

Earnings management and the role of auditors in an unusual IFRS context:

The case of Greece

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2012

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Abstract

The mandatory adoption of International Financial Reporting Standards (IFRS) on January 1, 2005 aimed to improve the quality of financial reporting in Greece, which had been regularly criticized for the practice of earnings management and the ineffectiveness of external auditing. However, the unusual characteristics of the economic environment and institutional setting of code-law oriented Greece, has made the attempt even more challenging. To investigate the role of auditors in potentially approving managers' opportunistic behaviour in the post-IFRS period, we examine the relationship between earnings management, measured by signed discretionary accruals, and auditor reporting, measured by audit firm size (Big 4 vs. non-Big 4) and audit opinion type (unqualified vs. qualified). Using a sample of firms listed on the Athens Stock Exchange over a five-year period, we find that the size of the audit firm does not affect the level of earnings management, and the audit opinion qualification is not issued in response to management's opportunistic behaviour. The interpretation of the results is conditional on the Greek context, where the economic bonding of auditors with their clients is strong, investor protection is low, enforcement mechanisms are weak and there is low litigation and reputation loss, even in the post-IFRS period.

Keywords: Discretionary accruals; Audit opinion; Big Four auditors; IFRS context; Greece

1. Introduction

Greece has often been in the spotlight for the inadequate quality of financial reporting. Before the implementation of International Financial Reporting Standards (IFRS) to all consolidated and individual accounts of publicly traded firms beginning on January 1, 2005, the quality of Greek accounting standards and disclosure practices had been criticized in the European financial press and investors' community. Some of the complaints were that Greek accounting standards allowed firms to use too much discretion, lacked detailed disclosures, were designed to satisfy the information needs of users, permitted reporting that was too heavily influenced by tax avoidance strategies, and had no effective enforcement mechanisms. Empirical studies of international comparison among countries have illustrated that Greece exhibits the highest level of earnings management and opacity (Bhattacharya, Daouk, & Welker, 2003; Leuz, Nanda, & Wysocki, 2003).

The practice of earnings management indicates a breakdown in the financial reporting process (Cohen, Krishnamoorthy, & Wright, 2004). When in doubt of the reliability of financial statements, users turn their attention to the auditor's report. Theoretically, external auditors play a key role as a monitoring mechanism in assuring the integrity of accounting figures and in reducing the agency costs, resulting from managers' opportunistic incentives.¹ However, the effectiveness of external auditing in Greece has also been questioned by various parties, i.e. finance institutions, investors, journalists, and politicians (Leventis, Weetman, & Caramanis, 2011).

In this study, we aim to investigate the relationship between earnings management and auditor reporting for firms listed on the Athens Stock Exchange (ASE) for the post-IFRS period 2005-2009. While research on earnings management is abundant, the role of auditors in potentially approving managers' opportunistic behaviour needs to be further investigated. To address this research question we focus on Greece for two reasons. First, it is interesting to investigate if code-law oriented Greece, criticized for the inadequate quality of financial and auditor reporting, has made improvements after the adoption of IFRS, which are designed to

¹Other monitoring mechanisms identified in the literature are the composition and characteristics of the board of directors and audit committees (Peasnell, Pope, & Young 2005; Lee & Mande 2005; Lee, Ortman, & Mande 2004; Xie, Davidson, & DaDalt 2003; Klein 2002; Beasley 1996) and ownership structure (Chung, Firth, & Kim 2002). Incentives range from bonus plans (Shuto 2007; Balsam 1998; Gaver & Gaver 1998; Baber, Kang, & Kumar 1998), avoidance of debt covenant violations (Sweeney 1994; DeFond & Jiambalvo 1994), insider trading (Bergstresser & Philippon 2006; Beneish & Vargus 2002) to meeting analysts' and management's forecasts (Burgstahler & Eames 2006; DeGeorge, Patel, & Zeckhauser 1999).

provide more useful financial statements, compared to the legalistic, politically and tax-influenced standards that historically have characterized Continental Europe (Ball, 2006).

Second, Greece is a small country that has undergone serious reforms over the last few years. The Greek economy was affected by the global recession, which began in 2007, and showed the first signs of sovereign debt crisis in 2009. In 2010 the concerns intensified, the crisis deepened and the public debt became unsustainable. The country turned to the European Union (EU), the International Monetary Fund (IMF) and the European Central Bank (ECB) for financial support, which included ‘rescue packages’, conditional on the implementation of harsh austerity measures, such as restrictive income policy and drastic limitation of public expenses. The financial problems of Greece have spread to other weak economies in the European Monetary Union (EMU), i.e. Ireland and Portugal, and the contagion effect has become a perceived problem for the whole EU. Therefore, it is interesting to investigate various financial aspects of such a small country, which threatens the stability of the EU.

We use signed discretionary accruals as a proxy for earnings management, and as proxies for auditor reporting we use audit firm size (Big 4 vs. non-Big 4), and audit opinion type (unqualified vs. qualified).² Specifically, since the purpose of an external audit is to improve financial reporting quality, we examine if there are observable differences in discretionary accruals between clients of Big 4 and non-Big 4 audit firms.³ Then, we investigate if there is a difference in the type of audit report issued in response to the level of discretionary accruals possibly employed by a firm. As an additional test, we examine whether the auditor’s propensity to issue a qualified report is similar for Big 4 and non-Big 4 auditors. As Arnedo, Lizarraga, and Sanchez (2008)⁴ state, a re-examination of these relationships is justified if we consider recent findings, which suggest that Big 4 auditors act less conservatively in countries with less restrictive regulations or in countries where stakeholders make lower demands for the quality of auditing.

Our results reveal that auditors, either Big 4 or non-Big 4, have weak incentives to prevent earnings management, and the audit opinion qualification is not issued in response to management’s opportunistic behaviour. As for the additional test, Big 4 auditors have a

² These proxies are typically termed as audit quality attributes and are used interchangeably throughout the study.

³ For practical reasons, Big 4 refers not only to current Big 4 but also to previous Big 5, 6 and 8 audit firms, where appropriate.

⁴ Although Arnedo et al. (2008) examined these relationships in Spain, a country from the Euro-Continental accounting model, their results are based on a sample of private firms that filed for bankruptcy during a pre-IFRS period from 1993 to 2002.

greater propensity to issue unqualified reports, which is attributed to client characteristics and not to auditor size. In sum, IFRS implementation has not alleviated the influences of the economic environment and institutional setting of Greece in the auditor and financial reporting process.

The findings can provide insights to investors, who have become the major target of the Greek government policy. From the early stages of the crisis, the Greek government realized that the attraction of foreign direct and indirect investments could assist the Greek economy to overcome the financial sovereign crisis.⁵ A series of reforms aimed at the development of a more attractive investment and business environment, including liberalization of a number of markets, faster licensing procedures, flexibility in the labour market, competitive real estate prices, new Investment Law, as well as a reduction in the cost of production. Consequently, investors who consult financial statements when they consider entering the Greek market should be aware of these relationships;⁶ they can rely on the auditor's report to make inferences about financial reporting quality, but the report is valuable to them only to the extent that is accurate, relevant and reliable (Ryu & Rho, 2007).

Furthermore, standard setters and regulators should be conscious of the fact that to accomplish international harmonization of auditing and financial reporting, the distinctive characteristics of each country need to be examined carefully. There must also be appropriate country level incentives and enforcement mechanisms. Francis and Wang (2006) state that enforcement mechanisms may matter more than a country's accounting standards in shaping earnings and audit quality. It is apparent that, despite IFRS implementation, earnings management still exists, and auditors also may behave opportunistically. Therefore, regulators have to enact standards and rules that limit the opportunistic behaviours of both.

Additionally, the study contributes to the literature of earnings management and auditing since these relations have not received considerable attention in Greece, and the findings from common-law countries may not be applicable. Our study is one of the first to

⁵ The net foreign direct investment (FDI) inflow in Greece showed a decrease of 5.82% in 2010 compared with 2009. However, this decrease is low taking into consideration the financial debt crisis. The total foreign capital gross inflows, which reflect the real performance of the country in the attraction of foreign investments, showed an increase of 4.96% in 2010 (Bank of Greece, 2011).

⁶ Countries with strong investment presence in Greece in recent years include Germany, France, the United Kingdom, Belgium, Luxembourg and the Netherlands. The U.S. presence is relatively low, suggesting future investment potentials. Prospects also exist to attract investors from Russia and Eastern Europe, the Middle East, Arab countries and Asia, particularly China, who are mainly interested in the energy, telecommunications, tourism, transport, finance, real estate and logistics sectors (Bank of Greece, 2011).

examine earnings management and the role of auditors in the post IFRS period for a five-year sample. Finally, it is the first time that the cross-sectional modified-Jones model with cash flow from operations (CFO) (Larcker & Richardson, 2004) and the cross-sectional modified-Jones model with prior year return on assets (ROA) (Kothari, Leone, & Wasley, 2005) are applied in Greece.

The remainder of the study is organized as follows. In Section 2 the Greek setting is described. Section 3 presents the literature review and hypotheses development. Section 4 outlines the research design, while Section 5 describes the sample and data. In Section 6 the empirical results are presented. Section 7 includes sensitivity tests and Section 8 concludes the paper.

