



The effect of the mandatory adoption of corporate governance mechanisms on earnings manipulation, management effectiveness and firm financing

Evidence from Greece

Corporate
governance
mechanisms

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Abstract

Purpose – The purpose of this paper is to examine the effect of the mandatory adoption of corporate governance mechanisms on serious firm issues (earnings manipulation, management effectiveness and firm's financing).

Design/methodology/approach – Cross-sectional analysis is employed to investigate the association between the corporate governance mechanisms that have been introduced by the L.3016/2002 and earnings manipulation, management effectiveness and firm's financing.

Findings – This study finds that the mandatory corporate governance mechanisms decrease firms' weighted average cost of capital, increase firm's financing and have no impact on firms' effectiveness and earnings manipulation.

Practical implications – This study provides insights regarding the extent to which the mechanisms of corporate governance provided by the L.3016/2002, improve the quality of financial statements prepared by Greek companies. The conclusions of the study are useful for the providers of equity and debt capital, the legislators and the shareholders.

Originality/value – The paper tests, empirically, the effect of the mandatory corporate governance mechanisms on earnings manipulation, management effectiveness and firm's financing.

Keywords Corporate governance, Earnings management, Corporate finances, Management effectiveness, Greece, Financial reporting

Paper type Research paper

Introduction

In the modern corporations, management has become increasingly independent from shareholders and other categories of firm's stakeholders. As a result, management has achieved an effective control over the affairs of a firm[1] (Monsen and Downs, 1965; Demsetz and Lehn, 1985). Within this context it has been question the motivation of the management of a firm to maximize the economic value of a firm (Berle and Means, 1932; Monsen and Downs, 1965; Williamson, 1985). It has been argued that the management of a firm will pursue its own personal goals, even at the expense of the interests of the other groups of stakeholders. Managers' ambitions for security, increased salaries, enhanced power and prestige can motivate them to direct funds to operations and activities that do not necessarily contribute to the maximization of the value of the firm (Monsen and Downs, 1965; Scherer, 1980)[2]. Moreover, managers may attempt to influence the reported figures of firm in order to provide a favourable picture of firm's financial position (Watts and Zimmerman, 1986).



Under these circumstances, the shareholders of a firm may devise mechanisms, which will restrain managers from following value-reducing policies (Dhaliwal *et al.*, 1982; Watts and Zimmerman, 1986). Many corporations have adopted corporate governance mechanisms in order to ensure that the management of a firm works towards the maximization of the value of the firm.

A number of studies have indicated that investors' decisions are influenced by the extent to which a firm implements corporate governance. Investors may be more inclined to invest in firms where corporate governance regulations are implemented, because they believe that their interests are more effectively protected in these firms. Similarly, the providers of debt capital would be less reluctant to supply funds to a firm when they believe that the firm follows value-increasing policies that enhance its ability to meet its loan-related obligations. In this context, it can be argued that when a firm adopts corporate governance mechanisms it will raise capital – equity and debt capital alike – with lower cost.

The Law 3016/2002 is the main legislation that regulates corporate governance in Greece. The L.3016/2002 prescribes that the companies that are listed in the Athens Stock Exchange are obliged to adopt certain corporate governance mechanisms. In particular, the board of directors should include independent non-executive members. Furthermore, firms have the obligation to establish an independent internal audit department. The present study investigates the effect of the corporate governance mechanisms on certain corporate issues of Greek listed firms. In particular, it is investigated whether the introduction of the corporate governance mechanisms, as these prescribed by L.3016/2002, affects: (a) the extent to which firms' management aim to influence companies reported figures; (b) the efficiency with which firms' managers use the funds at their disposal and (c) the firm's cost of capital.

The findings of this study can provide insights regarding the extent to which the mechanisms of corporate governance provided by the L.3016/2002, improve the quality of financial statements prepared by Greek companies. The findings of this study can be particularly important for providers of equity and debt capital, since their investing decisions are influenced, to an extent, by financial statements information. Shareholders may be also interested in the findings of this study examines the introduction of corporate governance mechanisms on management efficiency. The findings of this study can facilitate legislators in improving the existing legislation concerning corporate governance and in developing a new one.

The main provisions of L.3016/2002

According to the L.3016/2002 a certain number of non-executive and independent non-executive members should participate in the board of directors of all Greek listed companies[3]. In particular, the number of non-executive board members should not be lower than the one-third of the total number of board members, while at least two members of the board of directors should be independent non-executive ones.

The L.3016/2002 prescribes that all companies should establish an independent internal audit department, which will be responsible, among others, for monitoring the implementation of the Statement of Internal Company Policy and for ensuring the continuous compliance with its provisions. In the Statement of Internal Company Policy, which is compulsory to be prepared by all listed firms, is presented the administrative structure of the corporation, while the responsibilities of executive and non-executive board members are defined in detail.

Literature and hypotheses development

Earnings manipulation

Firms' management may have a motive to give a misleading picture regarding the true financial position of a firm. They may attempt to influence reported income in order to increase their remuneration through accounting-number based bonus schemes, and to secure their position in the firm. Within this context managers may try to manipulate the reported earnings towards a particular direction. Earnings manipulation may negatively affect firm's value. The cases of Enron and Parmalat signify that profits' manipulation can seriously damage investors' interests (Paltrow, 2002). Firm's managers can influence the reported figures of the firms by the selective application of particular reporting policies. One of the objectives of the corporate governance mechanisms is to restrain a possible tendency of the firm's management to influence reported accounting figures.

