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The relation between auditor reputation, earnings and capital management

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ABSTRACT

In this study we examine two types of manipulation: earnings and capital management (or capital adequacy management) in banks, using an international sample of banks from four countries (USA, UK, Germany and France), which in couples belong in common financial systems (two common – law countries and two code – law countries). In specific, we examine the implications of two aspects of auditor reputation, auditor type and auditor industry specialization, for earnings management via the manipulation of the earnings benchmark. We prove that different aspects of auditor reputation per financial system restrict the motivation of managers for earnings manipulation. Furthermore, we examine the levels of the earnings and capital management in banks by separating our research period in the pre – Basle II regime and the post – Basle II regime. We prove that in the post – Basle II period the banks per financial system limit earnings and capital adequacy management. Moreover, we examine the effects of auditor reputation both in earnings and capital management by using the same model taking into account the financial crisis of 2008 with the results of this (expanded) research to be highly interesting for each financial system.

1. Introduction

The recent financial crisis has highlighted the main issue of the risk-taking behavior of banks at a global level (Bernanke, 1983; Calomiris and Mason, 2003a,b). Regulators tried to mitigate that phenomenon by putting stricter and more effective capital adequacy standards (Chalermchatvichien et al., 2014). The stricter regulations provide a great deal of debate among policy makers, regulators and financial economists (Lagoarde-Segot, 2016). In particular, the opponents of restrictive regulation put forward the argument that self-regulation through effective corporate governance mechanisms and market

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discipline should lead to a moderation of risk-taking practices by financial institutions. According to Vauhkonen (2011), the current financial crisis brings into focus the need for greater transparency and market discipline. The purpose of this study is to analyze the impact of auditor reputation on earnings quality and capital adequacy ratios in the periods before and after the financial crisis and in the pre and post – Basle II periods.

In this paper we examine earnings and capital management through loan loss provisions in the banking sector. In the first part of our study we examine whether or not auditor reputation reduces earnings management via an earnings benchmark, while in the second part we examine if the sample banks manipulate simultaneously with their earnings and capital adequacy ratios violating or not the provision of the Basel Committee (Basle I & II). In the last part of our analysis we investigate whether auditor reputation affects, not only the extent of earnings but also the extent of capital management. We use an international sample banks from the USA, UK, Germany and France for the period 2005–2012. The selection of these countries was based on the nature of their financial systems which in couples is common (two common – law countries and two code – law countries). The USA and UK are common – law countries and France and Germany are code – law countries. According to Ball et al. (2000) common – law countries are characterized by active stock markets, a diverse base of investors, strong investor protection and corporate governance mechanisms and high litigation risks, and are shareholder – oriented. However, code – law countries are characterized by less active stock markets, low litigation risks, and are lender – oriented and call for less public disclosure. Coppens and Peek (2005) and Daske et al. (2006) show that discrepancies in earnings reporting are more evident in code – law countries, implying that earnings management would be more pronounced in code – law countries. A major research question according to Iatridis (2012) is whether being audited by a Big 4 auditor increases earnings quality and conservatism regardless of the respective national institutional differences. In contrast, it would be expected that audit firms that operate in strict regulatory environments improve the quality of financial reporting irrespective if they are big or not (see Maijoor and Vanstraelen, 2006).

In the first part of our study we investigate the effect of auditor reputation on earnings management. Auditor reputation consists of two components: 1) auditor type (Big 4[1] vs. non – Big 4 auditors). A large number of studies emphasize that higher audit quality associated with the Big 4 auditors. Relative to non – Big 4 auditors, Big 4 auditors have greater experience, resources and more importantly, market – based incentives (e.g. mitigating the risk of litigation and protecting their reputation capital) to reduce the tendency of their clients to apply earnings management techniques (Jenkins et al., 2007). In conclusion, we predict that manipulation on earnings will be lower for the banks that audited by Big 4 auditors. 2) auditor industry specialization. We examine if auditors experts in the banking industry can constrain earnings management. Auditors who are experts in the banking sector can better assess the adequacy of the loan loss provision in comparison with auditors without expertise in the banking industry. Prior research concluded that auditor industry specialization improve financial reporting quality and mitigates fraudulent financial (Johnson et al., 1991; Carcello and Nagy, 2004; Krishnan, 2003, 2005). We calculate auditor industry expertise by an auditor's industry market share.

Banks operate in a strict regulatory framework that monitored by the Central Banks and by the provision of the Basel Committee. Thus, auditor reputation may not be so important in limiting earnings management in banks. Conversely, if our results determine a negative association between auditor reputation and earnings management, then this reputation is likely to affect firms that does not belong in the financial sector and so does not strictly governed by regulatory frameworks (Kanagaretnam et al., 2010).

In our analysis we use two approaches for earnings management:

- The extent of earnings management to avoid a loss.
- The extent of earnings management to just meet – or beat the prior year's earnings (Beatty et al., 1995; Altamuro and Beatty, 2010; Kanagaretnam et al., 2010).

We find in separate tests per financial system that different approach of auditor reputation moderate benchmark – beating[2] behavior in banks. When we examine simultaneously earnings and capital management, we conclude that there is greater manipulation in earnings than in the capital adequacy ratios through LLPs. In the post – Basle II period and mainly in the post – crisis period the results reversed concerning with earnings and capital adequacy management in the banks of our sample. The rest of this study is organized as follows:

In the first section we refer to the literature review about auditor reputation, earnings and capital management in industrial firms and financial institutions. In the second section we develop the hypotheses. In Section 4, we refer to the measurements of earnings and capital management and we explain the empirical models used for the tests. In Section 5 we describe the sample data collection. In Section 6 we present the empirical results of our research. In Section 7 we refer to the conclusions of our study.

[1] We refer on Deloitte, PricewaterhouseCoopers, Ernst & Young and KPMG.
[2] Loss – avoidance and just – meeting or – beating prior year's earnings.

2. Background considerations

Many studies investigating the relation between auditing and earnings quality conclude that high quality audit mechanisms provided by Big 4 auditors for industrial firms..[3] Teoh and Wong (1993), observe higher earnings response coefficients for clients of Big 5 auditors in comparison with clients of non – Big 5 auditors, consistent with investors perceiving earnings to be of higher quality when the auditor is a brand – name auditor. Becker et al. (1998) report lower earnings management in firms for clients of Big 5 auditors. Furthermore, Basu et al. (2000), report higher levels of financial reporting conservatism for clients of Big 5 auditors. Krishnan (2003) finds that firms audited by auditors' experts in a specific industry report lower discretionary accruals[4] a commonly used proxy for earnings management in firms. Francis and Wang (2008), using an international sample of 42 countries, report that earnings quality is higher for the firms audited by Big 4 auditors, but their results holds only for countries with strong investor protection. In these studies that mentioned above from the sample the investigators were exclude firms from the financial sector.

A large body of empirical research examined the consequences of auditor industry specialization on the effectiveness of audit mechanisms. Bedard and Biggs (1991), report that an auditor with experience in the manufacturing industries is better able to detect errors in a manufacturing client's data than an auditor without manufacturing experience. Wright and Wright (1997), find that significant experience in the retailing industry helps to increased detection of errors for clients from the retail industry. Other benefits of auditor expertise in prior investigations include mitigation of financial fraud (Johnson et al., 1991) through lower level of discretionary accruals (Krishnan, 2003), and greater asymmetric timeliness of earnings (Krishnan, 2005).

While the above research reveals that the ability to identify misstatements in the financial statements related to the auditor specialization in a particular industry, there also is evidence that expert auditors attempt to protect their reputation capital by increasing the degree of their compliance with generally accepted auditing standards, compared always with non – specialist auditors (O' Keefe et al., 1994). In the banking sector, Kanagaretnam et al. (2009) find that when the auditor type and auditor industry specialization are separated, only the second dimension of auditor reputation has a significant impact on valuation of discretionary Loan Loss Provisions. Kanagaretnam et al., 2010; examined the effect of auditor reputation on earnings management in the banking industry using an international sample of banks from 48 countries for the period 1993–2006. The researchers support that high reputation auditors reduce earnings management in banks. This is because brand – name auditors have an incentive to provide high – quality audits to maintain their reputation capital in high levels (Kanagaretnam et al., 2010). The researchers separate auditor reputation in two dimensions: auditor type (Big 5 auditors vs. non – Big 5 auditors) and auditor industry specialization. Kanagaretnam et al. (2010), taking into account various factors similar to those examined by Fonseca and Gonzalez (2008)[5] they find in separate tests that both dimensions of auditor reputation constrain earnings management in banks. In joint tests only auditor industry specialization had a significant impact on constrain income – increasing earnings management. In similar results ended up Kanagaretnam et al. (2010) when they examined the effect of auditor reputation on discretionary component of LLPs. In summary, the researchers concluded that in such a competitive environment like that in the banking sector, auditor reputation creates disincentives in managers to apply earnings management techniques.

Previous research in credit institutions has studied the relation between international institutional factors and bank monitoring variables and earnings management (Shen and Chih, 2005; Fonseca and Gonzalez, 2008). Shen and Chih (2005) using earnings benchmark test conclude that the majority of the banks manipulate their earnings. They also prove that stronger investor protection and greater transparency in the disclosure of financial statements of banks can be act as a brake on earnings management. Fonseca and Gonzalez (2008) focused on the study of factors affecting income smoothing of banks though loan loss provisions which are the basic bank accrual. Fonseca and Gonzalez (2008) concluded that earnings management is lower in countries with stringent regulatory framework and higher banking supervision. However, none of these studies addresses the effect of auditing on earnings management or income smoothing.

Rivard et al. (2003), support that large US banks actually use LLPs for income smoothing, which in fact after the provisions of Basel Committee (Basle I) adopt more aggressive earnings management strategies. Bikker and Metzemakers (2005), mentioned in the pre – cyclical behavior of banks with respect to the recognition of LLPs. The researchers conclude that the procyclicality of the recognition of LLPs, in contrast with the economic cycle, predominates of counter – cyclical behavior of the recognition of LLPs combined with the profits and loans extension. Agarwal et al. (2007), studying whether and how the Japanese banks carry out manipulation in their profits during three different financial periods. The results of the researchers show that the size of credit expansion of banks depends on the period of the economic growth directly, from the earnings before taxes, earnings from securities and from the LLPs[6] Oosterbosch (2009), examines whether the manipulation of earnings from European banks has decreased after the introduction of International Accounting Standards (IAS) and whether the detailed disclosures must be made by the banks concerning the provisions for loan losses that negatively

[3] Empirical investigations before 2002 referred to Big 5 auditors because in that group was and Enron – Andersen.

[4] Discretionary accruals level is determined by the discretion of managers. Such, the magnitude of these accruals is in direct relation to the extent to which the profits that are published are unreliable.

[5] They introduced a number of specialized monitoring variables both per country and per banking environment.

[6] Higher earnings before taxes and provisions, higher profits from securities and lower LLPs entail greater credit expansion for banks.

related to earnings management in banks. Researcher concludes that banks adopted IFRS since 2005 they have reduced earnings management via LLPs. Oosterbosch (2009), also concludes that a greater requirements for disclosures about LLPs that may be encountered the banks does not prevent managers from using these provisions for earnings management or to reduce the volatility of earnings.

An important research is of Albertazzi and Gambacorta (2009) who studied the relation between the fluctuations of the business cycle and the level of profitability of banks in EU countries and in common – law countries and how this relation is influenced by institutional and other characteristics of the economies. Albertazzi and Gambacorta (2009), support that bank profits have pro – cyclical behavior. Thus, both net interest income (through the loans activity) and LLPs (through the quality of credit portfolio) ranging according to the course of the GDP for each country.

Empirical research in the field of capital management dichotomized into those made before the provisions of the Basel Committee (Basle I & II) and after those. Before 1989 there was an incentive for manipulation of provisions for loan losses to improve the capital adequacy ratio.

