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Accounting transparencies and audit fees of auditor-designated mutual savings banks in Korea

Hyoun Song¹ and Kyunbeom Jeong^{1*}

Abstract: In 1998, the act on mutual savings banks was amended to create a legal basis for auditor designation for certain mutual savings banks in Korea. Also, a series of restructuring processes for the savings banking industry took place in 2011 due to the insolvency of some savings banks. This study empirically analyzes whether the auditor designation rule has affected how mutual savings banks set aside allowance for bad debts and thus help improve their accounting transparency (better asset quality and less earnings management), as well as the impact of this rule on audit fees. It also looks into whether there is any notable difference in accounting transparency and audit fees between before and after the savings bank incident in 2011. We specifically set the six hypotheses about the effect of auditor designation on asset quality, earnings management, and audit fees, and the different effect of savings bank incident on these three factors. We investigate the hypotheses using regression models with 809 firm-year sample from 2005 to 2014. The results show that asset quality has improved for auditor designated mutual savings banks and after the incident. With respect to earnings management, mutual savings banks with designated auditors are found to be less likely to manage their earnings using allowance for bad debts, but there is no statistical significance in difference between before and after the savings bank incident. As for audit fees, the amount of fees is large for auditor-designated mutual savings banks, and after the incident. This study would offer useful insights to financial regulators, auditors, audit clients, and other stakeholders.

Subjects: Business, Management and Accounting; Accounting; Auditing

Keywords: mutual savings bank; auditor designation; asset quality; earnings management; audit fee

1. Introduction

The purpose of the audit is to improve the level of confidence of users of the intended financial statements, and it is achieved by the audit opinion on whether the financial statements are prepared in accordance with the financial reporting framework in terms of importance. In order

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that accounting information provided by auditors is trusted by users and is useful information for users' investment and credit decisions, it is important to maintain an appropriate level of audit quality. Audit quality is defined in various ways by researchers. Wallace (1980) defined audit quality as the auditor's ability to improve the accuracy of accounting data. DeAngelo (1981) defined audit quality as the joint probability of errors being found in financial statements and the probability of errors being reported honestly, it argued that this was related to the auditor's expertise to detect errors contained in financial statements (auditor competence) and the auditor's independence to accurately report them (auditor independence).

In the United States, where accounting transparency is known to be relatively high, it was discovered at the end of 2001 that Enron Corporation's poor finances had been covered up by routine, systematic, and carefully planned accounting irregularities. This led to questions about the accounting status and related activities of various companies in the United States, and had a decisive influence on the enactment of the Sarbanes-Oxley Act in 2002. Similarly, in Korea, some mutual savings banks (hereinafter referred to as "savings bank") have manipulated the BIS-based capital ratio higher than the actual level through fraudulent accounting, and have been expelled from the market or acquired in 2011. Savings bank is an organization that promotes financial convenience for ordinary people and small and medium-sized enterprises in charge of loans and receipts from the secondary financial sector established under the Mutual Savings Bank Act in Korea. Savings banks have the advantage of guaranteeing high interest rates if deposits or installment savings are deposited and having a high screening and high limit if they take out loans, while they have the disadvantage of having a somewhat higher loan interest rate and a higher possibility of failure than commercial banks. Savings bank incident caused property damage to savings bank depositors and subordinated bond investors and caused social controversy. Thus, various institutional devices have been implemented and supplemented, such as strengthening accounting supervision to improve audit quality, and there have been many policy changes in the auditor appointment system, an important requirement for determining audit quality. In particular, in January 1998, the Mutual Savings Bank Act was revised to allow regulators to designate auditors for savings banks that are subject to management guidance or suspension of executives due to illegal bad loans. Unlike other financial sectors, only for savings banks, allowing auditors to be designated only with separate standards under the law is mainly aimed at protecting savings bank depositors and investors by improving audit quality for savings banks traded by ordinary people and SMEs and improving accounting information. On the other hand, there is a controversy over the appropriateness of audit fees between designated savings banks and designated auditors. From the designated savings banks' point of view, they claim that the designated auditors (accounting firms) require higher audit fees than the free appointed auditor because they have exclusive authority. From the standpoint of designated auditors, they protest that it is reasonable that audit fees for companies designated auditors are higher because they have greater audit risks than general audits.

This study aims to contribute to future institutional improvement by empirically analyzing the effect of the audit designation system for savings banks on accounting transparency (amount of allowance for bad debts) and audit fees. Savings banks mainly manage assets with loans, so allowance for bad debts accounts for a large portion of the financial statements and directly affects net profit or loss and BIS ratio (Bank for International Settlements capital ratio). The BIS ratio is the bank's equity capital ratio proposed by the Bank for International Settlements (BIS), and is used as an indicator to check the soundness of bank management. Managers have an incentive to use allowance for bad debts as a means of managing earnings, so they try to maintain and manage the BIS ratio through the amount of allowance for bad debts. Therefore, it is intended to analyze how the audit designation system affects the amount of allowance for bad debts of savings banks and thus improves accounting transparency. Regarding audit fees, it analyzes whether the audit fees of savings banks have actually increased according to the designation of auditors. In addition, this study analyzes whether there is a difference in accounting transparency and audit fees after the savings bank incident in 2011.

This study analyzes the impact of the audit designation system on the accounting transparency and audit fee level of savings banks. It is meaningful in that the entire savings bank is divided into savings banks designated auditors and savings banks not designated auditors to analyze the impact of the audit designation system on savings banks' accounting transparency (amount of allowance for bad debts). Savings banks shall regularly classify soundness for loan bonds, securities, provisional payments, receivables, fixed payment guarantees, etc., and accumulate and maintain an appropriate level of allowance for bad debts, as prescribed by the mutual savings banking supervision regulations. Thus, we investigate whether the designation of auditors has the effect of improving the soundness of holding assets and whether earnings management is reduced. The effect of improving asset soundness is analyzed through the ratio of required amount of allowance for bad debts at the end of each fiscal year. If the ratio of required amount of allowance for bad debts increases, because the designated auditor performs accounting audit duties independently and the savings bank transparently classifies soundness, then the quality of assets of savings bank is expected to improve. Whether the earnings management decreased or not is analyzed through the ratio of actual amount of allowance for bad debts. When a designated auditor performs accounting audit duties from an independent position, earnings management in the form of accumulating allowance for bad debt in excess of the required amount of allowance for bad debt is expected to decrease. In addition, it is analyzed whether audit fees increased due to the designation of auditors.