Within this context, one of the duties of the board of directors is to contain top management from manipulating firms' financial figures (Parka and Shinb, 2004). The board of directors is more likely to execute its duties effectively when independent members participate in it. The participation of independent non-executive members in the board of directors ensures that the interest of the shareholders will be safeguarded and the firm will operate aiming to the maximization of shareholders' wealth. When non-executive independent directors participate in the board of directors, the firm's top management is less likely to get involved in profits manipulation (Dechow *et al.*, 1996; Beasley, 1996). Contrary to the non-independent directors, the independent directors are not dependent upon the company or persons connected with it (e.g. top executives, major shareholders). Besides, they do not expect an extra compensation for the services they offer to the firm. Hence, the independent non-executive directors have no motive to avoid fulfilling their legal obligations. One of their obligations is to ensure that the published financial statements represent a true and fair view of the financial position of the firm. In addition, Klein (2002) suggests that the creditors of a firm consider that the participation of non-executive independent members in the board of directors increases the reliability of the published financial statements.

Independent directors can perform effectively their monitoring duties when the appropriate incentives are provided to them (Monks and Minow, 2004). The competition in labour market for managerial skills can induce independent directors to monitor firms' management (Fama and Jensen, 1983). Independent directors are particularly concerned about their professional reputation. Given that independent directors' reputation is conditioned upon their abilities to control top managers, they have a strong incentive to restrain managers from manipulating reported earnings (Chtourou *et al.*, 2001).

However, the ability of independent board members to control managers' actions can be associated with their professional experience. Parka and Shinb (2004) provide evidence, which indicates that only when the independent directors have professional experience from the finance and insurance sector can effectively control managers' actions. Independent directors' effectiveness is associated with the length of the period they serve as members of board of directors (Beasley, 1996). It should be mentioned, however, that contrary to Beasley (1996), Parka and Shinb (2004) argue that the length of the period that independent directors participate in the board of directors does not enhance their ability to contain managers from manipulating reporting earnings. Moreover, Klein (2002) found a negative association between the existence of an independent audit committee and the manipulation of earnings by the management of the firm.

Internal audit mechanisms are expected to play a key role in restraining firms' managers from managing firms' reported earnings. An internal audit regulation

secures a transparency in the company's operations and defines a framework of responsibilities for the company's governing bodies and departments. In addition, it clarifies the procedures that should be followed for the recognition and accounting recording of the transactions of the firm. As a result, internal audit mechanisms restrict management's discretionary power to influence financial figures.

According to the corporate governance principles, the internal audit department is responsible for the implementation of the internal audit regulation. Thus, the internal audit department assists the board of directors in executing its monitoring duties, since it supervises corporate operations and transactions. Furthermore, it provides to the board of directors reliable information regarding the completeness and representational faithfulness of accounting records, and highlights instances that there is a conflict of interest between shareholders and managers. It can be concluded, therefore, that the internal audit department reduces the latitude of the management of a firm to influence reported figures.

The internal audit department can be proved to be the most important mechanism that monitors managers' contact, especially when its staff is independent, competent and possess adequate knowledge of accounting and auditing (Levitt, 1998; Cohen *et al.*, 2000). When an internal audit committee functions properly, the probability that the financial statements of a firm do not represent its real financial position is reduced, while it is less likely that the firm's management will attempt to manipulate corporate earnings (Defond and Jiambalvo, 1991; Beasley, 1996; Dechow *et al.*, 1996; McMullen, 1996; Peasnell *et al.*, 2000). In order to investigate that impact of the corporate governance mechanisms on earnings' manipulation, the following hypothesis has been formulated and tested:

- H1. The manipulation of reported earning by firms' management has been reduced as a consequence of the introduction of L.3016/2002.

Management efficiency[4]

According to the agency theory the managers of firms are not primarily concerned about the optimal usage of the resources entrusted to them by the various providers of capital. Instead, they are mainly interested in pursuing their own objectives (see Jensen and Meckling, 1976). It follows, that the quality of the management exercised in many corporations is not up to the envisaged level. The quality of the management of a corporation is defined as the ability of firms' managers to employ effectively the funds assigned to them, so that the return on the invested capital to exceed the cost of capital. Corporate governance mechanisms, such as, the board of directors, the internal audit department, the auditing committee (i.e. the directors that supervise the internal audit department) aims to improve the effectiveness of firm's management.

It has been argued that these bodies would perform more effectively their duties when independent non-executive members participate in them. A board of directors, which is composed by independent non-executive and non-independent members is supposed to be adequately equipped to tackle complex business problems, since the independent and not-independent directors are expected to approach the issues under consideration by different angles (Nemeth, 1986). The difference of opinions that is most likely to exist between the independent and non-independent directors can lead to a more thorough analysis of the questions under examination, and consequently can improve the decision making procedure (Eisenhardt and Schoonhoven, 1990). Similarly, Brickley *et al.* (1994) and Xie *et al.* (2003) conclude that the participation of independent members in the board of directors facilitates the decision making of a corporation at a strategic level. Besides, independent directors are expected to exercise stricter control

upon the extent to which management's actions contribute to the maximization of firm's value. When the board of directors includes independent non-executive members, it is more likely that appropriate criteria will be employed for the initial selection and subsequent evaluation of firms' managers. As a consequence, the firm will employ those managers that contribute, through their decisions and actions, to the maximization of the value of the firm. Therefore, it can be expected that the efficiency of the management of a firm will improve when independent non-executive directors participate in the board of directors (Brown and Caylor, 2004; Baysinger and Butler, 1985).

On the other hand, it has been argued that the lack of homogeneity that characterizes a board of directors that contains independent and non-independent members may lead to conflicts that hinder the cooperation between directors. As a consequence, an internally divided board of directors can exercise a limited control upon management's decisions and actions (Smith *et al.*, 1994). It follows that the performance of the corporation is negatively affected, when internal frictions hamper the operation of the board of directors (Davis *et al.*, 1997). It is argued that in a homogeneous board of directors there is a better communication and cooperation between its members, and as a consequence the decision making procedure is smoother and less time-consuming (Zenger and Lawrence, 1989; O'Reilly and Flatt, 1989). Hence, the firms that have a limited number of the independent members in their board of directors are expected to have a better performance (Muth and Donaldson, 1998).

