EARNINGS MANAGEMENT AND INCOME TAX EVIDENCE FROM GREECE

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Abstract

The aim of this study is to examine the question of earnings management and, specifically, how this relates to taxation. In order to determine whether there is a correlation between earnings management and taxation, we investigate the discretionary accruals aspect of total accruals, i.e. the portion of profits which can be affected by management accounting choices, as calculated by the Jones (1991) model and the modified Jones model (Dechow et. al, 1995). Furthermore, we examine to what degree a correlation may exist between discretionary accruals and tax income (consisting of current and deferred tax). Our empirical findings demonstrate a statistically significant relationship between the levels of discretionary accruals and of total, current and deferred tax. This suggests that tax in general may be employed as a means to facilitate earnings management. The findings of this study suggest that IFRS provisions regarding taxation provide firms with a scope to get involved in earning management practices.

Keywords: Earnings Management, Income Tax, Greece

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1. Introduction

Corporate governance mechanisms aim to discourage managers from involving in earnings management practices. This study focuses in investigating a certain aspect of earnings management practices. In particular, the main purpose of this study is to determine whether a relationship exists between earnings management and taxation. Previous studies have shown that the manipulation of profits by managers is mainly related to deferred tax, since deferred tax has a discretionary element, which can be manipulated. (Burgstahler & Eames, 2006; Burgstahler et al., 2002; Dhaliwal & Wang, 1992; Ettredge et al., 2006; Glancy & Yadav, 2011; Healy & Wahlen, 1999; Palepu et al., 2004; Phillips et al., 2003). In order to examine whether tax is used as a means of manipulation, this study focuses not only on deferred tax, as the majority of the relevant literature does, but also on total tax – divided into current and deferred tax. In addition, this study aims to investigate whether the firms' tendency to manipulate earnings is associated with the type of the audit firm that audits firm's financial statements. Previous research suggests that firms that are are audited by big-4 auditing firms are less likely to get involved in earnings management practices (Becker et al., 1998; Francis et al., 1999; Chung et al., 2003). The Law 3016/2002 is the main legislation that regulates corporate governance in Greece. Previous research has indicated that the introduction of Law 3016/2002 has not affected the extent to which managers of Greek firms attempt to manipulate earnings (Florou and Galarniotis, 2007; Chalevas and Tzovas, 2010). These studies are mainly concerned with the impact of corporate governance mechanisms imposed by Law 3016/2002. This study focuses on an external audit as an alternative corporate governance mechanism that refrain managers from manipulating reported earnings.

The Greek business environment possesses certain characteristics that provide the researcher the opportunity to investigate the factors that influence firms' accounting policy decisions within a context, which is quite different from that prevailing in many developed countries. In Greece, as in many European countries (e.g. France, Italy), the ownership structure of the majority of the firms is characterized by a high level of concentration (Nobes and Parker, 2000). In Greece, non-institutional blockholders of a listed firm are primarily members of the founder's extended family (Chalevas, 2011). The main providers of funds for Greek companies are the banks. Furthermore, in Greece there is a close linkage between tax accounting and financial reporting. These factors are generally not associated with high disclosure compliance and high quality published financial statements (Nobes and Parker, 2000). Indeed, Leuz et al. (2003) show that Greek companies appear to engage in some of the most extreme

earnings management practices in the world. Bhattacharya et al. (2003) provide similar evidence, since in their study Greek firms are the most engaged in earnings management among firms from 34 countries. On the basis of this discussion we would expect that the Greek firms will attempt to use deferred taxation for earnings management purposes.

The methodology employed to examine our research question involves two stages. The first stage uses the Jones (1991) model and the modified Jones model (Dechow et al., 1995) in order to determine the portion of earnings which is potentially open to manipulation by management; this portion is represented by discretionary accruals, i.e. the residuals of the relevant regressions. These two models are used to determine discretionary accruals since they are considered to be the most effective in identifying earnings management practices (Guay et al., 1996). Following the calculation of discretionary accruals, these are then employed as the dependant variable in the second stage. In the second stage, we examine whether a correlation exists between this dependant variable and total tax, analysed into current and deferred tax.

In order to examine these issues, we analyse the taxation and accounting policies of a sample of 146 Greek listed companies for the period 2006-2008. The results of the study suggest that there is an association between the discretionary accruals and the level of income tax, both deferred and current. It appears that Greek firms used the level of income tax in order to influence accounting figures.

The second section of the paper includes a literature review of earnings management studies by emphasizing in the relationship between income tax, earnings management and the use of tax as a means of manipulation. The third section present the research methodology adopted in this study. Fourth section presents the results of the empirical investigation and the study concludes with the presentation of study findings.

