AUDIT MARKET STRUCTURE, FACTORS AFFECTING AUDIT FEES AND AUDIT EFFORT IN TURKEY

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Prof. Dr. Meliha ALTUNIŞIK

Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor of Philosophy.

Prof. Dr. Ramazan SARI

Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Doctor of Philosophy.

Prof. Dr. F. N. Can ŞIMGA MUGAN	Assoc. Prof. Adil ORAN
Co-Supervisor	Supervisor

Examining Committee Members (first name belongs to the chairperson of the jury and the second name belongs to supervisor)

Prof. Dr. Özlem ÖZDEMİR (YILMAZ)	(METU)	
Assoc. Prof. Adil ORAN	(METU)	
Assoc. Prof. Çağnur KAYTMAZ BALSARI	(Dokuz Eylül U.)	
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Prof. Dr. Kadir GÜRDAL	(Ankara U.)	

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Name, Last Name : Sibel ULUSOY TOKGÖZ

Signature:

ABSTRACT

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ULUSOY TOKGÖZ, Sibel

Supervisor: Assoc. Prof. Adil ORAN

Co-Supervisor: Prof. Dr. F. N. Can ŞIMGA MUGAN

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This study explains the regulatory and competition structure of the audit market in Turkey by exploring types of audit firm, auditor changes and concentration levels in the audit market. The best way to analyse a market structure is to examine through a focus on fee and effort determinants. The association of audit fee and audit effort proxies with various independent variables generally employed in the literature are assessed, taking into account specific features of the Turkish market. The results of the study highlight that the main drivers of audit fees and audit hours are size of client company, number of consolidated firms in the financial reports of client companies, additional audit services for the all interim periods and type of audit firm (Big Four or not). Additionally, the impact of lowballing is detected in the Turkish setting. Further analysis focusing on audit firm changes enforced by the mandatory rotation period in 2010 supports a negative association between audit fees and change of audit firm due to rotation. This finding contributes to a better understanding of mandatory audit firm rotation policy choice. The negotiation power of large business groups over audit fees is also exposed, making a contribution to studies of other emerging countries' audit markets. The study also identifies the importance, especially in the determination of audit effort, of rendering additional, differentiated audit services.

Keywords: Audit, Audit Markets, Audit Costs, Audit Fee, Audit Effort

ÖZ

BAĞIMSIZ DENETİM PİYASASI, BAĞIMSIZ DENETİM ÜCRET ve SÜRESİNİ ETKİLEYEN UNSURLAR

ULUSOY TOKGÖZ, Sibel

Tez Yöneticisi: Doç Dr. Adil ORAN

Ortak Tez Yöneticisi: Prof. Dr. F. N. Can ŞIMGA MUGAN

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Çalışma öncelikle Türkiye'deki bağımsız denetim alanını düzenleyen yasal altyapı ile rekabet durumunu açıklamaktadır. Bu amaçla, bağımsız denetçilerin türleri, bağımsız denetçi değişiklikleri ve rekabet ortamının özellikleri ortaya çıkarılmıştır. Bir piyasayı incelemenin en temel yolu, piyasaki fiyat oluşumu ve harcanan sürenin analizidir. Bu sebeple, çalışma bağımsız denetim ücretleri ve bağımsız denetim süresi ile literatürde bunları önemli ölçüde etkilediği belirlenen değişkenler arasındaki ilişkiyi Türkiyedeki piyasaya özgü unsurları dikkate alarak analiz etmiştir. Analiz sonucunda denetlenen şirketin büyüklüğü, tüm ara dönem finansal tablolarının da denetlenip denetlenmediği, sağlanan konsolidasyon hizmetinin kapsamı ve bağımsız denetim firmasının niteliği (Dört büyük bağımsız denetim firması arasında yer alıp almadığı) en önemli bağımsız denetim ücret ve süre faktörleri olarak tespit edilmiştir. Bunun yanında, bağımsız denetim firmaları tarafından müşteri elde etmek için indirim yapıldığı tespit edilmiştir. Zorunlu bağımsız denetim rotasyonu için getirilen süre kısıtı dikkate alınarak yapılan ek incelemeler zorunlu rotasyon ile bağımsız denetim ücretleri arasındaki negatif yönlü ilişkiyi desteklemektedir. Bu sonuç bağımsız denetim firması rotasyonu politikasının etkilerinin daha iyi anlaşılmasına katkı sağlayacaktır. Bağımsız denetim ücretlerinde tespit edilen grup iskontosu da diğer gelişmekte olan ülke çalışmaları için yararlı olacaktır. Sunulan farklı ek hizmet türlerinin özellikle bağımsız denetim süresi üzerindeki öneminin gösterilmesi de çalışmanın bir diğer sonucudur.

Anahtar Kelimeler: Bağımsız Denetim, Bağımsız Denetim Piyasası, Bağımsız Denetim Maliyeti, Bağımsız Denetim Ücreti, Bağımsız Denetim Süresi

To Bülent

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LIST OF ABBREVIATIONS

BIST	Borsa Istanbul
BRSA	Banking Regulation and Supervision Agency
CMB	Capital Markets Board of Turkey
CML	Capital Market Law
DOJ	The Department of Justice, USA
EU	European Union
FTC	Federal Trade Commission
GAO	General Accounting Office, USA
IAS	International Accounting Standards
ISA	International Standards on Auditing
IASB	International Accounting Standards Board
IASCF	International Accounting Standards Committee Foundation
EAAT	Expert Accountants Association of Turkey
EU Acquis	Accumulated regulation, legal acts and court decisions which establish the body of EU Law
IFAC	International Federation of Accountants
IFRS	International Financial Reporting Standards
OLS	Ordinary Least Square
PDP	Public Disclosure Platform
POAASA	Public Oversight Accounting and Auditing Standards Authority

POAAB	Public Oversight Accounting and Auditing Standards Board
SMMM	Certified Public Accountants
TAS	Turkish Accounting Standards
TASB	Turkish Accounting Standards Board
TFRS	Turkish Financial Reporting Standards
TL	Turkish Liras
TMUDESK	Turkish Accounting and Auditing Standards Board
TURMOB	Union of Chambers of Certified Public Accountants of Turkey
YMM	Sworn-In Certified Public Accountants

CHAPTER 1

INTRODUCTION

Turkish accounting and audit markets have been subject to several reforms in recent years, including the introduction of international accounting and auditing standards, the foundation of a new entity for the oversight of audit operations, the determination of Turkish Accounting Standards (TAS), the application of mandatory audit rotation rules, and statutory audit introduced by the new Turkish Commercial Code for certain non-listed Turkish companies.

The aim of this study is to contribute to current literature regarding audit market structure in Turkey by focusing on the determinants of audit fee and effort. The examination of market structure begins with an analysis of the regulatory framework, explaining the main body of regulation affecting the auditing and accounting environment in Turkey. This is followed by an explanation of the market participants, the concentration levels of the Big Four auditors in the audit market, the audit market leaders and auditor changes.

The pricing mechanism is a vital element of the audit market structure. Thus, a full analysis of the audit market requires analysis of the impact of various demand and supply characteristics on audit fee. Understanding the determinants of audit fee is also important for regulatory purposes. The Turkish audit market exhibits some rare regulatory practices, such as minimum audit fee and effort requirements. In addition, in evaluating listing applications by audit firms, authorities must take into account the effect on audit fees, the influence of fee variations on the quality of financial statements and the audit effort expended as a result of new entrants to the market. An assessment of the implications of policy alternatives by relevant authorities, audit firms and audit partners should take into consideration the effect of these choices on audit pricing and market structure.

Simunic (1980) explores the determinants of several client and auditor characteristics which may influence audit fees, and proposes a production view of the audit process. A growing body of later research reveals relevant indicators of variations in audit fees in different country

settings. Hay, Knechel and Wong (2006) review audit fee research in more than 20 developed and developing countries for the period 1977 to 2003. The dependent variable of the audit fee models in these studies is generally the natural logarithm of audit fees. In general, the results suggest that the size of the auditee, the risk of the client and client complexity are associated with audit fee levels. These factors are expressed mainly as supply-side elements requiring auditors to expend more effort on their services. The lack of mandatory public disclosure of audit fee data is a barrier to investigating audit fee determinants in the Turkish setting. To the researcher's current knowledge, the only previous study with a principal focus on the Turkish audit market is Ulusoy Tokgöz (2010), which explores some of the fundamental indicator variables exposed in the literature on the 2007 audit fee data obtained from the Capital Markets Board of Turkey (CMB).

On the other hand, studies examining audit effort (time planned or actually spent during audit service) are globally scarce due to problems in gathering relevant data. Palmrose (1986) collects additional audit effort data to analyse the role of two competing arguments from the fee model for premiums obtained by large audit firms: better service quality or higher prices due to market power. Palmrose (1989) investigates the impact of audit contract types on audit fees and audit hours. Simunic (1984), Beck, Frecka and Solomon (1988) and Davis, Ricchiute and Trompeter (1993) test the argument that information obtained during the rendering of non-audit services may spill over into audit services and support production efficiencies. Davidson and Gist (1996) explore the relationship between audit planning and total audit effort. Bedard and Johnstone (2004) and Schelleman and Knechel (2010) test the significance of earnings manipulation and corporate governance risk factors on audit planning and pricing decisions. Other studies, such as O'Keefe, Simunic and Stein (1994) and Bell, Doogar and Solomon (2008), have been structured to focus on audit hours disaggregated by staff level. Furthermore, Hackenbrack and Hogan (2000) focus on engagement profitability in client retention and auditor switches, and Niemi (2005) and Niemi et al. (2014) evaluate the determinants of audit effort in Finnish companies. Leventis and Caramanis (2005) use audit effort data as a proxy for audit quality. Redmayne and Laswad (2013) provide proof of the impact of IAS/IFRS adaptation on actual audit fees and effort in public sector audits, while Bradbury and Redmayne (2014) reveal differences between the Big Four auditors in public settings. There does not appear to have been any previous study of the Turkish audit market focusing on audit effort data.

According to the researcher's current knowledge, only two studies have focused on the effects of mandatory audit firm rotation on both audit fee and audit effort data: Cameran et al. (2013) and Kwon, Lim and Simnett (2014). Cameran et al.'s (2013) sample focuses on the period 2006 to 2009 and comprises 204 publicly-listed, non-financial companies in Italy audited by the Big Four. Their principal audit hour data are proprietary, provided to them by the relevant audit firms. They find that auditors do not decrease their audit efforts for departing clients in comparison with continuing customers. On the other hand, first engagements after a mandatory audit present a significant average increase in total audit hours. They also report lowballing in audit fees in the initial engagement after a mandatory rotation. Kwon, Lim and Simnett (2014) study the case of Korea, where a mandatory rotation policy applied for a limited time from 2006 to 2010. Although, their main focus is on revealing the quality and fee implications of this policy, they also explore the policy's impact on audit effort. They observe higher audit fees in the post-implementation term and some proof of discounts in certain first engagements compared to continuing contracts. The study concludes that audit hours are elevated after a mandatory rotation, and the policy implications extend also to continuing audit relationships and voluntary auditor switches.

The main purpose of this study is to shed light on audit fee and audit effort indicators in Turkey, which is an almost unexplored area. Several indicators are selected to test their impact on both audit fee and audit effort. Besides the commonly-employed criteria in the literature (Hay, Knechel and Wong, 2006; Hay, 2013), policy enforcement, such as mandatory audit rotation, and affiliation with a large business group may have an impact on audit fees and audit effort. In addition, a rather less investigated factor, the role of extra services rendered by the audit firm, is asserted to have an impact on the determination of audit fees and effort (Hay, Knechel and Wong, 2006). Thus, the impact of seventeen independent variables on both audit fee and audit hour data, as proxies for audit fee and audit effort respectively, are examined using a multiple regression methodology. In order to achieve results comparable with other studies focusing on the implications of a mandatory audit firm rotation policy (Cameran et al., 2013; Kwon, Lim and Simnett, 2014), the regression is re-run on a pooled sample. Several interaction terms are also implemented and tested on the pooled data.

In this study, the indicator variables for which the impact on audit fee and hour are tested are size of customer company, qualifications and reputation of auditor, auditor change, number of companies for which consolidation services are rendered, availability of segment reporting, industry of the customer, inherent risk represented by the weight of inventory and receivables

to total assets of customer, other auditee risk factors such as liquidity, leverage, auditor view and experience of loss, corporate governance features such as ownership structure (major shareholder, foreign ownership) and group affiliation, the supply of additional audit-related services (e.g. English audit report, reviewing consolidation package of parent company and preparing separate audit reports for a subsidiary), review of all quarterly financial statements by auditor, and allocation of travel and accommodation costs among the parties to the audit contract. A five-year period (2008-2012) has been selected as the main focus of the study, since this time span represents a relatively stable accounting environment regarding the accounting standards and financial statement formats employed. This time span also allows the analysis of a period during which mandatory audit firm rotation was experienced in Turkey in 2010. Although this issue has been widely discussed as a policy choice to improve the independence of auditors, owing to the rarity of its application there is scarce evidence in the literature on actual implementation (Cameran et al., 2013; Kwon, Lim and Simnett, 2014).

Several inferences are drawn from the analysis of this study regarding the audit market in Turkey. Although, as an emerging economy, the Turkish audit market is less concentrated than developed markets in terms of the number of clients, the concentration levels of the market dramatically increase when they are calculated according to audited companies' total assets. These concentration levels should be taken into consideration in any new policy developments of regulatory agencies. The joint audit policies introduced by some European countries might be considered as an alternative policy for the Turkish structure, both to mitigate the concentration level and to facilitate sharing of experience and information between the international Big Four companies and smaller domestic audit firms (Le Vourc'h and Morand, 2011). Moreover, the impact of mandatory audit firm rotation on the audit market is observed as market share competition among market leaders, which leads to replacement of the audit market leader.

The results of the cross-sectional multiple regression show that variations in both audit fee and audit effort are driven mainly by the asset size of clients, the number of consolidated companies with in the financial reports, and whether or not the audit firm is a member of the Big Four. The observed assosication between these variables is positive, as expected and suggested by the literature. Thus, the relevant authorities should take these findings into consideration when making decisions on minimum price tariffs. In addition, analysis of the interactions reveals that larger firms with more consolidated companies must pay higher fees for audit services.

The service of auditors of reviewing all quarterly financial statements is incorporated in the model specifically to control for the impact of the mandatory quarterly audit requirement which was imposed by CMB for 2008 financial statements. As expected, the coefficient of the variable is found to be significant and positive for 2008 for both the audit fee and audit effort models. The same variable is also found to be significant for both models in all other cross-sectional periods of the study. These results expose both the cost impact of additional audit requirements imposed by regulators, and the relationship between audit fee and effort and different service features of auditors.

A Big Four auditor premium is proved in this study, similarly to results in the extant literature (Simunic, 1980; Hay, Knechel and Wong, 2006; Cobbin, 2002; Kamran and Mahendra, 2005; Ulusoy Tokgöz, 2010). Furthermore, in line with Kwon, Lim and Simnett (2014) and Palmrose (1986), the significance of the Big Four dummy variable in the audit effort model of this study contributes evidence to debate on the reasons for the Big Four audit fee premium and whether this is attributable to monopoly pricing or audit quality (Palmrose, 1986). Similarly to Palmrose's (1986) conclusions, the results of this study suggest that the Big Four premium relates to quality improvements. The results of a re-run of the modified audit fee model with the addition of the natural logarithm of audit hour data as an independent variable, following the previous literature (Cameran et al., 2013; Kwon, Lim and Simnett, 2014), is evaluated as a supplementary indication of a quality-conscious premium payment to Big Four auditors to benefit from longer audit service hours. The contribution of these conclusions to the literature is significant, since it has been impossible for most previous studies of audit effort to explore this issue owing to data restrictions due to the use of proprietary audit hour data provided only by Big Four auditors. Future studies should focus particularly on exploring the contribution of these extra service hours by the Big Four to financial reporting quality.

In addition, a proxy representing the availability of segment information in the notes is found to be significant, with a positive coefficient temporarily for the audit effort models. This reveals that not only the number of consolidated companies, but also diversified products, customers or geographical functions of the customer company influence variations in audit hours.

A significant result of the model is the proof obtained for a lowballing effect in first engagements in the Turkish audit market in 2008 and 2010 for the audit fee model. The proxy for first engagement with an audit firm is also found to be significant with a negative sign in

2008 for the audit effort model. This outcome shows not only that a price discount is in place, but also that the effort expended in audits is influenced by first engagements in 2008. The lowballing experienced in 2010 is especially important, since more than half of audit contracts were exchanged between auditors in the period when the mandatory audit firm rotation policy was first applied. Further analysis is carried out by configuring the relevant independent dummy variable of auditor change to show only audit firm changes that occurred after the same auditor had completed seven years of audits, as enforced by the mandatory audit rotation principles in place. It is found that the lowballing impact still existed in 2010. However, variations in audit effort do not reflect a relationship with auditor changes experienced in 2010. No notable impact is observed on planned audit hours relating to mandatory audit firm rotation, which is contrary to the expected start-up costs in first engagements suggested by the literature (Cameran, Vincenzo and Merlotti, 2005; Ewelt-Knauer, Gold and Pott, 2013). There is scarce direct empirical evidence in the literature on the consequences of mandatory audit firm rotation policy on audit fees and effort. To the best of the researcher's knowledge, only Cameran et al. (2013) and Kwon, Lim and Simnett (2014) have investigated this, for Italy and Korea respectively. In contrast to the present study, both Cameran et al. (2013) and Kwon, Lim and Simnett (2014) conducted their studies in environments in which the disclosure of audit fees was mandatory during most of the period of analysis. In addition, no association is observed in this study between audit effort and auditor changes during the mandatory audit rotation period, which is contrary to Cameran et al. (2013) and Kwon, Lim and Simnett (2014) and supports concerns about the quality of financial reports due to rotation policies. Thus, the findings of this study of the actual practice of mandatory audit firm rotation in a different country setting, where a major overhaul has been experienced in the audit market due to forced rotation, and in an environment in which audit fee transparency is not ensured, will contribute both to future studies in the area and to policy decisions, especially regarding mandatory audit and the disclosure of audit fees. Scholars in future should also analyse the impact of a mandatory audit firm rotation policy in Turkey to reveal the possible consequences of observed price competition and lack of responsiveness of audit effort for the quality of financial reports.

The impact of the discussed alternative policy option is tested with the addition to the basic models of a dummy variable representing audit partner rotations, and no notable impact of partner switches is detected on audit pricing or hour planning decisions. It should be noted that it is impossible to structure the proxy of partner rotations to reflect only mandatory changes of

audit partners with available data; thus, most identified audit partner changes may be due to voluntary changes.

The dummy variable designed as a corporate governance indicator to reveal group affiliation with one of the large business groups in Turkey is found to be significant with a negative sign for the audit fee model. This result is concluded to reflect a group discount in audit pricing decisions. A similar role of large group company structures has been observed in other developing countries, such as Bangladesh (Karim and Hasan, 2012), and this study will undoubtedly be beneficial to other emerging market audit fee studies.

Data on extra services provided by auditors collected from audit contracts, such as reviewing the consolidation package of a parent company, preparing a separate audit report for a subsidiary or providing an English version of the audit report, are found to be significant, especially in explaining variations in audit effort. This finding demonstrates the importance of increased transparency in the content of services rendered by auditors.

This study indicates that, similarly to the findings of Ulusoy Tokgöz (2010), the selected risk proxies do not deliver robust, significant explanatory power for variations in either audit service production or pricing decisions. Although this result is generally contrary to the previous literature (Hay, Knechel and Wong, 2006; Hay, 2013), some emerging country studies (e.g. Kamran and Mahendra, 2005; Karim and Hasan, 2012) have drawn similar conclusions. This finding suggests, as stated by Kamran and Mahendra (2005), that there is a lack of consideration of the specific qualifications of the client company and the adoption of audit planning regarding the risk profiles of clients. Thus, these results should encourage responsible authorities to focus more closely on audit firm quality controls in audit planning by seeking proper specifications in plans corresponding to the risk level of the client company.

The following Second Chapter of this study explains the regulatory framework for accounting, auditing and auditors in Turkey. In Chapter Three, market concentration, characteristics of market participants and changes in audit engagements are explored. Chapter Four continues with clarification of the determinants of audit effort and audit fee in the Turkish market, together with a literature review, an explanation of the structure of the model used, sample selection and the results obtained.

CHAPTER 2

TURKISH STOCK MARKETS, ACCOUNTING AND AUDITING ENVIRONMENT

The Capital Markets Board (CMB) is the main regulatory authority in the capital market structure of Turkey. It plays a specific role in the auditing and accounting of publicly-held companies. CMB uses the regulatory and supervisory power vested in the Capital Markets Law (CML)[1] in the accounting and auditing sphere of listed Turkish corporations.

On the other hand, a Public Oversight Accounting and Auditing Standards Authority (POAASA) was recently introduced into the Turkish system as a new core authority in the area of accounting and auditing. POAASA was established by Decree Law No. 660, which became effective on publication in the Official Gazette on 2 November 2011. According to the first article of this law, POAASA has the right to set audit standards and to set and issue Turkish Accounting Standards (TAS) in accordance with international standards. POAASA has power over all corporations. In Provisional Article No.1 of the Decree Law, it is explicitly indicated that provisions contrary to the decree included in other laws relating to auditing standards and statutory audit shall not be implemented. This provisional article also specifies that, until the standards and legislation to be issued by the POAASA enter into force, implementation of existing legislation relating to these areas shall continue. The aforementioned article also reserves the authority of CMB and the Banking Regulation and Supervision Agency (BRSA) to impose administrative penalties on authorised firms in accordance with their own regulations (POAAB, 2011).

Moreover, in Article 23 of Decree Law No. 660 regarding statutory audit of public-interest entities, the provisions of CML and Banking Law are also reserved in the implementation of

[1] The first CML, no. 2499 came into force through its dissemination in the Official Gazette dated 30 July 1981 (CMB, 1981). After several amendments to the main text, this CML was replaced by no. 6362 (hereafter New CML) following its publication in the Official Gazette on 30 December 2012 (CMB, 2012). Since the period of focus in this thesis ends with the 2012 year end and the first CMLwas still in force at that time, this Chapter will make limited reference to the relevant regulation of the new CML.

provisions regarding statutory audit. Similarly, according to Article 27 of the Decree Law entitled "Regulatory Procedures", authorities and boards established to regulate and supervise certain fields by law may make limited regulations to be applied in certain fields ensuring compliance with TAS (POAAB, 2011). Therefore, CMB regulations which do not contradict this Decree Law will be in force until the secondary rules put into place by POAASA come into effect; and even after this, to fulfil its secondary regulatory duties, other authorities such as CMB will still have some power in the accounting and auditing area limited to their fields. Accordingly, the role of the new authority and its secondary regulations will be emphasised in this chapter.

This chapter will first briefly introduce the Turkish capital markets, and then discuss the Turkish accounting and auditing setting in order to facilitate understanding of the audit fee and effort model employed in this thesis. Since the audit fee and effort data cover the 2008 to 2012 financial reporting periods, the central focus of explanation will be the regulations and institutions that were in effect during that period.

Owing to their distinctive structures, financial institutions are governed by other agencies, such as BRSA, and in view of their different features and regulatory framework this study will not cover publicly-held financial institutions and the regulations specific to these institutions.

Turkey has been negotiating accession to the European Union (EU) since 3 October 2005. Aligning the regulatory structure with the accumulated regulation, legal acts and court decisions which establish the body of EU Law (EU Acquis) is fundamental to ongoing and future amendments to the Turkish regulatory framework in the accounting and auditing area. Accordingly, where necessary, this chapter will also indicate the main similarities and differences between the Turkish and EU regulatory frameworks, to facilitate a discussion of future regulation alternatives in the light of the results of this study. International rules and their application will be outlined briefly where relevant to the model development of this study.

Although CML takes precedence in relation to publicly-held corporations in Turkey, these corporations still have to comply with the rules promulgated by the Turkish Commercial Code for areas which are not covered by CML. The previous Commercial Code No. 6762 (hereafter Former Commercial Code) was in effect from 1957. It did not play any significant role in auditing and accounting practices due to its limited enforcement power and practical provisions for these issues (Alp and Üstündağ, 2009). However, the new Turkish Commercial

Code No. 6102 (hereafter New Commercial Code), which was published in the Official Gazette on 14 February 2011, contains several new provisions relating to corporate governance, accounting and auditing designed mainly to harmonise the Turkish Commercial Code with EU Acquis. Most of the provisions of the New Commercial Code came into force on 1 July 2012. However, the New Commercial Code's provisions regarding auditing and accounting became effective from 1 January 2013 (Ulasan, Eren and Köylü, 2012). Thus, the provisions of the New Commercial Code are pointed out briefly in this chapter simply to provide a perspective for future developments.

2.1 Turkish Stock Markets

The only stock exchange in Turkey is Borsa Istanbul (BIST). Its daily average trading volume of shares was TL (Turkish Liras) 2.46 billion (USD 1.38 billion) in 2012. The market capitalisation of the companies traded on BIST was TL 550.1 billion (USD 309.6 billion) at the end of 2012 (CMB, 2012b). As at the end of 2012, the equities of 395 companies, including investment trusts and financial institutions, were being traded on the BIST equity market, distributed as follows: 242 on the National Market, 47 on the Collective Product Market, 77 on the Second National Market, 13 on the Watch List Companies Market, and 16 on the Free Trade Platform. The Free Trade Platform was formed to offer a trading venue for the equities of companies registered with CMB which have no available trading platform for their shares. Subject to CMB's approval, the first stocks of these corporations began trading on the Free Trade Platform on 10 May 2012. In order to attract small and medium-sized companies to BIST, the Emerging Companies Market was launched, in which certain incentives were introduced and reporting requirements reduced. The number of companies trading on the Emerging Companies Market had reached 11 by the end of 2012. As a unique feature, these companies also had to reach agreement with market advisors before their shares started to trade. Other than stocks, warrants written on a single stock or a basket of stocks are traded on BIST following the approval of CMB (Borsa Istanbul, 2012).

All companies included in the National Market must satisfy the listing requirements published by BIST. The Second National Market comprises companies removed temporarily or permanently from the National Market, along with companies that do not meet all the listing requirements of the National Market. The shares of investment trusts, real estate investment trusts, venture capital trusts and exchange-traded funds and warrant certificates are traded on the Collective Products Market. The Watch List Companies Market consists of companies

placed under closer scrutiny owing to special situations regarding transactions which have occurred in their shares and/or qualifications of the companies (Borsa Istanbul, 2014).

The number of intermediary institutions authorised to render services and practising at the end of 2012 was 132, including 91 brokerage houses and 41 banks (CMB, 2012b).

The role of international investors in BIST is reflected in the data, which show that 65.8 per cent of free-floating shares were held by international investors at the end of 2012 (Borsa Istanbul, 2012).

2.2 Review of Accounting Regulations in Turkey

2.2.1 Accounting Standards

The first regulatory attempts in Turkey regarding accounting, financial statements and company reports were presented in the Former Commercial Code. However, this only established a general basis and failed to influence practice (Alp and Üstündağ, 2009). Prior to CMB's regulatory role, all accounting practices were organised largely with the aim of preparing tax returns within the framework of tax law. This role of tax law was empowered by its authority to determine the tax base, with accompanying rules on accounting, record keeping, documentation principles and financial statements, as well as operational sanctions (Küçüksözen, 1995).

CMB brought a new perspective to the accounting environment by shifting the focus of regulation from the proper collection of taxes within the ambit of tax rules to informing shareholders about the financial performance and position of a company. According to the power vested in CML No. 2499 Article 16, publicly-held companies must prepare financial statements, including consolidated financial statements, financial reports and other information, in accordance with the form and principles determined by CMB and generally accepted accounting principles, definitions and standards (CMB, 1981).[2] CMB exercises its regulatory powers by putting into force relevant Communiqués which lay down the principles to be applied in the preparation of disclosed financial statements, as well as principles for their disclosure and notification. The main accounting regulation for public companies focusing on

[2] According to the corresponding new CML, Article 14, issuers are still obliged to prepare and submit financial statements and reports to be disclosed to the public or requested by the CMB when necessary, in compliance with regulations established by the CMB, but the emphasis is that these should be within the framework of TAS (CMB, 2012).

the information requirements of investors in capital markets, rather than on tax policies, was published by CMB in the Official Gazette on 1 January 1989 as Communiqué Serial XI, No. 1. Some revisions have been made to the first version of this Communiqué; however, it was implemented by all public companies until mandatory IAS/IFRS transformation for listed companies in 2005. Accounting standards laid down in this Communiqué were simple compared with the IAS/IFRS provisions, with no adjustment for consolidation and hyperinflation and no detailed provisions for the valuation of financial instruments. Financial reports prepared according to this Communiqué must comply with the formats presented in the appendix to the main text of the Communiqué.

Another development in accounting was the setting up of a Committee by the Ministry of Finance in 1992 to analyse accounting principles and to generate a uniform chart of accounts to be implemented by all companies. The Ministry of Finance released the Committee's report as a Regulatory Communiqué on 26 December 1992, which became effective on 1 January 1994 and set the principles and a uniform format for accounts. Banks, brokerage firms and insurance companies were excluded from the application of the guidelines and principles of this Communiqué (Mugan and Akman, 2005). Instead:

- Banks had to comply with the provisions introduced by the Central Bank of the Republic of Turkey and the Undersecretariat of the Treasury until August 2000, and since then BRSA regulations have taken precedence as the newly-established, main regulatory and enforcement authority for banks;
- Insurance companies had to comply with the Undersecretariat of the Treasury's specific provisions; and
- Brokerage firms had to comply with CMB's specific provisions.

The accounting environment in Turkey underwent a considerable overhaul after 2002. The first step was the decision of CMB in January 2002 to put into practice inflationary accounting and consolidation rules. The published principles complied with IAS/IFRS and implementation of these rules became mandatory from 1 January 2003. Similarly, from 1 January 2004, the Ministry of Finance required inflation adjustment in accounts used for tax purposes (Mugan and Akman, 2005).

The second step was the introduction of IAS/IFRS to the Turkish accounting system, in line with the EU harmonisation process as an EU candidate, since the European Parliament and the European Council of Ministers approved a regulation requiring the adoption of IAS/IFRS by

EU listed companies on 19 July 2002.[3] Accordingly, all EU-listed companies started to prepare their financial statements in accordance with IAS/IFRS from 2005 (ICAEW, 2014).

Some preparatory studies paved the way for this transition. Several boards were established and undertook various studies to draft national accounting standards in compliance with the International Accounting Standards Board (IASB). The Turkish Accounting and Auditing Standards Board (TMUDESK), with links to the Union of Chambers of Certified Public Accountants of Turkey (TURMOB), was established in 1994 and carried out its duties until the Turkish Accounting Standards Board (TASB) was created (Yalkın, Demir and Demir, 2008). TASB was established under powers granted by Supplementary Article 1 of CML No. 2499, as amended by Law No. 4487. As a public legal entity, TASB has administrative and financial autonomy in issuing national accounting standards. The TASB began operations at its first meeting on 7 March 2002 (Alp and Üstündağ, 2009).

In conjunction with the pace of the EU candidacy process, CMB, as the Turkish authority responsible for the financial reporting standards of listed companies at the time, published Communiqué Serial XI, No. 25 on 15 November 2003 as a Turkish translation of IAS/IFRS at the time of adoption. From 1 January 2005, CMB allowed exchange-traded companies the choice of publishing annual and interim reports either voluntarily in accordance with the original IAS/IFRS text as adopted by IASB, or under the provisions of Communiqué Serial XI, No. 25. Mandatory implementation was required by exchange-traded companies for financial statement periods ending after 1 January 2005.

Accordingly, TASB ensured full compliance of national reporting standards with the IAS/IFRS by aligning its process with the principle of officially translating the International Accounting Standards Committee Foundation (IASCF). TASB finished the translation process by publishing its results as Communiqués of TAS. As a result, the Turkish Financial Reporting Standards (TFRS) and interpretations became fully compliant with IAS/ IFRS as of May 2007 (Alp and Üstündağ, 2009).[4]

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[3] Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards.

[4] The regulation on the Principles and Procedures of the Operations of the Turkish Accounting Standards Board (Regulation) was published in the Official Gazette, No. 25404, 16 March 2004.

Adjustment of the system continued with the release of CMB Communiqué Serial XI, No. 29 on 9 April 2008, which abolished Communiqué Serial XI, No. 25 and enforced companies to apply IFRS, as endorsed by the EU, from financial periods ending after 1 January 2008, including interim financial reports. The new Communiqué revised the application of IAS/IFRS in Turkey by invalidating Serial XI, No. 25, which lacked prompt translation of some of the key amendments of IAS/IFRS. The timing of this new Communiqué coincided with the finalisation of the current translation of IAS/IFRS into Turkish by TASB, eliminating the translation lag experienced in CMB Communiqué Serial XI, No. 25. Thus, Communiqué Serial XI, No. 29 guaranteed the application of up-to-date versions of IAS/IFRS by all Turkish exchange-traded companies.

Moreover, Provisional Article 1 of Communiqué Serial XI, No. 29 required corporations which had previously implemented Communiqué Serial XI, No. 25, rather than the original IAS/IFRS text, in their disclosed financial statements to have all their interim financial statements reviewed by their auditors. Turkish exchange-traded companies already employing IAS/IFRS based on the original text were exempted from this additional audit requirement. Provisional Article 2 of Communiqué Serial XI, No. 29 delayed the implementation of the EU-endorsed version of IAS/IFRS until divergences from the original IAS/IFRS text had been announced by the TASB. Thus, in practice, the original version of IAS/IFRS was employed from 1 January 2008 by all exchange-traded companies.

Detailed financial statements formats are not regulated by IAS/IFRS, although general guidelines are provided in IAS 1. Using the regulatory power embedded in CML, CMB has set and published a financial statements format to be implemented by exchange-traded companies in order to improve consistency in financial statements and enhance understandability by users. CMB published its first financial statements format in Weekly Bulletin No. 2004/51 for the application of the provisions of Communiqué Serial XI, No. 25. Between 1 January 2005 and 31 December 2007, exchange-traded companies presented their financial statements in accordance with this format. Later, a new version of the financial statements format was published in Weekly Bulletin No. 2008/16 to align with developments of IAS/IFRS and provide solutions to problems which had been notified by companies and audit firms. Exchange-traded companies were mandated to follow this format for financial periods ending after 1 January 2008, when Communiqué Serial XI, No. 29 came into effect.

In November 2011, the TASB's authorities and responsibilities were transferred to the POAASA under Decree Law No. 660 on the "Organisation and Responsibilities of the Public Oversight, Accounting and Auditing Standards Authority". Hence, authority to set and publish TAS shifted to the POAASA (Yücel and Adiloğlu, 2013). In order to carry out the duties stated in the Decree Law, POAASA consists of an Executive Board (Public Oversight, Accounting and Auditing Standards Board – POAAB) and an administration which is responsible for implementing the Executive Board's decisions and assisting it in other issues. POAAB has the authority to prepare and disclose TAS in line with IAS/IFRS, make TAS consistent with International Standards on Auditing (IAS), authorise licences for audit firms and oversee the practice of the profession (Yücel and Adiloğlu, 2013).

Taking its powers from Article 9 and Provisional Article 1 of Decree Law No. 660 and Article 88 and Provisional Article 1 of the New Commercial Code, POAAB approved and announced a Resolution on 14 November 2012 that companies must prepare individual and consolidated financial statements compatible with TAS. According to that Resolution, from 1 January 2013 public-interest entities defined in Decree Law No. 660,[5] companies subject to statutory audit, as decided by the Council of Ministers according to New Commercial Code, Article 397,[6] and companies stated in the second paragraph of Article 1534/2 of the New Commercial Code must prepare their financial statements according to TAS. Until a specific designation of the POAAB, companies not covered by this resolution had to continue to comply with the regulation they had already been implementing. Currently, the TAS in force is a Turkish translation of IAS/IFRS, applying to accounting periods beginning on or after 1 January 2013 (PwC, 2013). POAAB's revised decision regarding the implementation of TAS was published in the Official Gazette on 26 August 2014, to take effect from 2014 financial statements. Compared with the previous version, the new rule narrows the scope of companies to apply TAS regarding shares traded on an exchange, capital market institutions, other publicly-held companies exceeding two of three thresholds based on asset total, revenue and employed

[5] Public-interest entities: publicly-held companies, banks, insurance, reassurance and pension companies, factoring companies, financing companies, financial lease companies, asset management companies, pension funds, issuers and other capital market institutions; and entities which are evaluated in this scope by the Authority since they significantly concern the public interest regarding their fields of activity, trading volumes, number of personnel they employ and other institutions.

[6] The Council of Ministers decisions on coverage of statutory audit are explained below.

personnel, listed financial institutions under the authority of BRSA, insurance companies and specified intermediary institutions licensed to perform their activities on BIST. Other institutions and companies may voluntarily adopt TAS, or should continue to comply with the regulation they have already been implementing.

New CMB Law No. 6362 (hereafter New CML) repealed CML No. 2499 and its amendments on 30 December 2012. According to Article 14 of the New CML, issuers are still obliged to prepare and submit financial statements and reports to be disclosed to the public or requested by the CMB when necessary in compliance with CMB's regulations. However, special emphasis is drawn in the text to CMB's regulatory focus on accounting, stating that it should be within the framework of TAS (CMB, 2012). In order to adopt the new resolutions of POAAB concerning implementation of TAS and put the new CML provisions into practice, CMB replaced its Communiqué Serial XI, No. 29 with Communiqué No. II-14.1, effective from 1 April 2013. Article 5 of this Communiqué explicitly requires companies to prepare financial statements according to TAS published by POAAB (Yurdakul, 2014). Accordingly, to facilitate a smooth transition, the format of financial statements was revised and published by CMB in its Weekly Bulletin No. 2013/19.

POAAB continues to shape the accounting environment, enhancing its regulatory role beyond the translation of IAS/IFRS by making accounting policy decisions on issues which are not yet covered by IAS/IFRS. For instance, on 20 May 2013 POAAB announced financial statements formats to be used by companies applying TAS. In addition, at its meeting on 17 July 2013 POAAB adopted policies for cross-ownership, business combinations under common control and preferred shares, and published these in the Official Gazette on 21 July 2013.

Table 1 summarises the transition of the Turkish accounting environment to IAS/IFRS by BIST traded companies.

Table 1: Application of IAS/IFRS by Borsa Istanbul Traded Companies				
Time of Application	1 Jan 2003 to 1 Jan 2005	1 Jan 2005 to 1 Jan 2008	After 1 Jan 2008	After 30 June 2013
Type of Application	Voluntary	Mandatory	Mandatory	Mandatory
Applied Standard	Either IAS/IFRS or CMB Communiqué Serial XI, No. 25 which is mainly the Turkish translation of IAS/IFRS	Either IAS/IFRS or CMB Communiqué Serial XI, No. 25 which is mainly the Turkish translation of IAS/IFRS	IFRS as endorsed by the EU	TAS published by POAAB
Financial Statement Format	No Format	Format announced in CMB Weekly Bulletin No. 2004/51	Format announced in CMB Weekly Bulletin No. 2008/16	Format announced in CMB Weekly Bulletin No. 2013/19

2.2.2 Disclosure Requirements for Financial Reports

No public disclosure requirements for financial statements were indicated in the Former Commercial Code, No. 6762. Although the initial version of the New Commercial Code, published in the Official Gazette of 14 January 2012, obliged certain types of company to publish their financial reports on their websites. Owing to various concerns raised by the business community, specifically privacy issues, the relevant Article 1524 was amended before its effective date (1 July 2013). Thus, currently, even under the New Commercial Code and its secondary regulations, the only financial reporting disclosure obligation is in the case of legal mergers and de-mergers (PwC, 2014).

The effective functioning of capital markets depends on the quality of information disclosed to investors, which may be qualified by the promptness and cost of accessing material information. Thus, the last paragraph of Article 16 of CML No. 2499 states that financial statements and reports required by CMB, and the reports of independent auditors in situations

where related financial statements are subject to independent audit, must be provided to CMB and disclosed in line with the principles and procedures designated by CMB (CMB, 1981).[7]

Disclosure of the annual financial reports of exchange-traded companies prior to the IAS/IFRS mandatory transformation in 2005 was regulated by Communiqué Serial XI, No. 1, according to which financial statements of exchange-traded companies had to be submitted to both CMB and the stock exchange. The stock exchange was responsible for the disclosure of financial reports in its bulletin. Article 49 of this Communiqué also obliged the disclosure of financial statements in the Trade Registry Gazette after approval by the General Assembly. Traded companies' annual reports need only be sent to CMB.

Disclosure of the financial statements of exchange-traded companies was regulated by Articles 707 to 715 and annual reports by Article 57 of Communiqué Serial XI, No. 25 during the period 1 January 2005 to 1 January 2008, until it was replaced by Communiqué Serial XI, No. 29. As previously stated, in these provisions exchange-traded companies were required to submit their financial statements within a certain time to both CMB and the relevant stock exchange. These documents were disseminated to the public by the stock exchange in a specifically designated section of its website. Thus, financial reports of exchange-traded companies were available on the BIST website until the disclosure of the 2009 annual financial statements.[8] It also became mandatory for traded corporations to publish their board reports and financial statements, as well as their independent audit reports, on their websites in a way that could easily be accessed by users after they had been disclosed by the stock exchange. Disclosed information had to be kept available to the public on the relevant company's website for a minimum of five years. Similarly to previous provisions, disclosure of financial statements in the Trade Registry Gazette was also compulsory.

For financial periods after 1 January 2008, disclosure of financial statements and reports and the maximum time allowed for these disclosures were retained in Articles 10 to 17 of Communiqué Serial XI, No. 29. The novel feature of this Communiqué concerning the disclosure of financial statements was laid down in Article 12, which provided CMB with

[7] This provision of Article 16 is mostly preserved in the New CML No. 6362, in Article 14, para. 5, with the omission of the submission requirement to CMB.

[8] http://borsaistanbul.com/yatirimcilar/mali-tablolar-arsiv.

authority to determine the submission of financial reports to CMB and the stock exchange over computer networks using electronic signatures. (CMB, 2008) This power triggered the transfer of the notification venue of financial reports from the stock exchange website to the Public Disclosure Platform,[9] where disclosure to the public was facilitated by an electronic signature which was mandatory from 2009 annual financial reports. Furthermore, CMB declared in its Weekly Bulletin a resolution to accept electronic submission as the only sufficient method, and abandoned its requirement for the direct submission of financial reports to CMB.

Until 1 January 2008, the preparation and disclosure of interim board reports were not required, and annual reports were not disclosed on the stock exchange website. For financial periods ending after 1 January 2008, interim board reports and annual reports were included in the financial information to be disclosed. In addition, with Communiqué Serial XI, No. 31 published in the Official Gazette on 9 March 2011, Emerging Market companies of BIST were exempted from the obligations for quarterly financial statements (three- and nine-month financial statements) and interim management board reporting. CMB Communiqué Serial IV, No. 58 introduced identical exemptions for Free Trade Platform companies. In addition, if a company's stock was suspended from trading for more than 30 business days, the company was also exempt from quarterly reporting and interim board reporting for as long as such suspension continued. These exemptions can also be found in CMB's new financial reporting Communiqué No. II-14.1. This Communiqué, which was published according to new CML No. 6362, has abolished the requirement for disclosure in the Trade Registry Gazette with effect from 2012 annual financial statements, while keeping the other essential rules on the disclosure of financial reports.

It should be noted that the fundamentals of the existing CMB financial reporting disclosure requirements overlap with EU Acquis. Similarly, the EU's Transparency Directive (2004/109/EC) obliges issuers of securities traded on regulated markets within the EU to ensure transparency through a regular flow of information to the markets, which includes annual, half-yearly and quarterly financial information. According to Article 4 of the Transparency Directive (2004/109/EC), an issuer must make its annual financial report public four months after the end of each financial year at the latest. In addition, issuers of shares or

[9] http://www.kap.gov.tr/.

debt securities must make public half-yearly financial reports two months thereafter at the latest. Companies whose shares are admitted to trading on a regulated market are also required to disclose an interim management report during the first and second half of each financial year. It is not mandatory for companies to disseminate an interim management report if they have already published their quarterly reports. Quarterly financial report disclosure is subject to the discretion of EU member states. The issuer must ensure that both annual and half-yearly financial reports remain available to the public for at least five years. The Directive demands the establishment of at least one officially-appointed mechanism for the central storage of regulated information. The EU recently published Directive 2013/50/EU, amending the existing Transparency Directive (2004/109/EC) on 6 November 2013. The most relevant new provision is the annulment of interim management reports in order to ease the unnecessary disclosure burden, especially for small and medium-sized companies. Under certain conditions, EU members may force listed companies to disseminate additional periodic financial information after making an assessment of its impact. The time limit for issuing public half-yearly financial reports has also been extended from two to three months after the end of financial reporting periods.

The time specifications for the disclosure of financial statements to the public are summarised in Table 2, adapted from Yurdakul (2014).

Table 2: Required Submission Periods of Financial Reports for the Exchange Traded Companies after the End of Accounting Period

	3 and 9 months		**Half Yearly**		**Yearly**	
Time Period of Application	2005 to 1 April 2013	After 1 April 2013	2005 to 1 April 2013	After 1 April 2013	2005 to 1 April 2013	After 1 April 2013
Consolidated Financial Reports	6 Weeks	40 Days	8 Weeks	50 Days	14 Weeks	70 Days
Individual Financial Reports	4 Weeks	30 Days	6 Weeks	40 Days	10 Weeks	60 Days

Table 3 summarises the announcement locations for financial reports.