The internal audit regulation by providing that certain procedures are applied for the evaluation of firm's managers, prompt executives to perform their tasks effectively. Given the complexity of the organizational structure of corporations, the internal audit department, by ensuring the implementation of the internal audit regulation, has the important function to continuously monitor the operations of each division and department of the company. Thus, it is ensured that each department executes its functions appropriately, and there are no overlapping of responsibilities and conflict of interests between different departments of the firm. In addition, the internal audit department is responsible for the detection of cases of conflict between shareholders and managers. It should be noted that empirical evidence provides mixed evidence concerning the extent to which the existence of independent internal audit mechanisms improves the employment of firm's resources (Agrawal and Chadha, 2005; Brown and Caylor, 2004; Dulewicz and Herbert, 2004). Taking into account the discussion above the following hypothesis has been formulated and tested:

- H2. The application of the corporate governance principles is associated with an increase on the return on equity.

Cost of capital

The availability of funds is prerequisite for the realization of the investment plans of a corporation. The providers of equity and debt capital face an investment risk, since almost every investment is surrounded by a certain degree of uncertainty. As the uncertainty relating to an investment increases, the providers of capital will demand higher returns. Within this context, the cost of capital of firm will rise.

When investors can calculate with accuracy the risk of a potential investment, are more willing to provide funds to a firm. As a consequence, the cost of capital for the respective firms will be lower. The introduction of corporate governance mechanisms can result in a decrease of the cost of capital of firm since these mechanisms allow potential investors to estimate with greater precision the result of an investment (Gordon, 2002). The more accurate estimation of the investors' risk is achieved through the information that is

provided by the published financial statements. An active audit committee is more likely to employ high quality external auditors that will not allow the issuance of misleading financial statements (Collier and Gregory, 1999). When investors are not confident that the published financial statements of a firm have been thoroughly audited (Kane and Velury, 2004; Zabihollah, 2005) or they know that the financial statements do not represent the actual financial position of a firm (Dechow *et al.*, 1996) they will be less than willing to invest funds in a particular firm. As a result, the cost of capital for this firm will rise.

The extent to which investment objectives are achieved is conditioned, to a considerable degree, upon the willingness of the board of directors to monitor the management of a firm. The providers of capital believe that independent directors control more effectively the top management of a firm. Empirical evidence indicates that the cost of capital of a firm is a negatively associated with the number of independent members of the board of directors (Bhojraj and Sengupta, 2003). In addition, it appears that the providers of capital assign greater importance to the independence, rather than the experience, of the members of the board of directors (Anderson *et al.*, 2004).

The investments of a firm are supposed to contribute to the maximization of the wealth of the shareholders of the firm. Consequently, shareholders are expected to endorse the financing of investment projects, which have marginal return higher, or at least equal, with the cost of the funds necessary for the financing of these projects (Gugler *et al.*, 2003). However, due to the asymmetry of information between owners and managers, shareholders may not be in position to evaluate whether an investment project maximize their wealth or not (Stiglitz and Weiss, 1981; Myers and Majluf, 1984; Davis, 2002). Besides, due to the agency problem shareholders may not be certain that firm's managers will select the investment projects that will maximize shareholder's wealth (Baumol, 1959; Marris, 1964, 1998; Grabowski and Mueller, 1972; Modigliani and Miller, 1958). Firm's managers have the discretion to invest firm's funds in projects that facilitate the achievement of their personal goals, at the expense of the shareholders interests (Lemmon and Loins, 2003). When the institutional framework of corporate governance is incomplete the management of a firm may concentrate its efforts in achieving high short-term returns, by sacrificing the long-term ones. As a result, the ability of a corporation to achieve comparative advantage against its competitors is undermined (Hayes and Abernathy, 1980; Charkham, 1994; Sykes, 1994; Moreland, 1995). The management of a firm may prefer higher short-term returns instead of a long-term ones, because it may believe that the stock price of the firm reflect the short-term value of firm rather than long-term one (Demirag, 1998; Grinyer *et al.*, 1998). The investors, due to the information asymmetry, cannot be certain about the long-term prospects of an investment. Although they would prefer investments that would generate profits in the long-run, they exercise pressure on the firm's management to achieve immediate cash-inflows, which will result in the increase of firm's value, and as a consequence an increase of their wealth (Groot, 1998).

The board of directors constitutes as a crucial corporate governance mechanism. The board of directors is supposed to safeguard shareholders interests and the company's resources (London Stock Exchange, 1998) while it is accountable to firm's shareholders (Gilson and Kraakman, 1991; Jensen, 1993). The board of directors is responsible for examining whether firm's managers have followed the formal procedures and policies regarding the selection and implementation of investments projects (Tricker, 1994). The independent non-executive members of the board of directors can discern which investment projects contribute to the maximization of shareholders wealth, and which projects constitute a waste of firm's resources (Byrd and Hickman, 1992).

The main source of information for the independent non-executive directors is the published financial statements, and the accounting reports that are prepared for internal use (Byrd and Hickman, 1992). The internal audit department ensures the reliability of these statements and reports. Additionally, internal audit monitors the financial results of firm's investments (Byrd and Hickman, 1992) and the degree of realization of firm's investment plans (Helliard and Dunne, 2004). Therefore, it can be concluded that corporate governance mechanisms increase the transparency relating to the selection of investments projects. Therefore, internal audit department maximizes the likelihood of being achieved profitable investments, making investors more willing to provide equity funds to corporations with lower required rate of return (Walkner, 2004; Gelos and Wei, 2002).

