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Cullen, G., Gasbarro, D., Monroe, G.S., Shailer, G. and Zhang, Y.Y.
(2011) Asset securitizations and audit fees. In: 2011 AFAANZ
Conference, 3 - 5 July, Darwin.

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Asset Securitizations and Audit Fees

Abstract

Asset securitizations increase audit complexity and audit risks, which may have an impact on audit fees. Using U.S. data from 2003 to 2008, we find that asset securitization risks (retained interests) are associated with audit fees after, but not before, the global financial crisis (GFC). This suggests auditors neglected securitization risks before the GFC. The results are consistent with auditors treating securitizations as asset sales rather than secured borrowings.

Keywords: Audit Fees; Asset Securitization; Bank Holding Companies; Financial Crisis

Data Availability: All data are available from public sources identified in the study.

JEL Classification: G01, G14, G21, M42

Asset Securitizations and Audit Fees

1 Introduction

Auditors have been criticized in relation to asset securitizations following recent bank failures and in relation to the global financial crisis. Perceived audit failures include not taking appropriate actions in response to securitization fraud (e.g., National Century Financial Enterprises Lawsuits against ex-auditors 2007), helping companies violate GAAP (e.g., New Century case 2009), inappropriate opinions on securitizations and overall insolvency (e.g., Lehman Brothers case 2007) and inadequate audit processes (e.g., Fannie Mae scandal 2006). These perceived audit failures undermine the financial reporting credibility of the reporting entities and harm domestic and global economies (Pearson 2009).

Prior studies investigate the economic substance of asset securitization risk transfers (Kane 1997; Niu and Richardson 2006; Chen et al. 2008; Landsman et al. 2008; Shipper and Yohn 2007; Barth et al. 2009), the extent of risk transfers with recourse (Gorton and Souleles 2005; Chen et al. 2008; Higgins and Mason 2004), information asymmetry (Cheng et al. 2008), and earnings and capital management in asset securitizations (Karaoglu 2005; Rosenblatt et al. 2005; Dechow and Shakespeare 2009; Dechow, Myers and Shakespeare 2009; Ambrose et al. 2004). However, despite the attendant criticisms of auditors, there is little or no prior research testing the link between asset securitizations and auditor behaviour.

The complexity of asset securitizations and the management's flexibility to choose sale or borrowing accounting treatments (Kane 1997; Shipper and Yohn 2007)

make it difficult for auditors to understand the true economic substance of the instruments, the financial risk status of the originating bank, and the discretionary earnings and capital management opportunities created by securitization transactions (Healy and Wahlen 1999; Matsumoto 2002; Karaoglu 2005). The challenges and auditors' limitations in this regard also affect the auditors' risk considerations in audit planning and pricing (Houston 1999; Phillips 1999; Beaulieu 2001). If auditors are focussed on audit quality or their risk exposure, higher securitization risk should induce increased audit effort to maintain an acceptable audit risk level. Self-interested auditors who recognize their risk exposure but are constrained from increasing effort may price-protect themselves by charging an audit fee premium. Both increased effort and fee premia will result in higher audit fees.

The analysis of audit fees is a basic tool in research into the audit market and auditors' behaviour. Extant studies extensively investigate cross-sectional determination and inter-temporal variation in audit fees for indications of variation in audit effort and fee premia (Simunic 1980, 1984; Palmrose 1986; Francis and Simon 1987; Simon and Francis 1988; Ettredge and Greenberg 1990; Pratt and Stice 1994; Craswell et al. 1995; Bell et al. 2001; Ghosh and Pawlewicz 2009). However, most such studies specifically exclude financial institutions from their analyses because of the attendant accounting and risk differences compared to other sectors. Consequently, there is relatively little research on audit effort and pricing in the banking industry.

By applying the established methodology of audit fee studies to investigate how asset securitization and other financial risks affect the behaviour of the banks' auditors, we advance our general understanding of auditor behaviour and audit pricing, and reduce the current knowledge gap concerning audit of asset securitization disclosures.

The audit risk in asset securitizations that is associated with transaction complexity, sale or borrowing accounting choice flexibility, and management manipulation risk, is represented in the amount of securitized assets (Kane 1997; Shipper and Yohn 2007; Landsman et al. 2008; Karaoglu 2005; Minton et al. 2004; Matsumoto 2002). Explicit recourse against the originator is significant in securitized assets; this is represented in retained interests, which is also sensitive to the reliability of fair value estimation conditioned on the economic environment. Therefore, following Barth et al. (2009), we use the amount of securitized assets and the amount of retained interests to represent asset securitization factors and incorporate these in the audit fee model extended for financial institutions in Fields et al. (2004). Estimating this using publicly available data on U.S. bank holding companies (BHCs) from 2003 to 2008, we find that audit fees increase with retained interests (RI) in the post-GFC period, but not earlier. This suggests that auditors did not recognize the risk of asset securitizations prior to the GFC.

Asset securitizations are an important source of audit risk and economic significance, as revealed by the current financial crisis and bank failures. Therefore, the cross-sectional and intertemporal views of the association between auditor effort or pricing and asset securitizations in this study are important contributions to the literatures concerning asset securitization risk and auditor behaviour. The study also contributes to the emerging literature on bank audits. This is a growing area of policy interest since Basel (2008) called for “more research on bank audits, especially in areas that are of particular interest to bank regulators and important to financial markets”.

The remainder of this paper is organized as follows. The relevant literature is

reviewed in Section 2 and hypotheses are developed in Section 3. Section 4 describes the research design and Section 5 reports the main results. Further testing is reported in Section 6. Section 7 concludes the study.

2 Literature Review

2.1 Asset Securitizations

Figure 1 displays the procedures of a typical securitization transaction in banks. An asset securitization transaction begins with the originating bank transferring a pool of financial assets, such as mortgages, loans and leases, to a special purpose entity (SPE). The SPE legally isolates the loans beyond the reach of the originating bank and its creditors under FAS 140 (formerly FAS 125), but remains part of the originating bank's consolidated entity. To avoid accounting consolidation, the SPE becomes a qualifying special purpose entity (QSPE) or transfers the loans to a QSPE. The loans are then securitized in ranked tranches. In the absence of credit enhancements, the most junior securities tranche is the first to bear credit losses on the securitized assets. When the first tranche is exhausted, the remaining liability passes to the second junior tranche, and so on until all credit losses are absorbed. Credit enhancements insulate senior securities from the default risk on the underlying financial assets. Enhancements are provided by the originators, or a third-party guarantor, in the form of cash collateral accounts, reserve funds, commitments to purchase assets in default, credit derivatives, or recourse provisions. Rating agencies are involved in this step to assign ratings to the tranches. Strategically, the most senior tranche is usually made as large as possible while still obtaining an AAA rating and the first (most junior) tranche is usually unrated and made as small as possible while

still allowing the second tranche to obtain an investment grade rating (Ryan 2008). The most junior tranche(s) is retained by the securitizer for credit enhancement purpose and the investment-grade tranches are sold to investors.¹ Proceeds are transferred through the SPE to the originator. The SPE distributes cash generated by the securitized financial assets to the investors, as per the security contracts.

< Figure 1 >

2.2 *Accounting Standards and Accounting Benefits on Asset Securitization*

For 2003 to 2008, accounting for asset securitization is subject to FAS 140 Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities and FIN 46(R) (an FASB interpretation of ARB 51 relating to consolidation of SPEs).² For securitization to qualify as an asset sale, the transferor must transfer the financial assets to a bankruptcy-remote entity and surrender controls of the transferred assets. To avoid consolidation, the entity must be a qualifying-SPE satisfying conditions specified in FIN 46(R). If the asset transfer qualifies as a sale, the illiquid loans are written back and originator recognizes any retained interests and servicing assets on its balance sheet; unrealised future cash flows are treated as a gains or loss in current income statement.

FAS 157 imposes a three-level measurement hierarchy for fair value based on whether the inputs are “observable” or “unobservable”. Market-priced observable inputs are ranked higher and more prioritized over firm-supplied unobservable inputs in fair value measurements. When the market price is not observable, firm-supplied

¹ We don't consider the situation that the retained junior tranche(s) may be re-securitized to CDO with more complex securitization and credit enhancement procedures. Basically, the effect of such re-securitization is to upgrade the formerly un-investable securities to investment-grade securities sold to investors. The balance sheet impact is similar to our simple model.

² From 2009, FAS 166 and FAS 167 largely limited the scope of accounting for asset securitization as sales.

fair value, usually established with internal models based on assumptions set by the firm itself, could be used to fair value measurements. FAS 157 provides support for the discretionary use of internal models in the fair value measurements associated with asset securitization transactions, especially when the market inputs are not reliable and of poor quality signals (e.g., during crisis period), or when the assets or liabilities are distinct from the assets or liabilities with available inputs in the market (e.g., the assets and liabilities incurred during individual securitizations).

Appendix 1 Panel A presents a typical accounting procedure for an asset securitization transaction under FAS 140, FAS 156 and FAS 166.³ The basic sale accounting treatment on asset securitizations under FAS 140 and FAS 156 is to (1) remove the securitization assets from the balance sheet; (2) record cash proceeds in the amount received and recognize non-cash proceeds at fair value; (3) recognize the book value of the retained sub-securities as the proportion of the sub-securities' fair value to the fair value of the securitized assets; (4) recognize the retained interests other than sub-securities (e.g. servicing assets) in the same way as retained sub-securities before FAS 156 or at fair value after FAS 156; and (5) gains on securitizations is recorded as the difference between net cash proceeds and the value (fair value or carrying amount depends on the type of the assets) of the components of assets sold. The sale accounting and non-consolidation of the SPE as allowed by FAS 140 /156 and FIN 46R bring the following accounting benefits to the originating bank

³ Although the changes in accounting standards from FAS 140 to FAS 156 are significant in some aspects of asset securitizations, to the extent of the scope studied in this paper, the change has very limited impact on the sale or borrowing accounting issue. The requirement changes of fair value measurement to servicing assets in FAS 156 also limitedly affect our study as servicing assets are not a focus of this study and only represent small portion of retained interests.

The application of FAS 166 and FAS 167 has almost excluded the opportunity of sale accounting and non-consolidation of asset securitization. However, they are implemented at the end of 2009 and irrelevant to our study period.

as displayed in Appendix 1 Panel B, including: (1) A lower leverage ratio, mainly because the loan liability has been removed from the balance sheet. (2) A better liquidity ratio. (3) A higher profitability. (4) A possibly more flexible and favourable risk-based capital ratio. Meanwhile, due to the manipulation opportunities created to easily hide changes in credit policy, subjective fair value evaluation on retained interests and gains on sales recorded in the income statement (Scism 1998), securitization accounting may have a negative impact on true and fair financial reporting.

< Appendix 1 >

2.3 Empirical research topics on asset securitization

The following empirical topics have been extensively studied by prior literature.

2.3.1 Sale or borrowing: the economic substance of asset securitization on risk transfer

Regulators, rating agencies and capital market have opposite views on the economic substance of asset securitization. At least before the reformation of securitization regulations and rules in response to the financial crisis (FAS 166 and FAS 167), standard setters and regulators view the asset securitization as a sale and a transfer of risks to the extent of the components of assets transferred (FAS 140; FIN 46R). Although rating agencies explicitly document that they treat asset securitization as a secured borrowing (S&P Corporate Rating Criteria 2001 &2008), the empirical evidence gives an opposite answer (Barth et al. 2009; Rosenkranz 2009; Cheng and Neamtiu 2009). Differently, the equity market and bond market tend to view securitization as an incomplete transfer of control and risk, and treat it as a secured borrowing in relation to its risk and value relevance (Mian & Smith 1994; Kane 1997;

Ryan 1997; Treacy and Carey 1998; Niu and Richardson 2006; Shipper and Yohn 2007; Hansel & Krahn 2007; Chen et al. 2008; Landsman et al. 2008; Barth et al. 2009).

2.3.2 Implicit or explicit recourse: the extent of risk transfer in asset securitization

The issue of implicit or explicit recourse is more about the extent of risks transferred. Measured with explicit recourse, which is accepted in the legal form, the extent of risk retained by the originator is explicitly limited to the extent of its retained interests, and the gap between total securitized assets and the retained interests are deemed fully transferred to the investors with all the risks and rewards. If adopting the implicit recourse argument, which is held by the market participants and academics (Gorton and Souleles 2005; Cheng et al. 2008), the originators actually do not have effective risk transfer on the securitized assets, and the extent of risk retained is simultaneously correspondent to the credit risk of the underlying assets and limited to the total amount of securitized assets (Higgins and Mason 2004; Calomiris and Mason 2004; Gorton and Souleles 2005).

