Capital Management and Loan Loss Provisions - the new U.S. Evidence Under the Basel Accord

Yunxia Zhou, Carol

UQ Business School
The University of Queensland
St Lucia Queensland 4072 Australia
Tel: +61 7 3365 6283
Email: carolchow.zyx@gmail.com

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Abstract

This paper empirically examines capital management mechanisms of the U.S. banks under the Basel capital adequacy accord. An important finding is that Tier I capital (primary capital under the regulatory regime prior to the Basel accord) and Tier II capital management incentives and their associated manipulation mechanisms are significantly different. Banks are likely to decrease (instead of increasing) loan loss provisions for Tier I capital management. In contrast, banks increase loan loss provisions for Tier II capital management. This dichotomy in capital management via loan loss provisions is completely missed out in prior literature. The conflicting effects of loan loss provisions on Tier II capital and earnings are also studied. Results suggest that, among banks with the same level of Tier II capitals, banks would prefer to decrease loan loss provisions for earnings management purpose if there is an earnings decrease from the previous year.

This study further examines cross-sectional variations of identified capital management mechanisms across banks with three different firm-specific characteristics - nonaudit service fee ratios, variability of the ratios, and bank size. Consistent with evidences from non-banking industries, high level of nonaudit service fees strengthens the association between regulatory capital and loan loss provisions. In other words, banks purchased substantial amount of nonaudit services are likely to engage in capital manipulations. Another appealing finding is that, in contrast to the "economic bond" theory, consistent and regular purchases of nonaudit services (low variability) suppress manipulation actions. Lastly, capital management prevails in small banks. These findings not only enrich capital management literature, but also have important regulatory implications.

1. Introduction

Although capital management has been extensively documented in prior research, there is no direct evidence of bank managers' adjustment to the regulatory capital requirement changes in the Basel Accord. Past papers either focus on banks' discretionary behaviors on primary capital prior to the Basel Accord (Greenawalt and Sinkey, 1988; Moyer, 1990; Scholes, Wilson and Wolfson, 1990; Wahlen, 1994; Wetmore and Brick, 1994; Beatty, Chamberlain and Magliolo, 1995), or focus on the marginal transition effect of different capital regulations before and after the implementation of the Basel Accord (Kim and Kross, 1998; Ahmed, Takeda, and Thomas, 1999). This study directly examines the U.S. banks' capital management mechanisms associated with both types of regulatory capital - Tier I capital and Tier II capital under the Basel Accord regime. I also extend prior research by investigating cross-sectional variations of capital management mechanisms, aiming to identify the impact of some firm-specific characteristics on capital management incentives.

Capital management mechanisms via loan loss provisions have been significantly changed since the Basel Accord in 1991[1]. Prior to that, banks must have primary capital ratio exceeding 5.5% to be adequately capitalized. Because the net effect of loan loss provisions on primary capital is the tax shield of loan loss provisions, banks with low primary capital are likely to manipulate regulatory capital upward via increasing loan loss provisions. This positive impact of loan loss provisions on primary capital is supported by empirical literature evidence. Kim and Kross (1998) and Ahmed et al. (1999) both show that the relation between loan loss provisions and primary capital are negative. Similar studies include Greenawalt and Sinkey (1988), Moyer (1999), Whalen (1990) and Beatty et al. (1995). In 1991, the U.S. banks adopted a new capital system called the Basel Capital Accord, aiming to assess bank capital in relation to the underlying risks that a bank is actually facing. This new capital requirement system significantly changed the

[1] The capital-raising target could also be reached via security gains and losses, loan charge-offs, capital notes, common stock, preferred stock, and dividends.

composition and computation of regulatory capital. Tier I capital (mainly equity capital and published reserves from post-tax retained earnings) replaces the primary capital. And more importantly, loan loss reserves, the mechanical link between regulatory capital and loan loss provisions, are no longer included in Tier I capital. Additionally, Tier II capital is introduced as a new regulatory capital component. In contrast to Tier I capital, loan loss reserves are allowed to be incorporated in Tier II capital with an upper limit of 1.25% of risk-weighted assets. Moreover, under the Basel Accord the minimum adequacy requirements of being "adequately-capitalized" are Tier I capital ratio of at least 4% and total capital ratio of at least 8%. These changes substantially alter the relationship between regulatory capital and loan loss provisions, leading to new predictions of bank managers' capital manipulation mechanisms.

Using a sample of 1,609 annual observations of bank holding firms that file Y-9C reports with the Federal Reserve from 2000 to 2005, I identify and explain four important capital management mechanisms in response to the new capital requirements under the Basel Accord. Firstly, I find a positive association between Tier I capital and loan loss provisions. Bank managers are likely to reduce loan loss provisions (instead of increasing loan loss provisions as they did before the Basel Accord) to preserve Tier I capital. This finding is different from Moyer (1990) and Beatty et al. (1995) which document a negative relationship primary capital and loan loss provisions. However, it is indirectly supported by Kim and Kross (1998) and Ahemad et al. (1999). Although they still document that loan loss provisions are negatively related to regulatory capital, the relationship has become less negative between loan loss provisions and Tier I capital since 1991. Secondly, in contrast to Tier I capital manipulation mechanism, banks would increase loan loss provisions in order to push up Tier II capital. Thirdly, this Tier II capital management incentive is particularly strong when the ratio of loan loss reserves to risk-weighted assets is low. Lastly, the conflicting incentives between Tier II capital and earnings are also investigated. Among banks with same level of Tier II capital, banks with earnings decrease from the previous year would prefer to manage earnings by decreasing loan loss provisions.

Besides investigating new capital management mechanisms under the Basel Accord, this study also examines their cross-sectional variations a function of three firm-specific factors – bank size, the nonaudit fee level and its variability. With respect to size, capital manipulations prevail in small banks in comparison with their large counterparts. With respect to the nonaudit service fee level, I find that banks with high level of nonaudit service fee ratios have stronger association between regulatory capitals and discretionary loan loss provisions. Consistent with evidence from non-banking industries, nonaudit services purchased from an incumbent auditor increase auditors' acquiescence to client pressure. As a consequence, banks with high level of nonaudit service fee ratios are more likely to engage in capital manipulation actions. Surprisingly, contradictory to the prevailing theory, I find that regular and consistent nonaudit service purchases (low variability) suppress bank managers' capital managerial incentives. This could be explained by higher litigation cost and detection risk induced by the stringent regulatory interventions on nonaduit services since 2000.

This paper contributes to studies on capital management and loan loss provisions in several ways. Firstly, my results have important regulatory implications. It uncovers a complete series of capital management mechanisms related to the Basel Accord regulation. These findings provide us a clear picture of how bank managers react to the capital regulations under the Basel Accord, and how they change their capital strategies dynamically across different banks. I identify and explain the positive association between Tier I capital and loan loss provisions. This paper is the first one in literature to directly investigate Tier I capital manipulation with a sample period completely within the Basel Accord regime. Kim and Kross (1998) and Ahmed et al. (1999) examine the Tier I capital, with the primary focus on the transitional effect of capital regulatory changes. Although they show some under-provisioning of loan loss provisions in the new Basel regime comparing to periods before 1991, the relationship between loan loss provisions and Tier I capital in these two papers are negative. To extend the research scope of prior related studies, for the first time in literature I also examine the differences of the relation between loan loss

provisions and regulatory capital across banks with different firm-specific characteristics. My results provide important reference to help governance practitioners and academics to develop a more circumspect regulatory approach to detect manipulative actions, and to take appropriate punishment which fit "the crime" identified in this study.

Secondly, this paper suggests researchers to take Tier II capital into consideration in future capital management studies. To my knowledge, this is the first paper to identify features of Tier II capital and its associated capital management mechanism. My results show that, Tier II capital can substantially influence banks managerial decisions, and its manipulation mechanism and implications are totally different from those of Tier I capital. However, the dichotomy of Tier I and Tier II capital are missed out in prior researches. Past studies examine either primary capital (Moyer, 1990; Beatty et al., 1995) or Tier I capital (Kim and Kross, 1998; Ahmed et al., 1999) only. This study reminds researchers to also consider Tier II capital in their future studies in order to have a complete understanding of banks' managerial incentives and actions. I also study the conflicting effect between earnings management incentive and Tier II capital incentive in this paper.

Thirdly, I utilize a series of six loan portfolios to construct more powerful capital management tests. Besides the non-performing loan, total assets and loan loss reserves which are included in prior literature, I add another six categories of loans as additional determinants of nondiscretionary loan loss provisions: loans secured by real estate, loans to commercial and industries, loans to depository institutions, loans to agricultural production, loans to individuals and loans to foreign government. Power of the tests are enhances by better isolating the discretionary portion of loan loss provisions from the nondiscretionary portion. My results show, loans secured by real estate, loans to commercial and industries and loans to individuals have significant explanatory power to loan loss provisions. My findings suggest that, in order to minimize the measurement errors and misspecification problems caused by missing variables,

researchers should take the three additional determinants into consideration in their tests of capital management via loan loss provisions.

This study provides further implications on nonaudit service research. It provides the first banking-industry-specific evidence on the nonaudit service research area. It is an appealing contribution to the literature. Nonaudit service is widely studied as an important economic determinant of earnings management incentive. However, it has not been incorporated in capital research before. To my knowledge this is the first paper to examine nonaudit service fees in the banking industry. I purposely choose to study this research topic in banking context because banking industry provides a better experimental environment by providing a more powerful proxy for discretionary behaviors. Kinney and Libby (2002) review the nonaudit service related literature and attempt to explain the inconsistency of literature results. They suggest that one important way to increase the power of nonaudit service research models is to find a reliably proxy for the real financial reporting quality which can reliably distinguish its discretionary portion from its nondiscretionary portion. Loan loss provisions in banking industry satisfy two key criteria of a good manipulation detection variable they mentioned. Loan loss provisions are very sensitive to hypothesized management behaviors. Furthermore, the nondiscretionary components of loan loss provisions are readily developed by GAAP. Comparing to other literature studies, the nonaudit service tests designed in this specific banking industry study have relatively high test power and reliability.

Lastly, this study promotes a new and important proxy - the variability of nonaudit fee ratios as a new measure of the tightness of economic bond between auditors and auditees. This is the first paper to research nonaudit services from the perspective of its purchase frequency in a time-series manner, instead of the purchase quantity only. One interesting finding is that the impact of nonaudit service purchase frequency on capital management incentives is largely different from the quantity effect documented in prior related researches. This new measure provides us a different research angle to study auditor independence and nonaudit services in future. The rest of

this paper is organized as follows. The next section first reviews literature studies on capital management and nonaduit services, which lead to the hypotheses development in the second part of the section. Section 3 describes the research design. Sample data selecting process and descriptive statistics are also included in section 3. Section 4 presents the main results and discussions. Conclusion appears in section 5.

2. Literature Review and Hypotheses Development

This section starts with a general introduction on the association between loan loss provisions and banks' manipulative behaviors. It is followed by the hypotheses development on capital and earnings management within the Basel capital adequacy regime. Lastly, this paper discusses cross-sectional variations of capital manipulations incentives as a function of three firm-specific factors - firm size, the level of nonaudit fees and its variability.

2.1. Bank manipulation and loan loss provisions

Bank loan loss provisions are very sensitive to the bank managers' manipulation incentives and have substantial influence on capital adequacy ratios. Loan loss provisions are relatively large accruals for commercial banks because ban portfolios are typically 10-15 times larger than equity in banking industry. Loan loss provisions are also the biggest components of the regulatory capitals. Beatty et al. (1995) reported that the mean (8.26 %) and median (5.99 %) of the ratio of loan loss provisions to primary capital was the highest of all tested primary capital components.

Loan loss provisions are closely related to regulatory capitals via the mechanical link with the loan loss reserve[2]. The capital adequacy ratio is the ratio of a bank's regulatory capitals to its highly standardized assets (see Appendix A for further explanation). In both regimes-before or after the Basel Accord implementation, loan loss reserves are included in the regulatory capitals. In the old regime, it was a substantial component of primary capital. Under the Basel framework,

[2] Loan loss provisions are related to loan loss reserves , $LLR_T = LLP_{T-1} + LLP_T - LWO_T$, one unit increase of loan loss provisions increase loan loss reserves by one unit .

although there is an upper limit, loan loss provisions are qualified to be included in Tier II capital (see Appendix B for further explanation). Every one dollar increase of the loan loss provision technically increases loan loss reserves by the same magnitude.

- Insert Appendix A around here -

- Insert Appendix B around here -

Generally, banks are supposed to maintain capital ratios above certain minimum required level. The cost of falling below the capital adequacy requirement can be substantial. Moyer (1990) pointed out that "because regulators are empowered to restrict bank operations, a bank with capitals that regulators consider to be inadequate incurs greater regulatory costs than a bank with adequate capital." Specifically, banks can be subject to sanctions, termination of federal insurance or stringent restrictions on additional loan deposits and investments. Consequently, banks' growth perspectives can be constrained. This tremendous cost of capital inadequacy gives bank managers high incentive to manipulate capital ratios upward especially when it falls short of target level.