The sample of the study on asset soundness and earnings management of savings banks are a total of 809 samples, including 176 samples with designated auditors and 633 samples with non-designated auditors from 2005 to 2014. The sample of the study on audit fee is 363 samples from 2010 to 2014. There is a limitation to get samples of savings bank, because this data is not publicly disclosed. Thus, the sample period is restricted.

The remainder of this paper consists of the following. In Section 2, research background and prior studies are reviewed, and research hypotheses are set based on this. Section 3 explains a research model for the research hypotheses and describes the sample for empirical analysis. In Section 4, data and the results of empirical analysis for the hypotheses are presented and Section 5 summarizes the research results and presents implications and limitations.

2. Related researches and hypotheses

2.1. Researches on auditor designation system

Researches on auditor designation system is limited because this system is rarely used globally. Especially, Korea use this system, thus some Korean studies have investigated. These studies mainly focused on whether the auditor's independence and audit quality are improved due to the designation of an auditor.

Kwon et al. (2004) analyze whether the auditor retention and auditor rotation of the auditor designation system enhance auditor independence by using discretionary accruals for 811 firm-year sample designated by auditors between 1991 and 2000. As a result of the analysis, discretionary accruals are significantly lower in the designated year of the designated company than in the non-designated year or non-designated company.

Kang and Hwang (2007) measured the difference in discretionary accruals before and after designation of auditors to verify the effectiveness, focusing on the change in the form of appointment of auditors in the case of auditor designation. As a result of the analysis, it was found that the discretionary accruals in the period after designation significantly decreased compared to the period before designation.

Y. Kim and Yi (2013) verified whether the auditor designation improved corporate accounting transparency by measuring profit adjustment measures before and after auditor designation for

companies designated by the Securities and Futures Commission by applying for listing designation from 2005 to 2010.

Even in Korea, where research on the auditor designation system is performed, only research on earnings management using discretionary accruals was studied for the manufacturing industry. Therefore, research on the audit designation system for the financial industry, not the manufacturing industry, has not yet been investigated.

2.2. Researches on allowance for bad debts of financial institutions

The financial industry, which is not a general company, is studying earnings management using the allowance for bad debt, because the allowance for bad debt has the greatest impact on net income as a single item in the financial industry.

Ma (1988) verified profit flexibility through the set amount of loan-loss reserves using 100 US bank panel data from 1980 to 1984. As a result of verifying the relationship between the discretionary part of the allowance for bad debt and the earnings, a significant positive relationship was found. In other words, it showed that U.S. banks are smoothing their earnings with their allowance for bad debt. McNichols and Wilson (1988) studied the phenomenon of income smoothing using allowance for bad debts. As a result of the study, it was found that when a company's management performance is very high or very low, the manager lowers the earnings. This confirmed that when earnings are very high, earnings are lowered for income smoothing, and when earnings are very low, earnings are lowered to increase earnings during the next accounting period.

Moyer (1990) verified whether the bank's managers adjust their earnings for income smoothing and avoid regulatory costs incurred when they fail to meet the standard equity capital ratio regulated by the regulator. The results of the empirical analysis revealed that accounting adjustments using adjustment of allowance for bad debts, amortization of loan receivables and gains or losses on disposal of securities were being made to avoid the regulation of the equity capital ratio, but the phenomenon of income smoothing was not verified. Warfield and Linsmeier (1992) analyzed whether gains and losses in securities disposition were used discretionary for corporate tax management or earnings management using 745 panel data for banks from 1980 to 1985. Consistent results were not found for earnings management, and significant results were confirmed only for corporate tax management.

Chen and Daley (1996) presented the results of a study that verified whether the Canadian banking industry uses allowance for bad debt to avoid the influence of capital regulation. Collins et al. (1995) verified the phenomenon of earnings management, equity management, and corporate tax management using specific accruals approaches with seven variables: gains and losses on disposal of securities, allowance for bad debts, loan intermediate termination fees, common stocks, preferred stocks, and dividends. However, no empirical evidence was presented to support the act of managing the equity capital ratio using allowance for bad debts. M. Kim and Kross (1998) analyzed the capital management phenomenon of U.S. banks due to the change in the capital ratio calculation factor in 1989. Before 1989, when calculating the capital ratio, the set amount of allowance for bad debts was treated as an increase in the capital ratio, but after 1989, it was changed to a decrease item. As a result of verifying capital management by dividing the group into upper capital ratio and lower capital ratio groups, there were no significant results for capital management in the upper group, and only significant results were verified in the lower group. In the lower group, it was shown that the set amount of allowance for bad debts was over-reported before 1989 compared to after 1989.

2.3. Researches on audit fees

Simunic (1980) found that the size of assets of the audited company, the number of subsidiaries, the size of overseas assets, the ratio of accounts receivable to inventory assets, and net loss during the period were significant variables that determine audit fees. However, there was no significant

difference in audit fees between Big 8 and Non-Big 8 accounting firms. Globally, there are Big 8 accounting firms (Arthur Andersen, Arthur Young, Coopers and Lybrand, Deloitte Haskins and Sells, Ernst & Whinney, Peat Marwick Mitchell, Price Waterhouse, and Touche Ross) that dominantly share the audit market at 1980s. Since then, it has been reduced to Big 5 accounting firms (Arthur Andersen, Ernst & Young, Price Waterhouse & Coopers, Deloitte, and KPMG) in the 1990s, and to Big 4 accounting firms (Ernst & Young, Price Waterhouse & Coopers, Deloitte, and KPMG) in the 2000s. Francis (1984) analyzed the study of Simunic (1980) for the audit market in Australia. As a result of the study, it was found that in Australia, Big 8 accounting firms received higher audit fees than non-Big 8 accounting firms, which were the same regardless of the size of the audited companies.

Francis and Strokes (1986) conducted additional study to determine the causes of different research results from Simunic (1980) and Francis (1984). 100 largest and 100 small companies among Australia's listed companies were selected as sample companies, and the two business groups were analyzed using the same research model as Francis (1984). As a result of the study, it was found that there was little difference in audit fees according to the size of accounting firms in the large corporate group, but in the small business group, the audit fees of Big 8 accounting firms were higher than those of Non-Big 8. Therefore, it was interpreted that there was a difference in audit quality between Big 8 accounting firms and Non-Big 8 accounting firms at least in the audit market for small companies.