2. Background

2.1. Cultural factors

Greece is a Euro-Continental, code law country. It shares similar attributes with other Euro-Continental countries but also has some unusual national features. During the last few decades, Greece has been modernized, but Greek culture, politics and economics remain affected by a duality of Eastern and Western influences (Caramanis 2005). The European Community membership in 1981, the influence of the Greek General Accounting Plan from the French Plan and the European Union Directives (Koumanakos, Siriopoulos, & Georgopoulos 2005), and the mandatory implementation of IFRS by all Greek listed firms, have played a major role in the modernization process (Tsalavoutas, Andre, & Evans 2008).

Consistent with the cultural values outlined by Hofstede (1980, 1991) and Gray (1988), Greece is characterized by high statutory control, uniformity, conservatism and uncertainty avoidance. In fact, in Hofstede's research, Greece appears as an outlier in terms of uncertainty avoidance, and also scores highly in power distance and masculinity (Ballas, Skoutela, & Tzovas 2010). Hope, Kang, Thomas, and Yoo (2008) rank Greece third, after Venezuela and Portugal, in terms of secrecy, first, along with Colombia, in ownership concentration, and first as the most uncertainty avoiding country in their sample. Similarly, in Tsakumis, Curatola, and Porcano (2007), Greece has the highest score of uncertainty avoidance among 50 countries.

2.2. Corporate environment

The family firm has been an important and common form of business organization in Greece, where ownership is concentrated and closely tied to a group of people (Spanos, Tsipouri, &

Xanthakis 2008). Typically, family members are also board members and executives, and are involved in the direct management of the firm (Spanos et al. 2008). Managers in such firms communicate information regarding their performance directly to their superior owner-managers, without having to rely upon financial statements (Tzovas 2006).

In this business setting, banks are the major source of financing. In many instances, the banks obtain directly all financial information required, without having to rely upon publicly disclosed data since they develop close personal relations with the owners of the firm. In some cases, they own part of the firm's share capital (Tzovas 2006). As expected, banks do not always base their credit decisions on entirely objective financial data. Consequently, the importance of public accounting information is further diminished (Tzovas 2006).

In the late 1990s, the significant use of initial public offerings (IPO) as a means of raising capital turned many firms from private-family owned to publicly listed firms (Spanos 2005), without changing the fact that the main shareholder, the family, may still hold the majority of the firm's equity capital (Lazarides 2010). The development of the ASE and the presence of international capital and institutional investors, followed by the crash of 2000-2001, and the employment of professional managers by listed firms were only some of the driving forces for the increased requirement of effective corporate governance. Law 3016/2002 contained detailed instructions about the form of a firm's corporate governance, with the aim of promoting the internationally significant protection of shareholders' rights (Dimitropoulos & Asteriou 2008) and securing the proper functioning of the market.

Although improvements in corporate governance have occurred, empirical studies reveal that they are primarily confined to a small number of large listed firms (Spanos et al. 2008). Chalevas and Tzovas (2010) suggest that the introduction of corporate governance mechanisms had a limited impact upon crucial corporate issues. For example, the extent to which managers attempt to manipulate firm's earnings has not been affected considerably (Chalevas & Tzovas 2010) since satisfactory results of firms is a prerequisite to raise money from banks and from the ASE (Baralexis 2004). On the whole, Greek listed firms have aligned their activities with the general corporate governance legislative framework, but they are not accustomed entirely to the philosophy of modern corporate governance (Dimitropoulos & Asteriou 2010).

2.3. Accounting framework - IFRS

The Greek accounting system has been stakeholder oriented, tax-driven, and conservative (Spathis & Georgakopoulou 2007; Ballas 1994). The income tax rate is perceived to be unfairly high and many firms attempt to pay the least taxes by exploiting or violating the law with tax evasion strategies, creative accounting and earnings management (Baralexis 2004). Greece ranks 19th among 50 countries in tax evasion, following the less developed Latin and near Eastern European areas (Tsakumis et al. 2007).

Firms have to prepare two different sets of accounts for accounting and tax purposes. This requirement creates a cost-benefit trade-off in the firm's accounting policy decisions. A preference for higher tax-savings results in lower reported profit figures, which in turn, may influence unfavourably the cost of capital of the firm, i.e. the bank's credit decisions, and the share price of the firm (Tzovas 2006). Considering the fact that, in Greece, accounting figures have a dominant influence on a firm's share price, firms are more likely to adopt income increasing accounting policies, regardless of the important tax costs associated with this decision (Tzovas 2006). In other words, the cost of profit overstatement, which is higher income taxes, is less than the benefit derived from such overstatement (Baralexis 2004). Even so, there are few listed firms that understate, rather than overstate profit (Baralexis 2004).

Greece was among the first adopters of IFRS in the EU (Ballas et al. 2010). Hope, Jin and Kang (2006) document that countries with weak shareholder protection bond themselves to superior accounting standards, in order to improve disclosure policies and accounting systems, to enhance the integration of domestic markets into world markets, and to accelerate economic growth. However, higher-quality standards do not automatically lead to higher-quality financial reporting (Ball 2001).

Empirical studies show that the transition to IFRS has not been easy or without problems and has been aggravated by the lack of preparedness of firms and accountants (Spathis & Georgakopoulou 2007). Daske, Hail, Leuz and Verdi (2008) measure the difference between local Generally Accepted Accounting Principles (GAAP) and IFRS on 21 key accounting dimensions and rank Greece first among 26 countries. In Li (2010), Greece has the lowest score of legal enforcement mechanisms regarding IFRS implementation, and the highest scores in 'additional disclosures required by IFRS relative to local standards' and 'the number of inconsistencies between local standards and IFRS'. Likewise, Greece has the highest number of issues absent from local GAAP, but covered by International Auditing Standards (IAS), and is tenth among 28 countries concerning divergence, the differences between national rules and IAS (Ding, Hope, Jeanjean, & Stolowy 2007).

Although Greece was not prepared for the adoption of IFRS, the widespread belief is that the adoption has increased reliability, transparency and comparability of financial statements (Ballas et al. 2010). Iatridis and Rouvolis (2010) examined the post-adoption effects of the implementation of IFRS in Greece and found that the effects in the official year of adoption appear to be unfavourable but improve significantly in the subsequent period. Karampinis and Hevas (2011) reveal that IFRS had only minor impact on the value relevance and conditional conservatism of accounting income, suggesting that simultaneous infrastructure changes are required in order to make any material improvements in financial reporting.⁷ Ball (2006) argues that integration has occurred, notably in the capital and product markets, but most market and political forces are local and will remain so for the foreseeable future.

2.4. The audit market

Corporate auditing was first introduced in Greece in 1955 with the establishment of the state-controlled Body of Chartered Accountants (SOL). Until then, corporate auditing of annual financial statements was a formal 'ironic' act towards the government, shareholders and other interested parties because auditors limited their task to signing the report, which was already composed by the board of directors of the audited company (SOEL 2009). SOL emerged as a state-regulated professional body with significant privileges and an authorized monopoly over audit practice (Dedoulis & Caramanis 2007).

The most important rivalry to SOL was the Association of Certified Accountants and Auditors (SELE), which was established in 1979 by partners in international accounting firms operating in Greece (Caramanis & Lennox 2008). However, members of SELE were prohibited by law from conducting statutory audits, and their services were limited to tax and management consultancy (Caramanis 1998). In 1992 the Greek auditing profession was

⁷ To examine the relevance of IFRS to the Greek market, Ballas et al. (2010) used a mixed methodology relying on secondary sources - a survey of the literature regarding cultural factors, the Greek economic environment and corporate governance structure, as well as the results of a postal survey to finance managers of the top 100 Greek firms, with 24 usable responses. Iatridis and Rouvolis (2010) examined the degree of earnings management under IFRS, the value relevance of IFRS-based accounting numbers, and transition effects on the financial results of Greek listed firms for the 2004-2006 period. Karampinis and Hevas (2011) explored the effects of IFRS on two properties of accounting income: value relevance and conditional conservatism, for a three year post-IFRS period.

liberalized. Opponents of the reform argued that by liberalizing the profession, auditors would serve the interests of their clients and not of the public, while liberalization supporters claimed that competition in the audit market would advance the quality and reliability of audits (Caramanis 1998). After a political struggle between the two organizations, SOL and SELE, SOL was abolished by the government and was reformed to a big private audit firm, SOL S.A. A new accounting organization, the Body of Chartered Auditors and Accountants (SOEL), was created to self-regulate the audit profession (Caramanis & Lennox 2008).

SOL S.A. has been the dominant Greek audit firm, although several small Greek and international audit firms have entered the market; since 2005, after mergers and the collapse of Arthur Andersen, there remained four multinational audit firms, i.e. PricewaterhouseCoopers (PwC), Deloitte Touche Tohmatsu, Ernst & Young, and KPMG, and 15 Greek and second-tier international audit firms.