2. Earnings Management

Various definitions have been provided regarding earnings management (Healy & Wahlen, 1999; Watts & Zimmerman, 1986; Davidson et al., 1987; Schipper, 1989; Degeorge et al., 1999; Beneish, 2001; swords, 2002). According to most definitions, earnings management is a purposeful intervention in financial reporting process with the intent of achieving certain objectives set by company's management (Burgstahler & Eames, 2006). Managers may use earnings management in order to increase firms' profitability, and to obtain as a result some private gains – e.g. bonuses - and enhance their reputation (Healy, 1985; Degeorge et al., 1999; Kao & Chen, 2004; Cheng & Warfield, 2005; Dechow & Skinner, 2000). The terms of firms' loan agreements may prompt managers to employ earnings management practices (Sweeney, 1994; Defond & Jiambalvo, 1994; Fields et al., 2001). Firm's management may attempt to avert a hostile takeover by reporting lower profits (DeAngelo, 1988; Christie & Zimmerman, 1994). Several studies indicate that the managers use earning management in order to achieve a stable growth rate of earnings per share (Earnings per Share - EPS), since they assume that potential investors are positively affected by a steady increase in earnings per share (Burgstahler & Dichev, 1997; Degeorge et al., 1999; Myers & Skinner, 1999, 2007). Earnings management may aim to income smoothing. Managers adopt this technique in order to mitigate the fluctuation in the corporation's earnings from one period to the next. They carry profits from a profitable year to a non-profitable one and achieve a steady income increase by reducing volatility. In this way managers aim to reduce the fluctuation of earnings and thereby to reduce investors' concerns about the viability of their investment, since the fluctuations of the enterprise's performance are usually connected with high risk (Healy, 1985; Davidson et al., 1986; Bettie et al . 1994). The reduction of firms' tax liability may also motivate managers in earnings management. (Boynton et al., 1992; Dhaliwal & Wang, 1992; Scholes et al. , 1992; Guenther, 1994; Maydew, 1997; Palepu et al., 2004). In banking and insurance sectors, firms choose accounting policies in order to avoid violating the rules of the regulatory framework (Moyer, 1990; Scholes et al., 1990; Petroni, 1992; Beatty et al., 1995, Collins et al., 1995; Adiel, 1996). There is also evidence of earnings management used for avoiding anti-trust rules (Jones, 1991; Cahan, 1992). Furthermore, a firm may have a motive to reduce its profitability in order to reduce its political visibility (Watts & Zimmerman, 1978; Hall & Stammerjohan, 1997). Managers may use earnings management in order to display a temporary decline in firm's profits so that their bargaining power over labor unions is strengthen (DeAngelo et al. 1994). Another type of earnings management is the "big bath technique", according to which a firm charges current earnings with various expenses in order to increase future profitability. The big bath technique is usually implemented in a bad year. The big bath technique is based on the notion that when it comes to bad news is preferable to be instantly announced by managers, in order to create favorable conditions for future increases in earnings (Healy, 1985; Defond & Park, 1997).

There are two basic approaches regarding earnings management; the accruals based management and real activities management. The most common method of manipulation is via accruals (Healy & Wahlen, 1999). Accruals generate the difference between income and cash flows. Although their primary purpose is to provide information, it has been observed that the accruals are used by management for earnings management. The accrual

based management method is popular for following reasons : accruals a) are an essential part of income and is not recognized in cash flow statement b) have no direct impact on cash flow and c) are not easily detected (Peasnell et al. , 2005; Gikas at al. 2010).

In most studies examining accrual based earning management (Healy, 1985, DeAngelo, 1986, Jones, 1991), total accruals are divided into non-discretionary accruals and discretionary accruals. The former are accruals resulting from the implementation of generally accepted accounting policies, while the latter results from management's accounting choices.

Earnings management can be achieved through real activities management. For instance, the acceleration of sales, the adopted inventories policies, the increase in production in order to reduce the cost of goods sold, can influence accounting figures (Fudenberg & Tirole, 1995; Healy & Wahlen, 1999; Dechow & Skinner, 2000; Roychowhury, 2006). A firm may reduce its research and development costs in order to reduce its accrued expenses and and as a consequence to increase its profits (Baber et al. 1991; Dechow & Sloan, 1991; Bushee, 1998; Bens et al., 2002, 2003).

2.2 Earning Management and deferred taxation

Several studies have indicated managers may use taxation for earnings management purposes (Engel et al. 1999; Dhaliwal et al, 2004, Randolph et al. 2005; Badertscher et al. 2009). A substantial part of previous research is concerned with the recognition of deferred tax assets. According to IAS 12 the income tax is the sum of current and deferred taxation. Due to the fact that the accounting policies used in determining accounting income may be different from the corresponding rules used by the tax authorities, there is the possibility there will be a difference between the accounting and the taxable income of a firm. According to IAS 12, the differences between accounting and tax income are classified as permanent or temporary. A temporary difference is likely to create either future income tax liabilities (deferred tax liability) or tax deductions in future periods (deferred tax asset). They are considered as temporary because the collection of receivables and the payment of the liabilities, settles the differences in subsequent years. With regard to permanent differences, they refer to amounts of revenues or expenses that can only affect the accounting or the taxable income of a certain period and are not be reversed in the future. According to IAS 12 a deferred tax asset should be recognized when there are enough deferred tax liabilities or if management considers that there will be sufficient future taxable profit to offset the recognized deferred tax assets. Thus, the total recognized amount of deferred tax assets is based on a subjective estimation of future benefits.

Furthermore, companies should record provisions which will be used to reduce deferred tax assets, in case that these are not used. Therefore, firms involved in earnings management, can record high provisions that will be depreciated in subsequent periods, thus reducing future income and hence tax (Schrand & Wong, 2003). These provisions can be used a reserve cookie jar, which will be used for a future reduction in profits (big bath), by recognizing an even greater amount of revenue in current year than the revenue expected in the future. Therefore, there is scope to recognize an even greater amount of deferred tax assets than that can be covered in the future (Christensen et al. 2008). Burgstahler et al. (2002) argue that the subjectivity that characterizes IAS 12 regarding provision making, provides managers the discretion to manipulate earnings through taxation.

The possible impairment of deferred tax assets can be used as a tool for earnings management (Healy & Wahlen 1999). Visvanathan (1998) argues that variation in earnings is related to the change in the impairment of deferred tax assets. The higher the profits the smaller the deferred tax assets impairment, since it is not likely to be covered by future profits or deferred tax liabilities. Chao et al. (2004) found that the impairment of recognized deferred tax assets is used for increasing firms' future liability. Japanese banks recognized excessive amounts of deferred tax assets in order to meet Central Bank's requirements for capital adequacy (Skinner, 2008).

