

CORPORATE GOVERNANCE AND FIRM PERFORMANCE: A COMPARATIVE ANALYSIS OF AUDITING PROBLEMS

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Abstract

The recent financial crises have created a new debate about comparison and convergence of different systems of corporate governance. In particular, they have underlined poor efficiency of rule structures to achieve a good relationship between different stakeholder's rights. In line with many studies of corporate governance that emphasize the manager-stakeholders relationship as explained by agency theory, in this paper, I analyse the role of auditing as an incentive device to reduce contractual or transaction costs related to asymmetric information. Considering as a benchmark the recent US *Sarbanes Oxley Act* of July 2002. I describe a set of auditing principles by comparing common and civil corporate laws. First, by using multiple correspondence analysis on six countries and twenty-seven dummy variables on auditing rules, I identify the main variables that form the auditing index. Second, I test the hypothesis that a suitable rule structure can improve the capability of financial markets to estimate the fair value of firms. In particular, I analyse the problem of the effects of direct and indirect monitoring rules for managers on the market value of public companies. The results obtained highlight a different relationship between auditing principles and firm performance from that expected on the basis of the legal framework.

Keywords: corporate governance, company law, market structure, firm performance, auditing

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1. Introduction

Recent financial corporate crises have opened to a new debate about the comparison and the convergence of different corporate governance systems. The crises have highlighted poor efficiency of rule structures that should achieve a good relationship between different stakeholders' rights.

In a comprehensive survey on the corporate governance literature, Becht *et al.* (2002) have emphasized several reasons about why corporate governance has been so prominent in recent decades. These reasons include: i) the privatisation process of the past two decades, ii) the pension fund reforms and the growth of private savings, iii) the importance of takeovers in financial markets during 1980s, iv) the process of deregulation and integration of capital markets, v) the 1998 East Asia crisis and, consequently, the greater attention of economists to corporate governance in emerging markets, vi) a series of recent US scandals and corporate failures during the bull market of the late 1990s. The growing importance of globalization implies that

financial markets could be exposed to new and greater financial risks and that these new kinds of risks are able to spread out within the international financial system faster than before.

Three main strands of literature are relevant for our purposes: i) the literature on corporate governance systems based on manager-stakeholders relationships explained by agency theory (Jensen and Meckling 1976) and the concept of firm as a bundle of contracts (Coase 1937, 1960 and Williamson 1975, 1979, 1987, 1996); ii) the literature on efficiency of auditing as an instrument to monitor managers' actions (DeAngelo, 1981; Watts and Zimmerman 1983; Palmrose, 2000, 1997; Palmrose *et al.*, 2001; Craswell 1999 and Francis, 2004); iii) the literature on the measurement of corporate governance mechanisms (La Porta *et al.*, 1997, 1998, 2000; Black *et al.*, 2003; Drobetz *et al.*, 2004 and Beiner *et al.*, 2004).

According to Gale (2000), the common aspect of the recent corporate crises is the fragility of the financial system. This means that a financial crisis in one market can propagate through the economic

system, causing larger damage after the initial small shock. In the recent financial crises of the United States (i.e. Enron, Arthur Andersen, WorldCom, Tyco, Citigroup, Merrill Lynch, Goldman Sachs), the causes of fragility stem from a problem of the managers' actions control in public companies. The common aspect of US public company scandals is a lack of good corporate governance mechanisms (e.g. auditing mechanisms), capable to prevent corporate misconduct and deep distortions between social and private costs. Different reasons for top managers' misconduct can be summarized in one important explanation: both shareholders and creditors (with different interests) have insufficient incentives to control managers' actions.

According to Coase's theorem, if transaction costs are zero, agents will sign a contract to maximize their aggregate surplus, independently from who owns the property rights. On the contrary, when transaction costs are positive, it is necessary to define the structure of property rights. Thus, firms could be considered as a bundle of contracts with several stakeholders such as managers, employees, shareholders and auditors. In particular, both transaction cost theory (Williamson 1981) and agency theory (Jensen and Meckling 1976) explain the existence of the firm from the contractual point of view. This means that a long run incomplete contract is the major feature of a firm.

The difference between the two theories is based on two main reasons. The first theory focuses on positive transaction costs, which could be regarded as obstacles to sign several short run contracts. The agency theory, instead, considers asymmetric information as the main reason to sign an incomplete contract. This means that counterparts have to design an incentive scheme to reveal hidden information and to behave in accordance to contract objectives.

Williamson (1981) underlines that transaction costs stem from two subjective characteristics: limited rationality and opportunism. Since managers are both limitedly rational and opportunistic, it is necessary to control them, in order to avoid these behaviours. However, this monitoring action is costly both before (ex ante) and after (ex post) the conclusion of the contract. Thus, one party has the right to establish which actions have to be undertaken in circumstances not explicitly defined in the contract because of imperfect information on future events.

According to Jensen and Meckling (1976), managers are agents mandated by shareholders to run firms. For this reason, they should pursue shareholders' interests; in particular, they should maximize shareholders' wealth. However, shareholders have the right to control managers'

actions, but because of high information and control costs, they are not able to monitor managers who pursue their own interests. The agency theory explains the conflict between managers and shareholders in term of interests' divergence. The lack of control over management implies that managers' incentives are not aligned with shareholders' objectives and consequently, they can perform actions to increase their power inside and outside the firm. However, shareholders can protect themselves from managers' opportunistic behaviour. They can write an *ex-ante* contract specifying a well defined incentive structure for managers to behave in the principal's interests.

Campbell (1985) applies agency theory to the relationship between managers and public accounting firms. Shareholders' high costs for monitoring management behaviour could be one of the reasons for the development of auditing devices. Moreover, managers need to certify balance sheets to reduce the possibility of distortion of information. This potential opportunity could increase shareholders' monitoring costs. A possible solution can be found by having a third person (auditing professional or firm) whose purpose is to control the truthfulness and the correctness of financial and economic statements. Managers as well as shareholders have incentives to have balance sheets certificated because these can increase their own credibility and reputation. As consequence of their improved reputation, they can obtain a higher remuneration and a higher value in financial markets for firms that have been successfully audited relative to firms that have not been audited or have not passed the judgement of the auditors.

An efficient solution to these conflicts of interests is not easy to find. More than two centuries ago, Adam Smith underlined this governance problem in "The Wealth of Nations" 1776: "*Since the directors of companies are the managers of other people's money rather than their own, it cannot be expected that they should watch over it with the same anxious vigilance as owners. Negligence and profusion therefore always prevail in the management of affairs of such a company*". From the time of Adam Smith's insight to recent financial scandals, the monitoring systems for management have become more complex and efficient. Both internal and external auditing structures have developed during these last decades. Moreover, audit opinions by public accounting firms are becoming as important as financial markets and intermediaries' approval.

In the real world, firms provide less than perfect information to financial markets and in some cases certified firms reach an agreement with public accounting firms about insufficient control of

financial and economic statements¹. The lack of information and of inefficient control of auditors on managers' behaviours is the issue of my analysis. I focus my attention on differences of theoretical and legal aspects of internal and external constituencies of control in US, UK and some EU members such as France, Germany, Italy and Spain. I show that the US law system lacks regulating breath and power in several aspects of auditing procedures. For this reason, the US congress has issued strict rules (*Sarbanes Oxley Act* of July 2002) on auditing and on the new role and powers of auditing supervisory authority. Considering as benchmark the recent US Act, I have defined a bundle of principles to describe both managers and internal and external constituencies' relationship and rights along with duties of an auditing supervisory authority. I have compared legislation of the two Common Law Countries (US and UK) with the four Civil Law Countries (France, Germany, Italy and Spain) defining dummies variables from the main principles on internal and external auditing and powers of supervisory authority of US Sarbanes-Oxley Act. Subsequently, I trace out the same principles in other company laws.