Maher et al. (1992) empirically analyzed the impact of intensifying competition in the audit market in the United States on audit fees. They examined the pattern of changes in audit fees due to changes in the audit environment. They compared and analyzed audit fees in 1977 and 1981, when the regulations that restricted competition between auditors were eased. As a result of the study, a significant decrease in audit fees occurred between 1977 and 1981, confirming that intensifying competition in the audit market led to a decrease in audit fees. Deis and Giroux (1996) analyzed the relationship between audit fees, audit hours, and audit quality at the time of initial audit. As a result of empirical analysis, it was proved that the price-cutting phenomenon of audit fees is occurring by presenting statistically significantly low initial audit fees. However, despite the low audit fees during the initial audit, the audit time increased, suggesting that high audit quality was maintained.

Bell et al. (2001) empirically analyzed whether the auditor reflects the expected cost of the customer's corporate risk in the audit fee. According to a survey of 422 accounting firms, the audit hour increased as the corporate risk perceived by the auditor increased, but the hourly audit fee did not change. Craswell et al. (2002) analyzed the relationship between audit opinions and audit fees for the audit market in Australia. As a result of the analysis, there was no significant relationship between the audit opinion and the audit fees. These results are interpreted that the audit market is in a fierce competition situation, which may threaten independence (audit opinion) due to the dependence on audit fees of the audited company, but institutional strategy and audit standards help auditors maintaining independence against these threats.

Chaney et al. (2004) investigated whether there was a premium for Big 5 accounting firms through analyzing audit fees of individual companies. As a result of the analysis, it was found that if there was no market pressure to choose Big 5, individual companies appoint auditors with as little fees as possible, and it was reported that Big 5 as a supervisor providing a sufficient level of audit quality to justify the audit premium was not found. Shailer et al. (2004) verified the effect of the degree of the exclusiveness of auditor's position on the audit fees in determining the audit fees. As a result of the analysis, it was confirmed that the degree to which the auditor can exercise discretion in determining the audit fees varies depending on the type of auditor. In other words, the lower the likelihood of an auditor's loss and the higher the risk of an allowable audit, the lower the audit cost was invested by the auditor. In addition, the more competitive the audit market is, the more discounted the audit fee is, while the reduction of audit costs is realized in the audit market with high monopoly power of auditors.

2.4. Research hypotheses

2.4.1. Hypotheses about asset quality

Financial institutions should evaluate the degree of insolvency of their assets every certain period. Reflecting this, the soundness of asset management shall be promoted by preventing the occurrence of unhealthy assets in advance and promoting normalization, specifically, by setting appropriate level of allowances, asking to seek additional collateral. The insolvency of assets causes liquidity problems due to deterioration of asset profitability and fixation of assets. In particular, savings banks, etc., which are deposit collection institutions, incur social costs such as insolvency and injection of public funds to depositors, so the degree of insolvency of their assets should be evaluated in advance and an appropriate response should be made.

In Korea, evaluating the degree of insolvency of assets held by financial institutions is done by asset soundness classification, and each financial law sets criteria for asset soundness classification to induce sound management of financial institutions. The asset soundness classification, which is conducted as a preliminary step to set the allowance for bad debts, is very important for the sound management of financial institutions such as savings banks and has the following meanings.

First, in order to classify asset soundness, it plays a role in maintaining the soundness of savings bank's assets by analyzing and evaluating changes in credit risk of holdings in a timely manner using data collected from customers, and taking necessary measures such as setting appropriate allowance for bad debts according to the degree of soundness. Second, financial institutions must set aside sufficient allowance for bad debts to absorb the risk of inherent loss in their holdings, and the classification of asset soundness is the basis for assessing the risk of loss of their holdings. Third, the BIS-based equity capital ratio (BIS ratio), which is a management indicator of the degree of soundness, is greatly affected by the classification of asset soundness and the setting amount of allowance for bad debts. Fourth, financial institutions must determine whether bonds are recoverable, in order to amortize bonds deemed difficult to recover among their holdings. They determine whether bonds are recoverable in the process of classifying asset soundness.

At the end of the fiscal year, savings banks divide their holdings into five stages: normal, caution, fixed, doubtful for collection, and estimated losses, and set allowance for bad debts prescribed by relevant laws and regulations. Where it is not clear to determine the classification stage of soundness due to ambiguous interpretation of the relevant laws and regulations or due to difficulty to judge the condition of the borrower or collateral, from a conservative point of view, if the soundness classification stage is set transparently, the amount of allowance for bad debts increases. As a result, the quality soundness of the savings bank asset structure is improved. For example, in case that a savings bank's bond may be classified as a "doubtful for collection" or "estimated loss" on the basis of its asset soundness classification, from a conservative point of view, classifying it as "estimated loss" transparently and setting corresponding allowance for bad debts improves the qualitative structure of the assets.

If the designated auditor performs audit work from a relatively independent position compared to the freely appointed auditor and classifies the assets held by the savings bank transparently, the ratio of required amount of allowance for bad debts (the required amount of allowance for bad debts/assets subject to allowance for bad debts) increases. As a result, the qualitative soundness of the asset structure of savings bank is expected to improve. In addition, since some savings banks with designated auditors may have poor asset structures, the ratio of required amount of allowance for bad debts is expected to be higher than that of savings banks with freely appointed auditors. To verify this, the following Hypothesis 1-a is set.

Hypothesis 1-a: The ratio of required amount of allowance for bad debts of savings banks with designated auditor is higher than that of savings banks with freely appointed auditor.

After the financial crisis, the role of savings banks as a financial institution for the common people is significantly weakened. Accordingly, some savings banks expanded their investment in high-risk assets such as real estate PF (project financing) and securities. However, due to the global financial crisis in 2008, the domestic economy has stagnated and the insolvency of savings banks has continued to expand, so large-scale restructuring of savings banks has been carried out since January 2011. As a result, a number of savings banks were liquidated, and the depositors and subordinated bond investors of some savings bank suffered losses, which caused social problems. In addition to the supervisory authorities' sanctions, civil and criminal liability issues were raised for the accounting firm due to poor accounting audits of suspended savings banks. The situation, called the savings bank crisis in 2011, affected external auditors, and after the incident, it is expected to play an audit role from a more independent position than before. Due to this effect, the ratio of required amount of allowance for bad debts after the savings bank crisis is expected to be higher than before the incident. The following Hypothesis 1-b is established to verify this.