The Greek Auditing Standards (GAS) published in the Government Gazette (issue 1589/B/22.10.2004) were developed according to the IAS of the International Federation of Accountants (IFAC). The Greek Legislation, with Law 3639/2008, is in full compliance with Directive 2006/43/EC on statutory audits of annual and consolidated accounts.

The Greek Ministry of Economy, responding to the Sarbanes Oxley Act (SOX) of 2002, which introduced major changes to the regulation of financial practice and corporate governance, established the Committee of Accounting Standardization and Auditing (ELTE) in 2003. ELTE was supposed to conduct random annual inspections of approximately 10% of listed firms' financial statements. In cooperation with the Hellenic Capital Market Commission (HCMC), ELTE strived to create a robust supervisory body in order to alleviate concerns over audit quality and the credibility of financial reporting. Unfortunately, ELTE has received considerable criticism because it has not yet become an effective enforcement mechanism. In the Greek environment of weak disciplinary authorities and low probability of litigation by third parties, concerns over auditors' potential opportunistic behaviour still remain.

2.5. Auditor's report

With the implementation of IFRS and the new auditing rules, the form and content of the auditor's report has been modified. Auditors are obliged to express one of the following opinions on the financial statements, in the opinion paragraph of the report: (1) unqualified opinion, (2) qualified opinion, with matters that do not affect the auditor's overall opinion, (3)

qualified opinion, with matters that do affect the auditor's overall opinion, (4) adverse opinion, and (5) disclaimer of opinion.

It should be mentioned that a particularity of the Greek auditor's report is that there is not a clear distinction between unqualified and qualified opinions, apart from the adverse opinion, where the auditor's verdict is clearly stated. For instance, a qualified opinion can include, in the explanatory paragraph, remarks about matters that both 'affect' and 'do not affect the auditor's overall opinion'. However, it could end with a phrase such as '... with the exception of the consequences of the above issues, in our opinion, the aforementioned financial statements give a true and fair view of the financial position of the firm as of 31 December 20XX.. .' Thus, it is in the subjective judgment of the user to decide whether or not the remarks are materially important, and whether or not they should be taken into consideration.

Lately, there is growing concern that firms have established the practice of not performing or undervaluing specific estimates, such as tax liabilities, lawsuits in progress, bad debts, and due liabilities. If these estimates were taken into consideration or valued more realistically, they would reduce considerably reported earnings. In a content analysis of audit reports, Grant Thornton (2010) discovered that the most frequent qualification of ASE listed firms for 2009 is 'the uncertain outcome of future State tax audits'.

3. Literature review and hypotheses development

Past US studies show that clients of Big 4 auditors, compared to clients of non-Big 4 auditors, use lower levels of discretionary accruals (Chung, Firth, & Kim 2003; Francis, Maydew, & Sparks 1999; Becker, DeFond, Jiambalvo, & Subramanyam 1998). Recent studies (Cassell, Giroux, Myers, & Omer 2011; Boone, Khurana, & Raman 2010; Krishnan, Park, & Vijayakumar 2008), indicate that the enactment of the 2002 Sarbanes Oxley Act, Arthur Andersen's demise, and the promotion of second-tier firms by regulators and interest groups as a viable alternative to the Big 4, has led to some migration from Big 4 to smaller auditors. The conclusion of the recent research is that the flight of audit clients from the Big 4 to second tier auditors has not impaired audit quality.

These findings are based, however, on data from countries where auditors face high litigation risk when they provide low-quality audits. Recent research documents that Big 4 behaviour, with respect to earnings management, is not uniform around the world and varies systematically among countries with differences in economic environments and institutional settings (Arnedo et al. 2008). Francis and Wang (2006) conjecture that Big 4 auditors impose

higher earnings quality and greater accounting conservatism on clients' financial reports as a rational response to stricter investor protection regimes, including the ability of investors to sue auditors for negligence and the power of regulators to sanction auditors for misconduct. It follows that when investor protection is low, large and small auditors have similar incentives, and there should be no observable differences in earnings quality between Big 4 and non-Big 4 clients (Francis & Wang 2006; Francis 2004). Studies in countries such as Korea, Belgium and France provide evidence that there is no statistically significant difference between the level of discretionary accruals of firms audited by Big 4 and non-Big 4 auditors (Othman & Zeghal 2006; Jeong & Rho 2004; Vander Bauwhede & Willekens 2004).

In Greece, the risk of litigation by a third party is small and auditors have little incentive to exert effort in detecting an existing problem or material error, despite the audit scandals that have featured prominently in both the daily press and specialist publications (Caramanis & Lennox 2008). Auditors may not believe they have a high likelihood of getting caught by the government if they provide low-quality audits (Jeong & Rho 2004). The economic bonding (DeAngelo 1981) encourages auditors to report favourably in order to retain influential clients and make more revenues, particularly if the client is large. In a relationship-based economy, such as Greece, where auditors typically have personal ties to management, it is less likely for auditors to maintain a high level of independence (Jeong & Rho 2004). As Kim, Chung and Firth (2003) note, external auditing acts as an effective deterrent to opportunistic earnings managements, only when auditors' preferences over accrual choices conflict with managers' preferences. Using discretionary accruals as a measure of earnings management, and audit firm size as a measure of audit quality, our first hypothesis is as follows:

H₁: In Greece, discretionary accruals are not associated with the size of the audit firm (Big 4 vs. non-Big 4), other things being equal.

The above discussion leads us to the next hypothesis that examines whether the type of audit report is issued in response to the level of discretionary accruals. The evidence on this association is, again, mixed. A stream of research supports the view that qualified reports are positively related to the level of discretionary accruals (Koumanakos, Georgopoulos, & Siriopoulos 2008; Bartov, Gul, & Tsui 2000; Francis & Krishnan 1999), while another supports the opposite (Bradshaw, Richardson, & Sloan 1999). Finally, Butler, Leone and

Willenborg (2004) find no evidence that firms receiving qualified audit opinions manage earnings more than those receiving unqualified opinions.

Another stream of research finds that qualified reports do not mean per se higher audit quality (Arnedo et al. 2008; Butler et al. 2004; Nelson, Elliott, & Tarpley 2002). In the negotiation process before the issuance of the audit report, the auditor discusses with management any material misstatements or departures from GAAP, and requests that management make the relevant adjustments (Butler et al. 2004). Higher quality auditors are regarded as the ones that get the client's errors booked before the issue of the audit report. In that case, a lower level of discretionary accruals should be expected, and thus the issuance of an unqualified opinion.

In Greece, where the auditor's incentives are not the same as in common law countries, this argument may not hold. The negotiation process is performed at a different level and it is likely that management will refuse to adjust the financial statements. Then, the auditor has two choices, either to give in to client pressure and issue an unqualified report, waving material errors and/or departures from GAAP, or issue a qualified report. In the second case, the vagueness of the Greek audit report gives options for qualification, leaving both parties satisfied. Auditors can issue the 'qualified opinion, with matters that do not affect the auditor's overall opinion' as an alternative to the more severe types of qualified opinions. In this way they reduce the possibility of either dissatisfying or losing their clients, and at the same time, they avoid the case of not issuing a qualified report at all. Therefore, our second hypothesis is:

H₂: In Greece, the audit opinion (unqualified vs. qualified) is not associated with discretionary accruals, other things being equal.

The final hypothesis investigates whether the type of audit opinion issued is related to the size of the audit firm. Past studies argue that since Big 4 audit firms are of higher quality, they are more likely than non-Big 4 firms to report earnings management, when they detect it, by issuing qualified audit reports (Gaeremynck, Van Der Meulen, & Willekens 2008; Gaeremynck & Willekens 2003; DeFond, Raghunandan, & Subramanyam 2002; DeFond, Wong, & Li 2000). Other studies show that non-Big 4 are more likely to qualify because they do not have the same capacity to detect errors and irregularities as the Big 4 firms, and qualification is a conservative strategy to compensate for this lack of capacity (Ryu & Roh 2007; Craswell, Stokes, & Laughton 2002). Finally, other studies document that the size of

the audit firm does not affect auditors' propensity to qualify their opinions (Caramanis & Spathis 2006; Chan, Lin, & Mo 2006; Bartov et al. 2000).

We expect that if audit quality is the same for both types of audit firms, as stated in Hypothesis 1, there should also be no differentiation in the audit qualification; Big 4 auditors are equally likely to issue qualified opinions as non-Big 4 auditors. Building on the same arguments of Hypotheses 1 and 2, we form our last hypothesis as follows:

H₃: In Greece, the audit opinion type (unqualified vs. qualified) is not associated with the size of the audit firm (Big 4 vs. non-Big 4), other things being equal.

4. Research design

4.1. Estimation of discretionary accruals

For the purpose of our analysis, we use discretionary accruals as a measure of earnings management. The manipulation of accruals to move underlying profits towards some desired level of earnings is a favoured instrument of earnings management. Because accruals are components of earnings that are not reflected in current cash flows, they have no direct cash flow consequence and are relatively difficult to detect (Peasnell et al. 2005). Researchers usually separate discretionary components from total accruals, by subtracting non-discretionary accruals, to examine the degree of earnings management. An important problem with this approach is the difficulty in separating operating accruals into discretionary and non-discretionary components.