Taking into account the effect of the corporate governance mechanisms, which have been introduced by the Greek law on the firm's cost of capital, the following hypothesis is tested:

- H3.* The application of the corporate governance principles is associated with a decrease of the cost of capital.

The above analysis suggests that the introduction of corporate governance principles may have a considerable impact upon the cost of capital of a firm. In addition, the implementation of corporate governance mechanisms may improve the creditworthiness of a firm. The membership of independent members in the board of directors provides an assurance to the providers of debt capital that the funds that they have invested in a particular company will be directed towards high-return projects. As a consequence, the firm's financial position will improve and the firm will meet its debt obligations without difficulty. Empirical evidence suggests that firms that have adopted corporate governance mechanisms have easier, and less costly, access to loan capital (La Porta *et al.*, 1999; Lombardo and Pagano, 2000; Himmelberg *et al.*, 2004; Klapper and Love, 2004). It would have expected, therefore, that the firms that implement corporate governance mechanisms would be highly leveraged.

- H4.* The application of the corporate governance principles is associated with an increase in the leverage of a firm.

The sample and methodology

The sample

The sample includes companies that were listed in the Athens Stock Exchange for the period 2000-2003. The sample does not include 55 companies from the following sectors: banking sector, insurance sector, investment companies and financial leasing companies (see Table I).

In the sample were included only firms whose fiscal year coincided with the calendar year; 11 companies were excluded from the sample because their fiscal years

Listed companies (from 01/01/2000 until 31/12/2003)	269
(-) Companies in the financial sector	36
<i>Companies total</i>	243
(-) Companies whose annual reports fail to disclose detailed information about their corporate governance mechanisms	67
<i>Sample total</i>	176

Table I.
Sample selection

did not coincide with the calendar years. Furthermore, in the sample were not included firms that during the period under investigation merged with other companies, or were acquired by other corporations. From the sample were also excluded companies that changed their line of business during that period, and companies that discontinued their operations in the same period.

For the firms operating in Greece, the only source of information regarding the corporate governance principles they apply is their annual report. As a consequence, the data used in this study relating to the corporate governance have been derived from the companies' annual reports. The sample does not include 67 companies that have failed to publish annual bulletins for the full study period. Data regarding stock returns have been derived from the commercial database of "EFFECT Computer Applications".

The distribution of firm-year observations across sectors is presented in Table II.

Methodology

In order to empirically test *H1* the income's components that can be influenced by the management of the firm, discretionary accruals (*DAC*), have been identified as a dependent variable. In order, to define *DAC*, the following procedure has been adopted, based on Jones (1991):

Initially, the total accrual revenue/expenses (total accruals, *TAC*) are calculated. *TAC* equals the net income (*NETIN*) for the period minus the operating cash flows.

The following model has been estimated:

$$TAC/A_{t-1} = \alpha(1/A_{t-1}) + \beta_1(\Delta REV/A_{t-1} - \Delta REC/A_{t-1}) + \beta_2(PPE_t/A_{t-1}) + \beta_3(ROA_{t-1}) + e \quad \text{Model (1)}$$

where *TAC*: total accrued revenues/expenses (total accruals), A_{t-1} : total assets of firm *i* in year $t - 1$, ΔREV : change in total sales for firm *i*, ΔREC : change in accounting receivables for firm *i*, PPE_t : total fixed assets of firm *i* for the year *t*, ROA_{t-1} : return on assets of firm *i* for the year $t - 1$.

Model 1 has been estimated for each company of the sample and for each year in the period 2000-2003. Cross-sectional analysis has been used for estimating model 1.

The *DAC* are calculated as the difference between the estimated *TAC* and the published *TAC*. In particular, *DAC* are calculated as an error in the estimation of model 1, where $\hat{\alpha}$, $\hat{\beta}_1$, $\hat{\beta}_2$, $\hat{\beta}_3$ are the estimators α , β_1 , β_2 , β_3 calculated from model 1.

$$|DAC_{it}| = TAC - [\hat{\alpha}(1/A_{t-1}) + \hat{\beta}_1(\Delta REV - \Delta REC/A_{t-1}) + \hat{\beta}_2(PPE/A_{t-1}) + \hat{\beta}_3(ROA_{t-1})] \quad \text{Model (2)}$$

In order to test *H2* the return on equity (*ROE*) has been identified as a dependent variable. The *ROE* is calculated by dividing the total net income *NETIN* of a firm for period *t* with the average of total equity (*TOTEQ*) for period $t - 1$ and *t*. This variable provides an indication of how effectively the management of a firm uses the funds entrusted to it by shareholders. In addition, by comparing the value of this variable with the cost of the equity funds, an indication is provided for the ability of the management of a firm to increase the value of the firm and create high returns for the providers of equity capital[6].

In order to test *H3* the weighted average of cost capital (*WACC*), is used as a dependent variable, which is calculated as follows:

Sector	Firm-year observations of the sample	Firm-year observations with information about corporate governance related issues
Holdings companies	22	13
Telecommunications	4	3
Refinery	1	1
Water supplies	1	1
Passenger shipping	4	4
Information technology	10	10
Publishing and printing	10	9
Television-entertainment	2	2
Gaming	1	1
Health services	3	3
Basic metals	11	9
Metallic products	6	5
Machinery and appliances	2	2
Cables	2	2
Electronic equipment	1	1
Non-metallic minerals-cement	7	6
Wholesale commerce	30	19
IT equipment-solutions	7	4
Retail commerce	13	6
Mobile retail services	1	1
Food	15	10
Animal feeds	2	2
Distilleries	2	0
Tobacco products	1	1
Hotels and resorts	5	2
Restaurants	4	4
Transportation related facilities and services	1	1
Advertisements	1	0
Textile industries	15	11
Clothing	5	3
Real estate	4	3
Construction	22	16
Chemicals	3	2
Plastics-rubber	6	4
Paper products	2	2
Wood and cork products	3	3
Furnishing industries	3	3
Vehicles manufacturing	1	1
Vehicles commerce, maintenance	1	1
Rental services	2	1
Transportations	1	1
Jewellery manufacturing	1	0
Pisciculture	3	1
Agriculture-farming	2	2
Total	243	176