Table 3: Disclosure Location for Financial Statements			
	1 January 2005 to 30 September 2009	**31 December 2009 to 31 December 2011**	**1 January 2012 to present**
Stock Exchange Website	√	-	-
Public Disclosure Platform	Only Voluntarily √	√	√
Turkish Trade Registry Gazette (only for annual statements)	√	√	-
Company Website (for five-year period)	√	√	√

2.2.3 Accounting Profession

An accounting profession with an organised structure in Turkey dates back to the nineteenth century. Thus, accounting services were provided even before the establishment of the Expert Accountants Association of Turkey (EAAT) in 1942. With no formal recognition, this voluntary organisation has been acting to represent Turkey in international congresses since 1957 and has become a member of the International Federation of Accountants (IFAC) (Aysan, 2006; World Bank, 2007a). In 1989, the profession gained a formal structure through the enactment of Law No. 3568, which directs qualification requirements and establishes the organisational structure of the profession. The organisational structure comprises two different chambers: the Chamber of Independent Accountants and Certified Public Accountants, and the Chamber of Sworn-In Certified Public Accountants. These two chambers function under a national umbrella union, TURMOB, which is authorised to issue professional licences to public accountants and set professional standards (World Bank, 2007a).

There are three separate accounting certificates, which have different educational requirements and empower different activities for each group. Only certified public accountants (SMMMs) and sworn-in certified public accountants (YMMs) are eligible to audit financial statements, as long as they also satisfy additional requirements set by the authorities.

2.3 Audit and Auditor Regulation in Turkey

In the Former Commercial Code, no independent audit obligation was required for corporations. The audit provisions of the Former Commercial Code had been in place since 1956, requiring joint stock corporations to elect a board of auditors in their annual shareholders' meeting. The number of auditors must be set in the company's articles of

association as a minimum of one person and up to five persons. According to Article 354 of the Former Commercial Code, auditors or boards of auditors must submit reports to the annual general meeting, giving their opinions of the general condition and financial position, balance sheet and other accounts drawn up by the company's board of directors and their proposed dividends at the end of each fiscal year. The Former Commercial Code did not promulgate any professional qualification for its members or designate choice of the board as a company organ; thus, it lacked a vital feature of independence in its functioning, and the role of the board of auditors was quite minor in practice (Gençoğlu, Isseveroğlu and Ertan, 2011).

In contrast, according to Article 16 of CML No. 2499,[10] publicly-held corporations were required to have their designated financial statements audited by independent auditing firms, to be established according to relevant CMB provisions (CMB, 1981). Under the power designated by Article 22/d of CML No.2499,[11] CMB exclusively governed the principles relating to independent auditing operations, including conditions for establishment, and audit principles had to be implemented by audit firms until the foundation of POAAB in November 2011. Consequently, until the introduction of the New Commercial Code, statutory audit was strictly enforced for publicly-held corporations, as structured by CMB in practice. Financial institutions, insurance companies and companies functioning in certain sectors, such as energy, also had specific audit requirements.

Prior to the adoption of ISA into the Turkish system in 2006, with the announcement of Communiqué Serial X, No. 22 in the Official Gazette on 12 June, the fundamental regulation of audit firms for publicly-held corporations was Communiqué Serial X, No. 16, first issued in 1996. Requirements for independent audit agencies to be assigned to publicly-held companies were promulgated in Article 3, Section 2 of Communiqué Serial X, No. 22. The main conditions for these audit firms were that they should be established as joint stock corporations with an independent audit clause in their commercial title, having at least 51 per cent of their primary capital held by the responsible partner, operating exclusively in the professional field of independent audit services, having sufficient organisational structure,

[10] Article 16 of CML No.2499 was in force until 29 April 1992, as amended by Law No. 3794.

[11] This article was introduced by amending Law No. 4487 to CML published in the Official Gazette on 15 December 1999.

physical amenities, technical capabilities and document- and record-keeping systems to perform independent audit activities, and purchasing professional liability insurance (CMB, 2006). The main difference from the previous Communiqué Serial X, No. 16 was enforcement of the designation of their title to demonstrate that they were working in the audit services business.

CMB provides a detailed list of authorised audit firms. Currently, 93 audit firms are licensed to render audit services to publicly-held companies and capital market institutions. All Big Four audit firms have been authorised to function in the Turkish market using their trade name under the provisions of a signed licensing agreement. The current Turkish names and affiliations with the relevant Big Four are: Akis Bağımsız Denetim ve SMMM A.Ş. (KPMG),[12] Başaran Nas Bağımsız Denetim ve SMMM A.Ş. (PwC), DRT Bağımsız Denetim ve SMMM A.Ş. (Deloitte Touche Tohmatsu International – Deloitte)[13] and Güney Bağımsız Denetim ve SMMM A.Ş. (Ernst &Young Global Limited – E&Y).[14] A number of audit agencies also work under the licences of global second-tier audit firms, such as Güreli Yeminli Mali Müşavirlik ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly International), Denet Bağımsız Denetim Yeminli Mali Müşavirlik A.Ş. (BDO International) and Engin Bağımsız Denetim ve Serbest Muhasebecilik A.Ş (Grant Thornton).

Attempts to harmonise the regulatory structure of auditors resulted in the foundation of POAASA in 2011. POAASA holds authority to authorise and list auditors, define ethical principles, quality control audit firms and auditors, design continuing education principles for auditors, and set administrative punishment principles to be applied to auditors (Başağaç, 2012). Decree Law No.660 provided a regulatory base for the establishment of POAAB, introducing general public oversight over audit activities for the purpose of synchronising the operations of several authorities with regard to auditing. For instance, previously CMB was responsible for the audit of publicly-held companies and BRSA for the audit of financial institutions. POAAB is also empowered as a principal authority to facilitate the statutory audit

[12] Previously, Cevdet Suner Denetim ve YMM A.Ş. also rendered audit services, licenced by KPMG.

[13] Denetim SMMM A.Ş. also provided services under licence of Deloitte prior to 2005.

[14] Önce SMMM A.Ş. used the E&Y licence until 2002 for listed corporations' audit.

regulated in the New Commercial Code for the first time. The main regulation, "By-Law Regarding Auditing", was published in the Official Gazette on 26 December 2012. This by-law laid out the principles to be implemented during rendering of audit services according to the New Commercial Code and Decree Law No. 660 (Bozdemir, 2013). Some of the provisions of the by-law were amended in October 2014.

The auditing provisions of CML No: 2499 were revised by the new CML No. 6362 to harmonise its provisions with the New Commercial Code. In Article 62 of the new CML, a new role for POAASA is acknowledged, stating additional conditions to be requested of independent audit firms authorised by the POAAB to render independent audit services for publicly-held companies' financial reports. These conditions must be determined by CMB, and a list of independent audit firms meeting these conditions must be disclosed to the public. Even under the new CML, CMB still initiates quality control examinations and inspections on audit agencies and is authorised to de-list audit firms that act contrary to the implemented standards and regulations. CMB also sends the results of its quality control operations to POAASA (CMB, 2012).

2.3.1 Audit Requirements of Financial Statements and Reports

Annual financial statements and notes of exchange-traded companies were subject to audit even in 1992, according to a secondary ruling of CMB. In addition, the half-yearly financial statements and notes of exchange-traded companies were to be reviewed by the auditor, and the view of the auditor had to be included in the disclosed financial report.[15] Emerging Market companies and Free Trade Platform companies of BIST were exempt from review of their half-yearly financial statements by an auditor.

The transformation to IAS/IFRS in financial reporting temporarily increased the audit burden of exchange-traded companies. Although quarterly three- and nine-month financial statements were customarily not subject to auditor review, as a safeguard for smooth conversion CMB obliged issuers to ensure the review of quarterly financial statements prepared within the first transitional year by an auditor. Therefore, according to Communiqué Serial XI, No. 25, either at the time of their voluntary transition to IAS/IFRS in 2003 or the mandatory application of IAS/IFRS in 2005, exchange-traded companies had all their interim financial statements

[15] After 1992, Article 1 of CMB Communiqué Serial X, No. 12 regulated the audit requirements which became effective with its publication in the Official Gazette on 18 February 1992 until Communiqué Serial X, No. 22 came into force. The latter was published in the Official Gazette on 12 June 2006.

reviewed by an auditor. The same approach continued in the transition from Communiqué Serial XI, No. 25 to Serial: XI, No. 29. Thus, similarly, traded companies that previously preferred to implement IAS/IFRS from Serial XI, No. 25, rather than the original text, encountered additional audit costs for the review of their three- and nine-month 2008 financial statements.

Furthermore, financial reports used in the legal merger of a publicly-held company, as well as disclosed financial reports in the prospectus of initial public offerings of securities, were subject to specific audit requirements.

In the first version of the New Commercial Code, all limited liability and joint stock companies were obliged to have their annual financial statements audited, starting from 2013. However, these provisions were amended in July 2012, before the effective date of the New Commercial Code, with Law No. 6335 limiting statutory audit requirements to certain companies to be declared by the Council of Ministers. Accordingly, the Council of Ministers declared its Resolution No. 2012/4213 on 19 December 2012, designating the companies to be subject to audit and exempting others. Details of the application principles of this Council of Ministers' decision were declared by POAAB in the Official Gazette on 12 March 2013. On the other hand, with an additional amendment to the New Commercial Code with Law No. 6455 in April 2013, the exempted companies again became subject to a type of audit, the structure of which was to be elaborated in a by-law issued by the Council of Ministers and the Ministry of Custom and Trades (Bozdemir, 2013). This approach may be a reflection of a policy of gradually enhancing audit coverage of all companies.

The revised resolution of the Council of Ministers regarding companies subject to audit and audit procedures was published in the Official Gazette on 14 March 2014. This amendment decreased the previous thresholds applied in the determination of companies to be subject to statutory audit. According to the current situation, traded companies, financial companies regulated by the BRSA, insurance companies, some special corporations, and companies which exceed two of three thresholds in their last two financial statements are required to have their annual financial statements audited. These three thresholds are: having an asset total of TL 75 million or above (previously TL 150 million); having an annual revenue of TL 150 million or over (previously TL 200 million); or employing 250 personnel or more (previously 500). Accordingly, details of the application principles accompanying the Council of Ministers' decision were published by POAAB in the Official Gazette on 10 October 2014.

Article 397 of the New Commercial Code broadens the subject of audit to annual reports, requiring auditors to state their views on the level of compatibility of the annual report with the presented annual financial statements and whether it represents a true view.

The EU's Fourth Council Directive (78/660/EEC) of 25 July 1978 required all companies covered by the Directive to have their annual accounts audited (EU Commission, 1996). According to this Directive, the auditor also had to give an opinion on the annual reports in terms of consistency with or discrepancy from the annual accounts. With the Seventh EU Council Directive (83/349/EEC) of 13 June 1983 on consolidated accounts, the audit requirement was expanded to all entities preparing consolidated accounts (EU Commission, 1996). These two directives were repealed by 2013/34/EU Directive in an attempt to eliminate some of the administrative burden on small companies (EU Commission, 2013). According to the new directive, small groups are exempt from preparing consolidated financial statements, except in cases where an affiliated entity is a public interest one. Financial statements' of public entities, medium-sized and large undertakings must be audited by one or more auditors. Statutory auditors are obliged to state their opinion on the consistency of the management report and the compliance of the annual report with legal requirements. Moreover, according to Directive 2013/34/EU, the statutory auditor must state any material mis-statements identified in the management report and provide an indication of the nature of any such mis-statements.

2.3.2 Authorisation of Auditors

Some additional conditions must be satisfied by auditors in the audit of publicly-held corporations. These conditions are regulated mainly by Article 4, Section 2 of Communiqué Serial X, No. 22. According to these provisions, in addition to being SMMMs or YMMs as defined by Law No. 3568, CMB certified auditors must take part in the audit process for a certain time period. In addition, partners, managers and independent auditors must prove that they are not responsible for any irregularities which have caused the revocation of the licence of any audit firm they have previously serviced (CMB, 2006). In comparison with the previous Communiqué Serial X, No. 16, the most important novelty of Communiqué Serial X, No. 22 on the issue of auditor requirements was the introduction of an audit licence requirement.

This certification started to be given on passing an exam conducted by CMB. CMB's audit certification requirement did not replace the existing audit licensing of SMMMs and YMMs,

but was an additional condition (World Bank, 2007a). This new audit certification requirement caused a conflict between two regulatory institutions, CMB and TURMOB, which was later taken to court. Currently, the foundation of POAAB has resolved the conflict: according to the abovementioned POAAB Audit By-Law, additional audit certification must be obtained from POAAB by SMMMs and YMMs to qualify them to practise audit services. Certain transitional provisions were put into effect for the conversion of previously-held CMB audit certificates to POAAB audit certificates.

2.3.3 Audit Standards

As stated previously, there was no specific provision in the Former Commercial Code's provisions regarding statutory audit. This condition was altered by the New Commercial Code's provisions, which have been effective since 2013 financial statements. Therefore, during the time span of this study, auditors providing services to exchange-traded, non-financial companies only had to comply with the audit standards introduced by CMB. As a result, this part of the study focuses solely on the relevant auditing standards of CMB.

The main reaction of CMB to changes in the financial environment after the demise of Enron was to make crucial changes to the audit structure. A renovation was experienced in the audit environment with Communiqué Serial X, No. 22, which came into force in June 2006. This Communiqué aimed mainly to tailor the ISA at the time to the Turkish audit market by making necessary adaptations to achieve coherent practice. Thus, application of international audit standards was enforced by this Communiqué (Ulusoy Tokgöz, 2010). Before that, the main secondary regulation was Communiqué Serial X, No. 16, starting from its first issue in 1996.

Even before the adaptation of ISA with Communiqué Serial X, No. 22, some of the best global regulatory practices generated in response to previous auditing disasters were followed by CMB in its audit policy setting. For instance, modifications made to Communiqué Serial X, No. 16 by Serial X, No. 19 on 2 November 2002 prohibited the rendering of non-audit services simultaneously with audit services, with the exemption of examinations of financial statements, tax returns and their verification according to tax legislation in compliance with Law 3568. The same amendments obliged listed companies to form audit committees, mainly to achieve certain improvements in the auditor selection process. Audit committees had to contain two members and were to be selected from board members without any executive

responsibilities. Procedures for the approval and attestation of disclosed financial reports were also elaborated (CMB, 2002).

There was a previous attempt to devise national auditing standards even before the introduction of the New Commercial Code. To that end, under the authority of TURMOB, TMUDESK carried out its duties through the formation of committees to ensure that proposed national auditing standards were in accordance with ISA. The translation of ISA to the Turkish system was administered under an International Federation of Accountants (IFAC) licensing agreement (World Bank, 2007a).

According to Article 397 of the New Commercial Code, statutory audit of firms and groups should be conducted according to TAS, which must be compatible with ISA (Bozdemir, 2013). TAS are defined in POAAB's above-mentioned by-law as standards including information systems auditing, education, ethics, quality control and auditing standards, and other relevant regulations in conformity with ISA. POAAB declared that these international standards published by IFAC would be a reference point for the preparation of TAS under the power vested in Decree Law No. 660. Currently, translations of most audit standards into Turkish have been finalised and published in the Official Gazette, although some standards are still in the process of approval.

The main regulation on auditing in the EU is the Directive on Statutory Audit (2006/43/EC), which is a minimum harmonisation directive amended by Directive 2008/30/EC. EU members were expected to comply with the provisions of the Directives before 29 June 2008; however, some countries have only gradually been able to adapt their domestic audit market regulation to the Directive. In Directive 2006/43/EC, Article 26 gives authority to the European Commission to enforce application of IAS in statutory audits. However, although some EU members have converged their national standards to IAS, there is currently no overall acceptance of IAS application in all EU member states (Hess and Stefani, 2012). In 2014, with Directive 2014/56/EU amending Directive 2006/43/EC, the role of the European Commission in adopting IAS in the EU was preserved (EU Commission, 2014).

2.3.4 Selection, Contracting and Rotation

Detailed conditions must be met before acceptance of an audit engagement by an auditor, as stated in CMB Communiqué Serial X, No. 22. For instance, the integrity of the management must be evaluated, the sufficiency of resources and time of the audit team to accomplish a

proper audit must be ensured, and the ethical position of the audit firm and team must be evaluated when accepting the audit (CMB, 2006).

From the perspective of corporations, Communiqué Serial X, No. 22, following the novelties introduced into the system by Serial X, No. 19, mandated exchange-traded companies' boards of directors to select at least two audit committee members who would be responsible for the audit selection process (CMB, 2006). The Turkish Corporate Governance Code contains some additional specifications for members of the audit committee, relating particularly to their independence. An independent audit firm selected by the audit committee must then be approved by the board of directors. The selection process is finalised by a decision of the annual shareholders' meeting of the company.

Mandatory audit firm rotation was initially introduced to Communiqué Serial X, No. 16 by Serial X, No. 19, with a five-year rotation term and two-year cooling off period. This rule came into force on 1 January 2003 without taking into account the period before publication. CMB (2002)

Next, the first version of Section 3 Article 6 of Communiqué Serial X, No. 2, published in the Reiterated Official Gazette on 12 June 2006, contained a maximum seven-year contracting period, with a two-year cooling-off period before contracting with the same audit firm. According to Provisional Article 4 of Serial X, No. 22, the stated mandatory audit firm rotation period must be calculated by taking into account audit contract periods effective before the implementation of the stated provisions. Therefore, the first impact of the mandatory audit firm provision was experienced in audit contracts for 2010 financial statements (Yurdakul, 2010). After its first application in 2010, the stated audit firm rotation rule was loosened to the extent that mandatory audit firm rotation had to be applied in cases where neither the auditor nor the listed company met the revised conditions in Communiqué Serial X, No. 22. Amendments were published in the Official Gazette on 26 March 2011, coming into effect from 2011 financial statements. These new requirements concerning listed companies included the number of independent members on the audit committee, execution of the responsibility of the audit committee in practice on the selection, contracting and decisions to obtain non-audit services from the auditor, and inserting a provision into the company's articles of association stating that minority shareholders who hold five per cent or more of the company's equity capital might, with justifiable grounds, demand a switch of current auditor with the approval of CMB. The conditions for auditors encompassed the organisational

capabilities of the audit firm, such as establishing a proper quality assurance service and informing CMB about its operations, having enough lead managers and auditors to enable rotation, composing three or more audit teams, and setting relevant policies to prevent the direct exchange of customers between lead managers. According to these modified provisions of Communiqué Serial X, No. 22, if parties to the contract proved their adherence to the stated conditions, audit firms only had to rotate their lead managers over five-year terms, with a similar two-year cooling-off period to that previously set for audit firm rotation. Otherwise, companies had to follow a seven-year audit firm rotation policy and a two-year cooling-off period (CMB, 2006).

Lastly, with Communiqué Serial X, No. 28, published on 28 June 2013, the contracting provisions of Serial X, No. 22 were modified. According to these amendments, without prejudice to the audit committee regulations, auditor selection process and maximum contracting period decisions must be processed according to the Turkish Commercial Code and POAAB regulations.

The POAAB Audit By-Law dated 26 December 2012 encompasses stricter rules for contractual terms of audits by introducing limitations on both auditor and audit agency. If a company has contracted with an audit firm for seven years within the last ten years and the audit firm has taken part in the company's audit for five years within the last seven years, neither the auditor nor the audit firm can contract with or render audit services to the same company until three years has elapsed. POAAB's rotation principles would also be applicable to previous audits carried out before 1 January 2013 (POAAB, 2012).

Article 42 of EU Statutory Audit Directive 2006/43/EC entailed the rotation of key audit partners following a seven-year term and a two-year cooling-off period before contracting with the same auditor again. This directive only enforced internal rotation within an audit firm between audit partners and did not enforce a mandatory audit firm rotation policy in the EU (Hess and Stefani, 2012).

Due to the minimum harmonisation feature of Audit Directive 2006/43/EC, there are currently diverse implementations in EU member countries of mandatory audit rotation policies. Mandatory cooling-off periods range from one year in at least seven countries to three years in Italy. The only country with mandatory audit firm rotation is Italy, and other countries

instead have partner rotation, with terms varying between five and seven years (Le Vourc'h and Morand, 2011).

In 2014, Directive 2014/56/EU again amended Directive 2006/43/EC and a new Regulation 537/2014 was published on specific requirements regarding statutory audit of public-interest entities. With these amendments, key audit partner rotation within seven years continued to be regulated with an extended three-year cooling-off period, and in addition a mandatory audit firm rotation policy was introduced for statutory auditors every ten years, with some exemptions, with a four-year cooling-off period before renewing engagement with the same public-interest company. Furthermore, a list of non-audit services which could not be provided by statutory auditors of public-interest entities was prepared, limitations were imposed on fees charged for non-audit services, and certain "Big Four only" contractual clauses were regulated. There was generally a two-year adaptation period for EU countries to transfer the new provisions to their jurisdictions, with delays in some obligations and transitional provisions (EU Commission, 2014).

According to Section 203 of the Sarbanes-Oxley Act, if a firm has provided audit services to a particular publicly-held company for five successive years, the lead and reviewing audit partners must be rotated (GAO, 2008; Yurdakul, 2010).

Currently, a limited number of countries have been employing mandatory audit firm rotation policies and, as stated above, Italy is the only EU country which imposes an audit firm rotation policy. In addition, Austria enforced, and then repealed before putting into practice, a six-year audit firm rotation policy, and until 2003 Poland enforced mandatory audit firm rotation for insurance companies only (Hess and Stefani, 2012). Spain imposed mandatory audit firm rotation with its 1988 Audit Law for a maximum period of nine years; however, owing to ambiguities in the evaluation of the provisions and abolition of the related ruling in 1995, audit firm rotation has not actually been practised in Spain (Carrera et al., 2007). Other than EU countries, Canada and Singapore enforce a mandatory audit firm rotation policy only for banks (Harris, 2012). In May 1999, the Brazilian Securities Commission adopted a mandatory audit firm rotation policy of five years with a minimum three-year cooling-off period (Martinez and Reis, 2010). Another implementation was experienced in South Korea starting in 2006, having a six-year rotation policy with certain designated exemptions for companies listed on a foreign stock exchange or controlled by a foreign parent. Mandatory rotation in South Korea was abolished in 2010 due to criticisms of its cost and usefulness (Kwon, Lim and Simnett, 2014).

2.3.5 Audit Contracts and Disclosure of Audit Fees

Coverage of audit contracts and their notification to CMB have also been promulgated by CMB to ensure proper surveillance. According to Communiqué Serial X, No. 22, engagement conditions such as the audit team, their planned working time and relevant fees, and total audit costs must be laid down in audit contracts. A contract must be submitted to CMB within six days of approval. In addition, audit agencies must submit their annual financial reports and segregation of revenues and costs between audit and non-audit services within ten weeks of their financial year end. Although Communiqué Serial X, No. 22 safeguards CMB's rights to disclose information submitted by an audit firm, which is deemed necessary, CMB has not yet exercised that power (CMB, 2006).

The EU's currently effective Directive on Statutory Audit (2006/43/EC) obliges statutory auditors of public-interest companies to publish a transparency report on their website within three months of each financial year end, containing a description of the audit firm, networks to which they belong, the governance structure of the auditor, the last quality assurance review date, a list of public-interest customers, statements on educational policy and independence practices, and financial information presenting the significance of the statutory audit and other services provided and partners' remuneration. In addition, with amendments to the Fourth Council Directive regarding the accounts of certain types of company (78/660/EEC) and the Seventh Directive on consolidated accounts of companies (83/349/EEC),[16] companies are obliged to disclose total audit fees, audit fees for assurance, advisory services and fees for other non-audit services in notes to the accounts (Humphrey and Moizer, 2008). The new Regulation 537/2014 regarding public-interest entities continues to require transparent reports, with an extension to the timing of their publication to four months after the relevant financial year end, and these reports must remain available for five years on their website. Furthermore, a new notification to competent authorities by auditors or audit firms carrying out statutory audits is imposed with the new regulation regarding the revenue obtained from public-interest entities through audit and non-audit services. However, as an EU accession candidate, Turkish

[16] These directives were repealed by the 2013/34/EU Directive published in the Official Journal of the EU on 29 June 2013. The aim of this directive is to decrease the administrative burden of small companies (EU Commission, 2013). Article 18 of the new Directive for public entities and large undertakings continues to enforce disclosure of audit fees and fees paid to the auditor for assurance, tax advice and for other non-audit services. Exemption from this disclosure requirement is regulated for cases where undertakings have been included in the consolidated statement of a parent which gives audit fee data in its notes.

exchange-traded companies are not obliged to disclose audit costs incurred, even as a total amount. Rarely, companies may voluntarily declare audit fees in their notes. It is expected that there will be a more transparent audit environment with the introduction of statutory audit. Accordingly, with its Audit By-Law, POAAB introduced a new disclosure obligation for auditors rendering services to public-interest entities to publish a transparency report in conformity with the EU Acquis (POAAB, 2012).

2.3.6 Rules for Minimum Audit Fees

Current CMB Regulations do not contain any specific rule regarding the minimum amount which should be paid for audit services. However, according to Article 46 of Law No. 3568 (fundamental law regarding accounting services), a minimum service fee must be determined according to a tariff for accounting services. Annual tariff proposals are submitted to TURMOB by the accountancy chambers. After taking into consideration the proposed pricing alternatives of the chambers, TURMOB's Board of Directors draws up and submits a final tariff plan to the Ministry of Finance for approval. The Ministry of Finance approves the tariff either as proposed by TURMOB or after making any amendments deemed necessary. The annual tariff enters into force following publication in the Official Gazette. Until the approval of a new tariff, previously published versions must be applied. The fundamentals of minimum pricing were regulated in a by-law published in the Official Gazette on 2 January 1990. According to this by-law, it is strictly forbidden to contract under a minimum tariff, and actions against this rule are subject to disciplinary action. Furthermore, a written contract comprising at least the audit service fee amount is mandatory. In addition, according to Article 20 of the by-law, work-related travel expenses of members of the profession must be paid by the owner of the business. If the contracting parties plan to deviate from this provision, accountants prefer in practice to put clauses into the written contract explicitly stating the conditions for sharing relevant costs with the business owner.

The minimum audit service fee tariffs, along with the minimum audit hours applied during the main period of this study (from 2008 to 2012), are summarised in Table 4. This contains only the SMMM tariff, since most auditors providing audit services to exchange-traded companies are SMMMs.

Table 4: Declared Minimum Audit Fees and Minimum Hours (2008-2012)					
	2008	**2009**	**2010**	**2011**	**2012**
Date published in the Official Gazette	29 December 2007	24 January 2009	*[17]	*	30 December 2011
Minimum service time in hours for standard annual audit	96	96	96	96	96
Minimum service time in hours for interim period auditor review	32	32	32	32	32
Minimum hourly fee for audit service	TL 143	TL 145	TL 145	TL 145	TL 160
Total minimum fee for audit of annual and review of half-yearly financial statements	TL 18,304	TL 18,560	TL 18,560	TL 18,560	TL 20,480

Article 43 of the Independent Audit By-Law put into practice by POAAB empowers POAASA to determine fee tariffs for audit services (POAAB, 2012). To the best of the researcher's knowledge, POAAB has not yet set or disclosed any tariff under its stated authority.

Investigation of the application of minimum fee/hour requirements for audit services across the world reveals that Croatia (World Bank, 2007b; Barać, Šodan and Vuko, 2011), Pakistan (World Bank, 2005; Ashraf and Ghani, 2005) and Greece (Leventis and Caramanis, 2005) practise minimum audit fee/hour regulations.

Leventis and Caramanis (2005) state that, in Greece, the Supervisory Council of the Hellenic Institute of Certified Auditors, through a series of decisions, set minimum audit hours for audit services in the early years following the 1992 liberalisation reforms. A steady and significant drop in audit service time after 1992, accompanied by fierce competition in the market for audit services, was the reason for introducing a minimum hours requirement (Leventis and Caramanis, 2005). Accordingly, a decision on minimum audit hours was issued in 1996 and became effective for financial years starting on or after 1 July 1996. The prescribed minimum audit hours for statutory audits of annual financial statements were 100 audit hours for trading

[17] Although a proposal for minimum accounting service fees was notified to the Ministry of Finance, the Ministry used its discretion not to disclose fee tariffs for these years. Thus, the chambers declared fees for these periods, raising minimum hourly fees by a revaluation rate as in previous practice, and posted them on their websites for members' use. However, TURMOB informed the chambers that the Ministry of Finance had notified it in writing that, in line with the relevant provisions, accountants had to continue to charge the 2009 tariff until a new tariff was approved by the Ministry. Thus, these columns contain the minimum hourly fees for 2009.

companies, 150 audit hours for industrial and construction companies, and 200 audit hours for listed companies.

A revision was approved, effective from 1 July 2001, which brought in a new basis for minimum hours of "total size", calculated as the sum of total assets and revenue. For each audit group designated according to total size, minimum hours were calculated using a mathematical formula based on constant minimum hours plus conditional audit hours determined according to the total size of the company. Additional audit hours were added taking into account the type and sector of the company, for example public and construction companies (Leventis and Caramanis, 2005).

In Croatia, Barać, Šodan and Vuko (2011) indicate that pricing of audit services was determined in conformity with a minimum tariff based on Article 20 of the Audit Law and a secondary ruling of the Croatian Chamber of Auditors, until it was repealed following investigation by the Croatian Competition Authority in April 2007.

Ashraf and Ghani (2005) report the view of a Big Four auditor in Pakistan that companies' unwillingness to pay higher fees for audit services was impeding audit quality. According to Ashraf and Ghani (2005), in 1999 the Institute of Chartered Accountants of Pakistan declared minimum audit fee levels for audit services to tackle the issue of declining fee levels.

2.3.7 Independence Requirements

Auditor independence is defined in CMB Communiqué Serial X, No. 22 as entailing a complete framework of perspectives and behavioural patterns ensuring honest and impartial execution of professional activities. Thus, audit firms and auditors should be honest and impartial, and free of any circumstances endangering their independence. Examples of special circumstances which may impair independence are given in the Communiqué, although these are not exhaustive. Family ties, being affiliated with the customer, having a managerial position in or decision-making power over the company, its subsidiaries or joint ventures, failing to collect the previous year's audit fee, audit fees contingent on an audit view, setting an audit fee significantly different from market rates or negotiating an audit fee by taking into consideration other services provided to the customer are among incidences indicated to hamper independence (CMB, 2006).

According to Communiqué Serial X, No. 22, rendering of particular non-audit services during a period of independent audit, in exchange for a fee or gratis, are prohibited in order to protect

of auditor independence. These restrictions cover book-keeping and related services, valuation and actuary services, preparation of survey and applicability reports, performing or supporting an internal audit function, and providing intermediation and financial consultancy services. Moreover, audit firms must not perform these non-audit services through other agencies in Turkey to which they are legally attached, or consultancy firms of which the management or capital is under the direct or indirect control of, or affiliated with, the audit firm. These prohibitions also encompass consultancy services rendered by shareholders and directors of the independent audit firm. However, the review and approval of financial statements and declarations in compliance with tax legislation within the framework of Law No. 3568 are not cited among prohibited activities (CMB, 2006).

Article 22 of the POAAB's Independent Audit By-Law contains similar requirements for the protection of auditors' independence. The only permissible non-audit services are ratification, tax consultancy and tax audit (POAAB, 2012).

In addition, Article 400 of the New Commercial Code sets conditions for being selected as auditor of a company. Most listed barriers to such selection relate to direct and indirect ownership, and managerial and employment relationships of the auditor with the client company. It is also forbidden to contract with an auditor that provides services or assistance in the book-keeping and financial report preparation operations of the company outside the scope of audit services. Moreover, if in the last five years an auditor has obtained more than 30 per cent of its audit and consultancy revenues from the company or from shareholders owning more than 20 per cent of its capital, and is expected to have that level of revenue in the current year, that auditor should not be selected (Ustundağ, 2011). Thus, the New Commercial Code introduces a new audit fee cap to the system in the selection of an auditor, with the aim of decreasing the economic bond between auditor and audited firm.

Article 4 of new EU Audit Regulation 537/2014 on the statutory audit of public-interest entities stipulated a threshold for the level of authorised non-audit services to audit customers of 70 per cent of the previous three years' average audit fees. This Regulation also preferred not only directly to impose an audit fee cap but to introduce a gradual transition with checks and balances provided through audit committees. Accordingly, if the total fees obtained from a client in each of the last three consecutive years are higher than 15 per cent of the total audit revenues of the auditor, this should be disclosed to the audit committee, and threats to auditor independence and safeguards imposed to ease these threats should be discussed with the audit

committee. As a safeguard, the audit committee may decide on a review of engagement quality control by another audit firm/auditor before the disclosure of the audit report. If the stated economic dependence of the auditor persists, the audit committee is responsible for identifying objective grounds for selecting the auditor again. However, this additional period must not exceed two years. A requirement imposed on auditors by Article 14 of Audit Regulation 537/2014 EU to notify competent authorities annually regarding their audit and non-audit service revenues may assist authorities in controlling these economic dependencies.

2.3.8 Liabilities of Audit Firms and Auditors

Audit firms are legally responsible for losses arising from false or misleading information in their audit reports, according to Article 16/4 of CML No. 2499 (CMB, 1981). Article 10 of new CML No. 6362 acknowledges auditors' responsibility for auditors' reports contained in prospectuses produced during public offerings, and Article 32 applies to audit reports contained in other public disclosure documents (CMB, 2012).

Auditors are also liable to penalties if it is proved that the auditor has deliberately prepared an independent audit report contrary to the facts, as stated in Article 47 of CML No. 2499 (CMB, 1981). Although in practice these provisions are implemented very rarely, the penal liability of auditors is retained in the new CML No.6362, Article 112 with reference to Turkish Criminal Code No. 5237. Moreover, in Article 63 of the new CML, auditors are held responsible for damages caused by not auditing financial statements and reports in line with the relevant regulations. According to the provisions of New CML Article 63, the auditors are responsible for damages incurred due to false, misleading or incomplete information contained in audit reports (CMB, 2012).

On the other hand, effective deterrence to non-appliance of CMB audit regulations is ensured with the revocation of the licences of audit agencies providing illicit services, on the authority of Article 46/g of CML No. 2499 (CMB, 1981). This authority is maintained in Article 62 of the new CML (CMB, 2012). If their non-compliance is proved, the auditors may also temporarily or permanently lose their licences to render audit services. Furthermore, in case of minor violations of the regulations, CMB may impose administrative fines on the audit firms and/or auditors, and such sanctions are disclosed to the public in CMB's Weekly Bulletin under the authority of Article 47/A of CML No. 2499. This administrative fine authority is also contained in Article 103 of the New CML (CMB, 2012).

To ensure compliance, POAAB may also impose administrative sanctions, depending on the violation detected in accordance with the degree of non-compliance, such as warning, suspension or revocation of the licence of the audit firm and/or auditor. POAAB has power to prohibit the statutory audit activities of an audit firm or statutory auditor in certain cases laid down in its Audit By-Law. Furthermore, audit firms and statutory auditors are liable for losses that may arise in connection with non-compliance of audit reports with TAS and incorrect, deficient or misleading information and opinions contained in audit reports, according to Article 44/1 of POAAB's Audit By-Laws (POAAB, 2012).

Article 554 of the New Commercial Code puts fault-based responsibility on auditors for damages caused to shareholders and creditors, as well as the company, in the fulfilment of their statutory duties.

Article 30 of the EU Directive on Statutory Audits forces EU members to put in place effective systems of investigation and penalties, while allowing discretion within countries. However, the new Directive 2014/56/EU moves towards a better convergence of policy on sanctions imposed on statutory audit by setting minimum standards for the types and addressees of sanctions, criteria for imposing sanctions, and disclosure of sanctions, without prejudicing the national criminal laws of EU member states (EU Commisson, 2014).

CHAPTER 3

STRUCTURE OF THE TURKISH AUDIT MARKET AND AUDITOR CHANGES

3.1 Concentration of the Audit Market

From a market perspective, the term "concentration" describes situations in which a small number of companies controls a large proportion of economic activity, such as total sales, assets or employment in a certain market (Le Vourc'h and Morand, 2011). Traditional industrial organisation theory postulates that higher concentration in an industry causes more market power and thus prices different from the competitive level. However, more recent understanding is that higher concentration does not cause higher prices if it co-occurs with cost efficiency (Abidin, Beattie and Goodacre, 2010). The main reasons cited for this conclusion are economies of scale and industry expertise in the audit market. Some studies (e.g. GAO, 2003; Thavapalan, Moroney and Simnett, 2002) even conclude that increased concentration does not necessarily decrease competition in the audit market following mergers between audit firms. On the other hand, incidents such as the acquisition of Arthur Andersen by Deloitte in the UK have been found to increase both market levels of audit fee and audit fee rate (Shamharir, 2006). Moreover, Francis, Michas and Seavey (2013) suggest that the industrial organisation literature presents mixed evidence on the association between degree of market concentration and product quality.

Another concern reported for a more concentrated audit market is specific to smaller firms, in that the emergence of a number of large audit firms create hurdles for these smaller firms entering the audit market due to higher capital requirements, high litigation risk and lack of recommendation by market participants (GAO, 2003). A further concern over concentration is the narrow choice of suppliers in the audit market. This problem may be becoming even more challenging, especially in concentrated sectors in which companies prefer not to work with the same auditor as a rival (Beattie, Goodacre and Fearnley, 2003). Aobdia (2011), referring to large mergers and the closure of Arthur Andersen, presents that, especially in concentrated sectors, companies hesitate to contract with the same auditor due to concerns

about the impact of information spill-over. This influence has been shown to allow auditors to extract rents on these concerns.

Three leading market-derived causes of concentration in the audit market are voluntary change, changes in the number of service suppliers, and changes in the number of service demanders (Beattie and Fearnley, 1994; Beattie, Goodacre and Fearnley, 2003). Factors influencing voluntary alignment in the audit market are discussed mainly in the auditor choice literature. The reasons cited for voluntary auditor change decisions include changes in company management, disagreements over accounting policies, merger or being taken over by another company, level of current audit fee, audit group realisation, concerns over provided audit service quality, need for a large audit firm, influence of underwriters, and preference of equity or loan provider (Beattie and Fearnley, 1995). The main elements that shift the demands of audit are initial public offerings and structural changes in the customer company, such as mergers, de-mergers, divestitures, de-listing, temporary cessation of trading of company shares and insolvency. On the other hand, the supply side of the audit market is altered by mergers between audit firms, failure and closure of audit firms (Shamharir, 2006) and new licences. Policy choices of authorities, such as mandatory audit firm rotation and joint audit requirements, may also alter the structure of competition in the audit market.

Several market concentration measures or indices are studied in the literature. Formulae for the two main ones – concentration ratio (CR) and Hirschman-Herfindahl Index (HHI) – are presented in Table 5 (Le Vourc'h and Morand, 2011).

Table 5: Concentration Formulae

	Formulae	**Explanation**
Concentration Ratio	$CR_m=\sum^{m}_{i=1} S_i$	- M ranges from 1 to N - S_i represents market share of the firm
Hirschman-Herfindahl Index	$HHI=\sum^{N}_{i=1} S^2_i$	- N represents total number of firms - S_i represents market share of the firm

CR represents the proportion of one or a number of large audit firms in the sample. One of the most frequently used concentration ratios is CR_4, which reveals information about the market structure according to the calculated concentration levels of the largest four market participants. For instance, CR_4=0% means perfect competition. CR_4 levels of 0 to 50 per cent, reflect a market structure ranging from perfect competition to oligopoly, whereas more than 50 per cent CR_4 up to 80 per cent represents an oligopolistic market, and CR_4 levels ranging

from 80 to 100 per cent are considered to indicate a market structure extending from a highly concentrated oligopoly to a monopoly (Le Vourc'h and Morand, 2011).

In addition, concentration levels in the audit market can be calculated using several metrics, including number of clients, audit fees and, since audit fees are not disclosed in many countries, proxies such as company revenues and total assets (Beattie, Goodacre and Fearnley, 2003).

On the other hand, HHI is calculated by summing the square values of the market shares of each audit firm compared with the overall market (Velte and Stiglbauer, 2012).

In the US in the late 1980s, the eight largest audit firms, the Big 8, began to merge with each other. The outcome was that by 2000 five large accounting firms collected the majority of audit revenues from publicly-held companies in the US. Consolidation of the market went even further in 2002 with the closure of Arthur Andersen, Enron's auditor. After that, the audit market concentrated on the Big Four auditors. A study by the United States Government Accountability Office (GAO, 2008) based on Audit Analytics data[18] shows that the largest audit firms acquired 94 per cent of all audit fees paid by publicly-held companies in 2006. The figure for 2002 was as high as 96 per cent. According to the HHI index method,[19] in 2006 the HHI for publicly-held company audits was 2,300, where the guidelines issued jointly by the US Department of Justice (DOJ) and the US Federal Trade Commission (FTC) suggest that an HHI above 1,800 reflects a highly concentrated market.[20] Also, GAO's (2008) survey of the US audit market finds that the audit committee chairs of almost 600 publicly-held companies based in the US indicated that 86 per cent of large publicly-held companies in the

[18] Audit Analytics (http://www.auditanalytics.com) is a provider of information on audits and accounting firms for research purposes.

[19] The HHI measure is based on the total number and size distribution of firms. It ranges from 1/N to 1, with N being the total number of firms in the market. HHI is calculated by summing the squares of individual firms' market shares; thus, it assigns proportionately greater weight to larger market shares. HHI is used by official bodies, for example US antitrust division merger guidelines and EU guidelines on the assessment of horizontal mergers (Le Vourc'h and Morand, 2011).

[20] In 2010, the US revised its horizontal merger guidelines, classifying HHI below 1,500 as not concentrated, HHI between 1,500 and 2,500 as moderately concentrated, and above 2,500 as highly concentrated (Le Vourc'h and Morand, 2011).

Fortune 1000 were unlikely to choose a mid-size audit firm, and none was likely to prefer a smaller firm as its new auditor.

A report by Oxera Consulting Ltd (2007), prepared for the EU and focusing on the relationship between ownership structure and concentration of audit market, suggests that there are several barriers in the audit market, other than having the necessary capital, including reputation, international coverage and liability risk. Another EU-funded study by London Economics (2006) presents similar conclusions according to a survey of auditors linked to the European umbrella organisation for audit firms and companies of EU member states, citing additional barriers such as the capacity limits of small audit firms, lack of audit liability insurance and unwillingness to switch current audit firm (client inertia). In addition, the survey responses of EU companies reveal that the willingness of companies to switch to a mid-tier audit firm decreases rapidly in accordance with the size of the company (London Economics, 2006).

A recent study in the EU (Le Vourc'h and Morand, 2011) finds that, when the audit market of listed companies is considered, most EU member states have highly concentrated audit markets. According to the study, the average market share of the Big Four firms is above 90 per cent, and only Bulgaria, Greece and France have unconcentrated or moderately concentrated audit markets. The study attributes these concentration levels firstly to the merger and acquisition activities of the Big Four audit firms until 2005, and secondly to similar restructurings among mid-tier and smaller audit firms and hurdles regarding the admittance of mid-tier audit firms into the audit market for listed companies. Lack of size or insufficient capacity in the number of auditors in mid-tier audit firms, their limited geographical availability and the strong preference of large companies for a Big Four audit firm are the main entry barriers to mid-tier audit firms serving larger clients.

In the same study, the audit market for companies listed on the main index of European countries is found to be highly concentrated in 24 out of 27 EU member states, with HHI index levels above 2,000. The HHI scores of only Latvia, Bulgaria and the Czech Republic are between 1,000 and 2,000. The least concentrated of the 24 member states with an HHI above 2,000 is France, with an HHI of 2,038, where the largest four audit firms have an overall market share of 84 per cent. The reason for this result is evaluated in the study as being the special position of Mazars Group, which has historically been auditor for a number of large French companies, and the system of mandatory joint audits facilitated in France. On the other hand, Germany has the most concentrated audit market of the main indices in Europe.

Similarly, two of the Big Four audit firms (KPMG and PwC) have a combined market share of 87 per cent of Germany's main index. However, when the whole audit market is considered, i.e. all audited companies, the market share of the Big Four is moderate in the EU, except in four member states. The study finds that in 19 member states the market share of the Big Four for all audited companies is below 26 per cent, and below 10 per cent in five Central/Eastern EU member states (Czech Republic, Estonia, Hungary, Poland and Slovenia). According to the findings of the study, in Denmark, Luxembourg, Sweden and the United Kingdom, the share of the Big Four is significantly higher, ranging from 35 to 44 per cent (Le Vourc'h and Morand, 2011).

High concentration in the audit market is not only the concern of developed countries. In developing countries, companies also prefer Big Four auditors to enhance the credibility of their financial reports and more easily acquire equity and loan financing (Michas, 2011). A recent study (Francis, Michas and Seavey, 2013) focuses on the impact of audit market concentration on quality of earnings in 42 countries, including Turkey. According to their study, the percentage of firms audited by a Big Four auditor by country-industry-year, expressed as B4SHARE,[21] has a mean value of 58 per cent. This figure ranges from a low of 17 per cent of audits in China to a high of 93 per cent of audits in Hungary. When a similar logic is applied, the market share of the Big Four in Turkey is measured at 58 per cent in the study. The study uses data on audit market structure variables gathered from the COMPUSTAT Global Vantage database for the years 1999 to 2007. It should be noted here, especially for a better comparison of these results regarding Turkey with the findings of the present study, that Francis, Michas and Seavey's (2013) study reports a potential limitation, based on the COMPUSTAT Global Vantage population, of a tendency for firms to comprise the larger listed companies and be concentrated by industry. It should also be noted that the study covers 178 company-year observations for Turkish companies, and the period of the study (1999 to 2007) does not entirely coincide with the sample in the present study. Another international study (Hess and Stefani, 2012) of 29 countries, including Turkey, for the years 2001 to 2010 investigates the association between calculated concentration figures of CR_4, HHI, audit firm per client ratios and audit regulation in the respective countries. Hess and Stefani (2012) collected relevant documents for the study from ThomsonOne. CR_4 figures

[21] B4SHARE equals the percentage of listed client companies in a country-industry grouping using a Big 4 auditor in year t. (Francis, Michas and Seavey, 2013).

obtained in the study, based on auditors' customer numbers and on the logarithm of the total assets of those audit client companies, are both 59 per cent for Turkey, with a mean sample size of 172 Turkish companies.[22]

There is a limited strand of research (SDA Bocconi, 2002; Arruñada and Paz-Ares, 1997) regarding the impact of mandatory audit firm rotation on concentration. This influence is central to an in-depth discussion of that policy, since some proponents of mandatory audit firm rotation offer it as a solution to achieving improved competition between the Big Four and other audit firms.

