

**NONINTEREST INCOME:
A DIVERSIFICATION STORY OR A RISKY PROPOSITION?**

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ABSTRACT

In this study we examine how noninterest income, or fee income, affects financial services firms' performance in the post Gramm-Leach-Bliley Act era. In a sample of bank holding companies from 2001 to 2009, we find that overall noninterest income improves banks' performance. Although some activities increase banks' volatility and exposure to systematic risk, we find evidence of economies of scope and scale, and that noninterest income can improve traditional intermediation or lending activities.

Our study expands the literature on noninterest income in two ways. First, to our knowledge this is one of the few studies that examine how different noninterest income components affect banks in the post-GLBA era. The deregulation that occurred represents a major shift in banking practices because it eroded long standing barriers that prevented banks from engaging in insurance, and securities activities. Despite this shift, DeYoung and Rice (2004a, b) observe that intermediation activities remain the banks' primary focus. Accepting deposits and reinvesting the funds into loans and other credit products has traditionally been the primary focus of banks' operations. While previous research focuses on portfolio theory and how correlations between noninterest activities and interest income affect the volatility of bank earnings, we believe a more encompassing approach is warranted. We not only examine noninterest income's affect on traditional market-based risk measures, but evaluate potential economies of scope and scale from combining noninterest income and intermediation activities. Finally, we test noninterest income's affect on intermediation efficiency, and the liquidity and capital adequacy of the banks.

Results show that for large banks, noninterest income offers limited diversification benefits for idiosyncratic and total risk. Fee income, securities activities in particular,

are associated with increases in systematic risk which is consistent with previous studies (Bhargava and Fraser, 1998; Allen and Jagtiani, 2000; Baele et al., 2007). Results for interest rate risk suggest that income streams from insurance activities are exposed to fluctuations in interest rates, while trading income is used as a hedging tool.

Many studies have suggested that some noninterest activities, insurance for example, may have significant economies of scope or scale when combined with banking. Results show that insurance income reduces salaries paid per employee and increase non-interest revenue per dollar of expense. Even though the skilled labour hired for trading and investment banking practices increase the average salary for employees, overall total noninterest income increases income per employee salary, and revenue relative to expenses. For intermediation efficiency, noninterest income is associated with increases to return on loans, increases in the net interest margin, a reduction in credit risk, and is negatively related to the loan loss reserve ratio. This result is significant because it shows that the shift to noninterest income has a positive impact on traditional banking activities. Despite the more volatile nature of noninterest income streams, diversification into fee income provides benefits that extend beyond traditional portfolio theory and risk reduction. Finally, although some noninterest income activities may require higher levels of equity capital in case of unforeseen shocks, overall fee income reduces liquidity risk.

Consistent with previous research we find that noninterest income can increase certain market-based risk measures. However, there is evidence that noninterest income can improve the performance of banks' traditional intermediation activities.

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CHAPTER 1: INTRODUCTION

Noninterest income, or fee income, has been a growing portion of US banks' income for the past 40 years. In the early 1970s noninterest income represented only 20% of commercial bank operating income (DeYoung and Rice, 2004a).¹ As of 2009, thanks in large part to the Gramm-Leach-Bliley Act (GLBA) of 1999, noninterest income makes up approximately 50% of the industry's aggregate operating income and has become a central component of modern banking in the US. The entry into insurance and securities activities, and the growth of noninterest income with respect to interest income, has caused many researchers to question what affects noninterest income has on bank risk. This paper attempts to fill some of the gaps in the literature, and also expand the scope of research for noninterest income.

The motivations for our research can be separated into two categories; the rapid growth of noninterest income over time, and the GLBA of 1999. First, noninterest income, which includes service charges and fees on deposit accounts, has grown significantly during the latter part of the 20th century. This growth is largely attributed to improvements in information technologies and the banks' ability to deliver new and improved services to depositors. Despite this growth, there had not been any significant changes within the banking industry until deregulation occurred in 1999. The GLBA permits banks to expand into securities and insurance businesses, among other things. The combination of bank and non-bank financial firms was a topic of extreme debate prior to 1999, and is still today. Many of the discussions revolve around conflicts of interest and concerns regarding the overall safety of the financial system when combining these business lines, concerns that became much more legitimate during the onset of the sub-prime mortgage crisis in 2007. Although noninterest income grew consistently prior to deregulation, the GLBA represents a major shift in the scope and scale of US banking practices.

Given that only a small number of studies have focused specifically on noninterest income, we believe our research contributes to the literature in several ways. To begin, this is one of the only studies to our knowledge that examines noninterest income in

¹ DeYoung and Rice (2004a) defines operating income as net interest income plus noninterest income.

the post-GLBA era.² A European study by Baele et al. (2007) points out that deregulation occurred much later in the US. As a result, US banks have not had the same level of exposure to universal banking, as their European counterparts. In addition, we are able to include several of the new noninterest income components provided in the FR Y-9C reporting forms. Prior to the GLBA, only four components of a bank holding company's fee income were reported; fiduciary income, service charges, trading income, and other noninterest income. Beginning in 2001, banks are required to report income from many other noninterest income sources. Securities activities and insurance income are of particular interest given that banks were prohibited from participating in these activities for such a long period of time.³ In terms of the literature, most studies examining fee income argue that banks' expansion into noninterest activities is motivated by diversification theory. Consequently research in this area largely focuses on efficiency and the risk return trade-off. However many studies have also discussed scale and scope economies as a motivation for banks' to engage in specific noninterest activities. Despite this, few studies have actually tested for economies achieved through fee income. Our study not only examines noninterest income's effect on traditional market based risk measures, but evaluates whether economies of scale are achieved through various operational efficiency measures. We also test how fee income has contributed to the efficiency of traditional intermediation activities, and the liquidity and capital adequacy of the banks.

This study uses annual data from the FR Y-9C reporting forms to evaluate the performance of BHCs with respect to noninterest income for the period 2001 to 2009. The two components of noninterest income we are most interested in are securities activities and insurance income, which until 1999 were prohibited by. We measure the performance of banks in four areas; market-based risk, operational efficiency, intermediation efficiency, and liquidity and capital adequacy. To measure these areas we have gathered 13 variables common to banking literature and practice.

² Stiroh (2006) uses data from 1997 to 2004 to examine the relationship between noninterest income and equity market risk. Beginning with the 2001 data the author is able to incorporate nontraditional noninterest income components into the models. A more detailed discussion of noninterest income is provided in *Chapter 2 Noninterest Income*.

³ The Glass-Steagall Act of 1933 and the Bank Holding Company Act of 1956 restricted banks from operating securities and insurance businesses respectively; however restrictions were gradually lifted in the years leading up to the GLBA. A brief discussion on the history of regulation is provided in *Chapter 2 Noninterest Income*.

For large banks in the US, total noninterest income has no impact on firm specific or total risk.⁴ Given that big banks derive a larger proportion of their income from noninterest activities, it appears as though diversification benefits are realized with lower weights of noninterest income. Securities activities are also insignificant however insurance income is associated with reductions in idiosyncratic and total volatility. The results for systematic risk are as expected. Overall noninterest income is positively related to market risk. This result is driven largely by securities activities and securitization income, which other authors have identified as being highly cyclical and correlated with the market (Bhargava and Fraser (1998), Allen and Jagtiani (2000), and Baele et al. (2007)). Insurance income is negatively related to market risk, a result that suggests insurance activities are consistent and provide a smooth income stream that is unaffected by market fluctuations. Finally, insurance is positively related to increases in interest rate risk, while trading activities are negatively related to interest rate risk..