Table II.
Firm-year observations
distributed across the
industry sectors

$$\begin{aligned}
 WACC_{it} = & (r_{e,it} * (TOTEQ_{it} / (DEBT_{it} + TOTEQ_{it}))) \\
 & + ((r_{d,it} * (1 - TAXRATE_{it})) ** \\
 & \times (DEBT_{it} / (TOTEQ_{it} + DEBT_{it})))
 \end{aligned}$$

where $TOTEQ_{it}$: total of equity of the firm i for the period t , $DEBT_{it}$: total of debt capital of the firm i for the period t , $TAXRATE_{it}$: tax rate 35 percent, $r_{e, it}$: the required return on equity of the firm i for the year t , as this calculated by Capital Asset Pricing Model (CAPM)[7], $r_{d, it}$: the cost of debt capital of the firm i for the year t . It is calculated by dividing financial expenses of the firm i in year t by the total of debt capital.

In order to test $H4$ the financial leverage of a firm is identified as dependant variable. The $FLEV$ is calculated by dividing financial obligations for year t with accounting value of $TOTEQ$ for year t .

The mean and the median of the corresponding variables for the sample firms were estimated for the years 2001 and 2003[8]. With the use of t -statistic is examined whether the value of the mean for each variable in year 2001 is significantly different from the corresponding value of the variable for year 2003. Accordingly, by using the Wilcoxon test, the value of median for each variable for year 2001 has been compared with value of median for each variable for year 2003. In addition, with the use of χ^2 test, it has been examined whether the values of the variables under investigation show a significant variance ($\Delta VAR_{i,t}$) in the periods before (2000-2001) and after (2002-2003) the introduction of L.3016/2002.

In order to examine the extent to which the variables of interest are affected by the implementation of corporate governance regulation the following model has been estimated, by using a cross-sectional analysis, for the period 2000-2003[9]:

$$VAR_{i,t} = b_0 + b_1INTAUD_{i,t} + b_2D^*OUTDIR_{i,t} + e_{i,t} \quad \text{Model (3)}$$

where $VAR_{i,t}$: the variable of the relevant hypothesis for the company i in year t , $INTAUD_{i,t}$: dummy variable, equals to one when there is an internal audit department in the company i in year t , $D^*OUTDIR_{i,t}$: a variable that represent the impact of the application of principles of corporate governance on the proportion of independent members of the board of directors (OUTDIR) for the company i in year t .

The variables $INTAUD$ and $OUTDIR$ have been selected because L.3016/2002 imposes the existence of an internal audit department in a firm and the compulsory participation on independent non-executive members in the board of director.

The variable $D^*OUTDIR_{i,t}$ represents the interaction between the adoption of the corporate governance principles and the proportion of independent members in the board of directors. The L.3016/2002 stipulates that at least two of the non-executive members of the board of directors should be independent directors.

Since many of the firms of the sample had an internal audit department in the period before the implementation of L.3016/2002, a variable that represents the interaction between the adoption of the corporate governance principles and the existence of the internal audit department has not been incorporated in the model. Instead, the variable $INTAUD$ has been incorporated in the model.

Results

Descriptive statistics

Table III presents the descriptive statistics of the variables under consideration for the years 2001 and 2003. Year 2001 represents the period prior the implementation of the corporate governance principles. The descriptive statistics of the particular variables concern the total number of firms, which were listed in the Athens Stock Exchange for the whole period 2000-2003. The variable ROE does not appear to vary

	Mean	25%	Median	75%	SD	Observations
<i>Panel A</i>						
<i>Year 2001</i>						
<i>ABSDAC</i>	0.0937	0.0266	0.0512	0.1084	0.1422	243
<i>ROE</i>	0.0152	0.0007	0.0209	0.0483	0.0994	243
<i>WACC</i>	0.0908	0.0705	0.0904	0.1119	0.0279	243
<i>FLEV</i>	0.4422	0.0885	0.2788	0.6354	0.4949	243
<i>Panel B</i>						
<i>Year 2003</i>						
<i>ABSDAC</i>	0.0912	0.0257	0.0594	0.1077	0.2071	243
<i>ROE</i>	0.0196	-0.0039	0.0101	0.0480	0.0907	243
<i>WACC</i>	0.0844	0.0543	0.0788	0.1078	0.0375	243
<i>FLEV</i>	0.5700	0.1386	0.4338	0.8349	0.5322	243

Notes: *ABSDAC*: the absolute value of discretionary accruals, *ROE*: return on equity, *WACC*: weighted average cost of capital, *FLEV*: financial leverage

Table III.
Descriptive statistics

significantly during the period 2000-2003. On the other hand, a significant increase is observed in the variable *FLEV*, while the variable *WACC* show a significant reduction.

The fact that the variables *ABSDAC*, *ROE* and *WACC* do not vary considerably between years 2001 and 2003 does not necessarily mean that the principles of corporate governance do not affect these variables. It is possible that other factors (for instance a change in the macroeconomic environment) influence the particular variables in a way that negates the impact of the principle of corporate governance. Similarly, it can be argued that the significant change that is observed in the value of *FLEV* between years 2001 and 2003 can be attributed to factors irrelevant to the introduction of principles of corporate governance. A further discussion regarding the extent, to which the principles of corporate governance affect the variables under investigation, is provided in the following paragraphs.