2.3.3 Information quality in asset securitization: information asymmetry

Despite several early theoretical arguments that securitizations can in fact reduce information uncertainty⁴, recent empirical evidence and analyses hold that asset securitizations increase information uncertainty and asymmetry. (1) The complexity and flexibility in structuring and accounting treatments lead to information

⁴ Before the crisis, people believe that securitization can in fact reduce information uncertainty. (1) Securitization requires disclosure of more information than non-securitized assets, e.g. the types of securitized assets, basic quality measures of the loans (Foley et al. 1999; Schwarcz 2004). The increased transparency with regard to the underlying loans mitigates info asymmetry. (2) Rating agencies published ratings on securities periodically and provide 3rd party monitoring on securitized assets. (3) The underlying assets are subject to stricter disclosure requirements under securitization (Foley et al. 1999).

uncertainty and asymmetry (Modigliani-Miller 1958; Barth et al. 2003). The financial reporting choices in asset securitization (e.g., sale or borrowing, QSPE) simplify the underlying economics behind securitization and cannot fully describe the complex securitization transactions (Schwzrcz 2004; Ryan 2007) thereby leave further space for information uncertainty and asymmetry. (2) The economic and accounting benefits are gained at the expense of information asymmetry (Amihud and Mendelson 1986; Chordia et al. 2001; Easley and O'Hara 2002; Cheng et al. 2008). Using various information asymmetry measures ⁵ to investigate information asymmetry in securitizations, Cheng et al. (2008) find that securitization leads to greater information asymmetry measured by forecast dispersion, ask-bid spread, and stock return volatility. Information uncertainty and asymmetry in asset securitizations particularly exists in three important areas. (1) The true risk status of the securitized assets is veiled behind the securitization transactions (Minton et al. 2004). (2) The creation of retained interests may have mitigated information asymmetry on asset quality as retained interests provide protections against losses (Pennacchi 1988). However, it creates another information asymmetry on the private information about expected cash flows with regard to the retained tranches and the underlying assets, discount rate assumptions, and other assumptions for the fair value estimation (as most of the RI do not have a market price). (3) The earnings numbers are easily manipulated via the asymmetric information of securitization gains.

⁵ (1) Bid-ask spreads, (2) analyst forecast dispersion, (3) stock return volatility. –FD is a more reliable and acceptable measure.

2.3.4 Earnings and capital management in asset securitization: an effective tool of information manipulation and creative accounting

The basic earnings numbers are important indicators for bank stakeholders especially non-sophisticated stakeholders and affect the contracting conditions of the banks with their stakeholders. Additionally, bank managers' explicit compensation and/or implicit rewards may rely heavily on earnings disclosed. Prior literature supports that earnings numbers are discretionarily manipulated for various reasons (DeGeorge, Patel, and Zeckhauser 1999; Matsumoto 2002). In addition, capital management is another type of opportunistic manipulation on financial statements, which can be achieved via earnings management (Moyer 1990). There are four ways in which bank managers use securitization for discretionary purposes: (1) timing (Rosenblatt et al. 2005; Dechow and Shakespeare 2009); (2) classification of sales versus borrowings (Karaoglu 2005); (3) selection of loans to be securitized (Pavel & Phillis 1987; Ambrose et al. 2004; Minton et al. 2004); and (4) valuation of retained interests (see Appendix 1. FAS 157; Dechow, Myers and Shakespeare 2009).

3 Hypotheses Development

3.1 Securitized Assets and Audit Fees

The purpose of an audit is to provide assurance on an entity's financial reports to be free from material omissions or misstatements, or in other words, audits are designed to reduce the audit risk to certain level (Lemon et al. 1993). Audit risk is the risk that the auditor expresses an inappropriate audit opinion when the financial report is materially misstated (SAS No. 47), which is a function of inherent risk, control risk and detection risk. Higher inherent risk and/or control risk leads to greater resources

(efforts) auditors allocated in order to maintain the total audit risk under an acceptable level (Felix et al. 2001; Hackenbrack and Knechel 1997; O’Keefe et al. 1994; Pratt and Stice 1994; O’ Sullivan 2000; Bell et al. 2001; Johnstone and Bedard 2001; Lyon and Maher 2005; Hay et al. 2006). In summary, audit efforts is associated with audit risk and audit efforts via inherent and/or control risks.

The association of the amount of securitization and inherent risk is reflected in three aspects. First, even a simplified asset securitization transaction involves multiple participants from the originator, SPE, QSPE, the guarantor, the rating agency, to the investors and hence complex procedures between them, attached with sophisticated documents. For parties except for the securitization specialists, the transaction procedures are complex and the documents are too sophisticated to be understood. Therefore, although the initial purpose of asset securitization is to reduce lender’s credit risk via packaging the loans into sellable securities, the higher complexity and lack of transparency in asset securitization transactions require more audit efforts.

Second, the sale accounting and non-consolidation treatment under FAS No. 140 and FIN 46R veils the true economic substance and financial risk status of the originating banks and thereby increases inherent risk. Empirical evidence universally views the “control” of the securitized assets is largely still with the originators (Kane 1997; Shipper and Yohn 2007). With regard to the risks and rewards, abundant research from 1990s till now reveals that there is no actual credit risk transfer from originators in asset securitizations (Mian & Smith 1994; Barth et al. 2009; Ryan 1997; Niu and Richardson 2006; Hansel & Krahnman 2007; Treacy and Carey 1998; Chen et al. 2008, Landsman et al. 2008). However, accounting standards (FAS 140; FIN 46R) and regulations (BASEL I) allow for sale accounting and non-consolidation of QSPE

from originators instead of secured borrowing accounting. Compared with secured borrowing accounting, sale accounting plus non-consolidation treatment dresses up leverage, liquidity, earnings numbers, and capital ratio. As illustrated in Appendix 1, for a hypothetical bank with 12.5% total assets securitized and about 10% ROI before the securitization, after a securitization with sale accounting, its leverage (10) is 3.06 lower than the leverage (13.06) under secured borrowing accounting treatment; the liquidity ratio also gets an immediate improvement; the ROE doubles from 10% to 21.7% after the securitization with sale accounting; and the regulatory capital ratio is accordingly improved with a reduction in risk-weighted assets and an increase in the earnings numbers. These accounting treatments therefore distort the true risk status as well as the financial performance of the originating banks, and hence lead to the inherent risk of misstatement of going concern opinions and financial performance in financial reporting.

Third, securitization transactions create discretionary opportunities for earnings and capital management, which are an indispensable source of inherent risk. Due to its complexity and flexibility in structuring and accounting treatments, securitization transactions lead to great information asymmetry between the originators and subsequent investors as suggested by Modigliani-Miller (1958) capital structure irrelevance theorem, and as evidenced in a series of research (Pennacchi 1998; Minton et al. 2004; Schwzrcz 2004; Ryan 2007). Managers of the originating banks have incentives to make earnings management (Healy and Wahlen 1999; Degeorge, Patel, and Zeckhauser 1999; Matsumoto 2002) and capital management (Moyer 1990; Karaoglu 2005). They utilize the discretionary opportunity created by the information imbalance between the originators and investors for manipulation purposes (Karaoglu

2005; Rosenblatt et al. 2005; Dechow and Shakespeare 2009; Pavel & Phillis 1987; Ambrose et al. 2004). The risk of earnings management and aggressive financial reporting is considered by auditors in audit planning and pricing as experimentally (Houston 1999; Phillips 1999; Beaulieu 2001) and empirically evidenced (Gul et al. 2003; Bedard and Johnstone 2004; Lyon and Maher 2005).

In conclusion, asset securitization is more complex and lack of transparency than ordinary banking transactions; sale accounting and non-consolidation treatments distort the overall risk status and financial performance of originating banks; moreover, the originating banks have incentives and opportunities to use asset securitization for earnings and capital management. These activities lead to great inherent risk to auditors, and hence attract additional audit efforts accordingly. To investigate whether or not auditors are able to capture the asset securitization risks reflected in the amount of the securitized assets, we establish the directional prediction on the association between audit fees and the securitized assets:

H1: Audit fees are positively associated with the amount of securitized assets.

3.2 *Retained Interests and Audit Fees*

Alternative to Hypothesis 1, auditors' risk consideration to asset securitizations may be associated with another important asset securitization factor, the retained interests. Empirical evidence indicates two opposite views on the economic and risk substance of asset securitizations. Regulators and standard setters treat asset securitizations as sales of assets and believe that the risk retained by the originator restricted to the extent of retained interests (FAS 140; FIN 46R). Oppositely, the

financial market holds asset securitizations as secured borrowings, and the risk retained should be extended to the total amount of the securitized assets, especially under unfavourable market conditions (Mian & Smith 1994; Kane 1997; Ryan 1997; Treacy and Carey 1998; Niu and Richardson 2006; Shipper and Yohn 2007; Hansel & Krahnert 2007; Chen et al. 2008; Landsman et al. 2008; Barth et al. 2009).

If auditors take the market participants' point of view (secured borrowing), their audit risk consideration rests with the total amount of the securitized assets, especially under unfavourable situations, and retained interest only represent the components that bear the first risk of losses on the securitized asset which are designed to be sufficient enough to cover credit risks of underlying assets only under predictable circumstances. Therefore, the audit fees are mainly associated with the total amount of the securitized assets, as predicted in Hypothesis 1. On the other hand, when auditors adopt the regulators and standard setters' point of view (sale of assets), their audit risk consideration is restricted to the components of retained interests, in the forms of interest-only stripes, servicing assets and retained junior tranche(s) of securities. In this case, a positive association between audit fees and retained interests rather than audit fees and total securitized assets is expected. Therefore, we make a directional prediction on the association between audit fees and retained interests, which is in response to and comparable with H1:

H2: Audit fees are positively associated with the amount of retained interests.

It is notable that two other issues may also affect auditors' risk assessment on the information provided by retained interests. First, the value of retained interests is

based on the fair value estimation on the securitization components (FAS 140; FAS 157), and due to the lack of market consensus price, the fair value estimation to components usually relies on certain subjective assumptions of default rates, prepayment rates and discount rates (FAS 157). Therefore, the reliability of fair value estimation is sensitive to the economic environment and is also subject to management manipulation (Dechow, Myers and Shakespeare 2009). Second, empirical research evidences the existence of implicit recourse to subsidize the SPE investors for any default losses related to the transferred assets (Higgins and mason 2004; Calomiris and Mason 2004; Chen et al. 2008; Gorton & Souleles 2005). It implies that the actual guarantee provided by the originator is not limited to the extent of retained interests, but cover the overall credit risk of the underlying assets limited to the total amount of securitized assets in case of economic difficulties. If it is the case, although retained interests represent explicit recourse of originators to investors, due to the subjective fair value estimation and the existence of implicit recourse, the retained interests should be no more important than other components in judging the true risk association between the originator and the securitized assets for auditors.

3.3 The Changes of the Association between Audit Fees and Asset Securitizations after GFC

The year 2007 saw great downward changes in the economic environment due to the GFC, especially for the banking industry. Asset securitizations are identified to be partially responsible for the economic downturn. We investigate if auditors' response to asset securitization factors has changed after GFC. For an audit, the changing economic environment relates to the variation of audit risk factors including: constraints on the availability of capital and credit, going concern and liquidity issues,

the discretion and complexity in using off-balance-sheet financings, SPEs, and other complex financing arrangements, significant estimation and valuation uncertainty resulted from market volatility. It also relates to the client's overall business risk and whether the client could achieve their strategic objectives (AICPA 2009). Both risk consideration should be addressed by auditors to either modify the audit efforts adequately or charge a fee premium for the adjusted expected legal liabilities. Therefore, we expect that auditors would pay more attention to asset securitization risks after the GFC.

H3: Audit fees are higher relative to asset securitization risks after GFC.

H3-1: Audit fees are higher relative to SA after GFC.

H3-2: Audit fees are higher relative to RI after GFC.

The asset securitization risks could be represented by the amount of securitized assets (like H1) or by the amount of the retained interests (like H2), depending on auditors' understanding of the economic substance and/or the extent of risk transfer of asset securitizations.

3.4 The impact of asset securitizations on audit pricing to credit risks

Fields et al. (2004) suggest a positive association between audit fees and bank credit risks. Specifically, banks with higher level of commercial loans, mortgage loans and intangible assets are charged higher audit fees by auditors; banks with higher level of problematic assets (proxied by non-performance loan ratio and the charge-off ratio) are charged higher audit fees by auditors.

Asset securitizations have effects of dressing up on-balance-sheet credit risks by

removing on-balance-sheet financial assets off the balance sheet. We argue that the awareness of the risks embedded in asset securitizations will trigger auditors' suspicion on auditees' on-balance-sheet credit risks and more audit efforts on credit risk evaluation and assurance, leading to higher audit fees. Measuring the credit risks with asset structure proxies (commercial loan ratio, mortgage loan ratio, and intangible asset ratio) and problematic asset proxies (the non-performance loan ratio and the charge-off ratio):

H4: As asset securitization risks increase, audit fees increase relative to credit risks.

H4-1: As SA increases, audit fees increase relative to credit risks.

H4-2: As RI increases, audit fees increase relative to credit risks.

The asset securitization risks could be represented by the amount of securitized assets or by the amount of the retained interests, depending on auditors' understanding of the economic substance and/or the extent of risk transfer of asset securitizations.