Using multiple correspondence analysis, I identify the principal components of the auditing issue. Subsequently, the main aspects of the auditing are used to verify the influence on Tobin's q as proxy of shareholders value. The findings confirm a negative relation between Tobin's q and auditing variables in common law countries while civil law countries show a positive one. This suggests that the dichotomy common law countries/civil law countries corresponds to real differences with respect to the issues examined. Moreover, common law countries consider stringent rules as increasing firm' costs, while in civil law countries the truthfulness and the correctness of balance statements are validated only by behaviour in accordance with rules.

The paper is organised as follows In Section 2, I briefly delineate some theoretical literature on auditing and measuring corporate governance. Section 3 outlines the empirical model used. In Section 4, I discuss the key-principles of auditing and the main principles as outcomes of multiple correspondence analysis. In Section 5, I describe the variables used in my empirical analysis and my econometrics findings using both La Porta *et al.* (1998) method and multiple correspondence factor analysis. Finally, in the last section we conclude our analysis.

¹ In 2002, Bank of International Settlement published a report in which it emphasized how information distortions, misbehaviour of auditing professionals and firms and, finally, uncertainty and high variance of share values can be considered important causes of recent financial scandals.

2. Theoretical literature on auditing and measuring corporate governance

According to Sridharan and Caine (2002), the Enron-Andersen scandal highlights the importance of financial transparency for the good functioning of capital markets. Thus, if information turns out to be hidden or incorrect on the part of the firm, the financial statements lack transparency and investors lose their confidence. For this reason, auditors should be independent to provide credibility to the information disclosed in a firm's financial statements. In an audit report, auditors provide evidence and assure investors that financial statements follow generally accepted accounting principles. Watts and Zimmerman (1983) underline that independence from the party being audited has always been a key-feature of effective auditing. Moreover, the Enron case underlines the conflict of interest between firm and auditor when the latter provides non-audit services. In this case, the auditors' fees increase dramatically when the same auditing firm conducts both internal and external audits and when it provides consulting services to the client.

Auditing is a central and critical issue of corporate governance. This means that the role of auditing is to preserve a high confidence for financial investors. However, a new challenge is rising in these recent years; auditors have to be a watchdog of firm behaviours. Auditing, actually, needs "not only to deliver in the public interest what is practical and cost effective, but needs to manage expectations" (Percy, 1997, p. 5), which means auditing has to avoid a fall in investors' confidence. Thus, corporate governance issues should include auditing matters besides issues on shareholders' and creditors' rights or independent directors'. For this reason, I try to combine the literature on the measurement of joint corporate governance with the auditing literature to find out if the different legal system and the level of auditing quality influence firm performance.

According to Francis's survey (2004), audit quality can be defined as a theoretical continuum ranging from very low to very high audit quality. Audit failures obviously occur on the lower end of the quality continuum. Moreover, an audit failure occurs in two circumstances: (i) when generally accepted accounting principles are not enforced by the auditor (GAAP failure); and (ii) when an auditor fails to issue an audit report. On the other extreme, high "audit quality" could be defined as the legal and professional requirements. Thus, audit quality is inversely related to audit failures: the higher the failure rate, the lower the quality of auditing. The empirical evidence (Palmrose, 2000 and 1997 and Francis 2004) suggests that the number of lawsuits

against auditors is small in United States. This seems to imply a very low audit failure rate and the fact that changes on auditing practices or on regulatory environment are unnecessary. Previous studies on auditing have focused on the relationship between non-audit services and auditor's independence, on the amount of audit and non-audit fees and on the length of the auditorclient relationship and the possibility of mandatory audit rotation.

The provision of non-audit services is considered as an increase of management power over the auditor and his audit report with the reduction of auditor's independence (DeAngelo, 1981; Antle, 1984; Simunic, 1984; Magee and Tseng, 1990; Mitchell *et al.*, 1993 and Matsumura *et al.*, 1997). Moreover, the provision of non audit services may strengthen or may not be correlated with auditor's independence (DeFond *et al.*, 2002; Craswell, 1999). Further, it has been argued that the provision of non-audit services by audit firms can be beneficial. It can increase the auditor's knowledge about the client and allow him to perform a better audit (Canning and Gwilliam 1999 and Messori *et al.*, 2002).

There have been several studies on audit and non-audit fees². Chung and Narasimhan, 2002 and Carson *et al.*, 2004 analyse cross-sectional variation in audit fees, finding that developed country firms pay higher audit fees than developing country firms and that the audit market is characterized by segmentation based on client size. Positive price premiums to large auditors are present in the small auditee market segment, while there is no evidence of a fee premium to large auditors in the large auditee segment. With regard to non-audit fees, Frankel *et al.* (2002) show evidence that firms which pay high non-audit fees, are treated by auditors more mildly. This result is denied by several recent studies such as Ashbaugh *et al.*, 2003; Chung and Kallapur, 2003; Larcker and Richardson, 2004; Reynolds *et al.*, 2004. Moreover, DeFond *et al.* (2002) find no evidence that the level of non-audit fees affects auditor-reporting decisions. Carcello and Neal (2000) suggest that a strong internal audit committee could support external auditors. Thus, external auditors may have greater fee bargaining power that may lead to signing audit contracts with higher audit fees. Contrary to the general view, that considers lowering audit fees as an incentive by auditors to obtain more lucrative non-audit contracts, Abbot *et al.* (2001) find a positive relationship between non-audit and audit fees.

Another issue on auditing is the mandatory audit rotation. Recent studies examine auditor's

tenure and audit quality issues. Meyers *et al.* (2003) find no evidence that a long term relation harms audit quality, while Johnson *et al.* (2002) and Johnson and Thomas (1990) find evidence of lower audit quality in the first three years, following auditor changes relative to ongoing engagements of four or more years, which is consistent with lower initial audit quality on new engagements. A theoretical paper by Gietzmann *et al.* (1997) shows that rotation has a positive public policy role only if audit markets are sufficiently thin. However, if the audit market is sufficiently developed, the reputation effect associated with potential loss of future business is sufficiently strong to deter implicit collusion, and mandatory rotation could lead to additional unnecessary costs.

A recent research has also begun investigating how a country's legal system affects auditors' behaviour. In other words, audit quality is affected by rules that state auditors' legal liability and other punishment for negligence and misconduct. In particular, Francis and Wang (2004) affirm that Big 4 auditing firms' behaviour is systematically related to a country's legal system. Auditors treat their clients more conservatively in countries having a legal system that gives investors greater protection, including the ability to sue auditors. These results are consistent with Seetharaman *et al.* (2002), who report that audit fees are higher for UK companies that cross-list in US markets, a finding, which is interpreted as a risk-premium for the auditors due to increased litigation risk exposure in the US legal system.

The recent debate on the capacity of public accounting firms to promote fair financial reporting has led US legislator to adopt several reforms, including the creation of the Public Company Accounting Oversight Board, which together with the Securities and Exchange Commission will monitor auditors' behaviour. A recent paper by Gunther and Moore (2002) concludes that market forces have tended, over time, to shape the role of auditors to match the needs of investors in monitoring individual companies' performance. Thus, policymakers' intervention could be considered unnecessary since it would increase audit costs. Several auditing issues and specially the importance of auditors' independence and of legal systems are considered as elements to measure auditing performance. In particular, following the corporate governance measurement literature I calculate an index that incorporates the legal level of audit quality to test the degree to which much financial markets are influenced by auditing quality. Following the classification of Denis and McConnell (2003) in their survey, I distinguish between first and second generations of research on international

² For a more recent survey on "for or against" issues on the provision of non-audit services and non-audit fees see Beattie and Fearnley (2002) and Canning and Gwilliam (2003).

corporate governance. The first generation studies examine individual governance mechanisms – particularly board composition and equity ownership – in individual countries, while the second generation ones consider the possible impact of different legal systems on structure and effectiveness of corporate governance.