Managers may get involved in earnings management practices in order to increase accounting profit (earnings before taxes) and in the same time to reduce taxable profit (Mills & Newberry, 2001; Phillips et al. 2003; Ettredge et al., 2006). As a result the difference between accounting and taxable income will increase. As a consequence, deferred tax liabilities, deferred tax - expense and the effective tax rate will be affected (Ettredge et al., 2006). A high amount of deferred taxation may suggest a manipulation of profits in order to avoid a reduction in earnings (Hanlon's, 2005; Wilson, 2009; Blaylock's et al. 2012).

Phillips et al. (2003) found that deferred tax-expense was used by managers for earnings management purposes in order to avoid a downward trend in profits and share prices. Ettredge et al. (2006) found that an analysis of the differences between book value and tax value and the deferred tax can be a useful mean for revealing future fraud.

3. Empirical Research

3.1 Sample Selection

This study uses a sample of companies listed on the Athens Stock Exchange (ASE) from all sectors, except those concerned with banking, insurance, real estate and financial services. These sectors were

excluded from the sample because of the particularities which characterise these companies, mostly pertaining to legislation, but also to differences in financial reporting. In addition, our sample also excludes companies which demonstrated a systematic lack of data, both in the Datastream database (which was used to extract data) and also in the company's own financial statements, particularly in respect to incomplete deferred tax data. Furthermore, the companies chosen had to be listed on the ASE for every year of the period under examination, in order to facilitate data collection and to ensure that the number of companies per year remained the same. In total, 146 companies were examined per year.

Regarding the period under investigation, the financial data which applies to this study consists of four fiscal years, beginning in 2005 – the first year of the implementation and mandatory adoption of the IFRS in Greece by all listed companies. The year 2008 was chosen as the cut-off point for our study in order to avoid our results being influenced by the effects of the economic crisis which hit Greece, the evidence of which started to appear in annual financial statements in 2009. Given that certain variables are necessary from the previous fiscal year in order to calculate the annual changes, we used additional data from 2004 financial reports, restated in accordance with the IFRS.

Table 1. Number of Listed Companies in Sectors of ASE

Sectors of ASE	Number of Listed Companies
Oil & Gas	3
Chemical Industries	6
Raw Materials	11
Constructions	21
Industrial Goods and Services	23
Food and Beverages	15
Personal and Household Goods	28
Health Care Services	6
Retail Trade	5
Media	7
Passenger Shipping	11
Telecommunications	1
Utilities	2
Technology	7
Total	**146**

3.2 Research Model and Methodology

The empirical investigation of this study takes place in two stages. In the first stage, we calculate the discretionary accruals, i.e. the part of the results subject to manipulation. For the identification of discretionary accruals, the model of Jones (1991) and the modified model Jones (Dechow et al., 1995) were used.

Initially, the Jones model uses the following equation:

$$NDA_t = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t) + \alpha_3(PPE_t) \quad (1)$$

where:

NDA_t = The non-discretionary accruals of year t, scaled by total assets of year t-1,

ΔREV_t = Total revenue (income from sales) of year t minus revenue of t-1 (change in revenue from year t-1 to year t), scaled by total assets of year t-1,

PPE_t = Fixed tangible assets of year t (gross property, plant and equipment) minus the fixed tangible assets of year t-1 (change in fixed tangible assets from year t-1 to year t), scaled by total assets of year t-1,

A_{t-1} = Total assets of year t-1, which functions as deflator,

α_1, α_2, α_3 = Company-specific parameters (coefficients of the independent variables).

To find parameters α1, α2, α3 we employ the least squares regression equation:

$$TA_t = a_1(1/A_{t-1}) + a_2(\Delta REV_t) + a_3(PPE_t) + e_t \quad (2)$$

where:

TA_t = Total accruals of year t, scaled by total assets of year t-1,

e_t = The residuals of the regression for year t which show discretionary accruals (the portion of total accruals which can be manipulated),

which produce the estimators of parameters α1, α2, α3 of equation (1).

By combining these estimates with data from each specific company, the discretionary accruals for each company can be calculated for the years under examination by using the estimates in equation (1) and then applying the equation:

$$TA_t = NDA_t + DA_t \rightarrow DA_t = TA_t - NDA_t \quad (3)$$

where:

DA_t = The discretionary accruals of year t.

Regarding the modified Jones model, we employ the equation:

$$NDA_t = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t - \Delta REC_t) + \alpha_3(PPE_t) \quad (4)$$

where:

ΔREC_t = The total accounts receivable in year t minus the total accounts receivable in year t-1 (change in accounts receivable from year t-1 to year t), deflated by total assets of year t-1.

The parameters are estimated using the corresponding equation:

$$TA_t = a_1(1/A_{t-1}) + a_2(\Delta REV_t - \Delta REC_t) + a_3(PPE_t) + e_t \quad (5)$$

It is important to note that the estimators which were generated by the first Jones (1991) model were not used here but rather were estimated again. Once more, combining these estimates with the specific company data, we calculate the discretionary accruals of every company per year in the same way as described above. The regression of equations (2) and (5) include a constant term and all variables are deflated by the total assets of the previous year, in order to limit heteroskedasticity (Botsari & Meeks, 2008). Kothari et al. (2005) argue in favour of including the constant term. They find that it offers additional control over heteroskedasticity and that models without a constant term are less symmetrical and, thus, they diminish the explanatory power of comparative tests. However, Peasnell et al. (2000) argue that there is no need to deflate the constant term.

Total Accruals (TA) are estimated by using the cash flow method which estimates total accruals as follows (Collins & Hribar 2002):

$$\mathbf{TA_t = NI_t - CFO_t}$$

NI_t: Net income year t
CFO_t: Operational Cash Flows year t

The aim of the models, which detect earnings manipulation through accruals, is the separation of total accruals into the portion that deals with business activities (non-discretionary or normal accruals) and the portion that is related to managerial discretion and which can, therefore, be manipulated (discretionary or abnormal accruals).