The results for operational efficiency are mixed. Theories on economies of scale and scope appear to be consistent for insurance income. Traditional banking activities provide the networks and skilled employees necessary to distribute and sell insurance products efficiently, which lowers the overall cost per employee. Conversely, securities activities and trading income increase the operational risk of banks. These activities create few synergies with retail banking and require a highly skilled work force with significantly higher salaries. However, overall noninterest activities decrease noninterest expenses relative to revenues, and increases income per dollar of employee salary..

Traditional banking, or intermediation activity, is significantly enhanced by noninterest income. Noninterest income is positively related to increases in the net interest margin, increases in return on loan, and decreases in credit risk. In addition, many noninterest components are negatively related to the loan loss reserve ratio. These results suggest that banks diversifying into noninterest activities have more efficient intermediation services. It is possible that banks with a broader range of revenue sources are less dependent on interest income. As such, diversified banks can issue loans, mortgages, and

⁴ In our sample, we define large banks as the largest 25% of banks by asset size in any given year. Previous studies observe that noninterest income is primarily a large bank phenomenon (Rogers and Sinkey, 1999; DeYoung and Rice, 2004a, b; Stiroh, 2004; Baele et al., 2007). We use results from *Figure 2* to analyze trends for noninterest income with respect to bank size in order to construct our sample. A more detailed discussion is provided in *Chapter 4 Data*.

credit cards to only the most creditworthy clients, thus reducing default rates and increasing returns. Alternatively banks could benefit from operating related activities. Combining information and expertise from several product groups may result in economies of scope and scale that enhance banks' business lines.

For liquidity risk, as banks shift operations away from traditional intermediation activities and towards noninterest income, there is less reliance on customer deposits. The results for equity capital show that banks engaging in securitization and securities activities carry larger amounts of equity on their balance sheets. Banks appear to be following safe practices by carrying more capital for activities exposed to higher amounts of market risk. Conversely, insurance is negatively related to equity capital, once again confirming the relative stability of this income stream.

Although previous studies have shown that noninterest income is more volatile than interest income, and decreases the risk-adjusted profits of the banks, our results suggest noninterest income can have a positive effect on banks' operations. While some noninterest activities increase the sensitivity of banks' returns with the market, overall there is little to no increase in total volatility. In addition, noninterest income improves not only operational efficiency, but enhances traditional lending practices. Finally, noninterest income reduces the banks' dependence on customer deposits, which decreases liquidity risk, and banks are able to adjust capital reserves for more volatile operations.

The remainder of the paper is organized as follows. Section 2 discusses the development of noninterest income with respect to technology and deregulation. Section 3 outlines the literature and formulates the hypotheses. Section 4 reviews the data for our study. Section 5 explains the methodology. Section 6 discusses the results and robustness tests. Section 7 concludes our study.

CHAPTER 2: NONINTEREST INCOME

2.1 Traditional and non-traditional noninterest income

The primary source of a bank's earnings is derived from intermediation activities. This is the typical lending relationship where a bank accepts funds from the public, compensates them with a rate on their deposits, and reinvests the money for a higher return. This is known as *interest income*. *Noninterest income*, or *fee income*, refers to the earnings of the bank that are not directly related to interest activities. Examples of noninterest income include service charges on deposit accounts, fiduciary income, and servicing fees. According to DeYoung & Rice (2004a, b) the former are considered traditional noninterest income components because banks have earned revenues from these sources for many years. Nearly all deposit taking institutions will derive significant portions of operating income from traditional noninterest activities. Monthly or annual fees for deposit accounts, service charges for transactions, safety deposit box fees, and any fees earned in a fiduciary capacity are specific examples of traditional noninterest income.

Non-traditional noninterest activities, as the term implies, includes fee income that banks have only recently begun to collect. Venture capital, securitization, and trading are some of the non-traditional noninterest activities that the banking industry has explored in recent years. Two of the more important non-traditional noninterest income components for banks today are insurance and investment banking. Recently, bancassurance (combination of banking and insurance) and the re-entry of banks into the securities market have been two prominent topics in financial institutions research. This is largely motivated by the deregulation that occurred throughout the 80s and 90s culminating with the Gramm-Leach-Bliley Act (GLBA) of 1999 that granted banks freedoms not seen since the Great Depression.

The growth of noninterest income can be clearly separated into two stages; the growth of traditional activities throughout the late 1900s, and the introduction of non-traditional activities in the post GLBA era. A brief discussion of each will follow.

2.2 Traditional noninterest income and technology

Although intermediation activities continue to be the central focus for banks' operations, DeYoung and Rice (2004a, b) recognize the increasing importance of fee in-

come. In the late 1970s noninterest income represented 20% of bank operating revenues. DeYoung and Rice (2004a) show that by 2000 this ratio doubled to approximately 40%. The steady rise in noninterest income over this 20 year period represents an increase in traditional noninterest activities. DeYoung & Rice (2004a, b) argue that banks have benefited from advances in information and communications technology that created new opportunities for fee income. Where banks previously collected deposit account fees primarily for safe-keeping and checking services, they now also collect fees for internet banking and ATM use. There have also been innovations in lending practices where banks can provide noninterest activities ranging from loan securitization to credit scoring. The authors further argue that the expansion into such financial instruments as high-yield bonds, commercial paper, and financial derivatives can be partially attributed to improvements in technology. Globalization has certainly impacted the ease with which we can access information, increasing the liquidity of markets, and providing banks with more opportunities to collect fees.

2.3 Deregulation and non-traditional noninterest income

The GLBA of 1999 negated many of the restrictions imposed on the financial industry, allowing banks to pursue non-traditional noninterest activities like insurance and investment banking. Due to the impact the GLBA had on the banking industry, and its importance with respect to this study, a brief discussion on the history of banking regulations should be included.

The Glass-Steagall Act of 1933 was enacted in order to separate commercial banking from security services. At the time, the combination of commercial banking with security activities was perceived as risky, and as a result of the Pecora committee was thought to be one of the causes of the 1929 Stock Market Crash.⁵ The main concern was the potential for agency issues arising when a bank underwrites securities for a corporation with which the bank already has a lending relationship. As Puri (1996) notes, creditors tend to acquire private information through their lending practices that is not avail-

⁵ The Pecora committee, led by Ferdinand Pecora, involved hearings related to two banks; The First National Bank and The Chase Bank. The two banks were accused of misinterpreting the quality of security issues to public investors. These events were key factors that lead to the introduction of the Glass-Steagall Act of 1933.

able to other market participants. If the bank also acts as underwriter, the bank could use this private information for personal gain. For example, as part of the underwriting agreement the bank could require that a risky corporation use a portion of the proceeds from an IPO to pay-off outstanding loans. In this case, the bank is protecting their interests at the expense of outsiders who invest in the new issue without the same private information that the bank has acquired.