Hypothesis 1-b: After the savings bank crisis in 2011, the ratio of required amount of allowance for bad debts is higher than before the crisis.

2.4.2. Hypotheses about earnings management

Earnings management is defined in a different meaning depending on the researcher. Schipper (1989) defined earnings management as "intentional intervention in the process of financial reporting to the outside world with the intention of obtaining any personal gain." She looked at the earnings management method in two main ways. One is to manage earnings while actually affecting the flow of resources by managing investment or financial decisions, and the other is to manage net income by changing the accounting method regardless of the flow of real resources. Healy and Wahlen (1999) defined earnings management as "changing financial information disclosed, by managers intervening in financial reporting or accounting processes, in order to mislead investors or creditors about the firm's economic performance or affect contractual relationships determined by accounting figures." Specifically, for financial companies, previous studies have shown that they mainly use the amount of allowance for bad debts as a way of earnings management because it is very discretionary and easy to manage for financial companies (Collins et al., 1995; Ma, 1988). Therefore, in this study, the ratio of actual amount of allowance for bad debts accumulated by savings banks at the end of the fiscal year is used as a proxy for measuring earnings management. The supervisory authority checks whether the savings bank has legally accumulated allowance for bad debts during the review of the savings bank's business report or on-site inspection, and if it is not implemented, measures such as sanctions are imposed. Thus, there will be no earnings management in savings banks in the form of accumulating less than the required amount of allowance for bad debts by the relevant laws, but it will be possible to manage earnings in savings banks in the form of arbitrarily accumulating in excess of allowance for bad debts. If a designated auditor plays the role of an accounting audit of a savings bank from a relatively independent position compared to a freely appointed auditor, the earnings management in the form of accumulating in excess of allowance for bad debts is less in savings banks with designated auditors than in savings banks with freely appointed auditors. According to Hypothesis 1, auditor designated savings banks transparently classify soundness of assets from a conservative perspective and calculate the required amount of allowance for bad debts at the soundness classification stage as a result of independent audit work. Thus, the incentive to manage earnings in the form of accumulating in excess of the required amount is expected to be small. The following hypothesis 2-a is established to verify this.

Hypothesis 2-a: Earnings management (excessive accumulation of allowance for bad debts) for a savings bank with a designated auditor is less than that of a savings bank with a freely appointed auditor.

The savings bank crisis in 2011 triggered by the expansion of investment in high-risk assets such as real estate PF and securities by some savings banks and the global financial crisis in 2008 is expected to affect the auditors of savings banks. Auditors auditing savings banks after 2011 are expected to play an audit role in a more independent position than before the savings bank crisis. In addition, after the savings bank crisis in 2011, auditors of savings bank classify soundness of assets from a conservative perspective and calculate the required allowance for bad debt, as auditors perform accounting audit tasks from an independent point of view, as shown in Hypothesis 1-b. Therefore, after the crisis in 2011, the incentive to manage earnings in excess of this amount is expected to be small, so the following hypothesis 2-b is established to verify this.

Hypothesis 2-b: After the savings bank crisis in 2011, earnings management (excessive accumulation of allowance for bad debts) for a savings bank is less than before the crisis.

2.4.3. Hypotheses about audit fees

If the supervisory authority designates an auditor, the company shall comply with such request except in special cases, and an audit contract shall be concluded within two weeks from the date of notification of such fact. In addition, it is stipulated that companies and auditors who do not comply with the supervisory authority's request for designation of auditors without justifiable reasons are punished by imprisonment for up to one year or a fine of up to 10 million won (by Act on External Audit of Stock Companies). It can be inferred that a company with designated auditor has a higher audit risk than a company with freely appointed auditor, so a high level of remuneration is determined in terms of compensation for this audit risk (Hwang & Kang, 2006). In other words, considering the high-quality audit service required for the designated auditors, the possibility of accounting intransparency of savings banks with the designated auditors, the exclusive status of designated auditors, and strict actions to auditors in case of audit failure, the audit fee of designated auditors can be expected to be higher than that of freely appointed auditors. Therefore, we establish the following hypothesis 3-a.

Hypothesis 3-a: The audit fees of savings banks with designated auditors are higher than those of savings banks with freely appointed auditors.

After the savings bank crisis in 2011, auditors who audit savings banks would have increased audit risks, such as sanctions on auditors and imposing civil and criminal liability, compared to before this incident. Accordingly, it is expected to play an audit role from an independent standpoint. Consequently, after this incident, the audit fees of auditors who audit savings banks is expected to be higher than before the incident. To this end, we establish the following hypothesis 3-b.

Hypothesis 3-b: After the savings bank crisis in 2011, audit fees for savings banks is higher than before the crisis.

3. Research design

3.1. Research model

3.1.1. Research model for hypothesis 1-a and 1-b

The research model for the verification of Hypothesis 1 was used by modifying the model in which Kang et al. (2009) studied the earnings management of Nonghyup mutual finance in Korea. The

regression model to verify Hypothesis 1-a and 1-b related to asset soundness of savings banks with designated auditors and savings bank crisis in 2011 is as follows.

$$\text{Re_PROV}_{i,t} = \beta_0 + \beta_1(\text{DES_Audit}_{i,t}, \text{CRISIS}_{i,t}) + \beta_2\text{SIZE}_{i,t} + \beta_3\text{NPL}_{i,t} + \beta_4\text{LOAN_Rate}_{i,t} + \beta_5\text{SM_LOAN}_{i,t} + \beta_6\text{CR_LOAN}_{i,t} + \beta_7\text{LONG_LOAN}_{i,t} + \beta_8\text{BIS}_{i,t} + \epsilon_{i,t} \quad (1)$$

Here,

$\text{Re_PROV}_{i,t}$: The ratio of required amount of allowance for bad debts for firm i , in year t

(= Required amount of allowance for bad debts/Assets that is subject of allowance for bad debts)