The reason why this distinction is important is that non-discretionary accruals refer to the accounting adjustments of cash flows and are determined by accounting rules and standards, while discretionary accruals are subject to managerial discretion and, thus, the level of discretionary accruals constitutes an indication of the degree to which profits (and earnings in general) have been manipulated. Specifically, discretionary accruals relate to income/expenses which have not yet been realised but which are recorded by management in the accounts. So, in this case, managers use their discretion to decide which income/expenses will be recognised and which not.

$$\mathbf{TA_t = NDA_t - DA_t}$$

Therefore,

NDA_t: Non-discretionary accruals
DA_t: Discretionary accruals

The regression analyses are performed with corrected heteroskedasticity robust standard errors so that, if heteroskedasticity does exist in the residuals, the analysis results will not be affected. The models are analysed using panel data methodology, which combines time series with cross-sectional data.

The combination of these two different dimensions increases the efficacy of the statistical analysis and allows for the study of complex behavioural patterns (Baltagi, 1995). Furthermore, the sample takes the form of balanced pooled panel data, whereby every company has a corresponding observation for every year which is applicable for all the variables.

The regressions are performed using two different approaches. First, we employ the time series approach for total number of years, whereby the parameters which are generated are used to determine the discretionary accruals for all the years under investigation. Second, we use cross-sectional regressions per year, so that the earnings for each year are not influenced by the economic conditions present in the remaining years. Based on the estimations of the parameters of the cross-sectional regressions, we calculate the discretionary accruals for each company, for each separate year under investigation.

After calculating discretionary accruals, i.e. the manipulable accruals, we move on to the second stage of our empirical research. The second stage involves using equation (6) to ascertain whether there is a correlation between discretionary accruals and tax and, by extension, whether manipulation of profits has occurred.

$$DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it} \quad (6)$$

where:

DA_{it} = discretionary accruals which are calculated using the Jones model and the modified Jones model for each company per year.

TAX_{it} = tax for each company, per year, analysed by total tax (the sum of current and deferred tax), current tax and deferred tax, deflated by the total assets of the previous year.

Basically, this amounts to three different models for each of the following variables:

TOT_TAX_{it}: Total tax for each company per year,

CUR_TAX_{it}: Current tax for each company per year,

DEF_TAX_{it}: Deferred tax for each company per year,

ROA_{it} = return on assets for each company per year,

LEV_{it} = financial leverage of each company per year, calculated as the ratio of total debt to equity (attributable to ordinary shares) → Debt-To-Equity is calculated from the variables Total Debt and Common Equity, taken from Datastream.

AUD_TYP_{it} = Dummy variable which represents the type of auditing firm that audits the company. Specifically, the variable takes the value: 0 if the company's annual financial statements are audited by a big-4 firm (Deloitte, Ernst & Young, KPMG, PWC); and 1 if the company's annual financial statements are not audited by a big-4 firm.

SEC_TYP_{it} = Dummy variable which represents the sector that the company operates within. To avoid fragmented data, we created two data sets, one which covers industrial and manufacturing companies (also including companies which provide medical services, due to the significant volume of their assets) and one set that covers retail companies and those in the service industry. Thus, the variable takes the value: 0 if the company belongs to the industrial/manufacturing sector; and 1 if the company belongs to the retail/service industry sector. In our sample, 87 companies are categorised as belonging to the industrial/manufacturing sector and 59 companies belong to the retail/service industry sector. The appendix shows the companies which are classified as belonging to one of these two different sectors, for the application of the dummy variable.

α_0 = The constant term,

$\alpha_1,\ldots\alpha_6$, = The coefficients of the independent variables,

e_t = The regression residuals.

The variables ROAit, LEVit, AUD_TYPit and SEC_TYPit are employed as control variables.

The procedure for the regression methodology, data structure etc., is carried out as specified above. Additionally, for the first stage analysis, equation (6) is used to regress the discretionary accruals separately, i.e. those which are calculated using the Jones model and those which are calculated using the modified Jones model. Furthermore, we test for multicollinearity but the results of the correlations between variables show that this is not a problem.

Following the above discussion, we formulate our hypotheses as follows:

H1: There is no correlation between the manipulated part of accruals and total tax and hence total tax is not used for earnings management.

H2: There is no correlation between the manipulated part of accruals and current tax and hence current tax is not used for earnings management.

H3: There is no correlation between the manipulated part of accruals and deferred tax and hence deferred tax is not used for earnings management.

To test the acceptance or rejection of the hypotheses, the t-statistic combined with the p-value, for 5% significance level, was used.

4. Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics of variables used in the first stage of the research for period 2005 to 2008 (pooled sample). In Tables 2-5 are presented the descriptive statistics for each individual year. The variables are divided by total assets for comparability purposes.

Table 1. Total

Observations: 584	Mean	Median	Standard Deviation	Min	Max
Accounts Receivable	91216.31	33823.5	188855.2	352	1408700
Variation of Accounts Receivable	5926.923	774	46550.28	-359720	501248
Fixed Assets	382053.5	64095.5	1617298	776	14800000
Total Assets	514597.8	129673.5	1543760	4753	14000000
Sales	403256.7	96456	1108417	1770	10100000
Variation of Sales	43590.64	4110	188216.6	-1850959	1593032
Earnings (Loss) Before Taxes	28449.63	2570	115492.2	-395892	1154800
Net Income	19874.33	1694.5	83239.91	-305879	773000
Cash Flows (Operating Activities)	33504.41	2146	163766.7	-197304	1842600
Total Accruals	-5054.779	26.5	111244.7	-1583800	516403
Total Accruals/ Total Assets	0.0046456	0.0005319	0.1606301	-2.590705	1.447187