The most frequently used model in the literature for the estimation of discretionary accruals is the Jones (1991) model. Dechow, Sloan, and Sweeney (1995) developed the modified-Jones model, which is designed to eliminate the conjectured tendency of the Jones (1991) model to measure discretionary accruals with error when managerial discretion is exercised over revenues (Bartov et al. 2000). To test our hypotheses, we rely on two alternative models in order to ensure the robustness of our results: 1) the modified-Jones model with cash flow from operations (Larcker & Richardson 2004), and 2) the modified-Jones model with prior-year return on assets (Kothari et al. 2005).

Discretionary accruals are usually estimated using time-series data of the same firm or cross-sectional data of the industry that the sample firm belongs to (Jeong & Rho 2004). According to Larcker and Richardson (2004), the time-series approach assumes temporal stationarity of parameter estimates, whereas the cross-sectional approach assumes homogeneity across firms in the same industry. For the purposes of our study, we adopt the

cross-sectional approach. An advantage of using this approach is that specific year changes in economic conditions affecting expected accruals are filtered out since the model is re-estimated every year (Johl, Jubb, & Houghton 2007). The two cross-sectional discretionary accruals models applied are described below.

4.1.1. Modified-Jones model with CFO

The first measure of discretionary accruals, DA_{CFO} , is obtained from Larcker and Richardson (2004), who added CFO to the modified-Jones model (Dechow et al. 1995) in an effort to reduce measurement errors, as follows:

$$TA_{it}/A_{it-1} = \beta_0 + \beta_{1t}(1/A_{it-1}) + \beta_{2t}((\Delta REV_{it} - \Delta REC_{it}) / A_{it-1}) + \beta_{3t}(PPE_{it} / A_{it-1}) + \beta_{4t}(CFO_{it} / A_{it-1}) + \varepsilon_{it} \quad (1)$$

where for firm i year t ,

TA_{it} = total accruals⁸;

A_{it-1} = total assets (year $t-1$);

ΔREV_{it} = change in net revenues from year $t-1$ to year t ;

ΔREC_{it} = change in net accounts receivable from year $t-1$ to year t ;

PPE_{it} = property, plant and equipment;

CFO_{it} = cash flow from operations;

ε_{it} = random error term

The estimated discretionary accruals, DA_{CFO} , are the difference between actual total accruals and the fitted values of the accruals from model (1). A higher level of discretionary accruals, positive or negative, indicates a greater level of earnings management.

4.1.2. Modified-Jones model with prior-year ROA

The second measure of discretionary accruals, DA_{ROA} , is obtained by applying the model developed by Kothari et al. (2005), who stated that accruals of firms that have

⁸ Total accruals are calculated using the cash flow approach proposed by Hribar and Collins (2002) as an alternative to balance sheet approach, defined as operating income minus operating cash flows.

experienced unusual performance are expected to be systematically non zero, and thus firm performance is correlated with accruals. They added current-year ROA and prior-year ROA to the modified-Jones model as additional controls for performance. Formally, the second model, which adjusts for performance by including prior-year ROA, is as follows:

$$TA_{it}/A_{it-1} = \beta_0 + \beta_{1t} (1/A_{it-1}) + \beta_{2t} ((\Delta REV_{it} - \Delta REC_{it}) / A_{it-1}) + \beta_{3t} (PPE_{it} / A_{it-1}) + \beta_{4t} (ROA_{it-1}) + \varepsilon_{it} \quad (2)$$

The definitions of the variables are the same as for model (1) with the inclusion of ROA_{it-1} , which is prior year net income divided by prior year total assets. Again, the estimated discretionary accruals, DA_{ROA} , are the difference between actual total accruals and the fitted values of the accruals from model (2).

4.2. Empirical models

For testing Hypothesis 1, we construct a multivariate model with two groups of variables, auditor- and client-related, which are traditionally identified as candidates in affecting the direction of earnings management. Earnings management is measured by discretionary accruals, DA_{CFO} and DA_{ROA} , and auditor quality by audit firm size, $BIGN$.

The control variables selected represent client financial characteristics.⁹ Cash flow from operations, CFO , is included to control for the potential correlation between accruals and cash flows, with negative expected coefficient (Iatridis 2011; Iatridis & Rouvolis 2010; Koumanakos et al. 2008; Carey & Simnett 2006; Kothari et al. 2005; Peasnell et al. 2005; Chen, Lin, & Zhou 2005; Jeong & Rho 2004; Kim et al. 2003; Myers, Myers, & Omer 2003;

⁹ The usefulness of financial information to the detection of falsified financial statements and the qualification decision has been investigated at length by Spathis (2002), who demonstrated that firms with high leverage, among other variables, are more likely to falsify financial statements. Also, Spathis (2003) found that financial distress and current year losses are major indicators of the audit qualification opinion. In addition, Spathis, Doumpos and Zopounidis (2002) and Spathis, Doumpos and Zopounidis (2003) examined the qualification decision by exploring the effectiveness of a multicriteria decision aid classification method, UTADIS. The results highlighted the importance of financial ratios, such as leverage and inventories to sales, in identifying falsified financial statements. Finally, Kirkos, Spathis, Nanopoulos and Manolopoulos (2007) used Decision Trees, Neural Networks and Bayesian Networks, and showed that financial distress and profitability are strongly related to qualified reports.

Becker et al. 1998; Dechow et al. 1995). We include the natural logarithm of total assets, *SIZE*, to control for the firm size effect on discretionary accruals (Iatridis 2011; Iatridis & Rouvolis 2010; Choi, Kim, Kim, & Zang 2010; Arnedo et al. 2008; Othman & Zeghal 2006; Carey & Simnett 2006; Chen et al. 2005; Jeong & Rho 2004; Kim et al. 2003; Vander Bauwhede et al. 2003; Dechow & Dichev 2002; Chung et al. 2002). Empirical studies have suggested that size can have a negative or positive association with discretionary accruals (Chung et al. 2002; Becker et al. 1998).

We also include financial leverage, *LEV*, because highly leveraged firms may have greater incentives for earnings management, either income-increasing or income-decreasing (Iatridis & Rouvolis 2010; Choi et al. 2010; Carey & Simnett 2006; Peasnell et al. 2005; Butler et al. 2004; Vander Bauwhede et al. 2003; Becker et al. 1998; DeFond & Jiambalvo 1994). Therefore, the expected sign of this coefficient could be either positive or negative. A dummy variable for current year losses, *LOSS*, is included to account for potential differences in discretionary accruals between loss and profit firms, with a negative expected sign (Choi et al. 2010; Carey & Simnett 2006; Burgstahler & Dichev 1997; Dopuch, Holthausen, & Leftwich 1987). Two variables control for liquidity and efficiency, measured by the current ratio, *CR* (Ryu & Roh 2007; Caramanis & Spathis 2006; Butler et al. 2004) and inventories to assets ratio, *INV* (Johl et al. 2007), respectively, which are direct measures of financial health. Our earnings management model is specified as follows:

$$DA_{it} = \beta_0 + \beta_1 BIGN_{it} + \beta_2 CFO_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 LOSS_{it} + \beta_6 CR_{it} + \beta_7 INV_{it} + \varepsilon_{it} \quad (3)$$

where for firm *i* at year *t*,

DA_{it} = signed discretionary accruals; estimated using models (1) and (2), i.e. $DA_{CFO_{it}}$ and $DA_{ROA_{it}}$, respectively;

$BIGN_{it}$ = dummy variable equal to 1 if the auditor is Big 4, 0 otherwise;

CFO_{it} = cash flow from operations, divided by lagged total assets;

$SIZE_{it}$ = natural logarithm of total assets;

LEV_{it} = total debt, divided by total assets;

$LOSS_{it}$ = dummy variable equal to 1, if loss is experienced in the current year, 0 otherwise;

CR_{it} = current assets, divided by current liabilities;

INV_{it} = inventory, divided by total assets

For Hypotheses 2 and 3 testing, we estimate a logistic regression model, where the type of audit opinion, AO , is the dependent dichotomous variable and DA_{CFO} and DA_{ROA} (H_2), and $BIGN$ (H_3) the test variables, as shown in model (4):

$$AO_{it} = \beta_0 + \beta_1 DA_{it} + \beta_2 BIGN_{it} + \beta_3 CFO_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 LOSS_{it} + \beta_7 CR_{it} + \beta_8 INV_{it} + \varepsilon_{it} \quad (4)$$

where,

AO_{it} = dummy variable equal to 1 for a qualified opinion, i.e. qualified opinion, with matters that do not affect the auditor's overall opinion, qualified opinion, with matters that do affect the auditor's overall opinion, and adverse opinion, and 0 otherwise. There was no disclaimer of opinion in our sample.