Within the first generation³ group, Bøhren and Ødegaard (2003) consider different types of measures of ownership characteristics, which include a wider set of mechanisms, such as the identity of outside owners (e.g., institutional, international, and individual), the use of voting and non-voting shares, board size, and dividend policy. They find that corporate governance matters for economic performance. However, they do not consider the effects of the more general underlying systems of corporate laws and regulations of corporate governance on firm value. In the second generation, instead, legal and regulatory issues play a relevant role on international corporate governance research. This kind of research begins with La Porta *et al.* (1998), who hypothesize that the extent to which country laws protect investor rights – and the extent to which those laws are enforced – are fundamental determinants of the ways in which corporate finance and corporate governance evolve in each country. They calculate two composite indexes: shareholders' rights and creditors' rights. The indicator of shareholders' rights is divided into two parts. First, it is considered the one-share one-vote principle, because investors are better protected if dividend rights are linked to voting rights during the annual shareholders' meeting at the end of the year. The second aspect refers to the anti-director's rights, which is a combination of six characteristics measuring how strongly the legal system favours minority shareholders against managers and dominant shareholders in the corporate decision process.

Several authors have followed this way of constructing a compound index to measure the corporate governance mechanisms both within the country and in comparison with the other countries. For example, Hyttinen *et al.* (2003) have analysed Finnish corporate governance by constructing 18 variables, developed by La Porta *et al.* (1998) and extended by Pistor (2000) and Glaeser, Johnson and Shleifer (2001), measuring shareholders' and creditors' protection for the period 1980–2000. Other studies (Durnev and Kim, 2003; Black *et al.*, 2003 and Gompers, Ishii and Metrick, 2003) have used

datasets collected by financial institutions, whose method of generating variables is completely different from the one adopted by La Porta *et al.* (1998). In particular, they get data of corporate governance mechanisms at firm-level and not at country-level. Several authors are not satisfied with the existing datasets both because of the lack of data collection for some specific countries and some specific kind of firms and because of the possibility of biases in the way they are collected. For these reasons, Drobetz *et al.* (2004) have sent out to all firms in the four principal segments of the German stock exchange a detailed questionnaire with a variety of different governance practices and attitudes based on the German Code of Best Practice. Thus, they could be able to develop broad corporate governance rating (CGR) as a proxy for firmlevel governance quality. Following the same method of constructing a corporate governance index is the analysis of Beiner *et al.* (2004) that have sent out to all Swiss firms quoted at the Swiss Stock Exchange (SWX), with the exception of investment companies a detailed questionnaire, which is mainly based on the suggestions and recommendations of the Swiss Code of Best Practice.

3. The empirical model

The fundamental hypothesis that I propose to test is that audit rules affect firm performance. To achieve this result, following the lead of Levine and Schmukler (2005), I combine firm-specific and country level variables.

The basic econometric test performed aims at falsifying the following hypothesis: *Hypothesis: (Tobin's q and legal rule system). Since firm performance is influenced by the legal structure of the market, financial operators can be more inclined to invest in a market that protect more effectively stakeholders in general and shareholders in particular. Thus, the auditing aspect is very important in the protection of shareholders against management misconduct.*

This hypothesis is tested by using the following equation:

$$\ln q_{ijt} = \alpha_i + \beta_t + \alpha_1 \ln EPS_{ijt} + \alpha_2 GPC_{it} + \alpha_3 \ln DPS_{ijt} + \alpha_4 SDPE_{ijt} + \alpha_5 \ln N_EMP_{ijt} + \alpha_6 CGINDEX_{ijt} + \varepsilon_{ijt}$$

where

$i=1, \dots, 6$ countries

$j=1, \dots, 1830$ firms

$t=1980, \dots, 2002$ years

(1)

In (1), $\ln q_{ijt}$ is the Tobin's q ; $\ln EPS_{ijt}$ is earning per share value; GPC_{it} is per capita national growth rate; $\ln DPS_{ijt}$ is dividend per share; $SDPE_{ijt}$ is standard deviation of price earning ratio; $\ln N_EMP_{ijt}$ is total number of employees; α_i represents country fixed effects; β_t is year effects; and, finally, $CGINDEX_{ijt}$ represents the fundamental variables of

³ For a comprehensive survey on corporate governance issues see Shleifer and Vishny (1997) and Denis and McConnell (2003).

auditing issue, describing the auditing rules of a country⁴.

The hypothesis is tested for overall, common and civil law samples. I examine the two subsamples because I want to falsify the hypothesis that auditing rules influence in different ways firms' performance. In particular, because common law countries provide for one tier corporate board their need for external control should be higher than civil law countries, characterized by two tier board rules.

4. Key-principles of auditing and the method used to identify the main auditing variables

The aim of my analysis is to establish if legal rules on auditing supervisory authority and on the specific conflicts of interest between managers and internal and external auditors are significantly different between the countries considered. Moreover, as explained above, I want to analyse whether the existence of these differences and of the differences in legal systems affects corporate value on financial markets. This purpose is pursued concentrating the analysis on seven countries.

The countries examined belong to two main legal traditions: civil law and common law. The former is represented by United States and United Kingdom, the latter includes France, Germany, Spain and Italy. According to La Porta *et al.* (1998), within the civil law countries we could distinguish different sub-legal-families that stem from Roman legislation, but since I consider only four countries, I have preferred to overlook this issue.

My analysis considers a large sample of public companies of each countries, because this kind of firms are obliged to certificate their financial and economic statements by a public accounting firm, which is controlled by a supervisory authority. I have only examined company laws to find duties and responsibilities of managers, auditing firms and supervisory authority. To define these auditing principles, I have studied the recent Sarbanes-Oxley Act issued on July 2002. Based on this law, I have identified the key-variables of the auditing, which assumes the role of benchmark with respect to the other countries of the sample. The comparison is based on company laws that are issued during the sample period analysed (from 1980 to 2002). Each variable is characterised by two modalities: presence (1) or absence (0) of legal principles about auditing.

The value 1 is assigned to each period where the legal rule is present, while the value 0 is assigned in each period in which the legal rule is absent. Using these dummy variables, we compare the La Porta *et al.* (1998) method with the multiple correspondence analysis⁵.

Table 1 reports 27 variables used to describe the relation between companies, public accounting firms and audit supervisory authority. Furthermore, I have classified all the keyvariables into four macro-groups: i) *Definition*; ii) *Supervisory Authority*; iii) *Auditor Independence*; iv) *Corporate Responsibility*.