Table 2. 2005

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Accounts Receivable	80969	30848	166926	2526	1350000
Variation of Accounts Receivable	4339	510	43419	-250698	252600
Fixed Assets	352312	56503	1493324	776	13223700
Total Assets	457826	115111	1448386	5252	12662649
Sales	333950	83688	906577	1770	6653078
Variation of Sales	35729	998	154997	-147696	1293705
Earnings (Loss) Before Taxes	25412	3132	84792	-61313	693418
Net Income	17463	1953	59790	-63980	458299
Cash Flows (Operating Activities)	26898	1039	149294	-197304	1587100
Total Accruals	-1486	376	152558	-1583800	516403
Total Accruals/ Total Assets	0.0198018	0.0058275	0.1025572	-0.3251614	0.4313423

Table 3. 2006

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Accounts Receivable	87320	34244	182912	1876	1408700
Variation of Accounts Receivable	6351	1325	33412	-198761	160506
Fixed Assets	364035	61519	1602981	787	14455700
Total Assets	486576	118384	1556365	4753	12938089
Sales	389961	93172	1073119	3089	8121490
Variation of Sales	56012	4847	189014	-214073	1468412
Earnings (Loss) Before Taxes	31970	2968	123294	-244646	1083800
Net Income	22430	1922	87827	-217848	730800
Cash Flows (Operating Activities)	31416	2772	170234	-126725	1842600
Total Accruals	554	-21	99663	-758800	452714
Total Accruals/ Total Assets	0.0097242	-0.0012001	0.1136102	-0.284721	0.8000067

Table 4. 2007

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Accounts Receivable	96239	36597	196190	2417	1330100
Variation of Accounts Receivable	8919	1100	42166	-93370	304384
Fixed Assets	385281	61758	1644255	1785	14400000
Total Assets	535160	146013	1568508	5734	13400000
Sales	416533	116144	1131520	2156	8537951
Variation of Sales	26572	7575	180495	-1850959	432322
Earnings (Loss) Before Taxes	38422	3108	130330	-40443	1154800
Net Income	27685	2035	93195	-40437	773000
Cash Flows (Operating Activities)	34162	2834	150779	-71345	1515100
Total Accruals	4260	725	51425	-360300	214572
Total Accruals/ Total Assets	0.0234387	0.0089051	0.144454	-0.3271385	1.447187

Table 5. 2008

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Accounts Receivable	100338	34294	208234	352	1342100
Variation of Accounts Receivable	4099	515	62592	-359720	501248
Fixed Assets	426585	73593	1735043	1673	14800000
Total Assets	578828	157411	1610328	5855	14000000
Sales	472583	110794	1294582	1962	10100000
Variation of Sales	56050	3535	222352	-220659	1593032
Earnings (Loss) Before Taxes	17994	1415	118410	-395892	993963
Net Income	11919	1206	88020	-305879	728504
Cash Flows (Operating Activities)	41541	2456	183621	-90215	1833500
Total Accruals	-23547	-1294	115890	-989500	122343
Total Accruals/ Total Assets	-0.0343821	-0.0177947	0.2393809	-2.590705	0.5465847

Tables 6-15 presents the descriptive statistics of non-discretionary and discretionary accruals variables, which resulted from the regressions of the first stage of research using the relevant coefficients of the independent variables. In particular, Tables 6-10 present the results of the variables formed by using parameters obtained from time series regression (pooled sample), while Tables 11- 15, present the descriptive statistics of the variables formed by using parameters obtained from cross section data regression.

We can observe that in 2005, the non-discretionary accruals have negative mean, affected by the relative size of total accruals. They increase in 2006 and 2007 and decline in 2008 due to a significant reduction in total accruals. Regarding to discretionary accruals, the dependent variable of the second stage of research, they exhibit an opposite trend in relation to non-discretionary accruals in years 2005 and 2006. They tend to increase in 2007 and decrease again in 2008. Similar are the results under the modified Jones model. The parameters generated, were used to compute the non-discretionary and the discretionary accruals.

Table 6. Time Series

Observations: 584	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	0.0026366	0.002009	0.0016957	0.0029499
Median	0.0029018	-0.0018796	0.0027374	-0.0018428
Standard Deviation	0.0274245	0.1582665	0.0231277	0.1589546
Min	-0.0921642	-2.559079	-0.0946878	-2.565846
Max	0.3455629	1.232137	0.2714074	1.263343

Table 7. Time Series, 2005

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	-0.0000106	0.0198124	-0.0000587	0.0198605
Median	0.0005836	0.0074569	0.0023413	0.0089842
Standard Deviation	0.0210915	0.1030527	0.019383	0.1041009
Min	-0.0844819	-0.3252358	-0.0786239	-0.3261456
Max	0.1230246	0.387103	0.1282814	0.3988631

Table 8. Time Series, 2006

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	0.001883	0.0078411	0.0007408	0.0089833
Median	0.0032058	-0.0005544	0.0020679	-0.0006495
Standard Deviation	0.0151999	0.1119073	0.0133987	0.1128025
Min	-0.0682848	-0.2854149	-0.0644022	-0.2850768
Max	0.079352	0.8099531	0.0575529	0.8058562

Table 9. Time Series, 2007

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	0.0058444	0.0175943	0.003722	0.0197167
Median	0.0047031	0.0055662	0.0041586	0.0061601
Standard Deviation	0.0359481	0.1351233	0.0298401	0.1366531
Min	-0.0921642	-0.3307064	-0.0946878	-0.329427
Max	0.3455629	1.232137	0.269454	1.263343

Table 10. Time Series, 2008

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	0.0028296	-0.0372117	0.0023787	-0.0367608
Median	0.0020781	-0.0240168	0.0028797	-0.0245482
Standard Deviation	0.0322148	0.2390881	0.0263884	0.2390774
Min	-0.0721693	-2.559079	-0.0682607	-2.565846
Max	0.3373426	0.5527691	0.2714074	0.5477406

Tables 11-15 present the descriptive statistics of non-discretionary and discretionary accruals variables, which resulted from the cross section data regression. In particular, we observe that, contrary to the results of time series regression, the non-discretionary accruals decreased from 2005 to 2006, while discretionary accruals increased. In 2007 there is an expected increase in non-discretionary accruals, since the total accruals reach their maximum and the discretionary accruals decreased respectively. Besides, in 2008, when the total and non-discretionary accruals were reduced, the discretionary accruals increased. Similar are the results under the modified Jones.