$\text{DES_Audit}_{i,t}$: Equals to 1 if the savings bank is audited by designated auditor, 0 otherwise

$\text{CRISIS}_{i,t}$: Equals to 1 if the year i is after the savings bank crisis, 0 otherwise

$\text{SIZE}_{i,t}$: The log of total assets for firm i , in year t

$\text{NPL}_{i,t}$: None performing loan ratio (= Non performing loans/Total loans)

$\text{LOAN_Rate}_{i,t}$: The rate of loans (= Total Loans/Total assets)

$\text{SM_LOAN}_{i,t}$: The rate of loans of small and medium-sized enterprises

(= Loans of SMEs/Total loans)

$\text{CR_LOAN}_{i,t}$: The rate of credit loans (= Credit loans/Total loans)

$\text{LONG_LOAN}_{i,t}$: The rate of long-term loans (= Long-term loans/Total loans)

$\text{BIS}_{i,t}$: BIS(Bank for International Settlement) capital adequacy ratio for firm i , in year t

$\epsilon_{i,t}$: Error

$\text{DES_Audit}_{i,t}$ is an explanatory variable to examine the effect of the designation of auditor on improving the asset soundness of savings banks. If the auditor's independence is improved by the designation of an auditor, and the savings bank classifies asset soundness transparently, it will have a positive (+) coefficient value. $\text{CRISIS}_{i,t}$ is an explanatory variable to examine the effect of the savings bank crisis in 2011 on improving the asset soundness of savings banks. If the savings bank classifies assets in a transparent manner and accumulates allowance for bad debts as the savings bank crisis in 2011 affected auditors after the crisis and audited from an independent position than before the savings bank crisis, it is expected to have a positive (+) coefficient value.

3.1.2. Research model for hypothesis 2-a and 2-b

A research model for verifying Hypothesis 2-a and 2-b is set as shown in Equation (2). This research model is established by changing the dependent variable to Ex_PROV in Equation (1) for verifying Hypotheses 1a and 1b and changing $\text{BIS}_{i,t}$ variable to $\text{ROA}_{i,t}$. In the research model, Hypothesis 2-a is supported that if β_1 (the regression coefficient of $\text{DES_Audit}_{i,t}$) has a significant negative (-) value, and Hypothesis 2-b is supported that if β_1 (the regression coefficient of $\text{CRISIS}_{i,t}$) has a significant negative (-) value.

$$\text{Ex_PROV}_{i,t} = \beta_0 + \beta_1(\text{DES_Audit}_{i,t}, \text{CRISIS}_{i,t}) + \beta_2\text{SIZE}_{i,t} + \beta_3\text{NPL}_{i,t} + \beta_4\text{LOAN_Rate}_{i,t} + \beta_5\text{SM_LOAN}_{i,t} + \beta_6\text{CR_LOAN}_{i,t} + \beta_7\text{LONG_LOAN}_{i,t} + \beta_8\text{ROA}_{i,t} + \epsilon_{i,t} \quad (2)$$

Here,

$Ex_PROV_{i,t}$: The ratio of actual amount of allowance for bad debts for firm i , in year t

(= Actual amount of allowance for bad debts/Required amount of allowance for bad debts)

$ROA_{i,t}$: Return on assets before the adjustment

(= (Net income + depreciation expense + income tax)/Total assets)

Other variables have same definitions in Equation (1)

3.1.3. Research model for hypothesis 3-a and 3-b

A model for Hypothesis 3-a and 3-b is set as shown in Equation (3). This research model is established by changing the dependent variable to $FEE_{i,t}$, changing the point of time of control variables to $t-1$, and adding several control variables in Equation (1). Here, the variable of interest is also $DES_Audit_{i,t}$ and $CRISIS_{i,t}$. Hypothesis 3-a is supported if the coefficient of the $DES_Audit_{i,t}$ variable has a significant positive (+) value and Hypothesis 3-b is supported if the coefficient of the $CRISIS_{i,t}$ variable has a significant positive (+) value.

$$FEE_{i,t} = \beta_0 + \beta_1 (DES_Audit_{i,t}, CRISIS_{i,t}) + \beta_2 SIZE_{i,t-1} + \beta_3 NPL_{i,t-1} + \beta_4 LOAN_Rate_{i,t-1} + \beta_5 SM_LOAN_{i,t-1} + \beta_6 CR_LOAN_{i,t-1} + \beta_7 LONG_LOAN_{i,t-1} + \beta_8 BIS_{i,t-1} + \beta_9 NI_{i,t-1} + \sum Year + \epsilon_{i,t} \quad (3)$$

Here,

$FEE_{i,t}$: The log of audit fee for firm i , in year t

(= Required amount of allowance for bad debts/Assets that is subject of allowance for bad debts)

$NI_{i,t-1}$: Net income for firm i , in year $t-1$

$\sum Year$: Year dummy

Other variables have same definitions in Equation (1)

4. Data and empirical results

4.1. Data and sample characteristics

For the analysis of this study, related data from 2005 to 2014 are collected through the Financial Statistical Information System of the Financial Supervisory Service and data held by savings banks. The sample period is limited because much of the data is not publicly available and restricted. The data used in this study are a total of 1,038 firm-year. Among them, 229 firm-year, including 221 firm-year with deficiencies and 8 firm-year, with loan receivables greater than the asset size or the ratio of allowance for bad debts less than 95%, were removed. Therefore, 809 final samples are selected to verify Hypotheses 1-a, 1-b, 2-a, and 2-b. In verifying Hypothesis 3, 363 firm-year are selected as a sample from 2010 to 2014 due to restrictions on audit fee data.

On the other hand, in order to control the effect of outliers on regression analysis, values exceeding the top 1% and the bottom 1% are treated with winsorization techniques for dependent and independent variables excluding dummy variables.