After comparing all the different country legislations and after constructing dummy variables for 22 years, I have performed the tests using both the methods suggested by La Porta *et al.* (1998) and multiple correspondence factor analysis. On the basis of the first method, the variables are reduced to only four, by summing up the "ones" present in the four categories of Table 1. See Hoffman and Leeuw (1992), Trivellato and Giraldo (2003) and Prencipe (2004)

According to the second method, the 27 variables identified can be reduced to those, which are the most correlated with the others and which describe the differences between countries on the absent and present side. With this method, I identify the "key" aspects of audit regulation. In each period, the most significant variables correspond principally to the *Supervisory Authority* category. In particular, variables that are extracted in the majority of years are: i) *Independence Standards and Rules*; ii) *Inspections of Registered Public Accounting Firms*; iii) *Quality Control Standards*; iv) *Auditing Standards*; v) *Oversight of Supervision Authority*; vi) *Audit*

Partner Rotation; vii) *Public Accounting Firm*. Furthermore, each variable is distributed along a unique significant axis where the extreme left is characterized by the absence of rules while the extreme right is blessed with the full presence of the juridical principles. Thus, the multiple correspondence factor analysis provides us auditing main principles, which could be summarized as the role of who controls and the ability of supervisory authority to monitor inspectors. In the following paragraphs, I proceed to test the effect of corporate governance variables on Tobin's q , comparing the above two methods of construction and using as financial and accounting variables the ones related to the discount cash flow model (DCF).

⁴ The method to obtain the main auditing principle in all years is described in section

⁵ See Hoffman and Leeuw (1992), Trivellato and Giraldo (2003) and Prencipe (2004)

5. Empirical analysis: La Porta et al. (1998) method vs. multiple correspondence factor analysis

5.1. Market to Book value and auditing main variables: a descriptive analysis

As a second step of my analysis, I proceed to test the effect of auditing as an instrument of corporate governance on firm performance. In order to do this, following Levine and Schmukler (2005), I match (i) the firm-level data on a range of firm attributes, both for common and civil law countries, and (ii) the country-specific data on macroeconomic, institutional, and auditing conditions.

To measure firm performance, I use the market to book value ratio: the Tobin's q . I select the sample by drawing values from stocks belonging to NYSE for the US and to the market stock exchanges for the EU countries. The data are pulled out by the DATASTREAM database. I have chosen 1830 firms from several sectors for data collected yearly from 1980 to 2002. The database is composed of: i) 500 observations from United States market; ii) 550 from United Kingdom market; iii) 250 from French market; iv) 250 from German market; v) 120 from Spanish market; and finally vi) 160 from Italian market. The database provides information about the following firm-level variables: 1) market to book value ratio (MVB); 2) earnings per share (EPS); 3) dividend per share (DPS); 4) standard deviation of price earnings ratio (SDPE), and 5) total number of employees (N_EMP). Following Levine and Schmukler (2005), I select and control for country level information, in particular, per capita national growth rate (GPC), drawn from the data base of the World Development Indicators of the World Bank. This growth rate is calculated using per capita GDP at constant 1995 US dollars. This variable represents the ratio of the gross domestic product divided by the midyear population. The GDP variable is the sum of the gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

In order to control for the country's institutional quality and the legal origin, I introduce the auditing main principle- variables obtained through the MCA method and then divide the database into the two samples of common law and civil law countries. As dependent variable, I use the market to the book value ratio as a proxy of the Tobin's q ratio. Consequently, I assume that the performance of a firm is linked both to some specific book value variables and to the institutional structure of the country. For this reason, the national growth and the rules on auditing could capture the ability of the country to improve its financial markets and thus, the

revenues of the both public and non-public companies.

Among firm-specific independent variables, I use earnings per share and dividends per share as the two main balance sheet indexes. These two variables could be useful mechanisms for conveying information about firm future projects. In particular, dividends per share should embody the future capability of less successful firms to reach the high dividends of more successful firms (Bhattacharaya, 1979 and Cho, 1994). The total number of employees represents the size of the firm and so its capability of influencing financial markets. As a measure of systematic risk, I use as a very crude proxy, the measure of the ex-post return variance. All these financial and economic aspects, describing the trend of the firm, could influence market equity value, but they are not sufficient. For this reason, I introduce auditing as a variable representing a particular aspect of corporate governance. In particular, I hypothesize that corporate governance increases the confidence of financial agents on audit reports about the truthfulness and the correctness of the company balance sheets.

Table 2 to Table 10 present some descriptive statistics on the variables specified, using both the method of La Porta *et al.* (1998) and the Multiple Correspondence Analysis (MCA). I compare the estimation on the overall sample to the estimation on the civil and common law sub-samples.

Table 2 - Table 4 show the main statistics for the three data sets considered. Both the per capita national growth rate and the firm earning per share are more or less the same in the two categories of countries (.001 and 8.05 and .002 and 9.07 for common and civil law samples respectively). The same can be said for corporate risk. What distinguishes the two groups are the last two accounting variables, the dividend per share and the number of employees. In common law countries, in fact, these variables (mean DPS=3.71; mean N_EMP=27580.2) have higher values than in the case of civil law countries (mean DPS=1.02; mean N_EMP=20748.99). Regarding the auditing principles, the civil law countries show a much higher weight in the explanation of the auditing of the *presence* vis a vis the *absence* aspect. The common law countries instead contribute with the same weight of *presence* and *absence* to the description of the auditing. The last four variables, in these two tables, represent the auditing aspect, using the method of La Porta *et al.* (1998). The data confirm the prevalence of auditing principles in civil law countries (i.e. SA=8.05) rather than common law countries (i.e. SA=2.25).

The next four tables report partial correlations between all the variables used in the estimation

hypothesis (see section 4). Linear correlations between Tobin's q and balance sheet variables (EPS, DPS and N_EMP) are extremely low (i.e. less than 0.043) for the civil law countries. Even the market-oriented countries show a low correlation between market to book values and earnings and dividends per share, that are equal to -.004 and -.005 respectively, while the size of the firm has not a high correlation as in the civil law country case. Table 5-Table 7 report correlations between Tobin's q and the variables for auditing principles constructed according to La Porta *et al.* (1998). The linear correlation is not significant for both common law and civil law case. The same occurs for the auditing variables created using the multiple correspondence factor analysis as shown from Table 8 to Table 10. In all cases, the coefficients of correlation are very low. The higher correlation between auditing variables using multiple correspondence factor analysis permits a reduction to only four variables instead of seven in the following empirical estimations. In particular, since the last three variables such as Independence Standards and Rules (ISR), Inspections of Registered Public Accounting Firm (IRPAF) and Quality Control Standards (QCS) are highly correlated with the first four auditing variables, I decided to use only these four variables in the estimations. For example, the absence (presence) of Independence Standards and Rules (ISR) is linearly and positively correlated with the absence (presence) Auditing Partner Rotation ($\rho = 1$ in all three cases). The last two auditing variables show a linear and positive correlation with Auditing Standards in all three samples. Moreover, the last three variables both in the absence and presence aspects show high correlations with the first four variables of auditing, so that their influence can be indirectly accounted for through the others variables.

5.2. Estimation method and econometric findings

To study how several auditing rules influence firm performance, I estimate the equation (1) as described above. Moreover, I compare the MCA method with the method applied by La Porta *et al.* (1998). Through the MCA method, I identify which are the variables (or principles) that describe an index. Since this index could take negative (in case of absence) or positive (in case of presence) values, we can observe negative and positive coordinates along the index-axis. In the estimation, I control for both coordinates to test whether is more important and significant the absence or the presence of the main auditing variables. In particular, I want to test whether few auditing rules (i.e. the prevalence of the absence) are more significant in common law countries rather

than in civil law countries. Thus, in common law countries commonly accepted rules prevail on rules issued by political institutions and vice-versa in civil law countries.