Table 11. Cross section data

Observations: 584	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	-0.0055787	0.0102243	-0.0079232	0.0125688
Median	-0.00852	0.0144093	-0.0096579	0.0153867
Standard Deviation	0.1034737	0.1593137	0.1034736	0.1603269
Min	-0.4806606	-2.263212	-0.4825927	-2.260468
Max	1.108981	0.8290378	1.099279	0.8174314

Table 12. Cross section data, 2005

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	-0.0004329	0.0202347	-0.0019543	0.0217561
Median	-0.0019603	0.0120485	-0.0025972	0.0093597
Standard Deviation	0.0201582	0.1005565	0.0122183	0.1018267
Min	-0.0786704	-0.3252872	-0.0767243	-0.3259834
Max	0.1431146	0.3960944	0.0736131	0.4216453

Table 13. Cross section data, 2006

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	-0.0276182	0.0373423	-0.033374	0.0430982
Median	-0.0281222	0.0331505	-0.0302378	0.0392583
Standard Deviation	0.0274502	0.1102172	0.0222929	0.1113739
Min	-0.1396507	-0.2780983	-0.150281	-0.2766382
Max	0.1156705	0.8290378	0.0313389	0.8174314

Table 14. Cross section data, 2007

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	0.1175152	-0.0940765	0.1174478	-0.094009
Median	0.1066079	-0.09312	0.1065841	-0.0931868
Standard Deviation	0.0984329	0.1059303	0.0975268	0.1067798
Min	-0.0168901	-0.3554104	-0.0133441	-0.3590053
Max	1.108981	0.3382059	1.099279	0.3479085

Table 15. Cross section data, 2008

Observations: 146	Non-discretionary Accruals (NDA) Jones Model	Discretionary Accruals (DA) Jones Model	Non-discretionary Accruals (NDA) Modified Jones Model	Discretionary Accruals (DA) Modified Jones Model
Mean	-0.1117788	0.0773967	-0.1138123	0.0794301
Median	-0.0971449	0.0953358	-0.0984609	0.1004542
Standard Deviation	0.0712129	0.2285378	0.0713215	0.2285039
Min	-0.4806606	-2.263212	-0.4825927	-2.260468
Max	-0.0095129	0.6659349	-0.0090095	0.6664988

Tables 16-20 present the descriptive statistics of key independent variables of the models derived from the second stage of the research, i.e. tax (total, current and deferred). Note again that the regression models used relevant variables divided by total assets for comparability purposes. However, the tables present the results without this division.

Regarding to taxes, we observe that in Tables 16-20, the total tax is increased until 2007, and decreased in 2008, following the relative reduction in profits. Current tax is increased up to 2006 then displays a marginal decrease in 2007 and a larger decrease in 2008, following a corresponding reduction of profits. Deferred tax, as in displays a negative value in 2005 and 2006, which may result from recognition of a deferred tax expense in the income statement due to recognition of deferred tax assets. That is, the tax income is, on average, larger than the accounting income. As it was expected, current tax is higher than total tax in these two periods. The amount of deferred tax decreases in 2006 and "turns" in a deferred tax expense in 2007. This change can be attributed either to recognition of deferred tax liability, implying that the accounting income is greater than the taxable income or from reduction of deferred tax liabilities resulting from inadequate profits to be depreciated.

In 2008 a relatively large amount of deferred tax – income appears, which means that tax income, on which the current tax rate is imposed, is substantially higher than accounting income.

Table 16. Total

Observations: 584	Mean	Median	Standard Deviation	Min	Max
Total Tax	8575.3	1139	33761.88	-90013	381800
Current Tax	9285.449	1018.5	34461.26	-1631	341500
Deferred Tax	-709.524	14.5	12218.94	-191900	41379

Table 17. 2005

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Total Tax	7948.932	1232.5	27118.07	-41344	235119
Current Tax	9281.007	859.5	32435.92	-550	233936
Deferred Tax	-1332.075	16.5	17613.17	-191900	26197

Table 18. 2006

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Total Tax	9540.425	1300.5	37020.91	-26798	353000
Current Tax	9879.699	1166.5	34760.76	-1443	316400
Deferred Tax	-339.2671	57	11617.82	-122480	36600

Table 19. 2007

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Total Tax	10736.74	1493	38171.57	-7912	381800
Current Tax	9774.096	1037.5	36136.88	-353	341500
Deferred Tax	965.0137	111	5639.568	-16940	41379

Table 20. 2008

Observations: 146	Mean	Median	Standard Deviation	Min	Max
Total Tax	6075.103	555.5	31744.34	-90013	265459
Current Tax	8206.993	962.5	34739.66	-1631	311700
Deferred Tax	-2131.767	-33	10858.57	-90551	17337

4.2. Regression analysis

It appears that total tax (TOT_TAX) and current tax (CUR_TAX) are significantly associated with discretionary accruals (DA) under the simple Jones model (Tables 21-22). With respect to deferred tax (DEF_TAX), the correlation is positive and statistically significant (Table 23). The results are similar when discretionary accruals are estimated under the modified Jones model (Tables 24 – 26). An

increase in total tax and current tax induces an increase in the discretionary accruals and as a consequence the possibility of earnings management increases. On the basis of these results the null hypothesis of H1, H2 and H3 can be rejected and the alternative hypothesis are accepted. These findings are in line with the findings of previous research. Management tends to manipulate earnings in order to reduce the current tax expense and to increase profits, through deferred tax, without affecting the current taxable income (Phillips et al., 2003, Wahlen, 1999). The results are consistent with findings of previous research according to which there is a negative effect on discretionary accruals when financial statements are audited by big-4 auditing firms (Becker et al., 1998; Francis et al., 1999; Chung et al., 2003).