However, prior investigations examined how banks use LLPs during this period resulted in conflicting conclusions. Wahlen (1994), examines the nature of information transmitted through LLPs by the bank managers and how investors perceive the use of LLPs. Wahlen (1994), found that after controlling for unexpected changes in non – performing loans, banks with higher unexpected LLPs have higher abnormal returns. Beatty et al. (1995), conclude that, while managers' accrual decisions are complicated by other capital – raising activities, loan charge – offs and LLPs are used as techniques for capital management. Collins et al. (1995), found the opposite results; found that some instruments like loan charge – offs associated with capital management but no with LLPs.

Kim and Kross (1998) didn't find any association between LLPs and capital management. This result is not unexpected since after the implementation of the Basel regulations the reserves for loan losses did not constitute a significant element of the capital adequacy ratio. Ahmed et al. (1999), found a negative association between LLPs and capital adequacy ratio for the core capital (Tier I) with this relation stable even after the adoption of Basle I regulations from the US financial institutions. Laeven and Majnoni (2003), focus on how banks (French, Japanese and US) recognize LLPs in relation to economic cycles. Laeven and Majnoni (2003) conclude that banks are characterized by pro – cyclical behavior as they increase LLPs in difficult economic conditions both for these and for their national economy rather than period of growth as would require a prudent policy.

Lobo and Yang (2001), investigating three motives of bank managers that push them to adjust the LLPs. These incentives are:

i Income smoothing and limiting the volatility of earnings.
ii Capital management.

Lobo and Yang (2001), conclude that managers adopt strategies for income smoothing and reducing earnings volatility. However, for earnings signaling Lobo and Yang (2001), were unable to support this argument, while weak were the indications for capital management through LLPs.

Kanagaretnam et al. (2003) studying the motivation of bank managers to implement policies cadence of LLPs in line with income smoothing. The researchers conclude that the banks from the category positive current – bleak future prospects with large capital base present more intense for earnings management compared to those with low capital base. Instead, research rejects the hypothesis that banks form the category bleak current – positive future prospects with large capital adequacy progressing to more aggressive earnings management techniques compared to those with low capital adequacy.

Shrieves and Dahl (2003) find that lending granted by banks depends on the capital base of the banks. Therefore, banks with small capital base will provide fewer loans. The researchers conclude that banks with less capital (than required) have an incentive to increase it by indentifying less LLP.[7] Furthermore, Shrieves and Dahl (2003) find that Japanese banks proceed to income smoothing by varying their LLPs along with their earnings which is also compatible with the hypothesis of capital arbitrage.

Perez et al. (2006) examine earnings and capital management in the Spanish banks, taking into account the changes made by the application of International Accounting Standards and the regulations of the Basel Committee. Perez et al. (2006) conclude that the Spanish banks conduct earnings management despite the regulations of the principles and IAS, however this manipulation seems to be limited following the implementation of "dynamic forecast". Researchers reject capital adequacy management in the Spanish banks for the period of the investigation (1986–2002).

Anandarajan et al. (2006) examine whether the Australian banks use LLPs for earnings and capital management and signaling. The provisions of Basel I adopted by the Australian banks in 1996. The researchers conclude that there is evidence that managers apply earnings management techniques which are more aggressive in the post – Basle I period. Regarding capital management the researchers show that this type of manipulation is not changed in the post – Basle I period compared with the pre – Basle I period. Anandarajan et al. (2006) observe that the listed Australian banks applies more aggressive earnings management practices in relation with non – listed banks because the first have an incentive to publish steady

[7] In accordance with Shrieves and Dahl (2003) lower LLPs entail a greater capital adequacy ratio for the core capital (Tier I) through higher earnings.

earnings for raising funds from the capital market. Finally, the researchers reject the hypothesis of the use of LLPs for signaling future intentions of higher earnings to investors.

3. Research hypotheses

3.1. Earnings management and auditors reputation

DeAngelo (1981), based on the economic theory supports that the auditor's size is a measurement of auditor reputation and audit quality. She supports that brand – name auditors are better able to indentify inaccuracies in the financial statements and more willing to report and publish their findings in relation to other auditors. Higher specialization is associated with Big 4 auditors not only because they have more resources but also because they are willing to devote more resources to specialized staff training, peer reviews, and investment in information technology than non – Big 4 (Craswell et al., 1995). Also, higher independence is associated with Big 4 auditors because they have higher reputation compared to non – Big 4 auditors. Loss of reputation, as in the case of Arthur Andersen, could put a Big 4 auditor out of business (Huang and Li, 2009).

Litigation risk also motivates Big 4 auditor to remain independent. So, a higher audit quality is synonymous with the Big 4 auditors.

As mentioned in the first section several empirical studies support that higher audit quality is associated with Big 4 auditors for industrial firms. Although the empirical research of auditor reputation and audit quality in the banking sector is limited, the incentives faced by the Big 4 auditors of banks are similar to those of other industries, i.e., conserving reputation capital and mitigating the risk of litigation.[8] Moreover, auditor type (Big 4 auditor or non – Big 4 auditor) may be of higher importance for industries such banking, where information uncertainty is higher in comparison with the industrial firms due to greater complexity of banking operations and difficulty of assessing risk on the large portfolio of loans (Autore et al., 2009; Kanagaretnam et al., 2010).

The previous argument essentially concludes that earnings management in banks will be lower for those audited from Big 4 auditors. However, due to the fact that banks operate in an environment with high regulatory framework, which mainly required from the Central Banks and the Basel Committee, auditor reputation may not be as important in reducing income – increasing earnings management in relation with the other industrial firms. Such, the first part of our first hypothesis in the alternative form is:

H_{1A}. Earnings management in banks in related to if an auditor is a Big 4 auditor.

The second part of our first hypothesis relates to the relation of auditor specialization in the banking sector and earnings management behavior. Separating auditors according their reputation to those who belong in the group of 4 and those are not may be ignored an auditor's expertise in a specific industry which may be an even more critical dimension of auditor reputation. Each of the Big 4 auditor or national auditing firms tends to choose between specific firms per industry to include them in their portfolio of clients (Kanagaretnam et al., 2010). Furthermore, to being a Big 4 auditor, the auditor's expertise in the banking industry can further contribute in the quality of financial information. The empirical results show that the auditor industry specialization has great benefits for them like their increased effectiveness and credibility of financial statements. However, as we mentioned above, the benefits of auditor specialists may not be so strongly in the banking sector, as it is in other industries because the international banking system is under extremely strictly regulatory frameworks. Such, the second part of our first hypothesis in the alternative form is:

H_{1B}. Earnings management in banks is related to if an auditor is an expert in the banking sector.

3.2. Capital adequacy management and basle II

Ahmed et al. (1999), using accounting data from banks in Europe and the USA, found that in the period before the Basle I credit institutions manipulated capital adequacy ratios through the reserves for loan losses. According to the provisions of the Basle I and mainly these of the Basle II, the reserves for loan losses are not included in Tier I but are a small proportion of Tier II, therefore changes in the provisions for loan losses will haven't any impact on capital adequacy ratios. This was the initial assumption of Ahmed et al. (1999) who assumed that in the post – Basle I period the relation between LLPs and capital will be less negative but they didn't find any evidence to support their hypothesis. In this study we modified the hypothesis of Ahmed et al. (1999) and given that the period under examination (2005–2012) refers to the period before and after the second Basel Accord and assuming that Basle II is stricter regarding the capital adequacy ratios, the first part of our second hypothesis in the alternative form is:

H_{2A}. The relation between loan loss provisions and total capital (Tier I + Tier II) of commercial banks will be less negative in the post – Basle II period compared with the pre – Basle II period.

[8] Kanagaretnam et al. (2009) is an exception as they find that the discretionary component of LLP is positively and significantly associated with the stock returns for banks audited by big 5 auditors.

3.3. Earnings management and Basle II

In this part of our study we define earnings management according to Ahmed et al. (1999). The inherent assumption is that the managers have an incentive to participate in earnings manipulation. Once they reduce the volatility of the profits supposed that they broadcast a message for lower risk, since less fluctuation in profits implies indication for more stable share prices (Greenawalt and Sinkey, 1988; Beatty et al., 1995; Collins et al., 1995; Ahmed et al., 1999). Since the provisions for loan losses not included in Tier I but only in Tier II, changing LLPs is not going to change the basic capital adequacy ratio (for the Tier I capital) but only the total capital (for the Tier I + Tier II capital) adequacy ratio.

Since the provision for loan losses does not included in Tier I but only in Tier II, changing these in not going to influence the capital adequacy ratio of the core capital (Tier I) but only for the total capital (Tier I + Tier II). Initially, appears to be no restriction or expense associated with the manipulation of earnings. Evidence of such behavior has been observed in the OECD and in Asian countries (Delhaise, 1998). However, after the implementation of the Basel II provisions the scope for capital adequacy manipulation has been reduced without, to be able to support the same for earnings management in banks.

In the literature it is argued that corporate decisions are influenced by the type of corporate property (Rozeff, 1982; Kim and Sorensen, 1986). In particular, it has been observed high correlation between individual interest and corporate performance (Rosen and Quarrey, 1987; Oswald and Jahera, 1991).

This can be explained by the agency theory, that suggests that managers act as agents for firm owners exhibiting, however, trends to follow strategies that meet their own goals and not those of the owners (Jensen and Meckling, 1976; Fama, 1980).

In our study, the commercial banks controlled by many regulators. Bank's managers acting as agents of the owners of the banks are under greater pressure to display higher returns. Most owners trying to motivate managers by incorporating a *pay for performance* system to their contract based on the average of the returns of the manager in a specific period (Core and Gauy, 2002; Yermack, 1995). Holderness and Sheeman (1988) and Jensen and Murphy (1990) noted that this type of performance measurement is common in the most listed companies and banks. Hasan and Lozano-Vivasa (2002) observe that for unlisted companies, given the lack of direct supervision and pressure, the managers may have different targets and strategies in relation to managers working in listed companies. In this study we hypothesize that listed banks have a vested interest to publish authoritative accounting statements mainly due to the fact that they increase their capital by issuing shares. Thus, given that all sample banks are listed in active stock markets, the second part of our second hypothesis in the alternative form is:

H_{2B}. The relation between loan loss provisions and earnings before taxes and provisions of commercial banks will be more positive in the post – Basle II period compared with the pre – Basle II period.

4. Measures of earnings and capital adequacy management

Our analysis is based on the assumption that auditor reputation and the regulations by Basel Committee on Bank Supervision (Basle II) restrict earnings and capital adequacy management in banks. To test for earnings management in our sample we apply three different tests:

- Managing earnings for loss – avoidance.
- Managing earnings for just – meeting – or – beating prior year's earnings.
- Managing earnings by manipulating loan loss provisions.

For capital management we apply the same test like the third test for earnings management through loan loss provisions (Anandarajan et al., 2006; Kanagaretnam et al., 2010).