Table 1. Descriptive statistics for hypothesis 1 and 2

Variables	N	Mean	Std. Dev.	Minimum Value	Median	Maximum Value
Re_PROV _{i,t}	809	0.073	0.060	0.012	0.051	0.305
Ex_PROV _{i,t}	809	1.122	0.268	0.996	1.006	2.467
DES_Audit _{i,t}	809	0.218	0.413	0.000	0.000	1.000
CRISIS _{i,t}	809	0.426	0.495	0.000	0.000	1.000
SIZE _{i,t}	809	26.307	0.938	24.144	26.285	28.499
NPL _{i,t}	809	0.086	0.072	0.003	0.062	0.349
LOAN_Rate _{i,t}	809	0.732	0.147	0.172	0.758	0.946
SM_LOAN _{i,t}	809	0.675	0.197	0.113	0.713	0.950
CR_LOAN _{i,t}	809	0.209	0.170	0.001	0.158	0.667
LONG_LOAN _{i,t}	809	0.342	0.215	0.039	0.298	0.960
ROA _{i,t}	809	0.023	0.024	-0.049	0.022	0.089
BIS _{i,t}	809	0.138	0.128	-0.127	0.115	0.896

Table 1 shows descriptive statistics for the sample for Hypothesis 1 and 2. First of all, the average of the dependent variable (the ratio of required amount of allowance for bad debts) is 0.073, which is higher than the median of 0.051. The average of Ex_PROV_{i,t} (the ratio of actual amount of allowance for bad debts) is 1.122, and the median is 1.006. The average of the variable of interest, DES_Audit_{i,t} (designated auditor), is 0.218, meaning that 21.8% of the samples are with designated auditors. The average of CRISIS (savings bank crisis) is 0.426, which means that 42.6% of the samples are in the period after the savings bank crisis.

Table 2 shows descriptive statistics of variables used in the analysis related to audit fees for Hypothesis 3. The mean of the dependent variable FEE_{i,t} (audit fee) is 17.970, and the median is 17.804, which shows a similar distribution to the normal distribution because the natural log value is used. The average of the variable of interest, DES_Audit_{i,t} (designated auditor), is 0.242, which means that the 24.2% of the sample are audited by designated auditors. The average of

Table 2. Descriptive statistics for hypothesis 3

Variables	N	Mean	Std. Dev.	Minimum Value	Median	Maximum Value
FEE _{i,t}	363	17.970	0.767	16.649	17.804	19.519
DES_Audit _{i,t}	363	0.242	0.429	0.000	0.000	1.000
CRISIS _{i,t}	363	0.634	0.482	0.000	1.000	1.000
SIZE _{i,t-1}	363	26.457	0.934	24.285	26.441	28.560
NPL _{i,t-1}	363	0.093	0.069	0.007	0.070	0.324
LOAN_Rate _{i,t-1}	363	0.706	0.135	0.147	0.734	0.908
SM_LOAN _{i,t-1}	363	0.672	0.193	0.125	0.702	0.946
CR_LOAN _{i,t-1}	363	0.804	0.167	0.347	0.851	1.000
LONG_LOAN _{i,t}	363	0.382	0.201	0.065	0.331	0.991
NI _{i,t-1}	363	-0.008	0.031	-0.132	0.003	0.040
BIS _{i,t-1}	363	0.135	0.128	-0.185	0.121	0.896

$CRISIS_{i,t}$ (savings bank crisis) is 0.634 which means 63.4% of the sample is after the savings bank crisis.

4.2. Empirical results

4.2.1. Correlation matrix

Tables 3 and 4 are the results of correlation analysis between variables used in the analyses. The correlation coefficients between the various variables used as the control variables are 0.5 or less, so there is no significantly high correlation. Therefore, we can conclude that there is no multi-collinearity problem. In addition, the results of the multi-collinearity test show that the maximum values of the variance inflation factor (VIF) of the research models are 3 or less. These results also support that there is no multi-collinearity problem.

In Table 3 related to asset soundness and earnings management, the correlation coefficient between the variables of interest $DES_Audit_{i,t}$ and $Re_PROV_{i,t}$ is 0.376, showing a significant positive (+) relationship at the 1% significance level. The correlation coefficient between $DES_Audit_{i,t}$ and $Ex_PROV_{i,t}$ is -0.203 , showing a significant negative (-) correlation at the 1% level. The correlation coefficient between $CRISIS_{i,t}$ and $Re_PROV_{i,t}$ is 0.354, showing a significant positive (+) correlation at the 1% level. The correlation coefficient between $CRISIS_{i,t}$ and $Ex_PROV_{i,t}$ is -0.155 , showing a significant negative (-) correlation at the 1% level.

In Table 4 related to audit fees, the correlation coefficient between the variables of interest $DES_Audit_{i,t}$ and $FEE_{i,t}$ is 0.621, showing a significant positive (+) correlation at the 1% significance level. The correlation coefficient between $CRISIS_{i,t}$ and $FEE_{i,t}$ is 0.415, showing a significant positive (+) relationship at the 1% level.

4.2.2. Regression results for hypothesis 1-a and 1-b

Table 5 is the results of analyzing hypotheses 1-a and 1-b related to asset soundness. In the model for Hypothesis 1-a, the regression coefficient value of the explanatory variable $DES_Audit_{i,t}$ is 0.020 and the t-value is 6.577, showing a significant positive(+) relationship at the significance level of 1%. This is a result of supporting the hypothesis 1-a that savings banks with designated auditors will have a higher ratio of required amount of allowance for bad debts than savings banks with freely appointed auditors. In the model for Hypothesis 1-b, the regression coefficient value of the explanatory variable $CRISIS_{i,t}$ is 0.009, and the t-value is 3.113, showing a significant positive(+) relationship at the significance level of 1%. This is a result of supporting the hypothesis 1-b that the savings bank crisis in 2011 affects auditors and the ratio of required amount of allowance for bad debts increases after the crisis compared to before the savings bank crisis.

4.2.3. Regression results for hypothesis 2-a and 2-b

Table 6 presents the results of analyzing Hypothesis 2-a and Hypothesis 2-b related to earnings management. In the model for hypothesis 2-a, the regression coefficient value of the explanatory variable $DES_Audit_{i,t}$ is -0.052 and the t-value is -2.272 , showing a significant negative(-) relationship at the significance level of 5%. This is a result of supporting Hypothesis 2 that savings banks with designated auditors have less earnings management through excessive accumulation of allowance for bad debts than savings banks with freely appointed auditors. In the model for hypothesis 2-b, the regression coefficient value of the explanatory variable $CRISIS_{i,t}$ is -0.017 , indicating a negative(-) relationship, but it is not statistically significant. Accordingly, the Hypothesis 2-b that the savings bank crisis in 2011 affects the independence of auditors, resulting in a decrease in earnings management compared to before the savings bank crisis is not supported. These results can be considered that the savings bank crisis itself did not affect earnings management through excessive accumulation of allowance for bad debts.