We apply the same control variables as in model (3) because they have been regularly used in prior literature for the explanation of auditors' decisions to qualify their opinions, though the expected signs of some coefficients may be in different directions. CFO is expected to be negatively associated with the probability of receiving a qualified opinion since more profitable firms are less likely to engage in earnings management than firms with financial difficulties (Carey & Simnett 2006; DeFond et al. 2002). $SIZE$ controls for the impact client size can have on the propensity of auditors to issue a qualified opinion. Craswell et al. (2002) argue that the sign on this coefficient could be either positive or negative; small clients are more likely to fail and face going concern problems, which increase the likelihood of receiving a qualified opinion. However, the threat of litigation cost in failures of large clients may condition auditors to be conservative in their opinions and qualify (Frost 1994).

LEV is used to control for the impact of financial risk on the issuance of a qualified opinion; a high leverage ratio indicates higher financial risk, and thus, higher probability of a qualification (Carey & Simnett 2006; Chan et al. 2006; DeFond et al. 2002; DeFond et al. 2000). $LOSS$ controls for the impact of operating risk with a positive expected coefficient sign (Carey & Simnett 2006; Chan et al. 2006; Spathis 2003; Craswell et al. 2002; DeFond et al. 2000). A low CR indicates liquidity problems, which increase the propensity of the auditor to issue a qualified opinion (Caramanis & Spathis 2006; Chan et al. 2006; Spathis 2003; DeFond

et al. 2000). Finally, *INV* is included to control for the efficiency of the client (Chan et al. 2006). We expect this variable to be positively correlated with the issuance of a qualified opinion.

5. Sample selection and data

The initial population from which the sample is chosen comprises firms listed on the ASE for the five-year period from 2005 to 2009. Data were also collected for 2004 since some variables of our models required beginning of year values. Following common practice in previous literature, Banking, Insurance, Financial Services and Real Estate Sectors are excluded because discretionary accruals estimation is problematic for these firms (DeFond & Subramanyam 1998). Additionally, sectors with less than ten firms are omitted from the sample. Therefore, from a total of 18 sectors, only 9 are included: Metals, Construction & Materials of Construction, Food & Beverages, Travelling & Leisure, Information Technology, Communication, Trade, Personal & Domestic Products, and Industrial Products & Services.

Another six IPO firms were not included because in the first year a firm goes public, it tends to manipulate earnings, and this may affect the likelihood of receiving a qualified audit opinion (Caramanis & Spathis 2006). Firms engaged in mergers, acquisitions or seasoned equity offerings were not eliminated from the sample because Greek empirical studies indicate no evidence of earnings management adoption around these events (Koumanakos et al. 2005). Moreover, 18 firms were excluded from the empirical analysis because they were audited by both a Big 4 and a non-Big 4 auditor.¹⁰ To reduce the impact of outlier observations on the results, we winsorize observations that fall in the top 1% and bottom 1% of the empirical distribution of each variable (Chung et al. 2002).

Data availability for the calculation of total accruals and the estimation of the variables used in hypotheses testing further reduced the sample size, resulting in roughly 978 firm-year observations. Firms with incomplete five-year data were not excluded from the analysis, resulting in a different number of observations in each of the five years. Information about audit reports of listed firms was hand-collected from the ASE online database.¹¹ Annual financial statement data for the sample firms were provided by Hellastat S.A.

¹⁰ For listed firms satisfying certain criteria, the audit is conducted by two auditors. When this is the case, one auditor may belong to a Big 4 audit firm and the other to a non-Big 4, making the categorization difficult.

¹¹ www.ase.gr

6. Empirical results

6.1. Descriptive statistics

Table 1 summarizes the types of audit opinion issued by the audit firms in our sample. Interestingly, Big 4 firms issue only two audit opinion types, unqualified (76.3%), and qualified with matters that do not affect auditor's opinion (23.7%). Non-Big 4 firms issue almost equal numbers of unqualified and qualified opinions, including in the qualified sample a 1.5% of adverse opinion reports.

(Table 1 About Here)

In Table 2, the descriptive statistics and univariate tests for the variables used in the empirical analysis are presented. The table is divided into three panels, A, B and C. The descriptive statistics for the full sample are summarized in Panel A, for 978 firm-year observations. Panels B and C show the descriptive statistics categorized by audit firm size and audit opinion type, respectively.

(Table 2 About Here)

In Panel B, the mean differences are statistically significant for most variables, except for the discretionary accruals (DA_{ROA}), CFO and CR. Total accruals (TA) and discretionary accruals (DA_{CFO}) are significantly different between firms with Big 4 and non-Big 4 auditors. Discretionary accruals have positive mean values (mean $DA_{CFO} = 0.012$ and mean $DA_{ROA} = 0.003$) in the Big 4 group, which implies a tendency to overestimate accruals, resulting in an upwards earnings management effect. Discretionary accruals have negative mean values (mean $DA_{CFO} = -0.006$ and mean $DA_{ROA} = -0.001$) in the non-Big 4 group, implying a tendency to underestimate accruals and, thus, to manage earnings downwards. Additionally, size (SIZE) and leverage (LEV) are significantly different between the two samples. Clients of Big 4 audit firms are larger in size (mean = 18.955) and less leveraged (mean = 0.483) compared to clients of non-Big 4.

Panel C distinguishes between firms with qualified and unqualified opinions. Once more, TA, discretionary accruals (DA_{CFO}), size (SIZE) and leverage (LEV) have statistically significant differences in mean values between the two groups. Firms with qualified opinions have negative mean total accruals and discretionary accruals, compared to firms with unqualified opinions, implying a propensity to underestimate accruals and, thus, to manage earnings downwards. Furthermore, firms with unqualified opinions are larger in size (mean = 18.376) and less leveraged (mean = 0.492).

Descriptive statistics of the discrete variable LOSS (current year losses) are shown in Table 3, where 204 of the 275 firms with current year losses were audited by non-Big 4 audit firms (chi-square = 10.061, $p < 0.000$). Examination of the table also shows that 133 of the 275 firms with losses in the current year received a qualified opinion. The difference between the two groups of firms reported is significant (chi-square = 15.788, $p < 0.000$).

(Table 3 About Here)

Table 4 presents the Pearson correlation coefficients of the test and control variables. Correlations among the test variables are weak. DA_{CFO} and DA_{ROA} are positively correlated with BIGN, but the correlations are small and not very significant. AO is negatively correlated with DA and BIGN, but again the correlations are not very strong. We note that significant correlations exist between a few pairs of variables. LOSS and DA_{CFO} (-0.433), SIZE and BIGN (0.427), and OCF and DA_{ROA} (-0.457) at the 1% significance level. Our discretionary accruals measures, DA_{CFO} and DA_{ROA} , are highly positively correlated, with a correlation coefficient of 0.682, and significant at the 1% level, suggesting that they are mean-reverting over time (Kim et al. 2003).

(Table 4 About Here)

Since there is no correlation coefficient higher than 0.8, multicollinearity does not seem to cause problems in the multivariate analysis (Judge, Hill, Griffiths, Lutkepohl, & Lee 1988), where the simultaneous effect of these variables will be examined.

6.2. Regression results for Hypothesis 1

Hypothesis 1 tests the association between discretionary accruals, DA_{CFO} and DA_{ROA} , estimated by two alternative models, the cross-sectional modified-Jones model with CFO (Larcker & Richardson 2004), and the cross-sectional modified-Jones model with prior year ROA (Kothari et al., 2005), respectively, and the size of the audit firm, BIGN. The results of the OLS regression for the full and annual samples are presented in Table 5. In model (3a), DA_{CFO} is used as the dependent variable, while DA_{ROA} is the dependent variable in model (3b). The signs of the coefficients are in the expected directions. To examine whether the results of cross-sectional regression are driven by potential problems of serial correlation, we estimate model (3) separately for each of the five years from 2005 to 2009 (Chung et al. 2002).

(Table 5 About Here)

We are primarily concerned with the sign and significance of the coefficient β_1 . In Table 5, both models, (3a) and (3b), give similar results for the BIGN variable. Although the

estimated value of the coefficient is not exactly zero, it is statistically indistinguishable from zero. This means that Hypothesis 1 is accepted; the BIGN variable does not explain variations in discretionary accruals, DA_{CFO} and DA_{ROA} , and it could, therefore, be removed from the model. This result is consistent with other studies, which report that there is lack of Big 4 differentiation in the level of discretionary accruals employed by a firm (Othman & Zeghal 2006; Carey & Simnett 2006; Peasnell et al. 2005; Jeong & Rho 2004; Vander Bauwhede & Willekens 2004).

The interpretation of this result, however, is subject to the particular characteristics of the economic environment and institutional setting of Greece. Possible reasons are the economic bonding of auditors with their clients, especially when the client is large. In fact, it appears that the economic incentives encourage them to retain existing clients, and attract new clients, by compromising independence in judgment. The incentive is stronger, than the possibility of penalties they would pay by providing low, rather than, high quality audits. This argument is reinforced by the fact that audit firms operate in a relatively small market where investor protection is low, enforcement mechanisms are weak and there is low litigation and reputation loss.