4.1. Earnings management to avoid losses or to just – meet – or – beat the prior year's earnings

Beatty et al. (1995) and Altamuro and Beatty (2010) report that bank managers have incentives to manipulate earnings to achieve an earnings benchmark.[9] We investigate how auditor reputation constrains this opportunistic behavior. We focus on two different earnings benchmark indexes: the loss avoidance index (*LOSSAVD*) and the just-meeting – or – beating prior year's earnings index (*JMBPRE*). LOSSAVD means Loss Avoidance and describes the tendency of firms to avoid to present losses at an accurate time. So, when a firm in the financial year have a limit loss tries to present a limit profit and simultaneously present a little positive ROA (between 0 and 0.005). JMBPRE means "just meat or beat the prior year earnings". Managers try to meet or beat analysts' forecasts presenting an impressive increase of the ROA between two consecutive years. Furthermore, we take into account traditional accounting measures as independent variables (like size, total loans, financial leverage, change in cash flow from operational functions, two indexes for growth and reserves for loan losses) which are influencing earnings. Thus, we estimate the following logit model:

[9] Benchmark – beating behavior.

$$BNCMRK_{i,t} = \alpha 0 + \alpha 1 \mathrm{B4AD}_{i,t} + \alpha 2 \mathrm{ADEXP}_{i,t} + \alpha 3 \mathrm{BNKSIZE}_{i,t} + \alpha 4 \mathrm{GRWT}_{i,t} + \alpha 5 \mathrm{TLNS}_{i,t-1} + \alpha 6 \mathrm{LVR}_{i,t} + \alpha 7 \mathrm{CHCFL}_{i,t-1} + \alpha 8 \mathrm{RLL}_{i,t-1} + \alpha 9 \mathrm{MTBR}_{i,t} + \alpha 10 \mathrm{FCRISIS}_{t} + e_{i,t} \quad (1)$$

where,

BNCMRK	Dummies for earnings management (LOSSAVD ή JMBPRE) defined as follows: **LOSSAVD** is a dummy variable equal with 1 if the bank has a small ROA (earnings before taxes divided by the weighted total assets) in the interval between 0 and 0,005 or 0 otherwise. **JMBPRE** is a dummy variable equal with 1 if the bank has a change in ROA (earnings before taxes divided by the weighted total assets) in the period t – (t – 1) in the interval between 0 – 0,0006 or 0 otherwise.
B4AD	Dummy variable equal with 1 if the auditor is a Big 4 auditor, zero otherwise.
ADEXP	Dummy variable equal with 1 if the auditor has the biggest market share in the banking industry in that particular country, zero otherwise.
BNKSIZE	The natural logarithm of the total assets as a proxy for the size of the bank at the end of year t.
GRWT	The change (in percentage terms) in the total assets between the periods t and t-1 as a proxy for the growth of the bank.
TLNS	The total loans of the bank divided by the weighted total assets at the begging of year t.
LVR	A financial leverage ratio defined as the quotient of the total equity to total assets of the bank at the beginning of year t
CHCFL	Change in cash flows from operating activities from the begging to the end of year t divided by the total assets of the bank at the begging of year t.
RLL	Percentage of the reserves for Loan Losses at the end of year t divided by the total assets of the bank at the begging of year t.
MTBR	The market – to – book value ratio at the begging of year t.
FCRISIS	Dummy variable for the financial crisis of 2008′s equal with 1 for the period 2009–2012 and 0 for the period 2005–2008.

The variables of interest are: *B4AD* and *ADEXP. B4AD* is a dummy variable equal 1 if the auditor belong in the group of the 4 big auditor or 0 zero otherwise. Auditor expertise measured by market share in the banking sector for each country[10] (based on Balsam et al., 2003; Krishnan, 2003). We calculate market share as the ratio of total assets of a specific bank to the total assets of the total number of banks in that particular country. An auditor is considered to be an expert when has the largest market share in the banking sector of a particular country. If a higher auditor reputation constrains earnings management for loss avoidance or for just meeting – or – beating prior year's earnings we expect the coefficients of the *B4AD* and *ADEXP* to be negative. Instead, if in a high regulated sector such as banking, auditor reputation does not affect opportunistic behaviors, the variables *B4AD* and *ADEXP* will be not statistical significant.

4.2. Check for earnings and capital adequacy management

We use the following model from Ahmed et al. (1999) and Anandarajan et al. (2006) to exam how Loan Loss Provisions used for earnings and capital management. We include in that model a dummy for the financial crisis and some interesting interaction variables. Based on least square method (with fixed or random effects) we estimate the model with dependent variable the natural logarithm of loan loss provisions [*LN(LLP)*]. We are interested for the relation between loan loss provisions [*LN(LLP)*], earnings before taxes and provisions (*EBTP*) and total capital adequacy ratio (*MTCAP*). We include all the available independent variables (a real loan loss ratio, the change on the GDP growth rate for each country, the total capital adequacy ratio, earnings before taxes and provisions, the size of each bank and an index for bank's fees). Thus, we estimate the following model:

$$LN(LLP)_{i,t} = \lambda_0 + \lambda_1 \mathrm{CHALLR}_{i,t} + \lambda_2 \mathrm{CHGDP}_{i,t} + \lambda_3 \mathrm{MTCAP}_{i,t} + \lambda_4 \mathrm{EBTP}_{i,t} + \lambda_5 \mathrm{BASELL\_II}_{t} + \lambda_6 \mathrm{BNKSIZE}_{i,t} + \lambda_7 \mathrm{BCFEES}_{i,t} + \lambda_8 (\mathrm{MTCAP} * \mathrm{BASELL\_II})_{i,t} + \lambda_9 (\mathrm{EBTP} * \mathrm{BASELL\_II})_{i,t} + \lambda_{10} (\mathrm{MTCAP} * \mathrm{BASEL\_II} * \mathrm{FCRISIS})_{i,t} + \lambda_{11} (\mathrm{EBTP} * \mathrm{BASEL\_IIbFCRISIS})_{i,t} + \lambda_{12} \mathrm{FCRISIS}_{t} + u_{i,t} \quad (2)$$

where,

[10] Based on the market share of banks in that particular country.

LN(LLP)	The natural logarithm of the provisions for loan losses.
CHALLR	Change in the real loan losses from the begging to the end of year t divided with the weighed total assets of the bank at the end of the year t.
CHGDP	Change in GDP growth rate for each country.
MTCAP	A measure of the extent that a bank applies the capital adequacy ratio for the basic and supplementary capital. Defined as the quotient of the total capital (Tier I + Tier II) before the reserves for loan losses divided with the minimum required total capital (=8%*weighted total assets) of the bank.
EBTP	Earnings before taxes and provisions divided with the weighed total assets of the bank at the end of year t.
BASEL II	Dummy variable equal with 1 for the post – Basle II period (2008–2012) and 0 for the pre – Basle II period (2005–2007).
BNKSIZE	The natural logarithm of the total assets as a proxy for the size of the bank at the end of year t.
BCFEES	Ratio of commission and fee income to weighted total assets of the bank at the end of year t.
MTCAP*BASEL_ II	Interaction of MTCAP and BASEL_II.
FCRISIS	Dummy variable for the financial crisis of 2008′s equal with 1 for the period 2009–2012 and 0 for the period 2005–2008.
EBTP*BASEL_II	Interaction of EBTP and BASEL_II.
MTCAP*BASEL_II*FCRISIS	Interaction of MTCAP, BASEL_II and FCRISIS.
EBTP*BASEL_II*FCRISIS	Interaction of EBTP, BASEL_II and FCRISIS.

Furthermore, for a connection of H_1 (H_{1A} & H_{1B}) to H_2 (H_{2A} & H_{2B}) we examine the following expanded model:

$$LN(LLP)_{i,t} = \rho_0 + \rho_1 \text{B4AD}_{i,t} + \rho_2 \text{ADEXP}_{i,t} + \rho_3 \text{CHALLR}_{i,t} + \rho_4 \text{CHGDP}_{i,t} + \rho_5 \text{MTCAP}_{i,t} + \rho_6 \text{EBTP}_{i,t} + \rho_7 \text{BASELL\_II}_t + \rho_8 \text{BNKSIZE}_{i,t} + \rho_9 \text{BCFEES}_{i,t} + \rho_{10}(\text{MTCAP} * \text{BASELL\_II})_{i,t} + \rho_{11}(\text{EBTP} * \text{BASELL\_II})_{i,t} + \rho_{12}(\text{B4AD} * \text{EBTP})_{i,t} + \rho_{13}(\text{ADEXP} * \text{EBTP})_{i,t} + \rho_{14}(\text{EBTP} * \text{B4AD} * \text{FCRISIS})_{i,t} + \rho_{15}(\text{EBTP} * \text{ADEXP} * \text{FCRISIS})_{i,t} + \rho_{16}\text{FCRISIS}_t + u_{i,t} \quad (3.1)$$

$$LN(LLP)_{i,t} = \rho_0 + \rho_1 \text{B4AD}_{i,t} + \rho_2 \text{ADEXP}_{i,t} + \rho_3 \text{CHALLR}_{i,t} + \rho_4 \text{CHGDP}_{i,t} + \rho_5 \text{MTCAP}_{i,t} + \rho_6 \text{EBTP}_{i,t} + \rho_7 \text{BASELL\_II}_t + \rho_8 \text{BNKSIZE}_{i,t} + \rho_9 \text{BCFEES}_{i,t} + \rho_{10}(\text{MTCAP} * \text{BASELL\_II})_{i,t} + \rho_{11}(\text{EBTP} * \text{BASELL\_II})_{i,t} + \rho_{12}(\text{B4AD} * \text{MTCAP})_{i,t} + \rho_{13}(\text{ADEXP} * \text{MTCAP})_{i,t} + \rho_{14}(\text{MTCAP} * \text{B4AD} * \text{FCRISIS})_{i,t} + \rho_{15}(\text{MTCAP} * \text{ADEXP} * \text{FCRISIS})_{i,t} + \rho_{16}\text{FCRISIS}_t + u_{i,t} \quad (3.2)$$

where,

B4AD*EBTP	Interaction of B4AD and EBTP.
ADEXP*EBTP	Interaction of ADEXP and EBTP.
B4AD*MTCAP	Interaction of B4AD and MTCAP.
ADEXP*MTCAP	Interaction of ADEXP and MTCAP.
EBTP*B4AD*FCRISIS	Interaction of EBTP, B4AD and FCRISIS.
EBTP*ADEXP*FCRISIS	Interaction of EBTP, ADEXP and FCRISIS.
MTCAP *B4AD*FCRISIS	Interaction of MTCAP, B4AD and FCRISIS.
MTCAP *ADEXP * FCRISIS	Interaction of MTCAP, ADEXP and FCRISIS.
B4AD, ADEXP, CHALLR, CHGDP, MTCAP, EBTP, BASEL_II, BNKSIZE, BCFEES, MTCAP*BASEL_II, EBTP*BASEL_II	The other variables of the equations (3.1) and (3.2) have been already defined.

In models (3.1) and (3.2) we investigate if auditor reputation constrains earnings and capital management respectively through loan loss provisions.

5. Data description

We obtain financial data for the banks of 4 different countries (USA, UK, France and Germany) for the period 2005–2012 from the Datastream database. Banks have chosen have their headquarters in the four countries mentioned and thus we excluded from our sample banks that operating in the USA, UK, France and Germany, but located in a different country.

Our final sample consists 684 observations for earnings benchmark test from which 417 concerning banks from the common – law countries and 267 concerning banks from the code – law countries. For the earnings and capital adequacy management test we obtain 657 observations from which 412 concerning banks from the common – law countries and 245 from the code – law countries. There was a significant variation in the number of banks per country during the period 2005–2012, due to changes in the development of their markets, their size and financial data availability. Thus banks that we haven't available financial data for all the years of the period 2005–2012, were excluded from our sample.

6. Empirical results

For the estimation of the H_{1A} and H_{1B} hypotheses we use two different tests, strengthening the validity and reliability of our results. We use the method of the Kanagaretnam et al., 2010 that approaches the methods of the Beatty et al. (1995) and Altamuro and Beatty (2010). For the estimation of the H_{2A} and H_{2B} hypotheses we based in the method of Anandarajan et al. (2006). The residuals from the regression output may be correlated and therefore use OLS/Logistic Regression with clustered robust standard errors to address for both serial and/or cross-sectional correlation (Williams, 2000; Petersen, 2009). For all tests, we report t or wald statistics.

6.1. Estimations for loss avoidance or for just – meeting – or – beating prior year's earnings

We report the results of the earnings benchmark tests in Tables 1–3 . Panel A of Table 1 shows the descriptive statistics of variables of the Model (1). On average, 11.93% of the banks of the common – law countries report a small profit (perhaps avoid to report a loss) [standard deviation 32.46%] and 3.60% of these report a small increase in earnings compared to the prior year (perhaps they just – meet – or – beat prior year's earnings) [st.dev.: 18.64%]. 26.97% of the banks from the code – law countries report a small profit (st.dev.: 44.46%) and 8.92% of these report a small increase in earnings over the prior year (st.dev.: 28,56%). 88.64% of the UK and US banks of our sample are audited by big 4 auditors (st.dev.: 31.77%) and 3.80% of these banks are audited by auditors specialists (st.dev.: 19.14%). 87.87% of the French and German banks are audited by big 4 auditors (st.dev.: 32.71%) while 5.97% of these are audited by auditors experts in banking industry (st.dev.: 23.74%).