As observed by Cameran, Vincenzo and Merlotti (2005), the focus of SDA Bocconi's (2002) study is the Italian audit market, where a mandatory audit firm rotation policy is in effect in some market segments. The SDA Bocconi (2002) report concludes that market shares were steady in segments where mandatory rotation was in place. This means that new auditors had been chosen mainly from the same group of auditors. Thus, considering the 90 per cent market share of the Big Four among listed companies in Italy, competition is observed between the Big Four. However, market shares are changing in market segments in which a rotation policy is not enforced (Cameran, Vincenzo and Merlotti, 2005).

Another study by Arruñada and Paz-Ares (1997) analyses the competition distortion effect of mandatory audit rotation by assessing simulations based on Spanish data. It is concluded in the study that rotation indirectly distorts audit efficiency. It is argued that investment in audit efficiency would not fully benefit the audit firm due to a decline in potential customer demand as a consequence of the application of mandatory audit rotation. This policy also decreases the motivation of audit firms to compete. Furthermore, according to Arruñada and Paz-Ares (1997), mandatory rotation may increase the potential for collusive agreements between audit firms since, as a result of restrictions imposed by that policy choice on the length of relationship with a customer, incentives diminish among cartel members to breach a cartel agreement in order to increase market share.

[22] Differences in concentration level between Hess and Stefani (2012) and the present study may be due to sample sizes and use of the logarithm of total assets, rather than unconverted total assets as preferred in this study. Hess and Stefani were contacted to explore the reasons for the different concentration levels, especially in the results based on the total asset size of clients. They suggest that the reason may be currency conversion due to studying with currencies denominated differently.

3.1.1. Concentration in the Turkish Audit Market

Concentration ratio calculations in the literature have generally been based on the number of customers and/or audit fees (Beattie, Goodacre and Fearnley, 2003; Johnson, Walker and Westergaard, 1995; Bigus and Zimmerman, 2008). However, disclosure of audit fees is not mandatory in Turkey, and the audit fee data collected for the current study do not include all exchange-listed companies' audit fees owing to several data constraints. Thus, in this part of the study, the number of auditors' customers and, as a proxy for audit fees, the asset size of the customer firm are used to calculate the market shares of the auditors and concentration ratios in the Turkish audit market, since both are accepted as key drivers of audit fees (Hay, Knechel and Wong, 2006) and have been employed as proxies in previous concentration studies (Francis, Michas and Seavey, 2013; Defond, Wong and Li, 2000).[23] The present study analyses concentration in the Turkish audit market by means of concentration ratios, taking into account that concentration ratio (market share of the largest four and eight audit firms) is still a commonly implemented methodology because it is straightforward and easily understood, and a high correlation between concentration ratio and HHI index methodology has been reported in many previous studies (Pong, 1999).

The audit market structure data for this study start from the 2001 annual period and end in 2012 financial reports. Similarly to other parts of the study, owing to their different structure, listed financial institutions are excluded from the analysis. Free Trade Platform companies are also excluded because their audits prior to listing were based on financial statements which were not compatible with the accounting standards employed by listed corporations. Moreover, listed companies transformed from Investment Trusts are not included in the sample.

Auditor name data were gathered from publicly-disclosed information on BIST's website for the period 2001 to 2008 and from PDP's website for the years 2009 to 2012. The asset total of the listed companies was obtained from a private data provider, FINNET[24] and, where necessary, from publicly-disclosed financial statements.

[23] See Moizer and Stuart (1987) for further comments on using proxies in concentration studies.

[24] A data provider operating on a subscription basis (http://www.finnet.com.tr/finnet2000/index.aspx).

A summary of the calculations for 2001 to 2012 regarding audit market structure according to customer numbers is provided in Appendix A. In Appendix B, identically structured information is presented to report the results of calculations based on the asset size of customers. These appendices provide the total number of audited companies, market shares and ranks of the largest eight auditors, numbers and asset sizes of their customers, cumulative market share of the Big Four,[25] second tier auditors (defined as auditors ranked from fifth to eighth out of all auditors rendering services during the period concerned) and audit firms having less than five customers. The last lines of the table show concentration ratios for the largest four (CR_4) and largest eight (CR_8) auditors according to their market share.

3.1.1.1 Concentration According to Customer Numbers

According to the descriptive results obtained, the Big Five (PwC, Arthur Andersen, Deloitte, E&Y and KPMG)[26] audited 47.52 per cent of listed companies in 2001. When the actual market share of the auditors is considered, this figure rises to 49.17 per cent. The second-tier firms ranking from sixth to eighth had a market share of 14.05 per cent (13.22 per cent for actual ranks). Thus, the CR_8 obtained is 61.57 per cent (62.40 per cent for actual ranks). The cumulative market share of 28 audit firms having fewer than five customers is 22.73 per cent. These audit firms rendered audit services to only 55 corporations.

The place of PwC in the market among the Big Five was exceptional in 2001, since it alone audited 19.01 per cent of the listed companies. This implies that PwC was the clear market leader according to customer numbers in 2001. It sustained its position as market leader until 2010, when Deloitte took its place with a market share of 20.40 per cent. PwC's rank had even fallen to third by 2010. The most significant event in 2010 regarding the audit environment was the initiation of a mandatory audit rotation policy. Thus, the shift in market leader in that period may be considered as anecdotal evidence of the impact of mandatory audit firm rotation

[25] Internationally functioning Big Four audit firms operate in Turkey; however, during some periods of the study, due mainly to client numbers, one of these Big Four auditors (KPMG) was not observed among the largest four auditors. Accordingly, for the purpose of increasing the comparability of this study, Big Four and second-tier audit firm figures and concentration ratios are provided both for the acknowledged international Big Four audit firms and the actual ranks of the practising auditors. Figures presented in Appendix A for 2001-2003 are extended to the nine largest audit firms to include KPMG.

[26] The Big Five definition is only provided for 2001. After the closure of Arthur Andersen's Turkish office in 2002, the term Big Four is used.

on market structure. As Pong (1999) states, this analysis may throw some light on the impact of mandatory audit rotation policies in an already concentrated market and reveal information about competition between the Big Four.

Another feature of the Big Five's operations in Turkey is that in 2001 the market share of the last of the Big Five, KPMG (Akis Bağımsız Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş.),[27] when calculated according to customer numbers, was less even than some second-tier firms (AGD-Akyüz-Günel-Dede Danışmanlık SMMM A.Ş., Güreli Yeminli Mali Müşavirlik ve Bağımsız Denetim Hizmetleri A.Ş. – Baker Tilly International, Denet Bağımsız Denetim Yeminli Mali Müşavirlik A.Ş. – BDO International, and Engin Bağımsız Denetim ve Serbest Muhasebecilik A.Ş.- Grant Thornton).[28] KPMG moved slowly to higher ranks and reached fifth in 2009. Simultaneously with the shift in market leader in 2010, KPMG positioned itself among the Big Four audit firms in terms of number of customers, and maintained that position for the following two years until the end of the sample period.

In 2002, the Turkish representative of Arthur Andersen (A.A. Aktif Analiz SMMM A.Ş.) discontinued its operations in Turkey. As of 2001, before its closure, Arthur Andersen had 18 customers. Two of these customers ceased to disclose financial statements in the following year; thus, 16 of them renewed their audit contracts with a different auditor. Among these former customers of Arthur Andersen, 11 (69 per cent) contracted with the Turkish representative of E&Y (Güney Bağımsız Denetim ve SMMM A.Ş.), and three (19 per cent) selected one of the other Big Four audit firms. As a result, in total 88 per cent of former Arthur Andersen customers preferred another Big Four audit firm.

The concentration ratio of the Big Four (CR_4) according to number of customers when the major reforms in both the accounting and auditing regulatory structures were introduced between 2001 and 2012 ranges from 44 to 51 per cent (or, according to actual share of practising auditors, 44 to 53 per cent). Thus, when customer numbers are considered, the Turkish audit market reflects a competition structure ranging from perfect competition to oligopoly (Le Vourc'h and Morand, 2011). During the same period, the CR_8 range is observed

[27] Cevdet Suner Bağımsız Denetim ve YMM A.Ş. also used the KPMG affiliation in its title until 2008. Thus, they are all treated as one company for the purpose of this analysis.

[28] Second-tier firms are defined as those having more than five per cent market share.

to be between 64 and 72 per cent according to customer numbers (and in calculations according to actual shares, CR_8 only differed in 2001 at 62.40 per cent). The lowest CR_4, experienced in 2011, was 44.44 per cent. In evaluating changes and new entrants to the audit market by way of IPO in 2011, this level is observed to relate to the lack of market share obtained by the Big Four from newly-listed companies. The maximum number obtained for CR_8 coincides with the period of the first IAS/IFRS adoption by BIST-listed firms in 2003. Moreover, even the largest eight auditors based on customer numbers did not control as much as 80 per cent of the audit contract market.

The market share of audit firms with fewer than five customers ranges from 16 to 27 per cent during the sample period. The minimum number is observed in 2010, which coincides with the start of mandatory audit firm rotation. A slight rebound is observed thereafter in 2011 and 2012. One reason for this rebound can be seen from the auditor change information presented in Table 6. When assessed with the declining concentration levels of the Big Four, first engagements might be suggested as a reason for that shift. Although the total number of these groups of audit firms can be considered to be quite stable, ranging from 26 to 33, the composition of audit firms is not. There are cases in which audit firms audited one or two companies, having left the market to go to a similar category audit firm in the following two or three years. There are auditors which provided services to only one listed company during the period. Thus, these observations raise concerns over the independence of these audit firms and the capacity of these firms to follow the changing requirements of international auditing and accounting standards, with limited financial resources from few customers and a lack of practice in varied accounting and auditing issues.

Ninety-three firms are currently licensed to provide audit services to publicly-held companies and capital market institutions. Analysis suggests that a large proportion of CMB-licensed audit firms do not currently provide services to listed non-financial companies. Thus, the remaining licensed audit firms may have been contracting with non-traded publicly-held companies, financial institutions, other capital market institutions and collective investment schemes, or not practising audit services during that time period.

3.1.1.2 Concentration According to Customer Asset Size

Similar analysis was conducted regarding concentration of the audit market according to asset size of audit firms' customers, based on the information provided in Appendix B.

According to these analyses, the cumulative concentration ratios of the Big Four auditors (CR_4) are observed for 2001 to 2008 in percentage terms as 76.85, 77.26, 87.26, 85.38, 86.29, 87.24, 89.60 and 90.16 respectively.[29] For the following periods, CR_4 according to asset size of audit customers does not fall below 90 per cent. Thus, when compared with the results based on customer numbers, the analysis reflects a different audit market structure in Turkey. When asset size of customers is considered, the audit market structure from 2003 reflects a highly concentrated oligopoly to a monopoly (Le Vourc'h and Morand, 2011). This assessment implies that larger, non-financial listed companies tend to prefer a Big Four audit firm. These results also coincide with the findings of Moizer and Turley (1987), which are that concentration ratios based on the number of clients show lower values than the outcomes of other proxies, supporting the view of a preference for larger audit firms by larger clients. A different impact in concentration levels observed in 2011 due to different parameters, i.e. customer numbers and asset sizes, also supports this proposition. Although the Big Four, as stated above, did not engage with new IPO companies sufficiently to protect their market share calculated according to customer numbers, concentration levels based on the asset sizes of customers did not demonstrate such a decline owing to the comparatively smaller asset sizes of these IPO companies.

The increase in the CR_4 level in 2003 should be evaluated cautiously, since asset totals of companies in 2001 and 2002 are reported individually with no adjustment for hyperinflation and consolidation. In contrast, in line with regulatory policy modifications, the 2003 financial statements were prepared using both consolidation principles and inflation adjustments.

These concentration figures should be interpreted in conjunction with the ownership structure of BIST-listed companies. Yurtoğlu (2003) reports a high concentration of the value of corporate assets in the hands of a few families in Turkey. According to the results of that research, the largest family (Koç family) at the date of analysis controlled 15 companies listed on BIST. The total market value of these companies amounted to almost 19 per cent of the total market capitalisation on BIST. The next largest business group was organised around Sabanci Holding, which controlled ten listed companies, the total market values of which amounted to 14 per cent of the total capitalisation on BIST. As a result, in total, the top five business groups accounted for almost half the total Turkish stock market capitalisation.

[29] The only difference observed in the actual largest four calculations was 76.87 per cent in 2001.

Although there is a time gap and a difference in concentration between Yurtoğlu (2003) and the present study (with the inclusion of financial corporations in Yurtoğlu's study), since both the holding corporations and their subsidiaries were listed concurrently on the stock exchange in most cases, due to that reason a possible over-estimation of concentration ratios based on consolidated asset sizes should be stated here. This constraint might be eased by disclosure of audit fees to the public, especially in a form that enables necessary amendments to concentration calculations.

The need for an assessment of audit cost in order truly to understand the Turkish market setting becomes more pressing in cases such as KPMG. According to number of audits, this company is not among the top four auditors in some of the investigated periods; however, in the assessment of audited asset size, it is ranked in third place in 2001 and 2002, and fourth place during the remaining research period.

The ranking between the Big Four differs slightly when asset sizes are considered. In terms of customer asset size, except in 2001 and 2002 PwC is the clear market leader yet again until 2010. The market shares according to total asset size of companies audited by PwC from 2001 to 2009 in percentage terms are 23.80, 26.23, 56.58, 55.74, 58.77, 61.05, 61.62, 58.11 and 58.54. The growth in market shares from 2002 to 2003 may be connected with the effect of the implementation of consolidation and inflation adjustments, similarly to the surge observed according to customer number criteria. The family group role should be recalled here again, since in 2003 most companies of the four large family groups in Turkey were customers of PwC. However, PwC lost its leadership in the audit market and is calculated as third in 2010, which may be inferred as anecdotal evidence of the results of the mandatory audit rotation practised in this period. Auditor changes experienced as a result of this policy in 2011 and 2012 are not observed to have any substantial impact on the market leadership shift, which will be elaborated in more detail in Section 3.2 below.

The market share of auditors with fewer than five customers, according to their customers' asset sizes, in percentage terms from 2001 to 2012 are 12.00, 13.38, 6.13, 5.93, 2.80, 4.14, 2.21, 3.51, 3.42, 3.04, 3.53 and 2.07 respectively. These figures indicate more variation than in the customer quantity analysis. Similarly to the increase in PwC's market share, the decline in 2003 may be inferred as the result of the new accounting regime introduced in 2003 which required consolidation and inflation accounting.

When CR_8 levels are considered based on asset sizes in the Turkish audit market, the minimum level observed during the study period is 85.10 per cent in 2001 and the maximum level is 96.67 per cent in 2012. A similar rise is experienced in 2003 for CR_8, surging from 89.47 to 94.34 per cent and maintaining those levels with slight changes thereafter. Thus, according to the analysis carried out for 2012, the eight largest auditors provided audit services for 96.67 per cent of the total assets of BIST companies. There was, therefore, only a small market in which other authorised auditors in Turkey could practise.

3.2 Auditor Changes

Another line of research focuses on audit firm shifts/changes and the selection of new auditors. Discussion in the literature regarding these topics will be briefly referred to below, and auditor changes from 2001 to 2012 will then be tabulated and evaluated. Focusing on auditor changes will enhance understanding of the role of auditor shifts in the concentration of the audit market. It will also help to reveal the impact of the significant accounting and audit policy changes which occurred in the audit market during the sample period, such as the introduction of inflation and consolidation accounting, IFRS adoption and mandatory audit firm rotation.

Moreover, selection of a new auditor is an integral part of audit cost studies, as supported by Ireland and Lennox (2002), who focus on the influence of the audit selection process on the audit premium found in audit fee studies. They argue that it is not valid to treat the size of auditors as an exogenous variable in the audit fee model, since firms are not randomly appointed to audit firms but go through a selection process. Therefore, they employ a two-stage-model, first modelling the audit selection and secondly estimating the impact of selectivity on the audit premium of large audit firms. Furthermore, findings reported in the literature on audit shifts and selection facilitate the construction of the audit fee model in the present study, since the price paid for an audit may either trigger a change from a current auditor or may be justified on the grounds of the auditor itself, such as the qualifications or reputation of the auditor.

A stated factor affecting the concentration level of the audit market is voluntary auditor change (Beattie and Fearnley, 1994; Beattie, Goodacre and Fearnley, 2003). Exploration of the reasons behind auditor choice provides a deeper understanding of audit market composition and development. The audit choice literature begins with concerns over longer audit terms and their impact on fees and independence. In the extant literature, there is no accepted general theory to explain auditor choice decisions (Beattie and Fearnley, 1998), and several factors

play a role. The main aspects are characteristics of auditor, auditee and the current audit environment (Beattie and Fearnley, 1995).

Auditor demand is investigated by Wallace (1980) using an information and insurance framework based on agency theory (Beattie and Fearnley, 1998). The agency theory approach identifies the bonding role of audit in decreasing the self-interested behaviour of management (Beattie and Fearnley, 1995). The selection of a qualified auditor by management reflects accountability and decreases supervision costs. The insurance feature of audit demand is satisfied with coverage of the finance provider's loss by the audit firm's professional responsibility (Beattie and Fearnley, 1998). In addition, demand for audit by public companies exhibits special features: it is generally enforced by regulation and no substitutes to the services of these authorised auditors are available from other service providers (Gerakos and Syverson, 2014).

Several characteristics of auditors have been stated to be influential in the selection process, as revealed by interview results reported by Oxera Consulting Ltd (2007), including reputation of the audit firm, quality of the audit and auditors, internationality, and associations between audit firm, selecting finance director and audit committee members.

Academics have sought to expose the qualifications of auditors, audit client companies and occasions triggering audit firm changes. These factors and occasions are summarised below from Williams (1988), Beattie and Fearnley (1995; 1998), Beattie (2012) and Stefaniak, Robertson and Houston (2009), as well as additional studies encountered during the research. Other studies in the literature explore the consequences of auditor changes for share prices, audit fees and the following term's audit opinions. This group of research results is not included in the summary below.

Several auditor characteristics have been investigated in the literature. Service satisfaction (quality of the audit) has been found to be significant in auditor selection decisions (Bedingfield and Loeb, 1974). Reputation of the auditor (Wilson and Grimland, 1990; Firth and Smith, 1992; Williams, 1988), industry specialisation of the auditor (Williams, 1988; Beattie and Fearnley, 1995; Kang, 2014) and demographic location of the auditor as local or non-local, owing to local firms' greater dependence on domestic clients and being more subject to political influence (Chan, Lin and Zhang, 2006), as well as closeness to company (Sankaraguruswamy and Whisenant, 2004) are presented as being associated with auditor changes. According to Beattie and Fearnley's (1998) survey results, the relationship between

senior audit personnel and the company has greater significance than service concerns. A study of survey responses in Malta (Magri and Baldacchino, 2004) concludes that personal relationships with auditors' clients influence auditor shifts.

The main client characteristics influencing auditor choice explored in the literature are: client size (Haskins and Williams, 1990), leverage (Defond, 1992; Woo and Koh, 2001; Broye and Weill, 2008), financial distress (Schwartz and Menon, 1985; Haskins and Williams, 1990; Schwartz and Soo, 1994; Hudaib and Cooke, 2005), growth (Haskins and Williams,1990), change in management (Burton and Roberts,1967; Carpenter and Strawser, 1971) and other corporate governance features, such as diffusion of ownership (Francis and Wilson, 1988; Woo and Koh, 2001), effectiveness of audit committee (Archambeault and DeZoort, 2011) and managerial ownership (Defond, 1992).

Some circumstances are more likely to trigger an audit change. The literature presents evidence for the following conditions: audit price (Bedingfield and Loeb, 1974; Eichenseher and Shields, 1983; Beattie and Fearnley, 1998), length of relationship, i.e. early or late stage of the relationship (Burton and Roberts, 1967; Levinthal and Fichman, 1988; Williams, 1988), the influence of investment bankers, creditors and bankers (Bedingfield and Loeb, 1974; Balvers, McDonald and Miller, 1988; Pong and Kita, 2006), mismatch between views of parties regarding accounting matters (DeAngelo, 1982; McConnell, 1984, Dhaliwal, Schatzberg and Trombley, 1993), receiving a qualified opinion from an auditor (Craswell, 1988; Chow and Rice, 1982; Williams, 1988), opinion shopping for auditors (Krishnan and Stephens, 1995; 1996), material deficiency opinions according to Rule 404 or going concern opinions of the auditor (Citron and Taffler, 1992; Krishnan and Visvanathan, 2007; Carey, Geiger and O'Connell, 2008), restatement of financial statements (Mande and Son, 2013), level of non-audit services provided by the auditor (DeBerg, Kaplan and Pany, 1991), and takeovers (Anderson, Stokes and Zimmer, 1993).

Audit and accounting regulations that reconfigure the framework of the environment may impose or influence auditor changes. As noted by Stefaniak, Robertson and Houston (2009), Garsombke and Armitage (1993) report the influence of client-initiated audit bids on the audit price obtained. Evidence is found by Chaney, Jeter and Shaw (1997) that allowing auditors to solicit potential clients may affect the rate of auditor changes. Atkinson et al. (2002) also show that auditor switches increase during a period when new accounting standards are being introduced. Kallunki, Sahlström and Zerni (2007), on the other hand, focus on the impact of

the legal liability environment in ten countries on audit switches triggered by underpricing of audit fees in the first year of engagement. The study reports that greater underpricing is required for audit clients to change their auditors in the case of companies with a stringent audit liability environment companies than for companies with a lax liability environment.

Policy choices such as mandatory audit firm rotation may force a shift in the contracted auditor. Although not directly related to occasions prompting voluntary audit firm rotations, mandatory audit firm rotations create interference in the functioning of audit contract markets through regulatory power. The main intentions of mandatory audit rotation are to decrease acquaintances established during long audit tenures and to lower concerns about the independence of auditors (GAO, 2003). Another proposed benefit of a mandatory audit firm rotation policy is improved audit quality. Proponents of this policy state that rotation will improve audit quality because concerns over the impact of quality on the familiarities established with customers by auditors will be diminished. Furthermore, a new auditor will bring a fresh look and a more rigorous approach (Aslan, 2012). On the other hand, opponents argue that a rotation policy may cause a loss of client-specific information, which may lead to inferior audit quality in the initial years of the engagement (GAO, 2003). Owing to lack of actual enforcement of mandatory audit firm rotation as a policy choice in most countries, empirical analysis to support the proposed impacts of this policy focus mainly on the influence of the length of auditor relationships, summarised in a review by Stefaniak, Robertson and Houston (2009). Few recent studies have investigated the effect of mandatory audit firm rotation using real data.

Harris (2012) explores the impact of a mandatory audit firm rotation policy on quality using data retrieved from Compustat Global regarding South Korea, Brazil and Italy for the period 1991 to 2010, concluding that, following the adoption of a mandatory rotation policy, audit markets exhibit higher audit quality than previous periods before adoption. She also asserts that the years before and after the auditor change allow more discretion in earnings, which should be taken into account in the policy decisions of regulators.

Martinez and Reis (2010) draw their sample from data collected from non-financial companies (excluding banks, insurers, pension fund operators, etc.) listed on the São Paulo Stock Exchange drawn from an Economatica and Brazilian Securities Commission database for the period 1997 to 2007. Using the abnormal working capital accruals method, the study reports no significant effect on earnings management due to auditor changes.

Cameran et al. (2013) test the impact on quality of mandatory audit rotation in comparison with voluntary audit changes using actual audit fee and audit effort data from Italy for the period 1985 to 2004. The study reveals that audit quality, represented by abnormal working capital accruals, deteriorates in the three years following a mandatory audit firm rotation compared with longer audit relationships.

Kwon, Lim and Simnett (2014) base their study on a sample of companies listed on the South Korean Stock Exchange and South Korea Securities and Dealers Automated Quotations (KOSDAQ) for the period 2000 to 2009 and related data obtained from a database of Korean Investors Service Inc. The study reveals no significant audit quality impact due to the implementation of a mandatory audit firm rotation policy. Therefore, the issue of the impact on audit quality of mandatory rotation requires further investigation.

Discussions of the impact of fee and effort of mandatory audit rotation found in these two studies will be elaborated in Chapter Four.

Only two studies have been identified which concentrate on Turkey regarding auditor choices by BIST companies. Aksu, Önder and Saatcioğlu (2007) focus on associations between auditor choice and ownership, transparency and disclosure and other frequently-employed client company characteristics for BIST-listed companies for the sub-periods 1999 to 2001 and 2003 to 2004. Their study reveals that company size and market-to-book ratio are positively associated with the choice of a Big Five auditor. This finding demonstrates that larger companies tend to contract with large auditors. Furthermore, the study reports that public shareholdings exhibit a negative relationship with auditor choice. Furthermore, only in the latter sub-period is profitability of the audit client found to be positively associated with the choice of a Big Five auditor. Foreign ownership shows explanatory power in the selection of a large auditor, as expected due to their credibility amongst foreign investors. In addition, according to the results of the study, transparency and disclosure scores calculated for the latter sub-period demonstrate positive coefficients but weak significance in the selection of a Big Four auditor.

The second Turkish study (Karaibrahimoğlu, 2013), based on data from a total of 805 BIST-listed companies in the period 2005 to 2009, investigates whether corporate governance structure has any influence on either Big Four choice or audit firm industry specialisation. The study empirically demonstrates that board of director composition (independence and size) and ownership concentration (share of largest shareholder) are significantly associated with

Big Four choice after controlling for size, leverage and profitability. When the other dependent variable of the study, industry specialisation, is considered, the characteristics of the board of directors are equally important elements, and CEO duality is also found to be significant in explaining the industry specialisation preference of BIST-listed companies. However, the ownership concentration variable employed in the study loses its significance, and instead institutional ownership is found to be associated with the industry specialisation of the auditor.

Considering that there appear to be few explanatory studies based on the Turkish audit market regarding auditor selection and changes, analysis of auditor change numbers will allow a better assessment of the structure of Turkish audit markets. It is especially essential to have additional data concerning the length of the relationship between auditors and companies prior to the mandatory audit firm rotation policy adapted in 2010. Furthermore, assessment of the changes among different auditor types (Big Four and others) will provide a better understanding of the impact of switches on concentration before, during and after a mandatory rotation policy application period. In Table 6, auditor shift figures are provided for the period 2001 to 2012 to explore the main elements of market position changes in the Turkish markets. The figures present auditor shifts not only among same type of audit firms but also switches from Big Four auditors to others, and from other smaller audit firms to the Big Four.

Table 6: Auditor Changes (2001-2012)

Period	Total Change	Total Change Excluding First Engagements Due to IPO	Big Four to Big Four	Other to Big Four	Big Four to Other	Other to Other	First Engagement Due to IPO
2001-2002	43	40	18	5	6	11	3
2002-2003	47	44	21	5	4	14	3
2003-2004	37	30	6	0	5	19	7
2004-2005	33	28	7	1	5	15	5
2005-2006	41	33	7	5	3	18	8
2006-2007	20	19	3	4	2	10	1
2007-2008	33	32	4	4	3	21	1
2008-2009	35	31	10	2	1	18	4
2009-2010	155	140	62	16	6	56	15
2010-2011	52	32	13	7	0	12	20
2011-2012	75	49	7	7	1	34	26

When the tabulated figures are assessed, it can be seen that switches between the Big Four are particularly high in 2001-2002, 2002-2003 and 2009-2010. Analysis of these rises reveals that one cause of the 2001-2002 figure was the discontinuation of Arthur Andersen's operations. As stated in detail above, 69 per cent of previous customers of Arthur Andersen contracted with E&Y and 19 per cent selected one of the other Big Four audit firms. Thus, in total 14 of the exchanges between the Big Four related directly to the closure of Arthur Andersen. In total, 88 per cent of former Arthur Andersen customers preferred another Big Four audit firm. When the 2002-2003 shifts between the Big Four auditors are considered, five of Arthur Andersen's former customers that moved to E&Y were contracted with another Big Four company in the following year. In 2003, some of the listed companies voluntarily adopted IAS/IFRS in their financial statements. Eight of the companies switching between Big Four audit firms are observed to have made this adoption in their 2003 financial statements. Furthermore, consolidation and inflation adjustments were enforced for the first time in 2003. However, the number of exchanges in that year from other auditors to the Big Four does not rise significantly, taking into account the qualifications needed for these adoptions.

In most cases, the number of shifts between dissimilar types of auditors, such as other to Big Four and Big Four to other, is lower than switches between similar types of auditor. Although subject to clarification by further empirical studies, it may be proposed that this observation reflects the stickiness of the audit firm preferences of listed companies. Similarly, it reflects the difficulty of altering concentration levels in the audit market by way of exchanges between two groups of audit firms.

The mandatory transformation to IAS/IFRS for listed firms in 2005 seems not to have motivated any exchanges, either between different audit firm types or within similar audit groups.

Another prominent date is 2008, when a new regulatory policy was introduced which changed the application principles of IAS/IFRS. Communiqué Serial XI, No. 25, the Turkish version of IAS/IFRS at the time of translation, was abolished and a single application style of IAS/IFRS was enforced for all exchange-traded companies. Thus, audit companies were obliged to follow the amendments in IAS/IFRS more promptly and reflect these standard changes in their practice. The stated policy change required more experienced auditors for a smooth transition. However, a review of the number of changes in Table 6 during that period

indicates that preferences among audit groups, especially other than the Big Four, are insufficient to derive even anecdotal conclusions.

Analysis of Table 6 reveals that audit engagement activity in 2010 was essentially higher in numbers compared with the other years observed. It should be stressed here that the main driver of this difference may be associated with the first application of mandatory audit firm rotation in 2010. The mandatory rotation policy is observed to lead to an overhaul in contractual audit relationships, with a major transfer of customers both between the Big Four and between other auditors. In addition, as noted previously in analysis of concentration ratios in the Turkish audit market, 16 new contracts passing from other auditors to the Big Four may be evaluated as anecdotal evidence for a slight increase in the market share of the Big Four. This coincides with the observed concentration of the Big Four.

It was presented in the concentration ratio analysis that mandatory audit firm rotation also modified the rankings of the Big Four. The following year, 2011, saw a higher number of client changes among the Big Four, with 65 per cent switching to PwC. Although this movement was insufficient to relocate PwC as market leader according to customer numbers, it led to a one-step increase in the ranking of PwC, making it the second largest auditor in the audit market. However, audit contracting numbers representing moves between the Big Four auditors seems not large enough to represent any resettlement of previous balances between the Big Four according to the asset total of their clients. Even the end of the two-year cooling-off period in 2012 due to regulatory obligations did not facilitate any shifts in market positioning among the Big Four. However, a greater number of shifts between other auditors in above Table 6 may indicate a reallocation among these goups.

The impact of price and audit effort of the mandatory rotation policy will be explored in the next Chapter, along with other indicators.

CHAPTER 4

AUDIT FEE AND EFFORT INDICATORS IN TURKEY

Following the work of Simunic (1980) on identifying client or auditor characteristics which may influence audit fees, a growing body of research has demonstrated the relevant attributes in different country settings and with an increasing variety of factors. Simunic (1980) proposes a production view of the audit process. Hay, Knechel and Wong (2006) review previous audit fee research in more than 20 countries, including developed countries and some developing ones, such as Hong Kong, Bahrain and Bangladesh, during the period 1977 to 2003. While 147 independent variables are explored, the results suggest generally that size of auditee, risk of client and client complexity are associated with audit fee level. These factors are expressed mainly as supply-side elements requiring auditors to expend more effort in performing their services.

The dependent variable of the reviewed models concerning audit fee determination is the natural logarithm of audit fees. However, lack of publicly-available data for audit fees presents a barrier to researchers seeking to investigate relevant factors in the Turkish audit market. The only previous study which has come to light in this research (Ulusoy Tokgöz, 2010) explores the issue in a Turkish setting with audit fee data obtained from CMB. In the application of multivariate regression and its rank transformed version to a sample of 205 listed companies for 2007, using independent variables such as auditee size, size of audit firm (Big Four or not), number of consolidated firms, risk, rate of receivables, inventory to asset size, foreign affiliation and audit tenure, the main factors impacting on audit fee are observed to be size of the client firm (total assets) and interaction between the size and complexity of the auditee and auditor type.

The pricing mechanism is vital for an understanding of audit market structure. The decisions of regulators, such as setting a minimum audit fee, stipulating mandatory rotation and improving price transparency in the market, should all be made by taking into account their

influence on audit prices. Experiences obtained from previous applications, such as the impact of the first application of mandatory audit firm rotation in 2010 in compliance with CMB regulation, should be investigated in detail to construct more sound policies in future. Furthermore, applications for listing by audit firms should be evaluated by the relevant authorities, taking into consideration the pricing mechanism of the market. The effect of new entrants on audit fees and the quality of audits should be key factors in these approval processes. Therefore, audit fee studies are key both to understanding the functioning of the audit market and in assisting the regulatory authorities in future policy decisions.

On the other hand, studies employing audit effort (time planned or actually spent during audit services) are globally scarce owing to problems of gathering relevant data. The earliest studies relating to audit effort are those of Palmrose (1986; 1989), Davis, Ricchiute and Trompeter (1993) and Davidson and Gist (1996). Some audit effort studies have been structured to focus on audit hours disaggregated by staff level, such as O'Keefe, Simunic and Stein (1994) and Bell, Doogar and Solomon (2008). Furthermore, Hackenbrack and Hogan (2000) analyse audit production and prices with evidence obtained from auditor switches. Niemi (2005) and Niemi et al. (2014) evaluate the determinants of audit efforts for large Finnish companies. One strand of literature (e.g. Leventis and Caramanis, 2005) uses audit effort data as a proxy for audit quality. Two studies have been identified that concentrate on the effects of mandatory audit firm rotation on audit effort and fees: Cameran et al. (2013) and Kwon, Lim and Simnett (2014).

Cameran et al.'s (2013) sample focuses on the period 2006 to 2009 and contains 204 publicly-listed non-financial companies in Italy audited by the Big Four. Their actual audit hour data are proprietary, provided by audit firms related to the researchers. Cameran et al.'s (2013) results indicate that departing auditors do not decrease their audit efforts for clients in comparison with continuing customers. On the other hand, first engagements following a mandatory rotation present a significant average increase in total audit hours spent on audit services.

Kwon, Lim and Simnett (2014) investigate the impact of mandatory rotation on audit efforts in a Korean setting from 2006 to 2009. Similarly, they observe greater audit effort following the introduction of a mandatory audit firm rotation policy in 2006, which was not limited to compulsory audit firm changes but had an extended impact on voluntary switches and continuing audit relationships.

There does not appear to have been any previous study exploring audit effort determinants based on Turkish audit market data.

Therefore, this study aims to throw light on audit fee and audit effort indicators in Turkey, which is an almost unexplored area in the literature. Several indicators are selected to test their impact on both audit fee and effort data. It is asserted that, besides several commonly-employed criteria in the literature (Hay, Knechel and Wong, 2006), policy enforcements such as mandatory audit rotation, and affiliation with a large business group may influence audit fees and audit effort. A rather less investigated factor, the role of extra services rendered by the audit firm, is also asserted to have an impact on audit fee and effort determination (Hay, Knechel and Wong, 2006). Thus, the impact of 17 independent variables on both audit fee and audit hour data, as surrogates for audit fee and audit effort respectively, have been examined in this study using a multiple regression methodology.

A five-year period (2008-2012) was selected as the focus of this study, since this time span covers a relatively stable accounting environment with respect to accounting standards and financial statement formats. The selection of the time span of the study also allows analysis of the unique time period of 2010, during which mandatory audit firm rotation was practised in Turkey. Although rotation policies have frequently been discussed as a choice to improve the independence of auditors, owing to their rare actual application there is only limited evidence in the literature with empirical analysis of actual data focusing on the influence of mandatory audit firm rotation on audit fee and audit effort.

As stated above in terms of audit effort studies, Cameran et al.'s (2013) study based on an Italian experience and Kwon, Lim and Simnett's (2014) study of Korean practice have been found to be the only studies that have explored the impact of mandatory audit firm rotation policies on audit fee and effort. Therefore, an assessment of mandatory audit rotation on actual market data, including available audit fee and effort data, will make a significant contribution to discussions of this policy alternative. The findings of this study will provide further empirical evidence for regulatory agencies in assessing the implications of an audit firm rotation policy choice.

The timing of the study is especially relevant in light of the recently published EU Directive 2014/56/EU and Regulation 537/2014, which introduce a mandatory audit firm rotation policy for statutory auditors every 10 years, with some exemptions, and are yet to be implemented. Moreover, the availability of data regarding identification of the responsible audit manager

(lead manager) in Turkey, as a result of requirements enforcing disclosure of their names in the audit report, also allows the testing of an alternative rotation policy option for audit partners and its association with audit fee and effort indicators as a sensitivity analysis.

In this part of the study, firstly developments in the literature are reported, then the data selection process and descriptive statistics of the sample are explained, after which the design of the audit fee and audit effort model is elaborated. The results and sensitivity analysis are then assessed, and conclusions and ideas for future research are given.

4.1 Literature Review: Model Development

4.1.1 Audit Fee Models

Audit fee models were first introduced to the literature with the seminal work of Simunic (1980). His study was triggered by a discussion which continues in the current audit market regarding monopolisation of the audit market and lack of available evidence to depict its impact and provide a sound evaluation of the issue. In order to test the competitiveness of the audit market using audit fee data, Simunic's (1980) model first takes into account the process of audit fee determination. The study was based on the notion that audit fee is a product of unit price and quantity of audit services demanded by the customer, and that cross-sectional differences in audit fees are the result of either quantity or unit price differences. Therefore, the study bases its analysis on the view that audit service is an economic good to customer companies, and proposes that demand for audit quantity is derived from the conventional equalisation of marginal private benefits and costs. The main benefit to the customer company from the audit is identified in the study as liability avoidance.

Data used in Simunic's (1980) study were gathered through a survey sent to publicly-held corporations in 1977. Analysis was conducted on the 397 responses, including audit fee figures and other related indicators. The foundation of the audit fee model is price determination in different types of audit markets, competitive and non-competitive, where profit maximisation is the main purpose of both the audit firm and the audited company. The study takes an economic perspective that audit is an economic production of financial reporting, where factor costs of resources are standard for all auditors. In Simunic's (1980) analysis, production is calculated as the decline in expected liability losses.

According to Simunic (1980), audit fee is the only observable data which depends on the implicit price elasticity of demand. Simunic (1980) also argues that scale economies may exist

in the audit market. Additionally, he posits that differentiated products are available in the audit market, as is observable indirectly from their prices. The principal distinguishing feature of the audit service is noted to be the identity of the supplier. This identity characteristic is revealed to be a large audit firm which incorporates both prominence and brand name. Losses caused by exposure were gathered from discussions with Chicago area representatives of large audit firms and insurance firms underwriting insurance coverage for accountants. The factors indicated in these discussions are size of the customer firm, complexity of the customer's operations, problems experienced in certain parts of financial statements, such as inventory and receivables, industry of the customer and whether the company is publicly-held or private. Accordingly, the audit fee model employed by Simunic (1980) was constructed by embodying these stated factors as independent variables to test their significance on audit fees. In the study, the size of the customer is represented by its total assets, and complexity reflecting the decentralisation and diversification of the company is represented by variables such as the number of consolidated subsidiaries, industry classifications and customer companies' foreign assets to total assets ratio. The risky elements of the balance sheet – inventories and receivables – are measured and included as two distinct variables in Simunic's (1980) constructed model by their ratio to total assets.

The aim of controlling loss sharing among parties, as a factor employed in the bankruptcy studies ratio of net income to total assets at the year end, and two dummy variables, the first demonstrating the company's exposure to loss in the year concerned and the second reflecting the current auditor's view, are used to represent the financial distress level of the customer firm. Differences in the auditor production function are controlled by the introduction of a variable measured as the number of contract periods with the same auditor. This tests the effect of learning through repeated performance of the task, as observed in physical production facilities. Lastly, Simunic (1980) introduces different classes of auditor into the audit fee model with a dummy variable which is assigned a value of one for large auditors and zero otherwise.

Although, Simunic's (1980) audit fee model contains the contractual audit period (audit tenure) as an independent variable, another fundamental issue relating to the audit fee determination process is developed in later studies as price cutting at initial engagement. This concept has drawn special attention from scholars due to its plausible impact on the independence of auditors. The practice known as "lowballing" in the literature is defined as determining audit fees below total current costs on first audit engagements. According to

DeAngelo (1981), discounts by auditors in first engagements with customers originate from start-up costs and costs arising from auditor changes. Furthermore, in a competitive market, the auditor expects quasi rents in the future by accepting a lower fee in the first contract (Craswell and Francis, 1999; Ghosh and Lustgarten, 2006).

However, Dye (1991) provides a different view on the reason behind lowballing. He argues that expected quasi rents may be prevented by disclosure requirements, since in that way detection of quasi rents from the disclosed information will be possible and discouraged due to the views of users about its impact on auditor independence and the quality of financial statements. Thus, Dye (1991) hypothesises that the reason behind discounts in first engagements is the lack of transparency over charged quasi rents (Craswell and Francis, 1999; Ghosh and Lustgarten, 2006). Simon and Francis's (1988) study explores price cutting and price recovery with a model that takes into account the results of previous studies, which they indicate are either ineffective (Francis, 1984; Palmrose, 1986; Simunic, 1980) or carried out on a small sample size (Baber, Brooks and Ricks, 1987; Francis and Simon, 1987). They extend their analysis on price cutting by investigating the following six years to understand when the price bounced back to normal levels. Accordingly, they improve the audit fee model by adding disaggregated new indicator variables representing the first engagement, second and third years of engagement, and fourth to sixth years of engagement. A test of the adjustment of audit fee levels of first engagements to normal is achieved by setting up a control sample comprising companies continuing to engage with the same auditor during the sample period.

Simon and Francis's (1988) results support systematic price cutting behaviour and have led to extended analysis of the influence of price cutting behaviour on the independence of auditors. DeAngelo (1981) argues that price cutting is a type of sunk cost and, accordingly, no impact of such behaviour is expected on the independence of auditors (Simon and Francis, 1988). On the other hand, Simon and Francis (1988) note that, in the psychological literature (e.g. Arkes and Blummer, 1985; Thaler,1980; Kahneman and Tversky, 1979), evidence is provided contrary to DeAngelo's (1981) sunk cost argument by showing the influence of sunk costs in the subsequent decision-making process. The main arguments of these behavioural studies are that losses are systematically undervalued, and there is a tendency for people to continue their operations once an investment of money, time and effort has been made.

Other studies have explored lowballing and provide further support for the expected quasi rents and damage to auditor independence, as in an analytical study by Magee and Tseng

(1990), and experimental studies by Schatzberg and Sevcik (1994) and Schatzberg et al. (2005). However, only Dopuch and King (1996) demonstrate a direct relationship between lowballing and impaired auditor independence (Mellon, 2010). Moreover, recent studies suggest that lowballing occurs because auditors succumb to the winner's curse (Hobson, Mellon and Stevens, 2010; Mellon, 2010).[30] Furthermore, a recent experiment (Mellon, 2010) reveals a positive relationship between lowballing and impaired auditor independence due to shirking behaviour by the auditor. In this experiment, there is an association between the financial loss incurred due to the winner's curse and shirking behaviour of the auditor in audit effort spent. Mellon (2010) also reports that previous experience of shirking influences the shirking behaviour of auditors.

In addition, Craswell and Francis (1999) test and generally confirm Dye's (1991) arguments about the impact of disclosure on quasi rents and auditor independence in an Australian setting in which disclosure of audit fees was mandatory for the 1987 financial year. On the other hand, Srinivasan and Sankaraguruswamy (2009) find a US case to be inconsistent with Dye's (1991) proposition. Similarly, Kraub, Quosigk and Zülch (2014), using German company data from 2005 to 2011 when audit fees were disclosed, also report a lowballing effect in first engagements, contrary to Dye's (1991) hypothesis.

Followers of Simunic's (1980) work have explored factors influencing audit fee determination using tools such as differentiating the number of variables, focusing on national, regional or larger geographical contexts, and improving the model by utilising newly-introduced statistical tools. Hay, Knechel and Wong's (2006) meta-analysis expresses the nature of the employed independent variables and evaluates similarities with the results of previous studies. The meta-analysis covers previous audit fee research in more than 20 countries, including developed countries such as the US, UK, Canada and Norway, and some developing ones, including Hong Kong, Bahrain and Bangladesh, for the period 1977 to 2003. It is indicated that 147 independent variables have been explored by previous studies. Their work demonstrates that many fee indicators have provided consistent results across studies, samples and countries. Generally, size of the audit firm, risk of the client and client complexity are related to the agreed audit fee level. These indicators are conveyed mainly as supply-side elements which require auditors to expend more effort in performing their services. In contrast,

[30] In an auction with several bidders, the winning individual is usually the most optimistic one but is also a loser because he/she may bid more than the worth of the subject of the auction (Thaler, 1992).

some potentially important variables, such as the relationship between external and internal auditing, deliver mixed conclusions. Most of the papers assessed are based on samples of listed corporations. The dependent variable of these reviewed audit fee models is generally the natural logarithm of audit fees (Ulusoy Tokgöz, 2010).

The most tested client and auditor qualities are summarised from Hay, Knechel and Wong (2006) in Table 7 (Ulusoy Tokgöz, 2010).