The variance in discretionary accruals is better explained by client financial characteristics. CFO is significant at the 1% level in both models (3a) and (3b). As predicted, it is negatively related to discretionary accruals, a finding consistent with previous studies (Iatridis 2011; Iatridis & Rouvolis 2010; Carey & Simnett 2006; Peasnell et al. 2005; Chen et al. 2005; Jeong & Rho 2004; Kim et al. 2003; Becker et al. 1998; Dechow et al. 1995), implying that firms with low cash flows tend to use accrual-increasing accounting policies. LOSS is significant at the 1% significance level and is negatively associated with DA for nearly all years, in both, (3a) and (3b), models. Finally, and mainly in model (3a), LEV is negatively associated with discretionary accruals (consistent with Iatridis & Rouvolis 2010; Chen et al. 2005; Kim et al. 2003, Becker et al. 1998). The explanatory power of model (3) is satisfactory and explains much of the dependent variable, with an adjusted R^2 ranging from 18.1% to 74.4%.

In Section 7.1, we perform an additional analysis with positive and negative discretionary accruals samples because discretionary accruals can imply two distinct situations, with either upwards or downwards earnings management incentives.

6.3. Regression results for Hypotheses 2 and 3

The results of the logistic regression model (4) are presented in Table 6. Both models, (4a) and (4b), give similar results because their only difference is the independent variable of discretionary accruals, DA_{CFO} and DA_{ROA} , which is not significant.

(Table 6 About Here)

With respect to Hypothesis 2, the coefficient β_1 is negative but, as predicted, not significant, at all significance levels in both (4a) and (4b) models, which implies that discretionary accruals do not provide any help in explaining the type of audit opinion issued by the audit firm. Taking the results of Hypotheses 1 and 2 together, we find that the size of the audit firm does not affect the level of earnings management, and the audit opinion qualification is not issued in response to management's opportunistic behaviour.

Furthermore, there is a negative and statistically significant relationship between Big 4 audit firms and the probability of receiving a qualified opinion, except for the years 2005 and 2009, supporting the argument that firms audited by Big 4 auditors are more likely to receive an unqualified opinion, leading to the rejection of Hypothesis 3. This result is inconsistent with previous studies, which document that Big 4 audit firms are more likely to issue qualified opinions, compared with non-Big 4 firms (Gaeremynck et al. 2008; Gaeremynck & Willekens 2003; DeFond et al. 2002), or studies with insignificant relationship between the Big 4 and the audit qualification variable (Caramanis & Spathis 2006;¹² Chan et al. 2006; Bartov et al. 2000).

We conjecture that since audit quality is the same for Big 4 and non-Big 4 auditors, regarding the constraint of clients' earnings management, there should also be no differentiation in the audit qualification. Thus, the fact that Big 4 auditors have a greater propensity to issue unqualified reports could be attributed to client characteristics, and not to audit quality per se, as indicated by the significantly negative control variable *SIZE*. Clients of Big 4 are larger in size,¹³ with international orientation, and adjust more to corporate governance mechanisms and the implementation of IFRS. These factors indicate that they have a lower likelihood of receiving a qualified opinion. An additional explanation could be that the economic bonding between auditors and large clients is even stronger, encouraging

¹² Interestingly, Caramanis and Spathis (2006) found for a sample of 185 Greek listed firms that the size of the audit firm does not affect auditors' qualification decision. Nonetheless, their analysis was performed in 2001, a pre-IFRS period, with the majority of reports issued being qualified, which signified a lower financial reporting quality irrespective of client size.

¹³ In 2009, the rank of audited financial statements of FTSE ASE 20 was: PwC 33.3% (1st), Ernst & Young 19% (2nd), KPMG 14.3% (3rd), Deloitte 9.5% (4th), and SOL S.A. 4.8% (5th) (Hellastat 2009).

auditors to act less conservatively, and report more favourably, in an effort to retain their influential clients. However, this condition impairs the exercise of auditors' independent judgment.

Regarding the rest of the control variables, the coefficient of LEV has, as predicted, a positive sign and is significant, except for the years 2006 and 2007. A high leverage ratio indicates higher financial risk, and thus, higher probability of a qualification (Carey & Simnett 2006; Chan et al. 2006; DeFond et al. 2000). Finally, LOSS is positively significant in models (4a) and (4b) only in the years 2008 and 2009. This result is consistent with prior studies, which suggest that financially poor firms have a greater tendency to receive qualified opinions than healthier firms (Chan et al. 2006; Spathis 2003; Craswell et al. 2002; DeFond et al. 2000). Pseudo R-Square¹⁴ ranges from 10.2% to 34.2% and implies a relatively strong relationship between the dependent and independent variables.

7. Sensitivity tests

To test whether the relationships examined are affected by our design choices, we perform a series of additional sensitivity tests.

7.1. Positive vs. negative discretionary accruals

We divide our sample into positive and negative discretionary accruals to investigate if our results differ when managers have incentives to either overstate reported earnings, through income-increasing accruals, or to understate reported earnings through income-decreasing accruals (see Jenkins, Kane, & Velury 2006; Othman & Zeghal 2006; Kim et al. 2003; Myers et al. 2003). The results of model (3) in Table 7 indicate that auditor size does not have any effect on constraining upwards or downwards earnings management of the client firm (Othman & Zeghal, 2006); the coefficient of BIGN is not significant for either the positive or negative discretionary accruals samples, and Hypothesis 1 is accepted.

(Table 7 About Here)

With respect to the control variables, our analysis reveals that firms with strong operating cash flows are less likely to use either positive or negative discretionary accruals, as the coefficient CFO is significantly negative for both samples. The coefficient on LEV is significantly positive in the positive discretionary accruals sample and significantly negative in the negative discretionary accruals sample, indicating that firms with increased leverage

¹⁴ Nagelkerke R-Square

manage earnings upwards. In both samples, current year losses, LOSS, are linked to a lower magnitude of earnings-management behaviour.

In Table 8, consistent with our main analysis in Section 6.3, we find that Hypothesis 2 is accepted. Hypothesis 3 is also rejected, as BIGN is negatively significant in both samples. Finally, SIZE (negative coefficient) and LEV (positive coefficient) are significant only for the negative discretionary accruals sample, which reveals that smaller firms and firms with high leverage are more likely to receive qualified opinions.

(Table 8 About Here)

7.2. Additional discretionary accrual models

To check the robustness of the estimation of discretionary accruals, we re-run models (3) and (4) using discretionary accruals estimated by two additional models: the Jones model (1991) and the modified-Jones model (Dechow et al. 1995).¹⁵ The use of these accrual measurements does not yield considerably different results to those reported in Section 6. Regarding model (3), the test variable BIGN is not significant in explaining DA, both DA_J and DA_{mJ}. This result strongly supports Hypothesis 1. LOSS, LEV and CFO coefficients are, again, negative and significant at the 1% level in both DA_J and DA_{mJ} models for the full and annual samples. As for model (4), the results are similar to those reported in Section 6. For brevity, we do not report the analytical tables of the results.

7.3. Excluding CFO from models (3) and (4)

The variable CFO is used to estimate discretionary accruals in model (1) of our empirical analysis. We drop this variable from models (3) and (4) to check the robustness of our results. We find that BIGN, again, is not significant (Hypothesis 1 accepted) and LOSS is negatively associated with DA at the 1% significance level for models (3a) and (3b). Hypothesis 2 is again accepted. Once more, the BIGN variable is strongly and negatively associated with AO at the 1% significance level for models (4a) and (4b), and thus Hypothesis 3 is rejected. Additionally, SIZE (negative coefficient) and LEV (positive coefficient) are

¹⁵ DA_{Jit} or $DA_{mJit} = \beta_0 + \beta_1 BIGN_{it} + \beta_2 CFO_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 LOSS_{it} + \beta_6 CR_{it} + \beta_7 INV_{it} + \varepsilon_{it}$ (for model 3), where DA_J is discretionary accruals, estimated using the Jones model (1991), and DA_{mJ} is discretionary accruals, estimated using the modified-Jones model (Dechow et al. 1995).

$AO_{it} = \beta_0 + \beta_1 (DA_{Jit} \text{ or } DA_{mJit}) + \beta_2 BIGN_{it} + \beta_3 CFO_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 LOSS_{it} + \beta_7 CR_{it} + \beta_8 INV_{it} + \varepsilon_{it}$ (for model 4)

associated with AO at the 1% significance level. In sum, the results are similar to those reported in our main analysis, supporting the strength of our tests. For brevity, we do not report the analytical tables of the results.

8. Conclusions, limitations and future research

This study investigated the role of auditors in potentially approving managers' opportunistic behaviour, i.e. earnings management, in the post-IFRS period from 2005 to 2009. As a proxy for earnings management we used discretionary accruals, and as proxies for auditor reporting, we used audit firm size (Big 4 vs. non-Big 4) and audit opinion type (unqualified vs. qualified).