Before estimating our hypothesis, we test for unit root and cointegration. These issues are frequent in panel data with long time series. Only recently, some tests have been developed for panel data. In particular, Im *et al.* (2003) have extended the Dickey-Fuller t -statistics to heterogeneous panel. The test is based on the mean of the individual Dickey-Fuller t -statistics of each unit in the panel and assumes that all series are non-stationary under the null hypothesis ($H_0: \rho_i = 1$) against the alternative heterogeneous hypothesis ($H_1: \rho_i < 1$ for each $i = 1, \dots, N_j$ and $\rho_i = 1$ for each $i = N_j + 1, \dots, N$ for some N_j)⁶. Table 11 shows the test statistics t -bar and W -bar under the alternative hypotheses that the errors are not or are serially correlated. We perform the test for both a "fixed effects only" structure in the upper block-rows and a "fixed effects and time trends" structure in the lower block-rows⁷. The results confirm the presence of unit root in both the "only fixed effects" structure and the "fixed effects and time trends" structure. Only for SDPE (standard deviation of price earning ratio), the test is not able to establish the presence of unit root in both cases. Since some variables present unit roots, we have to test if these variables are cointegrated (i.e. share a common stochastic trend) in order to obtain meaningful regression results. To this aim, I used the Nyblom-Harvey (2000) test. This test may be considered as a generalization of the Nyblom and Makelainen (1983) and Kwiatkowski *et al.* (1992) univariate tests for stationary of a series. The null hypothesis of those tests is that the series is stationary, or stationary around a deterministic trend, against the alternative of the presence of a random walk component. Their advantage over alternative families of tests is that they do not need a model to be estimated because are based on the rank of covariance matrix of the disturbances driving the multivariate random walk. If this rank is equal to a certain number of common trends, this implies the presence of cointegration and vice-versa. If the rank is equal to zero, as in the null hypothesis, then there are no common trends among the variables. Thus, a failure to reject the null hypothesis of zero common trends is also an indication that the variables do not

⁶ The homogeneous hypothesis is that $H_1: \rho_i = \rho < 1$ implying that variables are generated by a stationary process, identical across countries.

⁷ We are interested in testing for the presence of unit root in a stochastic process x_{it} generated by the first-order autoregressive model including fixed effects and time trends: $x_{it} = \rho_i x_{i,t-1} + \alpha_i + \gamma_i t + u_{it}$ where u_{it} is a stationary process.

form a cointegrated combination. We report test statistics for both the IID ($NH-t$) and the serially correlated residual ($NH\ adj-t$) assumptions. As before, the test is performed under the two different model specifications (*fixed effects only* and *fixed effects plus time trends*). The results of tests show that for the majority of variables the null hypothesis is accepted and this means the absence of cointegration. For some firm-level variables, such as the market to book value, the earning per share, the dividend per share and the number of employees, the null hypothesis is rejected. In other words, these variables present cointegration in both cases in which the test is performed. Even though the absence of cointegration cannot be excluded, I decided to estimate the empirical model using level values, since the majority of variables are cointegrated.

Table 13 shows the results of equation (1) under La Porta *et al.* (1998) method for the three samples and controlling for time effects using time dummies. The firm-level variables are generally significant for each regression. The per capita national growth variable is strongly significant under no control for time effects. On the other hand, if time dummies are introduced, this significance falls dramatically. Finally, the coefficients of the four variables of auditing rules (DEF: definition; SA: supervisory authority; AI: auditor independence; CR: corporate responsibility), representing the macro-area described in Table 1, are quite significant in all cases. In particular, the overall case shows that all four variables are significant even though the level of significance is lower with control for time effects. Moreover, in case of time dummies the coefficients of all four auditing variables are significant in common law countries while in civil law countries are less significant. In this latest sample, what it is important is only the “definitions of auditing” and the “independence of auditor” from the audited firm. The signs of auditing variables are mixed. For both common and civil law countries, an increase in the Auditor’s Independence (AI) is associated to an increase in the market to the book value of the firm, as we expected. The sign of the Corporate Responsibility variable is negative in the common law case while is positive in the civil law and the overall case. In the common law case, the higher the responsibility of the management on the truthfulness of the balance sheet, the higher appears to be the cost for the firm to be managed. Supervisory Authority (SA) seems to be considered as an additional cost for firms in the common law markets while for the civil law market it appears to be seen as an assurance of the good control of financial markets. The coefficient signs of the time effects show a prevailing positive trend specially in the latest 10 years of the sample.

Only for common law countries, there is a negative trend between years 1985 and 1991.

All these differences respect the differences of the legal structure and the political institutions. In other words, the higher is the control by external institutions, the higher the responsibility of rules that is required in the civil law countries, while the opposite holds for the common law countries, where laws give some general rules on specific issues and everyone has to respect them without a tight control of institutions. Using our method to identify the relevant auditing variables, Table 14 - Table 16 report the results of fixed effects estimation on overall, common and civil samples. The first table include all the firms of our sample. For sensitivity analysis, the 1st to the 7th columns report the following control variables: (i) earnings per share (lnEPS): as indicators of firm opportunities, they may forecast the market assessment of future cash flows; (ii) the per capita national growth (lnGPC): growth may influence the firm valuation and the institutions; (iii) the dividend per share (lnDPS), firm risk (SDPE) and firm size (lnN_EMP): firm intrinsic characteristics may represent the capability of firm to grow. As shown in Table 14, we find no evidence that Tobin’s q rises when auditing variables are introduced. In the majority of cases, the sign is negative for both presence and absence characteristics, but controlling for time effects, the prevailing signs of coefficients are negative if the rule is present and positive if the rule is absent. This suggests that auditing rules are costly for firms and thus they prefer not to be obliged by rules.

Among firm-level variables, the earning per share and the dividend per share variables always show positive and significant coefficients while the firm risk and the firm size variables influence in a negative way firm performance. When we introduce auditing variables, the per capita growth rate coefficient becomes negative due to the higher costs for firms. Nevertheless, time dummies show the existence of a positive trend and thus a constant increase of the value of the market to book variable in these last 20 years. In common law (civil law) analysis, the auditing rules influence negatively (positively) the Tobin’s q variable. Moreover, the time dummies are negatively (positively) related to the dependent variable. This different result for common law and civil law countries represent the completely different views of the two legal systems. While common law considers the presence of rules as an impediment to the firm expansion, civil law firms prefer more rules to be sure of the truthfulness of the market information.

Finally, to test whether the two estimations (common and civil law samples) are significant with respect to the overall sample, we apply a Chow test

to check if the results are significantly different in the sub-sample. As shown by the *F-statistics*, reported in Table 17, the null hypothesis that the coefficients in the two sub-samples are the same can be rejected.

6. Conclusions

The recent financial crises have been the topic of a recent debate about comparison and convergence of different corporate governance systems. They have underlined poor efficiency of rule structures to achieve a good relationship between different stakeholders' rights. My analysis considers the recent financial crises as a systemic crises of capitalism, due to lack of transparency and corporate governance structures. I focused my attention on the differences of theoretical and legal aspects of internal and external constituencies of control in US, UK and EU members (France, Germany, Italy and Spain).

Considering as benchmark the recent US Act (Sarbanes-Oxley Act 2002), I define a bundle of principles to describe both managers and internal and external constituencies' relationship and rights and duties of auditing supervisory authority. Subsequently, I find the same auditing principles in the other countries company laws. Using multiple correspondence analysis, I identify the main auditing variables and test the influence on Tobin's *q*. I test the hypothesis that a suitable rule structure can improve the capability of financial markets to estimate the fair value of firms. In particular, we compare the La Porta *et al.* (1998) method with the method of multiple

correspondence analysis. Using the first method, the auditing variables turn out to have a quite significant effect in the overall sample. Instead, the signs of auditing variables are mixed in both the common and civil law sample estimation. When I use the MCA method, in the overall case, I find no evidence that Tobin's *q* rises with an increase of auditing variables. For the common law (civil law) sample, auditing rules influence negatively (positively) the Tobin's *q* variable.