Panel B of Table 1 presents the correlations among the variables used in model (1). Correlations of the variables refer to the banks of the common – law countries are present in the brackets while the correlations of the variables refer to the banks of the code – law countries are present out of the brackets. We observe that in the banks from the common – law countries exist a negative correlation (but insignificant) between *B4AD*, *LOSSAVD* and *JMBPRE*, confirming our argument that banks audited by big 4 auditors have lower incentives to avoid a loss or to just – meet – or – beat prior year's earnings. However, there is a positive (and significant at the 10% level) correlation between *ADEXP* and *JMBPRE* implying that banks audited by specialist auditors have higher incentives to just – meet – or – beat prior year's earnings. For the banks from the code – law countries just *B4AD* correlate negative (but insignificant) with the *JMBPRE*. In fact, *LOSSAVD* correlate positive and significant (at the 5% level or better) with the *B4AD* and the *ADEXP* implying that UK and US banks audited by Big 4 and specialist auditors have higher incentives to avoid a loss. Although these individual results are interesting, they do not concern all the variables that may affect the extent of manipulation in earnings. So we rely on multi – factor regression analysis for more reliable results.

In Table 2 we report the estimation results of the logit model for the loss avoidance test. The coefficients of interest are $_{\alpha 1}$ and $_{\alpha 2}$. A negative sign for $_{\alpha 1}$ and $_{\alpha 2}$ implies that auditor reputation reduce managers motivations for earnings management via a loss – avoidance technique. The first three columns provide the results for the banks from the common – law countries and the last three columns the results for the banks from the code – law countries. In model (A) auditor reputation is proxied by whether or not the auditor is a Big 4 auditor. In model (B) auditor reputation is proxied by whether or not the auditor is an expert in the banking sector in the UK or USA. In model (C) we include both proxies for auditor reputation. For the banks from the common – law countries, in model (A) we find that *B4AD* negatively but insignificantly associated with *LOSSAVD* indicates a rejection of hypothesis H_{1A}. In model (B) the coefficient of *ADEXP* is negative and significant at the 10% level, indicates no – rejection of hypothesis H_{1B}. That output indicates that auditors' expertise in the banking industry obstructs managers' incentives for earnings manipulation confirming the findings of Kanagaretnam et al. (2010). Including both proxies for auditor reputation in model (C) only the coefficient of *ADEXP* maintain negative and significant at the 10% level. Thus, for the UK and US banks only auditor industry specialization limiting the incentives for earnings management. In model (A) for the banks from the code – law countries, the coefficient of *B4AD* is positive and insignificant indicates rejection of hypothesis H_{1A}. In model (B) *ADEXP* is negatively but insignificantly associated with *LOSSAVD* indicates rejection of hypothesis H_{1B}. In model (C) neither of the two aspects of auditor reputation does not reducing the incentives of bank's managers to manipulate their earnings through loss avoidance. For the banks from the code – law countries neither of *B4AD* or *ADEXP* is significantly associated with *LOSSAVD* in any of the three models, therefore, we reject hypotheses H_{1A} and H_{1B}.

In Table 2 we report the estimation results of the logit model for the just – meeting – or – beating prior year's earnings test. Again, the coefficients of interest are $_{\alpha 1}$ and $_{\alpha 2}$. The first three columns are referring to the UK and US banks while the last three columns are refer to the French and German banks. For the banks from common – law countries, in model (A) the coefficient of *B4AD* is negative but insignificant indicates rejection of hypothesis H_{1A}. In model (B) *ADEXP* positively but insignificantly associated with JMBPRE indicates rejection of hypothesis H_{1B}. For the UK and US banks neither of *B4AD* or *ADEXP* is significantly associated with *JMBPRE*.

For the German and French banks, in model (A) the coefficient of *B4AD* is negative and significant at the 10% level indicates no – rejection of hypothesis H_{1A} confirming the Kanagaretnam et al. (2010) results. In model (B) the coefficient of *ADEXP* is negative but insignificant indicates rejection of hypothesis H_{1B}. Including in the same model (3) both dimensions of auditor reputation for the just – meeting – or – beating prior year's earnings test only *B4AD* is negative and significant at the 10% level. These results suggest that German and French banks audited by a Big – 4 auditor are less likely to manage earnings to meet or beat the prior year's earnings.

Table 1
Descriptive Statistics and correlations for H_1 hypothesis.

Panel A: Descriptive Statistics

	Common – Law Countries					Code – Law Countries				
Variables	Mean	Median	Max	Min	Std. Dev.	Mean	Median	Max	Min	Std. Dev.
LOSSAVD	0.1193	0.0000	1.0000	0.0000	0.3246	0.2697	0.0000	1.0000	0.0000	0.4446
JMBPRE	0.0360	0.0000	1.0000	0.0000	0.1864	0.0892	0.0000	1.0000	0.0000	0.2856
B4AD	0.8864	1.0000	1.0000	0.0000	0.3177	0.8787	1.0000	1.0000	0.0000	0.3271
ADEXP	0.0380	0.0000	1.0000	0.0000	0.1914	0.0597	0.0000	1.0000	0.0000	0.2374
BNKSIZE	17.0178	16.5956	21.5965	10.8818	2.3376	16.9692	16.4229	21.509	10.6441	2.3816
GRWT	0.0878	0.0444	1.3489	−0.8720	0.2214	0.0850	0.0653	1.7289	−0.4201	0.1684
TLNS	0.6101	0.6403	1.0296	0.0003	0.1497	0.7326	0.8482	1.5060	1.0100	0.2392
LVR	0.1129	0.0974	0.9888	−0.0046	0.1011	0.0877	0.0991	0.2450	0.0140	0.0483
CHCFL	−0.0001	−0.0003	0.2028	−0.2638	0.0383	0.0013	0.0012	0.1454	−0.2238	0.0239
RLL	0.0122	0.0095	0.0834	0.0000	0.0100	0.0173	0.0171	0.0916	0.0008	0.0117
MTBR	1.4488	1.2188	10.316	−6.2434	1.1499	0.8677	0.5271	4.8458	0.1298	0.8605
OBSERV.	N = 417					N = 267				

Panel B: Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) LOSSAVD	**1.0000**										
	[**1.0000**]										
(2) JMBPRE	−0.0333	**1.0000**									
	[0.0906]	[**1.0000**]									
(3) B4AD	−0.0048	−0.0061	**1.0000**								
	[0.1365**]	[−0.0880]	**[1.0000]**								
(4) ADEXP	0.0424	0.0930*	0.0777	**1.0000**							
	[0.2203***]	[0.0351]	[0.0791]	[**1.0000**]							
(5) BNKSIZE	0.1125**	0.1005**	0.4394***	0.3793***	**1.0000**						
	[0.6215***]	[0.0900]	[0.1254*]	[0.5238***]	[**1.0000**]						
(6) GRWT	0.1210**	−0.0305	0.0120	0.1214**	0.1140**	**1.0000**					
	[0.0424]	[0.0012]	[−0.0026]	[0.0780]	[0.0891]	[**1.0000**]					
(7) TLNS	−0.1211**	−0.0584	−0.0599	−0.2597***	−0.2762***	−0.0160	**1.0000**				
	[−0.5718***]	[−0.0034]	[−0.1407**]	[−0.5411***]	[−0.9163***]	[−0.1225*]	[**1.0000**]				
(8) LVR	−0.1017**	−0.0721	−0.1280**	−0.1611***	−0.3782***	0.0022	0.1259**	**1.0000**			
	[−0.6655***]	[−0.0994]	[−0.1905***]	[−0.3492***]	[−0.8197***]	[−0.0156]	[0.7756***]	[**1.0000**]			
(9) CHCFL	0.0083	0.0104	−0.0203	0.0368	−0.0212	0.0416	−0.0231	−0.0282	**1.0000**		
	[−0.0461]	[0.0987]	[−0.0169]	[−0.0268]	[−0.0137]	[0.1207*]	[0.0273]	[−0.0010]	[**1.0000**]		
(10) RLL	−0.0311	−0.0654	−0.0749	−0.0891*	−0.1225**	−0.2027***	0.2659***	0.2157***	−0.0480	**1.0000**	
	[−0.5101***]	[−0.0401]	[0.0084]	[−0.3729***]	[−0.7274***]	[−0.1089]	[0.7089***]	[0.6444***]	[−0.0269]	[**1.0000**]	
(11) MTBR	−0.1593***	0.0675	0.0370	−0.0361	−0.0351	0.4213***	0.1082**	−0.1435***	0.0089	−0.0564	**1.0000**
	[0.3088***]	[0.1340***]	[0.0490]	[0.1789***]	[0.2860***]	[0.5631***]	[−0.3603***]	[−0.4404***]	[0.1486**]	[−0.3316***]	[**1.0000**]

Out of the brackets we report the correlations of the variables for the banks of the common – law while in the brackets we report the correlations of the variables for the banks of the code – law countries. The variables are defined as follows: **LOSSAVD** is a dummy variable equal with 1 if the bank has a small ROA (earnings before taxes divided by the weighted total assets) in the interval between 0 and 0,005 or 0 otherwise. **JMBPRE** is a dummy variable equal with 1 if the bank has a change in ROA (earnings before taxes divided by the weighted total assets) in the period t – (t – 1) in the interval between 0 and 0,0006 or 0 otherwise. **B4AD** is a dummy variable equal with 1 if the auditor is a Big 4 auditor, zero otherwise. **ADEXP** is a dummy variable equal with 1 if the auditor has the biggest market share in the banking industry in that particular country, zero otherwise. **BNKSIZE** is the natural logarithm of the total assets as a proxy for the size of the bank at the end of year t. **GRWT** is the change (in percentage terms) in the total assets between the periods t and t-1 as a proxy for the growth of the bank. **TLNS** is the total loans of the bank divided by the weighted total assets at the begging of year t. **LVR** is a financial leverage ratio defined as the quotient of the total equity to total assets of the bank at the beginning of year t. **CHCFL** represents a change in cash flows from operating activities from the begging to the end of year t divided by the total assets of the bank at the begging of year t. **RLL** the percentage of the reserves for Loan Losses at the end of year t divided by the total assets of the bank at the begging of year t. **MTBR** presents the market – to – book value ratio at the begging of year t. *, ** and *** indicate statistical significance at the 1%, 5% and 10% levels (two – tailed) respectively.

In summary, in the loss avoidance test in the banks from the common – law countries only auditors, who are specialists in the banking sector, are more likely to succeed to constrain earnings management incentives. In the just – meeting – or beating – prior year's earnings test in the banks from countries with a code – law financial system only the type of the auditor (Big 4 or non – Big 4 auditors) is more likely to reduce income – increasing earnings management in these banks.

6.2. Check for earnings and capital adequacy management through loan loss provisions

6.2.1. Estimation of basic model (2)

We present the results for earnings and capital adequacy management in Tables 4 and 5. In panel A of Table 4 we present the descriptive statistics of variables used in Eq. (2). On average, the banks from the common – law countries forming loan loss provisions 555,209 $ (st. dev.: 2.3547). In the banks from the code – law countries, the average loan loss provisions are 1,132,003 $ (st.dev.: 1.72 μονάδες). The average compliance index with capital the adequacy (for the total capital) for the

Table 2
Logit Model Results for the Loss – Avoidance Earnings Benchmark Test.