The next major piece of regulation was the Bank Holding Company Act of 1956. This piece of regulation prohibited a bank holding company (BHC) from underwriting insurance. This represented one of the most restrictive times in modern banking history for the US. However in the 1980s, banking regulations began to relax. The Depository Institutions Deregulation and Monetary Control Act (DIDMCA) of 1980 had several key elements in it. The first title of the Act extended the Federal Reserve System (FRS) control over reserves to all depository institutions. Previously, savings banks, savings and loans, credit unions, and other non-FRS members were thought to have benefited from the lack of regulatory restrictions governing their activities. Subsequently, reserve requirements would be set at uniform rates for all depository institutions removing any competitive advantages certain institutions held over others. The second title phased out Regulation Q, eliminating interest rate ceilings imposed on the banking industry. Although DIDMCA had few direct implications for noninterest income, the Act was a stepping stone for deregulation that would change the landscape of banking practices in the US.

Concessions were made in the late 1980s for banks eager to once again underwrite securities. In 1987, the Board of Governors of the Federal Reserve granted limited (up to 5% of gross revenues) underwriting abilities of municipal bonds to a number of banks. On January 18th 1989, the Federal Reserve authorized BHCs to underwrite corporate debt and equity. Underwriting corporate securities was viewed as risky and the main reason for the Glass-Steagall Act; however, only banks that met financial standards set by the BHC Act could engage in these activities. In the fall of 1989 the limit on underwriting revenues was subsequently raised to 10%, and in 1996 was increased again to 25%. This led to the passage of the Gramm-Leach-Bliley Act in 1999, which allowed all BHCs the freedom to engage in security services and insurance activities. As of 2009, insurance and

investment banking income make up more than 30% of total noninterest income on average, and following the passage of the GLBA total noninterest income has grown to half of bank operating income.

===== Insert Figure 1 Here =====

Prior to 1999, not all BHCs were permitted to offer security and insurance services. Now in the post-GLBA era, these two activities have become major sources of income for the banking industry. Given the rapid growth of noninterest income in recent years, how has this affected bank risk? More specifically, how has the entrance into insurance and security services affected bank performance?

CHAPTER 3: LITERATURE REVIEW

In this section we address the motivations and theories for noninterest income. However, literature in this area is sparse. Only a handful of studies specifically target noninterest income, most likely because until recent deregulation in the US banking industry data was not readily available for specific noninterest activities. On the other hand, there have been countless studies examining mergers in the banking industry, especially in the years leading up to the GLBA when banks were expanding into securities and insurance. For this reason we separate the literature into four categories. First we will review a broad set of literature related to noninterest income and bank diversification. The next two sections will review the literature related to securities activities and insurance. The fourth section will tie the remaining literature together to form the hypotheses for our study.

3.1 Noninterest income

Size is perhaps one of the most important bank characteristics when discussing noninterest income. It is widely held within the literature that noninterest income activities are driven by the larger institutions. Rogers and Sinkey (1999) observe that some institutions are incapable of producing certain categories of noninterest income, such as trading, because of the economies of scale that are required for these activities. DeYoung and Rice (2004a, b) suggest insurance and securitization activities also enjoy economies of scale. Intuitively, having a larger client base means there are more opportunities to sell insurance products, which are relatively costless to sell if a network is already in place to distribute them. In addition, having more clients almost certainly implies access to a larger pool of mortgages and loans that banks can package up and sell. Elsas et al. (2010) looks at international data and finds that when diversification occurs for related activities within a bank, economies of scope do exist. Given the importance of size, scale, and scope, we should first review some preliminary research about bank mergers.

Cornett and Tehranian (1992) examine 30 bank mergers between 1982 and 1987 and find superior cash flow returns on assets for the merged sample. The authors examine accounting information and conclude that improvements in cash flow can be attributed to

the banks' abilities to attract loans and deposits, asset growth, and employee productivity. Benston et al. (1995) look at the motivations behind bank mergers and test two theories; the "deposit insurance put-option-enhancing" theory essentially refers to the "too big to fail" doctrine, and the second theory is that banks seek to maximize shareholder wealth by diversifying their earnings and minimizing risk.⁶ The authors find evidence in support of the diversification hypothesis that mergers create net cash-flow advantages, which supports the diversification hypothesis. Allen and Jagtiani (2000) find additional support for diversification by examining the impact on risk of synthetically built universal banks from 1986 to 1994.⁷ Overall, their results show that universal banks have lower return volatility compared to individual banks. The merger literature suggests that cash-flow and diversification benefits are possible when combining activities where synergies exist.

Rogers (1998) looks at noninterest income and efficiency of US commercial banks. By estimating cost, revenue, and profit frontiers the author determines where the gains or losses in efficiency are derived. The results show that banks with noninterest income are more efficient than those without. In addition, the gains are derived primarily from cost efficiency. The authors conclude that any study examining bank efficiency must consider noninterest activities. Rogers and Sinkey (1999) examine some fundamental bank characteristics and how they are related to fee income. Their results show that banks that engage in noninterest activities are larger, have smaller core deposits, and have smaller net interest margins. The authors argue that larger banks, which face more competition, are less profitable from intermediation activities, and diversification into noninterest income can offset these losses. They also find that fee income is related to a reduction in various accounting risk measures. DeYoung and Roland (2001) find that as banks shift away from traditional intermediation activities and into fee-based services, the volatility of earnings increases. More specifically, fee income appears to increase revenue volatility and the degree of total leverage. However, the authors also find an increase in

⁶ The "deposit insurance put-option-enhancing" theory follows that banks seek to become larger in order to increase the probability that the Federal Deposit Insurance Corporation will cover all of the bank's deposits. See Boyd and Graham (1991) for a more detailed discussion on this topic.

⁷ Allen and Jagtiani (2000) create portfolios combining one depository institution, one securities firm, and one insurance company. The authors select the nine largest of each firm by asset size, and create every combination possible for a total of 729 synthetic universal banks.

profitability associated with fee income that partially compensates banks for the increase in risk.

A European study by Baele et al. (2007) explores the question of whether or not investors value diversification. In this study, the authors examine 255 European banks from 1989 to 2004 and observe what effects noninterest income has on risk and bank value. Results show that increasing the proportion of noninterest income increases bank value. The stock market anticipates some positive net benefit from banks earning multiple streams of income. On the risk side, firm betas increase as banks use more noninterest income, suggesting that as banks diversify they become more reliant on economy-wide shocks. Idiosyncratic and total risk is negatively related to noninterest activities for the majority of the sample. However, the authors note that the European results may not hold in other markets because deregulation occurred much earlier in Europe. The Second Banking Coordination Directive took place in 1989 and it was meant to foster competition among the European banking community. In addition to introducing regulatory and supervisory standards, the Directive also laid the ground work for functional diversification by allowing banks to form conglomerates combining commercial banking, securities, insurance, and other financial services. In later years the regulations were adjusted in order to harmonize the functionally diversified areas. As such, these banks are not only better equipped and more experienced with functional diversification, but are also engaged in far more nonbank activities than their American counterparts.