Table 7: Summary of Frequently-Used Independent Variables in Audit Fee Models

Features	**Variables**
Size of the Client Company	Total Assets
	Sales
Complexity of the Client Company	Number of Subsidiaries
	Industry Classification
	Foreign Subsidiaries
	Number of Business Segments
	Foreign Assets
Inherent Risk of the Client Company	Inventory
	Receivables
	Inventory and Receivables
	Systemic Risk
Profitability of the Client Company	Profitability Ratio
	Loss
Leverage of the Client Company	Leverage
	Quick Ratio
	Current Ratio
	Probability of Failure
Form of Ownership of the Client	Public or Private
	Major Shareholding
	Stocks versus Mutual
Internal Control of the Client Company	Internal Audit
Governance	Regulation
	Outside Directors
Industry of the Client Company	Financial Institutions
	Utilities
	Manufacturers
Auditor Quality	Big Four, Big Five, Big Six or Big Eight
	Specific Large Auditor
	Audit Firm Market Share
	Auditor Specialist
Auditor tenure	Auditor tenure
	Change of Auditor
Other Auditor-Related Attributes	Audit Report Lag
	Auditor Location
	Time of the Audit (Busy Season or Not)
	Audit opinion (e.g. Qualified or Not)
	Non-Audit Services by Auditor
	Number of Audit Reports

Hay (2013) extends Hay, Knechel and Wong (2006) by examining the relevant literature up to 31 December 2007, demonstrating that some new complexity measures have been added as independent variables to audit fee models, such as extraordinary items and discontinued operations, both found to have significant and positive associations in the audit fee literature. A growth in sales variable is reported as significant with negative association by Hay (2013), contrary to the findings of Hay, Knechel and Wong (2006). Although mixed results regarding the influence of internal control on audit fees are observed in Hay, Knechel and Wong (2006), more recent studies present a significant and positive relationship (Hay, 2013). According to Hay (2013), corporate governance qualities have attracted greater attention from scholars in recent studies, all indicating a positive association, contrary to expectations. Hay (2013) suggests that this finding reflects that the relationship between audit fee and corporate governance features is not simple, since better governance initiatives in a company's management board and audit committee may increase the fees paid for an audit, rather than decreasing them, which may be attributed to greater attention to financial statement quality as a result of better governance. Further evidence provided by Hay (2013) shows a positive association between non-audit service fees and audit tenure and audit fees. Busy season and client location are found to be significantly associated with audit fees in more recent studies (Hay, 2013). Since there have been few studies on partner tenure, Hay (2013) does not cover this topic.

Cobbin's (2002) review focuses on international dimensions of audit fee studies from the 1980s to 2000. The study suggests that, following Simunic's (1980) work on US markets, the first international dispersion was observed in the UK with regard to audit fee models. According to Cobbin (2002), attention to audit fee determinants then spread to other countries, and research studies were conducted which concentrated on markets where the disclosure of audit fees was mandatory, such as the UK and Australia and, in a limited manner, India and Ireland. Canada and New Zealand have attracted scholars' attention; however, owing to data constraints, limited studies have been published regarding these countries. A widening of the sphere occurred in the 1990s with studies published on data from Singapore, Hong Kong, Malaysia, Japan, South Korea, Bangladesh, Pakistan, Norway, Netherlands and South Africa. Variables representing audit client size, complexity, risk attributes and auditor size have consistently been reported to influence audit fee levels. Although complexity has been added to the models by various other independent variables, there has been little focus on related

domestic market-specific conditions in audit fee models which might assist in revealing differences between domestic audit markets (Cobbin, 2002).

4.1.2 Audit Effort (Hours) Models

Restricted data sources for audit effort data and, in most cases, their proprietary nature, mean that the literature on audit effort is limited. Palmrose (1986) explores an audit fee model primarily to provide supplementary evidence for an association between audit firm and audit fees charged. She also collects audit effort data from 302 audit clients, in order to analyse the role of two competing arguments for large audit firm premiums obtained from the fee model: better service quality or higher prices due to market power. She then exchanges the audit fee variable with audit effort data. The result of this further analysis reflects a similar positively significant association between a Big Eight audit firm proxy and audit hours spent. Accordingly, the study finds that large audit firm fee premiums are associated with audit quality stemming from increased audit effort for services. Palmrose (1989) investigates the impact of audit contract types on audit fees and audit hours, finding that audit hours are not affected by contract type (fixed fee or cost-reimbursement).

Davis, Ricchiute and Trompeter (1993) use data on total audit hours of audit team members, billing rates and out-of-pocket costs gathered from a large public accounting firm with 98 audit clients. The study tests the spillover argument discussed in Simunic (1984) and Beck, Frecka and Solomon (1988) that information obtained during the rendering of non-audit services may spill over into audit services and support production efficiencies (Davis, Ricchiute and Trompeter, 1993). In Davis, Ricchiute and Trompeter (1993), audit effort is regressed on segregated non-audit services according to type. The results of the study contradict propositions of a spillover effect of acquired knowledge on audit effort. Davidson and Gist (1996) study the association between audit planning and total audit effort to provide evidence for the impact of audit planning on audit efficiency. A revised version of Simunic's (1980) model is applied by Davidson and Gist (1996) to analyse this relationship, modifying the model by replacing the audit fee proxy with the natural logarithm of audit hours standardised by total assets. The results of the study indicate that audit planning decreases audit effort and is subject to diminishing returns.

Bedard and Johnstone (2004) focus on the significance of earnings manipulation and corporate governance risk factors in audit planning and pricing decisions for a sample obtained from an partner engagement review process. The study tests the impact of corporate governance and

risk factors separately and with interaction on both the natural logarithm of planned audit hours and a figure calculated by dividing planned audit fees into planned audit hours (billing rate), while controlling for several indicators proved to be significant in audit planning and pricing decisions. The role of earnings management risk in explaining variations in planned audit effort and billing rate is increasing in higher corporate governance risk cases. Similarly, Schelleman and Knechel (2010) use Dutch data to explore the power of earnings management probability represented by short term accruals on fluctuations in audit fee, effort, composition of audit team and profitability of the audit engagement. Data for the study were drawn from a survey of a Big Six audit firm carried out under restrictions imposed by the relevant audit firm on clients' names and financial information. The results confirm a positive significance of short-term accruals for both audit effort and audit fee. However, the study finds the same accruals to be insignificant in explaining variations in audit mix and profitability of the audit engagement. Furthermore, differences in the responses of the Big Three audit firms in Japan to clients' business risk are identified by Kim and Fukukawa (2013), with different significance levels, as increasing audit effort, allocating more qualified auditors to the service, and requiring a risk premium.

O'Keefe, Simunic and Stein (1994) use 249 observations obtained from questionnaires submitted to partners of an international audit firm regarding audit engagements in 1989. The association between client firm qualities and the nature and mix of audit effort is explored in the study, and the audit effort model is tested by disaggregating audit effort data according to the ranks of audit personnel. The study proposes that client type may create differences in the type of labour engaged in audit services. The study is extended to explore the knowledge spillover effect. The independent variables used in the model are client size, rate of foreign assets to total assets, complexity, number of audit reports, business and inherent risk, the degree of audit reliance on internal control, length of engagement, and the level of non-audit services in comparison with audit fees, most of which are similar to those employed in the audit fee model. O'Keefe, Simunic and Stein (1994) report their study as complementary to audit fee models, since assessments of these studies are distorted when audit efforts due to client characteristics are not controlled for. The study concludes that size, complexity and proxies for risk explain around 80 per cent of fluctuations in audit effort. In addition, the study observes that several indicator variables have different influences on different ranks of labour. Moreover, O'Keefe, Simunic and Stein (1994) support the findings of Davis, Ricchiute and

Trompeter (1993) in observing no knowledge spillover effect between audit and non-audit operations.

Bell, Doogar and Solomon (2008) focus on adaptation of the business risk audit model in the 1990s and its effect on audit effort and fees. Data for the study were gathered by the audit personnel of a large audit firm during internal quality control review processes. The hypothesis developed in the study tests 165 engagements in 2002 primarily in comparison with a pre-business risk model benchmark acquired by the application of O'Keefe, Simunic and Stein's (1994) coefficients. Compiled audit hours data are used in the study to enable an assessment of the impact of the application of the business risk audit model on different ranks of labour taking part in an audit team. Size of the audit client as the natural logarithm of total assets, rate of foreign assets of the client company, number of audit reports prepared, leverage, a dummy composed to reflect first audit engagements, type of company (public or private), business risk assessment levels, degree of reliance on internal control (moderate or high), rate of other non-audit service fees (separate consultancy and tax) to total audit fees, and limitations imposed in effective contracts with the client are employed as indicator variables in the study. The study posits that the composition and level of audit labour employed may be a differentiating factor. Along with other findings, the results of the study reveal that total labour hours spent are somewhat lower, but the role of higher-ranked personnel, partners and managers is greater than the pre-business risk audit application period.

Hackenbrack and Hogan (2000) initially analyse audit production and audit prices from data drawn from a survey of an international Big Six accounting firm. The data comprise 1991 audit fees and hours charged for different positions in the audit team and various client and engagement characteristics. In addition, the audit firm identified customer service relationships which were sustained through to 1996. Another survey was carried out on the new audit firms of switching companies to obtain information about audit fees, audit hours, characteristics of the client company and the contractual audit relationship, and the role of the company's acquisition by another client of the new auditor in its auditor change decision. The results of the study provide evidence of the impact of engagement profitability on client retention, the similarity of audit fee and audit effort composition in switches between Big Four auditors, and dissimilarities in stated audit features in switches from Big Four to non-Big Four auditors. The results of the study are considered to provide complementary evidence for the arguments of previous studies evaluating higher audit prices as a reflection of different service levels provided by large auditors.

Niemi (2005) studies the European audit market in terms of audit effort. Audit hour and fee data were gathered for the study from the internal records of four of the Big Six audit firms in Finland by random selection of 200 client companies from 502 engagements for the fiscal year 1996. The study's focus is on revealing the association between several ownership concentration characteristics (managerial ownership, state or foreign ownership) and audit hours and fees. Both audit figures are found to be lower for managerial ownership concentration cases, and higher for companies controlled by foreign owners. No difference is observed in the study between municipal or state-owned companies and diffused ownership structures. Apart from constructed variables representing various ownership structures, the other control variables of the study follow the common audit fee literature, i.e. total assets of the client company, cases of loss, new clients, percentage of inventories and receivables to total assets, and a categorical variable representing PwC.

Another study (Niemi et al., 2014) has recently been conducted on audit effort data regarding the Finnish audit market. This study examines variations in the determinants of audit effort (in total and separately for senior and junior actual hours) and fees in 1996 for 81 clients of Big Four audit firms and in 2010 for 59 clients of only one of the Big Four audit firms. The study initially conducts a regression on the constructed audit model, including various commonly-explored elements individually for the 1996 and 2010 data. The assessment is then repeated on a pooled sample comprising both 1996 and 2010 data, incorporating an additional year dummy for 2010 to observe differences in the latter period. The two periods are compared by interacting the year 2010 dummy with each of the independent variables in the study. Furthermore, out-of-sample prediction is employed to observe differences in audit fee and effort. The results of the study indicate that client size and complexity have more significant effects on the allocation of audit hours, which is more apparent for senior auditors. The relationship between quality of internal control and managerial ownership and audit effort observed in 1996 loses its significance in 2010. Although managerial ownership shows a negative significance for variations in audit effort in 1996, this disappears in the 2010 data.

Another European study has been conducted on the audit structure in Greece (Leventis and Caramanis, 2005). The study uses audit time as a proxy for audit quality. To achieve this, the ratio of minimum audit hours approved by the Supervisory Council of the Hellenic Institute of Certified Auditors to actual audit hours is selected as the dependent variable for the study. Data for the study were provided by the Athens Stock Exchange and the afore-mentioned Institute of Certified Auditors of Greece. Several common indicators of the audit fee model,

with some modifications, as well as audit fee, ownership concentration and rights issues are used as independent variables in the model used in the study. It is observed that some audits use less than the prescribed minimum hours. The outcome of the regression of the model of the study, with a comparably lower 21.3 per cent R^2, highlights that the major factors influencing variations in the ratio of audit effort to minimum audit effort are company size, leverage, multinational links of the audit firm and equity offerings of the company.

On the other hand, Redmayne and Laswad (2013) seek proof of the impact of IAS/IFRS adoption on actual audit fee and effort in public sector audits. The significance of the study is in identifying that regulatory and disclosure amendments may influence audit effort variations. Audit effort data for the study were provided by the Office of the Auditor General of New Zealand, with a sample size of 295 entity-year observations. The mean audit fees and audit efforts before and after IAS/IFRS adoption by public entities are compared in the study, and a significant increase is observed for local authorities and energy companies.

In a recent study, Bradbury and Redmayne (2014) try to reveal differences between the Big Four auditors in a public setting for the period 1998 to 2000 in terms of audit fees, audit hours and billing rate, using 116 firm-year observations obtained from the above-mentioned New Zealand institution. They use industry and year dummies in some of their specified models. They compare their results using a Wald test for equality of coefficients for different types of audit firms. They concur that financial risk factors represented as leverage increase audit effort but not the other related dependent variable, billing rates. Furthermore, they report similarity in audit fees but dissimilarities in the mix of audit hours and billing rates for different industries between the Big Five auditors (the data include Arthur Andersen). Bradbury and Redmayne's (2014) results support using industry dummies in audit effort studies.

Only two studies have been identified in the review which focus on the effects of mandatory audit rotation on audit effort data (Cameran et al., 2013; Kwon, Lim and Simnett, 2014). Cameran et al.'s (2013) sample covers the period 2006 to 2009 with 204 non-financial listed companies in Italy audited by Big Four auditors. Their actual audit hour data are proprietary, provided by the relevant audit firms. They assess the impact of mandatory audit firm rotation using pooled data with firm and year fixed effects. The main argument of the study, the explanatory power of mandatory audit firm rotation, is tested using two dummy variables indicating the first and final years of the auditors, along with other control variables selected from previous literature. Initial engagements account for 5.4 per cent of the total sample,

whereas 7.3 per cent of companies were in the last year of their relationship with their auditor. They also use various commonly-employed control variables in their audit fee model, along with the natural logarithm of audit fee data. The R^2 of the base audit fee model is 90 per cent when the previously-stated fixed effects and audit effort as a controlling element are included; however, only audit hours and size of the client company are observed to be significant in explaining variations in audit fees. Other generally accepted factors, such as leverage, level of foreign revenue and number of segments, gain explanatory power for variations in audit fee only after the elimination of the audit hours variable and running a pooled regression with no fixed effect. In addition, lowballing is experienced in audit fees in the initial engagement after a mandatory rotation, and higher audit fees are observed for the last year of the engagement. Hence, the R^2 of the audit fee model in this specification is lower. They also test the impact of 16 voluntary auditor changes on audit effort data. The study finds that the effort of departing auditors does not present any significant negative coefficient. This outcome is concluded to be proof that there is no shirking behaviour of auditors in last year of the contractual audit term. On the other hand, the audit hour model of the study reveals that the dummy indicating first year of engagement after a mandatory audit change presents a positive coefficient and a p-value of 0.014. The R^2 of the main audit hour model is 53 per cent.

Kwon, Lim and Simnett (2014) study a Korean case, where a mandatory rotation policy was applied for a limited time from 2006 to 2010. The main focus of the study is on revealing the quality and fee implications of this policy. The influence on audit hours is also investigated. Uniquely, the study was able to collect relevant audit hours data from publicly-available sources because disclosure requirements were in effect. This feature allowed the researchers to use a large sample composed of 6,710 firm-year observations, including 1,221 new engagements. Only 392 of these new engagements are designated as forced switches due to the mandatory rotation policy. Industry and year dummies are used in the models to control for idiosyncrasies. The audit hour data are also employed as an independent variable in the constructed audit fee model, along with a discretionary accrual variable used to proxy audit quality. The study concludes that audit hours are elevated after a mandatory rotation, and the policy implications similarly extend to continuing audit relationships and voluntary auditor switches.

The literature review supports that limited data sources are available for analysis of audit effort. Most studies use surveys, audit firms' own records or data submitted by related institutions. Accordingly, the sample sizes of these studies are quite small, stemming from

similar data collection restrictions. Owing to these data restraints, only a limited number of studies are available in the literature regarding audit effort indicators with a diversified focus. This assessment highlights the potential of the contribution to the accumulated literature of the present study on audit effort data.

4.1.3 Indicators of Audit Fee and Effort

The reasoning behind the selection of variables in the constructed model in this study will be elaborated below, citing the relevant literature. Since studies in the audit effort literature usually employ independent variables found to be significant in audit fee studies, the same variables are used here in the construction of an audit effort model similar to Cameran et al. (2013).

4.1.3.1 Size (LNTAS)

The size of the customer is the most commonly-tested independent variable to explain variations in audit fees. The customarily used proxy for size is the total assets of the customer company (Hay, Knechel and Wong, 2006). Owing to the higher risk of liability and expected effort to test, it is proposed that both fee and effort spent on audit will increase with company size. Larger size is usually experienced alongside complicated accounting applications and diverse assurance-checking operations (Ulusoy Tokgöz, 2010). Assumptions of economies of scale for the auditor service function and more developed internal control expected in large corporations have led scholars to assume a non-linear relationship (Chan, Ezzamel and Gwilliam, 1993). In line with the common approach, this study transforms total asset size, taking its natural logarithm for the application (Hay, Knechel and Wong, 2006).

Some audit fee studies choose sales figures as an alternative proxy for size; however, this is less common, as stated in the results of Hay, Knechel and Wong's (2006) meta-analysis.

Accordingly, for both audit fee and audit hours models in this study, the total asset figure of the client listed company at the previous year end is used as a size proxy, expecting a positive relationship. A lagged audit of the total assets of the client is used in this study, taking into consideration that the audit fee contracts had been signed before the related year end since a general shareholder meeting approval process is a legal condition for their effectiveness.

4.1.3.2 Auditor Attributes(Big 4 and ACHN)

Qualification and Reputation of the Auditor (Big4)

The findings of previous studies in the literature reflect that large audit firms with international affiliations are associated with more precise reports and detailed disclosure of the financial position of the company (Lennox, 1999). Large auditor designation is a common proxy employed in the literature for audit quality (Becker et al., 1998). Since it is not possible to observe directly the quality of the services expected during the initial audit selection phase, the name of the auditor may alternatively allow customers to infer the quality of future services (Simunic, 1980). Globalisation and internationalisation of accounting and auditing standards place even greater emphasis on contacts created by the auditor's name, and thus its reputation. Mozier (1997) reports the impact of Big Four auditors' international reputation and its economic consequences, such as audit fee premiums paid to auditors and less underpricing in initial public offerings.

Moreover, market power gained by large audit firms as a result of currently high concentration levels may cause exploitation of this power and result in the charging of higher prices than competitive levels (Simunic, 1980).

As a result, audit fee models usually contain a dummy variable to measure the specific influence of audit reputation on pricing. Several categorisations are recognised in the literature for this purpose; however, three of the most common ones are classification of Big Four/Five/Six auditors, a specific dummy for PwC and industry specialisation of the auditor. Debate about the operationalisation of a specialisation measure is not yet settled among researchers (Hay, Knechel and Wong, 2006). Better quality in an audit requires more audit hours; thus, similarly to audit fee models, audit effort models contain specific variables to represent the size of the audit firm (e.g. Palmrose, 1986; Leventis and Caramanis, 2005; Kwon, Lim and Simnett, 2014), expecting a positive relationship. Only a few audit effort studies have been able to designate a large auditor dummy; hence, owing to data restrictions, most audit effort studies have been based on the proprietary data of Big Four auditors.

Therefore, in this study a dummy variable is added to both fee and effort models to demonstrate the reputation, characteristics and market position of the audit firm. Considering the presence and concentration of the international Big Four audit firms in the Turkish audit market, as

depicted in Chapter Three, a Big Four classification has been chosen for the models in this study.

Auditor Change (ACHN)

As indicated previously, one strand of research in audit pricing focuses on discounts (lowballing behaviour) in first engagements. Variances in lowballing have been attributed to the financial situation of the client company, dissimilarities between the previous and current auditor with respect to auditor class, industry specialisation and competence in technology, and available bids for the offered audit contract (Ettredge and Greenberg, 1990).

Lowballing in initial engagements occurs following an auditor change. Previous studies have generally proved lowballing in voluntary auditor change situations (Simon and Francis, 1988; Kraub, Quosigk and Zülch, 2014).

Limitation of the term of the contractual audit relationship is also heavily discussed in terms of mandatory audit rotation policies, due to a proposed detrimental influence of longer-term relationships on auditor independence and the quality of financial reports. However, some researchers provide contradictory evidence that longer audit terms create higher audit quality (Myers, Myers and Omer, 2003). Owing to a shortage of available data on actual applications of mandatory audit rotation policies, most research has investigated the effects of mandatory rotation on audit quality indirectly by focusing on the association between audit tenure and audit quality (Stefaniak, Robertson and Houston, 2009). As elaborated above, the limited research on actual practice includes Harris (2012) for South Korea, Brazil and Italy; Martinez and Reis (2010) for Brazil; Cameran et al. (2013) for Italy; and Kwon, Lim and Simnett (2014) for South Korea. To the best of the researcher's knowledge, there has been no previous study of the impact on quality of the enforced rotation policy in Turkey constructed from actual audit effort data. One recent relevant Turkish study (Türel, Türel and Çiftçi, 2013) explores the association of audit tenure with audit quality. The study uses the propensity for a modified audit opinion as a proxy for audit quality and concludes that the length of the audit relationship has a negative impact on audit quality. Analysis of the impact of mandatory audit rotation on audit quality and auditor independence is as yet inconclusive (Ewelt-Knauer, Gold and Pott, 2013).

On the other hand, mandatory rotation is expected to raise audit cost elements for both the auditor and the client firm (Cameran, Vincenzo and Merlotti, 2005). The costs of the auditor

include the initial preliminary expenses involved in understanding the client company's business model and organisational structure (Ewelt-Knauer, Gold and Pott, 2013). The customer company also incurs various additional costs relating to a new engagement, such as selection expenditure, greater labour hours and documentation to generate relevant information demanded by the new auditor (Cameran, Vincenzo and Merlotti, 2005). Concerns over price competition in the market and pressure on prices are also issues specified by auditors in this policy discussion (Ewelt-Knauer, Gold and Pott, 2013).

Although there is the prospect of a rise in the price of audit stemming from these stated expenditures in new engagements, price discounts may still be expected from auditors in order to attract new customers and differentiate their offers from competitors. Only a few scholars have been interested in analysing the influence of mandatory audit rotation on audit costs. Two analyse the research question using the data obtained from facilitated surveys, one administered in Italy (SDA Bocconi, 2002; Cameran, Vincenzo and Merlotti, 2005) and the other in South Nigeria (Appah and Keretu, 2011). According to SDA Bocconi (2002), assessment of responses obtained from questionnaires submitted to the internal auditors, managers and Big Five auditors of Italian listed companies confirms that in first engagements both auditors and auditees encounter higher costs (Cameran, Vincenzo and Merlotti, 2005). Appah and Keretu (2011) investigate a survey of 172 respondents comprising auditors and professionals in the audit and accounting area by evaluating the results of a Spearman rank order correlation. They report a significant association between audit cost and mandatory rotation.

Another pertinent research study, Arruñada and Paz-Ares (1997), is a normative study which analyses the impact of mandatory audit rotation on both cost and quality. They conclude that mandatory audit firm rotation may raise audit costs owing to damage to intangible assets developed during the previous contractual relationship and to the competition structure. This damage is claimed to both impair audit efficiency indirectly and increase the possibility of collusion among competitors. Cameran et al. (2013), similarly to SDA Bocconi (2002), focus on Italy, which is one of the few countries in which a mandatory audit rotation policy has been practised. They indicate that, although Italian companies have disclosed audit costs in their notes since 2007, owing to inconsistencies in the data they construct their sample on audit cost data submitted by the Big Four auditors and also test publicly-available audit fee data for robustness and sensitivity. The impact of mandatory audit rotation on audit fees using pooled data with fixed firm and year effects is tested along with other analysis. The purpose of the

analysis is achieved, with an additional two indicator variables representing the first and last years of the auditors' engagement. They apply the same control variables in both their audit fee and audit effort models. However, they add an audit hour variable as another control variable. The explanatory power of their study, with an R^2 of 90 per cent, drops when they eliminate the audit hour variable and firm fixed effect from the base model. Although before the elimination only the size variable exhibits significance along with audit hours, after the stated elimination it is observed that, consistently with previous studies, leverage, amount of accounts receivable scaled by total assets, percentage of foreign revenues and number of business segments in which the company operates are found to be significant, along with the size variable. One of the main results of the study is proof of a discount in first engagements. Furthermore, the last auditor proxy is found to be significant with a positive coefficient, which is evaluated as opportunistic pricing in the last year of engagement. The results of the study regarding audit efforts have already been detailed. Kwon, Lim and Simnett (2014) investigate the impact of mandatory rotation on both audit fee and effort in a South Korean setting from 2006 to 2009. They observe higher audit fees in the post-implementation term and some proof of discounts in certain first engagements in both pre- and post-regulatory periods. The study's conclusions regarding audit effort have been mentioned earlier. Furthermore, a group of experimental studies simulates and studies environments in which rotation is mandated (Ewelt-Knauer, Gold and Pott, 2013).

The period of the present study covers 2010, when mandatory audit rotation was first enforced in Turkey. Thus, in that specific year considerably more auditor switches were experienced than in other periods. Owing to limited cases of actual application of mandatory audit rotation, this provides an opportunity to test directly the impact of this policy in an actual market setting on audit fee and effort.

Two common proxies are used in the literature to test the association between auditor switches and audit fee. The first is audit tenure, which represents the actual length of the audit engagement. The second is codification of a dummy variable to express a recent audit firm change. Previous studies has proved that the dummy variable approach is a better choice (Hay, Knechel and Wong, 2006). Furthermore, insignificant results are obtained in an audit fee model by Ulusoy Tokgöz (2010) from a proxy for audit tenure in a Turkish setting. Therefore, in order to be able to observe directly any price and effort variations created by mandatory audit change, especially in 2010, the preferred method is to construct a dummy variable

reflecting both changes of auditor in the current year and first engagements due to initial listing of the company.

Offers of discounts on first contracts with the expectation of obtaining quasi rents in the future may be limited in the Turkish setting owing to restrictions on the rendering of non-audit services by the same auditor. On the other hand, start-up expenditure and additional effort, as mentioned above, may cause a rise in both audit effort and fees in first engagements. Furthermore, enforced mandatory rotation on as large a scale as practised in Turkey may generate a competitive environment both over audit price and, as indicated by the descriptive statistics provided in Chapter Three, in market shares. Shirking behaviour of auditors proved by experiments may also generate negative coefficients for auditor change. Accordingly, it is assumed in this study that the auditor change dummy may be associated with audit price and effort in either direction, positive or negative.

A proposed alternative rotation policy targets audit partners rather than audit firms. This policy is in place for both the US, under the provisions of the Sarbanes-Oxley Act, and in the EU (Hess and Stefani, 2012; GAO, 2008; Yurdakul, 2010). Similarly, for certain types of company and auditor, CMB replaced the auditor rotation provisions after its first application in 2010 financial statements with audit partner rotation. Discussion of audit partner rotation is similar to that on audit firm rotation. Parties in favour of such a policy raise concerns over the independence of auditors due to long audit tenure, whereas parties against a rotation policy cite potential threats to audit quality due to the absence of company-specific information and lower industry specialisation opportunities (Daugherty et al., 2012). Studies of audit partner rotation are scarce in actual settings (Chi et al., 2009). One reason cited is that disclosure of the audit partner's name is not compulsory in some countries, such as the US where this policy has already been put into practice (Bergner, 2013; Chi et al., 2009). Since, for listed companies, this information is publicly disseminated in Turkey, supplementary data were collected on the identity of audit partners who signed relevant financial statements during the research period. As a result, this study is able to report supplementary analysis regarding the impact of audit partner change in cases where engagements with the same audit firm continue.

4.1.3.3 Complexity (SQRCMPLX, SGR, IND)

Decentralisation of a company is acknowledged to be the main representative feature of a company's complexity, since it necessitates the examination of different decision-making centres. Also, due to consolidation requirements, the number of subsidiaries, joint ventures

and associates raises the number of formal audit procedures and requires understanding of the relationship between consolidated companies in order to control the accuracy of the consolidation procedures. Therefore, in the literature, the number of subsidiaries of companies is accepted as one of the main proxies for complexity, with a positive sign (Simunic, 1980; Hackenbrack and Knechel, 1997; Cobbin, 2002; Hay, Knechel and Wong, 2006).

Prior to the New Turkish Commercial Code, private companies were not subject to statutory audit and it was not mandatory to disclose consolidated financial statements. Therefore, for listed companies, the audit effort comprises not just auditing of the parent company but also its consolidated subsidiaries, joint ventures and associates. Accordingly, an independent variable is included in the model of this study as a surrogate for complexity, containing numbers of joint ventures and associates of the companies as well as subsidiaries. The data collection process was designed to enable a separate analysis of the impact of the number of foreign and domestic consolidated companies. Thus, the sensitivity of the study's findings to the governing centre of consolidated firms is also assessed.

The number of business segments is another generally accepted proxy for complexity (Hay, Knechel and Wong, 2006; Hay, 2013). The sample of this study comprises both individual companies with no subsidiary and parent companies with several subsidiaries. An individual company may demonstrate organisational complexity stemming from diversified products or customer base. A positive association has been confirmed by previous studies for the number of segments variable (Hay, Knechel and Wong, 2006; Hay, 2013) As a result, another complexity element is contained in the model as a dummy variable (SGR), which is coded as one in cases where a company's financial statement notes disclose segment information. Owing to the availability of data, this variable is different from the common approach of using numbers of segments. A positive association is expected between this dummy variable and audit fee and effort figures, similarly to confirmed cases for the number of segments variable.

Different regulatory structures, riskiness and operational implications of an industry may involve extra effort, and accordingly also audit costs stemming from the required supplementary audit procedures and expertise. To assess fluctuations caused by industry differences, a dummy variable is usually designated to represent specific industries, i.e. financial institutions, utilities, manufacturing, mining, shipping (Hay, Knechel and Wong, 2006; Hay, 2013). In audit effort models, Kwon, Lim and Simnett (2014) apply industry dummies using a two-digit industry code for the pooled data; Cameran et al. (2013) control

for industry specialisation and provide supplementary analysis employing an industry fixed effect; while Anderson and Zeghal (1994), taking into account the results of previous studies, designate a dummy variable to control the influence of transportation, communication and utilities sectors on audit pricing. Furthermore, information submitted by the Independent Auditors Association of Turkey suggests that minimum service pricing demands higher fees for the transportation, telecommunications and communications and energy sectors. A common feature of these industries is their additional regulatory load and surveillance due to their widespread impact on the general public as users. Considering these assessments, as classified by BIST for other listed companies, a dummy variable is used in this study to distinguish mining; electricity, gas and water; chemicals, petroleum, rubber and plastic products; and transportation, telecommunications and storage industries. The direction of the association between industry and audit fee is not as well established as for other complexity proxies (Hay, Knechel and Wong, 2006). Accordingly, no direction of association is specified for the industry dummy variable.

4.1.3.4 Inherent Risk (INVAR), Risk (LQ, AO and LV) and Profitability (Loss)

Risk assessment of the client before engagement is crucial for proper audit planning and establishing the audit team. Considering the application of risk modelling in audit, a relationship between audit risk and audit fee may be expected. Faulty risk assessment may elevate the possibility of litigation due to audit failure (Chan, Ezzamel and Gwilliam, 1993; Ulusoy Tokgöz, 2010). In addition, the reputation of the auditor concerned becomes tainted; therefore, audit risk is claimed to raise both audit effort and fee, which may be attributable to these concerns.

Within the regulatory framework, summarised in Chapter Two, the responsibilities of auditors in case of an audit failure or intentionally-signed defective audit report are well established. However, in practice, court cases claiming the responsibility of auditors in audit failures are quite rare. The main detriments to auditors/audit firms are compulsory exit from audit services due to revocation of their licences and losing their authority to render audit services.

Various risk factors have been employed in the literature as proxies for audit risk, such as level of receivables, inventories compared with assets, and financial distress indicators such as profitability and leverage (Ulusoy Tokgöz, 2010; Hay, Knechel and Wong, 2006). The selection of receivables and inventories stems from the inherent risk within these items. The

necessary audit procedures mandate additional effort to control for these items (Simunic, 1980).

It is conjectured that the level of development of audit activities in Turkey, as an emerging country, may cause greater emphasis to be placed on primary audit processes such as confirmation of receivables and counting of inventory. Following this perspective, an independent variable (INVAR) is set to represent inherent risk. This variable is measured as the ratio of total inventory and receivables to total assets of the customer (see Kamran and Mahendra, 2005). Hay, Knechel and Wong's (2006) meta-analysis of audit fee studies indicates that 71 per cent of previous studies have found a positive relationship with the inherent risk variable (Kamran and Mahendra, 2005). In this study, a similarly significant positive association is assumed for the INVAR variable with audit fee and audit effort.

Various risk proxies are applied in the literature, taking into account theory and data constraints. For instance, loss making reflects financial distress, which is proposed to elevate the liability risk of the auditor in a possible bankruptcy (Pong and Whittington, 1994). However, loss making companies may not be able to pay higher prices (Craswell and Francis, 1999). On the other hand, higher profits may be exploited by auditors to increase their service prices (Pong and Whittington, 1994). Two dominant surrogates preferred in audit fee models to test the conjectured impact on audit fees are return on assets (ROA) and a dummy variable demonstrating the presence of loss. However, the results are not yet conclusive (Hay, Knechel and Wong, 2006). Accordingly, no directional association is pre-established in this study between the selected LOSS dummy and the dependent variables.

Leverage and liquidity ratios are often used as risk originators in audits (Simunic, 1980; Hay, Knechel and Wong, 2006; Hay, 2013), while some studies in the literature (Kamran and Mahendra, 2005) apply composite distress figures, such as Zmijeweski's (1984) index, to achieve a similar objective. Taking into consideration the results of Ulusoy Tokgöz (2010), it is believed that the individual assessment of risk components chosen for this study may improve the efficiency of the model. Accordingly, two separate variables are added to the model, including leverage (LV) and liquidity (LQ) ratios of client companies, considering the lack of capital and bounded financing opportunities in Turkey as an emerging market. Although, Niemi's (1992) proposition is not to cite any direction for the leverage proxy, due to the complex relationship between the risky financial position of the client and the first contractual relationship, in general the predicted relationship of leverage with the dependent

variables is positive due to greater audit risk pressure, whereas a negative association is inferred for the LQ variable (Hay, Knechel and Wong, 2006). The common sign expectation has been followed for these two variables in both models of this study.

Given that modifications in an audit opinion convey some ambiguity in the expected risk of a client company, an association is proposed between certain auditor opinion types and audit fees (Simunic, 1980). Furthermore, audit problems disseminated with a previous qualified audit report may force extra effort to achieve a careful audit (Larcker and Richardson, 2004). Thus, this is hypothesised as another risk factor for audit service production and is added to this model as a categorised variable which represents the issuing of audit reports other than unqualified ones (Hay, Knechel and Wong, 2006; Larcker and Richardson, 2004). Hay (2013) observes the cyclical nature of the relationship between audit views other than unqualified opinions and audit fees, with positively significant associations obtained in studies before the 1990s, no significant relationship afterwards and positive relationships reported again from 2003 to 2007. It is assumed in this study that audit effort and fees should rise in case of any modified audit report (Hay, Knechel and Wong, 2006; Hay, 2013; Kwon, Lim and Simnett, 2014).

It should be noted that, in line with the logic for the use of a lagged total assets measure, all risk, leverage and profitability figures are calculated on the client's previous year's financial statements.

4.1.3.5 Corporate Governance (OWN, FSHRate and GRP)

Demirağ and Serter (2003), Yurtoğlu (2003) and the data collection process in this study demonstrate that the ownership structure of Turkish listed companies is highly concentrated. Families are the major shareholders, and pyramidal structures function as a system for the separation of ownership and control. Several researchers (e.g. Orbay and Yurtoğlu, 2006; Gönenç, 2006) also investigate the impact of this feature on the performance of listed Turkish companies.

Hay, Knechel and Ling (2008) provide positive proof of the complementary nature of internal auditing, corporate governance and concentration of shareholder structure in the determination of audit fees. In addition, the results of their study imply that only a loosely-regulated environment will support the amelioration of internal audit deficiencies with stronger external audit services. Hay, Knechel and Ling (2008) argue that major ownership in a company may

necessitate more substantial audit services to safeguard the major owner's investment and ensure the protection of minority shareholders from exploitation by major shareholders. A concentrated ownership structure may generate agency conflicts between large controlling shareholders of companies and other non-controlling investors. Furthermore, the possibility of intensively-related party transactions and tunnelling behaviour requires adjustment to audit processes. Khan, Mahboob and Javed (2011) examine the role of concentrated ownership on audit fees in an emerging market setting, by dividing ownership into institutional, sponsor[31] and public ownership in Bangladesh. They observe a significant negative relationship between institutional and sponsor ownership concentration and audit fees.

Following these previous studies, it is proposed that the concentrated ownership experienced in Turkey may play a significant role in audit pricing, as suggested for other emerging countries. A similar association is expected for audit planning effort. Chan, Ezzamel and Gwilliam (1993) construct ownership control variables taking into consideration managerial ownership and shareholdings of more than five per cent of the capital, as disclosed in the notes. Hay, Knechel and Ling (2008) instead employ a dummy variable and categorise a shareholding of more than 20 per cent as major ownership. Khan, Mahboob and Javed (2011) use shareholding rates at the year end as a proxy for investigated shareholder groups. Hence, an independent variable (OWN) reflecting the percentage of the largest shareholders is added to both the models in this study. During the data collection process, family members' individual ownership and share of family group companies were taken into consideration cumulatively, so far as disclosures in the notes allowed. In this manner, the role of concentrated ownership in the audit process may be more vigorously interpreted. Taking into account Hay, Knechel and Wong's (2006) mixed results with regard to major shareholdings, this study proposes no single direction for the association of the OWN variable with audit fees or audit effort.

Yurtoğlu (2003) provide evidence regarding the high concentration of control of listed companies among a few families in Turkey. Therefore, this study implements an additional procedure, elimination of holding companies that control and consolidate other traded companies, to obtain an improved analysis of indicators of audit elements in this study. Furthermore, the particular role of business groups in Turkish stock markets leads to the construction of a supplementary variable to test the role of group affiliations in audit pricing

[31] Defined in the study as mainly a founder family that usually assigns management positions to family members.

and workload. Casteralla et al. (2004) use clients' bargaining power in a setting focusing on industry specialisation. They prove that large clients achieve discounts in audit fees according to their size both in absolute terms and relative to competitors in industries in which the audit firm specialises. Based on a similar logic, a dummy variable is assigned in this study to identify companies that are part of a large conglomerate, i.e. Koç, Sabancı, Oyak, Yaşar, Ulker, Alarko, Doğuş, Anadolu, Doğan, Dinçkök, Eczacıbaşı and Zorlu Groups. A negative relationship with this variable is initially assumed regarding both price and effort, since large business groups may have negotiation power on price because several other companies in the group portfolio will also be subject to audit. Considering the evaluations of Hay, Knechel and Ling (2008) relating to less-regulated areas, in an emerging market setting these groups establish better corporate governance practices and internal control structures that may facilitate lower audit effort. Moreover, it is predicted that secure financial support of the parent holding company due to strong ties within the group may lower the riskiness of group companies. Conversely, although it is not compulsory for private companies, all group members may demand audit services as more established entities. This approach may alter the allocation of fees and effort within the group. Thus, no particular direction is expected for the association between the designated GRP variable and audit fee and effort.

Another fundamental feature of governance is foreign ownership, which may initiate additional disclosure necessities and supplementary audit procedures due to regulatory differences (Kamran and Mahendra, 2005). Niemi (2005) conjectures that, due to the more complex structure stemming from additional reporting, currency transformations, language translation and contradictory interests between domestic subsidiary and foreign parent, more audit effort is required for foreign-controlled companies. The study operationalises these arguments with a dummy variable proposing a positive relationship. Furthermore, the liability of the audit firm is expanded due to the scrutiny of an additional foreign regulatory agency. In contrast, governance initiatives developed by the foreign parent may ease the audit process and lower the riskiness of the company, and hence the audit effort. If the foreign parent of the listed company is a global giant, for a large international audit firm concerns over sustaining global market share and reputation may also lead to discounts in audit prices for the Turkish subsidiary. The interaction between foreign ownership and other corporate governance features, such as board independence, board corporate auditor independence and independent auditors in audit fee determination, are hypothesised and tested by Desender et al. (2013). They detect that in companies with greater foreign affiliation, as represented by the percentage

of foreign ownership in a company, other relevant corporate governance features of the company function complementarily. They emphasise the significance of the level of foreign share ownership in shaping other corporate governance elements in companies. Kamran and Mahendra (2005) designate a dummy variable to identify multinational client companies, with an expected positive direction. Taking into consideration the above discussions, an FSHRate variable is added to both models in this study, representing the rate of foreign ownership of listed corporations, with no expected direction.

4.1.3.6 Other Factors (FR, EXTR and AT)

The content of audit services delivered may directly increase the required audit workload and thus the audit fee. Palmrose (1986) especially acknowledges variations triggered by clients' additional reporting demands from the auditor. In line with this argument, for the purpose of controlling the impact of additional interim audit review requirements of CMB in 2008 financial statements, an FR variable indicating any additional interim audit service agreed in the audit contract is incorporated into the models. Furthermore, Davidson and Gist (1996) similarly add the number of audit reports into their model as an independent variable to explore differences between planned and actual audit effort. Since the number of interim reports subject to review is constant, rather than taking the logarithm of the number of additional reports, as in Palmrose (1986) and Davidson and Gist (1996), in this study a dummy variable is constructed to depict audit engagements containing extra reporting services. Similarly to Palmrose (1986), a positive relationship with the FR variable is anticipated, as well as with both audit effort and fee, stemming from the necessity for additional effort to satisfy clients' demands.

A review of audit contracts reveals that other audit-related services may also be agreed, for instance reviewing the consolidation package of a parent company, preparing a separate audit report for a subsidiary or providing an English version of the audit report. Some language elements are reported as tested in audit fee models in Hay, Knechel and Wong (2006), i.e. various languages or English reporting. Therefore, a dummy variable EXTR is incorporated in the models in this study to check the effect of these diversified services on both audit fee and effort data, proposing a positive relationship.

Some audit contracts specify the principles by which transportation and accommodation costs are allocated between parties. Such differentiation may be contemplated as part of the pricing strategy of audit firms. On the other hand, the negotiation power of the customer company

may force the auditor to compromise on such audit-related expenditure. Thus, this may be inferred as anecdotal evidence of competitive pricing in the audit market. Furthermore, arrangement of accommodation and transportation facilities may impose additional organisational burdens on servicing auditors, divert auditors' attention, and thus influence the time spent on actual audit services. An AT dummy variable supplements the models, coded as one if transportation and accommodation expenses incurred relating to audit services are undertaken as the responsibility of the customer, and zero otherwise. A negative direction is expected for the association between this variable and audit effort and fee data.

4.2. Constructed Audit Fee and Effort Model

Exploration of the indicators of audit fees and audit effort in Turkey are tested using the models described below. The models are based on commonly-researched indicators, with adaptations and modifications to respond to novelties in the Turkish setting. In this respect, information obtained from audit contracts in the data collection process is embedded in the models to control for differences between contract types and additional services. The selection of independent variables, their reasoning and roots in the literature have already been described above, and the tested models are provided below.

Audit Fee Model

$$\mathbf{LNFEE_t} = \alpha+\beta_1 LNTAS_{t-1}+\beta_2 Big4_t+\beta_3 FR_t+\beta_4 INVAR_{t-1}+\beta_5 LOSS_{t-1}+\beta_6 LV_{t-1}+\beta_7 LQ_{t-1}+ \beta_8 AO_{t-1} + \beta_9 SGR_t+\beta_{10} SQRCMPLX_t +\beta_{11} IND_t+ \beta_{12} FSHRate_t + \beta_{13} OWN_t+ \beta_{14} GRP_t+ \beta_{15} ACHN_t+\beta_{16} EXTR_t+ \beta_{17} AT_t + \epsilon$$

Audit Effort Model

$$\mathbf{LNHR_t} = \alpha+\beta_1 LNTAS_{t-1}+\beta_2 Big4_t+\beta_3 FR_t+\beta_4 INVAR_{t-1}+\beta_5 LOSS_{t-1}+\beta_6 LV_{t-1}+\beta_7 LQ_{t-1}+ \beta_8 AO_{t-1} + \beta_9 SGR_t+\beta_{10} SQRCMPLXTY_t +\beta_{11} IND_t+ \beta_{12} FSHRate_t + \beta_{13} OWN_t+ \beta_{14} GRP_t+ \beta_{15} ACHN_t+\beta_{16} EXTR_t+ \beta_{17} AT_t + \epsilon$$

Definitions of the variables used in the models, their expected signs and references used are shown in Table 8.