Variables	Coeff.	Financial System					
		Common – Law Countries			Code – Law Countries		
		Model (A)	Model (B)	Model (C)	Model (A)	Model (B)	Model (C)
Intercept	α_0	−0.5760	−0.7942	−1.0629	−3.0029	−3.8146	−4.2387
		(0.0670)	(0.1270)	(0.2293)	(0.1857)	(0.3145)	(0.3580)
B4AD	α_1	−0.2734		−0.4008	0.1872		0.2810
		(0.2104)		(0.4312)	(0.0524)		(0.1194)
ADEXP	α_2		−2.1648*	−2.1774*		−0.6940	−0.7060
			(3.5487)	(3.7296)		(0.8998)	(0.9194)
BNKSIZE	α_3	0.0437	0.0741	0.1054	0.1712	0.2264	0.2323
		(0.1828)	(0.6378)	(1.0376)	(0.3544)	(0.6032)	(0.6220)
GRWT	α_4	3.1404***	3.6982***	3.6500***	1.2662	1.2434	1.2388
		(12.2086)	(21.3495)	(21.0537)	(0.5131)	(0.4648)	(0.4569)
TLNS	α_5	−0.4731	−1.0201	−1.0027	2.1369	1.6256	1.6527
		(0.1473)	(0.7685)	(0.7239)	(0.9963)	(0.5344)	(0.5488)
LVR	α_6	−9.9459*	−11.3237*	−10.5221*	−51.0422***	−47.7107***	−47.0688***
		(2.7610)	(3.2726)	(2.8849)	(13.8833)	(12.4422)	(11.1635)
CHCFL	α_7	1.0211	1.2286	1.1701	−14.7348	−15.2808	−15.1980
		(0.0686)	(0.0904)	(0.0839)	(1.1386)	(1.1197)	(1.0920)
RLL	α_8	−36.8206	−33.2603	−34.7798	−35.5332	−33.8004	−34.7873
		(0.8841)	(0.7054)	(0.7375)	(0.8739)	(0.7984)	(0.8324)
MTBR	α_9	−0.9100**	−1.0030***	−0.9973***	0.4281	0.5346	0.5445
		(6.4084)	(6.7911)	(7.8491)	(0.5685)	(0.7883)	(0.8056)
FCRISIS	α_{10}	0.8940**	0.8528**	0.8508**	1.3406**	1.4442**	1.4413**
		(4.8147)	(4.3027)	(4.3155)	(5.0111)	(4.9146)	(4.8576)
N		391	389	389	225	225	225
Likelihood Ratio		42.4355***	47.1110***	47.5769***	130.3100***	131.1574***	131.2029***

The estimations concern the model.

Table 3
Logit Model Results for the Just meet or beat prior year Earnings Benchmark Test.

Variables	Coeff.	Financial System					
		Common – Law Countries			Code – Law Countries		
		Model (A)	Model (B)	Model (C)	Model (A)	Model (B)	Model (C)
Intercept	α_0	−9.8591**	−8.0685**	−9.5544**	−28.5798***	−32.3154***	−28.1333***
		(4.4943)	(4.9840)	(4.0575)	(7.9929)	(8.4911)	(8.1859)
B4AD	α_1	−1.6332		−1.5703	−1.3540*		−1.3666*
		(1.7233)		(1.5632)	(2.8961)		(2.9096)
ADEXP	α_2		0.5488	0.4188		0.3147	0.3509
			(0.3249)	(0.1941)		(0.1209)	(0.1584)
BNKSIZE	α_3	0.4048*	0.2455*	0.3777	1.1260***	1.2116***	1.1009***
		(3.1481)	(2.7729)	(2.6110)	(7.8029)	(7.8124)	(8.1143)
GRWT	α_4	−2.6939	−2.5962	−2.7894	−3.1147*	−3.2504**	−2.9718*
		(1.9434)	(2.0224)	(2.0035)	(3.2482)	(4.1775)	(3.2140)
TLNS	α_5	−0.0321	−0.0170	0.1941	7.6667***	8.8851**	7.8866**
		(0.0002)	(0.0001)	(0.0082)	(7.1737)	(5.7096)	(6.3109)
LVR	α_6	3.6458	0.6454	3.5063	2.5565	5.3048	1.2649
		(0.3950)	(0.0145)	(0.3645)	(0.0727)	(0.3726)	(0.0193)
CHCFL	α_7	−0.0186	−0.2141	−0.3671	21.1372	22.8979	21.3046
		(0.0000)	(0.0008)	(0.0020)	(2.5568)	(2.4936)	(2.5454)
RLL	α_8	−137.4797**	−124.8690**	−136.2330**	51.6372	36.3806	49.9276
		(4.8156)	(4.3327)	(4.6104)	(1.8747)	(0.9909)	(1.8755)
MTBR	α_9	0.8305***	0.7241***	0.8188***	1.4262**	1.5401**	1.3798**
		(13.0889)	(14.1932)	(12.2599)	(5.0616)	(6.3613)	(5.2524)
FCRISIS	α_{10}	1.3193**	1.1547*	1.3118**	−0.1845	−0.1711	−0.2130
		(4.8411)	(3.4769)	(4.7695)	(0.1121)	(0.1082)	(0.1611)
N		391	389	389	225	225	225
Likelihood Ratio		17.6368**	15.6743*	17.7977*	22.4300***	20.2273**	22.5411**

The estimations concern the model.

UK and US banks is 1.4511 (st. dev.: 1.3036 μονάδες) while the same index for the French and German banks is 1.0992 (st.dev.:59.996%).

In panel B of Table 4 we present the correlations between the variables used in Eq. (2). The correlations of the variables concern banks from the common – law countries are in the brackets while the correlations for the banks from the code – law countries are out of the brackets. We observe that the compliance index with the minimum capital adequacy *MTCAP*

Table 4
Descriptive Statistics and correlation for H_2 hypothesis.

Panel A: Descriptive Statistics

	Common – Law Countries					Code – Law Countries				
Variables	Mean	Median	Max	Min	S.D.	Mean	Median	Max	Min	S.D.
LnLLP	13.2271	12.8462	18.649	8.1242	2.3547	13.9395	13.6094	18.2238	9.3179	1.7200
CHALLR	0.0007	0.0001	0.0318	−0.0407	0.0062	0.0000	0.0000	0.0122	−0.0056	0.0012
CHGDP	0.0138	0.0180	0.0340	−0.0520	0.0208	0.0102	0.0175	0.0400	−0.0510	0.0207
MTCAP	1.4511	1.2537	12.3605	−0.0575	1.3036	1.0992	1.2583	3.0628	0.1692	0.5996
EBTP	0.0407	0.0313	0.7405	−0.0323	0.0473	0.0572	0.0447	0.4062	−0.0014	0.0586
BNKSIZE	17.0178	16.5956	21.5965	10.8818	2.3376	16.9692	16.4229	21.509	10.6441	2.3816
BCFEES	0.0098	0.0075	0.2899	0.0000	0.0166	0.0117	0.0130	0.0198	0.0012	0.0041
N	412					245				

Panel B: Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) LN_LLP_	**1.0000**						
	[**1.0000**]						
(2) CHALLR	−0.0275	**1.0000**					
	[0.0344]	[**1.0000**]					
(3) CHGDP	−0.1050**	−0.4035***	**1.0000**				
	[0.1171]	[−0.0024]	[**1.0000**]				
(4) MTCAP	−0.3222***	−0.0084	0.0665	**1.0000**			
	[−0.6842***]	[−0.0563]	[−0.2606***]	[**1.0000**]			
(5) EBTP	0.1009**	−0.3593***	0.1001*	0.1544***	**1.0000**		
	[−0.2028**]	[0.0403]	[−0.1126]	[0.6076***]	[**1.0000**]		
(6) BNKSIZE	0.9340***	−0.0238	−0.0537	−0.3788***	−0.1457***	**1.0000**	
	[0.8740***]	[−0.0274]	[0.1778**]	[−0.8695***]	[−0.5604***]	[**1.0000**]	
(7) BCFEES	−0.0047	0.0278	−0.0375	0.0511	0.5205***	−0.0772	**1.0000**
	[−0.6783***]	[−0.1059]	[−0.2734***]	[0.9216***]	[0.6043***]	[−0.8227***]	[**1.0000**]

Out of the brackets we report the correlations of the variables for the banks of the common – law while in the brackets we report the correlations of the variables for the banks of the code – law countries. The variables are defined as follows: **LN(LLP)** is the natural logarithm of the loan loss. **CHALLR** is the change in the real loan losses from the begging to the end of year t divided with the weighed total assets of the bank at the end of the year t. **CHGDP** is the change in GDP growth rate for each country. **MTCAP** is a measure of the extent that a bank applies the capital adequacy ratio for the total and supplementary capital. Defined as the quotient of the total capital (Tier I + Tier II) before the reserves for loan losses divided with the minimum required total capital (=8%*weighted total assets) of the bank. **EBTP** is the earnings before taxes and provisions divided with the weighed total assets of the bank at the end of year t. **BASEL_II** is a dummy variable equal with 1 for the post – Basle II period (2008–2012) and 0 for the pre – Basle II period (2005–2007). **BNKSIZE** is the natural logarithm of the total assets as a proxy for the size of the bank at the end of year t. **BCFEES** is a ratio of commission and fee income to weighted total assets of the bank at the end of year t. *, ** and *** indicate statistical significance at **10%**, **5%** and **1%** respectively (two – tailed test).

correlate negative and significant (at the 10% level) with the natural logarithm of the *LLP*, indicates capital management both for the banks from the common – law and the code – law countries. In the UK and US banks earnings before taxes and provisions (*EBTP*) correlate positive and significant (at the 5% level) with the *LN(LLP)*, indicates earnings management through LLP. Instead, in the German and French banks, *EBTP* correlate negative and significant (at the 5% level) with the *LN(LLP)* indicates, lack of earnings management in these banks.

$$BNCMRK_{i,t} = \alpha 0 + \alpha 1 \mathrm{B4AD}_{i,t} + \alpha 2 \mathrm{ADEXP}_{i,t} + \alpha 3 \mathrm{BNKSIZE}_{i,t} + \alpha 4 \mathrm{GRWT}_{i,t} + \alpha 5 \mathrm{TLNS}_{i,t-1} + \alpha 6 \mathrm{LVR}_{i,t} + \alpha 7 \mathrm{CHCFL}_{i,t-1} + \alpha 8 \mathrm{RLL}_{i,t-1} + \alpha 9 \mathrm{MTBR}_{i,t} + \alpha 10 \mathrm{FCRISIS}_{t} + e_{i,t}$$

The sample period is from 2005 through 2012. Our sample consists 49 banks from the common – law countries and 30 banks from the code – law countries. 88.64% (3.80%) of the UK & US Banks and 87.87% (5.97%) of the German & French banks are audited by big 4 auditors (audit experts). The dependent variable is the **BNCMRK**, defined as **LOSSAVD**, which is a dummy equal with 1 if the bank has a small ROA (earnings before taxes divided by the weighted total assets) in the interval between 0 and 0,005 or 0 otherwise. **FCRISIS** is a dummy variable for the financial crisis of 2008′s equal with 1 for the period 2009–2012 and 0 for the period 2005–2008. The definitions for the other variables are provided in footnotes of Table 1. Wald statistics are in parentheses. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively (two – tailed test).

$$BNCMRK_{i,t} = \alpha 0 + \alpha 1 B4AD_{i,t} + \alpha 2 ADEXP_{i,t} + \alpha 3 BNKSIZE_{i,t} + \alpha 4 GRWT_{i,t} + \alpha 5 TLNS_{i,t-1} + \alpha 6 LVR_{it} + \alpha 7 CHCFL_{i,t-1} + \alpha 8 RLL_{i,t-1} + \alpha 9 MTBR_{i,t} + \alpha 10 FCRISIS_{t} + e_{i,t}$$

The sample period is from 2005 through 2012. Our sample consist 49 banks from the common – law countries and 30 banks from the code – law countries. 88.64% (3.80%) of the UK & US Banks and 87.87% (5.97%) of the German & French banks are audited by big 4 auditors (audit experts). The dependent variable is the **BNCMRK**, defined as **JMBPRE**, which is a dummy

Table 5
Estimations for earnings and capital management for the total capital (Tier I + Tier II) of the commercial banks.