Table 3. Pearson correlations between variables used for hypothesis 1 and 2 (N = 809)

Variables	Ex_PROV_{i,t}	DES_Audit_{i,t}	CRISIS_{i,t}	SIZE_{i,t}	NPL_{i,t}	LOAN_Rate_{i,t}	SM_LOAN_{i,t}	CR_LOAN_{i,t}	LONG_LOAN_{i,t}	ROA_{i,t}	BIS_{i,t}
Re_PROV _{i,t}	-0.222*** (0.000)	0.376*** (0.000)	0.354*** (0.000)	0.006 (0.858)	0.776*** (0.000)	-0.289*** (0.000)	0.007 (0.834)	0.287*** (0.000)	0.270*** (0.000)	-0.360*** (0.000)	-0.028 (0.429)
Ex_PROV _{i,t}	1	-0.203*** (0.000)	-0.155*** (0.000)	-0.016 (0.649)	-0.273*** (0.000)	0.017 (0.633)	0.110*** (0.002)	-0.063* (0.074)	-0.086** (0.014)	0.250*** (0.000)	0.213*** (0.000)
DES_Audit _{i,t}		1	0.163*** (0.000)	0.090** (0.010)	0.289*** (0.000)	-0.077** (0.028)	-0.053 (0.135)	0.152*** (0.000)	0.100*** (0.005)	-0.247*** (0.000)	-0.187*** (0.000)
CRISIS _{i,t}			1	0.140*** (0.000)	0.342*** (0.000)	-0.205*** (0.000)	-0.123*** (0.000)	0.040 (0.259)	0.313*** (0.000)	-0.250*** (0.000)	0.024 (0.495)
SIZE _{i,t}				1	0.011 (0.745)	0.250*** (0.000)	0.231*** (0.000)	0.081** (0.022)	-0.187*** (0.000)	0.074** (0.035)	-0.339*** (0.000)
NPL _{i,t}					1	-0.254*** (0.000)	0.120*** (0.001)	0.049 (0.164)	0.181*** (0.000)	-0.382*** (0.000)	-0.132*** (0.000)
LOAN_Rate _{i,t}						1	0.078** (0.026)	0.008 (0.819)	-0.360*** (0.000)	0.390*** (0.000)	-0.443*** (0.000)
SM_LOAN _{i,t}							1	-0.328*** (0.000)	-0.401*** (0.000)	-0.073** (0.039)	0.036 (0.305)
CR_LOAN _{i,t}								1	0.110*** (0.002)	0.235*** (0.000)	-0.043 (0.220)
LONG_LOAN _{i,t}									1	-0.225*** (0.000)	0.228*** (0.000)
ROA _{i,t}										1	0.052 (0.142)
BIS _{i,t}											1

Table 4. Pearson correlations between variables used for hypothesis 3 (N = 363)

Variables	DES_AudIt _t	CRISIt	SIZE _t	NPL _{t-1}	LOAN_Rate _{t-1}	SM_LOAN _{t-1}	CR_LOAN _{t-1}	LONG_LOAN _{t-1}	NII _{t-1}	BIS _{t-1}
FEE _t	0.621*** (0.000)	0.415*** (0.000)	0.556*** (0.000)	0.305*** (0.000)	-0.076 (0.149)	-0.009 (0.863)	-0.380*** (0.000)	0.046 (0.382)	-0.314*** (0.000)	-0.261*** (0.000)
DES_AudIt _t	1	0.323*** (0.000)	0.062 (0.241)	0.439*** (0.000)	-0.294*** (0.000)	-0.011 (0.841)	-0.194*** (0.000)	0.085 (0.108)	-0.442*** (0.000)	-0.215*** (0.000)
CRISIt		1	0.023 (0.657)	0.255*** (0.000)	-0.157*** (0.003)	-0.151*** (0.004)	-0.088* (0.093)	0.109** (0.039)	-0.152*** (0.004)	0.022 (0.678)
SIZE _{t-1}			1	-0.004 (0.932)	0.287*** (0.000)	0.209*** (0.000)	-0.191*** (0.000)	-0.212*** (0.000)	0.018 (0.727)	-0.314*** (0.000)
NPL _{t-1}				1	-0.152*** (0.004)	0.205*** (0.000)	-0.027 (0.607)	0.050 (0.343)	-0.556*** (0.000)	-0.277*** (0.000)
LOAN_Rate _{t-1}					1	0.061 (0.244)	-0.051 (0.335)	-0.376*** (0.000)	0.192*** (0.000)	-0.398*** (0.000)
SM_LOAN _{t-1}						1	0.499*** (0.000)	-0.305*** (0.000)	-0.120** (0.022)	0.001 (0.985)
CR_LOAN _{t-1}							1	-0.200*** (0.000)	0.074 (0.157)	0.107*** (0.042)
LONG_LOAN _{t-1}								1	-0.152*** (0.004)	0.321*** (0.000)
NII _{t-1}									1	0.186*** (0.000)
BIS _{t-1}										1

Table 5. Regression results for hypothesis 1-a and 1-b

Independent variable	Predicted sign	Dependent variable: Re_PROV _{i,t}			
		Model 1 (H1-a)		Model 2 (H1-b)	
		Coefficient	t-value	Coefficient	t-value
Intercept	±	-0.014	-0.395	0.007	0.170
DES_Audit _{i,t}	+	0.020***	6.577		
CRISIS _{i,t}	+			0.009***	3.113
SIZE _{i,t}	±	0.000	0.214	0.000	-0.289
NPL _{i,t}	+	0.581***	31.027	0.588***	29.947
OAN_Rate _{i,t}	±	-0.020**	-2.056	-0.024**	-2.365
SM_LOAN _{i,t}	+	0.014*	1.945	0.017**	2.252
CR_LOAN _{i,t}	+	0.085***	11.316	0.092***	12.111
LONG_LOAN _{i,t}	+	0.026***	3.960	0.024***	3.545
BIS _{i,t}	+	0.027**	2.309	0.012	1.001
F-value		232.193***		218.973***	
Adjusted-R ²		0.4394		0.683	
N		809		809	