Table 8: Definitions of Variables and Expected Signs

Variable	Definition	Expected Sign	Relevant Study
$LNFEE_t$	Natural log of annual audit fees	Dependent Variable	Simunic (1980), Cobbin (2002), Hay, Knechel and Wong (2006), Ulusoy Tokgöz (2010), Hay (2013)
$LNHR_t$	Natural log of annual audit hours	Dependent Variable	Palmrose (1986), Palmrose (1989), Simunic (1984), Beck, Frecka and Solomon (1988), Davis, Ricchiute and Trompeter (1993), Davidson and Gist (1996), Bedard and Johnstone (2004), Schelleman and Knechel (2010), O'Keefe, Simunic and Stein (1994), Bell, Doogar and Solomon (2008) , Niemi (2005), Niemi et al. (2014), Leventis and Caramanis (2005), Redmayne and Laswad (2013), Bradbury and Redmayne (2014), Cameran et al. (2013), Kwon, Lim and Simnett (2014)
$LNTAS_{t-1}$	Natural log of the total assets of the company in previous year-end financial statements	+	Hay, Knechel and Wong (2006), Ulusoy Tokgöz (2010)
$Big4_t$	Dummy variable set as one if the auditor is a Big Four auditor and zero otherwise	+	Simunic, (1980), Mozier (1997), Hay, Knechel and Wong (2006), Hay (2013), Palmrose (1986), Leventis and Caramanis (2005), Kwon, Lim and Simnett (2014), Ulusoy Tokgöz (2010)
FR_t	Dummy variable set as one if the audit contract contains the service of reviewing all interim periods and zero otherwise	+	Palmrose (1986), Davidson and Gist (1996)
$INVAR_{t-1}$	Proportion of total inventory and accounts receivable to total assets as stated in previous year-end financial statements	+	Simunic (1980), Kamran and Mahendra (2005), Hay, Knechel and Wong (2006), Ulusoy Tokgöz (2010)

Table 8 (cont'd)

$LOSS_{t-1}$	Dummy variable, coded as one if company incurs loss in previous year's financial statements and zero otherwise	+/-	Pong and Whittington (1994), Craswell and Francis (1999), Hay, Knechel and Wong (2006)
LV_{t-1}	Leverage ratio (total debt / total assets) as in the previous year-end financial statements	+	Simunic, (1980), Hay, Knechel and Wong (2006), Hay(2013)
LQ_{t-1}	Quick ratio of the client company calculated as (current assets-inventory) / current liabilities from the previous year's financial statements	-	Simunic, (1980), Hay, Knechel and Wong (2006), Hay(2013)
AO_{t-1}	Dummy variable coded as one if the auditor's opinion for the previous year's disclosed audit report includes qualification, disclaimer or adverse opinion. Nonqualified audit reports are coded as zero	+	Simunic (1980), Hay, Knechel and Wong (2006), Larcker and Richardson (2004), Kwon, Lim and Simnett (2014), Hay (2013)
SGR_t	Dummy variable, coded as one if the financial statements' notes contain segment reporting and zero otherwise	+	Hay, Knechel and Wong (2006), Hay (2013)
$SQRCMPLX_t$	Square root of number of consolidated subsidiaries, joint ventures and associates of the company stated in the financial statement notes	+	Simunic (1980), Hackenbrack and Knechel (1997), Cobbin (2002), Hay, Knechel and Wong (2006)
IND_t	Dummy variable coded as one if the company's industry is mining; electricity gas and water; chemicals petroleum, rubber and plastic products; or transportation, telecommunications and storage industries, as classified by BIST, and zero otherwise.	+/-	Hay, Knechel and Wong (2006), Hay (2013), Kwon, Lim and Simnett (2014), Cameran et al. (2013), Anderson and Zeghal (1994)

Table 8 (cont'd)

$FSHRate_t$	Ownership rate of the foreign shareholder	+/-	Kamran and Mahendra (2005), Niemi (2005), Desender et al. (2013).
OWN_t	Ownership rate of the biggest shareholder	+/-	Chan, Ezzamel and Gwilliam (1993); Hay, Knechel and Wong (2006); Hay, Knechel and Ling (2008); Khan, Mahboob and Javed (2011)
GRP_t	Dummy variable coded as one if the company is a member of big conglomerates of Turkey, and zero otherwise	+/-	Yurtoğlu (2003), Casteralla et al. (2004), Hay, Knechel and Ling (2008)
$ACHN_t$	Dummy variable coded as one if relevant year is the company's first engagement with the auditor and zero if the previous year's auditor continues to render services	+/-	Arruñada and Paz-Ares (1997), SDA Bocconi (2002), Cameran, Vincenzo and Merlotti (2005), Cameran et al. (2013), Ewelt-Knauer, Gold and Pott (2013), Kwon, Lim and Simnett (2014), Appah and Keretu (2011), Simon and Francis, (1988), Kraub, Quosigk and Zülch, (2014), Hay, Knechel and Wong (2006).
$EXTR_t$	Indicator variable coded as one if the audit services include differentiated services, such as providing additional English reports or preparing consolidation package for parent entity	+	Hay, Knechel and Wong (2006)
AT_t	Dummy variable coded as one if transportation and accommodation costs relating to audit services are the responsibility of customer, and zero if these costs are covered by the contract	-	

4.3 Data Collection and Sample Selection

4.3.1 Data Collection

This study covers companies listed on BIST, the only stock exchange in Turkey. The markets of BIST comprise the National Market, the Second National Market, the Collective Product Market and the Watch List Market. Two new markets have recently been introduced to the structure: the Free Trade Platform and the Emerging Companies Market. Listed companies in the Collective Product Market have not been included in the sample due to their distinct feature of covering only collective investment schemes. Similarly, listed companies which have been transformed from investment trusts are not included in the sample. Furthermore, Free Trade

Market companies are not incorporated in this study, since this market segment specialises in offering a trading venue for previously illiquid shares of publicly-held companies. Most of these companies have a prior relationship with the auditor in a different form, since the financial reporting standards specific to these companies (CMB Communiqué Serial XI, No. 11) are simpler than the requirements of IFRS. Furthermore, with respect to the uniqueness of their situation, foreign companies listed on BIST are also excluded from the sample.

Similarly to several previous studies identified in the literature (Niemi, 2005; Leventis and Caramanis, 2005; Kwon, Lim and Simnett 2014), financial institutions, banks, leasing and factoring companies, customer finance companies, intermediary institutions and insurance companies traded on BIST are eliminated from the sample due to their dissimilar financial statement formats and regulatory environment. All financial institutions except investment companies function under the authority of a different regulatory agency, BRSA, which influences both the format and structure of financial statements that these companies disclose and the regulatory audit environment with which they are obliged to comply.

This study investigates audit fee and effort (hour) data for the period 2008 to 2012. There are two main reasons for the selection of this period. The first is the data constraint stemming from the availability of data submitted to CMB. The second is the amendments experienced in the financial reporting environment for annual financial statements after 2012. These modifications include both the introduction of a new financial reporting format starting from 1 January 2013 and an additional audit burden effective from 2013 attributable to the provisions of the New Turkish Commercial Code, which enforce audit of annual reports as well as the financial reports of companies. Furthermore, a transformation in the allocation policy of audit costs within group companies may be expected due to the implementation of the New Turkish Commercial Code's statutory audit principles in 2013 for certain companies exceeding the determined thresholds.

Audit fee and effort (hours) data were collected by reviewing formal audit contracts submitted to CMB, with the written consent of CMB and with the proviso of not revealing any company-specific audit fee or effort data in the study.

Distinguishing features of 2008 financial statement audits were taken into consideration during the review of audit contracts. For instance, CMB required that exchange-traded companies which were transforming their applied accounting standards from annulled Communiqué Serial XI, No. 25 to original IAS/IFRS should have all their interim reports (including three-

and nine-month reports) reviewed by an auditor, while other exchange-traded companies were instead obliged to have only their half-yearly reports reviewed by an auditor. Thus, this review process tried, where possible, to identify separately from the audit contracts the audit fee and hours data for these quarterly financial statements. Some audit firms explicitly stated in their original contract that all interim periods would be reviewed, whereas others preferred to make addenda to the original contracts indicating the supplementary services provided for three- and nine-month interim reports. As mentioned above, the impact of this variation in audit service coverage is controlled for by constructing an extra control variable (FR).

It was realised during the audit contract review process that the names of the customer's subsidiaries, joint ventures or associates to be covered by the contracted audit services are specifically indicated in some audit contracts. However, it was observed that some audit contracts do not explicitly specify the treatment of consolidated subsidiaries, joint ventures and associates for services rendered. To ensure the accuracy of the data collected, additional data were collected from the relevant auditors. These additional efforts ensured the collection of coherent audit fee and hours data free of any inconsistencies which might arise due to different approaches to contracts.

Furthermore, it was observed during the data collection process that audit contracts submitted to CMB might encompass additional services to the client companies, for example preparing additional English audit reports, providing a single audit report for a consolidated subsidiary, controlling the financial covenants of a credit letter signed by the client company, arranging special reports to support parent companies' consolidation processes, and educating managers and accounting personnel about IAS/IFRS. It is acknowledged that these extra services may have some impact on both the negotiated audit service price and planned audit effort. Accordingly, extra services specified in the contracts were noted during the review process and incorporated in the models with a designated variable to control their influence on audit fee and effort.

In addition, the currency of the agreed price in the contract may differ in practice. While some audit firms agree their fee denominated in domestic currency, others prefer to contract in foreign currencies to protect their revenue against currency fluctuations. Commonly-used foreign currencies in the contracts are US Dollars and Euros. To procure a common currency basis for audit fee data, all foreign currency-denominated audit fees were converted to Turkish Lira by applying the year-end exchange rates of the Central Bank of Turkey. Similarly, given

that in practice some audit contracts denominated in Turkish Lira contain alternative clauses for fee adjustments according to certain indices, audit fees for multi-year contracts were converted by applying the index specified in these contracts.

The distance of the company's headquarters from the audit firm's offices and the facilities offered at the company premises may also influence the auditor's expenses. It is realised that anticipated expenditure such as accommodation, lunch and transfer costs may be reimbursed from the client or incorporated into the total audit fee. Accordingly, it is detected that some audit contracts explicitly express the distribution methodology for this expenditure between contracting parties. One alternative is to issue additional bills to the client companies to compensate for these incurred expenses. Another is to agree on a total fee containing all the relevant expenses. Contract clauses defining the policies for handling these additional costs were specifically identified during the contract review process, leading to the construction of a separate data figure in order to protect inferences of the study from these kinds of contractual dissimilarity.

Financial statement figures used in the study, such as inventory, total receivables and total assets, were retrieved from FINNET, a private data provider specialising in Turkish financial markets.

The percentage of company shares held by the largest shareholder, foreign ownership rate, number of subsidiaries, joint ventures and associates consolidated in the client companies' financial statements and their location(s), segment reporting, name of the audit partner, name of the audit firm, and type of audit view were all collected from the audit reports and financial statement notes of the listed companies. The relevant audit reports and financial statements were downloaded from BIST's website for the period 2007 to 2008 and from PDP's website for the period 2009 to 2012.

BIST's industry codes were employed to determine the industry classification of auditees. These codes were gathered from BIST annual reports for the years 2007 to 2011 and from the BIST website for 2012.

4.3.2 Sample Selection

As revealed by Yurtoğlu (2003) and Demirağ and Serter (2003), and observed during the data collection process for this study, indirect ownership and pyramidal structures are common among BIST-traded companies. Furthermore, some large holding companies, such as Hacı

Ömer Sabancı Holding A.Ş., consolidate banks and other financial institutions, which are excluded from this study on the basis of regulatory differences. Schelleman and Kenchel (2010) do not cover holding companies because of cooperation in the audit operations of these companies with different offices of the same audit firm or other audit firms. Ezzamel, Gwilliam and Holland (1996) exclude subsidiaries from their sample. In order to eliminate the confounding effect of double representation of assets, audit fee and effort data, holding companies and other BIST-traded companies consolidating another exchange-traded entity have been eliminated from this dataset.

Moreover, some audit firms had been delisted from CMB's list of audit firms authorised to render services in capital markets. As a result, it was not possible to obtain additional information from these audit firms to verify the coverage of their audit contract. Similarly, companies audited by these delisted audit firms were eliminated from the sample. In some cases, additional information collected from the audit firm highlighted that consolidated subsidiaries were audited by another auditor. In such circumstances, the relevant companies were removed from the sample because, even with the researcher's best efforts, it may not have been possible to acquire complementary data to obtain full audit fee/effort data, or the information obtained might have altered the consistency of the dataset if the subsidiary was audited by a different type of auditor (e.g. parent company audited by a Big Four auditor but subsidiary audited by a non-Big Four auditor). A small number of listed client companies was not included in the analysis due to missing data for various reasons, such as being unable to obtain financial statement figures or audit contracts.

Furthermore, analysis of residuals, as in Bradbury and Redmayne (2014), resulted in the elimination of outliers using Cook's distances.[32] Details of the full sample and eliminations are summarised in Table 9 by model and year.

[32] Cook's distances are measures which consider the influence of a case on the fitted value of an expected dependent variable (Kutner et al., 2005). A stepwise regression analysis was repeated separately for all sample years following the inclusion of omitted outliers, but is not provided in this study. In general, no major discrepancies are observed, with only minor changes in R^2 and significance levels of one or two variables not sufiicient to eliminate them from iterations of stepwise regression. Furthermore, in the 2012 sample the outcome of the regression for the fee model shows the LQ variable as significant, with p values higher than 0.01, and the same conclusion is experienced in the audit effort model for the AT variable in the 2012 sample. The other two differences in comparing the results of the samples without outliers were that the LOSS variable lost its significance in the 2008 fee model, and in the 2009 fee model FSHRate lost its significance and was replaced by the EXTR variable.

Table 9: Sample Selection										
	2008 Audit Fee Model Sample	**2008 Audit Effort Model Sample**	**2009 Audit Fee Model Sample**	**2009 Audit Effort Model Sample**	**2010 Audit Fee Model Sample**	**2010 Audit Effort Model Sample**	**2011 Audit Fee Model Sample**	**2011 Audit Effort Model Sample**	**2012 Audit Fee Model Sample**	**2012 Audit Effort Model Sample**
Number of Traded Companies	238	238	238	238	250	250	270	270	291	291
Asset Total of Traded Companies (Million TL)	382,765	382,765	404,902	404,902	470,882	470,882	559,817	559,817	628,523	628,523
Sample Construction										
-Financial Institution or other Traded Company Consolidated	22	22	20	20	26	26	26	26	29	29
-Subsidiary of the Company Audited by Another Auditor Type	4	4	11	11	6	6	10	10	7	7
-Delisted Auditor	6	6	7	7	5	5	6	6	3	3
-Miscellaneous Missing Data	3	6	3	4	2	3	4	5	1	2
-Outliers	3	3	9	7	3	4	3	5	5	3
Companies Included in the Sample	200	197	188	189	208	206	221	218	246	247
Sample to Population	84%	83%	79%	79%	83%	82%	82%	81%	85%	85%
Distribution of Sample										
Big Four	98	95	91	92	108	108	114	115	120	122
Other	102	102	97	97	100	98	107	103	126	125
Asset Total of Sample Companies (Million TL)	156,657	131,714	117,196	115,189	166,028	161,279	182,255	187,973	198,135	212,658
Asset Total of Sample to Population	41%	34%	29%	28%	35%	34%	33%	34%	32%	34%

4.4 Descriptive Statistics of the Sample

Simunic (1980) proposes a significant non-linear relationship between audit fee data and total assets. Furthermore, similarly to some previous studies (e.g. Chan, Ezzamel and Gwilliam, 1993) the skewness and kurtosis statistics of the variables in this study show differences from normal distribution. Following Simunic's (1980) approach, rather than using raw values of total fee and total asset data, analysis is conducted on the transformed form of these variables, taking their natural logarithms. A similar approach is followed for audit effort data, following other studies such as Bedard and Johnstone (2004), Schelleman and Knechel (2010), Cameran et al. (2013) and Kwon, Lim and Simnett (2014). In addition, the model is run on the square roots of the number of consolidated subsidiaries, joint ventures and associates (CMPLX), similarly to previous studies mentioned by Cobbin (2002). Another common transformation methodology accepted in the literature is natural logarithm transformation (Beattie et al., 2001). Because the CMPLX data in this study also comprise individual listed corporations with no subsidiary, it is not possible to apply the alternative natural logarithm transformation.

Descriptive statistics for variables other than dummy variables in the audit fee and effort models (including both raw and transformed figures) are presented in Tables 10 to 19. The minimum and maximum figures for audit fee and effort data are not provided in these tables to ensure that no client-specific information is revealed.

Analysis of the sample reveals that the highest mean number for audit fee data is observed for the year 2008. Similarly, a higher audit effort mean is observed in 2008 than in other analysed periods. Although there are size and composition differences in these samples, it is still conjectured that additional audit review requirements for interim reports imposed by the CMB may have caused higher observed average audit fees and effort for 2008, in line with the extra services provided by auditors. On the other hand, a reduction in the mean audit fee is detected in 2010, which may be related to the structural changes experienced in the Turkish audit market emanating from enforced mandatory audit firm rotation in the period. In contrast, the mean audit effort is slightly greater in 2010 than in 2009. Correspondingly, when evaluated with the auditor change data presented in Table 6 in Chapter Three, this observation may be interpreted as an impact of the escalation of new audit engagements due to customer changes in that period. This is consistent with regulators' arguments, as stated in Ewelt-Knauer, Gold and Pott (2013), that greater efforts should be made to understand the business

and organisation of a new client company. In addition, the effect of auditor changes on mean audit fee may be assessed as an indicator of offering audit fee discounts to clients.

A high standard deviation for total assets in the tabulated descriptive statistics indicates scale differences in this sample, similarly to Hay, Knechel and Ling (2008). The sample contains individual client companies as well as large ones with several consolidated subsidiaries, joint ventures and associates, with approximately three consolidated firms on average for each company. The mean leverage of client companies ranges from 51 to 60 per cent during the period of the sample. The ratio of inventory and receivables to total assets fluctuates from zero to 0.93 among client firms, but the mean of this sample is quite stable for all sample periods, emphasising the importance of controlling for differences in industry characteristics in these models. Up to 99 per cent foreign ownership is observed, revealing lower liquidity in the shares of some client companies. A gradual decline from 13.53 to 10.26 per cent in the mean of foreign ownership rates is detected in the audit fee sample period. A similar reduction is observed in the rate of foreign ownership in the audit effort model. Mean levels of more than 50 per cent ownership for the largest shareholders are a reflection of the concentrated ownership structure of Turkish listed companies and are consistent with the conclusions of previous studies (e.g. Demirağ and Serter, 2003; Yurtoğlu, 2003).

The Pearson correlation matrix for the dependent and independent variables of the audit fee and effort models are reported in Tables 20 to 29 to assess patterns of association between variables. The level of correlation between dependent variables of the audit fee model (LNFEE) and the audit effort model (LNHR) are also presented in the audit effort model correlation tables (Tables 21, 23, 25, 27 and 29). As expected, a positive significant correlation ($p=0.01$) is detected between the two dependent variables, ranging from 0.883 to 0.919. This is perceived as a reflection of the consistency of the link between the two dependent variables over the sample periods. Furthermore, less than perfect correlation between two predicted variables in the audit effort and fee models may indicate that their variations may be triggered by different factors.

The natural logarithm of total assets (LNTAS), Big Four (Big4), square root of the number of consolidated firms (SQRCMPLX) and extra services agreed in the audit contract (EXTR) presents the highest positive correlation with both dependent variables in the model. The

maximum significant positive correlation (p=0.01) is measured in 2011 between the audit effort proxy (LNHR) and total assets (LNTAS) as 0.759. The audit fee proxy (LNFEE) and the proxy for size of the client company (LNTAS) have the highest correlation (0.757) in 2012.

Correlation between predictor variables, for instance between total assets and each of Big Four, number of consolidated firms and extra services proxies, between Big Four and the surrogate of extra services of auditors (EXTR), between the group proxy (GRP) and Big Four (Big4), between foreign ownership and extra services surrogates, and similarly between the two complexity proxies (SQRCMPLX and SGR) raise multicollinearity concerns. The maximum recorded significant correlation is between Big4 and extra services provided by auditors (EXTR), at 0.731 in the Pearson correlation matrix. Gujarati (2004) suggests that a correlation of less than 0.80 between predictor variables does not cause serious multicollinearity. VIF values are provided along with the cross-sectional results in Tables 30 to 39 as well.

The significant collinearity between the extra service proxy and Big Four auditor is consistent with the literature, expecting that price premiums relate to the technical capability and industry specialisation offered by auditors (Hoang, 2013). The positive correlation of the extra service dummy with the foreign ownership level variable is also plausible, since the extra service variable (EXTR) is designed to represent the service of preparing supplementary English audit reports and reviewing consolidation packages of the parent company.

The industry of the listed company (IND) displays significant correlation at the 0.01 level with the dependent variables of the models, and in some periods with the size proxy, risk proxies, such as ratio of receivables and inventory to total assets (INVAR), leverage (LV) and liquidity (LQ), and complexity variables (SGR and SQRCMPLX). Several industries are represented in the sample; accordingly, their different risk levels, business structures and size features may be inferred as reasons for this observation.

It should especially be noted here that, across the investigated periods, low correlation is consistently calculated between dependent variables and selected risk indicators of the LV, INVAR, LQ, LOSS and AO variables.

Analysis of the group proxy (GRP) reveals that there is a positive correlation between this variable and the proxies for company size (LNTAS) and Big Four auditor (Big4). A noticeable significantly negative correlation between the GRP variable and some of the risk indicators, such as LV, LOSS and AO, is compatible with the discussions noted in the model development process regarding the lower risk of group companies. However, the significant negative association with the AO proxy, which represents audit opinions other than qualified ones, may warrant further examination to inform concerns over the independence of auditors. The financial health, corporate governance and internal control qualities of these group companies may be legitimate grounds for a lower number of qualified audit reports. However, greater attention should be given by regulators to the relationship between the negotiation power of these group companies and the possibility of having a qualified opinion, in order to ensure the independence of auditors.

A significant (p=0.01) positive correlation of Big4 with the foreign ownership variable in all periods is consistent with the foreign shareholders' approach to contracting with the same Big Four auditor in several countries. The necessity for supplementary services, such as reporting in English and providing reports for the foreign parent, may also lead to the selection of a Big Four auditor. These correlation figures emphasise the possibility of lack of engagement of a domestic audit firm with a company controlled by a foreign owner.

Lastly, it should be stated here that the auditor change variable (ACHN) is negatively correlated with both audit effort and fee surrogates during all investigated periods except the 2010 audit effort sample. A negative association of the audit fee and auditor change variables is inconsistent with the expectation in the literature of an increase in fees in the case of auditor change due to the necessary extra effort required to learn about the business and organisation of the new client (Cameran, Vincenzo and Merlotti, 2005; Ewelt-Knauer, Gold and Pott, 2013). However, it is in line with suggestions that, especially in the case of mandatory audit firm rotation, price competition in the market (Ewelt-Knauer, Gold and Pott, 2013) and price discounts offered to attract new customers (Cameran et al., 2013) may be observed. Although it is insignificant, a positive correlation is obtained between the auditor change proxy and the dependent variable in the 2010 audit effort model, which is consistent with the necessary greater audit effort in the case of first engagements stated in the literature (Cameran et al., 2013).

The association between auditor changes and size of the client (LNTAS) is different in 2010 from the other years. Although it is not significant in some periods, LNTAS commonly presents a negative association with auditor change, which might be assessed as an indication of fewer auditor switches in larger clients. However, the sign of this association is transformed to a positive one in 2010 for both audit models, still being insignificant. This observation may be a reflection of the greater number of auditor changes in large listed companies as a result of regulator interference in the audit market by the enforced audit firm rotation policy in that year.

4.5 Results and Analysis

The model is tested primarily using multiple regression with SPSS with a stepwise regression process. The stepwise regression method is an automatic search procedure that develops the best subset of indicator variables (Kutner et al., 2005). This process is used to increase the effectiveness of the model for future studies and analysis. This approach may contribute to future studies which, like that by Bradbury and Redmayne (2014), have to construct a parsimonious audit fee/effort model due to a small sample size.

Cross-sectional results of the stepwise regression for 2008 to 2012 for both audit fee and effort models are reported in Tables 30 to 39.

The coefficients of proxies for customer size (LNTAS), Big Four auditor (Big4) and number of consolidated subsidiaries, joint ventures and associates (SQRCMPLX) are found to be significant in all cross-sectional analyses for both models. Coefficients of these indicator variables all reflect positive signs for both audit effort and fee models, as expected and suggested in the literature (Hay, Knechel and Wong, 2006; Hay, 2013; Ulusoy Tokgöz, 2010). Thus, size of client and number of consolidated companies by these clients are two key factors in the determination of both audit fees charged and audit effort planned in Turkish listed companies. Larger and more complex listed companies have to pay higher audit fees, and more audit hours have to be spent on these companies. A significant Big4 proxy is proof of a Big Four auditor premium for Turkish companies, similarly to several other countries as the literature acknowledges (Simunic, 1980; Hay, Knechel and Wong, 2006; Cobbin, 2002; Kamran and Mahendra, 2005). Furthermore, the positive relationship revealed between the Big Four proxy and audit effort, in line with Kwon, Lim and Simnett (2014) and Palmrose

(1986), may provide evidence for discussions over whether Big Four audit fee premiums are attributable to monopoly pricing or quality (Palmrose, 1986). This finding suggests that the Big Four premium relates to quality improvements expected in financial reporting stemming from the greater efforts made by Big Four auditors to safeguard quality in audits, which is similar to Palmrose's (1986) conclusions. The contribution of a proven relationship with previous empirical studies on audit effort is essential, since most previous audit effort studies have been based on proprietary audit hour data provided by Big Four auditors, so it was not possible for these studies to test variations in effort between the Big Four and other auditors.

A review of all quarterly financial reports by auditors is incorporated in the model with a dummy variable (FR), to control for the impact of mandatory quarterly audit requirements imposed by CMB in 2008. However, it was realised during the audit contract review that some sample companies require their quarterly financial statements to be reviewed by the auditor, even though it is not mandatorily imposed by regulation. If they have not already recruited enough personnel for IAS/IFRS adoption, listed companies may prefer to ask for the assistance of their contracted auditors in the compliance of interim financial reports. Furthermore, foreign parents of traded companies may require all interim financial statements of their Turkish subsidiaries to be reviewed by the auditor due to either different regulatory bases or advanced governance procedures. As expected, it is found that the coefficient of the FR variable is significant and positive in the 2008 cross-section for both audit fee and effort models (for both models p=0.000). In addition, in all other cross-sectional periods of the study, the FR variable is found to be significant and shows a positive association with both audit fee and effort, consistent with the previous literature (Palmrose, 1986; Davidson and Gist, 1996). This result exposes both the cost impact of additional audit requirements imposed by regulators and the positive relationship of audit fee and effort with differentiated service features of auditors.

Collection of the data directly from audit contracts allowed the detection of other supplementary services rendered by auditors, which distinguishes this study from other audit fee and effort studies which have been based on disclosed information. Therefore, the surrogate of the coefficients of extra audit-related services (EXTR) is found to be significant in 2008 for both audit fee and effort models (p=0.000 and p=0.001 respectively), and in 2009 and 2010 for the audit effort model (p=0.001 and p=0.004 respectively). This outcome

emphasises the importance of taking into account service differentials offered by auditors, especially in future audit effort studies.

Another complexity proxy in these models, indicating whether any segment reporting information is provided in the notes of listed companies' financial statements (SGR), presents significant positive coefficients (p=0.005, p=0.000, p=0.004 respectively), as expected, for the audit effort model in 2008, 2009 and 2010, similarly to the literature (Hay, Knechel and Wong, 2006; Hay, 2013). It is revealed that not only the number of consolidated companies, but also diversified products, customers and geographical functions of the customer company may increase variations in the service hours of auditors. Furthermore, the significance of this proxy verifies only in the audit effort model that a factor may generate different variations in audit effort and price decisions, and stresses the importance of concentrating on the evaluation of these different indicators in future studies.

Some independent variables – ownership rate of the major shareholder (OWN), industry of the traded company (IND), leverage (LV), audit view (AO), liquidity (LQ), and ratio of accounts receivable and inventory total to total assets (INVAR) – are excluded from the stepwise regression in all iterations for both audit fee and audit effort models. Most of these eliminated variables are selected indicators for the corporate governance structures and risk of companies. The only risk variable found to be significant in 2008 (p=0.029) as a determinant of the audit fee decision is the LOSS proxy, which represents the occurrence of loss in customer companies' previous year's financial statements. Results adjusted for heteroscedasticity, which are presented in Appendix C, also show the LQ and LV variables as significant, with a p value of 0.0392 and 0.0931 for the 2012 audit effort model. Similarly, a corporate governance feature, the FSHRate variable, indicating the rate of foreign ownership, is entered into the outcome of stepwise regression iterations only for the 2009 audit fee model.

Another corporate governance indicator verified to be significant in the stepwise regression process is a dummy variable (GRP) designed to reveal group affiliation with one of the large business groups in Turkey. Although the GRP proxy presents a positive significant correlation with dependent variables for both audit effort and fee, according to the multiple regression results its coefficients are significant and negative for the audit fee model in 2008

and 2012 (p=0.000 and p=0.007 respectively).[33] In line with the explanation stated in the model development process, this result may be concluded to reflect a group discount in audit pricing decisions. The reason for the discount may relate to the relatively good internal control practices of large groups, which allows efficient information transmission and lower risk for audit, which it is not possible to test due to data constraints regarding the quality of companies' internal controls. Another conjectured reason for this result is the possibility of providing additional audit services to other group companies as a result of a contract with a large conglomerate member. Furthermore, this assessment of group discount is consistent with Casteralla et al. (2004), who provide proof of large clients' discounts in audit fees with a focus on industry specialisation. Furthermore, Karim and Hasan (2012) claim that in Bangladesh various large group member companies tend to contract with the same audit firm across industries. They also propose that, with the intention of contracting with these groups, auditors may offer lower fees or the business group may impose strong bargaining power. However, the study also states that, due to the small number of group companies in their sample, no statistical comparison can be made between group companies and others. Future studies should focus more on group engagement policies and the impact of bargaining power on audit fees.

Therefore, in general it is concluded that most of the selected risk and governance proxies explored are insignificant in explaining variations in both audit service production and pricing decisions. Lack of explanatory power for the selected risk attributes of the client is contrary to the general findings of the previous literature (Hay, Knechel and Wong, 2006; Hay, 2013). However, it is consistent with some studies from emerging countries. Similarly, in a study of Bangladeshi, Indian and Pakistani firms, Kamran and Mahendra (2005) reveal the insignificance of a company's financial position as an indicator of the audit fee and assess this finding as a lack of attention to specific characteristics by the client company in adopting a proper, company-specific audit process. Karim and Hasan (2012) similarly obtained no explanatory power for selected risk factors in a sample of Bangladeshi companies.

[33] White's heteroscedasticty-adjusted results obtained in 2008 present significant negative coefficients (p=0.0041), in 2012 the GRP variable loses its significance after heteroscedasticity adjustments (p=0.1324).

A prominent result of this model is the proof obtained for a lowballing effect in audit pricing of first engagements in both 2008 and 2010, as reflected by the negative significant coefficient of the ACHN proxy coded to indicate auditor changes (p=0.000 for both years).[34] The coefficients for ACHN are also found to be significant with a negative sign (p=0.005 and p=0.002 respectively)[35] in 2008 and 2009 for the audit effort model. Thus, it is verified that not only audit pricing but mean effort spent on audit is influenced by first engagements in 2008. On the other hand, changes in the contractual audit relationship in 2009 seem not to have had any impact on audit price but diminished audit effort. The cause of this finding may be enlightened by future studies with a focus on types of switching. For instance, changing from any Big Four auditor to another type may decrease both price and effort in first engagements, as suggested by the findings of this study for Big Four premiums and higher audit hours spent by Big Four auditors. However, client exchanges between similar category auditors may not have any effect on audit price negotiations but may still cause variations in planned audit hours due to quality differences between these firms. However, contrary to the lowballing evidenced in audit prices in 2010, auditor switches in that year show no explanatory power for planned audit hours, which is contradictory to the cost rise in first engagements expected in the literature (Cameran, Vincenzo and Merlotti, 2005; Ewelt-Knauer, Gold and Pott, 2013). This also contradicts Kwon, Lim and Simnett's (2014) finding that audit service time rises in post-mandatory rotation periods, attributable to familiarising themselves with new clients and sustaining the audit quality level of the previous auditor. Furthermore, Cameran et al. (2013) present proof of greater efforts in first engagements in a setting in which a mandatory rotation policy is enforced. Thus, the result obtained in this study conflicts with previous research, and concerns raised about audit quality stemming from a decline in audit prices and lack of adequate response to auditor changes in the adoption of planned audit hours should be further investigated in future studies.

[34] White's heteroscedasticity-adjusted results obtained in 2008 and 2010 also present significant negative coefficients (p=0.0013 and p=0.0003 respectively).

[35] White's heteroscedasticity-adjusted results obtained in 2008 and 2009 also present significant negative coefficients (p=0.0092 and p=0.00118 respectively).

The lowballing experienced in 2010 is especially important, since more than half of the audit contracts exchanged between auditors were due mainly to the mandatory audit rotation practice, as suggested by Table 6 earlier. However, the ACHN proxy embodies all first engagements – not only the switching of auditors by already-listed companies but also first engagements due to initial public offerings. As a sensitivity check, the ACHN variable was redesigned by eliminating the impact of both initial public offerings and voluntary changes. Voluntary change is defined as a shift in auditor when the auditor tenure is less than seven years at the time of the change, which is the maximum contractual term, forcing auditor change according to the mandatory audit rule. There is still a lowballing in the audit fee model in 2010, with a p value of 0.003, which may be inferred as proof of price competition in the market due to mandatory audit rotation.

According to the researcher's current knowledge, among only two related studies, Cameran et al. (2013) also detect a discount in first engagements following the introduction of mandatory rotation in Italy, while Kwon, Lim and Simnett (2014) suggest an extended influence of mandatory rotation policy on audit fees – higher price levels are observed in the post-regulatory era, yet still at lower levels than for post-regulatory continuing contracts. The results regarding the specific implications of mandatory audit firm rotation derived from this empirical study of actual practice in a different country setting contribute both to future studies in the area and policy-making alternatives regarding mandatory audit firm rotation. This result is significant, since Cameran et al. (2013) state that, due to the size of the audit market, around 30 listed corporations change their auditors mandatorily every year; thus, it is easier for the Italian market to respond to these changes without any distraction in the market. They then infer the possible consequences for the US market, given the vast size of the US audit market: if an audit firm rotation rule were to become effective, a greater number of audit contracts would be transferred between auditors. They assume that mandatory rotation experienced on such a large scale might create considerable disruption in the US market, causing reorganisation of audit offices, auditor transfers and loss of local knowledge. Thus, proof of the impact of a forced rotation focused on a single year, as in this study of Turkey, in which more than half of audit contracts were renegotiated, may provide empirical support for audit markets in which a greater volume of changes is expected in case of a forced rotation.

Contrary to expectations, the proxy reflecting the sharing of audit-related costs (AT) between audit firm and customer is found to be significant with a positive coefficient only in 2011 for both audit fee model (p=0.002) and audit effort model (p=0.036).

The lowest Adj. R^2 figure is experienced in 2011 for the audit fee model (0.659) and in 2012 for the audit effort model (0.755). The highest Adj. R^2 values are realised in 2008 for the audit fee model (0.747) and in 2011 for the audit effort model (0.789). These Adj. R^2 results are slightly lower than the outcomes for developed countries (Chan, Ezzamel and Gwilliam, 1993; Firth, 2002; Ittonen and Peni, 2012; Fung, Gul and Krishnan, 2012; Hay, 2013); however, they explain variations in audit fee and efforts more than some emerging market studies (e.g. Kamran and Mahendra, 2005; Karim and Hasan, 2012). It should be noted here that the Adj. R^2 for audit effort model are higher than Cameran et al.'s (2013) results for pooled data analysis with no fixed effect.

F values for all tested models are significant, as stated in the cross-sectional results in Tables 30 to 39.

With regard to normality tests, Shapiro-Wilks (SW) is assessed and no notable problems of normality are found. In addition, a plotted graph of predicted values against residuals depicts concerns over the heteroscedasticity of residuals. Therefore, the Breusch-Pagan-Godfrey (BPG) test of heteroscedasticity of residuals was run by Eviews for the full model, and White's heteroscedasticity-adjusted results are provided in Appendix C for periods in which the BPG test is significant. The BPG test Obs*R-squared p values are 0. 0242 for the 2008 audit fee model, 0.0642 for the 2008 audit effort model, 0.0966 for the 2010 audit effort model, 0.0258 for the 2011 audit fee model and 0.0000 for the 2012 audit effort model. It should be noted that the White's heteroscedasticity-adjusted results obtained from Eviews (Appendix C) generally confirm the stepwise regression results, with some modifications in the significance levels. Most notable difference is observed for 2012 audit effort model with additional rather lower but significant results for risk indicators LV (p=0.0931) and LQ (0.0392) and AT variable (p=0.0451).

4.6 Sensitivity Analysis

Taking into the consideration that the risk variables in these models demonstrate no major impact on variations in either audit effort or audit costs, contrary to the literature in developed

countries (Hay, Knechel and Wong, 2006; Hay, 2013), one of the risk surrogates, the Loss dummy variable, is replaced by another commonly-employed risk proxy for company profitability, return on total assets (ROA) (Hay, Knechel and Wong, 2006), to test the robustness of the results of this study to the variable specifications. With this modification, ROA is not found to be significant in 2008, as with the Loss proxy, and ROA is not entered into the outcomes of iterations of the stepwise regression in other cross-sections. Similarly, the Leverage proxy (LV) is exchanged with a new designated variable representing the ratio of paid capital to total equity, which is a measurement of financial distress according to Article 324 of the previous Turkish Commercial Code. However, no significant change is observed in the results.

Some of the sample listed companies have foreign subsidiaries. In the main audit fee and effort model, the total number of subsidiaries, joint ventures and associates is taken into account. Since the data source is limited to domestic audit firm contracts for audit effort and fee figures, these numbers may not contain audit fees paid to foreign audit firms or efforts spent by auditors of foreign subsidiaries. Considering this feature of the data, the related SQRCMPLX variable is disaggregated between foreign and domestic according to the centre of the subsidiaries, joint ventures and associates of the client company, resulting in a slight improvement in the untabulated results in terms of explanatory power. However, the influence on the audit fee and audit effort models are different in the results obtained. In 2008, only the proxy for the number of consolidated Turkish subsidiaries, joint ventures and associates (SQRCMPLXTR) appears to be significant for both audit effort and audit fee models. On the other hand, in other periods the audit fee model demonstrates significant results for both domestic (SQRCMPLXTR) and foreign (SQRCMPLXFR) proxies for the number of consolidated companies in the financial statements of the customer. However, only the number of consolidated domestic firms (SQRCMPLXTR) is found to be significant in explaining variations in audit hours. It is inferred from these results that audit effort planning in audit contracts may not encompass the auditing of foreign subsidiaries, joint ventures and associates. Thus, separating the figures for foreign and domestic companies may increase the efficiency of future audit fee and effort models.

In addition, alternative proxies are constructed and employed for governance proxies of the FSHRate and OWN variables to control their exposure to misrepresentation. The FSHRate

variable is substituted by a dummy variable (FSHD), which is coded as one if the company has a foreign shareholder and zero otherwise. The OWN indicator variable representing ownership percentage of the largest shareholder is replaced by a dummy variable, which is coded as one if the largest shareholder controls more than 50 per cent of the paid capital of the client company (OWND). These new configurations create no changes in the results of investigated periods, except in 2009 and 2012. In 2009, a preference for FSHD rather than FSHRate triggers a modification in the reported results of the audit fee model, leading to a loss in significance of the FSHRate variable and its replacement by the EXTR variable. In 2012, the coefficient of the OWND dummy is indicated as negatively signed with significant results (p=0.048). Furthermore, the FSHD variable is entered into the stepwise regression iteration along with the audit view proxy (AO), both presenting positive signs (p=0.031 and p=0.045 respectively) for the audit fee model. New companies entering the sample for the first time due to initial public offerings may play a role in the differences in 2012. Furthermore, replacement of the FSHRate variable with EXTR may be due to collinearity between these variables. Thus, introduction of corporate governance features to the audit fee and effort models requires attention regarding the association between corporate governance elements and other independent variables, and care should be given to the measurement of variables.

One alternative to mandatory audit firm rotation is audit partner rotation, which is accepted by CMB for certain companies and auditors as a substitute for audit firm rotation. The names of the partners of audit firms are disclosed with published audit reports in Turkey. This enabled audit partners' names to be gathered as additional data, and another dummy variable is coded to reflect cases of audit partner switches where the contractual relationship with the same audit firm continued. Contrary to the consequences of mandatory audit firm rotation, the audit partner change dummy (AU) has no impact on the results. However, it should be noted that it is impossible to structure the stated variable to reflect only mandatory changes of audit partners. Most of these audit partner changes may be due to voluntary changes relating to conditions such as reorganisation of the responsibilities of audit partners, newly-promoted audit partners, or voluntary termination of partner contracts for either job changes or private reasons such as maternity.

Likewise, the auditor change dummy (ACHN) in the models is replaced by the actual audit term (tenure) of the same audit firm (ATENURE), as suggested in the literature as an alternative variable construction (Hay, Knechel and Wong, 2006). Calculation of audit tenure starts from the 2001 audits due to data restrictions. In 2008, although the ACHN variable is found to be significant in the audit fee model, the coefficient of ATENURE shows no significance in the audit fee model. In contrast, ATENURE is found to be significant in the 2008 audit effort model, compatible with the ACHN variable in the base model. However, the sign and value of the related coefficient differs. The ATENURE variable presents a positively signed coefficient of 0.032 with a p value of 0.050. These results contradict Simunic's (1980) argument of learning through repeated performance, because they suggest that longer-tenure audit firms take more time to ensure the quality of audit than shorter-term auditors. However, this result complements the result of the base model indicating that auditor changes are associated with lower audit hours, which supports the concerns expressed by some auditors (Ewelt-Knauer, Gold and Pott, 2013) regarding mandatory audit rotation because of its vulnerability to more audit failures due to lack of knowledge about client-specific risk and processes. No change is experienced with this replacement in the audit fee model results in 2009. Similarly to 2008, in 2009 for the audit effort model, ATENURE is entered into the iterative results of the stepwise regression with a positive sign. This supports the argument that planned audit hours are revised with experience gained during the previous year's audit process. In 2010, the OLS results obtained are compatible with the base model findings: the ATENURE variable is presented as significant in the audit fee model with a positive sign. In the 2010 and 2011 audit effort models and in the 2012 audit effort and fee models, replacement of the variables generates no modifications in the obtained outcomes. On the other hand, in the 2011 audit fee model, although ACHN presents no statistical significance in explaining variations in audit fees, the ATENURE variable, which increases with the length of a relationship with the same customer company, is found to be significant, with a positive coefficient of 0.048 and a p value of 0.027. This may be interpreted as an indication of a rise in audit prices following discounts triggered by mandatory audit firm rotation in 2010 in continuing contracts. This result is consistent with the findings of Cameran et al. (2013) that indicate a subsequent increase in audit fees after the first engagement.

Several other industry definitions are tested as alternatives to observe the robustness of the results to industry specifications. The chemicals petroleum, rubber and plastic products industry is first eliminated from the previously-selected industries to construct a dummy variable to represent industries. Secondly, the manufacturing industry only is coded as one to explore its distinctive character compared with other industries. Thirdly, an IND dummy is constructed to indicate the technology and education, health, sports and other social services sectors. A final version of alternative industry categorisation is constructed to disaggregate emerging market companies, which are presented only in the samples for 2011 and 2012 and impose lesser disclosure requirements than for other firms. None of these alternative industry dummies present significance in either tested model. Thus, industry differences in the sample have no importance in the determination of audit pricing or audit effort planning.

4.7 Additional Analysis on Pooled Data

Both of the recent studies that focus on the effect of mandatory audit firm rotation (Cameran et al., 2013[36] and Kwon, Lim and Simnett, 2014), test their models on a pooled sample. For the purpose of allowing a better comparison of this study with the previous studies and testing the robustness of the results for different methodologies, the sample is pooled and the multiple regression analysis repeated using Eviews. The same models as presented above in Section 4.2, which are based on commonly-researched indicators in the previous literature, are tested by including year dummies and an interaction term to reflect price discounts and effort fluctuations specific to mandatory audit firm rotation in 2010. Furthermore, taking into account the assessments in the cross-sectional analysis, interactions of the auditor change variable (ACHN) are added for the year 2008 in the audit fee model and the year 2008 and 2009 in the audit effort model.(Niemi et al., 2014)

[36] Cameran et al. (2013) also employ firm fixed effects in their model. However, as stated in their study, when this specification is executed R^2 is higher, at 0.901, and other control variables in the model are insignificant. When both individual firm fixed effects and audit hours as a control variable are dropped from the model, control variables, especially proxies for selected risk and complexity, become significant in line with the literature, but the explanatory power of the model drops. Accordingly, the base audit fee model of the present study was re-run using random effect and a Haussman test (Frees, 2004) was employed. The results confirm a fixed effect; however, when individual company fixed effects are added to the base model, size of the client (LNTAS), which is the main factor in explanations of audit fee variations in the literature, loses its significance and adjusted R^2 surges to 0.908. A similar outcome is found for the audit effort model.

The tested models on pooled data are shown below.

Audit Fee Model

$$\mathbf{LNFEE_t} = \alpha+\beta_1 LNTAS_{t-1}+\beta_2 Big4_t+\beta_3 FR_t+\beta_4 INVAR_{t-1}+\beta_5 LOSS_{t-1}+\beta_6 LV_{t-1}+\beta_7 LQ_{t-1}+ \beta_8 AO_{t-1} + \beta_9 SGR_t+\beta_{10} SQRCMPLX_t +\beta_{11} IND_t+ \beta_{12} FSHRate_t + \beta_{13} OWN_t+ \beta_{14} GRP_t+ \beta_{15} ACHN_t+\beta_{16} EXTR_t+ \beta_{17} AT_t + \mathbf{\beta_{18}\, 2008^*\, ACHN_t} + \mathbf{\beta_{19}\, 2010^*\, ACHN_t} + \mathbf{year\ dummies} + \epsilon$$

Audit Effort Model

$$\mathbf{LNHR_t} = \alpha+\beta_1 LNTAS_{t-1}+\beta_2 Big4_t+\beta_3 FR_t+\beta_4 INVAR_{t-1}+\beta_5 LOSS_{t-1}+\beta_6 LV_{t-1}+\beta_7 LQ_{t-1}+ \beta_8 AO_{t-1} + \beta_9 SGR_t+\beta_{10} SQRCMPLXT_t +\beta_{11} IND_t+ \beta_{12} FSHRate_t + \beta_{13} OWN_t+ \beta_{14} GRP_t+ \beta_{15} ACHN_t+\beta_{16} EXTR_t+ \beta_{17} AT_t + \mathbf{\beta_{18}\, 2008^*\, ACHN_t} + \mathbf{\beta_{19}\, 2009^*\, ACHN_t} + \mathbf{\beta_{20}\, 2010^*\, ACHN_t} + \mathbf{year\ dummies} + \epsilon$$

Bradbury and Redmayne's (2014) results support using industry dummies in audit effort studies. However, Kwon, Lim and Simnett's (2014) choice of industry dummy was not adopted, and instead an industry predictor variable (IND) was retained in the models. No major changes in the results were expected stemming from this choice because neither the IND dummy nor several other alternative compositions of this variable employed in the cross-sectional regressions had any significant power in explaining variations of audit effort and price. The empirical findings of the pooled data in Tables 40 and 41 report adjusted standard errors clustered by cross-sections, following Cameran et al. (2013) and Kwon, Lim and Simnett (2014).