4 **Research Design**

4.1 *Model*

The basic model is adapted from the Fields et al. (2004) bank audit fee model. Fields et al. (2004) paper uses SENSITIVE, the net interest sensitive assets divided by total assets, to measure the bank's interest sensitivity. SENSITIVE is not a significant variable in the Fields et al. (2004) model either for the 2000 bank sample or for the 2003-2008 BHC samples. The importance of interest sensitive assets should be linked with the magnitude and the direction of interest rate changes. Therefore, we modify this

variable to $SENSITIVE * \Delta INT$ in our tests by multiplying the annual changes in the official interest rates of Federal Reserve Banks. We add $INTDERIV^6$, the notional amount of interest rate derivatives divided by total assets, into the model to capture off-balance-sheet interest rate risks. The effect of interest rate derivatives to audit fees is in two folds. First, the interest rate risk from on-balance-sheet assets and liabilities could be hedged by off-balance-sheet interest rate derivatives, leading to reduced business risk and reduced audit fees. On the other hand, interest rate derivatives can be used for speculation purposes, hence exaggerating the interest rate risk and increase audit fees. In addition, the complexity of derivatives leads to increased audit fees.

$$\begin{aligned}
LNAF = & \alpha + \beta_1 LNTA + \beta_2 BIG4 + \beta_3 LOSS + \beta_4 STDRET + \beta_5 TRANSACCT \\
& + \beta_6 SECURITIES + \beta_7 EFFICIENCY + \beta_8 COMMLOAN + \beta_9 NONPERFORM \\
& + \beta_{10} CHGOFF + \beta_{11} MTGLOAN + \beta_{12} CAPRATIO + \beta_{13} INTANG + \beta_{14} SAVING \\
& + \beta_{15} SENSITIVE * \Delta INT + \beta_{16} INTDERIV + \mu
\end{aligned} \tag{1}$$

Where:

LNAF: the natural logarithm of audit fee;

LNTA: the natural logarithm of total assets;

BIG4: =1 when the incumbent auditor belongs to Big 4, 0 otherwise;

LOSS: = 1 when the net income reports a negative number, 0 otherwise;

STDRET: the corresponding one-year standard deviation of daily stock returns;

SAVING: =1 when the BHC is a savings institution, 0 otherwise;

⁶ The appropriateness of using $INTDERIV$ to measure interest rate risk needs discussion.

Banks could use interest rate derivatives to hedge on-balance-sheet interest rate risks.

Supposing the only purpose that banks use interest rate derivatives is to hedge their on-balance-sheet interest rate risks, a higher proportion of interest rate derivatives leading to lower risks and lower audit fees. However, the notional amount of the derivatives and the amount of the on-balance-sheet position hedged might not be the same. (Under the derivative mechanism, the derivative amount is affected by both the amount of the hedged position and the date to maturity of the derivative and the hedged position.)

Overall, the effect of $INTDERIV$ to interest rate risk is not clear. However, it is still a good measure of off-balance-sheet risk even if it is not connected with on-balance-sheet interest rate risks.

TRANSACCT: transaction accounts, including Non-interest-earning demand deposit accounts (DDAs), interest-bearing checking accounts in NOW accounts, automatic transfer from savings (ATS) accounts, and Money Market deposit accounts (MMDAs, divided by total deposit;

SECURITIES: investment security accounts divided by total assets;

EFFICIENCY: the efficiency ratio, defined as the ratio of total operating expense to total revenue (net interest income plus non-interest income);

COMMLOAN: the proportion of commercial loans to gross loans; commercial loans involve commercial and industrial loans, loans to depository institutions, acceptances issued by other banks, and obligations (other than securities) of states and political subdivision; we also include commercial mortgage and agricultural loans in the commercial loan category;

NONPERFORM: non-performing loans/gross loans;

CHGOFF: net charge-offs/loan loss reserve;

MTGLOAN: residential mortgage loans/gross loans;

CAPRATIO: risk-adjusted capital ratio, defined as total amount of bank regulatory capital divided by risk-weighted assets;

INTANG: intangible assets/total assets;

SENSITIVE ΔINT*: on-balance-sheet interest rate risk measure, defined as (interest rate-sensitive assets - interest rate-sensitive liabilities)/total assets, all multiplied by interest rate change in the current year;

INTDERIV: the notional amount of interest rate derivatives divided by total assets.

SA: total outstanding securitized assets, deflated by total assets (Barth, Ormazabal, and Taylor 2009);

RI: total retained interests, including retained interest only strips, retained credit enhancements, and Unused commitments to provide liquidity (service advances), deflated by total assets (Barth, Ormazabal, and Taylor 2009);

GOS: the amount of gains on securitization, defined as the net income (loss) from securitizations deflated by securitized assets (Barth, Ormazabal, and Taylor 2009).

The two test variables, the amount of securitized assets (SA) and the amount of retained interests (RI), represent asset securitization risk factors as identified in Barth

et al. (2009). SA/RI measures the misstatement risk associated with asset securitizations based on the borrowing/sale accounting assumption. If auditors view asset securitizations as sales, the misstatement risk related is based on the retained interest amount; if auditors view asset securitizations as borrowings, the misstatement risk is based on the total securitized asset amount. This measure also relates to the bank's overall credit risk and the misstatement risk in auditors' going concern reporting. As the core financial risk of banks, credit risk have direct impacts on bank's going concern status. Thereby, in auditors' perception, whether credit risk is associated with total securitization amount or only with the retained interests is crucial for auditors in making their judgment on going concern status. GOS measures the misstatement risk related to earnings reporting. Prior research has demonstrated that manipulating gains on securitizations could be an effective tool in earnings management and capital management (Degeorge, Patel, and Zeckhauser 1999; Matsumoto 2002; Rosenblatt et al. 2005; Dechow and Shakespeare 2009). GOS is a control variable only when the BHC is a securitizer.

4.2 Data Source and Criteria

Bank audit data are collected from Audit-Analytics. Following prior research (e.g., Barth, Ormazabal, and Taylor 2009; Chen, Liu and Ryan 2008; Karaoglu 2004), we extract the financial statement data plus asset securitization and derivative details from Y9C quarterly reports filed with Bank Regulatory by BHCs that have total assets exceeding \$150 million. The lower limit of \$150 million does not affect our result as the majority of banks performing asset securitization activities are in the size larger than this limit. Securitization details are disclosed in Schedule HC-S, <Servicing, Securitization and Asset Sale Activities> of Y9C reports, first introduced in Y9C

reports from the second quarter of 2001. One-year standard deviation of daily stock return is an independent variable in the audit fee model, which is calculated from daily stock prices and dividend information collected from CRSP database. Interest rate information is obtained from U.S. Treasury and FRB official disclosures. The economic condition indicator, NYSE Financial Sector Index is extracted from NYSE official website.

We first match bank financial statement data with CRSP/Compustat merged data via CRSP-FRB link provided by Federal Reserve Bank of New York⁷. The linked dataset has identification items such as CIK (SEC registrant header code), CUSIP (Committee on Uniform Security Identification Procedures code) and LPERMCO (Company permanent name). We match the linked dataset with CRSP via LPERMCO, and Audit-Analytics via CIK (in Audit-Analytics, refers to Company_FKEY).

4.3 *Sample*

We restrict our sample to the BHCs. First, in firms performing securitization activities, BHCs represent a relatively large and economically important sample (Barth, Ormazabal, and Taylor 2009). Niu and Richardson (2006) indicate the intensity of securitization related transactions in the traditional financial sector is stronger than in other sectors. Dechow, Myers, and Shakespeare (2009) report that BHCs are the primary securitizers of assets. Second, as stated in Chen, Liu and Ryan(2008), restricting to bank sample could reduce the external validity of studying a multi-industry sample, increase the power of control for factors other than interested variables, and obtain greater ability to observe the effect of the securitization risks. Third, Bank Regulatory Database provides sufficient data on financial statement and

⁷ http://www.newyorkfed.org/research/banking_research/datasets.html

securitization activities of BHCs since the second quarter of 2001 based on Y9C reports to Federal Reserve. As securitization data are only available on Y9C Bank Regulatory reports after the second quarter of 2001, and RI information is available after 2003, the study covers the period from 2003 to 2008.

After matching audit fees, bank financial numbers, and CRSP one-year standard deviation of stock returns, the sample consists of 2138 firm-year observations. We delete two observations that report extreme CAPRATIO (risk-adjusted capital ratio) as at 0.16% (IBERIABank, 2008) and 1155% (Fidelity Southern Corp, 2007) as input errors. We further winsorize all the explanatory variables at their 1 and 99 percentiles.

The above procedures leave us with 2,136 firm-year observations for the period from 2003 to 2008, belonging to 452 U.S. BHCs, as the final sample. It can be partitioned into two subsamples—the securitizers (N=274) and the non-securitizers (N=1,862). Further partitioning the securitizer subsample into securitizers with RI>0 and securitizers with RI=0, there are 178 firm-year observations with more than zero retained interest balances.

<Figure 2>

4.4 *Descriptive Statistics*

Descriptive statistics are presented in Table 1. Some selected variables are also plotted in Figure 3. The average (median) audit fees for the sampled BHCs are \$1,210,067 (\$268,447). The average audit fees exhibit an upward trend from 2003 to 2008. In terms of auditor choice, Fields et al. (2004) report more than 70% of BHCs audited by Big N auditors in 2000. Our sample indicates a decreasing proportion of BHCs audited by Big N auditors since then, from 57.3% BHCs audited by Big N auditors in 2003 to 42.8% in 2008. Simunic and Stein (1996) and Fields et al. (2004)

explain the lower ratio of Big-N audits than in other industries as that increased litigation risk in the banking industry results in a shift from larger to smaller audit firms. Ettredge et al. (2009) state that the decrease in Big N audits in BHCs reflects client migration to small auditors after SOX 404 became effective. In addition, the average audit fees and total assets values are all much lower in Non-Big N audits than in Big N audits, implying that large BHCs still choose Big N audit firms as their auditors, while small BHCs are more likely to shift to Non-Big N auditors.

The average total assets follow a similar increasing pattern. The mean values are more than 10 times larger than the median values for the pool data and the yearly data, indicating the sample is highly right-skewed. The highly right skewed sample pattern is common in banking research, e.g., Fields et al. (2004), Karaoglu (2005), Chen et al. (2008) and Ettredge et al. (2009). Fields et al. (2004) attribute it to several very large BHCs in the sample.

Although the average LOSS is stable before GFC, there is a sharp increase in the proportion of BHCs experiencing loss after GFC. Correspondingly, with the consideration that the asset composition is generally stable during the period (e.g. TRANSACCT, COMMLOAN, MTGLOAN etc.), asset quality experience an unfavourable change after GFC, as reflected in the non-performing loan ratio (NONPERFORM) and the charge-off ratio (CHGOFF).

The average interest rate sensitivity of the pool data is 9.5%, comparable with Fields et al. (2004). As the interest rate risk might be sensitive to the interest rate fluctuation, we multiply the interest rate sensitivity with the annual changes in the official interest rates ($SENSITIVE * \Delta INT$) to capture the movement of on-balance-sheet interest rate sensitivity in response to the changes of interest rate of

the concurrent years. To complete the picture, we also include an off-balance-sheet interest rate risk measure—the ratio of interest rate derivatives (INTDERIV) into this study, with the mean value of 0.269 for the pool data.

<Table 1>

<Figure 3>

The amounts of securitization activities are widely diversified and highly right-skewed. Table 2 indicate that most BHCs did not undertake securitization activities. Of the 2,136 sampled firm-year observations, 1,862 (87.17%) observations did not have outstanding securitized assets; and 1,958 (91.67%) observations had no retained interests. Securitizations are clustered in the largest BHCs. There are 99.62% (\$9,983,352 million) outstanding securitized assets held by 178 of the 300 largest firm-year observations measured by total assets. Among the Top 50 BHC securitizers ranked by the amount of securitized assets during the period 2003 to 2008, the four largest BHCs, saying Bank of America, Citigroup, Wells Fargo & Co., and J. P. Morgan Chase & Co. are listed in the Top 5 securitizers. Countrywide Financial and MBNA were purchased by Bank of America, in 2005 and 2008 respectively. Bank One merged with JP Morgan Chase & Co. in 2004; and Wachovia was purchased by Wells Fargo at the end of 2008.

<Table 2>

4.5 *Correlations*

Table 3 shows Pearson correlations between the regression variables and p-values from the two-tailed tests. The logarithm of audit fees (LNAF) is highly correlated with most of the control variables except for SECURITIES. The asset securitization measures, namely SA and RI are highly correlated with each other (Corr.

Coef. 0.277, $p < 0.0001$), and they are both significantly correlated with LNAF ($p < 0.0001$). SA and RI are also correlated with a number of control variables. The positive correlation between asset securitization measures and LNTA support the view that asset securitizations are more likely to occur in large BHCs. We explain the positive correlation between asset securitization measures and Big N auditors as that the complexity of asset securitization transactions forces BHCs to go to Big N audit firms rather than small audit firms. The significantly positive correlations between loan quality measures (NONPERFORM and CHGOFF) and asset securitization measures suggest that BHCs with greater loan quality problems are more likely to undertake asset securitization transactions.

The derivative measure INTDERIV is positively correlated with LNAF, implying auditors charge higher audit fees for BHCs with larger proportions of interest rate derivative positions. Derivative transactions are higher for BHCs with larger size and Big N clients. The positive correlations of INTDERIV with COMMLOAN, CHGOFF, NONPERFORM, and INTANG indicate that interest rate derivatives are used as an active risk management tool in BHCs. On the other hand, derivative positions are lower for BHCs with higher market volatility, higher proportion of investment securities, and higher proportion of mortgage loans. In addition, SA and RI are both positively correlated with INTDERIV.