My results highlight a relationship between auditing principles and firm performance in accordance with the expectations that can be formulated on the basis of different legal systems. Common law countries consider the presence of rules as an obstacle to the firm expansion; civil law firms prefer instead tighter rules for managers' and auditors' behaviour to be sure of the truthfulness of market information. Therefore, for firms of common law countries, rules are costly, so that it is possible to speculate that companies prefer not to be constrained by rules. In conclusion, common law countries prefer

less numerous and less stringent rules to reduce corporate costs, while civil law countries favour more stringent rules to enhance the truthfulness of the information received by the market.

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Appendices

Table 1. Key-variables to create an auditing index

DEFINITION INDICATOR	SUPERVISORY AUTHORITY INDICATOR	AUDITORS INDEPENDENCE INDICATOR	CORPORATE RESPONSIBILITY INDICATOR
Audit	Juridical nature of authority	Prohibited Activities	Audit Committees: responsibility and independence
Supervisory Authority	Duties of the Board	Audit Partner Rotation	Corporate Responsibility for Financial Reports of National and Foreign Firms
Issuers	Composition	Conflicts of Interest	Improper influence on Conduct of Audits
Public Accounting Firm	Members Independence		CEO and CFO reimburse the Issuer due to non-compliance of financial reports
Audit Committee	Vacancies		
	Powers and Rules of Authority		
	Registration with the Authority		
	Auditing Standards		
	Quality Control Standards		
	Independence Standards and Rules		
	Inspections of Registered Public Accounting Firms		
	Authority Review		
	Investigations and Disciplinary Proceedings		
	Applicability to Foreign Public Accounting Firms		
	Oversight of Supervision Authority		

Source: our elaboration

Table 2. Descriptive analysis: common law country case

	mean	se	p50	sd	Kurtosis	Skewness	max	min	N	p1	p5	p10	p25	p75	p90	p95	p99
Q	8166.10	1497.99	1.91	186221	782.04	26.72	-594.29	7415316	15454	-2.73	0.59	0.73	1.10	3.28	5.80	8.78	26.37
EPS	8.05	0.17	1.72	23.02	646.26	19.30	0	961.68	17379	0.00	0.00	0.06	0.52	7.89	22.77	33.87	66.42
GPC	0.01	0.0004	0.02	0.05	35.63	-5.57	-0.33	0.06	23100	-0.33	-0.02	-0.01	0.01	0.03	0.04	0.04	0.06
DPS	3.71	0.08	0.79	10.43	252.99	12.92	0	280.00	17517	0	0	0	0.13	3.77	10.25	15.14	32.50
SDPE	266.12	2.87	81.18	446.00	10.83	2.85	11.39	2019.71	24150	11.39	20.32	35.98	57.61	242.14	870.74	963.08	2019.71
N_EMP	27580.20	507.27	9200.00	58063.79	95.28	7.30	0	1383000	13102	22	185	527	2460	29431	70318	110000	293000
AS0	-10.11	0.08	-3.17	13.00	4.70	-1.68	-44.80	-0.65	24150	-44.80	-43.20	-42.13	-17.88	-2.29	-1.16	-0.69	-0.65
AS1	16.77	0.09	13.08	13.58	2.04	0.68	2.30	43.61	24150	2.30	2.30	3.26	4.42	30.64	35.90	43.20	43.61
OSA0	-7.04	0.05	-2.86	7.23	1.91	-0.86	-21.76	-0.65	24150	-21.76	-18.52	-18.24	-16.08	-2.02	-1.16	-0.69	-0.65
OSA1	16.21	0.08	13.08	12.79	1.78	0.56	2.30	39.34	24150	2.30	2.30	3.26	3.98	30.64	35.90	36.48	39.34
APR0	-11.21	0.10	-3.17	15.52	5.67	-1.94	-55.56	-0.65	24150	-55.56	-55.20	-44.48	-17.88	-2.29	-1.16	-0.69	-0.65
APR1	14.84	0.08	13.08	11.86	1.88	0.59	2.30	35.90	24150	2.30	2.30	2.64	3.47	26.07	35.51	35.51	35.90
PAF0	-5.38	0.04	-2.86	6.73	5.86	-2.01	-24.96	-0.46	24150	-24.96	-23.04	-22.69	-7.10	-0.90	-0.65	-0.46	-0.46
PAF1	16.95	0.09	13.08	13.95	2.35	0.78	2.30	48.35	24150	2.30	2.30	3.19	4.50	29.13	35.51	45.60	48.35
ISR0	-11.21	0.10	-3.17	15.52	5.67	-1.94	-55.56	-0.65	24150	-55.56	-55.20	-44.48	-17.88	-2.29	-1.16	-0.69	-0.65
ISR1	14.84	0.08	13.08	11.86	1.88	0.59	2.30	35.90	24150	2.30	2.30	2.64	3.47	26.07	35.51	35.51	35.90
IRPAF0	-10.11	0.08	-3.17	13.00	4.70	-1.68	-44.80	-0.65	24150	-44.80	-43.20	-42.13	-17.88	-2.29	-1.16	-0.69	-0.65
IRPAF1	16.77	0.09	13.08	13.58	2.04	0.68	2.30	43.61	24150	2.30	2.30	3.26	4.42	30.64	35.90	43.20	43.61
QCS0	-10.11	0.08	-3.17	13.00	4.70	-1.68	-44.80	-0.65	24150	-44.80	-43.20	-42.13	-17.88	-2.29	-1.16	-0.69	-0.65
QCS1	16.77	0.09	13.08	13.58	2.04	0.68	2.30	43.61	24150	2.30	2.30	3.26	4.42	30.64	35.90	43.20	43.61
DEF	0.901	0.007	1	1.02	5.94	1.35	0	5	24150	0	0	0	0	2	2	2	5
SA	2.246	0.019	0	2.97	7.43	1.65	0	15	24150	0	0	0	0	5	5	5	15
AI	0.381	0.004	0	0.60	7.98	1.90	0	3	24150	0	0	0	0	1	1	1	3
CR	0.994	0.009	0	1.33	2.04	0.87	0	4	24150	0	0	0	0	3	3	3	4

Variable Legend: **Q**: is the Tobin's q ratio; **EPS**: earning per share value; **GPC**: per capita national growth rate; **DPS**: dividend per share; **SDPE**: standard deviation of price earning ratio; **N_EMP**: total number of employees; **AS0**: absence of Auditing Standards; **AS1**: presence of Auditing Standards; **OSA0**: absence of Oversight of Supervision Authority; **OSA1**: presence of Oversight of Supervision Authority; **APR0**: absence of Audit Partner Rotation; **APR1**: presence of Audit Partner Rotation; **PAF0**: absence of Public Accounting Firm; **PAF1**: presence of Public Accounting Firm; **ISR0**: absence of Independence Standards and Rules; **ISR1**: presence of Independence Standards and Rules; **IRPAF0**: absence of Inspections of Registered Public Accounting Firms; **IRPAF1**: presence of Inspections of Registered Public Accounting Firms; **QCS0**: absence of Quality Control Standards; **QCS1**: presence of Quality Control Standards; **DEF**: Definition; **SA**: Supervisory Authority; **AI**: Auditor Independence; **CR**: Corporate Responsibility.