Table 21

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Regression for all years 2005 – 2008 (time series)
TAX = TOT_TAX

Number of Obs = 584
F (5, 578) = 44.38
Prob > F = 0.000
Adj. R-squared = 0.112

DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
TOT_TAX	0.711***	0.133	5.350	0.000	0.450	0.972
ROA	0.003***	0.000	8.410	0.000	0.003	0.004
LEV	-0.001*	0.000	-1.850	0.066	-0.002	0.000
SEC_TYP	-0.002	0.006	-0.340	0.732	-0.015	0.010
AUD_TYP	0.016**	0.008	2.110	0.036	0.001	0.031
CONSTANT	-0.031***	0.007	-4.340	0.000	-0.045	-0.017

Table 22

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Regression for all years 2005 – 2008 (time series)
TAX = CUR_TAX

Number of Obs = 584
F (5, 578) = 34.84
Prob > F = 0.000
Adj. R-squared = 0.098

DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
CUR_TAX	0.312**	0.148	2.120	0.035	0.022	0.602
ROA	0.004***	0.000	9.260	0.000	0.003	0.005
LEV	-0.001	0.000	-1.420	0.158	-0.001	0.000
SEC_TYP	-0.001	0.007	-0.210	0.835	-0.014	0.012
AUD_TYP	0.017**	0.008	2.250	0.025	0.002	0.033
CONSTANT	-0.028***	0.007	-3.860	0.000	-0.043	-0.014

****significant at* the .01 level (2-tailed)
***significant at* the .05 level (2-tailed)
**significant at* the .1 level (2-tailed)

Table 23

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Regression for all years 2005 – 2008 (time series)
TAX = DEF_TAX

Number of Obs = 584
F (5, 578) = 38.82
Prob > F = 0.000
Adj. R-squared = 0.118

DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
DEF_TAX	1.420***	0.288	4.930	0.000	0.854	1.986
ROA	0.004***	0.000	12.560	0.000	0.004	0.005
LEV	-0.001***	0.000	-2.600	0.010	-0.002	0.000
SEC_TYP	0.002	0.006	0.330	0.744	-0.010	0.015
AUD_TYP	0.014*	0.008	1.880	0.061	-0.001	0.029
CONSTANT	-0.024***	0.007	-3.350	0.001	-0.038	-0.010

Table 24

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from modified Jones model
Regression for all years 2005 – 2008 (time series)
TAX = TOT_TAX

Number of obs = 584
F (5, 578) = 47.11
Prob > F = 0.000
Adj. R-squared = 0.116

DA (by Modified Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
TOT_TAX	0.750***	0.134	5.600	0.000	0.487	1.013
ROA	0.004***	0.000	8.600	0.000	0.003	0.004
LEV	-0.001*	0.000	-1.840	0.066	-0.002	0.000
SEC_TYP	-0.003	0.007	-0.400	0.689	-0.015	0.010
AUD_TYP	0.016**	0.008	2.050	0.041	0.001	0.031
CONSTANT	-0.031***	0.007	-4.330	0.000	-0.046	-0.017

***significant at* the .01 level (2-tailed)
**significant at* the .05 level (2-tailed)
**significant at* the .1 level (2-tailed)

Table 25

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from modified Jones model
Regression for all years 2005 – 2008 (time series)
TAX = CUR_TAX

Number of obs = 584
F (5, 578) = 36.78
Prob > F = 0.000
Adj. R-squared = 0.101

DA (by Modified Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
CUR_TAX	0.354**	0.149	2.370	0.018	0.061	0.648
ROA	0.004***	0.000	9.390	0.000	0.003	0.005
LEV	-0.001	0.000	-1.380	0.167	-0.001	0.000
SEC_TYP	-0.002	0.007	-0.330	0.741	-0.015	0.011
AUD_TYP	0.017**	0.008	2.210	0.027	0.002	0.033
CONSTANT	-0.028***	0.007	-3.840	0.000	-0.043	-0.014

Table 26

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from modified Jones model
Regression for all years 2005 – 2008 (time series)
TAX = DEF_TAX

Number of obs = 584
F (5, 578) = 40.43
Prob > F = 0.000
Adj. R-squared = 0.121

DA (by Modified Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
DEF_TAX	1.438***	0.291	4.940	0.000	0.866	2.009
ROA	0.004***	0.000	12.880	0.000	0.004	0.005
LEV	-0.001***	0.000	-2.570	0.010	-0.002	0.000
SEC_TYP	0.002	0.006	0.280	0.777	-0.011	0.015
AUD_TYP	0.014*	0.008	1.820	0.069	-0.001	0.029
CONSTANT	-0.024***	0.007	-3.280	0.001	-0.038	-0.010

***significant at* the .01 level (2-tailed)
**significant at* the .05 level (2-tailed)
**significant at* the .1 level (2-tailed)

The results obtained from cross section regressions are not entirely consistent with the results of times series regressions. However, the results are not cross checked and may be affected by the fact that the number of observations in cross section regressions is smaller than the corresponding number of time series regressions. In particular, in the cross-section regression for the year 2005 we observe that only the correlation between the total tax and discretionary accruals is positive and statistically

significant (Tables 27-29). It should be noted that for cross section regressions only the basic independent variable's results are presented (tax). It is clear that only hypothesis H1 can be rejected for the year 2005.