Stiroh (2004) decomposes noninterest income into four components – service charges, trading, fiduciary, and other noninterest income – and examines what impact each activity has on risk adjusted returns. Overall, noninterest income decreases risk adjusted profits. This result is largely driven by trading activities and other noninterest income because of their high volatility relative to returns. Fiduciary income proved to be the only component of noninterest income positively related to risk-adjusted profits. DeYoung and Rice (2004a, b) perform a qualitative and quantitative analysis of noninterest income. First, the authors note that the growth of noninterest income has produced some misleading facts. While noninterest income is becoming an increasing portion of the banking industry's operating income, the majority of this increase is attributed to payment related services. That is, for the average bank, roughly two thirds of noninterest

income is derived from traditional noninterest activities that are related to intermediation services. In addition, the shift to noninterest income has provided banks with higher profits, more variable profits, and a worsening of the risk return trade-off. The authors suggest that while noninterest income is becoming increasingly important for the banking industry, intermediation activities will continue to be the central focus of banks.

3.2 Insurance income

Boyd and Graham (1988) simulate mergers between banks and non-bank financial companies from 1971 to 1984. The authors find that bank mergers with insurance agents and brokers, property and casualty insurers, and life insurers are the least risky. However, for the latter category of mergers, risk only decreases when market measures are used. When accounting based risk measures are used, bank and insurance mergers appear to increase risk. Similarly, Lown et al. (2000) construct pro-forma mergers between BHCs and other financial services firms. The authors find that the largest diversification benefits are derived from bank holding companies combined with life insurance firms. Consistent with the previous results, Estrella (2001) examines what types of mergers would be most effective for banks and finds strong diversification benefits for bank and insurance mergers, especially among property and casualty insurance. Allen and Jagtiani (2000) find that among a group of synthetically built universal banks, insurance activities appear to have no effect on systematic risk, while decreasing interest rate risk. Fields et al. (2007) look at mergers between insurance firms and banks from 1997 to 2002 and find that markets respond positively to bancassurance merger announcements. In addition to the bidder's positive abnormal returns, the authors observe insignificant results for both standard deviation and beta indicating that bancassurance mergers have no effect on market based risk characteristics.

3.3 Income from securities activities

An argument against the combination of securities services with banks is the potential for conflicts of interest. In the past, concerns arose from the fear that banks would dump low quality securities on the public while at the same time requiring that firms repay outstanding loans to the banks with proceeds from the new issue. In an attempt to test this theory, Kroszner and Rajan (1994) compare the performance of security issues be-

tween commercial banks and independent investment banks from 1921 to 1933, prior to the Glass-Steagall Act. The authors find no evidence that commercial banks attempted to fool the public with low quality securities, and conclude that commercial banks appeared to underwrite higher quality securities that were not overpriced. Ang and Richardson (1994) found similar results with bond issues. Although there were isolated cases of poorly issued securities, the authors find no evidence that the bonds underwritten by bank affiliates were in any way inferior to those underwritten by investment banks. Puri (1999) develops a theoretical framework to test security issuance and finds that commercial banks with prior financial claims enables banks to acquire better prices for underwritten securities compared to independent investment banks. The previous result is even stronger when information collection costs are high. Puri (1999) concludes that banks rely on their informational advantages to more accurately price securities. This “certification role” of the bank is enhanced when securities are priced accurately, which in turn increases the bank’s reputation. White (1986) examines banks during the Great Depression and tests the failure rates of banks with securities affiliates. The results show that significantly fewer banks with affiliates failed during the ensuing market crash. This result could be partly attributed to the fact that banks attracted to securities activities were primarily larger institutions, while the majority of banks that failed were on average smaller. In addition, the author finds that securities affiliates did not cause a systematic dismantling of national banks’ capital or liquidity positions.

Although the literature seems to refute the idea that conflicts of interest are not as prominent as prior expectations had indicated, many studies show that securities activities still increase overall volatility in the banking industry. With their simulated mergers, Boyd and Graham (1988) found bank mergers with securities firms and real estate development firms to be among the most risky. Consistent with the previous study, Allen and Jagtiani (2000) found that securities firms increased both systematic risk and interest rate risk when combined with banking and insurance activities.

However some studies provide mixed or positive results. A study by Kwan (1997) looks at the performance of banks with approved Section 20 subsidiaries from 1990 to 1997 and compares various return and risk measures between the Section 20s and their affiliates. The author finds that the securities subsidiaries appear to be riskier than the af-

filiates but not more profitable. Conversely, low return correlations between the two samples suggest there are diversification benefits. Another study looking at Section 20 subsidiaries by Bhargava and Fraser (1998) shows that originally the market perceived positive wealth effects for banks approved to underwrite securities. Later, when the Board of Governors authorized banks to underwrite corporate debt and equity the market reacted negatively, with negative abnormal returns and increases in firm specific and total risk. Finally, Cornett et al. (2002) look at the performance of 40 commercial banks from 1987 to 1997 that began underwriting securities through a Section 20 subsidiary. Compared to non-Section 20 banks and investment banks, the newly diversified banks had superior cash flow performance. This improvement in cash flow is attributed to increased revenue from the new lines of business. In addition, the authors find that none of the risk measures increased significantly with the introduction of Section 20s.

3.4.1 Hypotheses – Market-based risk

Our main research questions are concerned with how noninterest income as a whole, insurance activities, and securities activities, affect bank risk and performance. We test how these three factors affect a set of commonly tested market-based risk measures; idiosyncratic risk, systematic risk, total risk, and interest rate risk.

==== Insert Table 1 Here =====

Idiosyncratic risk, or firm specific volatility, is the portion of risk directly attributed to a company irrespective of market or any other fluctuations. In the framework of this study, we can also break down firm specific risk into several components. If we assume that banks are portfolios, earning income from several different sources of noninterest income, then we can apply portfolio theory, which tells us that as long as two securities are not perfectly correlated there is the potential for risk reducing effects. Given our results from *Table 1*, we see the majority of the correlations between net interest income and noninterest income components are relatively small therefore:

Hypothesis 1: There is a negative relationship between a BHC's idiosyncratic risk and – noninterest income, insurance, and securities activities.

Market risk, or systematic risk, is attributed to fluctuations in the market. It is essentially a measure of how correlated a firm is with the market. Noninterest income is primarily fee-based and as DeYoung and Rice (2004a, b) point out, for clients these types of services have very low switching costs. Although monthly charges on deposit accounts are relatively sticky, service charges and other fee-based activities can be quite sensitive to economy wide fluctuations. Similarly, Baele et al. (2007) argues that more diversified banks will be more exposed to market-wide volatility. Activities like investment banking are subject to economy wide shocks, and should therefore increase the market risk of banks. Myers and Majluf (1984) note that managers prefer not to issue stock when the firm is undervalued.

Hypothesis 2: There is a positive relationship between a BHC's market risk and – noninterest income and securities activities.

Total risk is calculated as the standard deviation of stock returns, and is considered the sum of idiosyncratic and market risk. In order to formulate accurate predictions about total risk, we need to consider how prominent a role each component of risk represents. Like firm specific risk, total risk can be thought of as a sum of all the risky components of the firm, including systematic risk. As the firm diversifies across product lines and acquires new income streams, we expect idiosyncratic risk to decrease, however systematic risk can either increase or decrease depending on the correlation a particular activity has with the market. Holding the return on the market constant, we can assume that the more diversified firm will be the least risky. In addition, previous empirical studies show that idiosyncratic risk is the dominate portion of total risk (Anderson and Fraser, 2000; Chen et al., 2006; Baele et al., 2007). Therefore our hypothesis with regards to idiosyncratic risk should hold for total risk.