4.2.4. Regression results for hypothesis 3-a and 3-b

Table 7 shows the results of analysis on hypotheses 3-a and 3-b related to audit fees. In the model for hypothesis 3-a, the regression coefficient value of the explanatory variable *DES_Audit_{i,t}* is 0.888 and the t-value is 13.554, showing a significant positive(+) relationship at the significance level of 1%. This is the result of supporting Hypothesis 3-a that the audit fee of designated auditors higher than that of freely appointed auditors. It means that higher audit fees needed considering the provision of high-quality audit services required because of the possibility of accounting uncertainty of savings banks. In the model for verifying hypothesis 3-b, the regression coefficient value of the explanatory variable *CRISIS_{i,t}* is 0.507, and the t-value is 9.908, showing a significant positive

Table 6. Regression results for hypothesis 2-a and 2-b

Independent variable	Predicted sign	Dependent variable: Ex_PROV _{i,t}			
		Model 1 (H2-a)		Model 2 (H2-b)	
		Coefficient	t-value	Coefficient	t-value
Intercept	±	1.312***	5.159	1.317***	5.066
DES_Audit _{i,t}	-	-0.052**	-2.272		
CRISIS _{i,t}	-			-0.017	-0.851
SIZE _{i,t}	±	-0.005	-0.539	-0.005	-0.525
NPL _{i,t}	-	-0.813***	-5.822	-0.844***	-5.936
LOAN_Rate _{i,t}	-	-0.237***	-3.388	-0.248***	-3.535
SM_LOAN _{i,t}	+	0.222***	4.110	0.223***	4.093
CR_LOAN _{i,t}	+	-0.064	-1.099	-0.088	-1.510
LONG_LOAN _{i,t}	+	0.040	0.826	0.049	0.980
ROA _{i,t}	+	2.489***	5.672	2.666***	6.174
F-value		17.479***		16.832***	
Adjusted-R ²		0.140		0.136	
N		809		809	

Table 7. Regression results for hypothesis 3-a and 3-b

Independent variable	Predicted sign	Dependent variable: $FEE_{i,t}$			
		Model 1 (H3-a)		Model 2 (H3-b)	
		Coefficient	t-value	Coefficient	t-value
Intercept	±	6.790***	8.574	8.003***	9.083
$DES_Audit_{i,t}$	+	0.888***	13.554		
$CRISIS_{i,t}$	+			0.507***	9.098
$SIZE_{i,t-1}$	+	0.441***	15.548	0.423***	13.317
$NPL_{i,t-1}$	+	0.704	1.644	0.681	1.409
$LOAN_Rate_{i,t-1}$	±	-0.242	-1.136	-1.066***	-4.766
$SM_LOAN_{i,t-1}$	+	-0.188	-1.198	0.188	1.045
$CR_LOAN_{i,t-1}$	-	-0.681***	-3.954	-1.171***	-6.195
$LONG_LOAN_{i,t-1}$	+	0.140	1.045	0.090	0.610
$NI_{i,t-1}$	-	-1.386	-1.486	-3.880***	-3.835
$BIS_{i,t-1}$	-	0.174	0.756	-0.694***	-2.759
F-value		90.684***		66.255***	
Adjusted-R ²		0.690		0.619	
N		363		363	

(+) relationship at the significance level of 1%. This is a result of supporting the Hypothesis 3-b that audit fees after the savings bank crisis is higher than before the savings bank crisis.

5. Conclusion

This study empirically analyzed the effect of the audit designation system and savings bank situation on accounting transparency (improving asset soundness and reducing earnings management) for savings banks and whether audit fees increased. The effect of improving asset soundness is analyzed through the ratio of required amount of allowance for bad debts, and whether earnings management is reduced or not is analyzed through the ratio of actual amount of allowance for bad debts. The actual audit fee data is used to analyze whether the audit fee increased.

As a result of the analysis, it is confirmed that the savings banks with designated auditors had improved asset soundness compared to the savings banks with freely appointed auditors. This result is attributed to the fact that savings banks classified their assets transparently from a conservative perspective as designated auditors performed accounting audit tasks relatively more independently than freely appointed auditors, or that the original asset structure of savings banks with designated auditors before the designation is relatively poor. In addition, asset soundness improves after the savings bank crisis compared to before the crisis, and the savings bank crisis seems to have had a positive effect on the independence of savings banks' auditors. It means that savings bank crisis caused social controversy, but the actions taken after the crisis bring some positive results. Regarding earnings management, it is found that savings banks with designated auditors had less earnings management through excess accumulation of allowance for bad debts than savings banks with freely appointed auditors. However, it is not confirmed whether earnings management decreased after the savings bank crisis. Regarding the audit fees, the audit fees of the savings banks with designated auditors is higher than those of the savings banks with freely appointed auditors. In addition, the audit fees after the savings bank crisis in 2011 is higher than before the crisis.

This study is meaningful in that it is the first to confirm that the auditor designation system is introduced to savings banks in 1998 and that the system had a positive effect on improving asset

soundness and reducing earnings management. Existing studies only concerns about the earnings management using discretionary accruals for the manufacturing industry, but this study expand the boundary to the financial industry and broadly examines about asset soundness and audit fees. In addition, the claim for an increase in audit fees due to the designation of auditors, which has been raised in the savings bank industry, etc., is confirmed through an empirical analysis. This study also has a contribution because it empirically proved the effect of the savings bank crisis, which caused social controversy in 2011, on the independence of savings banks' auditors, asset soundness, earnings management, and audit fees of savings banks.

This study is expected to provide implications to financial and supervisory authorities, auditors, audited companies, and related stakeholders who formulate or operate the auditor designation system. As the auditor designation system for savings banks has the effect of enhancing the transparency and reliability of accounting information of savings banks as intended, it can provide meaning to how to operate the auditor designation system in the future. Also, policymakers should consider the behaviors of managers based on the results of this study to revise the auditor designation system in the future.

On the other hand, despite the difference from previous studies, this study has the following limitations. First, there is a limitation in that other factors other than the variable factors used in this study that may affect the allowance for bad debts of savings banks are not sufficiently considered. Second, there is a limitation in that the reasons for designating an auditor for a savings bank cannot be analyzed in detail by classifying them in various ways. Finally, it is limited in that it may be difficult to apply the research results directly to the present because it cannot be analyzed with data up to the present time due to data limitations.

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