<Table 3>

5 Results

5.1 *The Validity of Modified BHC Audit Fee Model*

The comparison of the validity of Fields et al. (2004) model and the modified

audit fee model used in this study is shown in Table 4. Fields et al. (2004) model still fits well for the pooled sample. LNTA, BIGN, SECURITIES⁸, EFFICIENCY, NONPERFORM, CAPRATIO and INTANGIBLE are still significant determinants for the pooled data and report the same signs as Fields et al. (2004). In particular, Big N auditors charge a significant fee premium for bank clients. SECURITIES is significantly negative in our sample while significantly positive in Fields et al. (2004). As SECURITIES is defined as 1 minus investment securities/total assets in Fields et al. (2004) but defined as investment securities/total assets in this study, this result is consistent with Fields et al. (2004). STDRET and MTGLOAN are also significant but report opposite signs to Fields et al. (2004).

Fields et al. (2004) paper uses SENSITIVE, the net interest sensitive assets divided by total assets, to measure the bank's interest sensitivity. SENSITIVE is not a significant variable in the Fields et al. (2004) model either for the 2000 bank sample or for the 2003-2008 BHC data. The increase (decrease) of interest-rate generally benefits banks with more net interest-sensitive assets (liabilities). During periods of increasing interest rates, banks with higher net-interest-sensitive asset gap would have higher net interest income and less risk, and thereby be charged a lower audit fees, *ceteris paribus*; The US experienced 17 consecutive interest-rate increases from June 2004 to June 2006 due to inflation concerns, however, the interest rate was continuously decreasing afterwards. Therefore it would be clearer to investigate the association between SENSITIVE and audit fees if we consider the changes in the interest rate in this measure.

We modify the BHC audit fee model by measuring market risk with two interest

rate variables. $SENSITIVE*\Delta INT$ represents on-balance-sheet interest rate risk with an adding consideration on the impact of changing interest rate to market sensitivity. $INTDERIV$ measures off-balance-sheet interest rate risk; it also indicates the involvement of the BHC into derivative activities. As presented in Table 4, the modified model explains more variations of audit fees than Fields et al. (2004) model. Additionally, both $SENSITIVE*\Delta INT$ and $INTDERIV$ are significantly and positively associated with $LNAF$ ($p < 0.01$) for the pooled sample. The positive significance of $SENSITIVE*\Delta INT$ and $INTDERIV$ for the pooled sample holds robust when we add asset securitization factors, post GFC dummy variable, or the changes in financial index into the model, indicating that auditors charge higher audit fees on both on-balance-sheet and off-balance-sheet interest rate risks. Further estimating on the yearly samples, the modified audit fee model fits well for the yearly samples, showing stable and consistent results on $LNTA$, $BIGN$, $EFFICIENCY$, and $INTDERIV$ with the pooled sample.

We apply Chow tests to signal the structural changes of the audit fee model before and after GFC. Taking the post-GFC indicator as the breaking point, both the Fields et al. (2004) model and the modified audit fees exhibit a significant change (all the p-values < 0.001).

<Table 4>

5.2 *Audit Fees and Asset Securitizations*

To capture the association between audit fees and asset securitizations, we add three asset securitization variables into the modified audit fee model. Among them, SA and RI are the two test variables on hypothesis testing. To analyse the changes in the audit pricing to asset securitizations, we further add a GFC indicator— $PGFC$, and

two interaction terms—SA*PGFC and RI*PGFC into the model. The association between audit fees and asset securitizations for the pooled sample, before and after GFC, and for the yearly samples are reported in Table 5.

Contrary to the predictions in H1 and H2, the pooled data result does not show direct associations between audit fees and asset securitization factors for the period from 2003 to 2008, indicating that asset securitization risks are not significantly noticed by BHC auditors in this period.

H3 predicts an increase in audit pricing on asset securitization items before and after the GFC. Taking the year 2007 as the separation point, before GFC, asset securitizations are commonly recognized as an effective tool to facilitate liquidity, manage risks and improve the bank performance for banks although there are some different voices from academics. The GFC reminded the markets about the risks and potential impacts of asset securitizations to banks and to the economy. The pooled sample shows a significant increase in overall audit fees after GFC ($p < 0.0001$). The interaction term RI*PGFC is positively associated with LNAF, suggesting that there is an increase in audit pricing to the retained interests after GFC, consistent with the prediction in H3-2.

Splitting the pooled sample into pre-GFC and post-GFC subsamples, SA and GOS are associated with LNAF neither before nor after GFC, contrary to the prediction of H1. The pre-GFC RI is not significant to LNAF, which is contrary to H2; however after GFC, RI has been positively associated with LNAF (Coef. 7.70, $p = 0.017$), supporting H2. The results imply a great increase in audit pricing on asset securitization risks after the financial crisis, focusing on the retained interest part. Specifically, auditors do not price asset securitization risks before GFC. In the years

after 2007 (inclusive), perhaps due to the explicit impact of GFC on the economy and the banking industry, auditors gave more consideration on asset securitization risks as reflected in the audit pricing. However, auditors only focused on RI instead of SA, indicating that auditors still believed the risk of asset securitization were restricted to the retained interest component, and support the view that asset securitization transactions are sales of assets rather than secured borrowings. Therefore, auditors' perception of asset securitization risks is similar to standard setters and regulators understanding to asset securitization risks, but opposite to the market participants' point of view even during the period after GFC.

<Table 5>

5.3 *The Impact of Asset Securitizations on Audit Pricing to Credit Risks*

We report the effects of asset securitizations on audit pricing to credit risk factors in Table 6. We select the ratio of commercial loans, mortgage loans and intangible assets to proxy for the credit risks in terms of asset structure and the non-performing loan ratio and charge-off ratio as the proxies for the asset quality. The effects of asset securitizations to audit pricing to specific credit risk factors are represented by the interactions between asset securitization measures and credit risk measures. The changes in these effects after GFC are reflected by multiplying the interaction terms with the PGFC indicator.

Setting the significance criteria at $p=0.05$, we cannot find evidence that asset securitizations have impacts on the associations between asset-structural-credit risks and audit fees for the pooled sample. However, further interactions with the PGFC indicator suggest that auditors increase their pricing to commercial loans and

intangible assets when the BHC shows a higher proportion of retained interests⁹. Similarly, on the impacts of asset securitizations on pricing to asset quality measures, auditors also increase their pricing to credit risks represented by problematic asset quality when the BHCs have a higher level of retained interests. The overall results are consistent with the expectation of H4-2 and also cross-support the views of H2 and H3-2.

<Table 6>

6 Additional Analyses

6.1 *Controlling for Changes in Macroeconomic Conditions*

The year 2007 might not be an appropriate dividing point of pre- and post-GFC, as some signals of banking distress and financial crisis have already been reflected in 2006 although auditors may or may not notice them. We also want to clarify if the audit fee determination changes with the macro-economic conditions other than the great GFC. Therefore, we introduce DFININDEX, the changes in NYSE financial sector index as a measure of the macro-economic condition of the banking industry in the model.

As shown in Figure 3, NYSE Financial Index has kept on increasing from 5148 in the year 2003 to the peak of 10745 in the year 2007. Afterwards, NYSE Financial Index has been on a downward trend and decreased to 9395 in the year 2008. Accordingly, the annual changes of NYSE Financial Index are positive for the pre-GFC years from 2003 to 2006, but negative for the post-GFC period 2007 and

⁹ The results can basically evidence the consistent pattern on the impacts of asset securitizations on audit pricing to credit risks. However, maybe due to the high multicollinearity existed among the interaction terms, some results are mixed and hard to explain.

2008.

Table 7 demonstrates that audit fees are sensitive to the changes in economic conditions. Other things being equal, LNAF is negatively associated with DFININDEX ($p < .0001$). Stated differently, audit fees decrease in booming years but increase in recession periods. The association between audit fees and securitization factors holds robust after adding DFININDEX into the model. Specifically, SA and RI are still not associated with LNAF for the period 2003-2008. Additionally, $RI * DFININDEX$ is negatively related to LNAF ($p = 0.032$), indicating that with the decrease of NYSE Financial Sector Index, the audit pricing to the retained interests increases significantly.

Partitioning the all BHC sample into pre- and post-GFC subsamples, SA and RI are not significant to LNAF in the pre-GFC period; while audit pricing to RI is positively significant after GFC (Coef. 7.39, $p = 0.020$). It is interesting to notice that LNAF is negatively associated with DFININDEX before GFC (Coef. -2.30, $p < .0001$) but positively associated with DFININDEX after GFC (Coef. 0.20, $p = 0.022$). Although audit fees are lower in booming years before GFC, after GFC, auditors make more audit efforts and charge higher fees to BHCs even though the industry index shows some booming signals.

<Table 7>

6.2 *Controlling for Auditor Change or Auditor Independence*

The addition of auditor change indicator or auditor independence measure into the regression does not affect the main test results. Specifically, AUDITORCHANGE is not a significant factor for BHC audit fee determination, both before and after GFC. For the full test period 2003-2008, none of the securitization factors is associated with

LNAF. There is a great increase in audit fees after GFC ($p < 0.0001$) and audit pricing to retained interests has also significantly increased after GFC (RI*PGFC: Coef. 9.23, $p = 0.030$). By partitioning pre- and post-GFC subsamples, although RI is not associated with LNAF during the pre-GFC years, LNAF is positively associated with RI in the post-GFC period (Coef. 7.53, $p = 0.019$), consistent with the main test results.

The auditor independence measure, LNNAF, is positively associated with LNAF, indicating that non-audit service fees are increasing with the increase of audit fees. In accordance with Hay et al. (2006), we explain the positive association between LNNAF and LNAF as non-audit services may lead to extensive changes in BHCs and therefore require additional audit efforts and higher audit fees. Controlling for non-audit service fees does not affect the main test results.

<Table 8>

6.3 *Matched Pair Samples and the Securitizer Subsample*

We match a control group of 248 BHCs without asset securitization activities to the group of 248 BHCs having asset securitization activities from 2003 to 2008, based on the total asset (LNTA) and year (YEAR) measures. The matching procedure is: (1) For each study case, control cases are matched on LNTA (the BHC size measure) and Year (the year measure); and (2) If more than one control cases match the study case, one control case is randomly selected. The final matched pair sample consists of 496 firm-year observations from 2003 to 2008. As shown in Table 9 Panel A, the results are qualitatively similar to the main analysis results. Although asset securitization factors are not associated with LNAF for the study period from 2003 through 2008, the interaction term RI*PGFC is positively significant, indicating that audit pricing to the retained interests is increased after GFC.

The securitizer subsample has 274 BHC-year observations. Unreported descriptive statistics indicate that the securitizer subsample has much higher audit fees (LNAF) and larger BHC size (LNTA). They are more audited by Big N auditors (Big N), have lower stock price volatility (STDRET), higher level of loan-charge-off (CHGOFF), and higher level of intangible assets (INTANG). Securitizers are more involved in on-balance-sheet and off-balance-sheet interest rate risks (SENSITIVE* Δ INT and INTDERIV). Not strangely, the securitizer subsample is more actively involved into asset securitization transactions than the all-BHC sample. Table 9 Panel B report the regression results on the securitizer subsample. Consistent with the main test results, the audit pricing to RI has a great increase after GFC (RI*PGFC Coef.9.04, p-value 0.043). Inconsistent with the main results, none of the asset securitization factors is significantly associated with LNAF, either before or after GFC. We attribute the insignificant results to the limited securitizer subsample size (N=274, compared with a large audit fee model with around 20 independent variables and interaction terms) and the very small post-GFC securitizer subsample size (N=73).

<Table 9>

6.4 *Excluding the Year 2006*

It might be inappropriate to include the year 2006 as a pre-GFC year, as this year may have seen some signals of banking distress and financial crisis and auditors may have been affected by them in audit pricing accordingly. Therefore we exclude the year 2006 from the pooled sample and rerun the regressions. As shown in Table 10, the exclusion of 2006 data does not affect the main test results.

<Table 10>

6.5 *Audit Fees and Asset Securitizations by Auditor Size and by BHC Size*

The main tests suggest that auditor choice is an important factor affecting audit fee determination. Untabulated descriptive statistics indicate that audit fees and total asset values are much higher for Big 4 Clients than for Non-Big 4 clients. Big 4 clients also have higher securitization amounts. Comparing the financial risk factors, Big 4 clients have lower possibility of incurring a loss (LOSS) and lower market risk (STDRET), implying that Big 4 clients are usually under lower business risks. We test whether THE auditors' pricing to asset securitization factors differentiate between Big N auditors and non-Big N auditors. Table 11 Panel A indicates that Big N and non-Big N auditors both increase audit fees after GFC; but only Big N auditors marginally increase their audit pricing to one of the asset securitization risks after GFC (RI*PGFC Coef. 7.60, p-value 0.079), which is supported by a marginally significant association between LNAF and RI for the Big-N auditor subsample (RI; coef. 6.28, p-value 0.056). The results from the analysis by auditor choice suggest that Big N auditors probably have better awareness of asset securitization risks, even though Big N auditors' attention to asset securitizations still lies in the retained interest components, and only after GFC.