Variables	Coeff.	Financial System			
		Common – Law Countries		Code – Law Countries	
		Model (A)	Model (B)	Model (A)	Model (B)
Intercept	λ_0	4.4143*	3.3684	−1.1930	0.6816
		(1.8090)	(1.5263)	(−1.0168)	(0.4427)
CHALLR	λ_1	6.1634*	7.4517**	46.5558***	30.9798***
		(1.8925)	(2.4532)	(4.2862)	(3.7243)
CHGDP	λ_2	4.8156***	5.1849***	2.5772***	3.7230***
		(4.0102)	(4.4777)	(2.8997)	(4.8820)
MTCAP	λ_3	−0.2689**	−0.1121	0.0461	−0.6348***
		(2.4599)	(−0.6692)	(0.3983)	(−4.0389)
EBTP	λ_4	5.5341***	15.3201***	9.6886***	22.2456***
		(3.6047)	(2.6248)	(11.2107)	(11.3693)
BASEL_II	λ_5	0.7789***	1.0238***	0.0780	0.0786
		(8.8529)	(4.2634)	(0.9317)	(0.6174)
BNKSIZE	λ_6	0.4763***	0.5152***	0.8278***	0.7192***
		(3.3067)	(3.9273)	(14.3872)	(8.1188)
BCFEES	λ_7	−0.4680	−7.5690**	−14.3146	16.4514
		(−0.3467)	(−2.4866)	(−0.8057)	(1.1093)
MTCAP*BASEL_II	λ_8		−0.1507		0.4011***
			(−0.8253)		(2.6275)
EBTP*BASEL_II	λ_9		−2.2422		−14.4365***
			(−0.3794)		(−6.7858)
MTCAP*BASEL_II*FCRISIS	λ_{10}		−0.0668		−0.6296***
			(−0.4396)		(−5.6286)
EBTP*BASEL_II*FCRISIS	λ_{11}		−7.5624**		1.5687
			(−2.2170)		(1.5587)
FCRISIS	λ_{12}	0.4940***	0.7590***	0.4570***	1.1031***
		5.8051	4.1603	(6.5894)	(9.9487)
N		386	386	216	216
Adj. R^2		0.9705	0.9725	0.8633	0.9882
F – statistic		208.9333***	210.6011***	170.7573***	429.0830***
Diagnostic Tests:					
Redundant test (POLS or FE)		322.7720***	319.0778***	311.3700***	350.7037***
Hausman's test (FE or RE)		81.0200***	82.6380***	15.1500*	61.2539***
A/C test (DW Statistic)		1.8655	1.8720	1.3093	1.4698

The estimations concern the model:.

variable equal with 1 if the bank has a change in ROA (earnings before taxes divided by the weighted total assets) in the period t – (t – 1) in the interval between 0 and 0,0006 or 0 otherwise. The definitions for the other variables are provided in footnotes of Tables 1 and 2. Wald statistics are in parentheses. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively (two – tailed test).

In Table 5 we report the regression results for earnings and capital adequacy management through loan loss provisions. All models have been estimated with the fixed effects approach. The first two columns refer to the banks from the common – law countries and the last two to the banks from the code – law countries. For each financial system, in model (A) we do not include any interaction variable, and in model (B) we include all the interaction variables. In the UK and US banks the compliance index with the minimum capital adequacy (*MTCAP*) is negatively and significantly (only in the model (A)) associated with the *LN(LLP)* at the 5% level. These results provide some evidence that banks from the common – law countries use LLPs for capital management over the entire period of interest. For the US and UK banks the coefficient of the earnings before taxes and provisions (*EBTP*) is positively and significantly associated with the *LN(LLP)* at the 1% level in all the models. These results confirming the findings of Lobo and Yang (2001); Shrieves and Dahl (2003) and Anandarajan et al. (2006), indicating that LLPs are used by the bank managers for earnings management.

For the banks from the common – law countries the indicator variable for the Basle II (*BASEL _II*) is positive and significant at the 1% level (only in the model (A)), indicates that in the post – Basle II period the UK and US banks increases loan loss provisions. The coefficient of the indicator variable for the financial crisis (*FCRISIS*) is positive and significant at the 1% level in each model. This result confirm the argument that after the financial crisis the UK and US banks create higher LLPs for hedging the higher credit risk that they were exposed after the Lehman Brothers default (Ivashina and Scharfstein, 2010; Cornett et al., 2011). From the interaction terms only the *EBTP * BASEL_II * FCRISIS* (in model B) is negatively and significantly associated with the *LN(LLP)* at the 5% level, indicates that in the post – Basle II period and especially after the crisis of 2008, we have not evidence that the UK and US banks use LLPs for earnings management. Thus, for the banks from the common – law countries we reject the hypotheses H_{2A} and H_{2B}.

In the French and German banks the coefficient of the compliance index with the minimum capital adequacy (*MTCAP*) is negatively and significantly associated with the *LN(LLP)* at the 1% in the model (B). These results suggest that banks from the

code – law countries manipulate their capital adequacy ratio through loan loss provisions confirming the findings of Beatty et al. (1995). The coefficient of *EBTP* is positive and significant at the 1% level in all the models confirming Lobo and Yang (2001); Shrieves and Dahl (2003) and Anandarajan et al. (2006). So, the managers of the French and German banks use LLPs as an instrument for earnings management. The coefficient of *FCRISIS*, is positive and significant at the 1% level indicating higher LLPs after the crisis period for the banks from the code – law countries.

In model (B) the interaction term *MTCAP*BASEL_II* is positively and significantly associated with the *LN(LLP)* at the 1% level. This result provides strong evidence that German and French banks manipulate capital adequacy ratio less in the post – Basle period than in the pre – Basle II period indicates no – rejection of hypothesis H_{2A}. In model (B) the coefficient of the interaction term *EBTP * BASEL_II* is negative and significant at the 1% level. This result suggests that the banks from the code – law countries unbend the earnings manipulation practices via loan loss provisions, indicates rejection of hypothesis H_{2B}. In model (B) the interaction term *MTCAP * BASEL_II * FCRISIS* is negatively and significantly associated with the LN(LLP) at the 1% level. This indicates that during the financial crisis period (2009–2012), there is evidence to support aggressive capital management practices via LLPs for the French and German banks.

In conclusion, banks from the common – law countries manipulated their earnings via LLPs in the pre – Basle II period reducing significantly these practices in the post – Basle II period and especially during the crisis period. For the UK and US banks in the pre – Basle II there is some evidence for capital adequacy management but these practices are limited in the post – Basle II regime. For earnings management similar results with the UK and US banks presented in the French and German banks. However, for the banks from the code – law countries capital management although it appeared to be limited after the implementation of the second Basel Accord, during the financial crisis period, bank managers adopted more aggressive capital adequacy management policies.

$$LN(LLP)_{it} = \lambda_0 + \lambda_1 \mathrm{CHALLR}_{i,t} + \lambda_2 \mathrm{CHGDP}_{i,t} + \lambda_3 \mathrm{MTCAP}_{i,t} + \lambda_4 \mathrm{EBTP}_{i,t} + \lambda_5 \mathrm{BASELL\_II}_t + \lambda_6 \mathrm{BNKSIZE}_{i,t} + \lambda_7 \mathrm{BCFEES}_{i,t} + \lambda_8 (\mathrm{MTCAP} * \mathrm{BASELL\_II})_{i,t} + \lambda_9 (\mathrm{EBTP} * \mathrm{BASELL\_II})_{i,t} + \lambda_{10} (\mathrm{MTCAP} * \mathrm{BASEL\_II} * \mathrm{FCRISIS})_{i,t} + \lambda_{11} (\mathrm{EBTP} * \mathrm{BASEL\_II} * \mathrm{FCRISIS})_{i,t} + \lambda_{12} \mathrm{FCRISIS}_t + u_{i,t}$$

The sample period is from 2005 through 2012. Our sample consist 49 banks from the common – law countries and 30 banks from the code – law countries. Each model in the Table 5 has been estimated with the fixed effects approach. The dependent variable is the natural logarithm of the loan loss (LN(LLP)). MTCAP*BASEL_II is an interaction variable of MTCAP and BASEL_II. EBTP*BASEL_II is an interaction variable of EBTP and BASEL_II. MTCAP*BASEL_II*FCRISIS is an interaction variable of MTCAP, BASEL_II and FCRISIS. The definitions for the other variables are provided in footnotes of Tables 2 and 4. t – statistics are reported in parentheses. For the Redundant and Hausman tests the values are referred to Chi – square statistic. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively (two – tailed test).

6.2.2. Estimation of expanded model (3)

In Tables 6 and 7 we examine the effects of auditor reputation in earnings and capital adequacy management (for the total capital) via loan loss provisions in the sample banks. In both tables the model (A) does not include any interaction terms, the model (B) include simple interaction terms and model (C) and (D) include three – way interaction terms. In Tables 6 and 7, model (B) present estimations for the effects of auditor reputation in earnings and capital management. In model (C) we present the results of the effect of auditor reputation in earnings management taking into account the financial crisis period, while in model (D) we present the results of the effect of auditor reputation in capital management taking into consideration the financial crisis period. In all the models of Table 6 the estimations are based in fixed effects approach while in Table 7 the model (A) estimated with random effects approach and the other models with the fixed effects method.

In Table 6, where we report the results for the banks from the common – law countries, only the one dimension of the auditor reputation the industry specialization (*ADEXP*) is negatively associated with the natural logarithm of LLPs (*LN(LLP)*) with high statistic significance (5% and only in model (A)). That result confirming the finding of Kanagaretnam et al. (2010). In model (B) only the coefficient of *B4AD * EBTP* is negative and significant at the 10% level. This result indicates that UK and US banks that audited by Big 4 auditors manipulate their earnings to a lesser extent than those that audited by non – Big 4 auditors. In the same model the coefficient of *ADEXP * EBTP* is positively and significantly associated with the *LN(LLP)* at the 1% level, implying that banks from the common – law countries that audited by auditors experts in banking sector, manipulate their earnings to a higher extent comparative with those that don't audited by these experts. In model (B), the interaction term *ADEXP * MTCAP* is negatively and significantly associated with the *LN(LLP)* at the 10% level, implying capital management via loan loss provisions for the UK and US banks for the entire period.

In model (C), the $\hat{\rho_{14}}$ is negative and statistically different from zero at the 1% level which means that *EBTP * B4AD * FCRISIS* is negatively and significantly associated with *LN(LLP)*. This result indicates that UK and US banks that audited by one of Deloitte, KPMG, PWC or Ernst & Young during the post – crisis period does not manipulate their earnings in contrast with the pre – crisis period. In model (G) the coefficient of *MTCAP * B4AD * FCRISIS* is negative and significant at the 1% level, implying that banks from the common – law countries that audited by Big- 4 auditors during the post – crisis period adopt more aggressive capital management practices for their total capital.

Table 6
Estimations for the expanded model for the banks from the common – law countries.