Table 11. Panel Unit Root Test by Im, Pesaran and Shin (2003)

	lnQ	lnEPS	lnGPC	lnDPS	SDPE	ln_EMP	ASO	ASI	OSA0	OSAI	APR0	APR1	PAF0	PAF1
<i>t-bar</i>	-1.686	-1.737	-4.372	-1.157		-1.234	-0.599	-0.874	-1.221	-1.317	-0.721	-0.838	-0.502	-0.777
Critical Value	-1.64	-1.64	-1.64	-1.64		-1.64	-1.64	-1.64	-1.64	-1.64	-1.64	-1.64	-1.64	-1.64
10%														
Critical Value	-1.67	-1.67	-1.67	-1.67		-1.67	-1.67	-1.67	-1.67	-1.67	-1.67	-1.67	-1.67	-1.67
5%														
Critical Value	-1.73	-1.73	-1.73	-1.73		-1.73	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73
1%														
<i>W-bar</i>	-3.345	-3.322	-69.825	5.673		5.061	22.012	15.311	6.861	4.522	19.038	15.706	24.357	17.664
<i>p-value</i>	0.0001	0.0001	0.0001	1		1	1	1	1	1	1	1	1	1
(<i>N, T</i>)	(337,12)	(203,12)	(599,12)	(272,12)		(358,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)
<i>t-bar</i>	-2.556	-2.436	-4.239	-1.927		-2.176	-1.854	-1.876	-2.953	-2.801	-1.906	-1.67%	-1.808	-1.945
Critical Value	-2.28	-2.28	-2.28	-2.28		-2.28	-2.28	-2.28	-2.28	-2.28	-2.28	-2.28	-2.28	-2.28
10%														
Critical Value	-2.31	-2.31	-2.31	-2.31		-2.31	-2.31	-2.31	-2.31	-2.31	-2.31	-2.31	-2.31	-2.31
5%														
Critical Value	-2.37	-2.37	-2.37	-2.37		-2.37	-2.37	-2.37	-2.37	-2.37	-2.37	-2.37	-2.37	-2.37
1%														
<i>W-bar</i>	-7.199	-3.847	-51.31	4.047		-0.142	7.817	7.266	-19.421	-15.667	6.511	12.322	8.945	5.554
<i>p-value</i>	0.0001	0.0001	0.0001	1		0.443	1	1	0.0001	0.0001	1	1	1	1
(<i>N, T</i>)	(337,12)	(203,12)	(599,12)	(272,12)		(358,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)	(599,12)

Variable Legend: see Table 2. The null hypothesis of the test is existence of unit root (H0: $\rho_i=1$) against the alternative no presence of unit root (H1: $\rho_i < 1$ for each $i=1, \dots, N1$ and $\rho_i = 1$ for each $i=N1+1, \dots, N$ for some $N1$) *N*: total number of countries; *T*: number of years; *t-bar*: the test is performed under the hypothesis of iid errors; *W-bar*: errors are allowed to be serially correlated.

Table 12. Panel Cointegration Test by Nyblom and Harvey (2000)

	lnQ	lnEPS	lnGPC	lnDPS	SDPE	ln_EMP	ASO	ASI	OSA0	OSAI	APR0	APR1	PAF0	PAF1
<i>NH-t</i>	5.9583	5.9583	1.2968	5.9583	0.7315	5.9583	0.572	0.8162	0.978	1.0123	0.3638	0.9732	0.3559	0.8512
<i>NH adj-t</i>	29.9722	29.9722	1.0184	29.9722	1.1372	29.9722	0.8888	0.5726	0.7109	0.7289	0.3861	0.6303	0.3834	0.6078
Critical Value	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36	CV>18.36
10%														
Critical Value	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01	CV>19.01
5%														
Critical Value	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25	CV>20.25
1%														
<i>N</i>	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100
<i>NH-t</i>	5.4167	5.4167	1.2322	5.4167	0.7448	5.4167	0.6816	0.85	0.9777	1.015	0.6813	0.8288	0.6739	0.8716
<i>NH adj-t</i>	28.8889	28.8889	1.3062	28.8889	1.2134	28.8889	0.512	0.6645	0.9843	1.009	0.5136	0.6186	0.5133	0.7178
Critical Value	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21	CV>7.21
10%														
Critical Value	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37	CV>7.37
5%														
Critical Value	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69	CV>7.69
1%														
<i>N</i>	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100	N=100

Variable Legend: see Table 2. The null hypothesis of the test is no cointegration (H0: rank(var-cov)=K=0) against the alternative hypothesis of cointegration (H1: rank(var-cov)=K ≠ 0) *NH-t*: the test is performed under the hypothesis of iid errors. *NH adj-t*: errors are allowed to be serially correlated and the test is performed using an estimate of the long-run variance derived from the spectral density matrix at frequency zero.

Table 13. Fixed Effects Estimation Common and Civil Law Countries using La Porta et al. (1998) estimation method plus auditing fundamental variables

	lnQ	CMIL	CVL	OVERALL
lnEPS	0.106***	0.074***	0.033**	0.029***
<i>t-statistic</i>	9.64	6.85	2.64	2.34
lnGPC	3.985***	3.358***	4.308***	2.034
<i>t-statistic</i>	8.18	2.95	9.31	1.82
lnDPS	0.118***	0.034**	0.077***	0.078***
<i>t-statistic</i>	8.27	2.37	5.14	9.31
SDPE	-0.000004	0.00001	-0.00006***	0.00013**
<i>t-statistic</i>	-0.33	0.55	-5.05	2.9
ln_EMP	-0.027**	-0.048***	-0.028***	-0.030***
<i>t-statistic</i>	-2.54	-4.58	-3.07	-3.36
DEF	0.343**	1.125***	-0.108***	-0.133***
<i>t-statistic</i>	2.09	4.19	-4.46	-3.73
SA	-0.010	-0.155**	0.003	-0.018
<i>t-statistic</i>	-0.25	-2.84	0.31	-1.55
AI	0.115**	0.161**	0.213***	0.304***
<i>t-statistic</i>	2.89	2.82	8.78	4.7
CR	-0.108	-0.596***	0.002	0.026
<i>t-statistic</i>	-1.41	-4.63	0.09	0.83
Time dummies		Yes		Yes
CONS	0.649***	1.120***	0.510***	0.232*
<i>t-statistic</i>	6.22	7.96	5.14	1.71
<i>R-sq Within</i>	0.100	0.169	0.124	0.161
<i>R-sq Between</i>	0.017	0.005	0.004	0.003
<i>R-sq Overall</i>	0.009	0.013	0.049	0.051
<i>F test</i>	102.35***	67.7***	51.27***	21.39***
<i>F test ni=0</i>	20.41***	21.13***	15.48***	15.95***
Hausman Test chi2	224.26***	65.36***	125.42***	47.87***
Number of obs	9096	9096	3696	3696
				12792
				12792

Variable Legend: see Table 2. Legend: *** coefficient is significant at the level of 1%; ** coefficient is significant at the level of 5%; * coefficient is significant at the level of 10%.