We also test whether the association between LNAF and asset securitizations is different for large BHCs and small BHCs. Table 2 indicates that asset securitization activities are clustered in large BHCs. Untabulated descriptive comparison demonstrates that large BHCs have higher audit fees and more asset securitization activities. Large BHCs are more likely to employ Big N auditors, incur a loss, and have a higher charge-off rate, a higher intangible asset ratio and a higher interest-sensitive asset ratio than small BHCs. Table 11 Panel B suggests that the main

test results hold consistent for the large BHCs. However, for the non-Big N subsample, as all the RIs are 0 in the post-GFC years, we cannot give out a comparable result on RI from the non-Big N subsample. On the other hand, the high multicollinearity existed among asset securitization variables and interaction terms veils the true effect of BHC size on the association between LNAF and asset securitizations.

<Table 11>

7 Conclusion

This study presents a cross-sectional and intertemporal picture of the association between audit fees and asset securitization from the pricing perspective. Although asset securitization has been studied in different aspects, no prior study has focused on the auditor's role in asset securitization. The current financial crisis reveals the economic materiality and the impact of asset securitization on the economy, financial markets and individual firms. For auditors, asset securitization is an important audit area with great audit risk and economic materiality.

The main tests and additional analyses are consistent on the association between audit fees and asset securitization factors in several dimensions. First, pooled for the period from 2003 to 2008, no asset securitization factors are priced in audit fees. Second, intertemporally comparing the before and after GFC results, SA, RI and GOS are not related to AF before GFC; after GFC, asset securitization risks have been priced by auditors in audit fees but only focused on the retained interest portion.

The results well explain the central question that “where were the auditors in asset securitization” under the lens of audit pricing. For the study period, auditors only focused on the risks associated with the retained portion of the securitized assets

(RI) in their audits and only after GFC. Auditors believed that the risk of asset securitization rested with the retained portion of the securitized assets, supporting the sale of assets treatment, and consistent with the views of regulators and standard setters. However, a series of bank distresses and failures across the GFC have demonstrated that it would be more conservative and optimal to fully consider the risks associated with total securitized assets and take securitization activities as secured borrowings. Therefore the risks associated with the total securitized assets (SA) had been largely neglected by auditors for the study period. In addition, the before-and-after comparison indicates that, even for the risks associated with the retained interest portion, auditors did not capture it before the GFC but only after 2006 when the impact and risks of asset securitization to the GFC has been universally disclosed and recognized.

A series of additional analyses and sensitivity tests support the main test results on the association between asset securitizations and audit fees. In addition, we find that off-balance-sheet risks are also priced in audit fees; and the macroeconomic condition and non-audit service fees are important determinants of audit fees. By comparing the audit pricing to asset securitization risks for BHCs audited by Big N and non-Big N auditors, we find inconclusive signals that Big N auditors are superior in capturing asset securitization risks to non-Big N auditors. By splitting the pooled sample into large and small BHC subsamples, the regression results on large BHCs also support the main test results.

This overall study contributes to the limitedly developed bank audit literature. With the lens of audit pricing, it provides insights on auditors' behaviours around the financial crisis, particularly focusing on asset securitization. The relatively stable

regulatory and accounting standard environment during the study period creates an ideal situation to examine the inter-temporal variation of any association between audit fees and asset securitization under a changing economic environment from prosperity to recession. By addressing bank auditing and asset securitization, it relates to several points mentioned in Basel (2008) including consolidation, fair value estimation and disclosures of off-balance-sheet vehicles. The findings that auditors cannot capture asset securitization risks before the GFC and auditors could only focus on risks associated with the retained portion of the securitized assets after the GFC well explain the audit failures on asset securitization area in recent years, and might be theoretically and practically useful for regulators, standard setters and the audit profession.

The study has several limitations. First, due to the data availability, our study only covers the years from 2003 to 2008. In the pre- and post-GFC comparison, there are only 4 years' pre-GFC data and 2 years' post-GFC data. The short time span and the unbalanced data structure might be one reason for some insignificant results in this study. Second, due to the limitation of empirical research methods, we cannot further analyse the reasons behind the lack of focus on asset securitization risks by auditors, especially before the GFC. We hope experimental and behavioural research could further precede this topic. Third, this study only analyses the cost-side of the association between audit pricing and asset securitization. Whether and how this fee premium in asset securitization is beneficial, e.g. in reporting quality and audit quality, is still pending further research.

Appendix 1: Accounting Treatments on Asset Securitizations
Panel A: Accounting treatments under FAS 140, FAS 156 and FAS 166

Fair Values		FAS 140 before Revision			FAS 156			FAS 166	
		Carrying amounts based on the relative fair values			Carrying amounts based on the relative fair value			Net Proceeds	
		Fair	Pct of total	Allocated carrying	Fair	Pct of total	Allocated carrying		
Cash proceeds	1,000							Cash proceeds	1000
Servicing asset	40							servicing assets	40
Interest-only strip	60							Interest-only strip	60
Total		1100	100	1000	1100	100	1000	Net proceeds	1100
Gains on sale								Gains on sale	
Net proceeds	\$		1000		\$	1040		Net proceeds	1100
Carrying amount of			910			945.5		less: carrying	1000
Gains on sale			90			94.5		Gains on sale	100
Journal entry:								Journal entry:	
Cash	1000				Cash	1000		Cash	1000
Loan sold			910		Interest-only strip	54.5		Interest-only strip	60
Gains on sale			90		servicing asset	40		Servicing asset	40
Servicing asset	36				Loans sold		1000	Loan sold	1000
Interest-only strip	54				Gains on sale		94.5	Gains on sale	100
Loans sold			90		Interest-only strip	5.5			
Interest-only strip*	6				Other		5.5		
Equity			6						

Note: as required in FAS 166 and FAS 167, the concept of QSPE was deleted. In most situations, the SPE financial report should be consolidated with the transferor's report. Therefore, there is no effect of sale accounting to the consolidated reports. * According to FAS 115, interest-only strip receivables are subsequently classified as available-for-sale securities and its changes in fair values should be adjusted and reported as other comprehensive income in the income statement.

Panel B: Comparison of Sale accounting and Borrowing Accounting

(1) We assume that Bank A initially has loan assets of \$4,000, consisting of half of its total assets. As a bank meeting the capital requirements, Its owner's equity is \$64, 8% of total assets. Its ROI before the securitization is 10% (the example case is established based on the statistics from our 2006 BHC data).

Initial Balance Sheet		leverage(D/E ratio): 11.5	
Other assets	\$4,000	Liabilities	\$7,360
		Owner's equity	\$64
Loans	\$4,000		0
		Liabilities & Equity	\$8,000
total assets	000		000

(2) Bank A securitizes 25% of the loans via a QSPE (Before FAS 156); the transaction is qualified as a sale according to FAS 140.

The balance sheet after the securitization		leverage: 10	
Cash	\$1,000	Liabilities	\$7,360
Loans	\$3,000		
servicing asset	\$36		
Interest-only strip	\$60		
Other assets	\$4,000	equity	\$73
		Liabilities & Equity	\$8,096
Total assets	096		096
The income statement after the securitization			
net income other than securitization	\$64		
Gains on securitization other comprehensive income	\$90		
	\$16		
	\$4		
	160		

(3) Bank A securitizes 25% of the loans via a QSPE (after FAS 156), qualifying a sale accounting according to FAS140 and FAS 156.

The balance sheet after the securitization			
Cash	\$1,000	Liabilities	\$7,360
Loans	\$3,000		
servicing asset	\$40		
Interest-only strip	\$60		
Other assets	\$4,000	equity	\$40
		Liabilities & Equity	\$8,100
Total assets	100		,100
The income statement after the securitization			
net income other than securitization	\$64		
Gains on securitization other comprehensive income	\$95		
	\$6		
	\$16		
	4		

(4) The transaction in (2) and (3) are recorded as a secured borrowing.

The balance sheet after the securitization		leverage: 13.06	
cash	\$1,000	liabilities	\$8,360
loans	\$3,000		
securities pledged to creditors	\$1,000	equity	\$640
other assets	\$4,000		
		liabilities & equity	\$9,000
total assets	000		\$9,000

And there is no effect of a secured borrowing on the income statement.

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Figure 1 The Securitization Mechanism