Hypothesis 3: There is a negative relationship between a BHC's total risk and – noninterest income, insurance, and securities activities.

Interest rate risk is the risk attributed to a security's return given that interest rates fluctuate. This form of risk is most prominent in the banking industry given the amount of assets and liabilities on the balance sheet that are subject to interest rates. Due in large part to the introduction of new financial instruments in recent years, banks are able to use derivative contracts to hedge interest rate risk, and match the payments of liabilities and assets. However, outside of trading, the majority of noninterest activities represent one time fees that are not subject to fluctuations in interest rates.

Hypothesis 4: There is a negative relationship between a BHC's interest rate risk and – trading income.

3.4.2 Hypotheses – Operational efficiency

In addition to market perceptions, we want to investigate how noninterest income affects banks' operations in terms of economies of scope, and what implications this has for employees and profits. There are several noninterest activities that require few additional employees, or only require minimal labour costs. Once an account is opened at the bank, many service charges and fees accumulate without the presence of an employee (deposit accounts, ATMs, online banking service fees, etc.). Looking at other components of noninterest income, Rogers and Sinkey (1999), DeYoung and Rice (2004a, b), and Elsas et al. (2010), find that insurance activities offer cross-selling opportunities and have potential to build economies of scope and scale. Conversely, it is widely held that investment bankers and traders earn very lucrative salaries and bonuses. These types of employees also have little to do with the retail side of the bank, therefore fewer synergies may exist between securities activities and intermediation activities compared to the efficiencies captured by insurance income.

Hypothesis 5: There is a positive relationship between a BHC's operational efficiency and insurance income. There is a negative relationship between a BHC's operational efficiency and securities activities.

3.4.3 Hypotheses – Intermediation efficiency

Intermediation efficiency can be thought of as proxies for the performance of traditional lending activities. As it is, there is little economic rationale as to how noninterest activities should affect this area of the bank. One theory, proposed by Rogers and Sinkey (1999) is that some banks have been forced to expand into non-traditional activities because of reduced net interest margins. This suggests that banks are competing for customers based on price, and subsidizing the decreases in profit by diversifying into noninterest income. Conversely, Lown et al. (2000) suggest that diversification benefits realized from noninterest activities, allows banks to pursue riskier loans, therefore achieving higher returns.

Cole (1998) finds that existing relationships increase the probability that credit will be extended, and emphasizes the importance of information collection by banks. If banks can offer full-service banking to its customers and encourage one stop shopping, larger more diversified banks will have informational advantages that will allow them to more accurately price credit and achieve more consistent returns. If we follow Lown et al (2000) and Cole (1998), noninterest income should be expected to improve intermediation activities.

Hypothesis 6: There is a positive relationship between the efficiency of a BHC's intermediation efficiency and noninterest income.

3.4.4 Hypotheses – Liquidity and capital adequacy

Capital adequacy and liquidity risk (Equity to assets, liquidity risk): Core capital, or equity to assets, from a regulator's point of view is one of the most important indicators of a bank's financial strength. Given what happened during the sub-prime mortgage crisis, and the amount of debt banks carry on their balance sheets, the restrictions on tier 1 capital are likely to become stricter. Banks pursuing securities activities, trading, securitization, and any other activities without fixed payments are deemed more risky and

should therefore have higher capital requirements. Liquidity risk on the other hand is highly correlated with accepting customer deposits. Since trading, insurance, securities activities and other components of noninterest income have little to do with customer deposits we assume that increases in noninterest activities should decrease liquidity risk.

Hypothesis 7: There is a positive relationship between a BHC's ratio of equity to assets and noninterest income.

Hypothesis 8: There is a negative relationship between a BHC's liquidity risk and noninterest income.

CHAPTER 4: DATA

4.1 FR Y-9C reporting forms

Our primary source of data is from the Federal Reserve Bank of Chicago's FR Y-9C database. The reports are required, by law, to be filed by Bank Holding Companies in the United States and provide detailed information of BHCs' balance sheet and income statement items. Due to the enactment of the Gramm-Leach-Bliley Act in 1999 all BHCs are now eligible to engage in insurance and securities activities, and beginning in 2001 all BHCs filing FR Y-9C forms are required to report income derived from any of 12 different categories of noninterest income.⁸ While other authors have studied the components of noninterest income prior to 2001, to our knowledge few other studies have used this dataset which contains the yearly revenues derived from insurance, securities activities, and all other noninterest income components. Consistent with previous studies we use annual data from 2001 to 2009, because quarterly data is unaudited (DeYoung & Rice, 2004a, b; Stiroh, 2004). In 2006 the Board of Governors of the Federal Reserve changed the requirements for the FR Y-9C reporting forms. In previous years only Bank Holding Companies with \$150 million or more in consolidated assets were required to report. In 2006 this number was changed to \$500 million. Banks with assets smaller than \$500 million submit FR Y-9SP reports which do not contain the relevant noninterest income information required for this study. In order to remain consistent we include only firms with \$500 million or more in consolidated assets throughout our study period. After adjustments we are left with a sample of 7276 observations across nine years.

As with other studies, we recognize the importance of size when studying noninterest income. To determine an appropriate sample for this study we graph noninterest income (as a percentage of operating income) as a function of asset size across our nine year study period.

==== Insert Figure 2 Here =====

⁸ Prior to 2001 there were four categories of noninterest income; fiduciary, service charges, trading, other noninterest income. As of the 2009 reporting forms there are 15 categories.

In the graph we see a sharp increase in the proportion of noninterest income for banks in the 76 to 80th percentile of assets. We find similar results when we graph securities activities as a percentage of noninterest income.⁹ Therefore, our final sample is constructed by using the largest 25% of banks in any given year. This leaves our sample from the FR Y-9C with 1828 bank year observations.

4.2 CRSP database

Daily stock return data is collected from the Centre for Research in Security Prices (CRSP) database. The Federal Reserve Bank of New York provides a list of BHC entity numbers from the FR Y-9C that matches with CRSP's PERMCO identification numbers. We use this list to extract the daily returns of BHCs in our original dataset from the CRSP database. Due to liquidity concerns, we follow Esty (1997) and Anderson & Fraser (2000) and discard any BHC whose equity was not traded for 75 days or more during a year.¹⁰ We also collect the equally weighted CRSP index returns. Interest rate data for this study comes from the Federal Reserve Bank of St. Louis. We follow Flannery and James (1984), Sweeney and Warga (1986), Saunders and Yourougou (1990), Yourougou (1990), Flannery et al. (1997), Allen and Jagtiani (2000), Chen et al. (2006) and estimate the following two-factor model model:

$$R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it} \quad (1)$$

where R_{it} is the daily stock return of the BHCs, α is the intercept term, R_{Mit} is the daily return of the equally weighted CRSP index, I_{it} is the daily three month treasury-bill yield, and e_{it} is a random error term. β_M is Beta or the systematic risk estimate, and β_I is a proxy for interest rate risk. Proxies for total risk and idiosyncratic risk are obtained by calculating volatility of the daily stock returns (σ_{Ri}) and volatility of the residuals (σ_{ei}).

⁹ When we graph insurance income as a percentage of noninterest income as a function of asset size the graph was relatively flat with a sharp increase for the top 5% of banks.