The results obtained from the pooled sample are generally compatible with the cross-sectional multiple regression results described in Section 4.5. Analysis of the pooled data reveals that size of auditee (LNTAS), characteristics of the auditor (Big4), extra audit reporting services (FR) and number of consolidated firms by the listed company (SQRCMPLX) are main factors in explaining variations in both audit fee and audit effort decisions.

In addition, similarly to the cross-sectional results, interactions of 2008 and 2010 with the auditor change variable are found to be significant, with negative coefficients and with p values of 0.0016 and 0.0056 respectively, for the audit fee model. These results confirm that, in some periods, auditor changes generate discounts in fees. As explained during the assessment of the cross-sectional results, the discounts observed in 2010 are especially important since they expose lowballing during the enforced mandatory audit firm rotation policy. However, consistent with the cross-sectional stepwise regression outcome, variations in audit effort do not reflect a relationship with auditor changes experienced in 2010. No notable impact is observed on planned audit hours relating to mandatory audit firm rotation, which is contrary to the expected start-up costs in first engagements suggested by the literature (Cameran, Vincenzo and Merlotti, 2005; Ewelt-Knauer, Gold and Pott, 2013). On the other hand, auditor changes are negatively associated with both audit effort and audit prices in 2008 (p=0.0016 for the audit fee model, p=0.0095 for the audit effort model). Furthermore, similarly to the cross-sectional results, the 2009*ACHN interaction term presents significant negative coefficients for the audit effort model. Since mandatory rotation enforces rotation after a seven-year contracting period, a new variable ACHN7 is created to designate auditor changes after a seven-year period in untabulated additional analysis. When both ACHN and ACHN7 variables and interaction terms, the 2010*ACHN7 and 2008*ACHN variables, are included in the base audit fee model, both 2010*ACHN7 and 2008*ACHN interaction terms are still found to be significant, with -0.397361 and -0.212144 coefficients and p values of 0.0472 and 0.0041 respectively. When the ACHN and ACHN7 dummy variables are removed and only the stated interaction terms are included in the audit fee model, unreported regression results show improvements in the statistical significance of both interaction terms (p value of 2010*ACHN7 = 0.0033, p value of 2008*ACHN = 0.0006).

The impact of an alternative policy option, audit partner rotation, is tested with the addition of a dummy variable representing partner changes. However, in both audit fee and audit effort models no significant impact is observed (p value for fee model = 0.6999, p value for effort model = 0.8087), similar to assesments provided in sensitivity analysis.

The explanatory power of segment reporting for planned audit hours is found to be temporary according to additional untabulated results with the inclusion of interaction terms with time dummies. The only observed variation from the cross-sectional regression outcome is in 2010

for the audit effort model, with a contradictory insignificant coefficient of the interaction of 2010*SGR (p = 0.8127).

Furthermore, two selected corporate governance indicators, group affiliation represented by a dummy variable (GRP) and foreign ownership rate (FSHRate), are significant only for the audit fee models. The addition of time and FSHRate interactions (2009*FSHRate) to the audit fee model demonstrates statistical significance for the interaction term (p= 0.0093), whereas the FSHRate variable loses its significance (p= 0.2047), which is compatible with the cross-sectional results. We are not able to confirm the same temporal impact detected in cross-sections for the GRP variable in untabulated additional analysis.

LOSS, which is the only risk variable observed to be significant in the 2008 cross-sectional analysis in the audit fee model, loses its significance in the results of the regression on pooled data. Furthermore, none of the other risk variables are reported as significant in the output of the audit fee model presented in Table 40.

Departing from the cross-sectional analysis for the audit effort model, it is reported that client companies with a lower level of liquidity, represented by a dummy (LQ), necessitate longer audit hours to render their audit services. However, the significance level of this risk variable is greater than 0.05 (p=0.091) in Table 41.

Analysis of the figures presented in Tables 40 and 41 reveal that extra services provided by the auditor (EXTR) and the proxy for allocation of transportation and accommodation expenses among parties (AT) are significant in both audit effort and audit fee models. Although these variables are proved to be significant for only some of the cross-sectional periods, no obvious period-specific impact is explored in the untabulated assessments carried out with the interaction terms composed of term dummies for the AT and EXTR variables for fee and effort models.

It is observed from the results presented in Tables 40 and 41 that selected indicators have an explanatory power of 0.70 for variations of audit fees, and 0.77 for fluctuations in audit hours. These figures coincide with the average explanatory power obtained in the cross-sectional results.

Taking into account the high correlation between some of the independent variables, following Ulusoy Tokgöz (2010) several additional interaction variables are introduced into the base models. Pong and Whittington (1994) assess various interaction terms in their audit fee model. One is Size*Big 8 firms. In addition, Aksu, Önder and Saatcioğlu (2007) state a tendency of larger firms to contract with Big Five auditors in the Turkish market. In line with Pong and Whittington's (1994) approach, a new interaction variable is added, LNTAS*Big4, to both models. However, the untabulated results demonstrate that this new indicator variable is insignificant with positive signs for both the audit fee model and the audit effort model (p values of 0.4355 and 0.7997 respectively). The positive association is consistent with Pong and Whittington (1994), who reveal that hiring a Big Four auditor is not less expensive for larger clients.

The proxy for the size of the client (LNTAS) also correlates highly with the complexity of the client proxy (SQRCMPLX). Accordingly, a new interaction term (LNTAS*CMPLX) is constructed, in line with Johnson, Walker and Westergaard (1995) and Ulusoy Tokgöz (2010), and the regression re-run on the pooled sample for both models. The LNTAS*CMPLX term is found to be significant with a p value of 0.0031 for the audit fee model in untabulated results, similarly to the cited literature. This result reflects that larger companies with more consolidated companies must pay additional fees for audit services. Nonetheless, the insignificant results for this interaction term for the audit effort model (p = 0.1357) do not support a similar proposition for the audit hours spent for this type of audit client.

The addition of the interaction term Big4*SQRCMPLX to the models allows an assessment of whether the larger audit firms offer lower audit fees to manage complexity issues encountered during the audit (Pong and Whittington, 1994). Similarly, the expertise of the larger auditors may assist them in responding more efficiently to the complexity of the client, using fewer audit hours. However, the insignificant results with positive coefficients observed for the audit fee model (coefficient = 0.011895, p = 0.8131) and the audit effort model (coefficient = 0.024988, p = 0.5916) in untabulated analysis contradict the afore-mentioned propositions.

Ruiz-Barbadillo, Gómez-Aguilar and Carrera (2009) add an interaction term of auditor rotation and reputation of the auditor to their model to capture the influence of mandatory audit firm rotation on Big Four auditors' decisions to issue a going concern opinion in their audit reports. Pong and Whittington (1994) claim to demonstrate that discounts in audit fees are lower if the newly-engaged audit firm is a large firm. They confirm this proposition with positive yet insignificant results observed for the interaction term of large audit firm and the change of auditor variable in their model. In contrast, the additional untabulated analysis of the present study indicates that the 2010*ACHN*Big4 interaction term added to the base audit fee model demonstrates negative insignificant coefficients (coefficient = -0.126523, p = 0.1509) in, which is attributable to the existence of lowballed audit fees by the Big Four audit firms in the mandatory audit firm rotation period. Moreover, the interaction term Big4*ACHN presents positive coefficients (0.025446) yet insignificant test statistics (p = 0.7086) for the audit effort model. The positive sign may be interpreted as indicating that auditor changes are associated with greater audit effort when Big Four audits are considered.

Considering the confirmed association between ownership structure and large audit firm in the literature (Aksu, Önder and Saatcioğlu, 2007; Karaibrahimoğlu, 2013), three further interaction terms are constructed to test the possible impact of endogeneity stemming from demand attributes (Hay, Knechel and Wong, 2006). Accordingly, the ownership rate of the largest shareholder (OWN), foreign shareholder's rate (FSHRate), group affiliation (GRP) and Big Four auditor choice (Big4) are interacted. None of these interaction terms are found to be significant for either model, except the Big4*FSHRate interaction term for the audit effort model. The negative coefficient (-0.005165) and p value of 0.0309 obtained for the Big4*FSHRate is interpreted as a necessity for less effort by Big Four auditors for firms having a foreign shareholder. This is contrary to Niemi's (2005) assertions that, due to the more complex structure stemming from additional reporting, currency transformations, language translation and contradictory interests between domestic subsidiary and foreign parent, greater audit effort is a necessity for foreign-controlled companies. It is conjectured here that the relatively well-developed internal audit control functions of these firms may lead to this result.

Moreover, given that the extra service surrogate for audit services (EXTR) includes preparing English audit reports and reviewing consolidation packages of foreign parents, the FSHRate

variable is interacted with the EXTR indicator variable and the models re-run. Unreported figures in the study present insignificant results for this interaction term for both models. Similarly, in line with suggestions that Big Four auditors may offer more specialised and diversified services to their clients, interaction of Big4 and the EXTR proxy (Big4*EXTR) is also added to the models. However, the untabulated results for this interaction term outcome are observed to be insignificant.

O'Keefe, Simunic and Stein (1994) report their study as being complementary to audit fee models, since the assessments in these studies have been distorted without the control of variations in audit efforts due to client characteristics. Similarly, Cameran et. al. (2013) and Kwon, Lim and Simnett (2014) employ audit hours data as a control variable in their audit fee models, expecting a positive relationship. Following their approach, LNHR is included in this study as an independent variable in the base audit fee model and the model re-tested. As presented in Table 42, consistent with expectations, the hours spent on audit services are observed to be positively related to audit pricing decisions ($p = 0.000$). The adjusted R^2 of 0.84 is higher than in the basic version of the audit fee model. Still, lowballing is identified in the offered audit prices for the mandatory rotation period of 2010.[37] Furthermore, the observed group affiliation discounts are sustained in the results with a p value of 0.0368. The main indicators revealed in the basic audit fee model – size, additional audit reports, number of consolidated firms – are still statistically significant with the proposed signs, except for the Big Four audit firm dummy (Big4), the sign of which is observed to be negative, contrary to what is expected, and this variable loses its significance. Since Cameran et al.'s (2013) study is structured on Big Four auditor data, it is impossible to compare the present results with those of Cameran et al. (2013) regarding alterations in the Big4 variable. However, in Kwon, Lim and Simnett's (2014) study, contrary to the present findings, the large audit firm dummy maintains its significance, revealing that an audit fee premium still exists after controlling for the effort spent on audit services. Accordingly, the lack of significance of the Big Four premium with the introduction of the audit effort variable into the audit fee model reveals that

[37] Similarly, when the audit fee model presented in Table 42 is modified by the addition of the ACHN7 variable, which reflects auditor changes after seven years, as enforced by the mandatory audit firm rotation rule, and replacement of the 2010*ACHN term with the 2010*ACHN7 interaction term, the untabulated results demonstrate that the 2010*ACHN7 term is significant with a negative coeffcieint (coefficient = -0.237916 and p = 0.0024).

the fee premium realised by the Big Four auditors is compensated by the audit effort provided to the client. When the planned audit hours are controlled, the Big Four offer lower fees than other auditors. Thus, similarly to Palmrose (1986), it is suggested that better service quality is the reason for the Big Four audit fee premium, not the market power imposed by these auditors in the Turkish setting.

4.8 Conclusion and Ideas for Future Research

The results of this study allow several inferences to be drawn regarding the audit market in Turkey. Although the Turkish audit market is less concentrated than developed markets according to audit client numbers, these concentration levels shift dramatically when calculated according to audited companies' asset totals.

Joint audit policies are introduced as an alternative for the EU by Le Vourc'h and Morand (2011), both to mitigate the concentration level of Big Four auditors and to facilitate sharing of experience and information between international Big Four companies and smaller domestic audit firms. France is the largest country that enforces joint audits, a policy in which two or more audit firms are appointed to render audit services, with joint liability in financial statements. Proponents of joint audit policies argue that they increase both audit quality and auditor independence owing to the lower possibility of dependence on audit fees due to shared charges. On the other hand, they require additional coordination between the appointed auditors, and free-riding behaviour of one of the auditors might be observed (Hess, Mohrmann and Stefani, 2014). Furthermore, joint audits elevate audit costs incurred by client companies. There is also a possibility that only larger audit firms might be hired to fulfil joint audit requirements, which might increase the power of larger audit firms still further. Empirical evidence for the impact on audit quality of joint audits is also mixed (Hess and Stefani, 2012). However, the benefits of joint audits for the Turkish structure should still be evaluated further as a policy choice to cope with a highly concentrated market structure for the Big Four auditors according to asset sizes of clients.

In addition, assessment of concentration ratios and market shares of the larger audit firms in Chapter Three of the study has revealed that increases in market share for smaller audit firms were not facilitated during the mandatory audit firm rotation period. One of the main effects of the enforced mandatory rotation policy was a shift in market leader between the Big Four

auditors. Francis, Michas and Seavey (2013) focus on the impact of audit market concentration on quality of earnings in 42 countries, including Turkey. They state that, in general, contrary to the suggestions of policy makers, the larger market share of the Big Four relative to other audit firms results in higher-quality audits. However, they suggest that, due to their finding of a detrimental impact of higher concentration among the Big Four on audit quality, care should be taken in policy decisions regarding the implications of unequal market shares among larger auditors leading to the dominance of one of the Big Four audit firms. Thus, further emphasis should be given in future studies to exploring the impact of mandatory audit firm rotation on audit quality, with a special focus on concomitant market leader changes in Turkish markets.

It has been demonstrated that variations in both audit fee and audit effort are driven mainly by asset size, number of consolidated companies and characteristics of audit firm (Big Four or not). This study provides empirical evidence for the selection of indicators in the process of minimum audit fee determination by regulatory authorities.

Additional analysis with interaction terms has shown that larger companies with more consolidated companies should pay higher fees for audit services.

A Big Four auditor premium is proved in this study of Turkish companies, similarly to the previous literature (Simunic, 1980; Hay, Knechel and Wong, 2006; Cobbin, 2002; Kamran and Mahendra, 2005; Ulusoy Tokgöz, 2010). Furthermore, in line with Kwon, Lim and Simnett (2014) and Palmrose (1986), the significance of the Big Four dummy in the audit effort model of this study provides evidence for discussions about whether the Big Four audit fee premium is due to monopoly pricing or audit quality (Palmrose, 1986). The results of this study suggest that it relates to quality improvements, similarly to Palmrose's (1986) conclusions. The re-run of the modified audit fee model with the addition of the natural logarithm of audit hours data as an independent variable, following the previous literature (Cameran et al., 2013; Kwon, Lim and Simnett, 2014), has shown that the coefficient of the Big Four dummy becomes negative, contrary to expectations, and also becomes insignificant. This outcome, contrary to Kwon, Lim and Simnett (2014), is suggested to be a supplementary indication of a quality-conscious premium payment to Big Four auditors to benefit from lengthier audit service hours. The contribution of these conclusions to the literature is

significant, since most previous audit effort studies have been based on proprietary audit hours data provided by Big Four auditors, so it was not possible for those studies to test variations in effort of the Big Four compared with other auditors in order to reveal the quality impact of a Big Four premium. Future studies should focus especially on exploring the translation of these extra service hours by the Big Four into financial reporting quality.

Segment reporting information provided in the notes of listed companies' financial statements (SGR) has been presented to have significant positive coefficients, revealing that not only the number of consolidated companies but also the diversified products, customers or geographical functions of the customer company influence variations in the service hours of auditors. Verification of this impact only in the audit effort model emphasises the necessity of additional research to identify differences in the determinants of audit effort and price.

The impact of mandatory audit firm rotation in the Turkish audit market is observed in terms of discounts in audit prices as well as market share competition between the Big Four. The limited existing studies in the literature on the actual practice of mandatory audit firm rotation highlights the importance of these findings. The lowballing proved in 2010 is especially important, since more than half of audit contracts were exchanged between auditors, due mainly to the mandatory audit rotation practice, as suggested in Table 6 in Chapter Three. Furthermore, Dye (1991) hypothesises that the reason for discounts in first engagements is a lack of transparency over quasi rents (Craswell and Francis,1999; Ghosh and Lustgarten, 2006). Dye's (1991) propositions are confirmed in an Australian setting by Craswell and Francis (1999). However, contrary evidence is provided for the lowballing effect in audit fees in first engagements obtained by Srinivasan and Sankaraguruswamy (2009) in a US setting, and similarly by Kraub, Quosigk and Zülch (2014) for German companies, where audit fee disclosure practice had already been established. In contrast to the present study, both Cameran et al. (2013) and Kwon, Lim and Simnett (2014) conducted their studies in environments in which the disclosure of audit fees was mandatory in most of their period of analysis. Distinctively, the lowballing impact of a mandatory audit firm rotation policy in an environment lacking transparency in audit fees and with rotation concentrated in a specific year is verified by this study. The regulatory authorities in Turkey should take into account Dye's (1991) proposal to increase transparency of audit fees through disclosure requirements in order to lower discounts in audit fees in future applications of mandatory rotation. The

number of audit reports and diversified audit-related extra services have been proved to be significant in explaining fluctutations in audit fees and hours. Disclosure policies should be structured by regulators to disseminate the content and main features of audit service contracts. Information regarding extra services, responsibilities with regard to foreign subsidiaries, and additional services to foreign parents fulfilled by the auditor would facilitate both an understanding of the independence level of auditors and a better evaluation of the grounds for audit prices.

Pong and Whittington (1994) and Ghosh and Lustgarten (2006) claim to demonstrate that discounts in audit fees are lower when a large audit firm is considered. The negative yet statistically insignificant results obtained for the 2010*ACHN*Big4 interaction term in the audit fee model in this study are suggested to be an indication of lowballed audit fees by the Big Four during the mandatory audit firm rotation period. Further analysis is necessary to explore differences in the lowballing behaviour of the Big Four and other audit firms.

No explanatory power for planned audit hours is observed during the mandatory audit firm rotation period, which is contradictory to the literature (Cameran, Vincenzo and Merlotti, 2005; Ewelt-Knauer, Gold and Pott, 2013; Kwon, Lim and Simnett, 2014; Cameran et al., 2013). Thus, these findings raise concerns over audit quality stemming from the insignificant response in audit hours to mandatory audit firm rotation. This is regarded as another reason for further exploration of the implications of mandatory audit firm rotation policies for financial reporting quality in future studies. In addition, this result highlights the necessity for improved quality controls on audit firms by relevant authorities concurrently with the practice of mandatory audit firm rotation, in order to prevent impairment of audit quality with greater emphasis on audit service hours delivered.

Another outcome of this study is the group discounts in audit fees, which may assist in increasing the explanatory power of audit fee studies, especially in emerging economies where similar prominence of large conglomorates is experienced in business practices. The introduction of group audits by the New Turkish Commercial Code especially signifies that future studies should throw light on the impact of group contracting on audit quality, expected quasi rents and auditor independence.

It is concluded that, similarly to Ulusoy Tokgöz (2010), selected risk proxies do not deliver robust significant power to explain variations in either audit service production or pricing decisions. Although this result is generally contrary to the previous literature (Hay, Knechel and Wong, 2006; Hay, 2013), some emerging country studies (e.g. Kamran and Mahendra, 2005; Karim and Hasan, 2012) reach similar conclusions. As stated by Kamran and Mahendra (2005), lack of consideration of specific characteristics of the client company and adaptation of audit planning to the risk profiles of clients should raise concerns regarding audit quality. Boilerplate audit planning may be detrimental to audit quality; thus, the results of this study should encourage responsible authorities to place greater focus on their audit firm quality controls in audit planning by seeking proper specifications in the plans corresponding to the risk level of the client company. Moreover, less attention to the risk indicators of the client in determining both audit fee and hours might be attributed to the limited liability experienced by auditors in practice. If minor legal liability is expected, the financial distress of a client company may not be reflected in fee levels. Similarly, Seetharaman, Gul and Lynn (2002) prove that UK firms cross-listed to US markets have to pay higher fees stemming from risk differentiations across liability regimes.

Given that it is the practice in the literature (Cobbin, 2002) to explore indicators of audit fees separately for small and large client markets, as well as the dissimilarities specified in Ulusoy Tokgöz (2010) for the Turkish setting, further studies should be carried out to assess the robustness of these findings to different market segments, especially for the risk proxies.

In addition, previous studies have speculated that high fees acquired from a particular customer may intensify the economic bond and impair auditor independence, as a result of which the quality of audit and thus quality of earnings may be impaired. There is not yet an agreed practice for measuring economic bond: non-audit fee to total fee, total fees and separate audit and non-audit fees are common indicators suggested in the literature. Although some empirical studies report contradictory results, fee ratio and total fee are considered to be impediments to earnings quality (Lin and Hwang, 2010). As a regulatory response to this, certain caps are executed on the ratio of total audit fee from an individual company to total audit revenues (Hess, Mohrmann and Stefani, 2014), and disclosure of the revenues of auditors is enforced. The dependence of an audit firm on a certain client may be examined in future audit fee studies, given that the audit firms listed by the POAASA have recently started

to publish their total revenues in their transparency reports. This investigation is especially necessary for small audit firms which render audit services to only one or a few clients.

Table 10: Descriptive Statistics of 2008 Audit Fee Sample

	Audit Fee 2008 (TL)	LNFEE 2008	TAS 2007 (TL)	LNTAS 2007	INVAR 2007	LV 2007	LQ 2007	CMPLX 2008	SQR-CMPLX 2008	FSH-Rate 2008	OWN 2008
N	200	200	200	200	200	200	200	200	200	200	200
Minimum	(*)	(*)	7,160,333.00	15.78	0.01	0.05	0.02	0.00	0.00	0,00	0,00
Maximum	(*)	(*)	12,706,985,000.00	23.27	0.91	3.47	17.29	87.00	9.33	99.28	97.92
Mean	127,998.32	11.15	675,842,876.49	19.01	0.32	0.51	1.70	3.16	1.11	13.53	55.77
Std. Dev.	275,789.61	1.00	1,724,760,744.73	1.51	0.20	0.42	2.29	8.00	1.39	27.01	21.88
Skewness	9.53	0.39	4.73	0.48	0.53	4.08	4.08	6.94	1.99	1.97	-0.30
Kurtosis	112.32	0.98	24.10	0.08	-0.26	23.27	20.73	64.02	6.58	2.65	-0.32

Table 11: Descriptive Statistics of 2008 Audit Effort Sample

	Audit Hours 2008	LNHR 2008	TAS 2007 (TL)	LNTAS 2007	INVAR 2007	LV 2007	LQ 2007	CMPLX 2008	SQR-CMPLX 2008	FSH-Rate 2008	OWN 2008
N	197	197	197	197	197	197	197	197	197	197	197
Minimum	(*)	(*)	7,160,333.00	15.78	0.00	0.02	0.02	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	9,629,246,150.00	22.99	0.91	3.47	17.29	87.00	9.33	99.28	97.92
Mean	1,258.68	6.52	570,471,094.06	18.97	0.32	0.51	1.77	3.04	1.09	13.98	56.25
Std. Dev.	1,737.37	1.11	1,359,255,109.84	1.46	0.20	0.42	2.46	7.88	1.36	27.73	21.80
Skewness	3.18	0.08	4.94	0.39	0.54	4.04	3.85	7.29	2.05	1.91	-0.27
Kurtosis	11.13	-0.35	27.14	-0.04	-0.26	22.83	17.61	69.40	7.24	2.37	-0.40

(*) Minimum and maximum figures for audit fee and effort data are not provided to avoid revealing any client-specific information.

(cont'd)

Definition of variables:Audit Fee: Audit Fees. **$LNFEE_t$** : Natural log of annual audit fee. **Audit Hour:** Annual audit service hours. **$LNHR_t$** : Natural log of annual audit hours. **TAS_{t-1}:** Total assets of the company in previous year-end financial statements. **$LNTAS_{t-1}$**: Natural log of the total assets of the company in previous year-end financial statements. **$INVAR_{t-1}$** : Proportion of inventory and accounts receivable total to total assets as stated in previous year-end financial statements. **LV_{t-1}** : Leverage ratio (total debt / total assets) in previous year-end financial statements. **LQ_{t-1}** : Quick ratio of the company calculated as (current assets-inventory)/current liabilities from the previous year's financial statements. **$CMPLX_t$** : Number of consolidated subsidiaries, joint ventures and associates of the company stated in the financial statement notes. **$SQRCMPLX_t$** : Square root of number of consolidated subsidiaries, joint ventures and associates of the company stated in the financial statement notes. **$FSHRate_t$** :Ownership rate of the foreign shareholder. **OWN_t** : Ownership rate of the largest shareholder.

Table 12: Descriptive Statistics of 2009 Audit Fee Sample

	Audit Fee 2009 (TL)	LNFEE 2009	TAS 2008 (TL)	LNTAS 2008	INVAR 2008	LV 2008	LQ 2008	CMPLX 2009	SQR-CMPLX 2009	FSH-Rate 2009	OWN 2009
N	188	188	188	188	188	188	188	188	188	188	188
Minimum	(*)	(*)	7,191,510.00	15.79	0.00	0.03	0.03	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	11,941,143,767.00	23.20	0.93	6.43	29.95	45.00	6.71	99.46	99.28
Mean	94,832.42	11.02	576,359,482.62	18.98	0.34	0.58	1.80	2.35	1.00	12.63	55.75
Std. Dev.	113,482.11	0.92	1,379,096,176.17	1.47	0.21	0.61	3.15	4.79	1.17	6.74	3.14
Skewness	3.23	0.21	5.36	0.36	0.39	6.22	5.98	4.98	1.41	2.05	-0.25
Kurtosis	12.36	0.15	34.24	-0.09	-0.45	51.93	44.94	35.86	2.77	2.97	-0.55

Table 13: Descriptive Statistics of 2009 Audit Effort Sample

	Audit Hours 2009	LNHR 2009	TAS 2008 (TL)	LNTAS 2008	INVAR 2008	LV 2008	LQ 2008	CMPLX 2009	SQR-CMPLX 2009	FSH-Rate 2009	OWN 2009
N	189	189	189	189	189	189	189	189	189	189	189
Minimum	(*)	(*)	7,191,510.00	15.79	0.00	0.03	0.03	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	11,941,143,767.00	23.20	0.84	6.43	29.95	45.00	6.71	99.46	99.28
Mean	1,039.47	6.39	563,713,666.38	18.97	0.34	0.58	1.78	2.39	1.01	12.65	55.49
Std. Dev.	1,380.87	1.07	1,371,390,944.66	1.46	0.21	0.61	3.14	4.80	1.18	27.02	23.46
Skewness	3.86	0.08	5.44	0.37	0.33	6.22	6.00	4.91	1.37	2.08	-0.23
Kurtosis	20.03	-0.53	35.08	-0.01	-0.50	51.97	45.21	35.28	2.61	3.07	-0.57

(*) Minimum and maximum figures for audit fee and effort data are not provided to avoid revealing any client-specific information.

Table 14: Descriptive Statistics of 2010 Audit Fee Sample

	Audit Fee 2010 (TL)	LNFEE 2010	TAS 2009 (TL)	LNTAS 2009	INVAR 2009	LV 2009	LQ 2009	CMPLX 2010	SQR-CMPLX 2010	FSH-Rate 2010	OWN 2010
N	208	208	208	208	208	208	208	208	208	208	208
Minimum	(*)	(*)	6,531,164.00	15.69	0.00	0.01	0.04	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	13,978,918,000.00	23.36	0.89	6.17	62.58	75.00	8.66	99.46	99.28
Mean	84,640.58	10.88	703,971,888.69	19.09	0.31	0.55	2.01	3.26	1.21	12.11	55.99
Std. Dev.	119,182.25	0.90	1,698,330,999.74	1.54	0.21	0.59	4.86	7.22	1.35	25.80	22.99
Skewness	5.45	0.44	5.02	0.38	0.61	5.97	9.97	6.16	1.66	2.14	-0.24
Kurtosis	41.74	0.25	29.75	-0.10	-0.23	47.57	118.74	51.54	4.84	3.49	-0.52

Table 15: Descriptive Statistics of 2010 Audit Effort Sample

	Audit Hours 2010	LNHR 2010	TAS 2009(TL)	LNTAS 2009	INVAR 2009	LV 2009	LQ 2009	CMPLX 2010	SQR-CMPLX 2010	FSH-Rate 2010	OWN 2010
N	206	206	206	206	206	206	206	206	206	206	206
Minimum	(*)	(*)	6,531,164.00	15.69	0.00	0,01	0,04	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	13,978,918,000.00	23.36	0.89	6.17	62.58	75.00	8.66	99.46	99.28
Mean	1,083.64	6.42	694,815,727.77	19.06	0.30	0.56	2.01	3.27	1.20	11.76	55.76
Std. Dev.	1,577.00	1.06	1,701,154,759.56	1.54	0.20	0.60	4,89	7.26	1.35	25.23	22.83
Skewness	5.10	0.11	5.05	0.39	0.65	5.90	9.92	6.13	1.67	2.17	-0.25
Kurtosis	38.23	-0.22	29.96	-0.08	-0.11	46.54	117.49	51.04	4.82	3.67	-0.49

(*) Minimum and maximum figures for audit fee and effort data are not provided to avoid revealing any client-specific information.

Table 16: Descriptive Statistics of 2011 Audit Fee Sample

	Audit Fee 2011 (TL)	LNFEE 2011	TAS 2010(TL)	LNTAS 2010	INVAR 2010	LV 2010	LQ 2010	CMPLX 2011	SQR-CMPLX 2011	FSH-Rate 2011	OWN 2011
N	221	221	221	221	221	221	221	221	221	221	221
Minimum	(*)	(*)	4,510,529.00	15.32	0.00	0.01	-1.92	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	15,096,019,000.00	23.44	0.88	5.53	125.34	74.00	8.60	99.46	99.28
Mean	87,957.52	10.91	725,638,337.44	19.10	0.32	0.55	2.28	3.01	1.16	10.94	55.03
Std. Dev.	116,447.02	0.92	1,861,185,414.68	1.57	0.21	0.53	8.63	6.73	1.29	24.60	23.18
Skewness	3.73	0.52	5.65	0.25	0.45	5.56	13.38	6.49	1.70	2.35	-0.28
Kurtosis	18.03	0.17	36.92	0.01	-0.64	44.04	190.51	59.14	5.11	4.58	-0.50

Table 17: Descriptive Statistics of 2011 Audit Effort Sample

	Audit Hour 2011	LNHR 2011	TAS 2010 (TL)	LNTAS 2010	INVAR 2010	LV 2010	LQ 2010	CMPLX 2011	SQR-CMPLX 2011	FSH-Rate 2011	OWN 2011
N	218	218	218	218	218	218	218	218	218	218	218
Minimum	(*)	(*)	4,510,529.00	15.32	0.00	0.01	-1.92	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	15,096,019,000,00	23.44	0.88	5.53	125.34	74.00	8.60	99.46	99.28
Mean	1,066.64	6.38	747,035,860.33	19.10	0.32	0.55	2.30	3.23	1.19	10.33	54.75
Std. Dev.	1,502.25	1.07	1,911,335,320.94	1.58	0.21	0.53	8.68	7.32	1.35	23.74	23.06
Skewness	3.93	0.22	5.42	0.26	0.47	5.55	13.29	5.85	1.77	2.45	-0.28
Kurtosis	21.58	-0.41	33.77	0.02	-0.59	43.76	187.98	46.08	5.08	5.16	-0.48

(*) Minimum and maximum figures for audit fee and effort data are not provided to avoid revealing any client-specific information.

Table 18: Descriptive Statistics of 2012 Audit Fee Sample

	Audit Fee 2012 (TL)	LNFEE 2012 TL	TAS 2011 (TL)	LNTAS 2011	INVAR 2011	LV 2011	LQ 2011	CMPLX 2012	SQR-CMPLX 2012	FSH-Rate 2012	OWN 2012
N	246	246	246	246	246	246	246	246	246	246	246
Minimum	(*)	(*)	1,060,640.00	13.87	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	17,147,031,000.00	23.57	0.87	12.56	56.13	69.00	8.31	99.46	99.28
Mean	82,609.45	10.92	735,892,553.65	19.05	0.35	0.60	2.13	2.87	1.14	10.26	53.98
Std. Dev.	102,316.73	0.84	1,896,089,082.79	1.66	0.21	0.94	4.89	6.48	1.26	24.01	23.80
Skewness	4.34	0.53	5.98	0.09	0.37	9.70	7.71	6.13	1.77	2.49	-0.35
Kurtosis	27.28	0.18	42.40	-0.06	-0.60	113.48	72.90	51.01	5.40	5.25	-0.55

Table 19: Descriptive Statistics of 2012 Audit Effort Sample

	Audit Hours 2012	LNHR 2012	TAS 2011 (TL)	LNTAS 2011	INVAR 2011	LV 2011	LQ 2011	CMPLX 2012	SQR-CMPLX 2012	FSH-Rate 2012	OWN 2012
N	247	247	247	247	247	247	247	247	247	247	247
Minimum	(*)	(*)	1,060,640.00	13.87	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Maximum	(*)	(*)	17,147,031,000.00	23.57	0.87	12.56	127.67	69.00	8.31	99.46	99.28
Mean	1,031.81	6.36	790,111,121.13	19.08	0.34	0.60	2.64	3.09	1.17	9.73	54.08
Std. Dev.	1,528.48	1.06	1,989,534,859.61	1.68	0.21	0.94	9.36	7.04	1.31	23.33	23.60
Skewness	5.45	0.17	5.45	0.12	0.37	9.71	10.82	5.56	1.82	2.56	-0.38
Kurtosis	44.88	-0.42	35.17	-0.08	-0.60	113.80	134.99	40.23	5.24	5.69	-0.51

(*) Minimum and maximum figures for audit fee and effort data are not provided to avoid revealing any client-specific information.

Table 20: Pearson Correlation of 2008 Audit Fee Model Sample

	LN-FEE 2008	LN-TAS 2007	Big4 2008	FR 2008	INV-AR 2007	LOSS 2007	LV 2007	LQ 2007	AO 2007	SGR 2008	SQR-CMP-LX 2008	IND 2008	FSH-Rate 2008	OWN 2008	GRP 2008	ACHN 2008	EXTR 2008	AT 2008
LNFEE 2008	1	.733 **	.624 **	.148 *	-.097	-.220 **	-.076	-.055	-.214 **	.287 **	.538 **	.245 **	.311 **	.158 *	.293 **	-.190 **	.582 **	-.011
LNTAS 2007		1	.445 **	-.043	-.135 *	-.348 **	-.123 *	-.061	-.228 **	.292 **	.588 **	.291 **	.221 **	.191 **	.336 **	-.045	.477 **	-.086
Big4 2008			1	-.022	-.062	-.210 **	-.173 **	-.003	-.329 **	.145 *	.210 **	.148 *	.342 **	.271 **	.431 **	-.141 *	.611 **	-.110
FR 2008				1	.086	-.072	-.028	.039	-.045	.041	-.126 *	.033	.074	-.034	.025	.071	.054	.038
INVAR 2007					1	-.151 *	.117	-.238 **	-.075	-.029	-.199 **	-.135 *	.131 *	-.058	-.049	.028	.055	-.010
LOSS 2007						1	.154*	-.061	.317 **	-.055	-.129 *	-.075	-.048	-.206 **	-.046	-.009	-.270 **	.051
LV 2007							1	-.369 **	.296 **	-.014	-.023	-.004	-.012	-.046	-.123 *	.032	-.026	.081
LQ 2007								1	-.081	-.035	-.085	-.070	-.095	.045	-.014	.010	-.054	-.013
AO 2007									1	-.013	-.069	-.015	-.104	-.146 *	-.252 **	.167 **	-.241 **	-.005
SGR 2008										1	.444 **	.102	-.002	-.020	.116	.081	.099	-.070
SQR-CMPLX 2008											1	.169 **	-.041	-.023	.220 **	-.009	.197 **	.032
IND 2008												1	.089	.075	.065	.004	.152 *	-.039
FSH Rate 2008													1	.226 **	-.067	-.018	.449 **	.038
OWN 2008														1	-.025	-.084	.137 *	.010
GRP 2008															1	-.131 *	.310 **	-.028
ACHN 2008																1	-.096	-.065
EXTR 2008																	1	-.104
AT 2008																		1

**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

(cont'd)

Definition of variables: $\mathbf{LNFEE_t}$: Natural log of annual audit fee. $\mathbf{LNHR_t}$: Natural log of annual audit hours. $\mathbf{LNTAS_{t-1}}$: Natural log of total assets of the company in previous year-end financial statements. $\mathbf{Big4_t}$: Dummy variable coded as one if the auditor is a Big Four auditor and zero otherwise. $\mathbf{FR_t}$: Dummy variable coded as one if the audit contract includes the service of reviewing all interim periods, zero otherwise. $\mathbf{INVAR_{t-1}}$: Proportion of inventory and accounts receivable total to the total assets stated in the previous year-end financial statements. $\mathbf{LOSS_{t-1}}$: Dummy variable, one if company incurs loss in the previous year's financial statements, zero otherwise. $\mathbf{LV_{t-1}}$: Leverage ratio (total debt / total assets) as in the previous year-end financial statements. $\mathbf{LQ_{t-1}}$: Quick ratio of the company calculated as (current assets-inventory)/current liabilities from the previous year's financial statements. $\mathbf{AO_{t-1}}$: Dummy variable coded as one if the auditor's opinion of the previous year's disclosed audit report includes qualification, disclaimer or adverse opinion, nonqualified audit reports coded as zero. $\mathbf{SGR_t}$: Dummy variable coded as one if the financial statement notes contain segment reporting and zero otherwise. $\mathbf{SQRCMPLX_t}$: Square root of number of consolidated subsidiaries, joint ventures and associates of the company stated in the financial statement notes. $\mathbf{IND_t}$: Dummy variable coded as one if the company is a member of the following industries as classified by BIST, and zero otherwise: mining; electricity gas and water; chemicals petroleum, rubber and plastic products; transportation, telecommunications and storage. $\mathbf{FSHRate_t}$: Ownership rate of the foreign shareholder. $\mathbf{OWN_t}$: Ownership rate of the largest shareholder. $\mathbf{GRP_t}$: Dummy variable coded as one if the company is a member of a large Turkish conglomerate, zero otherwise. $\mathbf{ACHN_t}$: Dummy variable coded as one if that year is company's first engagement with auditor and zero if previous year's auditor continues to render services. $\mathbf{EXTR_t}$: Indicator variable coded as one if audit services include differentiated services such as providing additional English report or fulfilment of consolidation package for parent entity. $\mathbf{AT_t}$: Dummy variable coded as one if transportation and accommodation costs relating to audit services are the responsibility of customer, zero if these costs are covered by the total audit cost of contract.