Earnings manipulation

In order to empirically test *H1* it has been examined whether the value of mean of variable *ABSDAC* for year 2001 is significantly different from the value of mean of variable *ABSDAC* for year 2003 (Table IV, panel A). Accordingly, it has been examined whether the value of median of variable *ABSDAC* in year 2001 is significantly different from the corresponding value of the median of variable *ABSDAC* for year 2003 (Table IV, panel B). According to Reynolds and Francis (2000) the magnitude of the absolute value of discretionary accruals (*ABSDAC*) represents the extent to which the management of a firm tends to manipulate company's income. Both the mean and the median of *ABSDAC* have not changed significantly between years 2001 and 2003.

The comparison of the direction of changes in the discretionary accruals in the period 2000-2001 (period prior to the introduction of corporate governance principles) with the direction of changes in the discretionary accruals in the period 2002-2003 (period that the corporate governance principles were implemented), provide a further indication that the introduction of corporate governance principles has not significantly affected the extent to which managers aim to manipulate reported earnings (Table V).

MF 36,3	Variable	Mean value	t-test	p-value
<i>Panel A</i>				
	<i>ABSDAC01</i>	0.0937	0.1508	0.8802
	<i>ABSDAC03</i>	0.0912		

268		Median	Wilcoxon test	p-value
<i>Panel B</i>				
	<i>ABSDAC01</i>	0.0512	0.1170	0.9068
	<i>ABSDAC03</i>	0.0594		

Table IV.
Comparison of the absolute value of discretionary accruals (*ABSDAC*) between the years 2001 and 2003

Notes: *ABSDAC01*: absolute value of discretionary accruals for year 2001, *ABSDAC03*: absolute value of discretionary accruals for year 2003

Table V.
Changes in the discretionary accruals

	Positive	Negative	Total
Period prior to the introduction of corporate governance principles	149	94	243
Period after the introduction of corporate governance principles	108	135	243

Notes: Pearson $\chi^2 = 0.104966$; prob. = 0.7460

Model 3 was estimated with dependent variable the *ABSDAC* and with independent variables the existence of internal audit mechanism in an organization (*INTAUD*) and the participation of independent non-executive directors in the board of directors (*D*OUTDIR*). As it has been hypothesized, the coefficients for the *OUTDIR* and the *INTAUD* have a negative sign. Yet, observed association is not a significant one (Table VI).

On the basis of these findings, *H1* cannot be accepted. The provided evidence does not support the argument that the introduction of corporate governance principles resulted in a reduction in the tendency of management to manipulate reported figures. These findings are consistent with the findings of Parka and Shinb (2004), who found

b_0	$ABS(DAC_{i,t}) = b_0 + b_1INTAUD_{i,t} + b_2D*OUTDIR_{i,t} + e_{i,t}$			F -statistic
	b_1	b_2	Adjusted R^2	
0.1079 (8.8507)***	-0.0053 (-0.3321)	-0.0089 (-0.0991)	0.0001-0.000123	(0.0644)

Notes: $ABS(DAC_{i,t})$: the absolute value of discretionary accruals in the company i in year t , $INTAUD_{i,t}$: dummy variable, equals to one when there is an internal audit department in the company i in year t , $D*OUTDIR_{i,t}$: a variable that represent the impact of the application of principles of corporate governance on the proportion of independent members of the board of directors (*OUTDIR*) for the company i in year t ; The regression is calculated by the least squares method; White's (1980) t -statistics in parentheses; *, **, *** significant at the 10, 5 and 1 per cent levels, respectively

Table VI.
OLS, Cross-sectional analysis, for the period 2000-2003, Dependent variable: $ABS(DAC_{i,t})$

that the tendency of firms listed in the Toronto Stock Exchange to influence reported figures, has not been reduced as a consequence of the adoption of corporate governance regulation. Chtourou *et al.* (2001) arrived to similar conclusions, since they do not found any evidence to support the hypothesis that the membership of independent directors in the board of directors restrains the management of a firm from manipulating reported earnings. With respect to the role of internal audit mechanism, Kinney *et al.* (2004), Agrawal and Chadha (2005) did not found evidence to support the argument that the establishment of an internal audit mechanism contains the management of a firm from involving in earnings management.

Management efficiency

The *ROE* does not appear to rise in the period after the introduction of corporate governance mechanisms[10]. Both the mean and the median of the values of *ROE* do not appear to significantly differ between the years 2001 and 2003 (see panels A and B of Table VII).

Model 3 was estimated with dependent variable the *ROE* and with independent variables the *INTAUD* and the *D*OUTDIR*. The results do not suggest that the efficiency of the firm's management is affected by the introduction of corporate governance mechanism (Table VIII). The value of the *F*-statistic is not statistically significant (*F*-statistic = 1.916). Similarly, the coefficients for the *D*OUTDIR* and the *INTAUD* are not significantly associated with return on equity *ROE*.