Besides regulatory capital, loan loss provisions are sensitive to bank earnings. Taxable net income of a bank can generally be increased by interest income, service revenues, securities gains and losses. It can be reduced by interest expense, operating costs, loan loss provisions, and income tax expense. Banks have difficulties to significantly change interest income or expense, service revenues or operating costs during financial periods or at the year-end. The loan loss provision is the only income component that can be revised interim and adjustable at the year-end. This special feature makes it a natural choice of bank managers' earnings discretion (Greenawalt and Sinkey, 1988; Beatty et al., 1995; Collins et al., 1995).

Loan loss provisions are not only sensitive to capital and earnings measures, they are also highly manipulative with a reasonably low risk of detection. Bank managers' judgments and discretion are necessary in estimating loan loss provisions in each period. And their judgments cannot be possibly changed or replaced. Guided by SFAS No.5, managers can execute judgment in selecting amount and timing of loan loss provision. Although the actual size of loan loss

provision is determined by the effective loan classification system, the decision to classify loans is largely judgmental. Furthermore, the loan loss provision is the only income component that can be revisable interim and adjustable at the year-end. Moreover, the managers have their own private information regarding default risk inherent in the loan portfolios that are not accessible and/ or expensive to be obtained from outsiders. Thus, investors and regulators can hardly verify the validity of the managers' decision of the loan loss provisions. In summary, loan loss provisions can be used as a worthwhile manipulation tool by bank management to reach their desired results and with low detection risk within short periods.

2.2 Hypothesis Development

2.2.1 Capital management

The United States started to implement the Basel Accord through issuance of Federal Deposit Insurance Corporation Improvement Act of 1991. This new capital system seeks to improve existing rules by aligning regulatory capital requirements more closely to the underlying risks that banks face. Since 1991, it is supervised by Board of Governors of the Federal Reserve System (FRB), Office of the Comptroller of the Currency (OCC) and Federal Deposit Insurance Corporation (FDIC). Banks' capital ratios are reviewed regularly on the Call Report or Thrift Financial Report. Moreover, banks are required to do "Capital Adequacy Quantitative Disclosures" on a consolidated basis. This disclosure requirement is applicable to not only parent banks, but also to their significant bank subsidiaries (stand alone or sub-consolidated depending on how the framework is applied).

The Basel Accord substantially changes the association between regulatory capital and loan loss provisions, leading to new predictions about banks manipulation behaviors. Prior to 1991, banks with low primary or total capital ratios are likely to boost up capital ratios by inflating loan loss provisions (Moyer, 1990; Beatty et al., 1995; Kim and Kross, 1998; Ahmed et al., 1999). This is because the net effect of loan loss provisions on primary capital is the tax shield of loan

loss provisions[3]. The loan loss provision account is mechanically linked to retained earnings and loan loss reserves, both of which are included in primary capital in the old regime. Although $X increase of loan loss provisions decreases retained earnings by $X (1-T) (T is the tax rate), it increases loan loss reserves by $X in the same time. Thus the net effect of $X loan loss provisions increase on primary capital is the tax shield of loan loss provisions $X*T.

Under the Basel Accord, not only the composition and computation of regulatory capital are changed, the minimum level requirements are also different. Tier I and Tier II capital are introduced to replace primary and supplementary capital. Tier I capital represents mainly equity capital and published reserves from post-tax retained earnings. It includes shareholder's equity, non-cumulative perpetual preference stock and minority interests. Under the new regime, Tier II capital includes loan loss reserves, preference shares, hybrid capital instrument, subordinate term debt and perpetual debt. More importantly, the association between loan loss provisions and regulatory capital has been changed because 1) different from primary capital, loan loss reserves are no longer included in Tier I capital; 2) different from secondary capital, loan loss reserves have been included as important components in Tier II capital with an upper bound of 1.25% of risk-weighted assets. Furthermore, the Basel Accord brings up minimum capital adequacy requirements from primary capital ratio of 5.5%, total capital ratio of 6%, to Tier I capital ratio of 4% and total capital ratio of 8 % to be "adequately-capitalized"[4] (for the U.S. banks, 8% was implemented at the end of 1992; from 1988 to December 1990, minimum total capital ratio was 7.25%).

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[3] In the income statement, Loan loss provisions are the expenses that should be deducted from income before tax. $NI = (a - LLP)(1-t)$. In the balance sheet, Loan loss provisions are related to loan loss reserves, $LLR_T = LLP_{T-1} + LLP_T - LWO_T$, one unit increase of loan loss provisions increase loan loss reserves by one unit .

[4] The Basel Accord does not define zone of scrutiny. However, the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 specify capital adequacy zones to measure capital strength as follows: Well-Capitalized – total risk-based capital ratio is 10% or more, or Tier I risk-based capital ratio is 6% or more; Adequately Capitalized – total risk-based capital ratio exceeds 8%, or Tier I risk-based capital ratio is at least 4%; Undercapitalized – Total risk-based capital ratio is less 8%, or Tier I risk-based capital ratio is less than 4%;Significantly Undercapitalized – Total risk-based capital ratio is less than 6%, or Tier I risk-based capital ratio is less than 3 %.

It is worthwhile investigating how banks adjust their manipulation mechanisms in response to the above policy changes under the Basel Accord. I expect manipulation mechanisms to change at least in three aspects. Firstly, in contrast to the negative relationship between loan loss provisions and primary capital, loan loss provisions and Tier I capital are positively associated under the Basel Accord. As loan loss reserves are no longer included in Tier I capital, the overall effect of $X increase in loan loss provisions is a reduction in retained earnings by $X (1-t). Loan loss provisions decrease Tier I capital (instead of increasing primary capital in the old regime) starting from 1991. In other words, banks with lower Tier I capital are likely to decrease loan loss provisions to reach the targeted capital adequacy ratios.

Secondly, Tier II capital has become a new option for total capital management under the Basel Accord. Besides 4% of Tier I capital ratio, banks are required to achieve the 8% total capital ratio threshold. Under the new regulation system, although being removed from Tier I capital, loan loss reserves still count as an important part of Tier II capital[5]. $X increase of loan loss provisions raises Tier II capital by $X. This implies that loan loss provisions have net positive impact on Tier II capital. Banks with low Tier II capital can reach total capital requirement via inflating loan loss provisions.

Lastly, the benefit of Tier II capital manipulations will be maximized for banks with low loan loss reserve level. It is required by the Basel Accord that loan loss reserves qualified to be included in Tier II capital is up to 1.25% of risk-weighted assets. This upper bound encourages banks with low loan loss reserves to maximize capital manipulation benefit. On the contrary, banks with loan loss reserves above this upper bound are less likely to engage in Tier II capital

[5] Basel Capital Accord 1998 April version: " General provisions or general loan-loss reserves are created against the possibility of losses not yet identified. Where they do not reflect a known deterioration in the valuation of particular assets, these reserves qualify for inclusion in tier 2 capital. Where, however, provisions or reserves have been created against identified losses or in respect of an identified deterioration in the value of any asset or group of subsets of assets …should therefore not be included in the capital base".

management. Banks with high loan loss reserves generally have high capital, which would reduce their capital management incentives.

Summarized what have been discussed above, my hypotheses are stated as follows:

H1.1: Banks are likely to decrease loan loss provisions to increase Tier I capital in the Basel capital regime.
H1.2: Banks are likely to increase loan loss provisions to increase Tier II capital in the Basel capital regime.
H1.3: Banks with low loan loss reserves to risk-adjusted assets ratios are likely to increase loan loss provisions in the Basel capital regime.

2.2.2 Earnings management

In addition to regulatory capital, loan loss provisions are sensitive to bank earnings management. Thus it is important to control the earnings management incentives in the tests of capital management hypotheses. Earnings management incentives arise because regulators monitor banks based on earnings. Scholes et al. (1990) show that bank managers can lower cost of capital by using earnings to convey private information to investors. Additionally, loan loss provisions are used for earnings smoothing purpose. Laeven and Majnoni (2003) and Hasan and Wall (2004) report worldwide empirical evidences which are consistent with the earnings smoothing hypothesis. Similar researches on earnings management via loan loss provisions also include Greenawalt and Sinkey (1988), Barth, Beaver and WoKson (1990), Clinch and Magliolo (1993), Haw, Jung and Lilien (1992), Collins et al. (1995) and Beatty et al. (1995).

Loan loss provisions are also manageable in the income statement. Taxable net income of a bank can generally be increased by interest income, service revenues, securities gains and losses. It can be reduced by interest expense, operating costs, loan loss provisions, and income tax expense. Generally banks have difficulties to significantly change interest income or expense, service revenues or operating costs during financial periods or at the year-end. As discussed in part 2.2, because both the loan classification process and loan loss provisioning within each

classified loan category are matters of judgment, the loan loss provision account is the only income component that can be revised interim and adjustable at the year-end.

Loan loss provisions purely work as expenses to decrease taxable income in the profit and loss statement. $X increase of loan loss provisions can reduce the net income after tax by $X* (1-T), T is the tax rate. This means that bank managers will be able to report smooth earnings via exercising discretion on the magnitude and timing of loan loss provisions. Both Greenawalt and Sinkey (1988) and Collins et al. (1995) find positive relation between loan loss provisions and reported earnings, implying that banks with poor real earnings performance generally record less loan loss provisions in order to inflate reported earnings. I expect a significant positive relation between real earnings and loan loss provisions. In other words, bank managers would like to decrease loan loss provisions if they would like to increase earnings.

Also, I expect the interaction between earnings management and capital managements via loan loss provisions differ markedly from what it was in the old regime. Loan loss provisions had conflicting impact on earnings and capital before 1991. Although loan loss provisions can increase primary capital, doing so also decrease taxable income in the same time. Differs from that, I expect the Basel capital rules align earnings and capital management incentives. As demonstrated in part 3.1, banks are likely decrease (instead of increase) loan loss provisions to boost up Tier I capital. In order words, $X reduction in loan loss provisions can increase both net income after tax and Tier I capital by $X (1-t). Banks can manipulate earnings upward without worrying about the decrease of capital (as they did in the old regime). I use the earning before tax and loan loss provisions (EBTP) to proxy the real earnings. In addition, in order to test whether banks have different management incentives when they experience complete losses, an alternative variable is used. “LOSS” represents negative EBTP. Banks with low earnings or pure LOSS may have strong earnings management incentives.

In contrast to Tier I capital, earnings management incentive via loan loss provisions conflict with Tier II capital motive. $X reduction in loan loss provisions increases the net income after tax

by $X (1-t), it also decreases the Tier II capital by $X in the same time. It is interesting to investigate bank managers' reaction to Tier II capital management when banks have strong earnings management incentives. This can be done by testing the interaction between Tier II capital and an earnings management incentive variable. Degeorge, Patel and Zeckhauser (1999) suggest that managers tend to manage earnings to exceed three thresholds, and they set priority of meeting one threshold over meeting another. Managers seek to meet zero earnings first, and then earnings of prior corresponding period. Analysts' earnings forecasts are the last targets they intend to meet. In other words, avoiding losses and earnings decreases seems to be the most important goal that managers seek to achieve in their sample period. Similarly, Burgstahler and Dichev (1997) provide evidence that firms manage reported earnings to avoid earnings losses and decreases. Following the literature, I use both negative earnings and earnings decrease as the earnings management incentive proxies to interact with Tier II capital.

I expect a bank to prefer managing earnings instead of Tier II capital when there is a loss or an earnings decrease from the previous year. Degeorge et al. (1999) document that reaching the zero earnings threshold is the firms' highest priority. Banks with good earnings performance can enjoy lower cost of capital. They can also using earnings to convey positive private information to market investors. The earning of the previous year is another important target banks need to beat. Consistent earnings increases, especially earnings increase for longer series can enable banks to benefit from positive market return. After controlling earnings levels, Barth et al. (1995) report that firms with consistent earnings increases usually have higher price-to-earnings ratios. Additionally, this market premium is larger for a firm who maintains a longer series of earnings increases, and the premium is eliminated or diminished when the earnings increase pattern is broken. DeAngelo et al. (1996) quantify the market premium of consistent earnings increases. They show that firms experience an average of 14% negative abnormal stock return in the year the consistent earnings growth pattern is broken. In the study comparing the earnings management between pubic and privately held banks, Betty et al (2002) find that public banks are

more likely to be involved in earnings manipulations. Specifically public banks are more likely to use loan loss provisions to eliminate small earnings decreases, and to report longer strings of consecutive earnings increases. Therefore, among banks with the same level of Tier II capital, I expect banks to have strong incentives to avoid reporting negative earnings or earnings decrease, and the incentive appears to increase in the length of the previous earnings increase string. Furthermore, according to the Basel Accord, Tier II capital upward manipulation space is limited. Tier II capital in total capital can not exceeds 50% of Tier I capital, and loan loss provisions includable in Tier II capital is up to an upper bound of 1.25% of risk-weighted total assets. As discussed above, I summarize my hypothesis as follows:

H2.1: Banks with low earnings before loan loss provisions and tax and loan loss provisions (EBTP) are likely to decrease loan loss provisions to increase earnings in the Basel capital regime.