¹⁰ In our sample there is roughly 250 trading days in any given year. Therefore only stocks that trade 70% of the year are included in our sample.

CHAPTER 5: METHODOLOGY

To examine the impact of noninterest income and its components on bank performance we estimate the following specifications:

$$y_{it} = \alpha + \beta_1 Non_II_{it} + \beta_2 d_e_{it} + \beta_3 lnAssets_{it} + \sum \gamma Year\ Dummy + \varepsilon_{it} \quad (2)$$

$$y_{it} = \alpha + \beta_1 Insurance_{it} + \beta_2 d_e_{it} + \beta_3 lnAssets_{it} + \sum \gamma Year\ Dummy + \varepsilon_{it} \quad (3)$$

$$y_{it} = \alpha + \beta_1 I_Banking_{it} + \beta_2 d_e_{it} + \beta_3 lnAssets_{it} + \sum \gamma Year\ Dummy + \varepsilon_{it} \quad (4)$$

$$y_{it} = \alpha + \beta_1 Insurance_{it} + \beta_2 I_Banking_{it} + \beta_3 Service_Charge_{it} + \beta_4 Trading_{it} + \beta_5 Securitization_{it} + \beta_6 Other_NonII_{it} + \beta_7 d_e_{it} + \beta_8 lnAssets_{it} + \sum \gamma Year\ Dummy + \varepsilon_{it} \quad (5)$$

where y_{it} represents one of our 13 performance measures in *Figure 3*. In the first three specifications we test each of our independent variables individually. Non_II_{it} , $Insurance_{it}$, and $I_Banking_{it}$ are noninterest income, insurance income, and investment banking income, all scaled by total assets. In each of our regressions we also control for capital structure using the debt to equity ratio (d_e_{it}), size by taking the natural log of total assets ($lnAssets_{it}$), and fixed year effects by using dummy variables for the years 2002 to 2009 ($\sum \gamma Year\ Dummy$). ε_{it} is the error term.

===== Insert Figure 3 Here =====

In equation (5) we stack several components of noninterest income together to control for other sources of income and for robustness.¹¹ The other four components of noninterest income we chose to include in the model are service charges on deposit accounts ($Service_Charge_{it}$), trading income ($Trading_{it}$), securitization income ($Securitization_{it}$), and ($Other_NonII_{it}$). Service charges represent traditional noninterest activities and are one of the largest components of fee income. DeYoung and Rice (2004a, b) identify service charges as the component of noninterest income most closely linked to interest

¹¹ Noninterest income is not included in *equation (5)* because of the high correlations that exist between it and other noninterest income components.

activities. In addition, empirical evidence from Stiroh (2004) shows that among noninterest income components, interest income growth shows the highest correlation with service charges. Trading income is included for two reasons. First, outside of securities activities and insurance, trading activities represent one of the most controversial activities banks engage in. It could be argued that trading was directly responsible for both the savings and loans crisis in the 1980s, and the sub-prime mortgage crisis which began in 2007. Secondly, trading income is very volatile. Stiroh (2004) identifies trading activities as the most volatile component of noninterest income, and has the largest negative impact on risk adjusted profits. Securitization is included primarily out of interest due to the sub-prime mortgage crisis. We should caution that all noninterest income components represent fee income that banks earn on an annual basis from these activities. Securitization does not represent the banks position with respect to securitized assets, it simply reflects the amount of fee income that banks earn from securitization activities.¹² Finally other noninterest income is included because of its sheer size with respect to noninterest income. In any given year it represents approximately 25% of noninterest income.

¹² A complete list of noninterest income components and their definitions from the FR Y-9C reporting forms are included in *Appendix 2*.

CHAPTER 6: RESULTS

6.1 Descriptive statistics

Given that our samples are different for our market and accounting based samples, we provide summary statistics and correlation tables for both.

==== Insert Table 2 Here =====

==== Insert Table 3 Here =====

==== Insert Table 4 Here =====

Table 1 shows the summary statistics for our first sample using market-based risk measures, and in total we have 712 observations across nine years. The smallest bank in our sample by total asset size is almost 6 billion, the largest is 2.2 trillion, and the average bank is approximately 100 billion. *Table 2* includes the summary statistics for the accounting-based sample which includes 1828 observations. With this sample the smallest bank has assets of just over 2 billion, the largest bank is still 2.2 trillion, and the average bank is approximately 62 billion. The minimum size of banks in both our samples is similar to Stiroh (2004), who divided his sample by taking banks with assets in excess of 1 billion. *Table 3* lists the number of banks by year in each of our samples.

Table 4 and *Table 5* present the Pearson Correlation Matrix for both samples. Consistent with our expectations, the highest correlations in the tables exist between non-interest income and several of the components, which is why we do not include total non-interest income in *equation (5)*. There are also negative correlations between the debt to equity ratio and both noninterest income, and investment banking activities. However, this is expected because interest income is derived from liabilities (deposits which are turned into loans), whereas many noninterest income components represent off-balance sheet activity. In addition, riskier banks are required to have more equity capital, and as mentioned many noninterest activities are more volatile than traditional banking.

==== Insert Table 5 Here =====

==== Insert Table 6 Here =====

6.2 Results – Market-based risk

Table 6.1 contains the results for the idiosyncratic risk regressions. Banks that derive more of their income from insurance activities have lower firm specific risk. This result is consistent when we test insurance individually in Column 2 and in the stacked regression in Column 4 (statistical significance increases to 1% in the stacked regression when we include other noninterest income variables). However securities activities and total noninterest income show no statistical significance in any of the regressions. Given that our sample consists of the large banks, which proportionately earn larger sums of fee income, it is possible that these BHCs have already reached the optimal amount of noninterest activities in which to reduce firm specific risk.¹³ For each component of noninterest income, depending on the volatility and covariance of securities services with other bank income streams, the majority of the diversification benefits could be realized with smaller weights. Service charges, the component most closely aligned with traditional intermediation activities, are negatively related to idiosyncratic risk. Given that annual fees for deposit accounts are collected on a continuous basis and rates rarely fluctuate, the negative coefficient for service charges is consistent with the low volatility of this activity.

==== Insert Table 7.1 Here =====

In *Table 6.1* we also include the coefficients for our year dummies. With 2001 as the base year, we observe a steady decrease in firm specific risk from 2002 to 2004 followed by a steady period from 2005 to 2006. The coefficient for our 2007 dummy is insignificant and in 2008 and 2009 the sign changes. We believe this portrays a fairly accurate story with respect to firm specific risk in banks during this time period. We know during the crisis period, beginning in 2007, many customers began defaulting on loans which could account for the increase in idiosyncratic risk during this time period.

Table 6.2 presents the results from the regressions with systematic risk. As expected, total noninterest income has a positive relationship with beta. We also find a positive relationship between beta and securities activities. These results are consistent with

¹³ In section 6.6 *Robustness tests*, we test this for this possibility by including the full sample of banks in our regressions. We also test the smallest banks from the original sample and find evidence that at lower weights *i_banking* and noninterest income provide diversification benefits.