Variables	Coeff.	Estimations			
		Model (A)	Model (B)	Model (C)	Model (D)
Intercept	ρ_0	4.1023	2.5481	3.8320*	3.0785
		(1.6335)	(1.0054)	(1.6551)	(1.2659
B4AD	ρ_1	−0.3333	0.3002	−0.4373	−0.4343
		(−1.5444)	(0.7376)	(−1.4559)	(−1.1120)
ADEXP	ρ_2	−0.3140**	−0.0256	−0.5047	0.2353
		(−2.1394)	(−0.1047)	(−1.5289)	(0.8164)
CHALLR	ρ_3	6.1425*	5.8012*	4.9291	6.2219**
		(1.8912)	(1.7176)	(1.4932)	(1.9965)
CHGDP	ρ_4	4.8255***	4.0272***	4.8041***	4.9812***
		(4.1025)	(3.6778)	(4.4868)	(4.5309)
MTCAP	ρ_5	−0.2730**	0.1651	−0.0270	−0.2150
		(−2.5077)	(0.7104)	(−0.1659)	(−0.8647)
EBTP	ρ_6	5.6376***	19.2498***	10.4343*	16.2751***
		(3.7095)	(3.2441)	(1.6693)	(2.8369)
BASEL_II	ρ_7	0.7773***	1.2434***	1.1501***	1.1439***
		(8.7805)	(6.5455)	(6.3988)	(6.4807)
BNKSIZE	ρ_8	0.5126***	0.5446***	0.5074***	0.5454***
		(3.4792)	(3.7010)	(3.7128)	(3.9156)
BCFEES	ρ_9	−0.3176	−0.9398	−9.4847***	−2.0944
		(−0.2376)	(−0.6873)	(−3.7977)	(−1.5619)
MTCAP*BASEL_II	ρ_{10}		−0.2200	−0.2673**	−0.0917
			(−1.6397)	(−2.0918)	(−0.7527)
EBTP*BASEL_II	ρ_{11}		−7.8359	−1.6099	−9.7826*
			(−1.4481)	(−0.2919)	(−1.8263)
B4AD*EBTP	ρ_{12}		−5.4962*	5.5738	
			(−1.7146)	(1.2352)	
ADEXP*EBTP	ρ_{13}		22.9050***	9.5314	
			(2.8314)	(0.5923)	
B4AD*MTCAP	$\rho_{14}\|\rho_{12}$		−0.2761		0.2034
			(−1.0965)		0.972
ADEXP*MTCAP	$\rho_{15}\|\rho_{13}$		−1.0059*		−0.6629
			(−1.8952)		−1.4500
EBTP*B4AD*FCRISIS	ρ_{14}			−9.5184***	
				(−3.6232)	
EBTP*ADEXP*FCRISIS	ρ_{15}			1.9631	
				(0.1828)	
MTCAP*B4AD*FCRISIS	ρ_{14}				−0.3213***
					(−3.6529)
MTCAP*ADEXP*FCRISIS	ρ_{15}				0.0224
					(0.0754)
FCRISIS	ρ_{16}	0.4904***	0.4518***	0.6787***	0.8175***
		(5.7555)	(5.0409)	(6.4478)	(6.4033)
N		385	385	385	385
Adj. R^2		0.9710	0.9731	0.9737	0.9733
F – statistic		205.0656***	202.0615***	207.3955***	203.7894***
Diagnostic Tests:					
Redundant test (POLS or FE)		323.3567***	321.4590***	332.8009***	318.3693***
Hausman's test (FE or RE)		75.4699***	73.4640***	80.6267***	74.1561***
A/C test (DW Statistic)		1.8928	1.9407	1.9358	1.9573

The estimations concern the model:.

In conclusion, both the two aspects of auditor reputation seem to reduce earnings management mainly in the post – crisis period. UK and US banks that audited by auditors specialists in banking industry tend to apply greater manipulation on capital adequacy in relation to banks that does not audited by these experts.

B4AD in all models of Table 7 is positively and significantly associated with *LN(LLP)* at the 1% level. This result indicates that auditor type not only does not limit but rather favors French and German banks to create high LLPs for earnings management. The other dimension of auditor reputation, auditor industry specialization (ADEXP), only in model (C) is negatively and significantly associated with LN(LLP) at the 1% level, implying that auditors expertise constrain earnings management in banks confirming the finding of Kanagaretnam et al. (2010).

In model (B) and (C) the coefficient of *B4AD * EBTP* is negative and significant at the 5% and 10% level respectively. This suggest that the French and German banks audited by big 4 auditors tend to not manipulate their earnings via loan loss provisions. In model (C) *ADEXP * EBTP* is positively and significantly associated with *LN(LLP)* at the 1% level, implying that banks from the code – law countries audited by auditors expert in the banking sector applies earnings management practices. In model (D) the coefficient of *B4AD * MTCAP* is negative and significant at the 10% level, implying that French and German

Table 7
Estimations for the expanded model for the banks from the code – law countries.

Variables	Coeff.	Estimations			
		Model (A)	Model (B)	Model (C)	Model (D)
Intercept	ρ_0	−1.3911	2.3656	2.6810	0.2829
		(−1.2450)	(1.4903)	(1.6486)	(0.1794)
B4AD	ρ_1	0.5650***	0.5735***	0.4264***	0.5562***
		(4.1542)	(4.1034)	(5.3540)	(4.6863)
ADEXP	ρ_2		−2.8608	0.0723	−3.7252***
			(−1.3457)	(1.3847)	(−3.0985)
CHALLR	ρ_3	46.3468***	33.1839***	34.2870***	33.6155***
		(4.1578)	(3.2998)	(3.2560)	(3.7887)
CHGDP	ρ_4	2.7889***	3.7652***	3.5917***	4.0153***
		(3.1663)	(4.7630)	(4.2952)	(5.2221)
MTCAP	ρ_5	0.0184	−0.5998**	−0.8781***	−0.4719
		(0.1703)	(−2.0800)	(−5.0098)	(−1.6093)
EBTP	ρ_6	9.5738***	28.8227***	28.8210***	20.3315***
		(11.0916)	(8.1803)	(7.0986)	(9.7866)
BASEL_II	ρ_7	0.0739	0.5239***	0.5804***	0.3578***
		(0.8986)	(5.5543)	(5.6094)	(3.5269)
BNKSIZE	ρ_8	0.8100***	0.6248***	0.6035***	0.7426***
		(14.9595)	(6.9087)	(6.6478)	(8.1746)
CFEER	ρ_9	−11.1800	9.1512	8.6738	22.9252
		(−0.6522)	(0.6190)	(0.5317)	(1.5600)
MTCAP*BASEL_II	ρ_{10}		−0.2101	−0.2530	−0.0758
			(−1.3990)	(−1.6445)	(−0.5790)
EBTP*BASEL_II	ρ_{11}		−12.2896***	−12.4180***	−11.6801***
			(−5.0559)	(−5.0835)	(−4.8003)
B4AD*EBTP	ρ_{12}		−7.8824**	−7.8666*	
			(−2.1980)	(−1.8497)	
ADEXP*EBTP	ρ_{13}		10.6827	52.0292***	
			(1.4582)	(2.9505)	
B4AD*MTCAP	$\rho_{14}\|\rho_{12}$		−0.3194		−0.4663*
			(−1.2432)		(−1.6949)
ADEXP*MTCAP	$\rho_{15}\|\rho_{13}$		2.0057		2.6710**
			(1.3772)		(2.5083)
EBTP*B4AD*FCRISIS	ρ_{14}			0.3328	
				(0.3218)	
EBTP*ADEXP*FCRISIS	ρ_{15}			−20.6053**	
				(−2.0105)	
MTCAP*B4AD*FCRISIS	ρ_{14}				−0.2470***
					(−3.9047)
MTCAP*ADEXP*FCRISIS	ρ_{15}				−0.0571
					(−0.1697)
FCRISIS	ρ_{16}	0.4606***	0.5812***	0.5771***	0.8012***
		(6.8287)	(9.9849)	(7.3936)	(9,7107)
N		216	216	216	216
Adj. R^2		0.8690	0.9872	0.9872	0.9880
F – statistic		159.4151***	361.1962***	362.0787***	387.3894***
Diagnostic Tests:					
Redundant test POLS or FE)		298.5366***	200.2279***	228.1055***	273.6068***
Hausman's test (FE or RE)		12.4925	95.5769***	145.2589***	121.7775***
A/C test (DW Statistic)		1.3246	1.6185	1.6099	1.5868

The estimations concern the model:.

banks audited by one from PWC, Deloitte, KPMG or Ernst & Young, tend to apply greater capital adequacy management than those audited by non – Big 4 auditors. In the same model *ADEXP * MTCAP* is positively and significantly associated with *LN(LLP)* at the 5% level. This result reveals that French and German banks audited by auditor industry specialization manipulate their capital adequacy ratios to lesser extent in comparison with those that don't audited by these experts. In model (C) the coefficient of *EBTP * ADEXP * FCRISIS* is negative and statistical significant ate the 5% level. This result implies (in conjunction with $\rho_{13}^{\wedge}$ of *ADEXP * EBTP* in the same model) that the banks from code – law countries manipulate their earnings less in the post – crisis period in comparison with the pre – crisis period. In model (D) *MTCAP * B4AD * FCRISIS* is negatively and significantly associated with *LN(LLP)* at the 1% level, implying that the French and German banks audited by auditors experts in the banking sector manipulate their capital adequacy ratio more in the post – crisis period in comparison with the pre – crisis period.

In conclusion, auditor type (Big 4 auditors or non – Big 4 auditors) constrain earnings management both during the period before and the period after the 2008 financial crisis. However, French and German banks audited by one from Deloitte, PricewaterhouseCoopers, KPMG or Ernst & Young manipulate their capital adequacy ratios both in the post – crisis period

and in the pre – crisis period. Banks from the code – law countries audited by auditor specialists in the banking sector have higher incentives for earnings management, but lower incentives for capital adequacy management.

$$LN(LLP)_{i,t} = \rho_0 + \rho_1 \text{B4AD}_{i,t} + \rho_2 \text{ADEXP}_{i,t} + \rho_3 \text{CHALLR}_{i,t} + \rho_4 \text{CHGDP}_{i,t} + \rho_5 \text{MTCAP}_{i,t} + \rho_6 \text{EBTP}_{i,t} + \rho_7 \text{BASELL\_II}_t + \rho_8 \text{BNKSIZE}_{i,t} + \rho_9 \text{BCFEES}_{i,t} + \rho_{10}(\text{MTCAP} * \text{BASELL\_II})_{i,t} + \rho_{11}(\text{EBTP} * \text{BASELL\_II})_{i,t} + \rho_{12}(\text{B4AD} * \text{EBTP})_{i,t} + \rho_{13}(\text{ADEXP} * \text{EBTP})_{i,t} + \rho_{14}(\text{EBTP} * \text{B4AD} * \text{FCRISIS})_{i,t} [\text{or} \rho_{14}(\text{MTCAP} * \text{B4AD} * \text{FCRISIS})_{i,t}] + \rho_{15}(\text{EBTP} * \text{ADEXP} * \text{FCRISIS})_{i,t} [\text{or} \rho_{15}(\text{MTCAP} * \text{ADEXP} * \text{FCRISIS})_{i,t}] + \rho_{16} \text{FCRISIS}_t + u_{i,t}$$

The sample period is from 2005 through 2012. Our sample consist 49 banks from the common – law countries. 88.64% (3.80%) of UK and US banks are audited by big 4 auditors (audit experts). Each model in the Table 6 has been estimated with the fixed effects approach. **B4AD*EBTP** (**ADEXP*EBTP**) is an interaction variable of B4AD and EBTP (ADEXP and EBTP). **B4AD*MTCAP (ADEXP*MTCAP)** is an interaction variable of B4AD and MTCAP (ADEXP and MTCAP). **EBTP*B4AD*FCRISIS** (**EBTP*ADEXP*FCRISIS**) is an interaction variable of EBTP, B4AD and FCRISIS (EBTP, ADEXP and FCRISIS). **MTCAP*B4AD*FCRISIS (MTCAP*ADEXP*FCRISIS)** is an interaction variable of MTCAP, B4AD and FCRISIS (MTCAP, ADEXP and FCRISIS). The definitions for the other variables are provided in footnotes of Tables 2, 4 and 5. t – statistics are reported in parentheses. For the Redundant and Hausman tests the values are referred to Chi – square statistic. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively (two – tailed test).

$$LN(LLP)_{i,t} = \rho_0 + \rho_1 \text{B4AD}_{i,t} + \rho_2 \text{ADEXP}_{i,t} + \rho_3 \text{CHALLR}_{i,t} + \rho_4 \text{CHGDP}_{i,t} + \rho_5 \text{MTCAP}_{i,t} + \rho_6 \text{EBTP}_{i,t} + \rho_7 \text{BASELL\_II}_t + \rho_8 \text{BNKSIZE}_{i,t} + \rho_9 \text{BCFEES}_{i,t} + \rho_{10}(\text{MTCAP} * \text{BASELL\_II})_{i,t} + \rho_{11}(\text{EBTP} * \text{BASELL\_II})_{i,t} + \rho_{12}(\text{B4AD} * \text{EBTP})_{i,t} + \rho_{13}(\text{ADEXP} * \text{EBTP})_{i,t} + \rho_{14}(\text{EBTP} * \text{B4AD} * \text{FCRISIS})_{i,t} [\text{or} \rho_{14}(\text{MTCAP} * \text{B4AD} * \text{FCRISIS})_{i,t}] + \rho_{15}(\text{EBTP} * \text{ADEXP} * \text{FCRISIS})_{i,t} [or \rho_{15}(\text{MTCAP} * \text{ADEXP} * \text{FCRISIS})_{i,t}] + \rho_{16} \text{FCRISIS}_t + u_{i,t}$$

The sample period is from 2005 through 2012. Our sample consist 30 banks from the common – law countries. 87.87% (5.97%) of UK and US banks are audited by big 4 auditors (audit experts). Models (A) and (C) has been estimated with the random effects approach while Models (B), (D), (E), (F) and (G) has been estimated with the fixed effects approach. The definitions for the variables are provided in footnotes of Tables 2, 4, 5 and 6. t – statistics are reported in parentheses. For the Redundant and Hausman tests the values are referred to Chi – square statistic. *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively (two – tailed test).