H2.2: Among banks with the same level of Tier II capital ratios, banks with negative earnings or earnings decrease would like to manage earnings by decreasing loan loss provisions (instead of increasing for Tier II capital purpose) in the Basel capital regime.

2.2.3 Level of nonaudit service fee

The hypothesis of the impact of nonaudit service fees on banks' capital management incentives is motivated by the fact that nonaudit service purchases prevail in the same period as the implementation of the Basel Accord. U.S. banks adopted the Basel Adequacy Accord in 1991. According to SEC reports, nonaudit service fees have increased substantially since the 1990s. Not only nonaudit service fees grow up to 51% of total audit fees (Abbott, Parker and Rama, 2003), the proportion of corporations purchasing nonaudit services has also increased significantly, from 25% in 1991 to 96% in 2000. Is this a coincidence? Or is there any causality between the two events? The association between Basel regulatory capital and nonaudit services raise is really worthwhile to look into. Investigating the nonaudit service impact on capital management incentives is also very important. Same as other non-banking industries, auditors play an important role in banks. Regulators, including Federal Reserve, are interested in the opinions of

external auditors. They regard their opinion as critical reference to facilitate their supervision and monitoring over the institutions they supervise. However, the impacts of nonaudit services have not been empirically examined in banks before. Will the benefits derived from the external audits diminish in banks that purchase large amount of nonaudit services?

It is worthwhile to empirically investigate the association between nonaudit fees and banks' management behavior via loan loss provisions within the new Basel capital adequacy framework. Literature evidences support that nonaudit service fees are associated with observable difference in earnings quality proxies (DeAngelo 1981; Beck et al., 1988; Magee and Tseng 1990; Francis and Ke, 2001; Frankel et al., 2002; DeFond et al., 2002; Ashbaugh et al., 2003). In the banking industry, loan loss provisions have been used as an important measure for financial reporting quality (Scholes, Wilson and Wolfson, 1990; Greenawalt and Sinkey, 1988; Moyer, 1990; Beatty et al., 1995; Collins, et al, 1995; Kim and Kross, 1998; Ahmed et al., 1999). They are closely linked to both earnings and capital by construction. This implies the existence of an empirical relationship between nonaudit service fees and loan loss provisions.

High level of nonaudit services are generally found to have adverse effects on financial quality in many industries (DeAngelo, 1981; Beck, Frecka and Solomon 1988; Magee and Tseng, 1990; Francis and Ke, 2001; Frankel et al., 2002; DeFond et al., 2002; Ashbaugh et al., 2003; Ferguson, Seow, and Young, 2004; Larcker and Richardson, 2004). The adverse impact is mainly explained by the agency theory. Agency theory characterizes auditors' bias as deliberate. Agency theory believes that the provision of nonaudit services aligns auditors and their audited firms closely when nonaudit services become the substantial revenue source of auditors besides their regular audit services. This economic bond increases auditor's incentive to acquiesce the client pressure, including deliberately allowing management manipulations (Simunic 1984; Beck et al., 1988). I expect auditors' acquiescence to managerial behaviors to be even stronger in banks. Banks have capital targets to reach besides earnings. Bank managers can manipulate both regulatory capital and earnings upward simultaneously by reducing loan loss provisions under the

Basel Accord regime. And this, gives bank managers more incentive to "bribe" auditors by providing "bigger rent". Following the agency theory, I hypothesize that nonaudit services strengthen the association between regulatory capital and discretionary loan loss provisions.

H3: Comparing to banks with low nonaudit service fee ratios, banks with high nonaudit fee ratios are more likely to: 1) decrease loan loss provisions for Tier I capital management; 2) increase loan loss provisions for Tier II capital management purpose.

2.2.4. Variability of nonaudit service fees

Besides the level of nonaudit service fee ratios, variability of nonaudit service fee ratios can also influence banks' manipulation behaviors. Variability here describes the purchase consistency in the perspective of frequency. In recent years both the frequency and magnitude of nonaudit service purchase vary vastly across different companies. Even for the same firm, the amount of consumed nonaudit service changes largely from year to year. Banks who have consumed nonaudit services regularly and consistently over years are highly likely to have different capital manipulation incentives from those who only purchase nonaudit service sparsely. This motivates this study to use the variability of nonaudit service fee ratios - a new proxy for the tightness of economic bond between auditors and banks, to investigate the association between nonaudit service fee and capital management incentives from the perspective of purchase frequency under the Basel Accord.

The variability of nonaudit service fee ratios can affect the banks' manipulation incentives in two different ways. Regular and consistent nonaudit service purchases can encourage banks' manipulation engagement. Beck et al. (1988) show that, if the nonaudit services becomes a recurring revenue source of an auditing firm, the economic bond between the firm and its clients is much stronger. They explain that it is the high start-up and switching costs which induce auditors to be more acquiescent to their regular clients. Similarly, Parkash and Venable (1993) demonstrate that because auditors perceive the recurred services as steady annuity, auditee's purchasing behavior of recurring nonaudit services is highly influenced by agency incentives.

Consistent nonaudit service purchases can affect banks managerial behaviors the other way around. In other words, nonaudit services of low variability may constrain managers' manipulation actions. This hypothesis could be especially true after year 2001. Auditor independence has received the highest attention it ever has from researchers, regulators and public investors since 2001. Many research publications have investigated the association between nonaudit services and financial reporting quality (Ferguson, Seow, and Young, 2004; Gore et al., 2001; Larcker and Richardson, 2004; Antle, Gordon, Narayanamoorthy, and Zhou, 2002; Craswell, Stokes and Laughton, 2002; Raghunandan, Read and Whisenant, 2003). Most of these papers demonstrate that nonaudit services are related to potential auditor independence impairment and low accountability of financial reporting. In view of this, many stringent legislative interventions are enacted, aiming to restrict excessive supply of nonaudit services and to require full disclosure of audit fees. For example, SEC issued Final Rule [File No. S7-13-00]: Revision of the Commission's Auditor Independence Requirements (hereafter SEC rule (2000)) in November 2000. This rule requires firms, starting from February 5, 2001, to disclose all detailed audit fee information in recent years. Besides regulatory institutions, as shown by Jere (2006), market investors also react negatively to firms with high nonaudit fees when they perceive the nonaudit service fees as representation of dishonesty and low audit quality. Hence, regular and consistent purchase of nonaudit services within this period would not only pose high litigation risk on auditors, but also trigger negative stock market reactions to audited banks.

The firm-specific standard deviation of nonaudit service fee ratios is used to proxy nonaudit service purchase variability[6] lower the standard deviation, more consistent nonaudit service purchases over sample years. As discussed above, as I do not have any prior directional

[6] Although the SEC (2003) prohibit registrants from purchasing financial information systems design and implementation services and internal audit outsourcing from incumbent auditor, this does not affect data consistency over sample period. Registrants may still purchase many types of non-audit services, including tax compliance and consulting, employee plan audits, consulting on accounting matters, merger and acquisition consulting, and consulting on new debt and equity issues.

prediction on the impact of nonaudit service purchase frequency on capital management incentives, I thus summarize the hypothesis in the alternative form as follows:

H4: Comparing to banks with high nonaudit service fee variability, banks with low variability of nonaudit service fee ratios are more (less) likely: 1) decrease loan loss provisions for Tier I capital management purpose; 2) increase loan loss provisions for Tier II capital management.

2.2.5. Size effect

The associations between regulatory capital and loan loss provisions are not expected to be the same across banks of different size. Thus it is important to investigate the size effect on banks' capital manipulation incentives under the Basel Accord. According to prior related research, the prediction of capital management motives in large banks and small banks both can go two opposing directions.

Prior researches document two-way stories about the manipulation incentives of large banks. Rangan (1998) and Myers and Skinner (2000) show that big firms are more likely to engage in managerial manipulations. Barton and Simko (2002) offer an explanation. Comparing to small firms, they think big firms generally face higher pressure to meet or beat analysts' forecasts because stock market punishes them more severely for losses or falling below analysts' expectations. High costs of missing market expectations induce tremendous demand of manipulations in big firms. On the other hand, these incentives can be restricted by huge reputation cost and litigation risks they may face when they get caught. Being caught of manipulations would substantially diminish their credibility and reputation in the business community which have been buildup after years of effort. As demonstrated in literature, big firms also face higher litigation risk than small firms (Bonner, Palmrose and Young, 1998; Kellogg, 1984; Lys and Watts, 1994; Stice, 1991). Besides the reputation and litigation constraints, strong bargaining power possessed by big firms can also lower their manipulation incentives. Bishop (1996) tests a "too big to fail" hypothesis in his paper. As shown by the results, large banks could

continually violate capital adequacy requirements without provoking regulatory interventions because they are "too big to fail".

Similarly, current literature has opposing views on manipulation incentives of small firms. Small firms generally have higher manipulation demand to achieve smooth performance. Because of lack of diversification and small production scale, financial performance of small firms is normally more volatile than large firms. For the same level of adverse change in external market environment, small firms usually suffer more drastic earnings decreases or losses. In additional to small firms' higher manipulation demand, their inefficient internal auditing and control systems facilitate them to engage in real manipulation actions with reasonably lower detection risk. However, the story can go the other way around. Small firms on the whole are subject to very strict oversight by federal regulators and market investors than their large size counterparts, which suggests that discretionary behaviors are less likely.

Therefore I do not have any prior prediction of the direction of size effect on banks' manipulation incentives. I state the hypothesis as follows:

H5: Small banks are more(less) likely to have capital management incentives. In other words, small banks are more (less) likely to: 1) decrease loan loss provisions for Tier I capital management 2) increase loan loss provisions for Tier II capital management purpose.

3. Research Design

Regulatory capital, earnings and other control variables in the basic capital management tests are described in section 3.1. Section 3.2 is about the design of capital management differences across different banks. Following that, I present discretionary loan loss provisions estimation in section 3.3. Lastly, I report sample selection process and descriptive statistics in section 3.4.

3.1. Regulatory capital and earnings variables

The basic capital management hypotheses tests are designed based on banks' managerial manipulation incentives identified in literature. Unlike other industries, private contract incentives,

such as bonus plans, debt agreements and costs of capital, do not influence bank manager's accounting choices as much as they do in non-banking firms. Smith and Watts (1986) compare the impact of bonus plans and costs of capital in banks and non-banks. They report that only 67% of banks have accounting-based bonus plans. In contrast, the percentage is as high as 91% in non-banking firms. They also examine the impact of capital costs on banks' accounting choices. Their results show that the impact is very trivial and insignificant. Moyer (1988) further demonstrates that there is no association between dividend covenants and accounting adjustments in commercial banks. The two most recognized accounting-adjusting motivations in the banking industry are regulatory capital adequacy requirements and earnings (Greenawalt and Sinkey, 1988; Moyer, 1990; Beatty et al., 1995; Stinson, 1993; Collins et al., 1995). My capital management detection model (formula 1) is designed based on these two well-understood management incentives.

Tier I capital and Tier II capital (T1C, T2C) are used to capture the capital management incentives under the Basel Accord. It is important to test these two regulatory capitals together because bank managers can manage to achieve regulatory capital adequacy requirements through excising discretions on either one of them. Furthermore, as previous demonstrated, the management mechanisms associated with Tier I capital and Tier II capital are totally different under the Basel Accord. Following Kim and Kross (1998) and Ahemad et al. (1999), I use adjusted Tier I capital and adjusted Tier II capital (see Appendix C for Tier I and Tier II capital adjustments). In order to capture the significant impact of loan loss reserve levels, I also include the ratio of loan loss reserves (before loan loss provisions of current year) to risk-weighted assets (LLR) in the model. Because loan loss reserves includable in Tier II capital are limited to 1.25% of risk-weighted assets in the Basel regime, banks with different levels of loan loss reserves would have different capital management incentives. In addition, to examine the conflicts between Tier II capital and earnings management incentives, I add two dummy variables to interact with Tier II capital, NEG and DECRE. As hypothesized in section 3.2, among banks with

same level of Tier II capital, banks with a loss or an earnings decrease from the previous year may choose to decrease loan loss provisions for earnings management purpose instead of increasing loan loss provisions. NEG equals to one if there is a loss in a bank, and DECRE equals to one if there is an earnings decrease from the previous year. These two earnings management incentive proxies are represented by EAR in the model. Interaction between Tier II capital and each of the two proxies are tested separately.