Bhargava and Fraser (1998), Allen and Jagtiani (2000), and Baele et al. (2007) which confirms the expectation that as banks diversify their income they will have higher exposure to changes in the market, or economy-wide shocks. This argument is particularly relevant with respect to investment banking activities, where the execution of IPOs and mergers and acquisitions are highly dependent on market timing. Insurance activities show a negative relationship with market risk. Our results are consistent with Biger and Kahane (1978) who find that the betas of almost all insurance lines are no different from zero. Insurance activities appear to provide smooth income streams that do not fluctuate with the market, however given that the significance on the insurance coefficient changes from columns 2 to 4 conclusions should be drawn cautiously. Similar to the results for idiosyncratic risk, service charges decrease market risk while securitization increases it. The year dummies from *Table 6.2* explain a similar story from the previous regression. Although the pattern from 2002 to 2006 is somewhat sporadic, from 2007 to 2009 we observe an upward trend in systematic risk which clearly reflects events during that time period.

==== Insert Table 7.2 Here =====

==== Insert Table 7.3 Here =====

The results for the regressions with standard deviation are reported in *Table 6.3*. Total risk can be thought of as the sum of all risky components calculated from *equation (1)* which includes market, idiosyncratic, and interest rate risk. Consistent with other studies (Bhargava and Fraser, 1998; Allen and Jagtiani, 2000; Baele et al., 2007) we observe that total risk is primarily driven by the idiosyncratic portion. Insurance and service charges are negatively related to total risk, while securitization is associated with increases in standard deviation. The year dummies display the same pattern as in our idiosyncratic regressions.

We observe consistent results for our control variables across the first three regressions. Increases in leverage are associated with increases in firm specific, market, and total risk. The more debt a bank carries the riskier it is. However, size is not statistically significant in any of our regressions. Although size is widely recognized in the literature

as one of the most important predictors of noninterest income, we have already controlled for it by including only the largest 25% of firms from our original sample.

Interest rate risk is our final measure of market-based risk and the results are reported in *Table 6.4*. An important issue to identify is our estimates for interest rate risk. The minimum value for this coefficient is negative. From *equation (1)* we see that the return on a security is a function of the market return and the yield on a 3 month treasury-bill. Economically, when the yield on a treasury-bill increases (interest rates increase), holding everything else constant, the return on the security will decrease. Therefore in order to avoid confusion when interpreting the results for interest rate risk, we multiplied all of the β_I coefficients by negative one prior to running the model.¹⁴ In this form, we can say that an increase in our coefficient represents an increase in interest rate risk.

==== Insert Table 7.4 Here ====

Overall noninterest income has a very small impact on interest rate risk. We observe a marginal positive relationship with insurance, and a negative relationship with trading income. A possible explanation for the positive relationship between insurance income and interest rate risk stems from the fact that insurance premiums are relatively sticky. When a customer enters an insurance contract, typically they commit to a long term contract composed of fixed payments. During the course of the contract, even if market interest rates fluctuate, the premiums paid for insurance coverage do not change. This exposes banks to increases in interest rates since they will not be compensated for this cost through their existing insurance contracts. Going forward banks can factor in changes to interest rates into new contracts, however previously negotiated premiums will not change. This result is consistent with Allen and Jagtiani (2000) who also find that insurance income decreases interest rate risk. The negative sign for trading income supports the idea that banks use derivative instruments to hedge risk. Interest rate risk is one of the primary forms of risk a bank can face. Banks actively manage their liabilities and assets in order to minimize not only interest rate risk, but their maturity gap as well.

¹⁴ Allen and Jagtiani (2000) performed similar tests for interest rate risk and bank diversification. Although the authors did not adjust their coefficients as we did, the interpretations remain the same.

When banks are unable to naturally hedge their interest rate risk, it is common for banks to enter swap agreements in order to match fixed and variable payments. The negative sign for asset size suggests that larger banks are less exposed to interest rate risk. It could be argued that larger banks are more geographically diversified, exposing them to different rates all over the country. Loans and mortgages in different parts of the country will be subject to different rates and economic conditions.

6.3 Results – Operational efficiency

Table 7.1 displays the regression results for operational risk, defined as total employees' salaries and benefits to number of full-time employees. First, we see a positive relationship between noninterest income and operational risk. Contrary to our hypothesis, as banks derive more income from noninterest activities salary per employee increases. Theoretically, noninterest income is considered a fee-based activity with low switching costs that requires substantially fewer labour inputs. This idea is particularly relevant for traditional noninterest activities like service charges and other noninterest income. However for securities and trading activities we know labour costs can be very high. For our sample we only include financial institutions in the 75th percentile in asset size or higher which are the primary drivers of securities and trading activities (From *Table 5* we see the correlation between noninterest income non_ii and securities activities i_banking is 0.91). When we remove income from trading and securities activities from total noninterest income in column 1, the sign becomes negative and significant. Insurance income, consistent with arguments for scale and scope economies, is the only non-traditional non-interest income component that reduces operational risk.

==== Insert Table 8.1 Here =====

Results for income to employee salary, our second measure of operational efficiency, are reported in *Table 7.2*. Overall noninterest income has a positive relationship with profit per employee salary. Noninterest activities appear to generate proportionately

more net income than employee salaries. However, none of the six noninterest income components included in the regression can explain this result.¹⁵

==== Insert Table 8.2 Here =====

Table 7.3 contains the results for our final measure of operational efficiency, non-interest expenses to noninterest revenues. This measure indicates how each component of noninterest income contributes to the bank's operating margin. From the results we see that almost every component of noninterest income improves efficiency. For every dollar of expense banks incur for a given noninterest activity the bank earns a proportionately higher amount of revenues. The coefficient for *i_banking* is negative and significant in column 3, however loses significance in column 4 in the stacked regression.

==== Insert Table 8.3 Here =====

Overall noninterest income improves the efficiency of the banks. Although trading and securities activities increase the amount of salaries paid to employees, this does not have a negative impact on banks' net income. In addition, virtually all noninterest income components appear to increase noninterest revenues with respect to noninterest expenses. Important to note is that our definition of efficiency is fairly limited. The variables we use to evaluate operating efficiency are in response to the extent literature on scale and scope economies with respect to combining insurance, securities, and banking activities. Previous research suggests that existing networks and information availability can lead to efficiencies across financial service lines. While we recognize there are likely other measurements available, our results suggest operating efficiencies are realized.

6.4 Results – Intermediation efficiency

Results for intermediation efficiency are found in tables 8.1 through 8.4. First, the results for net interest margin suggest that banks earning more income from noninterest

¹⁵ For robustness, we include the other six noninterest income components BHCs report in the FR Y-9C forms. We find net gains (losses) on sales of other real estate owned is positively related to *income_emptsalary*, and the coefficient for *fiduciary income* is negative and significant.

activities have higher profit margins. As banks diversify into other activities, they become less reliant on interest income. Intuitively, banks can choose to not issue riskier loans because of their lower dependence on customer deposits. This could result in banks increasing the margin on their loans. In addition to insurance, securitization and other noninterest income have a positive and significant relationship with NIM. The debt to equity ratio is negative and statistically significant although it is not economically significant, and larger banks are associated with increased net interest margins.