The effects of the unusual characteristics of the economic environment and institutional setting of code-law Greece are evidenced in the results. The empirical analysis reveals that auditors, either Big 4 or non-Big 4, have weak incentives to prevent earnings management. The economic bonding of auditors with their clients leads them to behave opportunistically themselves. The relatively small market, where disciplinary authorities are weak and the likelihood of getting caught by the government is low, combined with the low reputation loss, strengthens this behaviour. The variation in discretionary accruals is better explained by client financial characteristics, such as profitability and leverage. As for the audit qualification decision, we documented that the audit report is not issued in response to discretionary accruals. Additionally, Big 4 auditors have a greater propensity to issue unqualified reports. This finding is attributed to client characteristics and not to the quality of the auditor. Clients of Big 4 firms are larger in size, with international orientation, and adjust more to IFRS and corporate governance mechanisms. Also, the economic bonding between auditors and large clients is even stronger, encouraging auditors to act less conservatively. Finally, apart from size, leverage also explains the audit qualification.

We conclude that, despite improvements in reliability, transparency, comparability conditional conservatism and value relevance with the implementation of IFRS, especially for large firms, as evidenced in the literature (Ballas et al., 2010; Iatridis & Rouvolis, 2010; Karampinis & Hevas, 2011), the particular characteristics of the Greek context still influence auditor and financial reporting.

Our results are subject to the limitations of similar empirical studies. First, accrual models have received repeated criticism for providing biased and noisy estimates of discretion (Stubben, 2010) and researchers are not in consensus on the superiority or higher reliability of any particular model (Bartov et al., 2000; Bernard & Skinner, 1996; Dechow et al., 1995;

Guay, Kothari, & Watts, 1996; Kothari et al., 2005). Second, concerning the audit firm size proxy, Dang (2004) claimed that it is unlikely that all Big 4 auditors or all non-Big 4 auditors offer the same level of audit quality at a moment in time and across different time periods. These limitations could be taken into consideration as opportunities for future research. Future research could also conduct a content analysis on the qualifications of the audit reports in order to provide more profound explanations for the relationship between earnings management and auditor qualification.

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Table 1
 Audit opinion type by audit firm size (2005-2009).

	Big 4		Non-Big 4		Total	
Unqualified	246	76.3%	359	54.7%	605	61.9%
Qualified opinion, with matters that do not affect auditor's overall opinion	76	23.7%	266	40.5%	342	35.0%
Qualified opinion, with matters that affect auditor's overall opinion	0	0.0%	21	3.3%	21	2.1%
Adverse opinion	0	0.0%	10	1.5%	10	1.0%
Disclaimer of opinion	0	0.0%	0	0.0%	0	0.0%
Total	322	100.0%	656	100.0%	978	100.0%

Table 2
Descriptive statistics and univariate tests of continuous variables.

Panel A: Descriptive statistics of continuous variables (full sample, N = 978)

Variable	Mean	Std. Dev.	Min.	Median	Max.
TA	0.005	0.116	-1.422	0.006	0.684
DA _{CFO}	0.001	0.090	-0.520	0.001	0.432
DA _{ROA}	0.000	0.094	-0.916	0.002	0.423
CFO	0.023	0.205	-5.466	0.014	2.095
SIZE	18.226	1.235	14.438	18.106	22.181
LEV	0.530	0.278	0.001	0.005	2.564
CR	2.192	4.064	0.003	1.452	70.598
INV	0.121	0.106	0.000	0.101	0.611

Panel B: Descriptive statistics and univariate test of continuous variables by audit firm size

Variable	Big 4 (N = 322)					Non-Big 4 (N = 656)					Differences
	Mean	Std. Dev.	Min.	Median	Max.	Mean	Std. Dev.	Min.	Median	Max.	t-statistic
TA	0.016	0.075	-0.200	0.008	0.410	0.000	0.132	-0.815	0.004	0.684	-2.535***
DA _{CFO}	0.012	0.073	-0.187	0.001	0.412	-0.004	0.096	-0.520	0.000	0.432	-3.268***
DA _{ROA}	0.003	0.068	-0.352	0.003	0.346	-0.001	0.105	-0.916	0.002	0.423	-0.639
CFO	0.033	0.104	-0.275	0.016	0.754	0.018	0.240	-5.466	0.013	2.095	-1.480
SIZE	18.955	1.186	15.587	18.769	22.181	17.862	1.091	14.438	17.655	20.834	15.322***
LEV	0.483	0.221	0.008	0.012	1.778	0.572	0.481	0.001	2.589	8.447	-5.000***
CR	1.994	2.426	0.012	1.506	35.444	2.291	4.672	0.003	1.434	70.598	1.294
INV	0.110	0.087	0.000	0.096	0.492	0.126	0.115	0.000	0.104	0.611	-2.400**

Table 2 continued

Panel C: Descriptive statistics and univariate test of continuous variables by audit opinion type

Variable	Qualified opinion (N = 381)					Unqualified opinion (N = 597)					Differences
	Mean	Std. Dev.	Min.	Median	Max.	Mean	Std. Dev.	Min.	Median	Max.	t-statistic
TA	-0.006	0.143	-0.815	0.005	0.684	0.012	0.095	-0.410	0.006	0.410	2.314***
DA _{CFO}	-0.013	0.102	-0.520	-0.002	0.291	0.010	0.080	-0.258	0.003	0.432	4.022***
DA _{ROA}	-0.001	0.094	-0.382	0.004	0.381	0.001	0.094	-0.916	-0.001	0.423	0.482
CFO	0.009	0.301	-5.466	0.005	2.095	0.032	0.107	-0.311	0.018	0.754	1.509
SIZE	17.985	1.201	14.438	17.772	22.181	18.376	1.233	15.152	18.312	22.155	-5.137***
LEV	0.622	0.609	0.008	1.056	8.447	0.492	0.204	0.001	0.513	1.363	4.799***
CR	2.267	4.711	0.003	1.362	70.598	2.145	3.602	0.052	1.523	44.730	-0.498
INV	0.116	0.105	0.000	0.097	0.605	0.123	0.107	0.000	0.102	0.611	-1.023

TA: total accruals divided by lagged total assets; DA_{CFO}: discretionary accruals estimated using the modified-Jones model with CFO (Larcker and Richardson, 2004); DA_{ROA}: discretionary accruals estimated using the modified-Jones model with prior-year ROA (Kothari et al., 2005); CFO: cash flow from operations divided by lagged total assets; SIZE: natural logarithm of total assets; LEV: total debt divided by total assets; CR: current assets divided by current liabilities; INV: inventory divided by total assets;

**Significant at the 0.05 level.

*** Significant at the 0.01 level.

Table 3

Chi-square test of the discrete variable LOSS.

Variable	Non-Big 4 (N = 656)	Big 4 (N = 352)	Chi-square
LOSS			
(Yes)	204	71	10.061***
(No)	452	251	
Variable	Unqualified Opinion (N = 597)	Qualified Opinion (N = 381)	Chi-square
LOSS			
(Yes)	142	133	15.788***
(No)	455	248	

LOSS: dummy variable equal to 1 if loss is experienced in the current year, 0 otherwise.

*** Significant at the 0.01 level.

Table 4

Pearson correlation matrix.

	DA _{CFO}	DA _{ROA}	AO	BIGN	OCF	SIZE	LEV	LOSS	CR	INV
DA _{CFO}	1									
DA _{ROA}	0.682**	1								
AO	-0.132**	-0.015	1							
BIGN	0.088**	0.016	-0.189**	1						
OCF	0.000	-0.457**	-0.055	0.035	1					
SIZE	0.002**	-0.024	-0.152**	0.427**	0.029	1				
LEV	-0.212**	-0.021	0.162**	-0.133**	-0.095**	-0.064*	1			
LOSS	-0.433**	-0.138**	0.120**	-0.096**	-0.131**	-0.145**	0.226**	1		
CR	-0.018	-0.011	0.016	-0.032	0.000	-0.053	-0.321**	-0.058	1	
INV	0.091**	0.150**	-0.032	-0.070*	-0.002	-0.162**	0.104**	-0.039	0.009	1

*Significant at the 0.05 level (2-tailed).

** Significant at the 0.01 level (2-tailed).

Table 5

Regression results of audit firm size and other control variables on discretionary accruals.