Table 27

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2005)
TAX = TOT_TAX

Number of obs = 146						
F (5, 140) = 28.73						
Prob > F = 0.000						
Adj. R-squared = 0.192						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
TOT_TAX	0.684**	0.270	2.540	0.012	0.151	1.217

Table 28

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2005)
TAX = CUR_TAX

Number of obs = 146						
F (5, 140) = 13.84						
Prob > F = 0.000						
Adj. R-squared = 0.179						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
CUR_TAX	-0.038	0.331	-0.120	0.908	-0.693	0.617

Table 29

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2005)
TAX = DEF_TAX

Number of obs = 146						
F (5, 140) = 15.68						
Prob > F = 0.000						
Adj. R-squared = 0.195						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
DEF_TAX	-0.303	0.864	-0.350	0.726	-2.010	1.405

***significant at the .01 level (2-tailed)
**significant at the .05 level (2-tailed)
*significant at the .1 level (2-tailed)

Tables 30-32 present the results of cross-section regression for year 2006. It appears that only the coefficient between deferred tax and discretionary accruals is positive and statistically significant. It is clear that only hypothesis H3 can be rejected for the year 2006.

Table 30

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2006)
TAX = TOT_TAX

Number of obs = 146						
F (5, 140) = 5.07						
Prob > F = 0.000						
Adj. R-squared = 0.109						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
TOT_TAX	0.237	0.304	0.780	0.437	-0.364	0.838

Table 31

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2006)
TAX = CUR_TAX

Number of obs = 146						
F (5, 140) = 5.07						
Prob > F = 0.000						
Adj. R-squared = 0.107						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
CUR_TAX	-0.113	0.356	-0.320	0.752	-0.817	0.592

Table 32

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2006)
TAX = DEF_TAX

Number of obs = 146						
F (5, 140) = 6.34						
Prob > F = 0.000						
Adj. R-squared = 0.127						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
DEF_TAX	1.599**	0.641	2.490	0.014	0.331	2.867

***significant at* the .01 level (2-tailed)
**significant at* the .05 level (2-tailed)
**significant at* the .1 level (2-tailed)

For year 2007, we observe that there is a statistically significant positive correlation between total tax, deferred tax and discretionary accruals. On the basis of these results the null hypothesis of H1 and H3 can be rejected (Tables 33-35).

Table 33

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2007)
TAX = TOT_TAX

Number of obs = 146						
F (5, 140) = 3.97						
Prob > F = 0.002						
Adj. R-squared = 0.091						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
TOT_TAX	1.003**	0.508	1.970	0.050	-0.001	2.006

Table 34

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2007)
TAX = CUR_TAX

Number of obs = 146						
F (5, 140) = 3.22						
Prob > F = 0.009						
Adj. R-squared = 0.088						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
CUR_TAX	0.249	0.597	0.420	0.678	-0.932	1.429

Table 35

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2007)
TAX = DEF_TAX

Number of obs = 146						
F (5, 140) = 4.71						
Prob > F = 0.000						
Adj. R-squared = 0.118						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
DEF_TAX	2.588***	0.886	2.920	0.004	0.836	4.341

****significant at* the .01 level (2-tailed)
***significant at* the .05 level (2-tailed)
**significant at* the .1 level (2-tailed)

Regarding to the cross-section regression for year 2008, we observe that there is a statistically significant positive correlation between the total tax and discretionary accruals (Tables 36-38). Therefore, the null hypothesis H1 can be rejected.

Table 36

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2008)
TAX = TOT_TAX

Number of obs = 146						
F (5, 140) = 9.81						
Prob > F = 0.000						
Adj. R-squared = 0.082						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
TOT_TAX	1.103***	0.273	4.040	0.000	0.563	1.643

Table 37

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2008)
TAX = CUR_TAX

Number of obs = 146						
F (5, 140) = 20.03						
Prob > F = 0.000						
Adj. R-squared = 0.098						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
CUR_TAX	0.408**	0.376	1.080	0.280	-0.336	1.151

Table 38

Model: $DA_{it} = a_0 + a_1(TAX_{it}) + a_2(ROA_{it}) + a_3(LEV_{it}) + a_4(AUD\_TYP_{it}) + a_5(SEC\_TYP_{it}) + e_{it}$
DA estimated from Jones model
Cross section regression per year (2008)
TAX = DEF_TAX

Number of obs = 146						
F (5, 140) = 12.26						
Prob > F = 0.000						
Adj. R-squared = 0.122						
DA (by Jones)	Coefficients	Std. Err.	t	P>t	[95% Conf.	Interval]
DEF_TAX	1.132*	0.615	1.840	0.068	-0.085	2.349

****significant at* the .01 level (2-tailed)
***significant at* the .05 level (2-tailed)
**significant at* the .1 level (2-tailed)

The results of the cross-section regressions are similar under the modified Jones model.

5. Conclusions

The results of the regressions for the period 2004-2008 (time series) suggest that the Greek companies use the tax as a mean of earning management. These findings are in line with previous research that found that an increase in deferred tax tends to be associated with earnings management efforts (Cloyod et al. 1996; Wahlen, 1999; Mills & Newberry, 2001; Phillips et al., 2003; Desai, 2005). Furthermore it appears that the firms that are audited by big-4 audit firms are less likely to get involved in earnings management.

The findings of this study can have some implications regarding the accounting standards setting procedure. The findings of this study suggest that IFRS provisions regarding taxation provide firms with a scope to get involved in earning management practices. The introduction of IFRS does not automatically leads to an improvement of the quality of the published financial statements. A future revision of IAS 12 *Taxation* could aim to reduce the options provided to firms regarding the level of deferred taxation. In addition, these findings suggest that it might be fruitful to further investigate the effectiveness of various monitoring mechanisms. The corporate governance mechanisms provided by Law 3016/2002 have not as yet succeeded in substantially restraining earning management practices. On the other hand external audit seems to be a more effective mechanism. Given the similarities of the Greek business environment with that prevailing in other European countries, the findings of this study could provide some useful insights concerning the accounting policy choices of firms in other European countries and regarding the effectiveness of corporate governance mechanism.

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