<–Insert Appendix C around here–>

As earnings are mechanically linked with loan loss provisions, it is necessary to control the earnings management incentive. EBTP, earnings before taxes and loan loss provisions deflated by total assets, is used to proxy for banks' real earnings in the model. In addition, I included another variable (LOSS), the negative earnings before taxes and loan loss provisions to examine whether bank managers behave differently when there is a loss.

$$DLLP = b_0 + b_1 T1C + b_2 T2C + b_3 T2C * EAR + b_4 LLR + b_5 EBTP + b_6 LOSS + b_7 \text{BIGFIVE} + b_8 LEVERAGE + e \quad (1)$$

where

DLLP	Discretionary loan loss provisions;
T1C	Ratio of Tier I capital (before loan loss provisions) to risk-weighted total assets;
T2C	Ratio of Tier II capital (before loan loss provisions) to risk-weighted total assets;
LLR	Ratio of Loan loss reserves (before loan loss provisions) to risk-weighted total assets;
EAR	Earnings management incentive dummy variables: NEG or DECRE;
NEG	Dummy variable, equals to one if there is a loss in a bank;
DECRE	Dummy variable, equals to one if there is an earnings decrease from the previous year;
EBTP	Earnings before taxes and loan loss provisions/average total assets
LOSS	Negative earnings before taxes and loan loss provisions/average total assets;
BIGFIVE	Dummy variable, equals to 1 if the sample firm is audited by one of the five auditing firms: Arthur Andersen (AA), Deloitee & Touché (D&T), Ernst & Young (E&Y), KPMG (KPMG), or PricewaterhouseCoopers (PWC);
LEVERAGE	Ratio of total liability to average total assets;

Also, I include two additional control variables in the research model - LEVERAGE and BIGFIVE. Prior studies show that discretionary accruals are generally associated with leverage levels (DeFond and Jiambalvo 1994; DeAngelo, H., L. DeAngelo, and Skinner, 1994; Becker et al., 1998). It is important to control the relationship between leverage and loan loss provisions as the leverage level is an important bank performance indictor.

The loan loss provisioning differences among banks with Big 5 and non-Big 5 auditors are also examined by including the BIGFIVE variable. It is interesting to investigate this issue in banks. Researchers generally believe that Big 5 auditors have high financial reporting quality. They are more conservative because of the higher litigation risks and adverse reputation effect they may face if they get caught by supporting and/ or failing to report detected misbehaviors in clients' financial reports. Comparing to non-Big 5 auditors, they have " more to lose" (DeAngelo, 1981; Reynolds and Francis, 2000). However, they may also have "more to gain" in the same time in banking industry. Banks managers can simultaneously manipulate both earnings and regulatory capital upward by reducing loan loss provisions under the Basel Accord. This incremental benefit of loan loss provision manipulation may give bank managers stronger incentives to "bribe" auditors by providing "bigger rent".

3.2. Firm-specific characteristics variables

Cross-sectional variations of capital management mechanisms across different banks are tested by allowing interactions between regulatory capital and three firm-specific characteristics. The differences in banks' firm-specific characteristics are proxied by three dummy variables, HNAF, VAR and SIZE. HNAF equals to one if a bank's nonaudit fee ratio (the ratio of nonaudit fees to total fees) is above the sample mean, and zero otherwise. VAR describes the difference in nonaudit service purchase pattern (variability) across banks. It equals to one if the standard deviation of a bank's nonaudit fee ratios is below the sample mean. I also use an alternative VAR

measure for robustness check - the rank of standard deviation of nonaudit fee ratios. It equals to one if it is in the highest rank decile in the sample, and 10 if it is in the lowest rank decile. Size effect on capital management is examined through SIZE dummy, which equals to one if a bank's total asset is below the sample mean level. The interaction terms between regulatory capital and each of these dummy variables are added into the basic model. Formula (2) is an illustration of the regression of cross-sectional variations of capital management mechanisms across different banks by using HNAF as a demonstration.

$$\begin{aligned} DLLP = {} & b_0 + b_1 T1C + b_2 T2C + b_3 T2C * EAR + b_4 LLR + b_5 EBTP + b_6 LOSS \\ & + b_7 T1C * HNAF + b_8 T2C * HNAF + b_9 LLR * HNAF + b_{10} EBTP * HNAF \\ & + b_{11} LOSS * HNAF + b_{12} \text{BIGFIVE} + b_{13} LEVERAGE + e \end{aligned} \quad (2)$$

3.3. Estimation of discretionary loan loss provisions

I use discretionary loan loss provisions as the dependent variable to examine the financial reporting quality in the banking industry. Comparing to other financial reporting quality measures in non-banking industries, loan loss provisions can detect discretionary behaviors more effectively. Loan loss provisions better satisfy two critical criteria of a good manipulation detection tool. First, loan loss provisions are very sensitive to both capital and earnings management incentives. Loan loss provisions are linked to regulatory capital and earnings by construction. Second, nondiscretionary portion of loan loss provisions can be reliably isolated from the discretionary portion. Nondiscretionary loan loss provisions can be readily developed. Researchers rely on the generally accepted accounting principles (GAAP) to understand what fundamentals should be reflected in the loan loss provisions in absence of management manipulations. Following Beatty et al. (2002), I analyze the nondiscretionary loan loss provisions based on a series of loan portfolio characteristic variables identified under GAAP:

$$LLP_{it} = a_{it} + b_0 LASSET_{it} + b_1 \Delta NPL_{it} + b_2 LLR_{it} + b_3 LOANR_{it} + b_4 LOANC_{it} + b_5 LOAND_{it} + b_6 LOANA_{it} + b_7 LOANI_{it} + b_8 LOANF_{it} + e_{it} \quad (3)$$

LLP	=	Loan loss provisions deflated by the average loans;
ΔNPL	=	Change in nonperforming loans deflated by the average of beginning and ending total loans;
LASSET	=	Natural log of total asset;
LLR	=	Loan loss reserves deflated by the total loans at the beginning of the year;
LOANR	=	Loans secured by real estate deflated by total loans;
LOANC	=	Commercial and industrial loans deflated by total loans;
LOAND	=	Loans to depository institutions deflated by total loans;
LOANA	=	Loans to finance agricultural production deflated by total loans;
LOANI	=	Loans to individuals deflated by total loans;
LOANF	=	Loans to foreign government deflated by total loans

Nondiscretionary loan loss provisions are generally evaluated based on the credit risk assessment and loan loss possibilities. The complete series of loan portfolio variables in formula (3) fairly reflect credit risk associated with loan portfolios. Size effect, regional effect and specific function of different loan categories are also fully controlled in the regression. Residuals from the regression discretionary loan loss provisions in this study.

3.4 Sample and descriptive statistics

I use a sample of bank holdings firms with annual observations from year 2000 to year 2005. All sample banks have SIC code of 6021 or 6022. In addition, to be included in the study, a bank must satisfy the following requirements:

- has fiscal year-end of December 31
- has at least four years of consecutive data.
- with total asset above $500 million
- loan portfolio variables needed to calculate discretionary loan loss provisions are available from Y-9C in CFRB of FRBC[7]
- DEF 14A proxy statement for audit fees matrix data and 10-k report for non-performing loan data are available from EDGAR[8]
- control variables data available from Compustat

[7] Federal Reserve Bank website of Chicago.
[8] EDGAR: SEC Filings and Forms.

Gunther and Moore (2003) investigate mandated loan loss provision revision instances. They report that all banks (except six banks) with mandated revisions are small banks with total assets less than $500 million. In order to make sure all bank managers in my sample are tacitly allowed by regulators to excise judgments on loan loss provisioning, banks with total assets below $500 million are deleted. I also remove banks with merger and acquisition transactions happened during the sample period. Merger and acquisition transactions demand considerable extra audit and nonaudit services besides those generated from normal operations. The above selection process leaves 1609 bank-year observations from year 2001 to 2005 in my sample. One year data is lost due to the necessary differencing process in the estimation of nondiscretionary loan loss provisions.

Table 3.1 presents sample descriptive statistics. Banks in this sample are generally well-capitalized. The average T1C is 12.43%, higher than the 4% minimum level required by the Basel Accord. In contrast, T2C is relatively low with a mean of 1.26%. This is not surprising because Tier I capital is the dominant regulatory capital component which can be used to absorb the losses without ceasing a bank's existence. It is the major indicator of a bank's capital adequacy. The average ratio of loan loss reserves to beginning total loan is 1.15%. The mean ratio of EBTP is 6.9% and the mean return on asset (ROA) is 1.1%. These are consistent with what observed in prior studies. Loans are major bank assets. Untabulated table shows that the mean (median) of total loan to total asset ratios is 66.28 % (67.45%). This implies that loan loss provisions are important bank accruals. As shown in Table 3.1, the mean and median ratio of loan loss provisions to average total loans is 0.4 % and 0.3% respectively. Ratio of loan loss provisions to earnings (EBTP) is also very high, with a mean of 15.85 % and median of 11.05%.

<– Insert Table 3.1 around here –>

Table 3.2 - 3.4 present the descriptive statistics of nonaudit services and audit services. Audit and nonaudit service fee data become available in year 2000. According to the Section II.C.5 of SEC rule (2000), firms are required to disclose audit fee, financial information system design and

implementation fee (IS hereafter)[9] and "all other fees" (audit-related service fee, tax service fee, and other fees). This rule narrowly defines nonaudit fee as the sum of IS fee and all other fees. Basically, nonaudit fee is generated from all services except 10-Ks audit and 10-Qs review services. As shown in Table 3.2, nonaudit fee ratios are significantly lower than audit fee ratios. The mean of nonaudit fee ratios is 29.27 % and the median is 26.31%, while the mean of audit fee ratios is 70.73 % and median is 73.69%. Nonaudit fee ratios are even less than half of audit fee ratios. This differs from what has been observed from non-banking industries. Nonaudit service fees are almost 50% of total fees in non-banking industries. Frankel et al. (2002) report that the mean of nonaudit fee to total fee ratios in their sample is 49%. The percentage of nonaudit fee in total fee also has a mean of 47.73% in Ashbaugh et al. (2003) sample. The relatively low nonaudit service proportion may be specific to the banking industry. Stringent supervision and monitoring system in this highly regulated banking industry suppress excessive nonaudit service purchases.

Panel B describes fee distributions of three important nonaudit services: audit-related service, tax service and all other services. Results show that they are evenly distributed. The average ratio of each of the three nonaudit service components to total services is 10%. This also seems to be unique to the banking industry. Audit-related services are far more recurring than the other two engagements in other industries. In contrast, banks may have much higher demand for tax services and "all other services" than non-banking industries. For example, tax services become especially prevalent in recent years. Banks purchase large amount of tax services, hoping to save tax expenses via auditors' professional arrangements. Moreover, banks require more consulting services on merger and acquisition transactions or new equity issuing which are included in the category of "all other services".

<– Insert Table 3.2 around here –>

[9] Required by Sarbanes-Oxley Act of 2002(July 30, 2002), audit firms are prohibited from providing services such as financial information system implementation and design, internal auditing, and a number of other services.

I compare audit fees charged by Big 5 auditors and non-Big 5 auditors in Table 3.3. The average total fees charged by Big 5 auditors is 2083.18 (all fees are in thousands of dollars), much higher than fees charged by non-Big 5 auditors (167.18). One explanation is that most of the clients of Big 5 auditors are larger than those of non-Big 5 auditors. Besides that, as literature papers documented, Big 5 auditors generally charge higher premiums for their recognized industry specializations, high audit quality and reputation.

Average nonaudit fee ratios of banks audited by Big 5 auditors (28.45%) are not significantly different from banks audited by non-Big 5 auditors (30.04%). Nevertheless, the nonaudit fee ratios from both Big 5 auditors and non-Big 5 auditors are much higher than the 10% level reported by SEC rule (2000)[10]. This implies that the high level of nonaudit service provision may pose potential threats to auditor independence and financial reporting quality in the banking industry.

<– Insert Table 3.3 around here –>

<– Insert Table 3.4 around here –>

I did trend analysis on audit fees, audit fee ratios, nonaudit fees and nonaudit fee ratios, aiming to see if there is any significant distribution pattern over years. Audit fees and nonaudit fees have never been examined in a time-series manner in literature before. We can observe from Table 3.4 that nonaudit service fees and nonaudit fee ratios continuously shrink from year 2001 to year 2005, and the decrease becomes substantial starting from year 2003. Banks audited by Big 5 auditors and non-Big 5 auditors all have the same nonaudit -service -fee-declining pattern.