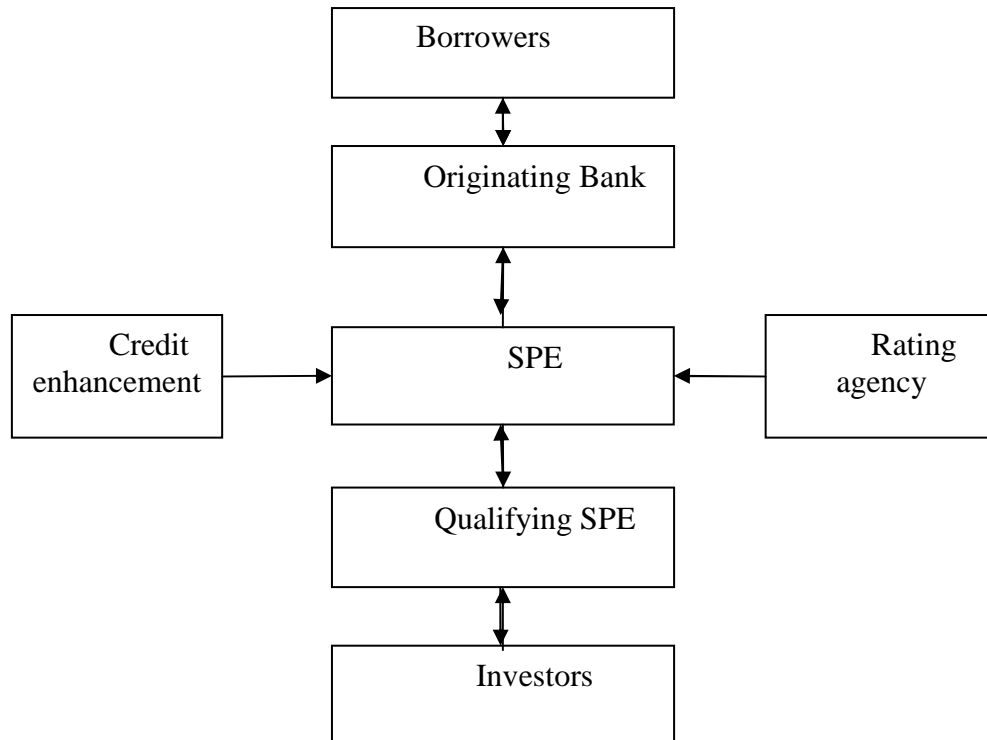


Figure 2 The Overview of the Sample

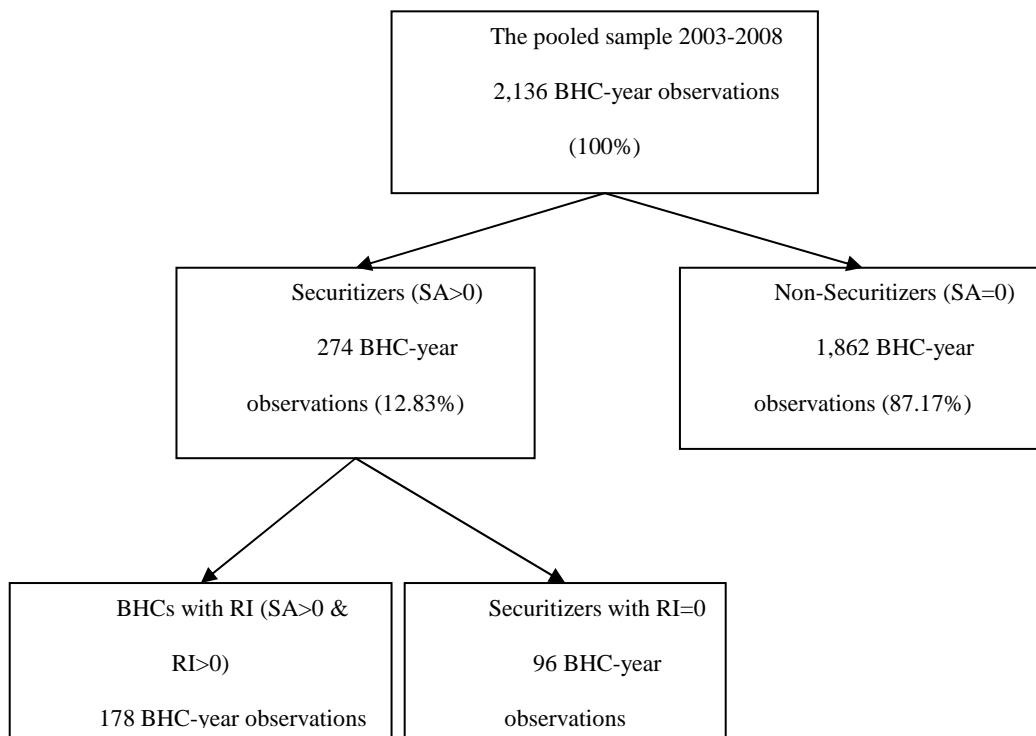


Figure 3 The Plots of Selected Variables

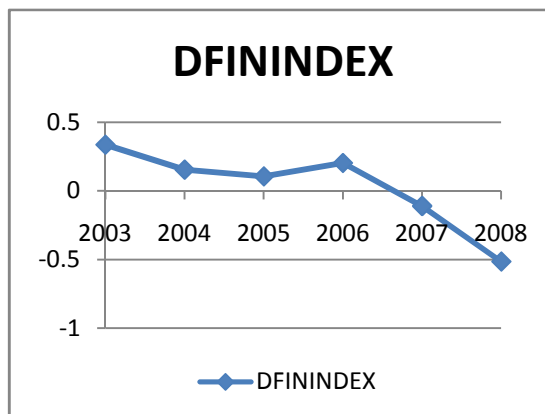
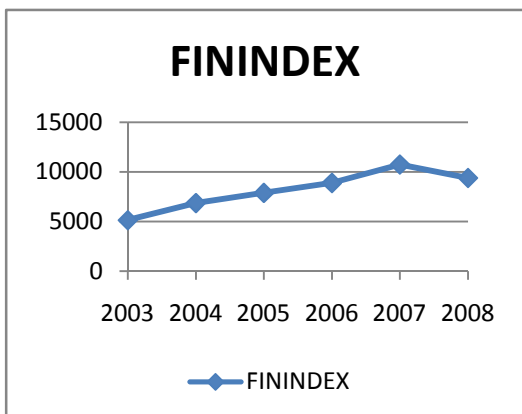
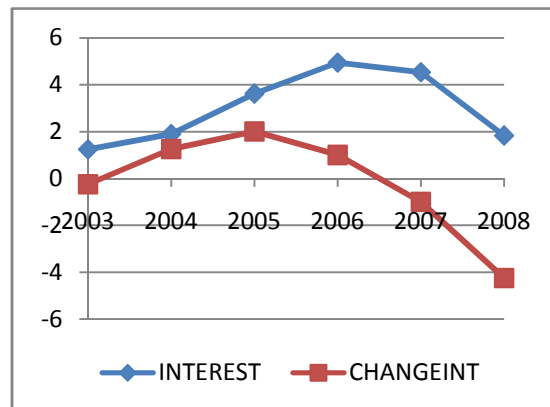
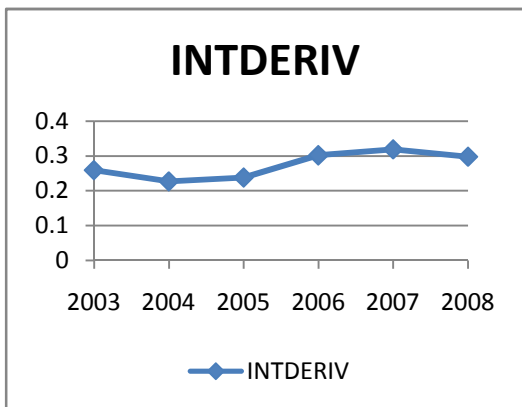
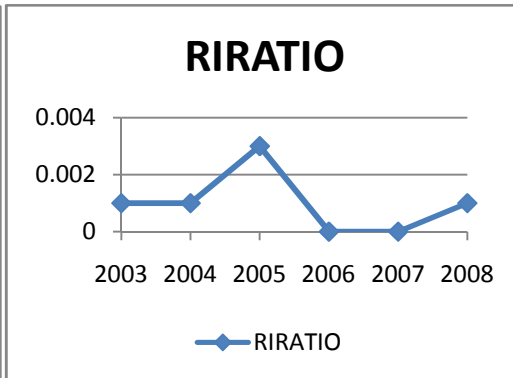
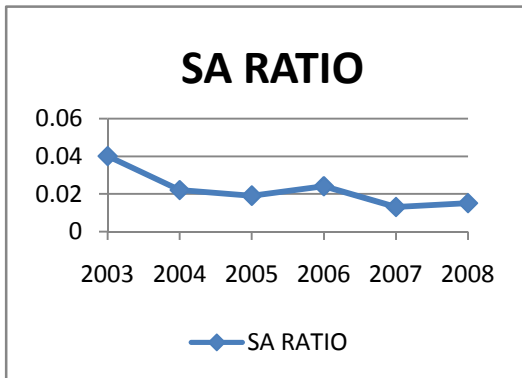
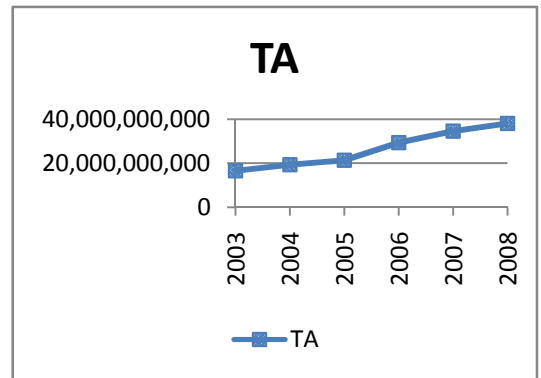
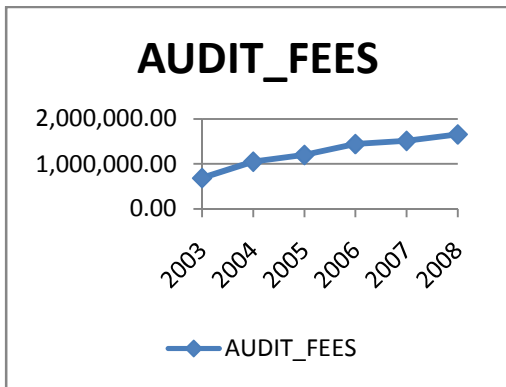


Table 1 Descriptive Statistics

		<u>Pooled</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Dependent Variable								
AUDIT_FEES \$	Mean	1,210,067.74	685,440.01	1,050,175.96	1,198,512.37	1,441,411.00	1,511,708.32	1,654,425.24
	Median	268,446.50	144,500.00	247,080.00	280,000.00	332,000.00	353,301.00	380,000.00
Control Variables								
TA \$	Mean	25,316,446,010	16,549,493,540	19,311,922,010	21,337,121,080	29,351,957,690	34,610,684,810	38,083,226,760
	Median	1,584,543,500	1,093,238,000	1,223,803,000	1,452,287,000	1,971,753,000	2,109,270,000	2,271,833,000
BIGN	Mean	0.499	0.573	0.531	0.483	0.486	0.450	0.428
	Median	0	1	1	0	0	0	0
LOSS	Mean	0.059	0.009	0.024	0.018	0.012	0.060	0.289
	Median	0	0	0	0	0	0	0
STDRET	Mean	0.326	0.337	0.362	0.371	0.281	0.265	0.313
	Median	0.041	0.029	0.035	0.028	0.021	0.026	0.067
TRANSACCT	Mean	0.570	0.596	0.600	0.578	0.552	0.548	0.516
	Median	0.573	0.609	0.611	0.581	0.551	0.543	0.517
SECURITIES	Mean	0.206	0.244	0.227	0.207	0.190	0.173	0.174
	Median	0.184	0.228	0.210	0.190	0.168	0.157	0.156
EFFICIENCY	Mean	0.656	0.637	0.644	0.630	0.632	0.659	0.766
	Median	0.636	0.630	0.633	0.619	0.625	0.647	0.673
COMMLOAN	Mean	0.168	0.175	0.167	0.160	0.166	0.169	0.168
	Median	0.150	0.158	0.148	0.141	0.150	0.154	0.150
NONPERFORM	Mean	0.010	0.009	0.007	0.006	0.007	0.012	0.028
	Median	0.006	0.006	0.005	0.004	0.005	0.008	0.020
CHGOFF	Mean	0.277	0.272	0.236	0.211	0.215	0.281	0.505
	Median	0.200	0.216	0.174	0.141	0.156	0.219	0.409
MTGLOAN	Mean	0.734	0.715	0.731	0.745	0.373	0.741	0.744
	Median	0.758	0.739	0.752	0.765	0.767	0.767	0.775
CAPRATIO	Mean	13.534	14.062	13.801	13.586	13.393	12.680	13.353
	Median	12.710	13.225	12.910	12.660	12.510	11.785	13.070
INTANG	Mean	0.018	0.013	0.016	0.018	0.022	0.024	0.020
	Median	0.011	0.007	0.009	0.011	0.016	0.018	0.014
SAVING	Mean	0.056	0.071	0.064	0.064	0.046	0.040	0.039
	Median	0	0	0	0	0	0	0
SENSITIVE	Mean	0.095	0.086	0.137	0.118	0.079	0.072	0.056
	Median	0.090	0.089	0.135	0.114	0.073	0.067	0.047
ΔINT	Mean	0.006	-0.250	1.250	2.000	1.000	-1.000	-4.250
	Median	-	-	-	-	-	-	-
INTDERIV	Mean	0.269	0.259	0.227	0.238	0.302	0.319	0.298
	Median	0.001	0	0	0	0.003	0.005	0.008

		<u>Pooled</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Asset Securitization Variables								
SA AMOUNT	Mean	4,691,652,460	2,347,636,000	2,956,949,710	3,791,364,130	5,846,183,690	5,585,318,500	9,664,898,200
	Median	0	0	0	0	0	0	0
RI AMOUNT	Mean	89,764,370	73,426,240	67,016,150	70,296,080	107,100,610	113,798,700	128,384,770
	Median	0	0	0	0	0	0	0
GOS AMOUNT	Mean	45,741,650	38,488,640	46,294,460	36,273,510	58,240,880	56,914,200	42,516,240
	Median	0	0	0	0	0	0	0
SA (RATIO)	Mean	0.023	0.040	0.022	0.019	0.024	0.013	0.015
	Median	0	0	0	0	0	0	0
RI	Mean	0.001	0.001	0.001	0.003	0.000	0.000	0.001
	Median	0	0	0	0	0	0	0
GOS	Mean	-0.012	0.013	0.017	0.010	0.015	0.014	-0.178
	Median	0	0	0	0	0	0	0
Additional Information								
Interest Rate		2.910 (Mean)	1.240	0.890	3.620	4.940	4.530	1.830
NYSE Fin Index		8,157.60 (Mean)	5,148.45	6,874.44	7,889.40	8,893.39	10,745.00	9,394.92
DFININDEX		0.063(Mean)	0.335	0.154	0.105	0.202	-0.111	-0.515
N		2136	424	409	391	329	300	283

Table 2 the distribution of Asset Securitization Variables

Panel A:

(1) In the pooled sample (n=2,136, Number of BHCs=452)

<u>SA</u>	<u>Frequency (%)</u>	<u>RI</u>	<u>Frequenc y (%)</u>	<u>GOS</u>	<u>Frequency (%)</u>
				<0	15 (0.70%)
0	1,862 (87.17%)	0	1,958 (91.67%)	0	2,001 (94.38%)
>0	274 (12.83%)	>0	178 (8.33%)	>0	120 (4.92%)
Total Amount (\$, 000)					
9,648	10,021,36	00	191,736,7		97,704,166

(2) In the largest BHC sample (n=300, Total assets >\$11,680 Million)

<u>SA</u>	<u>Frequenc y (%)</u>	<u>RI</u>	<u>Frequenc y (%)</u>	<u>GOS</u>	<u>Frequency (%)</u>
				<0	9(3.00%)
0	122 (40.67%)	0	163(54.33 %)	0	200 (66.67%)
>0	178 (59.33%)	>0	139 (45.67%)	>0	91 (30.33%)
Total Amount (\$, 000)					
,258	9,983,352	83	189,543,4		97,637,827

Panel B. Top 50 Securitizers during the Period 2003-2008

<u>BHC Name</u>	<u>Frequency of Being Listed in Top 50</u>
BANK OF AMERICA CORP	6
CITIGROUP INC.	6
J.P. MORGAN CHASE & CO.	6
WELLS FARGO & COMPANY	6
SUNTRUST BANKS, INC.	6
CAPITAL ONE FINANCIAL CORP	5
WACHOVIA CORPORATION*	5
COUNTRYWIDE FINANCIAL CORP*	4
FIRST HORIZON NATIONAL CORPORATION	3
MBNA CORPORATION*	2
BANK ONE CORP*	1

* Wachovia Corporation was purchased by Wells Fargo at the end of 2008 in a government-forced sale to avoid the failure of Wachovia.

* Countrywide Financial was purchased by Bank of America in 2008.