Variable	Mean	<i>t</i> -test	<i>p</i> -value
<i>Panel A</i>			
<i>ROE01</i>	0.0152	0.4947	0.6210
<i>ROE03</i>	0.0196		
	Median	Wilcoxon test	<i>p</i> -value
<i>Panel B</i>			
<i>ROE01</i>	0.0209	1.3987	0.1619
<i>ROE03</i>	0.0101		

Notes: *ROE01*: return on equity in year 2001; *ROE03*: return on equity in year 2003

Table VII.
Comparison of return on equity (*ROE*) between the years 2001 and 2003

b_0	$ROE_{i,t} = b_0 + b_1INTAUD_{i,t} + b_2D*OUTDIR_{i,t} + e_{i,t}$		Adjusted R^2	<i>F</i> -statistic
	b_1	b_2		
0.0267 (3.6597)***	-0.0095 (-0.9874)	-0.0314 (-1.1699)	0.0041	(1.9159)

Notes: $ROE_{i,t}$: return on equity for the company *i* in year *t*, $INTAUD_{i,t}$: dummy variable, equals to one when there is an internal audit department in the company *i* in year *t*, $D*OUTDIR_{i,t}$: a variable that represent the impact of the application of principles of corporate governance on the proportion of independent members of the board of directors (*OUTDIR*) for the company *i* in year *t*; The regression is calculated by the least squares method; White's (1980) *t*-statistics in parentheses; *, **, *** significant at the 10, 5 and 1 per cent levels, respectively

Table VIII.
OLS, Cross-sectional analysis, for the period 2000-2003, (Dependent variable: $ROE_{i,t}$)

On the basis of these findings, *H2* cannot be accepted. The introductions of corporate governance principles, as L.3016/2002 prescribes them, do not appear to improve the management's efficiency. The findings are consistent with the findings of Bhagat and Black (1999, 2002), Hermalin and Weisbach (1991), MacAvoy and Millstein (1999), Buchholtz and Ribbens (1994), Vafeas and Theodorou (1998) and Chalevas (2007). These studies, by using accounting-numbers based indicators of management's efficiency, concluded that there is no significant association between the proportion of the independent members of the board of directors and the efficiency of firm's management. Walsh and Seward (1990) argue that when an increase in the number of independent directors is not combined with other measures does not necessarily result in an improvement in the effectiveness of management of a firm. Dulewicz and Herbert (2004) provide evidence, which indicates that existence of internal audit mechanism is not associated with an improvement in the administration of firm's resources.

Firm financing

The firm's cost of capital appears to be considerably affected by the introduction of corporate governance principles. The comparison of the mean values (Table IX, panel A) and the median values of the *WACC* (Table IX, panel B) for the years 2001 and 2003 indicates that there is a statistically significant difference in the corresponding values for the period prior to and after the implementation of the corporate governance principles.

Model 3 was estimated with *WACC* as a dependent variable and the *INTAUD* and the *D*OUTDIR* as independent variables. This investigation could provide an additional indication regarding the impact that the introduction of corporate governance principles has upon the firms' cost of capital (Table X).

The coefficients for the *D*OUTDIR* and the *INTAUD* are significantly associated with the cost of capital of a firm. The observed association is significant at the level of 1 per cent. On the basis of these findings *H3* can be accepted. These findings suggest that the introduction of corporate governance principles resulted in a reduction of the cost of capital of firms.

The comparison of the mean values (Table XI, panel A) and the median values (Table XI, panel B) of the variable *FLEV* for the years 2001 and 2003 indicates that there is a statistically significant difference in the corresponding values for the period

Variable	Mean	<i>t</i> -test	<i>p</i> -value
<i>Panel A</i>			
<i>WACC01</i>	0.0908	2.1309	0.0336
<i>WACC03</i>	0.0844		
	Median	Wilcoxon test	<i>p</i> -value
<i>Panel B</i>			
<i>WACC01</i>	0.0904	3.2808	0.0010
<i>WACC03</i>	0.0788		

Table IX.
Comparison of weighted average cost of capital (*WACC*) between the years 2001 and 2003

Note: *WACC1*: weighted average cost of capital for year 2001, *WACC3*: weighted average cost of capital for year 2003

prior to and after the implementation of the corporate governance principles. The firms' leverage has increased significantly through the period 2001-2003.

Model 3 was estimated with the *FLEV* as a dependent variable and the *INTAUD* and the *D*OUTDIR* as independent variables. This investigation could provide an additional indication regarding the impact that the introduction of corporate governance principles has upon the firms' leverage (Table XII).

b_0	$WACC_{i,t} = b_0 + b_1INTAUD_{i,t} + b_2D*OUTDIR_{i,t} + e_{i,t}$			F -statistic
	b_1	b_2	Adjusted R^2	
0.1151 (37.0230)***	-0.0158 (-4.1566)***	-0.0501 (-5.2090)***	0.1081	(36.2400)***

Notes: $WACC_{i,t}$: weighted average cost of capital of the company i for year t , $INTAUD_{i,t}$: dummy variable, equals to one when there is an internal audit department in the company i in year t , $D*OUTDIR_{i,t}$: a variable that represent the impact of the application of principles of corporate governance on the proportion of independent members of the board of directors (*OUTDIR*) for the company i in year t ; The regression is calculated by the least squares method. White's (1980) t -statistics in parentheses; *, **, *** significant at the 10, 5 and 1 per cent levels, respectively

Table X.
OLS, Cross-sectional
analysis, for the period
2000-2003 (Dependent
variable: $WACC_{i,t}$)

Variable	Mean	t -test	p -value
<i>Panel A</i>			
<i>FLEV01</i>	0.4422	2.6792	0.0076
<i>FLEV03</i>	0.5700		
	Median	Wilcoxon test	p -value
<i>Panel B</i>			
<i>FLEV01</i>	0.2788	3.0262	0.0025
<i>FLEV03</i>	0.4338		

Notes: *FLEV01*: financial leverage for year 2001, *FLEV03*: financial leverage for year 2003

Table XI.
Comparison financial
leverage (*FLEV*)
between the years 2001
and 2003

b_0	$FLEV_{i,t} = b_0 + b_1INTAUD_{i,t} + b_2D*OUTDIR_{i,t} + e_{i,t}$			F -statistic
	b_1	b_2	Adjusted R^2	
0.4506 (9.2163)***	0.0510 (0.8793)	0.3814 (2.8931)***	0.0196	(5.3869)***