Strict regulatory rules on nonaudit services enacted since 2000 may cause the decrease of nonaudit services. SEC rule (2000) requires stringent scrutiny on both the supply and disclosure of nonaudit services. Together with other legislative rules, SEC rule (2000) calls for public concerns of auditor independence and accounting reporting quality. As a consequence, market investors react negatively to firms with high nonaudit fees when they perceive the nonaudit

[10] In SEC (2000) report, the 1999 data shows that non-audit fee is only 10% of total fee, and only 75% of firms purchase non-audit service.

service fees as representation of dishonesty and low audit quality (Jere, 2006). Therefore, heavy purchase of nonaudit services during this regulating period would not only pose higher litigation risk on auditors, but also trigger negative stock market reactions to audited banks.

4. Empirical Results

Empirical results of both Tier I capital and Tier II capital management mechanisms are consistent are reported in section 4.1. Section 4.2 shows bank mangers' response to the situation where earnings management incentive conflicts with Tier II capital management purpose. Section 4.3 presents the impact of both nonaudit service fee level and variability on capital management incentives, followed by the evidence of size effect in section 4.4. Lastly, section 4.5 describes the interactive effects of three firm-specific characteristics on capital management incentives.

4.1 Evidence on capital management

I test the capital management hypotheses in the basic model and present results in Table 4.1. The associations between regulatory capital and loan loss provisions differ significantly from what we have observed from prior studies. Coefficient of TIC is significantly positive (0.0003, two-tailed *p*-value 0.00). This is consistent with my hypothesis that Tier I capital is positively related to loan loss provisions, that is, lower Tier I capital is associated with lower loan loss provisions. Because loan loss reserves are removed from Tier I capital, the net effect of loan loss provisions on Tier I capital is the negative tax shield. Banks with lower Tier I capital are likely to increase Tier I capital by reducing loan loss provisions (instead of increasing as they did before the Basel Accord implementation). This finding is indirectly supported by two prior studies. Although there is no direct evidence of positive association between Tier I capital and loan loss provisions, Ahemad et al. (1999) report that the association between regulatory capital and loan loss provisions has become less negative since the implementation of Basel Accord. Kim and Kross (1998) also compare the capital management behaviors before and after the Basel Accord.

They show that banks with low capital ratios in the 1990 to 1992 (the Basel regime) sample generally have less loan loss provisions than banks in the 1985 to 1988 (the prior-Basel regime) sample. Besides the empirical evidences, my finding is also consistent with industry practice. There are quite many well-known bank loan loss under-provisioning cases happened worldwide, for example, in French Credit Lyonnais in 1993, Thailand in 1997, Japan in late 1990's (Genay, 1998), and more recently, China.

Table 4.1 also reveals the association between Tier II capital and loan loss provisions. Tier II capital has become an alternative capital management option in addition to Tier I capital because the Basel Accord allows loan loss reserves to be included in Tier II capital. As hypothesized, loan loss provisions affect Tier II capital positively through the included loan loss reserves. This is proved in Table 4.1. The coefficient of T2C is significantly negative (-0.0002, two-tailed *p*-value, 0.00), implying that banks can choose to inflate Tier II capital by increasing loan loss provisions. The association between loan loss reserves and loan loss provisions is also examined in Table 4.1. LLR has a negative coefficient, significant at 5% level (-0.0101, two-tailed *p*-value, 0.00). This finding suggests that, because loan loss reserves includable in total capital is limited to 1.25% of risk-weighted total assets, banks with less loan loss reserves can better maximize the capital management benefits comparing to banks with high level of loan loss reserves, therefore they are more likely to engage in loan loss provision manipulations.

<– Insert Table 4.1 around here –>

Table 4.1 reports the loan loss provisioning differences among banks audited by Big 5 auditors and non-Big 5 auditors. Coefficient of BIGFIVE is significantly negative (-0.0004, two-tailed *p*-value, 0.01). That is, banks audited by Big 5 auditors have less discretionary loan loss provisions than banks audited by their non-Big 5 auditors. This finding is consistent with literature evidences. Becker et al. (1998) and Francis, Maydew and Sparks (1999) find that Big 5 auditors usually report lower level of discretionary accruals than non-Big 5 auditors. Also, Gore, Pope and Singh (2001) study the associations between several earnings quality proxies and

nonaudit service fees. They directly show that non-Big 5 auditors are more acquiescent to clients' earnings management behaviors. In contrast, they do not find any significant relationship between discretionary earnings and nonaudit fees in firms audited by Big 5 auditors. This can be explained by higher litigation risk and adverse reputation cost Big 5 auditors face. The explanation is that generally Big 5 auditors have substantial number of clients thus they have "more to lose" if they get caught by supporting and/ or failing to report detected misbehaviors in clients' financial reports (DeAngelo, 1981; Reynolds and Francis, 2000). As for leverage level, different from prior studies (DeFond and Jiambalvo 1994; DeAngelo et al., 1994; Becker et al., 1998), the coefficient of LEVERAGE is insignificant. Leverage does not have much explanatory power to discretionary loan loss provisions in my sample.

4.2 Conflicts between earnings and Tier II capital

Because loan loss provisions are by nature, mechanically associated with earnings, I control earnings management incentive via EBTP (earnings before tax and loan loss provisions) in the basic model. The coefficient estimate of EBTP is significantly positive in table 4.1 (0.0003, two-tailed *p*-value, 0.01). Because loan loss provisions are expenses set aside for doubtful loans, loan loss provisions effectively decrease net income after tax. Bank managers thus can decrease loan loss provisions when real earnings is low, and inflate loan loss provisions to reserve earnings for a "better tomorrow" when real earnings is far above or below earnings targets.

As shown in table 4.1, LOSS, lacks explanatory power in the test. Insufficient banks with negative earnings data in my sample can explain the insignificant coefficient of LOSS. Differs from non-banking firms, banks are generally less likely to have negative earnings under normal circumstances. I carefully scrutinized my sample and found very few banks with losses indeed. Also because of the loss data insufficiency, untabulated tables show the interaction term between Tier II capital and one of the earnings management incentive proxies, T2C*NEG (NEG equals to one if there is a loss in the bank) is not significant.

Evidence of the conflicting effect between Tier II capital and another earnings management proxy, DECRE, is presented in Table 4.1. DECRE equals to one if there is an earnings decrease from the previous year in a bank. Opposite to the negative sign of T2C coefficient, T2C*DECRE estimate has a significantly positive sign (0.8173, two-tailed *p*-value, 0.00). That is, among banks with the same level of Tier II capital, those banks that experience earnings decreases from the previous year would prefer to manipulate earnings upward via loan loss provisions reduction. This is consistent with Betty et al (2002). They show that public banks use loan loss provisions to eliminate small earnings decreases. Earnings from the previous year is not only a very important earnings target banks need to beat, many literature papers also demonstrate that banks can enjoy many incremental benefits from consistent earnings increase. After controlling earnings levels, Barth et al. (1995) report that firms with consistent earnings increases usually have higher price-to-earnings ratios, and this market premium goes larger when the string of earnings-increase goes longer. DeAngelo et al. (1996) even quantify the market premium brought by consistent earnings increases. They show that firms can suffer from an average of 14% negative abnormal stock return in the year when the consistent earnings growth pattern is broken.

4.3 Evidence on nonaudit services

Table 4.2 presents the variations of capital management mechanisms across banks with different level of nonaudit fees. The coefficient of T1C*HNAF is positive (0.0002, two-tailed *p*-value 0.01), and the coefficient of T2C*HNAF is negative (-0.0003, two-tailed *p*-value 0.02). The signs are in the same directions as the estimates of TIC and T2C in Table 4.1, and both are statistically significant at 5% level. That is, high level of nonaudit service fee ratios strengthens the associations between regulatory capital and loan loss provisions. Comparing to banks of low level of nonaudit service fee ratios, banks with more nonaudit service purchases are more likely to decrease loan loss provisions to boost up Tier I capital, and increase loan loss provisions if they want to manipulate Tier II capital upward. These uncovered differences in the associations

between regulatory capital and discretionary loan loss provisions among banks with various nonaudit fee levels could be explained in two ways. One possibility is that a bank purchases large amount of nonaudit services from its incumbent auditor to meet its real operation needs. The purchased nonaudit services thus tight up the economic bond between the bank and its auditor which encourages the bank to engage in manipulative actions subsequently. The story could go the other way round. In anticipating the manipulation needs in the next period, bank managers deliberately provide rent to auditors by purchasing large amount of nonaudit services, hoping to get auditors' support or acquiescence to its planned manipulative actions.

<– Insert Table 4.2 around here –>

Besides nonaudit fee level, the variability of nonaudit service fee is also expected to significantly affect banks' discretionary behaviors. Banks that consume nonaudit services regularly and consistently should have different manipulation incentives from those banks with sparse and irregular nonaudit service purchases. Two different variability (VAR) measures are tested in Table 4.3. In model (1), VAR is a dummy variable, which equals to 1 if the standard deviation of a bank's nonaudit service fee ratios is lower than the median standard deviation of the sample. In model (2), VAR is defined based on the rank of standard deviations. It equals to 1 if the standard deviation of the nonaudit service fee ratios is in the highest rank decile, and 10 if it is in the lowest rank decile in the sample.

As shown in Table 4.3, the coefficient estimates of T1C*VAR in both models are negative (-0.0002 with two-tailed *p*-value of 0.01 in model (1), and -0.0001with two-tailed *p*-value of 0.00 in model (2)). In contrast, coefficient estimates of T2C*VAR are significantly positive in both models. It is 0.0005 in model (1) and 0.001 in model (2). The signs of both T1C*VAR and T2C*VAR are opposite to signs of T1C and T2C. The real earnings proxy, EBTP, has the same change. In contrast to the positive sign of EBTP in Table 4.1, coefficient of EBTP*VAR is significantly negative (-0.0007 with two-tailed *p*-value of 0.01 in model (1), and -0.0001 with two-tailed *p*-value of 0.02 in model (2)). The sign changes suggest that consistent and regular

nonaudit service purchases not only weaken the associations between loan loss provisions and regulatory capital, but also the link between loan loss provisions and earnings. In particular, banks with low variability of nonaudit service purchases are less likely to manipulate regulatory capital and earnings via exercising discretions on loan loss provisions.

My results show that low variability of nonaudit services purchases suppresses banks' manipulation incentives. This interesting finding provides researchers valuable reference on understanding how banks react to SEC regulations on nonaudit services starting from year 2000, e.g. the SEC Final Rule (2000) and Sarbanes-Oxely Act of 2002. These regulations aim to intervene and regulate both the supply and disclosure of nonaudit services. Both banks and auditors become cautious and conservative in reaction to these stringent regulations. Because regular and consistent nonaudit service purchases can be considered as obvious symptoms of managerial manipulation intentions, banks buy nonaudit services in this manner can easily draw considerable attentions from regulatory institutions within this regulating period. This poses pose high litigation risk on auditors as a consequence. Consistent and regular purchases of nonaudit services also would cause negative market reactions to audited banks if market investors "perceive" that as a sign of dishonesty or low audit quality.

<– Insert Table 4.3 around here –>

This study examines the impact of nonaudit services on the association between regulatory capital and loan loss provisions. However, it does not attempt to investigate whether auditor independence is actually impaired or not. This stand-alone marginal analysis does not infer much about factual independence impairments because auditor independence is not readily observable with real data. I examine the variations of the relation between regulatory capital and loan loss provisions across banks with different nonaudit service fee level and variability, but I can not empirically verify or confirm that auditors deliberately support or acquiesce to banks' manipulations for the sake of nonaudit service income. Advanced and rigorous models which can

probe subjective issues are needed. However, my results provide meaningful implications for further researches on the auditor independence issue in the future.

4.4 Evidence on size effect

Bank size considerably affects banks' regulatory capital management incentives. As shown in Table 4.4, the coefficient of T1C*SIZE is significantly positive (0.0004, two-tailed *p*-value 0.00), suggesting that small banks generally have stronger association between Tier I capital and loan loss provisions. That is, comparing to big banks, they are more likely to decrease loan loss provisions if they have to report higher Tier I capital. Small-size banks also have reinforced Tier II capital manipulation incentive. As verified by the significantly negative coefficient of T2C*SIZE (-0.0013, two-tailed *p*-value 0.00), small banks have higher incentive to increase Tier II capital via boosting up loan loss provisions.