Table 21: Pearson Correlation of 2008 Audit Effort Model Sample

	LN-HR 2008	LN-FEE 2008	LN-TAS 2007	Big4 2008	FR 2008	IN-VAR 2007	LOSS 2007	LV 2007	LQ 2007	AO 2007	SGR 2008	SQR-CMP-LX 2008	IND 2008	FSH-Rate 2008	OWN 2008	GRP 2008	ACHN 2008	EXTR 2008	AT 2008
LNHR 2008	1	.919**	.715**	.677**	.166**	-.063	-.270**	-.124*	-.024	-.274**	.339**	.494**	.198**	.323**	.203**	.383**	-.195**	.609**	-.041
LNFEE 2008		1	.719**	.637**	.159*	-.099	-.228**	-.087	.021	-.226**	.269**	.511**	.215**	.328**	.193**	.316**	-.221**	.602**	-.018
LNTAS 2007			1	.450**	-.025	-.115	-.352**	-.134*	-.037	-.224**	.261**	.563**	.245**	.247**	.214**	.365**	-.093	.473**	-.101
Big4 2008				1	-.025	-.050	-.225**	-.177**	.028	-.334**	.135*	.206**	.115	.322**	.253**	.436**	-.154*	.601**	-.118*
FR 2008					1	.093	-.045	-.017	.021	-.023	.031	-.116	.044	.057	-.038	.033	.083	.063	.038
INVAR 2007						1	-.164*	.119*	-.258**	-.087	.005	-195**	-.145*	.118*	-.057	-.049	.050	.056	-.012
LOSS 2007							1	.160*	-.075	.331**	-.048	-.121*	-.103	-.058	-.225**	-.071	.030	-.297**	.055
LV 2007								1	-.374**	.307**	-.015	-.028	-.029	-.001	-.042	-.129*	.035	-.034	.080
LQ 2007									1	-.094	-.051	-.054	.007	-.109	.029	-.025	.000	-.021	-.002
AO 2007										1	-.015	-.056	-.016	-.116	-.148*	-.258**	.207**	-.252**	.003
SGR 2008											1	.425**	.056	.031	-.015	.133 *	.030	.095	-.076
SQR-CMPLX 2008												1	.122*	-.020	-.001	.235**	-.030	.192**	.027
IND 2008													1	.082	.066	.044	-.029	.108	-.043
FSHRate 2008														1	.244**	-.071	-.017	.466**	.044
OWN 2008															1	-.049	-.088	.131*	.019
GRP 2008																1	-.125*	.299**	-.029
ACHN 2008																	1	-.118*	-.070
EXTR 2008																		1	-.104
AT 2008																			1

**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

Table 22: Pearson Correlation of 2009 Audit Fee Model Sample

	LN-FEE 2009	LN-TAS 2008	Big4 2009	FR 2009	INVAR 2008	LOSS 2008	LV 2008	LQ 2008	AO 2008	SGR 2009	SQR-CMPLX 2009	IND 2009	FSH-Rate 2009	OWN 2009	GRP 2009	ACHN 2009	EXTR 2009	AT 2009
LNFEE 2009	1	.736 **	.623 **	.106	-.036	-.231 **	-.069	-.140 *	-.228 **	.344 **	.526 **	.186 **	.319 **	.224 **	.361 **	-.097	.575 **	-.172 **
LNTAS 2008		1	.442 **	.003	-.063	-.379 **	-.130 *	-.102	-.252 **	.299 **	.519 **	.204 **	.217 **	.207 **	.399 **	-.078	.482 **	-.234 **
Big4 2009			1	-.128 *	-.058	-.140 *	-.135 *	-.076	-.275 **	.147 *	.204 **	.133 *	.316 **	.280 **	.438 **	-.063	.622 **	-.236 **
FR 2009				1	.136 *	.071	-.036	-.042	-.148 *	-.043	-.025	.042	.004	-.011	-.003	.047	-.017	.036
INVAR 2008					1	.007	.020	-.200 **	-.227 **	-.002	-.162 *	-.162 *	.084	-.016	-.003	.032	.011	.018
LOSS 2008						1	.294 **	-.281 **	.234 **	-.026	-.067	-.072	-.043	-.101	-.154 *	.033	-.256 **	.091
LV 2008							1	-.275 **	.349 **	-.040	-.021	-.002	-.033	-.044	-.104	-.002	-.009	.042
LQ 2008								1	-.095	-.068	-.054	.134 *	-.079	.000	-.082	.033	-.058	.041
AO 2008									1	-.077	-.071	-.025	-.116	-.201 **	-.277 **	-.055	-.186 **	.064
SGR 2009										1	.481 **	.114	.061	-.022	.124 *	-.002	.099	-.076
SQR-CMPLX 2009											1	.118	-.089	-.074	.250 **	-.035	.173 **	-.013
IND 2009												1	.099	.045	.081	-.044	.120 *	-.075
FSH-Rate 2009													1	.302 **	-.078	-.096	.465 **	-.018
OWN 2009														1	.041	-.075	.187 **	-.084
GRP 2009															1	.023	.313 **	-.242 **
ACHN 2009																1	-.024	-.123 *
EXTR 2009																	1	-.279 **
AT 2009																		1

**. Correlation is significant at the 0.01 level (1-tailed).*. Correlation is significant at the 0.05 level (1-tailed).

Table 23: Pearson Correlation of 2009 Audit Effort Model Sample

	LN-HR 2009	LN-FEE 2009	LN-TAS 2008	Big4 2009	FR 2009	INVAR 2008	LOSS 2008	LV 2008	LQ 2008	AO 2008	SGR 2009	SQR-CM-PLX 2009	IND 2009	FSH-Rate 2009	OWN 2009	GRP 2009	ACHN 2009	EXTR 2009	AT 2009
LNHR 2009	1	.900**	.699**	.729**	0.114	-.052	-.221**	-.115	-.124*	-.245**	.362**	.474**	.181**	.316**	.233**	.431**	-.145*	.632**	-.185**
LNFEE 2009		1	.712**	.638**	.144*	-0.03	-.227**	-.049	-.134*	-.221**	.299**	.469**	.192**	.333**	.245**	.368**	-.129*	.600**	-.147*
LNTAS 2008			1	.456**	0.014	-.084	-.368**	-.129*	-.103	-.244**	.293**	.513**	.210**	.228**	.213**	.408**	-0.088	.496**	-.229**
Big4 2009				1	-.106	-.042	-.154*	-.135*	-.074	-.297**	0.119	.193**	.130*	.343**	.304**	.433**	-0.049	.625**	-.217**
FR 2009					1	.129*	.081	-.025	-.045	-0.111	-0.02	-0.027	0.034	0.031	-0.011	-0.014	0.087	.006	0.047
INVAR 2008						1	.011	.019	-.199**	-.213**	0.024	-.161*	-.159*	0.084	-0.042	0.007	0.052	.017	.013
LOSS 2008							1	.287**	-.285**	.241**	0	-0.047	-0.083	-0.037	-0.113	-.169**	0.066	-.263**	.088
LV 2008								1	-.274**	.346**	-0.036	-0.026	-0.002	-0.027	-0.045	-0.104	-0.001	-.004	.05
LQ 2008									1	-0.101	-0.078	-0.059	.136*	-0.079	0.007	-0.078	0.021	-.058	.042
AO 2008										1	-0.048	-0.071	-0.034	-0.113	-.209**	-.286**	-0.07	-.178**	0.08
SGR 2009											1	.477**	0.106	0.044	-0.039	0.112	-0.02	.099	-.085
SQR-CMPLX 2009												1	0.113	-0.09	-0.076	.243**	-0.027	.164*	-0.03
IND 2009													1	0.097	0.049	0.082	-0.048	.117	-0.07
FSH-Rate 2009														1	.325**	-0.077	-0.067	.472**	-.011
OWN 2009															1	0.047	-0.054	.190**	-0.06
GRP 2009																1	0.015	.307**	-.232**
ACHN 2009																	1	-.007	-.146*
EXTR 2009																		1	-.261**
AT 2009																			1

**: Correlation is significant at the 0.01 level (1-tailed). *: Correlation is significant at the 0.05 level (1-tailed).

Table 24: Pearson Correlation of 2010 Audit Fee Model Sample

	LN-FEE 2010	LNTAS 2009	Big4 2010	FR 2010	INVAR 2009	LOSS 2009	LV 2009	LQ 2009	AO 2009	SGR 2010	SQR-CMPLX 2010	IND 2010	FSH-Rate 2010	OWN 2010	GRP 2010	ACHN 2010	EXTR 2010	AT 2010
LNFEE 2010	1	.753**	.519**	0.112	-.127*	-.260**	-0.088	-0.084	-.226**	.307**	.580**	.234**	.188**	.168**	.287**	-.143*	.523**	-.131*
LNTAS 2009		1	.443**	0.019	-.170**	-.350**	-.138*	-0.073	-.281**	.325**	.557**	.233**	.219**	.257**	.347**	0.008	.521**	-.206**
Big4 2010			1	0.028	-0.037	-.149*	-.187**	-0.017	-.372**	0.021	.209**	.139*	.237**	.266**	.504**	0.061	.677**	-.313**
FR 2010				1	.197**	0.024	-0.039	-0.041	-.117*	-0.042	-0.074	-0.015	0.09	0.027	0.016	-0.011	0.039	0.007
INVAR 2009					1	-0.029	-0.03	-0.105	-.265**	-.191**	-.254**	-.183**	.153*	-0.039	-0.012	0.036	-0.034	0.064
LOSS 2009						1	.195**	-0.067	.252**	-0.1	-.168**	-.162**	-0.003	-0.042	-0.085	-0.006	-.164**	0.096
LV 2009							1	-.211**	.416**	-0.056	-0.038	-0.004	-0.069	-0.03	-.115*	-0.005	-.178**	0.11
LQ 2009								1	-0.056	-0.081	-0.044	0.062	-0.001	0.078	-0.056	-0.082	-0.019	0.027
AO 2009									1	-0.025	-0.11	-0.05	-.128*	-.207**	-.257**	-0.067	-.296**	.140*
SGR 2010										1	.500**	.128*	-0.02	0.035	0.058	-0.048	0.059	-0.049
SQR-CMPLX 2010											1	.143*	-0.113	-0.019	.224**	-0.002	.271**	-0.073
IND 2010												1	0.101	0.056	0.035	0.024	.170**	0.021
FSH-Rate 2010													1	.279**	-0.065	0.072	.289**	-0.027
OWN 2010														1	0.046	.135*	.195**	-.130*
GRP 2010															1	.135*	.507**	-.414**
ACHN 2010																1	0.007	-0.075
EXTR 2010																	1	-.346**
AT 2010																		1

**: Correlation is significant at the 0.01 level (1-tailed). *: Correlation is significant at the 0.05 level (1-tailed).

Table 25: Pearson Correlation of 2010 Audit Effort Model Sample

	LN-HR 2010	LN-FEE 2010	LN-TAS 2009	Big4 2010	FR 2010	INVAR 2009	LOSS 2009	LV 2009	LQ 2009	AO 2009	SGR 2010	SQR-CMP-LX 2010	IND 2010	FSH-Rate 2010	OWN 2010	GRP 2010	ACHN 2010	EXTR 2010	AT 2010
LNHR 2010	1	.885**	.723**	.726**	.162**	-.125*	-.261**	-.156*	-0.08	-.297**	.313**	.505**	.236**	.210**	.212**	.415**	0.017	.666**	-.248**
LNFEE 2010		1	.741**	.532**	.139*	-.148*	-.268**	-0.092	-0.083	-.218**	.314**	.575**	.239**	.174**	.149*	.293**	-.148*	.534**	-.148*
LNTAS 2009			1	.464**	0.035	-.186**	-.362**	-.150*	-0.068	-.293**	.340**	.561**	.242**	.220**	.248**	.358**	0.005	.539**	-.224**
Big4 2010				1	0.047	-0.008	-.158*	-.191**	-0.017	-.388**	0.035	.214**	.135*	.260**	.281**	.501**	0.05	.674**	-.324**
FR 2010					1	.191**	0.039	-0.036	-0.041	-.115*	-0.067	-0.058	-0.008	0.109	0.051	0.027	0.01	0.056	0.043
INVAR 2009						1	-0.033	-0.039	-0.102	-.266**	-.205**	-.256**	-.174**	.142*	-0.056	0.005	0.046	-0.01	0.065
LOSS 2009							1	.198**	-0.069	.263**	-0.111	-.180**	-.166**	-0.03	-0.057	-0.09	-0.016	-.172**	0.092
LV 2009								1	-.212**	.423**	-0.062	-0.045	-0.006	-.082	-0.039	-.117*	-0.004	-.181**	0.109
LQ 2009									1	-0.061	-0.079	-0.042	0.062	0.003	0.081	-0.056	-0.085	-0.019	0.026
AO 2009										1	-0.029	-.119*	-0.057	-.130*	-.208**	-.265**	-0.061	-.309**	.144*
SGR 2010											1	.510**	.135*	-.039	0.035	0.066	-0.054	0.071	-0.041
SQR-CMPLX 2010												1	.145*	-.125*	-0.028	.227**	-0.012	.276**	-0.086
IND 2010													1	0.11	0.061	0.032	0.019	.167**	0.019
FSH-Rate 2010														1	.262 **	-0.059	0.054	.310**	-0.041
OWN 2010															1	0.052	.129*	.207**	-.150*
GRP 2010																1	.130 *	.505**	-.423**
ACHN 2010																	1	-0.003	-0.084
EXTR 2010																		1	-.356**
AT 2010																			1

**. Correlation is significant at the 0.01 level (1-tailed).*. Correlation is significant at the 0.05 level (1-tailed).

Table 26: Pearson Correlation of 2011 Audit Fee Model Sample

	LN-FEE 2011	LNTAS 2010	Big4 2011	FR 2011	INVAR 2010	LOSS 2010	LV 2010	LQ 2010	AO 2010	SGR 2011	SQR-CMP-LX 2011	IND 2011	FSH-Rate 2011	OWN 2011	GRP 2011	ACHN 2011	EXTR 2011	AT 2011
LNFEE 2011	1	.736**	.550**	0.027	-.140*	-.137*	-0.05	-0.018	-0.095	.290**	.581**	.212**	.229**	.225**	.250**	-.174**	.492**	-0.107
LNTAS 2010		1	.471**	-0.04	-.165**	-.212**	-0.079	-0.063	-.163**	.330**	.551**	.197**	.239**	.255**	.321**	-.169**	.479**	-.185**
Big4 2011			1	-0.063	-0.023	-.169**	-.160**	0.058	-.274**	0.064	.215**	.119*	.322**	.362**	.474**	-0.061	.705**	-.382**
FR 2011				1	0.092	-0.1	-0.039	-0.04	-0.101	-0.037	-0.069	-.121*	0.044	-0.033	-0.031	-0.089	0.023	-0.056
INVAR 2010					1	-.157**	0.005	-.143*	-.290**	-.178**	-.283**	-.193**	.215**	-0.032	0.057	-0.035	0.037	-0.039
LOSS 2010						1	.279**	-0.076	.295**	-0.024	-0.07	-0.085	0.026	-0.049	-.129*	-0.058	-.229**	.169**
LV 2010							1	-.160**	.410**	-0.03	0.017	0.001	-0.04	-0.06	-.112*	.115*	-.159**	0.095
LQ 2010								1	-0.051	-0.065	-0.069	.173**	-0.041	0.016	-0.056	-0.06	0.058	0.047
AO 2010									1	0.002	0.074	0.055	-0.093	-.219**	-.183**	0.091	-.265**	.148*
SGR 2011										1	.483**	.175**	-0.015	-0.013	0.063	-0.037	0.038	-0.004
SQR-CMPLX 2011											1	.180**	-0.08	-0.008	.192**	-.124*	.227**	-0.077
IND 2011												1	0.049	0.032	0.022	-0.011	.129*	0.029
FSH-Rate 2011													1	.279**	-0.054	0.021	.313**	-0.067
OWN 2011														1	0.067	0.017	.254**	-.127*
GRP 2011															1	-0.051	.500**	-.476**
ACHN 2011																1	-0.085	-0.086
EXTR 2011																	1	-.320**
AT 2011																		1

**: Correlation is significant at the 0.01 level (1-tailed). *: Correlation is significant at the 0.05 level (1-tailed).

Table 27: Pearson Correlation of 2011 Audit Effort Model Sample

	LN-HR 2011	LN-FEE 2011	LN-TAS 2010	Big4 2011	FR 2011	IN-VAR 2010	LOSS 2010	LV 2010	LQ 2010	AO 2010	SGR 2011	SQR-CMP-LX2011	IND 2011	FSH-Rate 2011	OWN 2011	GRP 2011	ACHN 2011	EXTR 2011	AT 2011
LNHR 2011	1	.883**	.759**	.752**	0.049	-0.111	-.191**	-.093	-0.04	-.192**	.285**	.509**	.169**	.269**	.277**	.383**	-.148*	.652**	-.233**
LNFEE 2011		1	.737**	.567**	0.059	-.148*	-.151*	-.055	-0.019	-0.097	.303**	.579**	.213**	.225**	.211**	.263**	-.177**	.526**	-.112*
LNTAS 2010			1	.491**	-0.022	-.166**	-.222**	-.083	-0.063	-.164**	.349**	.567**	.195**	.248**	.244**	.341**	-.171**	.511**	-.193**
Big4 2011				1	-.033	0.003	-.176**	-.156*	0.055	-.286**	0.058	.222**	0.11	.361**	.381**	.472**	-0.074	.731**	-.386**
FR 2011					1	0.064	-0.082	-.044	-0.036	-0.095	-0.017	-0.044	-.114*	0.017	-0.028	-0.015	-0.078	-0.024	-0.038
INVAR 2010						1	-.167**	-.002	-.142*	-.288**	-.161**	-.264**	-.188**	.176**	-0.058	0.076	-0.026	0.037	-0.031
LOSS 2010							1	.279**	-0.077	.298**	-0.03	-0.089	-0.085	0.009	-0.06	-.136*	-0.058	-.231**	.164**
LV 2010								1	-.160**	.413**	-0.027	0.015	0.004	-0.05	-0.066	-0.109	.118*	-.165**	0.093
LQ 2010									1	-0.052	-0.067	-0.069	.172**	-.039	0.018	-0.058	-0.062	0.061	0.047
AO 2010										1	-0.005	0.063	0.053	-.087	-.217**	-.189**	0.088	-.271**	.148*
SGR 2011											1	.490**	.166**	-.002	-0.005	0.066	-0.047	0.06	0
SQR-CMPLX 2011												1	.164**	-.091	-0.017	.214**	-.131*	.255**	-0.072
IND 2011													1	0.063	0.038	0.014	-0.014	.125*	0.028
FSH-Rate 2011														1	.259**	-0.046	0.035	.324**	-0.059
OWN 2011															1	0.074	0.023	.268**	-.130*
GRP 2011																1	-0.06	.527**	-.474**
ACHN 2011																	1	-0.092	-0.088
EXTR 2011																		1	-.327**
AT 2011																			1

**: Correlation is significant at the 0.01 level (1-tailed). *: Correlation is significant at the 0.05 level (1-tailed).

Table 28: Pearson Correlation of 2012 Audit Fee Model Sample

	LN-FEE 2012	LN-TAS 2011	Big4 2012	FR 2012	INV-AR 2011	LOSS 2011	LV 2011	LQ 2011	AO 2011	SGR 2012	SQR-CMP-LX 2012	IND 2012	FSH-Rate 2012	OWN 2012	GRP 2012	ACHN 2012	EXTR 2012	AT 2012
LNFEE 2012	1	.757 **	.545 **	0.056	-0.048	-0.1	-0.036	-.161 **	-0.022	.289 **	.561 **	.208 **	.274 **	.127 *	.243 **	-.249 **	.448 **	-.118 *
LNTAS 2011		1	.499 **	0.01	-0.023	-.178 **	-.107 *	-.165 **	-.134 *	.305 **	.503 **	.225 **	.243 **	.181 **	.341 **	-.321 **	.489 **	-.174 **
Big4 2012			1	-.106 *	0.038	-.122 *	-0.076	-0.101	-.202 **	0.035	.222 **	.123 *	.305 **	.313 **	.484 **	-.301 **	.708 **	-.344 **
FR 2012				1	0.09	0.026	-0.002	-0.033	-0.084	0.02	-0.056	-0.095	0.021	-0.047	-0.063	0.009	-0.025	-0.018
INVAR 2011					1	-.190 **	-0.055	-.202 **	-.191 **	-.116 *	-.230 **	-.148 *	.181 * *	0.018	0.086	-0.011	.113 *	-0.008
LOSS 2011						1	.267 * *	-.159 **	.200 **	-0.049	-0.011	.111 *	-0.033	-.131 *	-.117 *	0.063	-0.092	.178 **
LV 2011							1	-.160 **	.184 **	-0.074	0.013	0.003	-0.035	-0.068	-0.07	.110 *	-0.091	0.087
LQ 2011								1	-0.065	-0.071	-0.058	.108 *	-0.066	0.026	-0.064	-0.091	-0.101	0.074
AO 2011									1	-0.033	.108 *	0.024	-0.102	-.293 **	-.184 **	.165 **	-.233 **	.121 *
SGR 2012										1	.503 **	0.103	0.015	-0.007	0.083	-0.007	0.088	0.027
SQR-CMPLX 2012											1	.157 **	-0.024	-0.068	.176 **	-0.092	.211 **	-0.043
IND 2012												1	0.06	0.034	0.045	-0.074	.131 *	0.037
FSH-Rate 2012													1	.268 **	-0.045	-0.095	.290 **	-0.094
OWN 2012														1	0.101	-0.075	.243 **	-.120 *
GRP 2012															1	-.180 **	.546 **	-.400 **
ACHN 2012																1	-.279 **	.126 *
EXTR 2012																	1	-.335 **
AT 2012																		1

**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

Table 29: Pearson Correlation of 2012 Audit Effort Model Sample

	LN-HR 2012	LN-FEE 2012	LN-TAS 2011	Big4 2012	FR 2012	INV-AR-TA 2011	LOSS 2011	LV 2011	LQ 2011	AO 2011	SGR 2012	SQR-CMP-LXT 2012	IND 2012	FSH-Rate 2012	OWN 2012	GRP 2012	ACHN 2012	EXTR 2012	AT 2012
LNHR 2012	1	.896**	.755**	.730**	0.02	-0.021	-.110*	-0.03	-.145*	-.149**	.278**	.511**	.190**	.290**	.204**	.361**	-.274**	.596**	-.178**
LNFEE 2012		1	.763**	.562**	0.04	-0.057	-0.087	-0.029	-.189**	-0.023	.311**	.581**	.175**	.246**	.119*	.246**	-.259**	.462**	-.112*
LNTAS 2011			1	.509**	0.014	-0.028	-.169**	-0.103	-.109*	-.138*	.329**	.526**	.207**	.231**	.174**	.346**	-.327**	.507**	-.161**
Big4 2012				1	-0.098	0.05	-0.105	-0.071	-.109*	-.207**	0.052	.240**	.105*	.328**	.314**	.483**	-.325**	.719**	-.336**
FR 2012					1	0.096	0.009	-0.002	-0.031	-0.08	-0.002	-0.049	-0.092	0.02	-0.031	-0.058	0.019	-0.044	-0.027
INVAR 2011						1	-.207**	-0.055	-.192**	-.184**	-.108*	-.214**	-.157**	.161**	-0.006	0.101	-0.035	.121*	-0.018
LOSS 2011							1	.267**	-.119*	.205**	-0.047	-0.005	.108*	-0.06	-.135*	-.117*	0.07	-0.088	.171**
LV 2011								1	-.118*	.185**	-0.07	0.016	-0.002	-0.04	-0.072	-0.068	0.103	-0.087	0.084
LQ 2011									1	-0.056	-0.076	-0.081	.181**	-0.055	0.073	-0.064	0.046	-0.098	0.07
AO 2011										1	-0.035	0.093	0.02	-0.096	-.296**	-.186**	.166**	-.234**	.120*
SGR 2012											1	.522**	0.092	0.019	0.005	0.093	-0.029	0.094	0.03
SQR-CMPLX 2012												1	.128*	-0.038	-0.074	.196**	-0.101	.240**	-0.028
IND 2012													1	0.066	0.044	0.035	-0.053	.118*	0.042
FSH-Rate 2012														1	.250**	-0.038	-0.084	.303**	-.110*
OWN 2012															1	0.097	-0.075	.255**	-.118*
GRP 2012																1	-.205**	.550**	-.393**
ACHN 2012																	1	-.300**	.124*
EXTR 2012																		1	-.331**
AT 2012																			1

**: Correlation is significant at the 0.01 level (1-tailed). *: Correlation is significant at the 0.05 level (1-tailed).

Table 30: Audit Fee Model Results-2008

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		4,903	.632	7.752	.000	
LNTAS 2007	+	.292	.035	8.394	.000	2.179
Big4 2008	+	.679	.097	7.018	.000	1.849
FR 2008	+	.487	.082	5.926	.000	1.041
SQRCMPLX 2008	+	.173	.032	5.358	.000	1.587
ACHN2008	+/-	-.403	.108	7.752	.000	1.035
EXTR2008	+	.312	.098	8.394	.000	1.789
GRP 2008	+/-	-.275	.092	7.018	.000	1.302
LOSS 2007	+/-	.190	.086	5.926	.000	1.186
Adj R^2 =0.747; F Statistics- 74.596 (Sig. 0.000)						

Table 31: Audit Effort Model Results-2008

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		.600	.667	.900	.370	
LNTAS 2007	+	.268	.037	7.191	.000	1.923
Big4 2008	+	.814	.102	8.004	.000	1.686
FR 2008	+	.501	.091	5.521	.000	1.042
SQRCMPLX 2008	+	.134	.038	3.548	.000	1.720
EXTR2008	+	.356	.106	3.373	.001	1.734
ACHN2008	+/-	-.342	.120	-2.858	.005	1.036
SGR2008	+	.273	.097	2.826	.005	1.238
Adj R^2 =0.757; F Statistics- 88.253 (Sig. 0.000)						

(cont'd)

Definition of variables: **$LNFEE_t$**: Natural log of annual audit fee. **$LNHR_t$**: Natural log of annual audit hours. **$LNTAS_{t-1}$**: Natural log of total assets of the company in previous year-end financial statements. **$Big4_t$**: Dummy variable coded as one if the auditor is a Big Four auditor, zero otherwise. **FR_t**: Dummy variable coded as one if the audit contract includes the service of reviewing all interim periods, zero otherwise. **$INVAR_{t-1}$**: Proportion of inventory and accounts receivable total to total assets as stated in previous year-end financial statements. **$LOSS_{t-1}$**: Dummy variable, coded one if company incurred a loss in previous year's financial statements, zero otherwise. **LV_{t-1}**: Leverage ratio (total debt / total assets) as in the previous year-end financial statements. **LQ_{t-1}**: Quick ratio of the company calculated as (current assets-inventory)/current liabilities from the previous year's financial statements. **AO_{t-1}**: A dummy variable coded as one if the auditor's opinion of the previous year's disclosed audit report includes qualification, disclaimer or adverse opinion; nonqualified audit reports are represented as zero. **SGR_t**: Dummy variable, coded as one if financial statement notes contain segment reporting and zero otherwise. **$SQRCMPLX_t$**: Square root of number of consolidated subsidiaries, joint ventures and associates of the company stated in the financial statement notes. **IND_t**: Dummy variable coded as one if the company is a member of the following industries as classified by BIST, zero otherwise: mining; electricity gas and water; chemicals petroleum, rubber and plastic products; transportation, telecommunications and storage. **$FSHRate_t$**:Ownership rate of the foreign shareholder. **OWN_t**: Ownership rate of the largest shareholder. **GRP_t**: Dummy variable coded as one if the company is a member of a large Turkish conglomerate, zero otherwise. **$ACHN_t$**: Dummy variable coded as one if that year is the company's first engagement with the auditor and zero if the previous year's auditor continues to render services. **$EXTR_t$**: Indicator variable coded as one if the audit services include differentiated services, such as providing additional English report or fulfilment of consolidation package for the parent entity. **AT_t**: Dummy variable coded as one if transportation and accommodation costs relating to audit services are the responsibility of customer, zero if these costs are covered by the total audit cost of contract.

Table 32: Audit Fee Model Results- 2009

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		5.512	.567	9.721	.000	
LNTAS 2008	+	.257	.032	8.126	.000	1.707
Big4 2009	+	.669	.083	8.057	.000	1.359
SQRCMPLX 2009	+	.199	.037	5.401	.000	1.455
FR 2009	+	.530	.133	3.990	.000	1.024
FSHRate	+	.005	.001	3.204	.002	1.190
Adj R^2 = 0.717; F Statistics - 95.800 (Sig. 0.000)						

Table 33: Audit Effort Model Results-2009

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		1.703	.604	2.821	.005	
Big4 2009	+	1.003	.095	10.549	.000	1.759
LNTAS 2008	+	.201	.034	5.966	.000	1.865
SGR 2009	+	.308	.086	3.584	.000	1.300
FR 2009	+	.669	.131	5.121	.000	1.031
SQR-CMPLX 2009	+	.138	.039	3.540	.001	1.633
EXTR2009	+	.356	.101	3.523	.001	1.843
ACHN 2009	+/-	-.316	.102	-3.102	.002	1.019
Adj R^2 = 0.787; F Statistics - 100.071 (Sig. 0.000)						

Table 34: Audit Fee Model Results-2010

	Coefficients			T	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		5.022	.547	9.174	.000	
LNTAS 2009	+	.291	.030	9.599	.000	1.737
Big4 2010	+	.455	.079	5.757	.000	1.253
SQRCMPLXT 2010	+	.173	.032	5.458	.000	1.469
ACHN 2010	+/-	-.295	.072	-4.103	.000	1.004
FR 2010	+	.407	.142	2.874	.004	1.011
Adj R^2 = 0.682; F Statistics - 89.776 (Sig. 0.000)						

Table 35: Audit Effort Model Results-2010

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		1.397	.580	2.408	.017	
Big4 2010	+	.935	.098	9.587	.000	1.895
LNTAS 2009	+	.217	.033	6.664	.000	2.002
SQRCMPLXT 2010	+	.111	.035	3.201	.002	1.763
FR 2010	+	.600	.147	4.096	.000	1.014
SGR 2010	+	.256	.087	2.931	.004	1.396
EXTR 2010	+	.300	.103	2.904	.004	2.093
Adj R^2 = 0.769; F Statistics - 114.659 (Sig. 0.000)						

Table 36: Audit Fee Model Results-2011

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		5.038	.556	9.062	.000	
LNTAS	+	.267	.031	8.727	.000	.566
Big 4 2011	+	.606	.087	6.960	.000	.682
SQR-CMPLX 2011	+	.194	.033	5.799	.000	.691
AT 2011	-	.278	.091	3.061	.002	.847
FR 2011	+	.333	.144	2.316	.022	.985
Adj R^2 = 0.659; F Statistics - 86.080 (Sig. 0.000)						

Table 37: Audit Effort Model Results- 2011

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		.041	.524	.078	.938	
LNTAS	+	.283	.029	9.801	.000	1.858
Big 4 2011	+	1.162	.082	14.189	.000	1.501
SQR-CMPLX 2011	+	.128	.030	4.236	.000	1.486
FR 2011	+	.388	.141	2.747	.007	1.006
AT 2011	-	.178	.085	2.109	.036	1.180
Adj R^2 = 0.789; F Statistics - 163.103 (Sig. 0.000)						

Table 38: Audit Fee Model Results- 2012

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		5.497	.440	12.503	.000	
LNTAS	+	.263	.025	10.662	.000	1.736
SQR-CMPLX 2012	+	.175	.029	6.079	.000	1.350
Big4 2012	+	.494	.078	6.330	.000	1.589
GRP 2012	+/-	-.235	.086	-2.725	.007	1.330
FR 2012	+	.264	.110	2.410	.017	1.023
Adj R^2 =0.668; F Statistics- 99,389 (Sig. 0,000)						

Table 39: Audit Effort Model Results- 2012

	Coefficients			t	Sig.	VIF
	Prd. Sign	B	Std. Error			
(Constant)		.673	.474	1.420	.157	
LNTAS	+	.261	.027	9.814	.000	1.779
Big4 2012	+	1.026	.079	13.063	.000	1.373
SQR-CMPLX 2012	+	.147	.030	4.878	.000	1.392
FR 2012	+	.270	.121	2.222	.027	1.021
Adj R2 =0.755; F Statistics- 190,485 (Sig. 0,000)						

Table 40: Audit Fee Model Results on Pooled Sample (2008-2012)					
	Coefficients			t	Sig.
	Prd. Sign	B	Std. Error		
(Constant)		5.199310	0.470689	11.04616	0.0000
LNTAS	+	0.262666	0.024325	10.79830	0.0000
Big4	+	0.573061	0.069367	8.261302	0.0000
FR	+	0.409506	0.071862	5.698467	0.0000
INVAR	+	0.058938	0.148348	0.397299	0.6912
LOSS	+/-	-0.004135	0.040804	-0.101339	0.9193
LV	+	0.031380	0.038446	0.816220	0.4146
LQ	-	-0.001741	0.003948	-0.440993	0.6593
AO	+	0.101718	0.073957	1.375364	0.1693
SGR	+	0.036746	0.060193	0.610470	0.5417
SQRCMPLX	+	0.178795	0.026204	6.823160	0.0000
IND	+/-	0.072044	0.072440	0.994524	0.3202
FSHRATE	+/-	0.002031	0.001157	1.755372	0.0795
OWN	+/-	-0.000398	0.001474	-0.270127	0.7871
GRP	+/-	-0.139100	0.065859	-2.112095	0.0349
ACHN	+/-	-0.008734	0.050208	-0.173962	0.8619
EXTR	+	0.122707	0.064027	1.916479	0.0556
AT	-	0.140969	0.055584	2.536128	0.0114
2008		0.219955	0.042846	5.133619	0.0000
2009		0.141572	0.037428	3.782507	0.0002
2010		0.095823	0.053707	1.784183	0.0747
2011		-0.028449	0.025257	-1.126383	0.2603
2010*ACHN	+/-	-0.269984	0.097258	-2.775963	0.0056
2008*ACHN	+/-	-0.436154	0.137676	-3.167961	0.0016
Adj R^2 =0.70; F Statistics- 107.9469 (Sig. 0.000)					

Table 41: Audit Effort Model Results on Pooled Sample (2008-2012)

	Coefficients			t	Sig.
	Prd. Sign	B	Std. Error		
(Constant)		0.674835	0.467349	1.443966	0.1491
LNTAS	+	0.250307	0.025116	9.965900	0.0000
Big4	+	1.006539	0.066295	15.18280	0.0000
FR	+	0.475642	0.076822	6.191454	0.0000
INVAR	+	-0.033140	0.137458	-0.241089	0.8095
LOSS	+/-	-0.016181	0.041753	-0.387542	0.6984
LV	+	0.034813	0.032091	1.084811	0.2783
LQ	-	-0.004120	0.002429	-1.696464	0.0901
AO	+	0.008769	0.080473	0.108962	0.9133
SGR	+	0.173872	0.061259	2.838305	0.0046
SQRCMPLX	+	0.121187	0.024891	4.868693	0.0000
IND	+/-	0.077977	0.071809	1.085898	0.2778
FSHRATE	+/-	0.000304	0.001010	0.300624	0.7638
OWN	+/-	-0.000581	0.001328	-0.437663	0.6617
GRP	+/-	-0.076870	0.066078	-1.163323	0.2450
ACHN	+/-	0.048686	0.058554	0.831469	0.4059
EXTR	+	0.249033	0.063238	3.938019	0.0001
AT	-	0.124770	0.059514	2.096469	0.0363
2008		0.182465	0.052032	3.506805	0.0005
2009		0.138586	0.047159	2.938677	0.0034
2010		0.065861	0.072849	0.904071	0.3662
2011		-0.014021	0.028389	-0.493884	0.6215
2008*ACHN	+/-	-0.372863	0.143434	-2.599544	0.0095
2009*ACHN	+/-	-0.310668	0.121562	-2.555623	0.0108
2010*ACHN	+/-	-0.084834	0.112329	-0.755224	0.4503
Adj R^2 =0.77; F Statistics- 137.6117 (Sig. 0.000)					

Table 42: Audit Fee Model Results on Pooled Sample by the Introduction of LNHR as Independent Variable (2008-2012)

	Coefficients			t	Sig.
	Prd. Sign	B	Std. Error		
(Constant)		4.919931	0.328743	14.96590	0.0000
LNTAS	+	0.091610	0.018905	4.845739	0.0000
Big4	+	-0.068023	0.073756	-0.922267	0.3566
FR	+	0.106064	0.052342	2.026340	0.0430
INVAR	+	0.015547	0.102131	0.152221	0.8790
LOSS	+/-	-2.44E-05	0.029209	-0.000835	0.9993
LV	+	0.012371	0.035170	0.351751	0.7251
LQ	-	0.001383	0.002396	0.577167	0.5640
AO	+	0.081006	0.056146	1.442766	0.1494
SGR	+	-0.071737	0.048190	-1.488606	0.1369
SQRCMPLX	+	0.090688	0.020223	4.484390	0.0000
IND	+/-	0.028639	0.054010	0.530245	0.5961
FSHRATE	+/-	0.001292	0.000823	1.570622	0.1166
OWN	+/-	-0.000421	0.000966	-0.435663	0.6632
GRP	+/-	-0.092517	0.044249	-2.090813	0.0368
ACHN	+/-	0.003870	0.035947	0.107673	0.9143
EXTR_	+	-0.012559	0.047352	-0.265235	0.7909
AT	-	0.059490	0.039855	1.492685	0.1358
2008		0.119850	0.031563	3.797161	0.0002
2009		0.081726	0.026208	3.118385	0.0019
2010		0.076277	0.035456	2.151294	0.0317
2011		-0.024821	0.018792	-1.320860	0.1868
2010*ACHN	+/-	-0.279539	0.068043	-4.108261	0.0000
2008*ACHN	+/-	-0.262297	0.115465	-2.271659	0.0233
LNHR	+	0.654169	0.037204	17.58345	0.0000
Adj R^2 =0.84; F Statistics= 233.4965 (Sig. 0.000)					

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APPENDIX A: Summary Data According to Analysis of Audit Contract Numbers

2001				2002				2003			
Audit Firm	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**
PWC (1)	46	1	19.01	PWC (1)	50	1	21.19	PWC (1)	49	1	21.03
Deloitte (2)	29	2	11.98	Deloitte (2)	30	2	12.71	Deloitte (2)	34	2	14.59
Arthur Andersen (5)	18	3	7.44	Ernst&Young (3)	28	3	11.86	Ernst&Young (3)	23	3	9.87
Ernst&Young (3)	14	4	5.79	AGD -AKYÜZ-GÜNEL - DEDE Danışmanlık SMMM A.Ş..	13	4	5.51	AGD -AKYÜZ–GÜNEL-DEDE Danışmanlık SMMM A.Ş.	14	4	6.01
AGD -AKYÜZ - GÜNEL–DEDE Danışmanlık SMMM A.Ş.	12	5	4.96	Güreli YMM A.Ş. (Baker Tilly Int.)	13	5	5.51	Denet YMM A.Ş. (BDO)	14	5	6.01
Güreli YMM A.Ş. (Baker Tilly Int.)	12	6	4.96	Denet YMM A.Ş. (BDO)	12	6	5.08	Güreli YMM A.Ş. (Baker Tilly Int.)	14	6	6.01
Denet YMM A.Ş. (BDO)	10	7	4.13	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	11	7	4.66	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	11	7	4.72
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	10	8	4.13	KPMG (4)	7	8	2.97	KPMG (4)	9	8	3.86
KPMG (4)	8	9	3.31	Denge İzmir Bağımsız Denetim ve YMM A.Ş.	6	9	2.54	Denge İzmir Bağımsız Denetim ve YMM A.Ş.	6	9	2.58

Full Title of the Auditors: (1) Başaran Nas Bağımsız Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş. (PWC). **(2)** DRT Denetim Revizyon Tasdik YMM A.Ş.(Deloitte)/Denetim Serbest Mali Müşavirlik A.Ş. (Deloitte). **(3)** Güney Bağimsiz Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş./ Önce SMMM A.Ş. (Ernst&Young). **(4)** Akis Bağimsiz Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş./ Cevdet Suner Denetim ve YMM A.Ş. (KPMG). **(5)** A.A. Aktif Analiz SMMM A.Ş.(Arthur Andersen).

(cont'd)

2001				2002				2003			
Audit Firm	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**
Total Number of Client Companies	242		100.00	Total Number of Client Companies	236		100.00	Total Number of Client Companies	233		100.00
Big Five Cumulative (Globally Accepted)	115		47.52	Big Four Cumulative (Globally Accepted)	115		48.73	Big Four Cumulative (Globally Accepted)	115		49.36
Big Five Cumulative	119		49.17	Big Four Cumulative	121		51.27	Big Four Cumulative	120		51.50
Second Tier Firms(6 th to 8) (Globally Accepted)	44		14.05	Second Tier Firms(5 th to 8) (Globally Accepted)	49		20.76	Second Tier Firms(5 th to 8) (Globally Accepted)	53		22.75
Second Tier Firms(6 th to 8)	40		13.22	Second Tier Firms(5 th to 8)	43		18.22	Second Tier Firms(5 th to 8)	48		20.60
Audit Firms Having Less than Five Clients (28 audit firm)	55		22.73	Audit Firms Having Less than Five Clients (28 audit firm)	60		25.42	Audit Firms Having Less than Five Clients (27 audit firm)	48		20.60
CR_5 (Globally Accepted)	47.52			CR_4 (Globally Accepted)	48.73			CR_4 (Globally Accepted)	49.36		
CR_8 (Globally Accepted)	61.57			CR_8 (Globally Accepted)	69.49			CR_8 (Globally Accepted)	72.10		
CR_5	49.17			CR_4	51.27			CR_4	51.50		
CR_8	62.40			CR_8	69.49			CR_8	72.10		

2004				2005				2006			
Audit Firm	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**
PWC (1)	50	1	20.83	PWC (1)	49	1	19.92	PWC (1)	51	1	20.65
Deloitte (2)	34	2	14.17	Deloitte (2)	35	2	14.23	Deloitte (2)	36	2	14.57
Ernst&Young (3)	20	3	8.33	Ernst&Young (3)	20	3	8.13	Ernst&Young (3)	19	3	7.69
Güreli YMM A.Ş. (Baker Tilly Int.)	15	4	6.25	Güreli YMM A.Ş. (Baker Tilly Int.)	16	4	6.50	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	16	4	6.48
AGD -AKYÜZ - GÜNEL–DEDE Danışmanlık SMMM A.Ş.	14	5	5.83	AGD Danışmanlık SMMM A.Ş.	13	5	5.28	Denet Bağımsız Denetim ve YMM A.Ş.(BDO)	14	5	5.67
Denet YMM A.Ş. (BDO)	14	6	5.83	Denet YMM A.Ş. (BDO)	13	6	5.28	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	13	6	5.26
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	12	7	5.00	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	13	7	5.28	AGD Bağımsız Denetim ve Danışmanlık SMMM A.Ş.	12	7	4.86
KPMG (4)	8	8	3.33	KPMG (4)	6	8	2.44	KPMG (4)	7	8	2.83

(cont'd)

2004				2005				2006			
Audit Firm	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**
Total Number of Client Companies	240		100.00	Total Number of Client Companies	246		100.00	Total Number of Client Companies	247		100.00
Big Four Cumulative (Globally Accepted)	112		46.67	Big Four Cumulative (Globally Accepted)	110		44.72	Big Four Cumulative (Globally Accepted)	113		45.75
Big Four Cumulative	119		49.58	Big Four Cumulative	120		48.78	Big Four Cumulative	122		49.39
Second Tier Firms (5 th to 8) (Globally Accepted)	55		22.92	Second Tier Firms (5 th to 8) (Globally Accepted)	55		22.36	Second Tier Firms(5 th to 8) (Globally Accepted)	55		22.27
Second Tier Firms (5 th to 8)	48		20.00	Second Tier Firms(5 th to 8)	45		18.29	Second Tier Firms(5 th to 8)	46		18.62
Audit Firms Having Less than Five Clients (26 audit firm)	50		22.92	Audit Firms Having Less than Five Clients (29 audit firm)	54		21.95	Audit Firms Having Less than Five Clients (32 audit firm)	57		23.08
CR_4 (Globally Accepted)	46.67			CR_4 (Globally Accepted)	44.72			CR_4 (Globally Accepted)	45.75		
CR_8 (Globally Accepted)	69.58			CR_8 (Globally Accepted)	67.07			CR_8 (Globally Accepted)	68.02		
CR_4	49.58			CR_4	48.78			CR_4	49.39		
CR_8	69.58			CR_8	67.07			CR_8	68.02		

2007				2008				2009			
Audit Firm	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**
PWC (1)	51	1	20.82	PWC (1)	49	1	20.59	PWC (1)	49	1	20.59
Deloitte (2)	34	2	13.88	Deloitte (2)	36	2	15.13	Deloitte (2)	29	2	12.18
Ernst&Young (3)	19	3	7.76	Ernst&Young (3)	19	3	7.98	Ernst&Young (3)	25	3	10.50
Denet Bağımsız Denetim ve YMM A.Ş. (BDO)	14	4	5.71	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	18	4	7.56	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	23	4	9.66
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	14	5	5.71	Denet Bağımsız Denetim ve YMM A.Ş.(BDO)	13	5	5.46	KPMG (4)	11	5	4.62
Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	14	6	5.71	Engin Bağımsız Denetim ve SMMM A.Ş.(Grant Thornton)	11	6	4.62	Denet Bağımsız Denetim ve YMM A.Ş. (BDO)	11	6	4.62
AGD Bağımsız Denetim ve Danışmanlık SMMM. A. Ş.	13	7	5.31	KPMG (4)	10	7	4.20	Engin Bağımsız Denetim ve SMMM A.Ş.(Grant Thornton)	10	7	4.20
KPMG (4)	10	8	4.08	AGD Bağımsız Denetim ve Danışmanlık SMMM A. Ş.	9	8	3.78	Can Uluslararası Bağımsız Denetim ve SMM A.Ş.	6	8	2.52

(cont'd)

2007				2008				2009			
Audit Firm	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**
Total Number of Client Companies	245		100.00	Total Number of Client Companies	238		100.00	Total Number of Client Companies	238		100.00
Big Four Cumulative (Globally Accepted)	114		46.53	Big Four Cumulative (Globally Accepted)	114		47.90	Big Four Cumulative (Globally Accepted)	114		47.90
Big Four Cumulative	118		48.16	Big Four Cumulative	122		51.26	Big Four Cumulative	126		52.94
Second Tier Firms(5 th to 8) (Globally Accepted)	55		22.45	Second Tier Firms(5 th to 8) (Globally Accepted)	51		21.43	Second Tier Firms(5 th to 8) (Globally Accepted)	50		21.01
Second Tier Firms(5 th to 8)	51		20.82	Second Tier Firms(5 th to 8)	43		18.07	Second Tier Firms(5 th to 8)	38		15.97
Audit Firms Having Less than Five Clients (28 audit firm)	52		21.22	Audit Firms Having Less than Five Clients (30 audit firm)	57		23.95	Audit Firms Having Less than Five Clients (33 audit firm)	64		26.89
CR_4 (Globally Accepted)	46.53			CR_4 (Globally Accepted)	47.90			CR_4 (Globally Accepted)	47.90		
CR_8 (Globally Accepted)	68.98			CR_8 (Globally Accepted)	69.33			CR_8 (Globally Accepted)	68.91		
CR_4	48.16			CR_4	51.26			CR_4	52.94		
CR_8	68.98			CR_8	69.33			CR_8	68.91		

2010				2011				2012			
Audit Firm	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Rank**	**Market Share (%)**
Deloitte (2)	51	1	20.4	Deloitte (2)	49	1	18.15	Deloitte (2)	51	1	17.53
Ernst&Young (3)	30	2	12.0	PWC (1)	37	2	13.70	PWC (1)	41	2	14.09
PWC (1)	28	3	11.2	Ernst&Young (3)	34	3	12.59	Ernst&Young (3)	37	3	12.71
KPMG (4)	18	4	7.2	KPMG (4)	16	4	5.93	KPMG (4)	15	4	5.15
Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	14	5	5.6	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	15	5	5.56	Arkan Ergin Uluslararası Bağımsız Denetim ve SMMM A.Ş.	15	5	5.15
ÇAĞDAŞ Bağimsiz Denetim SMMM A.Ş.	11	6	4.4	Can Uluslararası Bağımsız Denetim ve SMM A.Ş.	12	6	4.44	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	15	6	5.15
AC İSTANBUL Uluslararasi Bağimsiz Denetim ve SMMM A.Ş.	8	7	3.2	AC İSTANBUL Uluslararasi Bağimsiz Denetim ve SMMM A.Ş.	11	7	4.07	AC İSTANBUL Uluslararasi Bağimsiz Denetim ve SMMM A.Ş.	11	7	3.78
Arkan Ergin Uluslararası Bağımsız Denetim ve SMMM A.Ş.	8	8	3.2	ÇAĞDAŞ Bağimsiz Denetim SMMM A.Ş.	10	8	3.70	ATA Uluslararası Bağımsız Denetim ve SMMM A.Ş.	9	8	3.09

(cont'd)

2010				2011				2012			
Audit Firm	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**	**Audit Firm**	**Number of Clients**		**Market Share (%)**
Total Number of Client Companies	250		100.00	Total Number of Client Companies	270		100.00	Total Number of Client Companies	291		100.00
Big Four Cumulative (Globally Accepted)	127		50.8	Big Four Cumulative (Globally Accepted)	136		44.44	Big Four Cumulative (Globally Accepted)	144		49.48
Big Four Cumulative	127		50.8	Big Four Cumulative	136		44.44	Big Four Cumulative	144		49.48
Second Tier Firms(5 th to 8) (Globally Accepted)	41		16.4	Second Tier Firms(5 th to 8) (Globally Accepted)	48		20.00	Second Tier Firms(5 th to 8) (Globally Accepted)	50		17.18
Second Tier Firms(5 th to 8)	41		16.4	Second Tier Firms(5 th to 8)	48		20.00	Second Tier Firms(5 th to 8)	50		17.18
Audit Firms Having Less than Five Clients (28 audit firm)	41		16.4	Audit Firms Having Less than Five Clients (28 audit firm)	42		17.41	Audit Firms Having Less than Five Clients (31 audit firm)	59		20.27
CR_4 (Globally Accepted)	50.80			CR_4 (Globally Accepted)	44.44			CR_4 (Globally Accepted)	49.48		
CR_8 (Globally Accepted)	67.20			CR_8 (Globally Accepted)	64.44			CR_8 (Globally Accepted)	66.67		
CR_4	50.80			CR_4	44.44			CR_4	49.48		
CR_8	67.20			CR_8	64.44			CR_8	66.67		

APPENDIX B: Summary Data According to Analysis of Total Assets of Auditee

	2001				2002				
Audit Firm	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**
Deloitte (2)	29	11,145,137,217	1	30.95	Deloitte (2)	30	15,276,728,307	1	31.65
PWC (1)	46	8,571,743,038	2	23.80	PWC (1)	50	12,660,671,770	2	26.23
KPMG (4)	8	4,402,104,953	3	12.22	KPMG (4)	7	4,959,878,326	3	10.28
Arthur Andersen (5)	18	2,442,361,007	4	6.78	Ernst &Young (3)	28	4,389,224,156	4	9.09
Arılar Bağımsız Dış Denetim A.Ş.	2	1,120,774,919	5	3.11	Arılar Bağımsız Dış Denetim A.Ş.	2	1,966,081,301	5	4.07
Ernst&Young (3)	14	1,113,681,921	6	3.09	Denet YMM A.Ş. (BDO)	12	1,537,391,402	6	3.19
Denet YMM A.Ş. (BDO)	10	960,118,987	7	2.67	Önder Bağımsız Denetim ve Danışmanlık A.Ş.	1	1,417,279,760	7	2.94
Önder Bağımsız Denetim ve Danışmanlık A.Ş.	1	889,146,814	8	2.47	AGD -AKYÜZ -GÜNEL–DEDE Danışmanlık SMMM A.Ş.	13	976,726,850	8	2.02
Total	**242**	**36,012,603,148**		**100.00**	**Total**	**236**	**48,264,049,446**		**100.00**
Big Five Cumulative (Globally Accepted)		27,675,028,136		76.85	Big Four Cumulative (Globally Accepted)		37,286,502,559		77.26
Big Five Cumulative		27,682,121,134		76.87	Big Four Cumulative		37,286,502,559		77.26
Second Tier Firms (6th to 8th) (Globally Accepted)		2,970,040,720		8.25	Second Tier Firms (5th to 8th) (Globally Accepted)		5,897,479,313		12.22
Second Tier Firms (6th to 8th)		2,962,947,722		8.23	Second Tier Firms (5th to 8th)		5,897,479,313		12.22
Audit Firms Having Less than Five Clients (28 audit firms)		4,320,672,931		12.00	Audit Firms Having Less than Five Clients (28 audit firms)		6,457,365,603		13.38
CR_5 (Globally Accepted)	76.85				CR_4 (Globally Accepted)	77.26			
CR_8 (Globally Accepted)	85.10				CR_8 (Globally Accepted)	89.47			
CR_5	76.87				CR_4	77.26			
CR_8	85.10				CR_8	89.47			

Full Title of the Auditors: (1) Başaran Nas Bağımsız Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş. (PWC). **(2)** DRT Denetim Revizyon Tasdik YMM A.Ş.(Deloitte)/Denetim Serbest Mali Müşavirlik A.Ş. (Deloitte). **(3)** Güney Bağimsiz Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş./ Önce SMMM A.Ş. (Ernst&Young). **(4)** Akis Bağimsiz Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş./ Cevdet Suner Denetim ve YMM A.Ş. (KPMG). **(5)** A.A. Aktif Analiz SMMM A.Ş.(Arthur Andersen).