6.3. Sensitivity checks

In our main analysis we defined as specialist an auditor with the biggest market share in the banking sector for each country. However, we can use a differentiated approach for auditor's expertise based on Neal and Riley (2004) that allow more than one auditor to be specialist in the banking industry for a particular country (*ADEXP1*). Thus, we consider that an auditor has a large market share if it owns at least 30% in the banking sector for the period 2005–2012. This percentage based on Neal and Riley (2004) formula {[1/(N)]*1.2 = 0.30|N: Big 4 auditors}for limiting excessive market shares. Thus, replacing *ADEXP* with *ADEXP1* in equations (1), (3.1) and (3.2), for the loss – avoidance test in the banks of the common – law countries, we find that the coefficient of *ADEXP1* in the model (B) is negative and significant at the 5% level, while in the model (C) we find that the coefficient of B4AD is negative and insignificant but *ADEXP1* is negatively and significantly associated with *LOSSAVD* at the 5% level. For the same test in the banks from the code – law countries *ADEXP1* is negative but insignificant in the models (B) and (C). In the just – meeting – or – beating prior year's earnings test, the coefficient for *ADEXP1* is insignificant for all the banks of our sample in the models (B) and (C). In the expanded model for the banks from the common – law countries *ADEXP1* is negative and significant at the 10% level in the models (B), (C) and (D). In the model (E) the coefficient for *ADEXP1 * EBTP* is negative and significant at the 5% level. In the same model the interaction variable ADEXP1 * *MTCAP* remain negative but insignificant. Regarding the French and German banks in the expanded model, *ADEXP1* is negatively and significantly associated with *LN(LLP)* at the 5% level in the model (G). In model (F) the interaction term *ADEXP1 * EBTP* remain positive and significant at the 10% level and in model (G) the interaction term *ADEXP1 * MTCAP* is significantly positive at the same statistical level. In model (F) the three – way interaction term *EBTP * ADEXP1 * FCRISIS* is negatively and significantly associated with *LN(LLP)* at the 10% level. Therefore, our results are robust to different approaches of auditor specialization in the banking industry.

In the second sensitivity test, we control for possible endogeneity of auditor choice and bank's earnings manipulation. Banks with high earnings quality possible choose to be audited by high – reputation auditors and high – reputation auditors

possible choose to audit banks with high earnings quality (Kanagaretnam et al., 2010). Thus, we apply the two – stages method by Heckman (1979) to address this issue

We first estimate a probit model concerning with auditor choice (big 4 auditor or non big 4 auditor). From the estimation of the probit model we calculate the Inverse Mills Ratio (*IMILLS*). Following the suggestions of Francis and Lennox (2008) about the problems of the two – stage procedure by Heckman (1979) in accounting, we exclude some independent variables from the second stage of the method (i.e. *LN(TLNS)* and *NLLR*) which are included in the first stage. Including IMILLS in the second stage we check for multicollinearity although it usually does not appear between variables which fluctuate due to inflationary trends. Based on Kanagaretnam et al. (2010), we estimate the following model:.[11]

$$B4AD_{i,t} = k_0 + k_1\mathrm{ROA}_{i,t} + k_2(\mathrm{ROA} * \mathrm{TLOSS})_{i,t} + k_3\mathrm{LN(TLNS)}_{i,t} + k_4\mathrm{CHTLNS}_{i,t} + k_5\mathrm{TCAP}_{i,t} + k_6\mathrm{TLNSR}_{i,t} + k_7\mathrm{NLLR}_{i,t} + e_{i,t} \quad (4)$$

Where,

B4AD	Dummy variable equal 1 if the auditor is a Big 4 auditor, zero otherwise.
ROA	Earnings before taxes and provisions to total assets at the end of year t.
TLOSS	Dummy variable equal 1if the bank has a loss in year t, zero otherwise.
ROA*TLOSS	Interaction of ROA and TLOSS.
LN(TLNS)	The natural logarithm of the total loans of the bank at the end of year t.
CHTLNS	Change in total loans from the begging to the end of year t divided by the total assets of the banks at the begging of year t.
TCAP	The total capital adequacy ratio of the bank at the end of year t.
TLNSR	The total loans of the bank at the end of year t divided by the total assets at the begging of year t.
NLLR	The net loan losses of the bank divided by the total loans at the end of year t.

ROA represents bank's performance and expected to be positive associated with the *B4AD*. Including the interaction term *ROA*TLOSS* in our model we allow ROA to differ between profitable and loss – making banks. *LN(TLNS)* represents bank's size. We predict a positive coefficient for the *LN(TLNS)* because larger banks may prefer to be audited by big 4 auditors than by non – big 4 auditors. αντιπρ◯σωπεύει τ◯ μέγεθ◯ζ της τράπεζας. We use several variables that reflect bank's risks like *CHTLNS*, *TCAP*, *TLNSR* and *NLLR* as banks with higher real risks are likely to choose to be audited from a big 4 auditor to enhance the credibility of their financial statements (Kanagaretnam et al., 2010). The estimations of the first stage procedure show that *LN(TLNS)*, *TCAP* and *NLLR* are positively and significantly associated with *B4AD* (at the 1%, 10% and 1% level respectively. *ROA* and *CHTLNS* are positive but insignificant. Furthermore, the coefficient of the interaction variable *ROA*TLOSS* is negative but insignificant.

When re – estimate equations (1), (2), (3.1) and (3.2) including *IMILLS* as independent variable, in the second stage, the coefficient of *IMILLS* only in the loss – avoidance test is significant at the 10% level for the banks from the common – law countries and at the 5% level for the banks from the code – law countries. These results indicate that self – selection probably is not a problem in our analysis. Although we included *IMILLS* in models (1), (2), (3.1) and (3.2), the estimations of the second – stage regression are similar to those reported in Tables 3, 5, 6 and 7.

Our third sensitivity test concerning with benchmark – beating test. In the loss – avoidance test we hypothesize that a bank try to avoid losses if its ROA is between 0 and 0.005. As a robustness check, we use an alternative benchmark index: *SMALL_PRFi* (small profits), which is an indicator variable equal1 if ROA is between [*(0, 0.006):SMALL_PRF*$_1$] or [*(0, 0.004):SMALL_PRF*$_2$]. Our results are similar with those reported at Table 2. In the just – meeting – or – beating prior year's test we use an alternative benchmark index $JMBPRE_i$, which is an indicator variable equal 1 if the bank has a change in ROA from year t – 1 to year t between [*(0, 0.0007):JMBPRE*$_1$] or [*(0, 0.0005):JMBPRE*$_2$]. The results of the regression are similar to those reported in Table 3.

Our fifth sensitivity test concerning with a different measure of the provisions for loan losses in the equations (2), (3.1) and (3.2). More specific, we use as a dependent variable a ratio for loan loss provisions (*LLPR*) defined as the ratio of LLP divided by the weighted total loans of the bank per year for each country[12] Again, we obtain results that differ slightly from those that presented in Tables 5–7.

7. Conclusions

Given the undeniable importance of banking to the international economic system, there is limited number of investigations carried out in relation to the impact of auditors on the earnings quality of banks and even more limited research on the extent of compliance of these banks with the provisions of the Basel Committee regarding to capital adequacy requirements. Banking institutions vary significantly from other industries and given the current disputing of the quality and solvency of the global banking system (beginning from the collapse of Lehman Brother in September of 2008), this research highlighted important issues for supervisors, investors and shareholders.

In the first part we examined the relation between auditors and earnings management using a sample of banks from common – law and code – law countries. We hypothesized that high auditor reputation constrain earnings management

[11] The sample size is reduced because of the lack of data concerning the net loan losses ratio.

[12] Total loans are weighted with the formula: $\frac{(\mathrm{Loans}_{i,t-1}+\mathrm{Loans}_{i,t})}{2}$.

in banks. Specifically, we examined the effects of two aspects of auditor reputation: auditor type (Big 4 auditor vs. non – Big 4 auditor) and auditor industry specialization on earnings management in the banking sector. In separate tests related to earnings benchmark and for different classification of banks per financial system, we find that both auditor type and auditor expertise constrain earnings management. In particular, when we examine earnings management through loss – avoidance test only auditor industry expertise has a significant impact on reducing this type of manipulation in the banks from the common – law countries. When we examine earnings management through just – meeting – or beating – prior year's earnings test, only auditor type has a significant impact on constraining this type of manipulation in the banks from the code – law countries.

In the second part we examined the extent of earnings and capital management through loan loss provisions for the 89 banks of our sample. Comparing the intensity of those two forms of manipulation for the pre – Basle II period and for the post – Basle II period we found that UK and US banks manipulate their capital adequacy ratio (for the total capital) to a lesser extent in the post – Basle II in relation with the pre – Basle II period. In similar results we end up for the extent of earnings management in these banks. In fact, earnings management in UK and US banks limited further to the post – crisis period. Regarding earnings management identical results obtained for US and UK banks have emerged and for the banks from the code – law countries. However, in French and German banks capital management while it seemed to be confined in the post – Basle II period, in the post – crisis period intensified further.

In the third part of our analysis we investigated the effect of auditor reputation on the extent of earnings and capital adequacy management in the banks of our sample for the periods prior to Basle II and after this as well and for the periods before and after the crisis of 2008. For the banks from the common – law countries showed that when audited by Big 4 auditors are applying milder earnings management policies. However, when these banks are audited by auditors experts in the banking sector are applying more aggressive capital management techniques especially during the post – crisis period. For banks from the code – law countries we prove that when they audited by one of Deloitte, PWC, KPMG or Ernst & Young are applying milder earnings management policies. However, when French and German banks are audited by auditors with expertise in the banking industry are engage in more aggressive capital management strategies during the financial crisis period.

In conclusion, we could say that for the 89 bank institutions of our sample and for the period 2005–2012, auditors with high reputation in auditing in the banking industry seemed not to constrain both earnings and especially capital management of these institutions. Thus, raised an issue of reliability of auditing services of high reputation auditors with specialization in the banking sector and a doubt about the quality of banking financial statements. Stricter standards (compared with Basle I) on capital adequacy and credit risk of banks worldwide made by the Basel Committee in June 1999 and launched globally be applied by early 2007, on the merits, as shown by the analysis that preceded it, they had the opposite of the expected results. Banks instead to comply with the projected levels of minimum capital adequacy ratios, they manipulating these ratios especially during the financial crisis period, so to increase their loan portfolio with more loans, which in many cases, they were characterized as subordinated. Our research we hope to help those exercising supervision and regulation of banking institutions so to make the necessary improvements as we are waiting for the universal adoption of the provisions of the third agreement of the Basel Committee (Basle III).

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