Table 14. Fixed Effects Estimation Overall Countries: auditing main variables

lnQ	1	2	3	4	5	6	7
lnEPS	0.188***	0.182***	0.105***	0.105***	0.092***	0.070***	0.060***
t-statistic	38.23	36.33	13.24	13.24	10.66	8.29	7.12
lnGPC	0.117*	0.224***	0.223***	0.166**	-0.376***	-0.306**	
t-statistic	1.63	2.85	2.84	2.07	-4.11	-2.45	
lnDPS		0.175***	0.175***	0.143***	0.108***	0.062***	
t-statistic		19.34	19.28	13.98	10.51	5.69	
SDPE			0.000001	-0.00002**	-0.00005***	0.00018***	
t-statistic			0.08	-2.54	-5.7	2.88	
lnN_EMP				-0.007	-0.031***	-0.046***	
t-statistic				-1.00	-4.28	-6.43	
AS_0					0.267**	-0.041	
t-statistic					2.53	-0.23	
AS_1					0.132	0.132	
t-statistic					1.58	0.95	
OSA_0					-0.203**	0.011	
t-statistic					-2.40	0.08	
OSA_1					-0.153**	-0.037	
t-statistic					-2.56	-0.38	
APR_0					-0.075***	0.035	
t-statistic					-3.5	0.98	
APR_1					-0.038	-0.073*	
t-statistic					-1.49	-1.74	
PAF_0					-0.175**	0.052	
t-statistic					-2.18	0.39	
PAF_1					0.020	-0.011	
t-statistic					1.13	-0.37	
Time dummies							Yes
Cons	0.527***	0.539***	0.566***	0.566***	0.756***	0.955***	0.668***
t-statistic	101.21	99.41	62.93	60.32	11.58	14.62	4.78
R-sq Within	0.082	0.076	0.112	0.112	0.069	0.108	0.153
R-sq Between	0.0003	0.0003	0.000001	0.000001	0.001	0.005	0.004
R-sq Overall	0.0003	0.0002	0.0002	0.0002	0.002	0.012	0.021
F test	1461.3***	660.85***	600.78***	450.56***	172.42***	107.75***	63.22***
F test ui=0	23.32***	23.12***	24.05***	24.03***	20.33***	19.84***	20.82***
Hausman Test chi2	223.39***	246.33***	395.54***	394.05***		287.35***	158.93***
Number of obs	17883	17591	15618	15618	12792	12792	12792

Variable Legend: see Table 2. Legend: *** coefficient is significant at the level of 1%; ** coefficient is significant at the level of 5%; * coefficient is significant at the level of 10%

Table 15. Fixed Effects Estimation Common Law Countries: auditing main variables

lnQ	1	2	3	4	5	6	7
lnEPS	0.227***	0.220***	0.128***	0.128***	0.112***	0.081***	0.074***
t-statistic	39.63	37.62	12.68	12.76	10.16	7.55	6.9
lnGPC	0.062	0.148*	0.129	0.063	2.674***	6.624***	
t-statistic	0.85	1.80	1.58	0.74	8.92	4.46	
lnDPS		0.186***	0.182***	0.155***	0.079***	0.043***	
t-statistic		16.11	15.75	11.29	5.71	2.99	
SDPE			0.00003	0.00001	-0.00005***	-0.003***	
t-statistic			2.92	0.59	-3.83	-4.71	
lnN_EMP				-0.019	-0.052***	-0.051***	
t-statistic				-1.74	-5.01	-4.93	
AS_0					2.804***	-0.411	
t-statistic					11.62	-0.74	
AS_1					2.080***	0.175	
t-statistic					11.00	0.41	
OSA_0					-2.349***	0.521	
t-statistic					-11.97	1.07	
OSA_1					-1.642***	0.352	
t-statistic					-12.12	0.97	
APR_0					-0.574***	-0.027	
t-statistic					-12.08	-0.27	
APR_1					-0.649***	-0.399***	
t-statistic					-11.49	-2.97	
PAF_0					-2.040***	1.077**	
t-statistic					-11.1	2.20	
PAF_1					-0.291***	0.153**	
t-statistic					-7.54	2.04	
Time dummies							Yes
cons	0.504***	0.520***	0.488***	0.479***	0.827***	1.825***	7.466***
t-statistic	71.26	70.66	45.36	42.93	8.88	16.77	5.76
R-sq Within	0.116	0.108	0.136	0.136	0.079	0.148	0.185
R-sq Between	0.004	0.004	0.013	0.013	0.023	0.013	0.005
R-sq Overall	0.001	0.001	0.004	0.004	0.011	0.006	0.045
F test	1570.9***	711.1***	543.52***	410.07***	142.26***	111.54***	64.99***
F test ui=0	27.7***	27.28***	27.25***	27.11***	20.54***	21.12***	21.61***
Hausman Test chi2	221.2***	201.94***	475.24***	461.53***	289.75***	265.13***	65.39***
Number of obs	12975	12713	11232	11232	9096	9096	9096

Variable Legend: see Table 2. Legend: *** coefficient is significant at the level of 1%; ** coefficient is significant at the level of 5%; * coefficient is significant at the level of 10%

Table 16. Fixed Effects Estimation Civil Law Countries: auditing fundamental variables

lnQ	1	2	3	4	5	6	7
lnEPS	0.068***	0.070***	0.033***	0.035***	0.038***	0.019	0.019
<i>t</i> -statistic	7.23	7.55	2.70	2.83	3.06	1.57	1.54
lnGPC		4.864***	5.096***	5.203***	5.078***	4.625***	-0.633
<i>t</i> -statistic		10.06	10.75	11.00	10.98	9.53	-0.38
lnDPS			0.141***	0.142***	0.129***	0.093***	0.080***
<i>t</i> -statistic			10.25	10.39	9.16	6.59	5.37
SDPE				-0.0001***	-0.0001***	-0.0001***	0.0002***
<i>t</i> -statistic				-5.29	-5.92	-7.23	2.80
lnN_EMP					-0.003	-0.021**	-0.026***
<i>t</i> -statistic					-0.32	-2.41	-2.88
AS_0						-0.305***	0.533***
<i>t</i> -statistic						-3.01	2.66
AS_1						-0.253***	0.578***
<i>t</i> -statistic						-2.63	3.00
OSA_0						0.267***	-0.460***
<i>t</i> -statistic						3.28	-2.85
OSA_1						0.062	-0.544***
<i>t</i> -statistic						0.88	-3.89
APR_0						0.040	-0.067
<i>t</i> -statistic						1.45	-1.20
APR_1						0.162***	-0.030
<i>t</i> -statistic						4.28	-0.38
PAF_0						0.189**	-0.519***
<i>t</i> -statistic						2.50	-3.44
PAF_1						0.065***	-0.108***
<i>t</i> -statistic						3.55	-3.14
Time dummies							Yes
cons	0.509***	0.427***	0.584***	0.608***	0.612***	0.795***	0.359***
<i>t</i> -statistic	75	39.24	28.15	28.72	7.33	9.59	2.51
<i>R</i> -sq Within	0.012	0.034	0.075	0.081	0.088	0.143	0.171
<i>R</i> -sq Between	0.001	0.001	0.0001	0.00001	0.0001	0.002	0.001
<i>R</i> -sq Overall	0.006	0.011	0.021	0.023	0.018	0.017	0.024
<i>F</i> test	52.24***	75.67***	105.29***	86.5***	62.54***	41.77***	20.17***
<i>F</i> test $u_i=0$	14.35***	14.76***	15.55***	15.64***	16.51***	17.15***	17.18***
Hausman Test χ^2	16.37***	16.55***		34.63***	29.33***	120.31***	169.42***
Number of obs	4908	4878	4386	4386	3696	3696	3696

Variable Legend: see Table 2. Legend: *** coefficient is significant at the level of 1%;

** coefficient is significant at the level of 5%; *coefficient is significant at the level of 10%

Table 17. Chow test or Structural test between overall and common and civil law countries

	1	2	3	4	5	6	7
F-test	97.44	90.03	45.50	42.73	23.59	38.17	12.84
VC al 5%	3.00	2.6	2.37	2.21	2.1	<1.88	<1.88
VC al 1%	4.63	3.8	3.34	3.04	2.82	<2.43	<2.43

Legend: H0: the coefficients in the two sub-samples (common and civil sample) are the same.