<– Insert Table 4.4 around here –>

The size effect on discretionary loan loss provisions and regulatory capital can be explained by two reasons. First, small banks have higher manipulation needs. Because of insufficient diversification, small production scale and high production cost, small banks suffer from higher performance volatility in comparison with large banks. They thus have higher manipulation demand to achieve smooth and steady reported earnings and regulatory capital. Second, their unsophisticated internal control systems and incompetent internal auditing enable them to benefit from lower detection risk of their misbehaviors, which eventually encourage them to involve in manipulations. In comparison, large banks generally have lower capital manipulation incentives. High litigation risk and high reputation cost can restrain them away from discretionary behaviors (Kellogg, 1984; Stice, 1991; Bonner, Palmrose and Young, 1998). On the other hand, large banks usually possess large bargaining power which reduces their manipulation incentives. Stinson (1993) and Bishop (1996) argue that big banks can continuously violating capital requirements without regulatory intervention because they are "too big to fail".

4.5 Interactions between three bank-specific characteristics

Table 4.5 and Table 4.6 present the interactive effects between HNAF and VAR, and HNAF and SIZE respectively. The previous results show that banks with low variability of nonaudit services generally have weaker association between regulatory capital and loan loss provisions. However, this variability measure only evaluates the nonaudit service purchase frequency. It does not take the purchase magnitude into consideration. It is possible that two banks with the same purchase frequency can differ considerably in nonaudit service fee magnitude. In order to differentiate banks with different nonaudit service fee magnitudes and same level of purchase frequency, I add HNAF into the model to interact with VAR. As shown in Table 4.5, the coefficient of TIC*VAR*HNAF is significant (0.0004, two-tailed *p*-value 0.00) with the same positive sign as T1C. However, it is opposite to the negative sign of TIC*VAR. T2C*VAR*HNAF (-0.0006, two-tailed *p*-value 0.00) follows the same pattern. Its sign is the same as T2C and is opposite to the sign of T2C*VAR. These findings suggest that it is the magnitude of nonaudit service fee dominates banks' capital management incentives among banks of same low nonaudit service fee variability. In other words, if there are two banks who purchase nonaudit service in the same manner (regularly and consistently), the bank who purchases nonaudit service in a larger magnitude is more likely to have stronger association between regulatory capital and discretionary loan loss provisions.

<– Insert Table 4.5 around here –>

<– Insert Table 4.6 around here –>

The interaction between nonaudit service fee level and bank size is also investigated. Table 4.6 presents the results. Although the coefficient of T1C*HNAF*SIZE is not significant, it has the same positive sign as T1C*HNAF. T2C*HNAF*SIZE also has the same negative coefficient (-0.0007, two-tailed p-value 0.01) as T2C*HNAF, and it is statistically significant at 5% level. We can infer from the results that, among banks with the same high level of nonaudit service fees,

small banks are more likely to have strong relationship between regulatory capital and loan loss provisions. In particular, small banks with high level of nonaudit service fee ratios prone to boost up Tier I capital by decreasing loan loss provisions and manipulate Tier II capital upward by increasing loan loss provisions.

5. Conclusion

This paper empirically investigates the U.S banks' capital management mechanisms under the Basel Accord. To provide deeper and more specific evidences on bank managers' responses to new capital requirements, this study also examines the cross-sectional variations of capital management mechanisms across banks of different firm-specific characteristics. Specifically, three firm-specific characteristic factors are considered in this study- bank size, magnitude and variability of nonaudit service fees.

Two types of regulatory capital - Tier I capital and Tier II capital, are examined together for the first time in this study. It is important to note that under the Basel Accord, in addition to Tier I capital, Tier II capital also has substantial impact on capital management incentives Moreover, the capital management mechanisms of Tier I capital and Tier II capital are extraordinarily different. However, this dichotomy is completely missed in the literature.

The capital managements of Tier I capital and Tier II capital via loan loss provisions are both examined in this paper. The results reveal that, specifically: (I) Tier I capital is positively related to loan loss provisions. This finding is different from literature results. Prior papers document negative association between primary capital and loan loss provisions. Because loan loss reserves are removed from Tier I capital under the Basel Accord, and the net effect of loan loss provisions on Tier I capital becomes negative.Thus banks would like to manipulate Tier I capital r upward by decreasing loan loss provisions, instead of increasing as they did prior to the Basel Accord. (II) In contrast to Tier I capital management mechanism, Tier II capital is negatively associated with loan loss provisions. This suggests that banks would choose to increase loan loss provisions to

inflate Tier II capital. (III) Because the loan loss reserves includable in Tier II capital are limited to an upper bound, banks with less loan loss reserves generally have higher Tier II capital manipulation incentives. (IV) Loan loss provisions have conflicting impact on Tier II capital and earnings which is caused by the new capital requirement changes under the Basel Accord. I find out that, among banks with the same level of Tier II capital, banks with earnings decrease from the prior year would choose to decrease loan loss provisions for earnings management purpose, instead of increasing loan loss provisions to boost up Tier II capital. Moreover, unlike the contradictory effects related to Tier II capital and earnings, manipulation incentives of Tier I capital and earnings become consistent under the Basel Accord. Banks are able to increase Tier I capital and earnings at the same time via loan loss provision reduction. Regulators need to pay more attention to this new relationship. The alignment between Tier I capital and earnings may encourage banks to involve in capital management or earnings management actions or both. Bank managers can now manage to increase either capital or earnings without worrying about the decrease of the other as they did prior to the Basel Accord.

Extending the research scope of prior capital management studies, this paper further analyzes the cross-sectional variations of the above identified capital manipulation mechanisms as a function of three firm-specific characteristics factors. It is for the first time in literature that this paper answers the research question how capital manipulation mechanisms change dynamically across different banks. My results show that: (I) in comparison with large banks, capital managements via loan loss provisions prevail in small banks. (II) Consistent with evidence from non-banking industries, high level of nonaudit services purchased from incumbent auditors strengthen the association between bank capital and loan loss provisions. In other words, banks that purchase nonaudit services in large amount are more likely to engage in capital management behaviors. (III) In contrast, nonaudit service purchases of low variability weaken the tie between loan loss provisions and regulatory capital, suggesting that regular and consistent nonaudit service purchases suppress banks' discretionary incentives. (IV) This paper also examines the

impact of the interaction between nonaudit service fee magnitude and purchase frequency. My results indicate that nonaudit service fee magnitude plays a dominant role when banks' nonaudit service purchase frequencies are the same. Among banks with the same nonaudit service purchase pattern, banks with high level of nonaudit service fees are more likely to participate in capital management actions.

The capital manipulation mechanisms and their cross-sectional variations identified in this paper uncover "crimes" possibly conducted by bank managers in response to regulatory changes of the Basel Accord. Based on the results, I can suggest governance practitioners and academics to take a more circumspect regulatory policy approach to detect manipulative behaviors, and take appropriate "punishment" to fit "the crime". Furthermore, my findings can provide valuable reference to regulatory institutions and researchers even if the Basel II is implemented in the United States[11]. Basel II aims to improve the internal risk measurement system by providing a more forward-looking approach, however, the regulatory capital compositions and calculation methods are left unchanged. My findings might also be of interest to auditors. Audit risk and related legal liabilities can be affected by regulatory changes. Understanding banks' capital management incentives and mechanisms can help auditors to lower unnecessary audit risk exposure.

There are several limitations and caveats to this study. First, although this paper examines nonaudit service as one firm-specific characteristic factor when investigating the cross-sectional variations of capital management mechanisms, it does not discuss whether auditor independence is truly impaired or not. This stand-alone marginal analysis can not tell much about that due to the unobservability of auditor independence. Advanced and rigorous models which can probe subjective issues are needed. Thus this study only uncovers the impact of nonaudit services on the association between banks' regulatory capital and loan loss provisions. Second, the impact of

[11] The United States is still having the national regulator implementation of the Basel Accord, but not Basel II.

nonaudit service purchase variability on capital management should be considered in light of my sample selection process. It is possible that purchasing nonaudit services in a consistent and regular manner suppresses banks' managerial actions only for the sample period 2000-2005 when nonaudit services attract the highest regulatory attention ever. Third, limited sample size and time period prohibit the results to be generalized to other samples and other time periods. However, the limitation in sample period is necessary because the nonaudit service fee data becomes available only starting from year 2000. Finally, the uncovered capital management mechanisms in this paper are industry-specific evidence, which have difficulties to be generalized to other non-banking industries.

Going forward, I expect that bank capital managements via loan loss provisions will continue to be the main object of interest in accounting research. There has been recently intense discussion on Basel II which aims to better align bank capital with actual risks facing by banks. In addition to the Basel II amendment that incorporated market risks in 1996, Basel committee issued an agreed text and a comprehensive version of Basel II Framework in June 2004 and July 2006 respectively. It is quite evident that this Basel II will not have much relevance if the bank capital quality is not satisfactory. This paper uncovers the dynamics how bank capital quality is deteriorated by managerial actions and how it is changed across different banks. Therefore, despite the limitations, the evidence of capital management mechanisms and their cross-sectional variations identified in this study have very important and relevant implication in the future even after the Basel II implementation.

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TABLE 3.1
Sample Descriptive Statistics

Descriptive statistics for the sample of 1609 bank holding firm-year observations over the year 2001 to year 2005. All banks 1) file Y-9C reports with the Federal Reserve and 2) disclose audit and non-audit fee data in EDGER.

Variables TIC, T2C and LLR are used to capture the capital management incentives of bank managers; EBTP is used as a proxy for the earnings management incentive. In order to fairly reflect credit risk assessment and loan valuations related to the nondiscretionary portion of loan loss provisions, a series of loan portfolio characteristic variables identified under GAAP are used: NPL, LLR, LOANR, LOANC, LOAND, LOANA, LOANI, and LOANF. These variables effectively control region effect and loans' specific function. Size effect is controlled by the natural log of total asset, LASSET.ASSET is the total assets of bank firms at year end, and is dollar amount in millions.

Variable	Mean	STD	Min	25%	Median	75%	Max
LLP	0.004	0.004	-0.006	0.002	0.003	0.005	0.062
TIC	12.429	3.35	5.386	10.488	11.826	13.484	46.401
T2C	1.260	1.020	0.314	0.753	0.969	1.296	9.849
LLR	0.011	0.035	-0.024	0.007	0.009	0.011	0.895
EBTP	0.069	0.767	-14.041	0	0.091	0.19	19.745
LEVERAGE	1.036	2.388	0.017	0.897	0.908	0.919	49.928
NAF	0.293	0.183	0	0.156	0.263	0.401	0.936
ΔNPL	0.000	0.005	-0.031	-0.001	0.000	0.002	0.032
LASSET	14.200	1.575	12.040	13.118	13.729	14.891	21.125
LLR	0.015	0.005	0.004	0.012	0.015	0.017	0.059
LOANR	0.719	0.143	0.000	0.635	0.742	0.816	0.999
LOANC	0.165	0.100	0.000	0.097	0.141	0.207	0.724
LOAND	0.002	0.014	0.000	0.000	0.000	0.000	0.396
LOANA	0.011	0.026	0.000	0.000	0.002	0.010	0.339
LOANI	0.084	0.083	0.000	0.030	0.062	0.107	0.960
LOANF	0.000	0.001	0.000	0.000	0.000	0.000	0.016
STD(NAF)	0.129	0.07	0	0.075	0.118	0.178	0.363
ROA	0.011	0.004	-0.021	0.009	0.011	0.013	0.047

Variable Definitions

LLP	Loan loss provision deflated by the average loans
T1C	Ratio of Tier I capital before loan loss reserves to the risk-weighted total assets
T2C	Ratio of Tier II capital before reserves to the risk-weighted total assets
LLR	Ratio of Loan Loss Reserves before loan loss provisions to the risk-weighted total assets

EBTP	Earnings before taxes and loan loss provision deflated by the average total assets
LEVERAG	Ratio of total liability to average total assets
NAF	Non-audit service fee to total fee ratio, non-audit service fee is the sum of audit-related fee, tax fees, other advisory fees, IS and all other fees
ΔNPL	Change in nonperforming loans deflated by the average of beginning and ending total loans
LASSET	Natural log of total asset
LLR	Loan loss reserve deflated by the total loans at the beginning of the year
LOANR	Loans secured by real estate as a percentage of total loans
LOANC	Commercial and industrial loans as a percentage of total loans
LOAND	Loans to depository institutions as a percentage of total loans
LOANA	Loans to finance agricultural production as a percentage of total loans
LOANI	Loans to individuals as a percentage of total loans
LOANF	Loans to foreign government as a percentage of total loans
STD (NAF)	Standard deviation of non-audit service fee ratio for each bank firm
	Net income divided by average total asset

TABLE 3.2
Descriptive Statistics of Auditor Fees Disclosed in Proxy Statements in Banking Holdings Companies (2001-2005)

Variable	*Mean*	*Standard Deviation*	*First Quartile*	*Median*	*Third Quartile*	*Minimum*	*Maximum*
Panel A: Mandatory Disclosure of Fee Data							
Audit	665.20	2916.91	75.50	135.20	345.40	0.07	55000.00
Audit/Total	70.73%	18.32%	59.94%	73.69%	84.37%	6.36%	100.00%
Nonaudit	487.96	2521.77	22.00	49.47	131.18	0.00	58700.00
Nonaudit/Total	29.27%	18.32%	15.63%	26.31%	40.06%	0.00%	93.64%
IS	1.00	37.20	0.00	0.00	0.00	0.00	1491.00
IS/Total	0.07%	1.41%	0.00%	0.00%	0.00%	0.00%	43.60%
Total Fees	1153.17	5030.73	110.59	202.96	521.18	0.09	74200.00
Panel B: Voluntary Disclosure of Fee Data							
Audit-Related	215.89	878.19	10.64	23.50	62.73	0.00	9900.00
Audit-Related/Total	9.50%	11.15%	0.00%	6.30%	14.20%	0.00%	72.37%
Tax	271.25	1393.00	9.00	20.78	66.75	0.00	15300.00
Tax/Total	10.10%	10.91%	0.00%	7.56%	14.31%	0.00%	74.77%
All Other	240.74	1767.31	6.22	23.79	73.40	0.00	35300.00
All Other/Total	9.59%	16.88%	0.00%	0.05%	12.25%	0.00%	93.64%

Note: Panel A presents the distribution of mandatory disclosure by SEC rule (2000), Section II. The components of nonaudit fees are described in Panel B: audit-related fees, tax fees, the financial information system design and implementation fees (IS) and all other Advisory fees. All other advisory service is general consulting service, and information technology consulting for systems not associated with the financial statements. All fees are in thousands of dollars.