2003					2004				
Audit Firm	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**
PwC (1)	49	79,624,670,939	1	56.58	PwC (1)	50	99,682,636,507	1	55.74
Deloitte (2)	34	22,309,663,693	2	15.85	Deloitte (2)	34	26,627,936,779	2	14.89
Ernst & Young (3)	23	13,106,415,749	3	9.31	Ernst & Young (3)	20	17,401,579,290	3	9.73
KPMG (4)	9	7,763,693,911	4	5.52	KPMG (4)	8	8,991,241,326	4	5.03
Denet YMM A.Ş. (BDO)	14	4,385,881,819	5	3.12	Denet YMM A.Ş. (BDO)	14	8,065,643,160	5	4.51
Arılar Bağımsız Dış Denetim A.Ş.	2	3,192,016,590	6	2.27	Arılar Bağımsız Dış Denetim A.Ş.	2	4,346,414,776	6	2.43
AGD -AKYÜZ - GÜNEL–DEDE Danışmanlık SMMM A.Ş.	14	1,358,545,063	7	0.97	Güreli YMM A.Ş. (Baker Tilly Int.)	15	1,953,945,514	7	1.09
Güreli YMM A.Ş. (Baker Tilly Int.)	14	1,038,584,949	8	0.74	Kapital YMM A.Ş.	6	1,524,001,890	8	0.85
Total	**233**	**140,738,531,412**		**100.00**	**Total**	**240**	**178,850,941,950**		**100.00**
Big Five Cumulative (Globally Accepted)		122,804,444,292		87.26	Big Four Cumulative (Globally Accepted)		152,703,393,902		85.38
Big Five Cumulative		122,804,444,292		87.26	Big Four Cumulative		152,703,393,902		85.38
Second Tier Firms (5th to 8th) (Globally Accepted)		9,975,028,421		7.09	Second Tier Firms (5th to 8th) (Globally Accepted)		15,890,005,340		8.88
Second Tier Firms (5th to 8th)		9,975,028,421		7.09	Second Tier Firms (5th to 8th)		15,890,005,340		8.88
Audit Firms Having Less than Five Clients (27 audit firms)		8,625,635,282		6.13	Audit Firms Having Less than Five Clients (26 audit firms)		10,614,119,461		5.93
CR_4 (Globally Accepted)		87.26			CR_4 (Globally Accepted)		85.38		
CR_8 (Globally Accepted)		94.34			CR_8 (Globally Accepted)		94.26		
CR_4		87.26			CR_4		85.38		
CR_8		94.34			CR_8		94.26		

2005					2006				
Audit Firm	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**
PwC (1)	49	130,715,753,591	1	58.77	PwC (1)	51	170,080,471,456	1	61.05
Deloitte (2)	35	32,733,345,301	2	14.72	Deloitte (2)	36	34,918,066,648	2	12.53
Ernst&Young (3)	20	20,022,527,498	3	9.00	Ernst & Young (3)	19	23,501,329,657	3	8.44
KPMG (4)	6	8,468,315,790	4	3.81	KPMG (4)	7	14,571,218,162	4	5.23
Denet YMM A.Ş. (BDO)	13	7,324,344,966	5	3.29	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	13	9,392,196,738	5	3.37
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	13	5,757,927,494	6	2.59	Denet Bağımsız Denetim ve YMM A.Ş.(BDO)	14	8,017,189,606	6	2.88
Can Uluslararası Bağımsız Denetim ve SMMM A.Ş.	3	3,558,140,239	7	1.60	Can Uluslararası Bağımsız Denetim ve SMMM A.Ş.	3	4,783,996,187	7	1.72
Güreli YMM A.Ş. (Baker Tilly Int.)	16	1,723,135,389	8	0.77	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	16	2,519,190,564	8	0.90
Total	**246**	**222,434,554,813**		**100.00**	**Total**	**247**	**278,611,844,183**		**100.00**
Big Four Cumulative (Globally Accepted)		191,939,942,180		86.29	Big Four Cumulative (Globally Accepted)		243,071,085,923		87.24
Big Four Cumulative		191,939,942,180		86.29	Big Four Cumulative		243,071,085,923		87.24
Second Tier Firms (5th to 8th) (Globally Accepted)		18,363,548,088		8.26	Second Tier Firms (5th to 8th) (Globally Accepted)		24,712,573,095		8.87
Second Tier Firms (5th to 8th)		18,363,548,088		8.26	Second Tier Firms (5th to 8th)		24,712,573,095		8.87
Audit Firms Having Less than Five Clients (29 audit firms)		6,218,736,600		2.80	Audit Firms Having Less than Five Clients (32 audit firms)		11,543,272,914		4.14
CR_4 (Globally Accepted)		86.29			CR_4 (Globally Accepted)		87.24		
CR_8 (Globally Accepted)		94.55			CR_8 (Globally Accepted)		96.11		
CR_4		86.29			CR_4		87.24		
CR_8		94.55			CR_8		96.11		

2007					2008				
Audit Firm	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**
PWC (1)	51	191,153,639,752	1	61.62	PWC (1)	49	222,430,683,934	1	58.11
Deloitte (2)	34	42,810,651,291	2	13.80	Deloitte (2)	36	55,120,925,410	2	14.40
Ernst & Young (3)	19	27,240,385,228	3	8.78	Ernst & Young (3)	19	46,672,678,540	3	12.19
KPMG (4)	10	16,733,669,170	4	5.39	KPMG (4)	10	20,878,958,054	4	5.45
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	14	10,748,019,378	5	3.46	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	11	12,046,315,740	5	3.15
Denet Bağımsız Denetim ve YMM A.Ş. (BDO)	14	7,020,238,742	6	2.26	Denet Bağımsız Denetim ve YMM A.Ş. (BDO)	13	5,800,902,054	6	1.52
Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	14	2,313,371,986	7	0.75	Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	18	2,772,281,792	7	0.72
Ata Uluslararası Bağımsız Denetim ve SMMM A.Ş.	6	1,475,308,076	8	0,48	Kavram Bağımsız Denetim ve YMM A.Ş.	4	2,314,283,521	8	0.60
Total	**245**	**310,201,566,847**		**100.00**	**Total**	**238**	**382,765,294,580**		**100.00**
Big Four Cumulative (Globally Accepted)		277,938,345,441		89.60	Big Four Cumulative (Globally Accepted)		345,103,245,938		90.16
Big Four Cumulative		277,938,345,441		89.60	Big Four Cumulative		345,103,245,938		90.16
Second Tier Firms (5th to 8th) (Globally Accepted)		21,556,938,182		6.95	Second Tier Firms (5th to 8th) (Globally Accepted)		22,933,783,107		5.99
Second Tier Firms (5th to 8th)		21,556,938,182		6.95	Second Tier Firms (5th to 8th)		22,933,783,107		5.99
Audit Firms Having Less than Five Clients (28 audit firms)		6,849,489,009		2.21	Audit Firms Having Less than Five Clients (30 audit firms)		13,425,697,790		3.51
CR_4 (Globally Accepted)		89.60			CR_4 (Globally Accepted)		90.16		
CR_8 (Globally Accepted)		96.55			CR_8 (Globally Accepted)		96.15		
CR_4		89.60			CR_4		90.16		
CR_8		96.55			CR_8		96.15		

2009					2010				
Audit Firm	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**
PWC (1)	49	237,047,709,477	1	58.54	Deloitte (2)	51	219,722,439,964	1	46.66
Deloitte (2)	29	54,339,319,226	2	13.42	Ernst & Young (3)	30	149,937,813,776	2	31.84
Ernst & Young (3)	25	49,883,669,675	3	12.32	PWC (1)	28	39,893,781,824	3	8.47
KPMG (4)	11	23,383,638,999	4	5.78	KPMG (4)	18	18,538,354,556	4	3.94
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	10	12,578,242,104	5	3.11	Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	8	17,503,007,163	5	3.72
Denet Bağımsız Denetim ve YMM A.Ş. (BDO)	11	6,783,458,396	6	1.68	Denet Bağımsız Denetim ve YMM A.Ş. (BDO)	5	3,492,931,486	6	0.74
Güreli YMM ve Bağımsız Denetim Hizmetleri A.Ş. (Baker Tilly Int.)	23	2,640,982,537	7	0.65	PÜR Bağımsız Denetim YMM A.Ş.	5	2,372,444,759	7	0.50
Kavram Bağımsız Denetim ve YMM A.Ş.	3	2,216,900,812	8	0.55	ÇAĞDAŞ Bağimsiz Denetim SMMM A.Ş.	11	2,213,293,403	8	0.47
Total	**238**	**404,902,147,110**		**100.00**	**Total**	**250**	**470,882,105,661**		**100.00**
Big Four Cumulative (Globally Accepted)		364,654,337,377		90.06	Big Four Cumulative (Globally Accepted)		428,092,390,120		90.91
Big Four Cumulative		364,654,337,377		90.06	Big Four Cumulative		428,092,390,120		90.91
Second Tier Firms (5th to 8th) (Globally Accepted)		24,219,583,849		5.98	Second Tier Firms (5th to 8th) (Globally Accepted)		25,581,676,811		5.43
Second Tier Firms (5th to 8th)		24,219,583,849		5.98	Second Tier Firms (5th to 8th)		25,581,676,811		5.43
Audit Firms Having Less than Five Clients (33 audit firms)		13,833,398,533		3.42	Audit Firms Having Less than Five Clients (28 audit firms)		7,436,853,661		3.04
CR_4 (Globally Accepted)		90.06			CR_4 (Globally Accepted)		90.91		
CR_8 (Globally Accepted)		96.04			CR_8 (Globally Accepted)		96.35		
CR_4		90.06			CR_4		90.91		
CR_8		96.04			CR_8		96.35		

2011					2012				
Audit Firm	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**	**Audit Firm**	**Number of Clients**	**Asset Total of Clients (TL)**	**Rank**	**Market Share (%)**
Deloitte (2)	49	253,438,749,154	1	45.27	Deloitte (2)	51	287,417,661,976	1	45.73
Ernst & Young (3)	34	184,263,876,546	2	32.92	Ernst & Young (3)	37	202,189,352,372	2	32.17
PwC (1)	37	52,833,802,712	3	9.44	PwC (1)	41	68,257,113,461	3	10.86
KPMG (4)	16	22,618,680,018	4	4.04	KPMG (4)	15	21,845,876,229	4	3.48
Engin Bağımsız Denetim ve SMMM A.Ş. (Grant Thornton)	7	16,057,974,010	5	2.87	EREN Bağımsız Denetim ve YMM A.Ş.	6	13,093,955,038	5	2.08
Can Uluslararası Bağımsız Denetim ve SMM A.Ş.	12	3,492,585,416	6	0.62	Engin Bağımsız Denetim ve SMMM A.Ş.(Grant Thornton)	6	7,726,214,234	6	1.23
PÜR Bağımsız Denetim YMM A.Ş.	5	3,215,125,146	7	0.57	İrfan Bağımsız Denetim ve YMM A.Ş.	9	3,695,243,284	7	0.59
Köker Yeminli Mali Müşavirlik ve Bağımsız Denetim A.Ş.	2	3,184,770,846	8	0.57	ATA Uluslararası Bağımsız Denetim ve Serbest Muhasebeci Mali Müşavirlik A.Ş.	9	3,373,555,001	8	0.54
Total	**270**	**559,816,665,163**		**100.00**	**Total**	**291**	**628,522,962,623**		**100.00**
Big Four Cumulative (Globally Accepted)		513,155,108,430		91.66	Big Four Cumulative (Globally Accepted)		579,710,004,038		92.23
Big Four Cumulative		513,155,108,430		91.66	Big Four Cumulative		579,710,004,038		92.23
Second Tier Firms (5th to 8th) (Globally Accepted)		25,950,455,418		4.64	Second Tier Firms (5th to 8th) (Globally Accepted)		27,888,967,557		4.44
Second Tier Firms (5th to 8th)		25,950,455,418		4.64	Second Tier Firms (5th to 8th)		27,888,967,557		4.44
Audit Firms Having Less than Five Clients (28 audit firms)		10,815,110,578		3.53	Audit Firms Having Less than Five Clients (31 audit firms)		7,844,367,512		2.07
CR_4 (Globally Accepted)		91.66			CR_4 (Globally Accepted)		92.23		
CR_8 (Globally Accepted)		96.30			CR_8 (Globally Accepted)		96.67		
CR_4		91.66			CR_4		92.23		
CR_8		96.30			CR_8		96.67		

APPENDIX C: White's Heteroscedasticity – Consistent Standard Errors and Covariances

C3.1 2008 Audit Fee Model

Dependent Variable: LNFEE_2008
Method: Least Squares
Date: 01/21/15 Time: 10:26
Sample: 1,200
Included observations: 200
White's heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.625117	0.681851	6.783180	0.0000
LNTAS_2007	0.298970	0.036982	8.084257	0.0000
BIG4_2008	0.720516	0.085355	8.441388	0.0000
FR_2008	0.473232	0.072723	6.507368	0.0000
INVAR_2007	0.081893	0.204067	0.401304	0.6887
LOSS_2007	0.157480	0.089227	1.764932	0.0793
LV_2007	0.063017	0.078969	0.798003	0.4259
LQ_2007	0.007998	0.011846	0.675176	0.5004
AO_2007	0.079723	0.108399	0.735458	0.4630
SGR2008	0.023741	0.085982	0.276120	0.7828
SQRCMPLX_2008	0.164088	0.035237	4.656663	0.0000
IND_2008D	0.035284	0.094074	0.375070	0.7080
FSHRATE_2008	0.000735	0.001577	0.465861	0.6419
OWN_2008	-0.001504	0.002357	-0.638125	0.5242
GRP_2008	-0.261708	0.090032	-2.906827	0.0041
ACHN	-0.414655	0.126745	-3.271580	0.0013
EXTR2008	0.280784	0.096245	2.917394	0.0040
AT_2008	0.147461	0.095038	1.551594	0.1225

R-squared	0.763074	Mean dependent var	11.15259
Adjusted R-squared	0.740944	S.D. dependent var	1.000450
S.E. of regression	0.509205	Akaike info criterion	1.573756
Sum squared resid	47.19066	Schwarz criterion	1.870604
Log likelihood	-139.3756	Hannan-Quinn criter.	1.693886
F-statistic	34.48075	Durbin-Watson stat	1.961030
Prob(F-statistic)	0.000000	Wald F-statistic	33.53711
Prob(Wald F-statistic)	0.000000		

C3.2 2008 Audit Effort Model

Dependent Variable: LNHR_2008
Method: Least Squares
Date: 01/21/15 Time: 10:32
Sample: 1,197
Included observations: 197
White's heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.281953	0.855113	0.329726	0.7420
LNTAS_2007	0.274374	0.045503	6.029828	0.0000
BIG4_2008	0.831831	0.111258	7.476563	0.0000
FR_2008	0.496205	0.098587	5.033148	0.0000
INVAR_2007	0.055974	0.245967	0.227567	0.8202
LOSS_2007	0.069107	0.103224	0.669480	0.5041
LV_2007	-0.005873	0.108930	-0.053919	0.9571
LQ_2007	-0.001322	0.020821	-0.063494	0.9494
AO_2007	-0.011727	0.115148	-0.101841	0.9190
SGR2008	0.279952	0.094764	2.954199	0.0036
SQRCMPLX_2008	0.134746	0.044228	3.046606	0.0027
IND_2008	0.054321	0.105674	0.514040	0.6079
FSHRATE_2008	0.000866	0.001684	0.514251	0.6077
OWN_2008	0.000510	0.002138	0.238787	0.8115
GRP_2008	-0.065521	0.101130	-0.647887	0.5179
ACHN	-0.332755	0.126343	-2.633745	0.0092
EXTR2008	0.348934	0.121981	2.860571	0.0047
AT_2008	0.139235	0.110883	1.255691	0.2109

R-squared			6.522346
Adjusted R-squared	0.748094	S.D. dependent var	1.114824
S.E. of regression	0.559533	Akaike info criterion	1.763493
Sum squared resid	56.04073	Schwarz criterion	2.063481
Log likelihood	-155.7041	Hannan-Quinn criter.	1.884931
F-statistic	35.23935	Durbin-Watson stat	1.928617
Prob(F-statistic)	0.000000	Wald F-statistic	52.48353
Prob(Wald F-statistic)	0.000000		

C3.3 2010 Audit Effort Model

Dependent Variable: LNHR_2010
Method: Least Squares
Date: 01/21/15 Time: 10:57
Sample: 1,206
Included observations: 206
White's heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.406733	0.684528	2.055041	0.0413
LNTAS_2009	0.218441	0.036595	5.969137	0.0000
BIG4_2010	1.016693	0.090887	11.18634	0.0000
FR_2010	0.640145	0.113559	5.637121	0.0000
INVAR_2009	-0.087194	0.200106	-0.435738	0.6635
LOSS_2009	-0.062809	0.080901	-0.776368	0.4385
LV_2009	-0.002055	0.057556	-0.035709	0.9716
LQ_2009	-0.006433	0.006748	-0.953225	0.3417
AO_2009	0.141697	0.123035	1.151681	0.2509
SGR_2010	0.248428	0.088116	2.819324	0.0053
SQRCMPLXT_2010	0.099826	0.033464	2.983098	0.0032
IND_2010	0.102069	0.103034	0.990638	0.3231
FSHRATE_2010	-0.001051	0.001520	-0.691319	0.4902
OWN_2010	-0.001219	0.001982	-0.615138	0.5392
GRP_2010	-0.123920	0.095746	-1.294262	0.1972
ACHN	0.023641	0.076209	0.310211	0.7567
EXTR_2010	0.356073	0.088075	4.042829	0.0001
AT_2010	0.047660	0.083254	0.572470	0.5677

R-squared	0.784677	Mean dependent var	6.419001
Adjusted R-squared	0.765206	S.D. dependent var	1.056303
S.E. of regression	0.511838	Akaike info criterion	1.581705
Sum squared resid	49.25185	Schwarz criterion	1.872490
Log likelihood	-144.9156	Hannan-Quinn criter.	1.699308
F-statistic	40.30030	Durbin-Watson stat	2.053699
Prob(F-statistic)	0.000000	Wald F-statistic	36.64778
Prob(Wald F-statistic)	0.000000		

C3.4 2011 Audit Fee Model

Dependent Variable: LNFEE_2011
Method: Least Squares
Date: 01/21/15 Time: 11:05
Sample: 1,221
Included observations: 221
White's heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.365234	0.647653	6.740081	0.0000
LNTAS	0.312311	0.032224	9.691798	0.0000
BIG4_2011	0.569190	0.115195	4.941083	0.0000
FR_2011	0.324822	0.132417	2.453014	0.0150
INVAR_2010	0.055913	0.214561	0.260594	0.7947
LOSS_2010	0.034729	0.088352	0.393076	0.6947
LV_2010	0.019536	0.079937	0.244392	0.8072
LQ_2010	-0.000764	0.001695	-0.450501	0.6528
AO_2010	0.162809	0.164175	0.991680	0.3225
SGR_2011	0.054142	0.095434	0.567325	0.5711
SQRCMPLX 2011	0.151416	0.041853	3.617796	0.0004
IND_2011	0.129691	0.110171	1.177175	0.2405
FSHRATE_2011	-0.000414	0.002045	-0.202357	0.8398
OWN_2011	-0.000666	0.001837	-0.362464	0.7174
GRP_2011	-0.178854	0.110528	-1.618167	0.1072
ACHN	-0.066599	0.097185	-0.685276	0.4940
EXTR_2011	0.122162	0.118042	1.034901	0.3019
AT_2011	0.202607	0.095080	2.130918	0.0343

R-squared	0.652767	Mean dependent var	10.90797
Adjusted R-squared	0.623688	S.D. dependent var	0.915002
S.E. of regression	0.561301	Akaike info criterion	1.760821
Sum squared resid	63.95700	Schwarz criterion	2.037595
Log likelihood	-176.5708	Hannan-Quinn criter.	1.872577
F-statistic	22.44833	Durbin-Watson stat	2.148891
Prob(F-statistic)	0.000000	Wald F-statistic	24.48199
Prob(Wald F-statistic)	0.000000		

C3.5 2012 Audit Effort Model

Dependent Variable: LNHOUR_2012
Method: Least Squares
Date: 03/23/15 Time: 01:04
Sample: 1 247
Included observations: 247
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.671281	0.576207	1.165000	0.2452
LNTAS	0.255375	0.030384	8.404908	0.0000
BIG4_2012	1.074095	0.090227	11.90432	0.0000
FR_2012	0.278056	0.136028	2.044115	0.0421
INVAR_2011	-0.069973	0.199921	-0.350002	0.7267
LOSS_2011	-0.048666	0.076752	-0.634076	0.5267
LV_2011	0.048184	0.028576	1.686164	0.0931
LQ_2011	-0.004540	0.002189	-2.074093	0.0392
AO_2011	-0.070733	0.130103	-0.543671	0.5872
SGR_2012	0.057739	0.080599	0.716372	0.4745
SQRCMPLX_2012	0.134042	0.029529	4.539391	0.0000
IND_2012	0.120275	0.092605	1.298794	0.1953
FSHRATE_2012	0.001628	0.001261	1.291498	0.1978
OWN_2012	-0.000772	0.001670	-0.462179	0.6444
GRP_2012	-0.102117	0.083571	-1.221919	0.2230
ACHN	0.089239	0.084265	1.059025	0.2907
EXTR_2012	0.049215	0.081648	0.602776	0.5473
AT__2012	0.135509	0.067248	2.015073	0.0451

R-squared	0.771845	Mean dependent var	6.357066
Adjusted R-squared	0.754908	S.D. dependent var	1.064417
S.E. of regression	0.526959	Akaike info criterion	1.626693
Sum squared resid	63.58997	Schwarz criterion	1.882438
Log likelihood	-182.8966	Hannan-Quinn criter.	1.729658
F-statistic	45.57086	Durbin-Watson stat	2.306537
Prob(F-statistic)	0.000000	Wald F-statistic	62.27111
Prob(Wald F-statistic)	0.000000		

APPENDIX D:CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: ULUSOY TOKGÖZ, Sibel

Date and Place of Birth: 1974/Ankara-Turkey

Nationality: Turkish (TC)

Marital Status: Married

email: sibelulusoy@yahoo.com

EDUCATION

Institution, Degree

Ankara University, Business Administration, BS

University of Pennsylvania, Wharton School, Certificate

Erasmus University, Rotterdam, Business and Trade Law, LLM Degree

Ankara University, Faculty of Political Sciences, Business Administration, Masters Degree

WORK EXPERIENCE

Year	Place	Enrollment
1996- 2000	Capital Markets Board of Turkey	Expert Assistant
2000-2008	Capital Markets Board of Turkey	Expert
2008-Present	Capital Markets Board of Turkey	Group Head

SCHOLARSHIPS

EU Jean Monnet Scholar

Turkish-Japan Association Scholar

FOREIGN LANGUAGES

Advanced English

HOBBIES

Photograph, Yoga and Travelling

APPENDIX E:TURKISH SUMMARY

Muhasebe ve bağımsız denetim alanında Türkiye'de son yıllarda önemli reformlar yaşanmıştır. Bunlardan bazıları enflasyon muhasebesi ve konsolidasyon zorunluluğu getirilmesi, uluslararası standartlara uyum için yapılan düzenlemeler, bağımsız denetçi rotasyonu ve yeni Türk Ticaret Kanunu'nun yürürlüğe girmesi ile bağımsız denetimin halka açık olmayan şirketleri de kapsayacak şekilde yaygınlaştırılması olarak sayılabilir.

Çalışmanın temel hedefi Türkiye'de önemli değişikliklerin yaşandığı bağımsız denetim piyasasının yapısını açıklamaktır. Bu amaçla ilk olarak çalışmanın ikinci bölümünde bağımsız denetim, bağımsız denetçiler ve muhasebe alanındaki düzenleme altyapısı ortaya konulmuştur. Bu kapsamda öncelikle Türk sermaye piyasaları kısaca tanıtılmış, muhasebe standartları, finansal tabloların açıklanmasındaki esaslar çerçevesinde muhasebe mesleğinin gelişimi anlatılmıştır. Takiben, bağımsız denetim yükümlülüğü, bağımsız denetçilerin yetkilendirilmesi, bağımsız denetim standartları, bağımsız denetçi seçimi, sözleşme yapılması ile koşulları, bağımsız denetçi rotasyonu, minimum ücret ve süre ile bağımsız denetim ücretlerinin açıklanması konusundaki düzenlemeler, bağımsız denetimde bağımsızlık ve bağımsız denetçilerin sorumlulukları açıklanmıştır.

Ardından çalışmanın üçüncü bölümünde öncelikle bağımsız denetim piyasasında konsantrasyon ve bunun etkileri hakkındaki tartışmalar açıklanmış, ardından Türkiye'deki bağımsız denetim piyasasındaki konsantrasyon düzeyi, piyasa liderleri ve bağımsız denetçi değişimleri verileri incelenmiştir. Bağımsız denetim piyasasında rekabet ve konsantrayon hakkındaki değerlendirmeler; 2001-2012 döneminde finansal kurumlar, serbest işlem platformu şirketleri ve yatırım ortaklıklarından dönüşen şirketler dışında kalan Borsa İstanbul şirketlerini denetleyen bağımsız denetçileri kapsamaktadır. Yapılan inceleme ile sözkonusu dönemde bağımsız denetim piyasasının liderleri belirlenmiş, ilk dört ve sekiz büyük bağımsız denetim firması ve bunların piyasa payları ortaya konulmuş ve az sayıda müşteri ile çalışan bağımsız denetçilerin sayısının belirlenmesi sağlanmıştır. Borsa İstanbul web sayfası, Kamuyu Aydınlatma Platformu ve Finnet veri sağlayıcısından elde edilen veriler kullanılarak bu değerlendirmeler yapılmıştır. Yapılan analizde kullanılan özet tablolar da çalışmanın eki olarak sunulmuştur. İnceleme dönemi içerisindeki bağımsız denetçi değişiklikleri de ayrıca çalışmada özet bir tablo oluşturularak, değerlendirilmiştir. Üçüncü bölümde yer alan sözkonusu Tablo 6, bağımsız denetçi değişimlerini

ilk halka arzların etkisi ile aynı gruptaki ve farklı gruplar arasındaki bağımsız denetçi değişimlerini de içerecek şekilde hazırlanmıştır.

Piyasa analizinin temel unsurlarından birisini fiyatlama mekanizmasının değerlendirilmesi oluşturmaktadır. Bu değerlendirme fiyata etki eden çeşitli arz ve talep değişkenlerinin incelenmesini gerektirmektedir. Bu itibarla, Türkiye'deki bağımsız denetim piyasasının işleyişinin anlaşılmasını teminen, çalışmanın dördüncü bölümünde bağımsız denetim ücretlerini etkileyen unsurlar ampirik bir çalışma yapılarak analiz edilmiştir. Bu analizlerin literatüre katkı sağlaması yanında, bağımsız denetim hizmeti için minimum fiyat ile çalışma saati belirlenmesinden, bağımsız denetim firmalarının listeye alınmasından, kamuya yapacakları açıklamalardan ve bağımsız denetim kalitesinin değerlendirilmesinden sorumlu düzenleyici ve denetleyici otoritelerin çalışmaları için de yararlı olacağı düşünülmektedir. Piyasa yapısının değerlendirilmesinde diğer önemli bir unsur ise harcanan emektir. Bu sebeple, bağımsız denetim sürelerinin belirlenmesine etki eden unsurların tespiti de çalışmanın bir diğer hedefi olup, bu çerçevedeki ampirik analizlere de çalışmanın dördüncü bölümünde yer verilmiştir.

Akademik literatürde bağımsız denetim fiyatını etkileyen unsurları araştıran çeşitli çalışmalar bulunmaktadır. Simunic (1980) bağımsız denetim fiyatını etkileyen çok sayıda müşteri ve bağımsız denetçi özelliklerini bağımsız denetimi bir üretim süreci olarak değerlendirerek test etmiştir. Bunu takiben çok sayıda çalışma farklı ülkelerde bağımsız denetim fiyatlarını etkileyen değişiklikleri ortaya çıkarmıştır. Hay, Knechel ve Wong (2006) bağımsız denetim ücretlerini etkileyen değişkenler hakkında 1997-2003 yıllarında yapılan çalışmaları 20 ülke için derleyip, analiz etmiştir. Hay, Knechel ve Wong (2006)'da literatürdeki konuya ilişkin çalışmalarda en çok kullanılan bağımsız değişkenler listelenmiş olup, bunlar arasında müşteri şirketin büyüklüğü (aktif veya satış hasılatı), müşteri şirketin karmaşıklığı (müşterinin konsolide ettiği bağlı ortaklık sayısı, sektörü, yabancı ülkede yerleşik bağlı ortaklıkları, faaliyet bölümlerinin sayısı, yabancı varlıklarının oranı), müşterinin riskini gösteren değişkenler (müşterinin stokları, alacakları, sistemik riski), müşterinin karlılığına ilişkin değişkenler (karlılık oranı, zarar edip etmediği), müşterinin borçluluk durumunu gösteren oranlar, müşteri şirketin ortaklık yapısına ilişkin değişkenler, iç kontrolü, kurumsal yapısısı ile bağımsız denetçinin kalitesi (büyüklüğü, uzmanlığı, piyasa payı), bağımsız denetim ilişkisinin uzunluğu ve bağımsız denetim süresi değişkenleri yer almaktadır. Bunun yanında, Hay, Knechel ve Wong (2006)'da konuya ilişkin literatürde genel olarak müşteri şirketin büyüklüğü, riski ve karmaşıklığının bağımsız denetim ücretlerini etkilediğinin tespit edildiği belirlenmiştir.

Türkiye'de bağımsız denetim ücretlerinin analizi için yapılan çalışmalar, ücret verisinin kamuya duyurulması yönünde bir zorunluluk bulunmadığı için kısıtlı kalmış olup, ulaşabildiğimiz Türkiye'ye odaklanmış tek çalışma 2007 yılı bağımsız denetim ücretleri üzerinden yapılmış olan Ulusoy Tokgöz (2010)'dur.

Bağımsız denetim için harcanan çaba (bağımsız denetim süresi) hakkında literatürde yapılan çalışmalar ise kısıtlı sayıdadır. Bunun en önemli nedeni bağımsız denetim sürelerine ilişkin veriye ulaşmada yaşanan sıkıntılardır. İlk çalışmalardan biri olan Palmrose (1986) asli analizine ek olarak bağımsız denetim sürelerine ilişkin verileri de toplayarak büyük bağımsız denetim firmaları tarafından elde edilen primlerin gerekçesinin daha iyi hizmet mi yoksa piyasa gücü mü olduğunu test etmiştir. Takiben, Palmrose (1989) farklı bağımsız denetim sözleşme türlerinin bağımsız denetim ücret ve süresi üzerindeki etkisini araştırmıştır. Bunun yanında, Simunic (1984), Beck, Frecka ve Solomon (1988) ve Davis, Ricchiute ve Trompeter (1993) diğer sağlanan hizmetler sırasında elde edilen bilgilerin bağımsız denetim etkinliğine etkisini araştırmışlardır. Bağımsız denetim süresini dikkate alan diğer çalışmalar farklı konulara odaklanmış olmakla birlikte, Davidson ve Gist (1996), Bedard ve Johnstone (2004) ve Schelleman ve Knechel (2010), O'Keefe, Simunic ve Stein (1994) ve Bell, Doogar ve Solomon (2008), Hackenbrack ve Hogan (2000), Niemi (2005), Niemi et al. (2014), Leventis and Caramanis (2005), Redmayne ve Laswad (2013) ve Bradbury ve Redmayne (2014) olarak sayılabilir. Türkiye'de daha önce bağımsız denetim sürelerine odaklanarak yapılmış bir akademik çalışmaya ulaşılamamıştır.

Çalışmanın bağımsız denetim ücret ve sürelerini analiz eden bölümü 2008-2012 yıllarını içermekte ve dolayısıyla 2010 yılında gerçekleşen zorunlu bağımsız denetim firması rotasyonu dönemini de içine almaktadır. Bağımsız denetim rotasyonunu zorunlu kılan ülkelerin sınırlı olması ve veri elde etmedeki güçlükler nedeniyle bu politikanın etkilerini uygulamaya dayanarak analiz eden çalışmaların sayısı azdır. Bu konuya odaklanmış ve uygulama verilerine dayalı olan iki çalışmadan Cameran et al. (2013) İtalya, Kwon, Lim ve Simnett (2014) Güney Kore verilerini kullanmıştır. Cameran et al. (2013) temel olarak dört büyük bağımsız denetim firmasından elde ettiği verileri kullanmış ve zorunlu rotasyon öncesinde bağımsız denetçilerin gayretlerini azaltmadığını ve zorunlu rotasyon sonrasındaki dönemde ise harcanan bağımsız denetim süresinin arttığını bulmuştur. Bunun yanında, anılan çalışmada bu politikanın ilk sözleşmelerde fiyat indirimi yarattığı da ortaya konmuştur. Kwon, Lim ve Simnett (2014)'nin ana konusu zorunlu rotasyon uygulamasının kalite ve fiyata etkisini değerlendirmek ise de bağımsız denetim süresi üzerindeki etkisi de bu çalışmada araştırılmıştır.

Literatür dikkate alınarak çalışmanın dördüncü bölümünde, 2008-2012 yıllarında Borsa İstanbul'da işlem gören temel olarak finansal şirketler, serbet işlem platformu ile yatırım ortaklıklarından dönüşen şirketler dışında kalan şirketlerin yaptığı bağımsız denetim sözleşmelerinde yer alan ücret ve süre verilerine etki eden faktörler regresyon analizi yapılarak incelenmiştir. Çalışmadaki bağımsız denetim ücret ve süre verileri Sermaye Piyasası Kurulu'na bildirilen bağımsız denetim sözleşmelerinin incelenmesi ile elde edilmiş, diğer finansal, şirketlere ve bağımsız denetime ilişkin veriler ise Borsa İstanbul ile Kamuyu Aydınlatma Platformu'nun web sayfasındaki finansal rapor ve bağımsız denetim raporları ile Finnet veri sağlayıcısından temin edilmiştir.

Test edilen 17 adet bağımsız değişken literatürde sık kullanıldığı tespit edilenler (Hay, Knechel ve Wong, 2006; Hay, 2013) ve Türkiye'ye özgü unsurlar dikkate alınarak belirlenmiştir. Çalışmada değerlendirilen bağımsız değişkenler; müşteri şirketin büyüklüğü (aktif büyüklüğü), bağımsız denetim firmasının dünyada kabul edilen dört büyük bağımsız denetim firmasından biri olup olmadığı, ilgili yılda bağımsız denetçi değişikliği olup olmadığı, denetlenen şirketin konsolide ettiği şirket sayısı ile dipnotlarında bölümlere göre raporlama yapıp yapmadığı, müşteri şirketin faaliyet gösterdiği sektör ile stoklar ve alacaklarının aktif toplamına oranı, müşterinin likidite, borçlanma oranları ve müşterinin zararlı olup olmadığı, müşteri şirketin ortaklık yapısı (en büyük ortak ve yabancı ortağın pay oranı), müşterinin önemli bir şirket grubuna dahil olup olmadığı, bağımsız denetçi tarafından sağlanan ek hizmetler, tüm ara dönem finansal tabloların bağımsız denetçi tarafından bağımsız denetimden/incelemeden geçirilip geçirilmediği ve bağımsız denetim giderlerinin (konaklama ve yolculuk) sözleşme tarafları arasında dağılımıdır. Kullanılan değişkenler ile bu değişkenler için beklenen ilişkinin yönü ve değişkenlerin belirlenmesinde yararlanılan referanslar, çalışmanın dördüncü bölümünde sunulmuş ve aynı bölümdeki Tablo 8'de özetlenmiştir.

Bu kapsamda, literatürdeki tespitler dikkate alınarak özellikle analiz dönemi içerisinde kalan 2010 yılındaki zorunlu bağımsız denetim firması rotasyonu, büyük şirket grupları ile yapılan sözleşmeler ve sözleşmelerden derlenen bağımsız denetim firmaları tarafından sunulan İngilizce rapor hazırlama, ara dönemlerin denetlenmesi ile konsolide olunan holding şirketi için veri hazırlanması gibi ek hizmetlerin bağımsız denetim ücret ve süresine etkisi incelenmiştir. Bu kapsamda oluşturulan bağımsız denetim ücret ve süresini inceleyen iki ayrı modelin bağımlı değişkenleri ise logaritması alınmış yıllık bağımsız denetim ücret ve süresidir. Temel değerlendirmeler yıl bazında kesitsel (cross sectional) olarak yapılmakla birlikte, özellikle zorunlu rotasyon konusunda yapıldığı tespit edilen iki çalışma ile karşılaştırma sağlayabilmek için (Cameran et al., 2013; Kwon, Lim ve Simnett, 2014) pooled veri seti üzerinden de analizler tekrarlanmıştır. Ayrıca, literatürdeki farklı

veri tanımlamaları kullanılıp, karlılık için müşterinin zarar edip etmemesi değişkeni yerine aktif karlılığının, müşterinin borçlanma oranı yerine sermaye kaybını gösteren bir oranın kullanılması, müşteri tarafından konsolide edilen şirketlerin kuruluş yerlerine göre yabancı ve Türk olarak ayrıştırılarak ayrı ayrı test edilen modellerde dikkate alınması, farklı sektör gruplarını temsil eden alternatif değişkenler oluşturulması, bağımsız denetçi değişimi yerine bağımsız denetim ilişkisinin süresinin dikkate alınması yaklaşımlarının elde edilen sonuçlar üzerindeki etkisi araştırılarak, kullanılan modeller için duyarlılık analizi yapılmıştır. Ayrıca pooled veri analizi yapılırken değişkenler arasındaki korelasyon ve literatür çerçevesinde çeşitli etkileşim terimleri oluşturularak elde edilen sonuçlar çalışmada değerlendirilmiştir.

Çalışmanın üçüncü bölümünde analiz edilen veriler, müşteri sayısı dikkate alındığında bağımsız denetim piyasasında konsantrasyonun gelişmiş ülkelere nazaran düşük olmakla birlikte, denetlenen şirketlerin aktif toplamları dikkate alındığında dört büyük bağımsız denetim firmasının önemli piyasa hakimiyeti bulunduğunu göstermektedir. Bağımsız denetçi değişiklikleri analizi, 2010 yılındaki zorunlu rotasyonun çok sayıda Borsa İstanbul şirketinin bağımsız denetim firması değiştirmesine yol açtığını ve bu uygulamanın önemli sonuçlarından birinin de bağımsız denetim piyasa liderliğindeki değişiklik olduğunu göstermektedir. Bağımsız denetim piyasasındaki konsantrasyona ilişkin tespitler dikkate alınarak, konsantrasyonu azaltmak ve uluslararası dört büyük denetim firması ile küçük ve orta ölçekteki yerel bağımsız denetim firmaları arasındaki tecrübe paylaşımını artırmak için, Le Vourc'h and Morand (2011) tarafından Avrupa Birliği için önerilen bağımsız denetim yapılması için birden fazla denetim firmasının görevlendirilmesi alternatifinin Türkiye için de tartışılması gerektiği düşünülmektedir. Bu tartışma yürütülürken, bu politikanın taraftarlarının bağımsız denetim kalitesi ve bağımsızlığında artış olacağını düşünürken, karşı görüşte olanların bağımsız denetçiler arası koordinasyon gerektireceği, bağımsız denetçilerden birinin diğerinin çalışması üzerinden işlerini yürütebileceği (free-riding) (Hess, Mohrmann ve Stefani, 2014), görevlendirilen bağımsız denetim firmalarının ikisinin de büyük firmalar olması durumunda piyasa güçlerinin daha da artabileceği ve bu politikanın etkilerine ilişkin yapılan çalışmaların net bir sonuca ulaşmadığı (Hess ve Stefani, 2012) hususlarının da değerlendirilmesi gerekmektedir.

Bağımsız denetim ücret ve sürelerini etkileyen etkenleri belirlemek üzere yapılan regresyon analizleri ise en önemli unsurların müşteri şirket büyüklüğü, konsolide edilen şirket sayısı ve dört büyük bağımsız denetim firması arasında yer alınıp alınmadığı olduğunu göstermiştir. Böylece literatürde kabul edildiği (Simunic, 1980; Hay, Knechel ve Wong, 2006; Cobbin, 2002; Kamran ve Mahendra, 2005; Ulusoy Tokgöz, 2010) gibi inceleme döneminde dört büyüklerin Türkiye'de de

primli fiyat üzerinden çalıştıkları belirlenmiştir. Bunun yanında, (Palmrose, 1986)'u takip ederek büyük bağımsız denetim firmalarının aldıkları primin verdikleri hizmetin süresinden kaynaklanıp kaynaklanmadığı da ek olarak incelenmiştir. Bu inceleme literatürde (Cameran et al., 2013; Kwon, Lim ve Simnett, 2014) kullanılan bağımsız denetim ücretlerine ilişkin modele bağımsız değişken olarak bağımsız denetim sürelerinin de dahil edilmesi suretiyle yapılmıştır. Bu şekilde model test edildiğinde dört büyük bağımsız denetim firmasını gösteren kukla (dummy) değişken önemsiz hale gelmiş olup, bu sonuç ödenen primlerin büyük bağımsız denetim firmalarının artan çalışma süreleri ile açıklandığı şeklinde değerlendirilmiştir.

Bunun yanında, tüm ara dönem finansal tabloları için bağımsız denetim/inceleme hizmeti alınmasının da fiyat ve bağımsız denetim sürelerini etkilediği sonucuna ulaşılmıştır.

Bölümlere göre raporlama yapılmasının özellikle bağımsız denetim süresini etkilediği ve ek olarak sunulan bağımsız denetim hizmetlerinin de bağımlı değişkenleri açıklamada önemli olduğu da çalışmada tespit edilmiştir. Seçilen müşteri riskini gösterir değişkenlerinin bağımsız denetim süre ve fiyatı üzerinde net bir etkisi bulunduğu çalışma ile ispat edilemediğinden, bu durumun farklı şirket büyüklükleri için ileriki çalışmalarda daha detaylı araştırılmasının yararlı olacağı düşünülmektedir.

Bunun yanında, bağımsız denetim firmaları tarafından müşteri elde etmek için ilk sözleşmelerde indirim yapıldığı (lowballing) tespit edilmiştir. Zorunlu bağımsız denetim rotasyonu için getirilen süre kısıtı dikkate alınarak yapılan ek incelemeler zorunlu rotasyon ile bağımsız denetim ücretleri arasındaki negatif yönlü ilişkiyi Cameran et al. (2013)'e benzer şekilde desteklemektedir. Bu sonuç bağımsız denetim firması rotasyonu politikasının etkilerinin daha iyi anlaşılmasına katkı sağlayacaktır.

Zorunlu bağımsız denetim firması rotasyonunun alternatifi olan politika, sorumlu ortak bağımsız denetçilerin değiştirilmesini içermektedir. Bu kapsamda, literatür dikkate alınarak 2008-2012 dönemi içerisindeki bağımsız denetçi sorumlu ortak değişiklikleri verisi de ayrıca derlenmiş ve analiz edilmiştir. Veri yetersizlikleri nedeni ile sorumlu ortak değişikliklerinin zorunlu/gönüllü olup olmadığının ortaya konulması mümkün olmamakla birlikte, elde edilen sorumlu ortak değişim verisi üzerinden yapılan testler sorumlu ortak değişiminin bağımsız denetim süre ve fiyatı üzerinde önemli bir etkisi olmadığını göstermektedir.

Bunun yanında, çalışmada bulunan bağımsız denetim ücretlerinde tespit edilen grup iskontosu da diğer gelişmekte olan ülke çalışmaları için yararlı olacaktır.

Yapılan çalışmanın sonuçları dikkate alındığında, gelecekteki konuya ilişkin akademik çalışmaların bağımsız denetçinin müşteriye ekonomik bağımlılığı, bağımsız denetim firmasının piyasa gücü ve zorunlu rotasyon politikasının finansal tablo ve bağımsız denetim kalitesi üzerindeki etkilerinin incelenmesine yoğunlaştırılmasının yararlı olacağı düşünülmektedir.

APPENDIX F: THESIS PHOTOCOPY PERMISSION FORM/ TEZ FOTOKOPİSİ İZİN FORMU

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YAZARIN / AUTHOR

Soyadı / Surname : .....
Adı / Name : .....
Bölümü / Department : .....

TEZİN ADI / TITLE OF THE THESIS (**İngilizce** / English) : .....
.....
.....
.....
.....

TEZİN TÜRÜ / DEGREE: **Yüksek Lisans** / Master ☐ **Doktora** / PhD ☐

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