$DA_{CFOit} = \beta_0 + \beta_1 BIGN_{it} + \beta_2 CFO_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 LOSS_{it} + \beta_6 CR_{it} + \beta_7 INV_{it} + \varepsilon_{it}$ (3a)							
	Expected Sign	Full Sample	2009	2008	2007	2006	2005
Constant	?	-0.027	-0.030	-0.028	-0.171*	-0.076	-0.071
BIG N	?	0.005	0.016	0.015	-0.008	0.002	0.010
CFO	-	-0.006	-0.220***	-0.117**	-0.019	-0.062	-0.320***
SIZE	?	0.004**	0.004	0.005	0.011**	0.007	0.007
LEV	?	-0.065***	-0.037	-0.090***	-0.050*	-0.045**	-0.069***
LOSS	-	-0.084***	-0.076***	-0.094***	-0.084***	-0.085***	-0.096***
CR	?	-0.002***	-0.002**	-0.003**	0.000	-0.002	-0.003
INV	?	0.089*	0.011	0.139*	0.253**	0.008	0.060
<i>F</i> -value		47.926***	20.733***	14.825***	9.850***	9.712***	24.891***
<i>R</i> ²		0.252	0.440	0.339	0.237	0.228	0.450
$DA_{ROAit} = \beta_0 + \beta_1 BIGN_{it} + \beta_2 CFO_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 LOSS_{it} + \beta_6 CR_{it} + \beta_7 INV_{it} + \varepsilon_{it}$ (3b)							
	Expected Sign	Full Sample	2009	2008	2007	2006	2005
Constant	?	0.046	-0.026	-0.027	-0.145	-0.032	0.015
BIG N	?	0.008	0.005	0.012	-0.005	-0.003	0.003
CFO	-	-0.219***	-0.805***	-0.579***	-0.047***	-0.652***	-0.531***
SIZE	?	-0.002	0.003	0.003	0.005	0.005	0.001
LEV	?	-0.008	0.021	-0.045**	0.035	-0.024	-0.037**
LOSS	-	-0.045***	-0.010	-0.050***	-0.025*	-0.054***	-0.031***
CR	?	0.000	0.000	-0.002*	0.000	-0.002	-0.003**
INV	?	0.127**	0.047	0.122*	0.324	-0.018	0.106*
<i>F</i> -value		51.699***	86.707***	29.291***	7.274***	36.730***	100.755***
<i>R</i> ²		0.267	0.773	0.512	0.181	0.548	0.774

DA_{CFO}: discretionary accruals estimated using the modified-Jones model with CFO (Larcker & Richardson, 2004); DA_{ROA}: discretionary accruals estimated using the modified-Jones model with prior-year ROA (Kothari et al. 2005); BIG N: dummy variable equal to 1 if the auditor is Big 4, 0 otherwise; CFO: cash flow from operations divided by lagged total assets; SIZE: natural logarithm of total assets; LEV: total debt divided by total assets; LOSS: dummy variable equal to 1 if loss is experienced in the current year, 0 otherwise CR: current assets divided by current liabilities; INV: inventory divided by total assets;

* Significant at the 0.10 level.

** Significant at the 0.05 level.

*** Significant at the 0.01 level.

Table 6

Logistic regression results of discretionary accruals, audit firm size and other control variables on audit opinion type

$AO_{it} = \beta_0 + \beta_1 DA_{CFOit} + \beta_2 BIGN_{it} + \beta_3 CFO_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 LOSS_{it} + \beta_7 CR_{it} + \beta_8 INV_{it} + \varepsilon_{it}$ (4a)							
	Expected	Full Sample	2009	2008	2007	2006	2005
Constant	?	2.510**	-1.328	-0.039	1.185	0.600	1.795
DA_{CFO}	?	-2.038	-0.519	-3.151	-4.551	-2.733	-5.021
BIG N	?	-0.629***	-0.895	-1.435**	-0.948***	-1.026***	-0.223
CFO	-	-1.472*	-3.872	-3.880	-1.013	-1.217	-0.306
SIZE	?	-0.188***	-0.195*	-0.154**	-0.078*	-0.058	-0.184
LEV	+	1.280***	3.583**	2.152*	0.614	1.199	2.858***
LOSS	+	0.004	1.721**	1.239**	-0.393	0.601	-0.204
CR	-	0.023	0.058	0.004	0.025	0.027	0.370**
INV	+	-1.311**	-1.029	-3.196	-0.443	-0.720	-0.141
Wald		66.558***	73.436***	67.856***	4.466**	0.584	9.340***
Pseudo R^2		0.105	0.330	0.342	0.129	0.162	0.159
$AO_{it} = \beta_0 + \beta_1 DA_{ROAit} + \beta_2 BIGN_{it} + \beta_3 CFO_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 LOSS_{it} + \beta_7 CR_{it} + \beta_8 INV_{it} + \varepsilon_{it}$ (4b)							
	Expected	Full Sample	2009	2008	2007	2006	2005
Constant	?	2.534**	-1.091	-0.185	1.207	0.682	1.995
DA_{ROA}	?	-1.066	6.750	-0.249	-3.893	-2.424	-1.541
BIG N	?	-0.630***	-0.895	-1.475**	-0.920**	-1.031***	-0.238
CFO	-	-1.547	1.460	-2.926	-2.035	-2.549	0.060
SIZE	?	-0.194***	-0.219*	-0.156**	-0.087*	-0.063	-0.203
LEV	+	1.373***	3.388**	2.347**	0.804	1.239	2.971***
LOSS	+	0.130	1.812***	1.533***	-0.161	0.703*	0.217
CR	-	0.026	0.062	0.011	0.029	0.027	0.375**
INVA	+	-1.353**	-1.056	-3.462	-0.497	-0.789	-0.265
Wald		67.693***	69.589***	70.201***	3.546**	0.796	8.247***
Pseudo R^2		0.102	0.341	0.336	0.115	0.159	0.134

AO: dummy variable equal to 1 for a qualified opinion, 0 otherwise; DA_{CFO} :discretionary accruals estimated using the modified-Jones model with CFO (Larcker & Richardson, 2004); DA_{ROA} : discretionary accruals estimated using the modified-Jones model with prior-year ROA (Kothari et al., 2005); BIG N: dummy variable equal to 1 if the auditor is Big 4, 0 otherwise; CFO = cash flow from operations divided by lagged total assets; SIZE: natural logarithm of total assets; LEV: total debt divided by total assets; LOSS: dummy variable equal to 1 if loss is experienced in the current year, 0 otherwise CR: current assets divided by current liabilities; INV: inventory divided by total assets;

* Significant at the 0.10 level.

** Significant at the 0.05 level.

*** Significant at the 0.01 level.

Table 7

Regression results of model (3) with positive and negative discretionary accruals samples.

$$DA_{it} = \beta_0 + \beta_1 BIGN_{it} + \beta_2 CFO_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 LOSS_{it} + \beta_6 CR_{it} + \beta_7 INV_{it} + \varepsilon_{it} \quad (3)$$

	DA ⁺		DA ⁻	
	DA _{CFO}	DA _{ROA}	DA _{CFO}	DA _{ROA}
Constant	-0.033	0.096**	-0.070	-0.036
BIG N	-0.004	-0.002	0.012	0.009
CFO	0.022	-0.091***	-0.026**	-0.492***
SIZE	0.004	-0.004*	0.004	0.003
LEV	0.023	0.054***	-0.103***	-0.062***
LOSS	-0.020*	-0.022***	-0.022***	-0.043***
CR	0.001	0.001	-0.002*	-0.001*
INV	0.045	0.081*	0.087*	0.101*
<i>F</i> -value	2.116**	20.730***	26.626***	49.006***
<i>R</i> ²	0.015	0.215	0.285	0.416

DA_{CFO}: discretionary accruals estimated using the modified-Jones model with CFO (Larcker & Richardson, 2004); DA_{ROA}: discretionary accruals estimated using the modified-Jones model with prior-year ROA (Kothari et al., 2005); BIGN: dummy variable equal to 1 if the auditor is Big 4, 0 otherwise; CFO: cash flow from operations divided by lagged total assets; SIZE: natural logarithm of total assets; LEV: total debt divided by total assets; LOSS: dummy variable equal to 1 if loss is experienced in the current year, 0 otherwise; CR: current assets divided by current liabilities; INV: inventory divided by total assets;

* Significant at the 0.10 level.

** Significant at the 0.05 level.

*** Significant at the 0.01 level.

Table 8

Regression results of model (4) with positive and negative discretionary accruals samples.

$$AO_{it} = \beta_0 + \beta_1 DA_{it}^+ + \beta_2 BIGN_{it} + \beta_3 CFO_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 LOSS_{it} + \beta_7 CR_{it} + \beta_8 INV_{it} + \varepsilon_{it} \quad (4)$$

	DA ⁺		DA ⁻	
	DA _{CFO}	DA _{ROA}	DA _{CFO}	DA _{ROA}
Constant	0.542	2.940	4.534**	2.609
DA	-2.952*	-4.322	-2.628	-0.096
BIG N	-0.772***	-0.622*	-0.477*	-0.722***
CFO	-1.337	-1.153	-1.549	-1.466
SIZE	-0.046	-0.177	-0.329***	-0.227**
LEV	0.158	0.657	2.007***	2.111***
LOSS	-0.306	0.074	0.204	0.212
CR	0.056	0.051	0.025	0.007
INV	-0.406	-1.868	-2.665**	-0.503
Wald	43.274***	22.781***	23.992***	45.984***
Pseudo R ²	0.062	0.083	0.200	0.168

AO: dummy variable equal to 1 for a qualified opinion, 0 otherwise; DA_{CFO}: discretionary accruals estimated using the modified-Jones model with CFO (Larcker & Richardson, 2004); DA_{ROA}: discretionary accruals estimated using the modified-Jones model with prior-year ROA (Kothari et al., 2005); BIG N: dummy variable equal to 1 if the auditor is Big 4, 0 otherwise; CFO: cash flow from operations divided by lagged total assets; SIZE: natural logarithm of total assets; LEV: total debt divided by total assets; LOSS: dummy variable equal to 1 if loss is experienced in the current year, 0 otherwise CR: current assets divided by current liabilities; INV: inventory divided by total assets;

* Significant at the 0.10 level.

** Significant at the 0.05 level.

*** Significant at the 0.01 level.