Notes: $FLEV_{i,t}$: financial leverage of company i in year t . Defined by dividing financial obligation with the total equity of a firm, $INTAUD_{i,t}$: dummy variable, equals to one when there is an internal audit department in the company i in year t , $D*OUTDIR_{i,t}$: a variable that represent the impact of the application of principles of corporate governance on the proportion of independent members of the board of directors (*OUTDIR*) for the company i in year t ; The regression is calculated by the least squares method; White's (1980) t -statistics in parentheses; *, **, *** significant at the 10, 5 and 1 per cent levels, respectively

Table XII.
OLS, Cross-sectional
analysis, for the period
2000-2003 (Dependent
variable: $FLEV_{i,t}$)

The coefficient for $D*OUTDIR$ has a positive sign and is significantly associated with the financial leverage of a firm. On the other hand, the existence of internal audit mechanism does not appear to be significantly associated with the financial leverage of a firm, although the coefficient for $INTAUD$ has a positive sign. On the basis of these findings, $H4$ can be accepted. These findings indicate that, overall, the introduction of corporate governance principles resulted in an improvement of the creditworthiness of a firm. These findings are consistent with the hypothesis that the membership of independent non-executive board members in the board of directors provides an assurance to the providers of debt capital that the funds that they have lent to a particular company will be used in high-return projects that will improve the financial position of the firm. As a result, the firm will meet its debt obligations without difficulty. Thus, the firm has an easier access to loan capital, and as a result its leverage rises. The findings of the study are consistent with the findings of La Porta *et al.* (1999), Lombardo and Pagano (2000), Himmelberg *et al.* (2004) and Klapper and Love (2004), which provided evidence that firms' tend to adopt corporate governance mechanisms in order to reduce their cost of capital and to have easier access to debt financing.

Conclusions

This study empirically investigates the effect of corporate governance mechanisms, introduced by the corporate governance law (L.3016/2002), on crucial corporate issues, such as the manipulation of firm's earnings, management effectiveness and firm's financing. The investigation of these issues is based upon the comparison of certain financial figures, before and after the introduction of the relevant corporate governance principles.

The findings of this study suggest that the introduction of corporate governance principles has a limited impact upon crucial corporate issues. The introduction of corporate governance mechanisms has not affected the extent to which managers attempt to manipulate firm's earnings. The efficiency with which company's recourses are used has not changed significantly as a result of the implementation of corporate governance mechanisms. A possible explanation for the observed results is that the non-executive independent board members might be under the influence of the executive board members. As a result, they are not in position to restrain firm's management from value-reducing actions. Similarly, the internal audit department cannot resist the pressure exercised upon it by the management of the firm and as a consequence has a limited power to control the managers of a firm.

On the other hand, the introduction of corporate governance mechanisms has been associated with a reduction in the cost of capital of firms and an increase in their financial leverage. Providers of debt capital might believe that membership of independent non-executive board members ensures that the funds that they have lent to the firm will be used for the financing of investment projects that will increase the economic value of the firm. As a consequence, the ability of a firm to meet its debt obligations is enhanced and its the credit worthiness is improved.

The findings of this study can provide a basis on which a further investigation of the impact of L.3016/2002 on the corporate life of Greek listed firms. A further investigation is required in order to clarify the way firms implement in practice the L.3016/2002. For instance, it can be examined whether the internal audit department is in reality independent from the top management of the firm. In this way, it can be assessed whether the introduction of the corporate governance mechanisms protects the interests of the firm's shareholders and other groups of firm's stakeholders.

Notes

1. According to Smith, "... control refers to the power to direct the affairs of the corporation or to determine the broad policies guiding the corporation. Control, used in this sense, does not necessarily imply active decision making of the firm, but it does imply involvement in the making of more fundamental decisions such as the selection of management" (Smith, 1976, p. 709).
2. See Williamson (1963), Berle and Means (1932), McEachern (1978). For instance, Williamson (1963) maintains that management may have a preference for types of expenditures – i.e. staff expenditures, emolument expenditures and availability of funds for discretionary investments – that will enable it to achieve the aforementioned objectives. Those expenditures, however, "... have value additional to which derives from their productivity" (Williamson, 1963, p. 1034; see also Monsen and Downs, 1965).
3. Executive members are concerned with daily administrative issues of the corporation. Non-executive members are responsible for all corporate issues (L.3016/2002, Article 3, para 1).
4. The return on equity has been used as a proxy for the efficiency of firm's management (Baber *et al.*, 1998; Lambert and Larcker, 1987; Iyengar *et al.*, 2005; Boubakri *et al.*, 2005; Iqbal and French, 2007).
5. Revenue adjusted for the change in receivables, according to Kasznik (1999).
6. The increase in the economic value of a firm is calculated by multiplying the abnormal returns that a firm achieves in period t with the value of equity capital in period $t - 1$.
7. For the formula of the calculation of CAPM, see Sharpe (1964) and Lintner (1965).
8. Given that in the estimations of the parameters of the model are included variables that refer to a previous year and that the sample under investigation includes firm-years for the period 2000-2003, the year that represents the period before the introduction of corporate governance principles is the year 2001. The year 2003 represents the period after the introduction of corporate governance principles. The companies that they were already listed in 2002 had the obligation to comply with the provisions of L.3016/2002 by 17 November 2002.
9. In order to control for the heteroskedasticity the White method has been employed.
10. According to Penman (2001), ROE can be defined according to the following formula: $ROE = RNOA + (FLEV * SPREAD)$, where $RNOA$: return on net operating assets, $FLEV$: firm's leverage, $SPREAD$: the spread between return on net operating assets and firm's cost of borrowing. By applying t -statistic and Wilcoxon-criterion on the components of return on equity ($RNOA$, $FLEV$ and $SPREAD$), it appears that only the value of $FLEV$ are significantly different between years 2001 and 2003.

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