TABLE 3.3
Descriptive Statistics of Fees Disclosed by Big 5 and non-Big 5 Auditors (2001-2005)

Panel A: Big 5 Auditors, Fees are divided by Total Auditor Fees

Variable	*Mean*	*Standard Deviation*	*First Quartile*	*Median*	*Third Quartile*	*Minimum*	*Maximum*
Total Fees	2083.18	6884.56	206.04	466.23	1023.65	41.00	74200.00
Audit/Total	69.96%	20.22%	58.34%	73.68%	85.86%	6.36%	100.00%
NonAudit/Total	30.04%	20.22%	14.14%	26.32%	41.66%	0.00%	93.64%
IS/Total	0.08%	1.62%	0.00%	0.00%	0.00%	0.00%	43.60%
Audit-Related/Total	9.04%	11.03%	0.00%	5.40%	13.44%	0.00%	72.37%
Tax/Total	11.48%	13.23%	0.00%	7.46%	17.77%	0.00%	74.77%
All Other/Total	9.44%	17.99%	0.00%	0.00%	9.97%	0.00%	93.64%

Panel B: Non-Big 5 Auditors, Fees are divided by Total Auditor Fees

Variable	*Mean*	*Standard Deviation*	*First Quartile*	*Median*	*Third Quartile*	*Minimum*	*Maximum*
Total Fees	167.18	170.90	81.57	119.17	191.15	0.09	2049.08
Audit/Total	71.55%	16.05%	61.91%	73.79%	83.69%	15.57%	100.00%
NonAudit/Total	28.45%	16.05%	16.31%	26.21%	38.09%	0.00%	84.43%
IS/Total	0.07%	1.16%	0.00%	0.00%	0.00%	0.00%	26.77%
Audit-Related/Total	9.99%	11.26%	0.00%	7.20%	15.37%	0.00%	67.86%
Tax/Total	8.64%	7.45%	3.27%	7.61%	12.24%	0.00%	43.44%
All Other/Total	9.75%	15.63%	0.00%	0.85%	13.40%	0.00%	81.58%

Note: Big 5 Auditors are Arthur Andersen (AA), Deloitee & Touché (D&T), Ernst & Young (E&Y), KPMG (KPMG), and PricewaterhouseCoopers (PWC). The auditors included in the category of " non-Big 5 Auditors " with observations exceed 50 are as follows: Beard Miller Company LLP, Crowe Chizek and Company LLC,Dixon Hughes PLLC,Moss Adams LLP and Yount, Hyde & Barbour P.C. All fees are in thousands of dollars.

TABLE 3.4
Time-Series Analysis of Audit and Nonaudit Fees and Ratios (2001-2005)

This table presents the median of audit fees, nonaudit fees, total fees, audit ratio and nonaudit fee ratios for 1609 bank holding firm-year observations from year 2001 to year 2005. Panel A.B and Panel C report the medians of full sample, Big 5 sample and non-Big 5 sample respectively. All fees are in thousands of dollars.

Year	Audit fee	NonAudit Fee	Total Fees	Audit Fee ratio	NonAudit Fee Ratio
Panel A: Full Sample					
2001	98.90	58.00	171.00	62.72%	37.28%
2002	100.00	52.02	159.45	67.43%	32.57%
2003	116.35	47.21	176.09	71.31%	28.69%
2004	208.12	45.29	269.65	79.85%	20.15%
2005	215.00	46.90	290.50	81.65%	18.35%
Panel B: Big 5 Sample					
2001	188.00	131.41	308.03	58.43%	41.57%
2002	205.00	110.00	320.06	65.26%	34.74%
2003	256.13	98.97	332.98	71.24%	28.76%
2004	519.17	102.79	608.78	82.69%	17.31%
2005	529.30	90.25	647.00	83.96%	16.04%
Panel C: Non-Big 5 Sample					
2001	62.67	35.46	102.54	66.79%	33.21%
2002	71.80	32.01	107.29	68.74%	31.26%
2003	72.55	31.00	107.50	70.52%	29.48%
2004	100.41	31.95	135.64	77.20%	22.80%
2005	118.58	33.30	158.59	79.49%	20.51%

TABLE 4.1
Capital Management Hypothesis Test under the Basel Accord

This table presents evidence of new relationship between banks' capital and loan loss provisions under the Basel Accord. The dependent variable is loan loss provision. Results show, instead of the positive effect in the old capital requirement regime, loan loss provisions have negative impact on Tier I capital. This suggests that banks would lower loan loss provision if they would like to increase Tier I capital. On the contrary, loan loss provisions increase Tier II capital, that is, bank managers would increase loan loss provisions to inflate Tier II capital, and this incentive would be stronger when the ratio of loan loss reserves to risk-weighted total assets is low. Further more, Tier II capital management incentive would be weak if banks experience earnings decrease, as shown by the interaction term T2C* DECRE. Earnings management incentive dominates when a bank's earning decreases compared to its last year earnings and bank managers would decrease loan loss provisions accordingly under this circumstance.

Independent Variable	Coefficient Estimates	Two Tailed *p*-value
(Constant)	-0.0006	0.02
TIC	0.0003	0.00
T2C	-0.0002	0.00
T2C*DECRE	0.8173	0.00
LLR	-0.0101	0.00
EBTP	0.0003	0.01
LOSS	-0.0001	0.47
BIGFIVE	-0.0004	0.01
LEVERAGE	0.0000	0.58
R-square	3.55%	
Adjusted R-square	3.07%	

TABLE 4.2
Evidence of Capital Management Mechanisms under the Basel Accord, Conditional on the Level of Nonaudit Service Fee

This table presents the variations of capital management behaviors as a function of non-audit service fee ratios. HNAF is a dummy variable, which equals to one if the nonaudit service fee ratio of a bank is higher than the sample median level. Results show that the capital management differs among banks with different levels of nonaudit service fee ratios. Specifically, banks which purchase large amount of nonaudit services have stronger association between LLP and regulatory capital（T1C, T2C）, and both are in the expected directions. This indicates that, banks' providing rents to auditors via nonauidt services strengthen the economic bond between bank firms and auditors, as a result, bank managers are more likely to involve in capital management.

Independent Variable	Coefficient Estimates	Two Tailed *p*-value
(Constant)	-0.0004	0.15
TIC	0.0002	0.05
T2C	-0.0001	0.10
T2C*DECRE	0.8241	0.00
LLR	-0.0143	0.00
EBTP	0.0001	0.76
LOSS	-0.0003	0.24
BIGFIVE	-0.0004	0.03
LEVERAGE	0.0000	0.56
TIC*HNAF	0.0002	0.01
T2C*HNAF	-0.0003	0.02
LLR*HNAF	0.0052	0.36
EBTP*HNAF	0.0003	0.25
LOSS*HNAF	0.0004	0.34
R-square	0.0461	
Adjusted R-square	0.0383	

TABLE 4.3
Evidence of Banks' Capital Management Mechanisms under the Basel Accord, Conditional on the Variability of Nonaudit Service Fee

The table presents the impact of variability of nonaudit service fees on banks managers' manipulation incentives via loan loss provisions (LLP). Two different nonaudit fees variability measures (VAR) are used. In model (1), VAR is defined as a dummy variable, which equals to 1 if the standard deviation of a bank's non-audit service fee over the sample years is lower than the sample median level. In model (2), it is defines by the rank of standard deviation, which equals to 1 if the standard deviation of the nonaudit service fee ratios is in the highest rank decile, and 10 if it is in the lowest rank decile in the sample.

The coefficients of estimators T1C*VAR, T2C* VAR and EBTP*VAR are significant at 5% level. However, the signs are opposite those of T1C, T2C and EBTP. This finding implies that regular and consistent nonaudit service purchases suppress banks' manipulations. This may be explained by the legislative rules which have been enacted to regulate nonaudit services supply and disclosures since the beginning of year 2000.Continuous providing rents to auditors would not only increase detection probability and thus pose higher litigation risks to auditors, it also can be perceived as impaired honesty and low quality of financial reporting by investors which trigger negative market reaction to banks' shares as a consequence.

	Model (1)		Model (2)	
Independent Variable	Coefficient Estimates	Two Tailed *p*-value	Coefficient Estimates	Two Tailed *p*-value
(Constant)	0.0001	0.78	0.0004	0.23
TIC	0.0003	0.01	0.0003	0.01
T2C	-0.0006	0.00	-0.0010	0.00
T2C*DECRE	0.8574	0.00	0.8680	0.00
LLR	-0.0089	0.00	-0.0072	0.04
EBTP	0.0006	0.00	0.0008	0.00
LOSS	0.0000	0.99	-0.0001	0.86
BIGFIVE	-0.0005	0.01	-0.0004	0.01
LEVERAGE	0.0000	0.53	0.0000	0.48
TIC*VAR	-0.0002	0.02	-0.0001	0.00
T2C*VAR	0.0005	0.00	0.0001	0.00
LLR*VAR	-0.0063	0.26	-0.0011	0.17
EBTP*VAR	-0.0007	0.00	-0.0001	0.01
LOSS*VAR	-0.0003	0.52	-0.0002	0.61

R-square	5.21%	5.84%
Adjusted R-square	4.44%	5.07%

TABLE 4.4
Evidence of Size Effect on Banks' Capital Management Mechanisms under the Basel Accord

This table presents evidence of impact of banks firms' size (total assets) on the banks' capital management behaviors via loan loss provisions under the Basel Accord. Size effect is captured by a SIZE dummy variable, which equals to 1 if a bank's total asset is below the sample median level and 0 otherwise.

The coefficients of TIC*SIZE, and T2C*SIZE are statistically significant, indicating that size has incremental impact on capital management incentives. Compare to large banks, small banks are more likely to be involved in capital management. This can be explained in two ways. First, large banks' manipulation incentives can be constrained by higher reputation cost and litigation risk. Second, small banks have higher capital manipulation demand, and their inefficient internal control systems can facilitate them to do so with lower detection risk is lower.

Independent Variable	Coefficient Estimates	Two Tailed *p*-value
(Constant)	0.0002	0.54
TIC	0.0000	0.97
T2C	0.0000	0.87
T2C*DECRE	0.7120	0.00
LLR	-0.0084	0.01
EBTP	0.0005	0.00
LOSS	0.0000	0.87
BIGFIVE	-0.0005	0.00
LEVERAGE	0.0000	0.91
TIC*SIZE	0.0004	0.00
T2C*SIZE	-0.0013	0.00
LLR*SIZE	-0.0053	0.28
EBTP*SIZE	-0.0003	0.13
LOSS*SIZE	-0.0001	0.72
R-square	4.61%	
Adjusted R-square	3.83%	

TABLE 4.5
Interaction between HNAF and VAR on Banks' Manipulation incentives Through LLP under the Basel Accord

This table presents the incremental effect of HNAF on capital management incentives through loan loss provisions the under Basel Accord, when banks have the same level of nonaudit service variability (VAR). HNAF is a dummy variable, which equals to one if the nonaudit service fee ratio of a bank is higher than the sample median level. VAR is also a dummy variable, equal to 1 if the standard deviation of a firm's nonaudit service fee ratio is below sample median level.