* Bank One merged with JPMorgan Chase & Co. on July 1, 2004

* MBNA was acquired by Bank of America at the end of 2005.(* Sources: Wikipedia)

Table 3: Correlations

	LNAF	LNTA	BIGN	LOSS	STDR	TRAN	SECU	EFFI	COMM	NONP	CHGO	MTGL	CAPR	INTA	SAVI	SENS	S*ΔINT	INTD	DFIN	SA	RI
LNTA	0.911	1																			
	<.0001																				
BIGN	0.585	0.540	1																		
	<.0001	<.0001																			
LOSS	0.070	0.016	-0.033	1																	
	0.001	0.451	0.125																		
STDRET	-0.616	-0.656	-0.448	-0.040	1																
	<.0001	<.0001	<.0001	0.0629																	
TRANSACCT	0.111	0.119	0.205	-0.190	-0.157	1															
	<.0001	<.0001	<.0001	<.0001	<.0001																
SECURITIES	-0.000	0.026	0.194	-0.121	0.007	0.131	1														
	0.993	0.231	<.0001	<.0001	0.749	<.0001															
EFFICIENCY	-0.041	-0.144	-0.102	0.532	0.200	-0.064	-0.043	1													
	0.061	<.0001	<.0001	<.0001	<.0001	0.003	0.046														
COMMLOAN	0.172	0.161	0.194	-0.056	-0.168	0.261	-0.036	-0.029	1												
	<.0001	<.0001	<.0001	0.010	<.0001	<.0001	0.093	0.188													
NONPERFORM	0.131	0.078	-0.043	0.484	-0.020	-0.295	-0.122	0.266	-0.012	1											
	<.0001	0.000	0.047	<.0001	0.353	<.0001	<.0001	<.0001	0.569												
CHGOFF	0.272	0.239	0.072	0.370	-0.131	-0.139	-0.096	0.205	0.088	0.497	1										
	<.0001	<.0001	0.001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001											
MTGLOAN	-0.428	-0.426	-0.335	0.078	0.259	-0.234	-0.124	0.016	-0.675	0.035	-0.265	1									
	<.0001	<.0001	<.0001	0.000	<.0001	<.0001	<.0001	0.457	<.0001	0.105	<.0001										
CAPRATIO	-0.111	-0.142	-0.008	-0.044	0.141	0.024	0.437	-0.017	-0.122	-0.024	0.030	-0.037	1								
	<.0001	<.0001	0.699	0.044	<.0001	0.271	<.0001	0.431	<.0001	0.262	0.172	0.091									
INTANG	0.452	0.444	0.233	-0.030	-0.343	0.136	-0.124	-0.062	0.039	0.013	0.109	-0.123	-0.112	1							
	<.0001	<.0001	<.0001	0.160	<.0001	<.0001	<.0001	0.004	0.072	0.539	<.0001	<.0001	<.0001								
SAVING	-0.086	-0.089	-0.038	0.000	0.115	-0.029	-0.037	0.030	-0.132	-0.008	-0.046	0.187	0.064	0.064	1						
	<.0001	<.0001	0.078	0.988	<.0001	0.175	0.084	0.160	<.0001	0.726	0.035	<.0001	0.003	0.003							
SENSITIVE	0.227	0.242	0.185	-0.051	-0.191	0.331	-0.156	-0.098	0.265	-0.097	-0.011	-0.254	-0.051	0.068	-0.067	1					
	<.0001	<.0001	<.0001	0.018	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.608	<.0001	0.020	0.002	0.002						
SENSITIVE*ΔINT	-0.043	-0.053	-0.027	-0.130	0.023	0.021	-0.009	-0.082	-0.046	-0.198	-0.138	0.039	-0.045	-0.012	-0.005	0.089	1				
	0.045	0.014	0.215	<.0001	0.296	0.322	0.684	0.000	0.034	<.0001	<.0001	0.075	0.037	0.569	0.812	<.0001					
INTDERIV	0.504	0.507	0.177	-0.001	-0.149	-0.013	-0.089	-0.019	0.056	0.100	0.176	-0.206	-0.046	0.203	-0.001	0.095	-0.016	1			
	<.0001	<.0001	<.0001	0.840	<.0001	0.556	<.0001	0.374	0.010	<.0001	<.0001	<.0001	0.033	<.0001	0.962	<.0001	0.466				
DFININDEX	-0.178	-0.112	0.083	-0.363	0.034	0.161	0.174	-0.205	0.009	-0.461	-0.281	-0.046	0.104	-0.101	0.041	0.095	0.269	0.001	1		
	<.0001	<.0001	0.000	<.0001	0.117	<.0001	<.0001	<.0001	0.673	<.0001	<.0001	0.033	<.0001	<.0001	0.056	<.0001	<.0001	0.974			
SA	0.164	0.163	0.053	0.007	-0.055	-0.010	-0.041	-0.002	-0.070	0.078	0.117	-0.018	0.082	0.174	0.062	0.054	-0.008	0.238	0.032	1	
	<.0001	<.0001	0.015	0.745	0.011	0.660	0.060	0.938	0.001	0.000	<.0001	0.395	0.000	<.0001	0.004	0.012	0.700	<.0001	0.144		
RI	0.222	0.225	0.120	0.052	-0.095	-0.071	0.013	-0.052	-0.044	0.118	0.173	-0.126	0.101	0.105	-0.009	0.041	-0.013	0.206	0.021	0.277	1
	<.0001	<.0001	<.0001	0.017	<.0001	0.001	0.543	0.016	0.043	<.0001	<.0001	<.0001	<.0001	<.0001	0.694	0.059	0.549	<.0001	0.329	<.0001	
GOS	-0.021	-0.030	-0.012	-0.090	0.006	-0.003	-0.006	0.005	-0.004	-0.004	-0.033	0.043	-0.021	-0.046	0.013	-0.001	0.036	0.033	0.050	0.022	-0.009
	0.325	0.172	0.595	<.0001	0.779	0.874	0.790	0.834	0.844	0.870	0.129	0.045	0.332	0.034	0.536	0.961	0.097	0.128	0.022	0.307	0.684

Table 4 the Validity of the Basic Model, Based on the Pooled Sample and Yearly Sample

Variable	Fields et al. (2004)		Pooled				2003	2004	2005	2006	2007	2008		
	Sign	p-value	Coef.	p-value	Coef.	p-value	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.		
Intercept	+	<0.01	-4.10	<.0001	-4.15	<.0001	-3.45	<.0001	-4.64***	-3.02***	-2.84***	-2.96***	-1.41**	-2.25***
LNTA	+	<0.01	0.64	<.0001	0.64	<.0001	0.59	<.0001	0.59***	0.54***	0.55***	0.55***	0.51***	0.54***
BIGN	+	<0.01	0.37	<.0001	0.37	<.0001	0.39	<.0001	0.35***	0.52***	0.51***	0.42***	0.42***	0.41***
LOSS	+	>0.10	-0.08	0.087	-0.08	0.102	-0.05	0.215	-0.47**	-0.25*	-0.15	-0.16	0.18*	-0.02
STDRET	+	>0.10	-0.09	0.007	-0.09	0.007	-0.16	<.0001	0.02	-0.47***	-0.31***	-0.31***	-0.20**	-0.12
TRANSACCT	+	<0.05	-0.06	0.214	-0.05	0.243	-0.04	0.298	0.26*	0.19	0.03	-0.05	-0.28*	-0.14
SECURITIES	+	<0.01	-0.59	<.0001	-0.59	<.0001	-0.49	<.0001	-0.68***	-0.40**	-0.23	-0.14	0.47*	0.12
EFFICIENCY	+	<0.01	0.78	<.0001	0.78	<.0001	0.75	<.0001	1.12***	1.15***	1.01***	0.87***	0.61***	0.31**
COMMLOAN	+	<0.01	-0.21	0.097	-0.18	0.124	-0.20	0.099	-0.07	-0.17	-0.40	-0.20	-0.45	-0.40
NONPERFORM	+	<0.01	5.08	<.0001	5.47	<.0001	5.19	<.0001	5.22**	5.75**	11.11***	2.85	-0.32	5.68***
CHGOFF	+	<0.10	0.05	0.180	0.05	0.163	0.04	0.216	0.39***	0.10	0.08	0.16	0.20*	-0.00
MTGLOAN	+	<0.05	-0.38	0.001	-0.38	0.001	-0.39	0.000	-0.13	-0.31*	-0.41**	-0.43*	-0.70**	-0.64**
CAPRATIO	+	<0.05	0.02	0.000	0.02	0.000	0.01	0.001	0.03***	0.02**	0.01	0.03***	-0.01	0.02**
INTANG	+	<0.01	3.85	<.0001	3.83	<.0001	3.98	<.0001	3.44**	4.20***	3.47***	1.33	1.95*	0.40
SAVING	+	<0.05	-0.06	0.092	-0.06	0.096	-0.07	0.065	0.01	-0.06	-0.14*	0.04	0.05	0.06
SENSITIVE	-	>0.10	0.02	0.403										
SENS* ΔINT					0.09	0.003	0.08	0.005	0.02	-0.03	0.06	0.20*	-0.34**	-0.04
INTDERIV							0.15	<.0001	0.14***	0.16***	0.16***	0.21***	0.24***	0.25***
CHOW TEST			F-Stat	p-value	F-Stat	p-value	F-Stat	p-value						
			4.19	<.0001	6.43	<.0001	7.38	<.0001						
N	277		2136		2136		2136		424	409	391	329	300	283
Adj. R-square	0.877		0.859		0.860		0.863		0.861	0.892	0.890	0.890	0.882	0.880

Due to directional predictions, all the results reported in this paper are one tailed.

The Chow Tests indicate the difference of the model structure before and after GFC with the break point as 2007.

*, **, *** denote significance at the 0.10, 0.05 and 0.01 levels, respectively (One-tailed test).

Table 5: Audit Fees and Asset Securitizations, for the Pooled Sample, Pre-GFC and Post-GFC Samples, and the Yearly Samples

$$\begin{aligned}
 LNAF = & \alpha + \beta_1 LNTA + \beta_2 BIG4 + \beta_3 LOSS + \beta_4 STDRET + \beta_5 TRANSACCT + \beta_6 SECURITIES + \beta_7 EFFICIENCY + \beta_8 COMMLOAN + \beta_9 NONPERFORM \\
 & + \beta_{10} CHGOFF + \beta_{11} MTGLOAN + \beta_{12} CAPRATIO + \beta_{13} INTANG + \beta_{14} SAVING + \beta_{15} SENSITIVE * \Delta INT + \beta_{16} INTDERIV \\
 & + \beta_{17} SA + \beta_{18} RI + \beta_{19} GOS + \beta_{20} PGFC + \beta_{21} SA * PGFC + \beta_{22} RI * PGFC + \mu
 \end{aligned}
 \tag{2}$$

Variable	Pooled		Before GFC		After GFC		2003	2004	2005	2006	2007	2008				
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.				
SENS* ΔINT	0.08	0.005	0.14	<.0001	0.13	<.0001	0.36	<.0001	-0.06	0.099	0.02	-0.03	0.05	0.20	-0.35**	-0.04
INTDERIV	0.15	<.0001	0.16	<.0001	0.17	<.0001	0.14	<.0001	0.26	<.0001	0.14***	0.16***	0.16***	0.21***	0.25***	0.27***
SA	-0.03	0.294			0.01	0.455	-0.01	0.411	-0.30	0.154	-0.02	0.05	0.16	0.05	-0.74**	-0.30
RI	1.11	0.317			-0.98	0.362	-0.32	0.459	7.70	0.017	5.22	1.06	4.43	2.53	3.62	8.35**
GOS	0.00	0.319			0.01	0.283	-0.02	0.440	0.00	0.295	-0.20	-0.01	-0.21	0.02	0.19	0.00
PGFC			0.16	<.0001	0.16	<.0001										
SA*PGFC					-0.34	0.129										
RI*PGFC					9.22	0.030										
CHOW TEST	F-Stat	p-value	F-Stat	p-value	F-Stat	p-value										
	6.45	<.0001	5.01	<.0001	4.12	<.0001										
N	2136						1553		583		424	409	391	329	300	283
Adj. R-square	0.863		0.865		0.865		0.862		0.880		0.860	0.891	0.890	0.889	0.882	0.880

Due to directional predictions, all the results reported in this paper are one tailed.
 The Chow Tests indicate the difference of the model structure before and after GFC with the break point as 2007.
 *, **, *** denote significance at the 0.10, 0.05 and 0.01 levels, respectively (One-tailed test).

Table 6: The Impact of Asset Securitization on Audit Pricing to Credit Risks and Market Risks

Variable	Asset Structure								Asset Quality											
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value		
SA	0.00	0.477	0.01	0.411	-0.73	0.082	-0.05	0.466	-0.10	0.358	0.31	0.149	-0.03	0.365	-0.06	0.231	0.05	0.392	0.02	0.456
RI	-0.59	0.444	0.48	0.454	14.51	0.079	2.39	0.424	1.93	0.333	-3.99	0.210	-3.71	0.249	4.57	0.268	-6.51	0.133	-5.43	0.180
GOS	0.00	0.327	0.01	0.263	0.00	0.333	0.00	0.302	0.00	0.320	0.01	0.175	0.00	0.323	0.01	0.290	0.00	0.345	0.01	0.267
PGFC			0.16	<.0001			0.17	<.0001			0.16	<.0001			0.17	<.0001			0.16	<.0001
SA*COMMLOAN	-1.61	0.073	-0.81	0.288																
RI*COMMLOAN	19.74	0.254	-13.06	0.352																
SA*COMM*PGFC			-0.78	0.341																
RI*COMM*PGFC			60.10	0.036																
SA*MTGLOAN ¹					0.77	0.090	0.07	0.462												
RI*MTGLOAN					-18.37	0.099	-4.57	0.388												
SA*MTGLOAN*PGFC							-0.63	0.129												
RI*MTGLOAN*PGFC							12.52	0.083												
SA*INTANG ²									1.08	0.394	-4.37	0.153								
RI*INTANG									-19.46	0.438	32.75	0.396								
SA*INTANG*PGFC											-13.28	0.036								
RI*INTANG*PGFC											533.46	0.003								
SA*NONPERFORM													0.07	0.494	4.86	0.156				
RI*NONPERFORM													166.77	0.169	-251.70	0.220				
SA*NONP*PGFC															-7.87	0.190				
RI*NONP*PGFC															304.69	0.073				
SA*CHGOFF																	-0.14	0.327	-0.04	0.454
RI*CHGOFF																	10.94	0.090	6.45	0.225
SA*CHGOFF*PGFC																			-0.17	0.361
RI*CHGOFF*PGFC																			10.76	0.047

1. High VIFs on SA, RI and SA*MTGLOAN (over 20).
2. VIFs of SA and SA*INTANG are larger than 35.
3. High VIFs on SA, RI and SA*CAPRATIO, RI*CAPRATIO (>15).