The coefficient of TIC*VAR*HNAF, T2C*VAR*HNAF and LLR*VAR*HNAF are statistically significant, and their signs are opposite to those of TIC*VAR, T2C*VAR and LLR*VAR. However, they are in the same direction as TIC, T2C and LLR. HNAF is playing a dominant role. That is, among banks with the same level of nonaudit service variability (VAR), those banks with higher level of nonauidt service are more likely to manipulate their regulatory capital via loan loss provision.

Independent Variable	Coefficient Estimates	Two Tailed *p*-value
(Constant)	0.0005	0.20
TIC	0.0002	0.11
T2C	-0.0006	0.00
T2C*DECRE	0.8814	0.00
LLR	-0.0090	0.00
EBTP	0.0006	0.00
LOSS	0.0000	1.00
BIGFIVE	-0.0004	0.02
LEVERAGE	0.0000	0.58
TIC*VAR	-0.0003	0.00
T2C*VAR	0.0007	0.00
LLR*VAR	-0.0003	0.96
EBTP*VAR	-0.0005	0.05
LOSS*VAR	-0.0003	0.48
TIC*VAR*HNAF	0.0004	0.00
T2C*VAR*HNAF	-0.0006	0.00
LLR*VAR*HNAF	-0.0603	0.00
EBTP*VAR*HNAF	-0.0004	0.33
LOSS*VAR*HNAF	0.0003	0.61

R-square	6.82%
Adjusted R-square	5.77%

TABLE 4. 6
Interaction between HNAF and SIZE on Banks' Manipulation Incentives through LLP under the Basel Accord

This table presents evidence of incremental size effect on the capital management incentives of banks with same high level of nonaudit services fees. The coefficient of T2C*HNAF*SIZE is negative and significant at 5% level, indicating that smaller banks who purchases high level of nonaudit services are more likely to manipulate loan loss provisions upward when their Tier II capital are low.

Independent Variable	Coefficient Estimates	Two Tailed *p*-value
(Constant)	-0.0004	0.23
TIC	0.0002	0.05
T2C	-0.0001	0.10
T2C*DECRE	0.7131	0.00
LLR	-0.0143	0.00
EBTP	0.0001	0.72
LOSS	-0.0003	0.25
BIGFIVE	-0.0006	0.00
LEVERAGE	0.0000	0.83
TIC*HNAF	0.0003	0.01
T2C*HNAF	-0.0002	0.13
LLR*HNAF	0.0074	0.20
EBTP*HNAF	0.0004	0.15
LOSS*HNAF	0.0008	0.14
TIC*HNAF*SIZE	0.0001	0.45
T2C*HNAF*SIZE	-0.0007	0.01
LLR*HNAF*SIZE	-0.0114	0.12
EBTP*HNAF*SIZE	-0.0004	0.18
LOSS*HNAF*SIZE	-0.0006	0.32
R-square	5.81%	
Adjusted R-square	4.74%	

Appendix A. How to calculate capital adequacy ratios

$$\text{Total Capital Ratio} = \frac{\text{Tier 1 Capital} + \text{Tier 2 Capital}}{\text{Risk - weighted Asset - Exceeding LLR(if LLR} > 1.25\% \text{ GRWA)}}$$

LLR: loan loss reserves; GRWA: gross risk-weighted assets

Step1: compute Tier I capital

(a) Permanent shareholders' equity:
Fully-paid ordinary shares/common stock (CS)
Perpetual non-cumulative preference shares (PS)

(b) Disclosed reserves:
Retained earnings (RE)
Mandatory convertible debt (CD)
Legal reserves (LR)
Other surplus (OS)

Deduction from Tier I capital: Goodwill

Step2: compute Tier II capital

(a) Undisclosed reserves(UR)
(b) Asset revaluation reserves (AR)
(c) Loan-loss reserves (LLR)
(d) Hybrid capital instruments (CI)
(e) Subordinated term debt (TD)

Restrictions of Tier II capital:
(i) The total of Tier II capital is limited to a maximum of 100% of the total of Tier I capital;
(ii) Subordinated term debt is limited to a maximum of 50% of Tier I capital;
(iii) Loan loss reserves included in Tier II capital are limited to a maximum of 1.25 percentages
points of risk-weighted assets;
(iv) Asset revaluation reserves which take the form of latent gains on unrealized securities is subject to a discount of 55%.

Step3: compute total capital

Total Capital= Tier I capital+ Tier II capital- Deductions

Deductions from Total capital:

(a) *Investments in subsidiaries* engaged in banking and financial activities which are not consolidated in national systems, to prevent the multiple uses of the same capital resources in different parts of the group.
(b) *Investments in the capital of other banks and financial institutions*, to avoid the cross-holdings of bank capital designed artificially to inflate bank capital positions.

Step4: compute risk –weighted assets (RWA)

RWA is calculated by multiplying relevant risk-weights to the value of both on-balance sheet items and off-balance sheet items.

On-Balance Sheet Items

Risk Categories

The framework of weights has been designed in a very simple way and only five weights are used: 0, 10, 20, 50 and 100%. For example:

Balance Sheet Risk Assets	Risk Weight
Cash, Claims on central governments and central banks or claims , Federal balances, Treasury securities	0%
General obligation municipal bonds, claims on multilateral development banks, or cash items in process of collection	20%
Loans fully secured by mortgage on residential property , or Revenue municipal bonds	50%
All other loans and investments, premises and equipment	100%

Off-Balance Sheet Items

In the Basel Accord, all off-balance-sheet activity is taken into account in the capital adequacy framework. All categories of off-balance-sheet engagements are converted to credit risk equivalents by multiplying a credit conversion factor, the resulting amounts then being weighted according to the nature of the equivalent on-balance sheet counterparty. Credit conversion ratios are derived from the estimated size and likely occurrence of the credit exposure, as well as the relative degree of credit risk as identified in the Committee's paper "The management of banks' off-balance sheet exposures: a supervisory perspective" issued in March 1986.

Off-Balance Sheet Items	Credit Conversion Ratio
Other loan commitments with an original maturity of up to one year ,or which can be unconditionally cancelled at anytime	0%
Short-term self-liquidating trade-related contingencies, eg, commercial letter of credit	20%
Transaction-related contingent items, note issuance facilities and revolving underwriting facilities	50%
Direct credit substitute, sale and repurchase agreements, asset sales with recourse, Forward asset purchases, forward deposits and partly-paid shares and securities	100%

Total Risk –Weighted Assets (RWA) =Adjusted On-Balance Sheet Items + Adjusted Off-Balance Sheet Items

Appendix B. The effect of loan loss provisions on Tier I and Tier II capital under the Basel Adequacy Accord

I. Primary capital and Tier I capital

Primary Capital before the Basel Accord

Primary capital consists of:

a) Fully-paid ordinary shares/common stock(CS)
b) Perpetual non-cumulative preference shares(PS)
c) Retained earnings(RE)
d) Loan loss reserves(LLR)
e) Mandatory convertible debt(CD)
f) Legal reserves(LR)
g) Other surplus(OS)

$$\text{Primary Capital Ratio} = \frac{CS + PS + RE + LLR + CD + LR + OS}{\text{Gross Total Assets}}$$

LLP is related to LLR and RE. $LLR_T = LLP_{T-1} + LLP_T - LWO_T$,that is , one unit increase of LLP increase LLR by one unit .However, in the income statement LLP decrease the RE by (1-t) unit, t is the tax rate. Therefore, the net effect of LLP on primary capital is the tax shield of LLP, $\frac{t * LLP}{\text{Gross Total Assets}}$, in one word, LLP increase primary capital before the Basel Accord.

Tier I Capital after the Basel Accord

$$\text{Tier I Capital Ratio} = \frac{CS + PS + RE + CD + LR + OS}{\text{Risk - weighted Asset - Exceeding LLR(if LLR} > 1.25\%\text{GRWA)}}$$

LLR is removed from the numerator of Tier I capital, therefore the net effect of LLP is

$$\frac{-(1-t) * LLP}{\text{Risk - weighted Asset - Exceeding LLR(if LLR} > 1.25\%\text{GRWA)}}$$

1) When LLR<1.25%GRWA, net effect of LLP is $\frac{-(1-t) * LLP}{\text{Risk - weighted Asset}}$, LLP has negative effect on Tier I capital ratio

2) When the LLR > 1.25% GRWA, the net effect of LLP is:

$$\frac{-(1-t)LLP}{Risk-Weighted\ Assets-(LLP\ -1.25\%GRWA)}$$

Take the differentiate of the above formula respect to LLP, to make it looks simple, take

b= -1and all the other variables in the denominator as c, then

$$d\frac{-(1-t)LLP_T}{bLLP_T + c} = \frac{-(1-t)}{bLLP_T + c} + \frac{-(1-t)LLP_T}{(bLLP_T + c)^2}$$

-(1-t)*LLP is the numerator , and(b*LLP+c) is the denominator, the condition need to

make LLP has negative effect is :

$$d\frac{-(1-t)LLP_T}{bLLP_T+c}=\frac{-(1-t)}{bLLP_T+c}+\frac{-(1-t)LLP_T}{(bLLP_T+c)^2}=\frac{-(1-t)}{denominator}+\frac{numerator}{denominator^2}<0$$

Assume the tax rate t=34%, we only need the denominator >1.5 times numerator so that LLP has negative effect on Tier I capital even when LLR is larger than 1.25% of risk-weighted assets. And this criterion can be fully satisfied in most banks.

Therefore LLP decrease Tier I capital ratio after the Basel Accord in stead of increasing before 1988.

II. Secondary Capital and Tier II capital

Secondary capital after the Basel Accord

Secondary capital before Basel Accord consists of:
(a) Undisclosed reserves(UR)
(b) Asset revaluation reserves (AR)
(c) Hybrid capital instruments (CI)
(d) Subordinated term debt (TD)

$$\text{Secondary Capital Ratio}=\frac{UR+AR+CI+TD}{\text{Gross Total Assets}}$$

Tier II Capital after the Basel Accord

Loan loss reserves (LLR) are shifted from primary capital before 1988 to Tier II capital under the Basel Adequacy Accord, however, LLR qualifies to be included in Tier II capital is limited to 1.25% of Gross Risk-Weighted Assets (GRWA)

$$\text{Tier II Capital Ratio}=\frac{UR+AR+CI+TD+LLR(up\ to\ 1.25\%\ \text{GRWA})}{\text{Risk-weighted Asset-Exceeding LLR(if LLR}>1.25\%\ \text{GRWA})}$$

The net effect of LLP on Tier II capital is:

$$\frac{LLP}{\text{Risk-weighted Asset-Exceeding LLR(if LLR}>1.25\%\text{GRWA})}$$

That is, LLP has positive net effect on Tier II capital under the Basel Adequacy Accord.

Appendix C. Regulatory Capital Adjustment

Following Kim and Kross (1998) and Ahemad et al. (1999), I use Tier I and Tier II capitals are adjusted for loan loss provisions. The regulatory capital available in databases is reported regulatory capital, which could be contaminated by possible manipulations via loan loss provisions. Hence adjustments are necessary to avoid the mechanical link between dependent variable and regulatory capital. However, I make the adjustments differently. I begin with reported capital in Y9-C report (Consolidated Financial Statements for Bank Holding Companies—FR Y-9C) instead of the capital *ratios* as done by Kim and Kross (1998) and Ahemad et al. (1999).

Adjusted Tier I capital ratio= [reported Tier I capital (BHCK8274) + (1-T)* LLP (BHCK 4230)]/total risk-weighted assets

Adjusted Tier II capital ratio= [reported Tier II capital (BHCK8275)- LLR(BHCK5310)]/ total risk-weighted assets

Where T is the tax rate, and BHCK is the code used in Y9-C report.

In this capital ratios adjustment, two issues need special mention. Firstly, Y9-C does not report the tax rate for each bank in each specific fiscal year, only the total tax expense is reported. For calculation, I follow the recommendation by Kim and Kross (1998) and assume a universal tax rate of 34%. To obtain fairly accurate representation, I plan to use income before tax and extraordinary items (BHCK4301) and applicable income tax (BHCK4301) in Y9-C report to calculate the yearly tax rate for each bank. However, I expect the result to be similar.

Secondly, according to the Basel Accord, banks can choose to deduct the amount loan loss reserves exceeding 1.25% of risk –weighted assets from the total risk-weighted assets when calculate Tier I or Tier II capital ratios. Bank managers can inflate capital ratios by reducing the ratio denominators through this. However, total risk-weighted assets are reported by bank managers, and they are not specified in Y9-C report whether these numbers are before or after the loan loss reserve deduction. In order to get the real capital ratio, adjustments should be done for banks with loan loss reserves larger than 1.25% of risk-weighted assets. However, after careful scrutinizing the pilot sample, I find loan loss reserves (before loan loss provisions) are mostly lower than the upper limit, specifically, the mean is 1.1% and median is 0.09% of risk-weighted assets.