Table 7: Additional Analysis by Controlling for Changes in NYSE Financial Index

Variable	Pooled									BEFORE GFC			AFTER GFC					
	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value
SENSITIVE* ΔINT	0.14	4.64	<.0001	0.14	4.62	<.0001	0.15	4.68	<.0001	0.12	3.66	0.000	0.02	0.34	0.369	-0.07	-1.55	0.061
INTDERIV	0.18	8.84	<.0001	0.18	8.59	<.0001	0.18	8.48	<.0001	0.18	8.70	<.0001	0.15	6.71	<.0001	0.26	6.95	<.0001
DFININDEX	-0.47	-9.89	<.0001	-0.48	-9.96	<.0001	-0.47	-9.79	<.0001	-0.72	-8.74	<.0001	-2.30	-15.83	<.0001	0.20	2.01	0.022
SA				0.00	0.09	0.463	0.03	0.28	0.389	0.02	0.40	0.346	0.02	0.42	0.336	-0.33	-1.13	0.130
RI				2.76	1.22	0.112	3.29	1.42	0.078	-0.00	-0.00	0.500	0.81	0.28	0.391	7.39	2.05	0.020
GOS				0.01	0.69	0.245	0.01	0.93	0.176	0.01	0.76	0.223	-0.06	-0.53	0.298	0.00	0.48	0.316
SA*DFININDEX							-0.07	-0.18	0.428									
RI*DFININDEX							-13.58	-1.85	0.032									
PGFC										-0.17	-3.65	0.000						
SA*PGFC										-0.30	-1.02	0.153						
RI*PGFC										9.10	1.89	0.029						
CHOW TEST		F-Stat	p-value		F-Stat	p-value		F-Stat	p-value		F-Stat	p-value		F-Stat	p-value		F-Stat	p-value
		16.44	<.0001		14.21	<.0001		12.82	<.0001		12.03	<.0001						
N	2136												1553			583		
Adj. R-square	0.869			0.869			0.869			0.870			0.882			0.881		

Table 8 Additional Analysis by Controlling for Auditor Changes and Non-Audit Service Fees

Variable			Pooled				Before GFC		After GFC	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
Panel A: Controlling for auditor changes										
SENSITIVE*ΔINT	0.08	0.004	0.08	0.005	0.14	<.0001	0.36	<.0001	-0.05	0.109
INTDERIV	0.15	<.0001	0.15	<.0001	0.17	<.0001	0.14	<.0001	0.26	<.0001
AUDITORCHANGE	-0.05	0.113	-0.05	0.113	-0.03	0.202	-0.01	0.406	-0.12	0.066
SA			-0.03	0.292	0.01	0.458	-0.01	0.409	-0.27	0.177
RI			1.06	0.323	-1.01	0.357	-0.34	0.457	7.53	0.019
GOS			0.00	0.317	0.01	0.281	-0.02	0.442	0.00	0.289
PGFC					0.16	<.0001				
SA*PGFC					-0.33	0.134				
RI*PGFC					9.23	0.030				
CHOW TEST	F-Stat	p-value	F-Stat	p-value	F-Stat	p-value				
	7.00	<.0001	6.16	<.0001	4.05	<.0001				
N	2136						1553		583	
Adj. R-square	0.863		0.863		0.865		0.862		0.880	
Panel B: Controlling for non-audit service fees										
SENSITIVE* ΔINT	0.08	0.008	0.07	0.008	0.13	<.0001	0.36	<.0001	-0.06	0.095
INTDERIV	0.14	<.0001	0.14	<.0001	0.16	<.0001	0.13	<.0001	0.25	<.0001
LNNAF	0.02	0.003	0.02	0.003	0.03	0.000	0.03	0.008	0.03	0.007
SA			-0.03	0.305	0.01	0.427	-0.01	0.433	-0.31	0.148
RI			0.80	0.364	-1.18	0.335	-0.52	0.434	7.16	0.023
GOS			0.00	0.324	0.01	0.292	-0.02	0.443	0.00	0.310
PGFC					0.18	<.0001				
SA*PGFC					-0.35	0.115				
RI*PGFC					8.85	0.035				
CHOW TEST	F-Stat	p-value	F-Stat	p-value	F-Stat	p-value				
	7.20	<.0001	6.32	<.0001	3.91	<.0001				
N	2136						1553		583	
Adj. R-square	0.864		0.863		0.866		0.863		0.881	

Table 9 Additional Tests: Matched Pair Sample and the Securitizer Subsample

Variable							Before GFC		After GFC	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
Panel A Matched Pair Sample (N_{control}=248, N_{study}=248)										
SENS*ΔINT	0.14	0.014	0.24	0.000	0.23	0.000	0.47	<.0001	0.09	0.196
INTDERIV	0.14	<.0001	0.15	<.0001	0.15	<.0001	0.13	<.0001	0.24	<.0001
SA	-0.03	0.321	-0.01	0.416	0.00	0.486	-0.03	0.330	-0.41	0.114
RI	-0.03	0.495	0.46	0.372	-2.08	0.263	0.79	0.417	6.29	0.104
GOS	0.01	0.279	0.01	0.279	0.01	0.263	-0.00	0.489	0.01	0.153
PGFC			0.19	0.001	0.19	0.001				
SA*PGFC					-0.33	0.155				
RI*PGFC					11.05	0.037				
CHOW TEST	F-Stat	p-value	F-Stat	p-value	F-Stat	p-value				
	2.96	<.0001	2.35	0.000	2.02	0.002				
N	496						347		149	
Adj. R-square	0.887		0.889		0.889		0.891		0.903	
Panel B The Securitizer Subsample										
SENS* ΔINT	0.28	0.001	0.38	<.0001	0.37	0.000	0.59	0.000	-0.08	0.328
INTDERIV	0.18	<.0001	0.19	<.0001	0.19	<.0001	0.16	<.0001	0.28	<.0001
SA	-0.03	0.300	-0.02	0.403	-0.00	0.495	-0.02	0.364	-0.27	0.228
RI	-2.26	0.188	-1.61	0.262	-4.83	0.063	-1.92	0.289	2.37	0.287
GOS	0.01	0.123	0.01	0.123	0.01	0.139	-0.07	0.297	0.02	0.070
PGFC			0.22	0.006	0.24	0.006				
SA*PGFC					-0.44	0.094				
RI*PGFC					9.04	0.043				
CHOW TEST	F-Stat	p-value	F-Stat	p-value	F-Stat	p-value				
	1.96	0.005	1.55	0.032	1.30	0.083				
N	274						201		73	
Adj. R-square	0.912		0.914		0.915		0.916		0.927	

Table 10 Robust Test: Excluding the Year 2006 from the Sample

Variable	ALL BHCs EXCLUDING 2006 DATA			Pre-GFC			Post-GFC		
	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value	Coef.	t-Stat.	p-value
Intercept	-3.28	-11.18	<.0001	-3.78	-10.14	<.0001	-1.67	-3.54	0.000
LNTA	0.58	41.97	<.0001	0.58	33.33	<.0001	0.53	23.96	<.0001
BIGN	0.42	14.80	<.0001	0.43	12.19	<.0001	0.40	9.00	<.0001
LOSS	-0.06	-0.99	0.161	-0.18	-1.36	0.087	0.03	0.43	0.334
STDRET	0.14	-3.45	0.000	-0.18	-3.32	0.000	-0.16	-2.42	0.008
TRANSACCT	0.06	0.70	0.242	-0.01	-0.11	0.458	-0.14	-0.92	0.178
SECURITIES	-0.43	-3.65	0.000	-0.43	-2.99	0.001	0.16	0.75	0.226
EFFICIENCY	0.69	7.36	<.0001	1.10	7.88	<.0001	0.35	2.96	0.002
COMMLOAN	-0.27	-1.59	0.056	-0.30	-1.40	0.081	-0.47	-1.64	0.050
NONPERFORM	3.75	3.14	0.001	4.39	2.15	0.016	3.36	2.43	0.008
CHGOFF	0.04	0.81	0.209	0.14	1.80	0.036	0.01	0.19	0.425
MTGLOAN	-0.44	-3.53	0.000	-0.19	-1.20	0.114	-0.78	-3.73	0.000
CAPRATIO	0.01	2.91	0.002	0.01	2.36	0.009	0.00	0.44	0.331
INTANG	3.80	5.56	<.0001	5.46	6.02	<.0001	1.39	1.44	0.075
SAVING	-0.05	-1.07	0.143	-0.09	-1.46	0.072	0.07	0.73	0.234
SENS* ΔINT	0.15	4.41	<.0001	0.42	7.17	<.0001	-0.06	-1.29	0.099
INTDERIV	0.17	7.46	<.0001	0.14	4.81	<.0001	0.26	7.01	<.0001
SA	0.00	0.08	0.468	-0.02	-0.27	0.395	-0.30	-1.02	0.154
RI	-0.34	-0.11	0.455	0.84	0.24	0.407	7.70	2.14	0.017
GOS	0.01	0.57	0.286	-0.02	-0.13	0.450	0.00	0.54	0.295
PGFC	0.22	7.41	<.0001						
SA*PGFC	-0.31	-1.01	0.156						
RI*PGFC	8.52	1.68	0.046						
CHOW TEST PRE-GFC VS POST-GFC		F-Stat.	p-value						
		4.32	<.0001						
N	1807			1224			583		
Adj. R-square	0.864			0.858			0.880		

Table 11 Additional Analysis by Auditor Size and by BHC Size

Panel A by Auditor Size												
<u>Variable</u>	Non-Big N Auditor						Big N Auditor					
	<u>Pre-GFC</u>		<u>Post-GFC</u>		<u>Pre-GFC</u>		<u>Post-GFC</u>		<u>Pre-GFC</u>		<u>Post-GFC</u>	
	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>
SENS* ΔINT	0.05	0.124	0.19	0.007	-0.06	0.120	0.24	<.0001	0.49	<.0001	-0.04	0.278
INTDERIV	0.34	0.151	0.50	0.111	-0.27	0.309	0.19	<.0001	0.16	<.0001	0.27	<.0001
SA	-0.00	0.476	-0.02	0.355	-1.47	0.087	0.09	0.216	0.04	0.371	-0.26	0.216
RI	152.01	0.082	-227.55	0.043	-4490.57	0.291	-0.91	0.389	0.45	0.446	6.28	0.056
PGFC	0.12	0.000					0.20	<.0001				
SA*PGFC	-1.32	0.140					-0.29	0.193				
RI*PGFC	-9581.24	0.145					7.60	0.079				
CHOW TEST (pre vs post-GFC)	F-Stat.	p-value					F-Stat.	p-value				
	2.47	0.000					6.48	<.0001				
N	1071		744		327		1065		809		256	
Adj. R-square	0.660		0.621		0.635		0.847		0.845		0.860	
Panel B by BHC Size												
<u>Variable</u>	Small BHCs						Large BHCs					
	<u>Pre-GFC</u>		<u>Post-GFC</u>		<u>Pre-GFC</u>		<u>Post-GFC</u>		<u>Pre-GFC</u>		<u>Post-GFC</u>	
	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>	<u>Coef.</u>	<u>p-value</u>
SENS* ΔINT	0.05	0.128	0.17	0.008	-0.02	0.345	0.16	0.000	0.53	<.0001	-0.05	0.200
INTDERIV	-0.01	0.486	0.10	0.416	-0.63	0.169	0.18	<.0001	0.17	<.0001	0.25	<.0001
SA	0.00	0.475	-0.01	0.454	-18.48	0.040	0.10	0.183	0.03	0.386	-0.29	0.179
RI#	44.15	0.473	71.38	0.458			-1.64	0.306	1.18	0.363	7.09	0.035
PGFC	0.17	<.0001					0.12	0.002				
SA*PGFC	-17.69	0.084					-0.22	0.244				
RI*PGFC							9.79	0.033				
CHOW TEST (pre vs post-GFC)	F-Stat.	p-value					F-Stat.	p-value				
	2.56	0.000					4.45	<.0001				
N	1068		830		238		1068		723		345	
Adj. R-square	0.546		0.526		0.488		0.817		0.814		0.850	