==== Insert Table 9.1 Here ====

==== Insert Table 9.2 Here ====

Table 8.2 reports the results for a bank's return on loan with respect to noninterest activities. Total noninterest income is positively related to return on loan. This result is driven primarily by securities activities and securitization, which are both significant at 1%. The positive relationship between *i_banking* and return on loan is consistent with findings from Puri (1999), and Cole (1998). Both authors suggest informational advantages gained from a security firm's collection of private company information can be used for more efficient pricing of products. In addition, similar to our conclusions regarding net interest margin, diversification into other activities allows banks to pick and choose which customers to lend to. The negative sign with respect to trading income suggests that this activity reduces the banks' return on loan. As mentioned earlier, trading activities are often used for hedging purposes and banks may be using derivative products to decrease risk. In addition to swap agreements, banks can use credit derivatives to protect themselves from default risk. This allows banks to issue riskier credit, which could reduce the return on loans. The positive coefficient on securitization suggests that banks are packaging risky loans and redistributing the risk to willing buyers.

The regressions for credit risk are reported in *Table 8.3*. Overall there is a negative relationship between credit risk and noninterest income. The coefficient on insurance is insignificant however *i_banking* and service charges are both negatively related to credit risk. This could suggest that banks obtain more information from customers (commercial or retail) involved in multiple lines of business, are able to identify the most cred-

itworthy clients, and consequently can more accurately price credit products. This is consistent with arguments from Puri (1999) and Cole (1998) that emphasize the importance of information collection and cost. Intuitively, as banks focus more on noninterest income and less on intermediation activities, the bank is not as dependent on loans. Once again this will result in fewer risky loans being issued. The negative sign on trading income is consistent with previous results, and our hypotheses regarding hedging activities. The debt to equity ratio is statistically but not economically significant and the results for bank size indicate that larger banks have more credit risk. Larger banks are likely more diversified within their loan portfolio and across different business segments, which allows them to be less risk averse.

==== Insert Table 9.3 Here =====

The results for loan loss reserve ratio reported in *Table 8.4* reflect in some ways the results of the previous three tables. If the banks' loan portfolios are achieving higher margins, higher returns, and fewer defaults, the amount of money set aside for loan losses should be reduced. Although the LLRR is considered a forward looking measure, we would expect that past loan productivity should be somewhat reflected in this result. We find that insurance, securities, trading, and service charges are all negatively related with LLRR. This finding is generally consistent with our findings from the previous three regressions. The one exception is the result for trading income with respect to return on loans, however despite the fact that trading income appears to reduce returns we suspect this is due to hedging activities used to decrease credit risk. Securitization and other non-interest income are positively related to LLRR. Although securitization increases both NIM and return on loan, it also increases credit risk which is expected to be more heavily weighted in calculating provisions for loan losses.

==== Insert Table 9.4 Here =====

Overall these results strongly suggest that noninterest income improves the efficiency of intermediation activities. Insurance, securities activities, service charges, and

trading activities either increase the return of the banks' loan portfolios, or reduce the credit risk. These results are consistent with theories on pricing credit and information gathering proposed by Puri (1999) and Cole (1998). As larger banks move towards universal banking and customers are capable of dealing with one institution for all of their financial needs, banks are able to acquire more information about their customers. Insurance products, securities activities, and deposit accounts provide banks with information they can use to more accurately price credit. Conversely not all noninterest income components enhance a bank's ability to lend. Although securitization increases profitability of the loan portfolio it also increases credit risk. The ability to package and redistribute credit risk to other parties may provide incentives for banks to take on riskier loans. However, the increase in credit risk can be offset by trading activities used for hedging.

6.5 Results – Liquidity and capital adequacy

Our measure for liquidity risk tests the extent to which banks' assets are funded by customer deposits. It is a proxy for traditional intermediation activities and measures the quantity of a bank's funds that are subject to withdrawal at any given time. The results for liquidity risk are reported in *Table 9.1*. Total noninterest income is negatively related to liquidity risk. Increases in fee income reduce the banks' overall dependence on customer deposits. The specific components of noninterest income that appear to be driving this result are insurance, securities activities, and trading. All three coefficients are negative and statistically significant at the 1% level. This finding is consistent with our hypothesis, and our expectations regarding the mechanics of these components. Participating in any of the aforementioned activities does not directly create a deposit on the liability side of the balance sheet however any of the three activities can potentially increase the amount of assets on the balance sheet. Both scenarios result in a decrease in liquidity risk. Not surprisingly service charges, which are directly related to customer deposits, are positive and statistically significant. We also note that larger banks appear to have less liquidity risk which is consistent with previous studies that find larger banks are more focused on noninterest activities.

==== Insert Table 10.1 Here =====

==== Insert Table 10.2 Here ====

The results for CoreCapital, measured as equity capital to total assets, are provided in *Table 9.2*. From a regulator's perspective, equity capital is one of the most important indicators of a bank's safety. Theoretically for the banking industry, equity capital represents the banks' ability to withstand unforeseen losses or shocks. Our results show that overall total noninterest income is positively related to equity capital. Noninterest income appears to increase the need to carry larger amounts of equity capital on the balance sheet. This suggests that banks or regulators, or both, recognize the risk of noninterest income and are making appropriate adjustments. Securities activities and securitization in particular are positively related to CoreCapital. Given that investment banking practices are associated with large amounts of market risk, intuitively we should expect these activities to increase the need for additional reserves of capital. Conversely insurance represents steady and consistent income streams, which is why we observe a negative relationship with equity capital. The coefficient on our size variable indicates that larger institutions carry proportionately less equity capital, suggesting perhaps that smaller banks are less diversified and therefore more exposed to unexpected shocks.

6.6 Robustness tests

For robustness we examine how noninterest income components affect our results during the crisis period from 2007 to 2009. We use dummy variables, as interaction terms for our main independent variables (noninterest income, insurance income, and securities activities), that take the value of 1 in years 2007 to 2009 and zero otherwise.¹⁶ We observe negative and significant coefficients on the crisis coefficients for noninterest income and securities activities for firm specific risk, market risk, and total risk. Overall, for our market-based risk measures (*Tables 11.1 to 11.4*), this suggests that noninterest income and securities activities may decrease risk during the crisis period. The operational efficiency results remain the same after including the crisis dummies with the exception of income to employee salary (*Table 12.2*). The coefficient for *i_bankingcrisis* and *non_iicrisis* are positive and significant at 1% suggesting that during the crisis period,

¹⁶ Tables 11.1 to 14.2 show results for robustness tests examining the crisis period.

firms that engage more heavily in those activities generate more income relative to employee salaries. This is also consistent with our results for market-based risk. Security activities appear to be immune to market crashes. One possibility is that banks are cutting employee bonuses, staff, or both during periods of low activity. For intermediation efficiency, the crisis interaction terms are negative and significant for return on loan (*Table 13.2*), however the same coefficients are also negative and significant for credit risk (*Table 13.3*). This suggests that during the crisis, noninterest activities reduce returns for loans but also decrease the likelihood of default. The results for capital adequacy and liquidity remain the same after including the crisis dummies (*Tables 14.1 and 14.2*).

We also want to ensure our results are robust to different data frequencies. For *equation (1)* we recalculate our risk measures using weekly instead of daily data and re-run our models. Our results did not change (*Tables 15.1 to 15.4*). For the market-based data we also recognize that idiosyncratic and total risk have a lower bound of zero. In addition, the summary statistics suggest our distributions are skewed and have excess kurtosis. After removing outliers our results remain the same (*Tables 16.1 to 16.4*). Finally, for the market-based risk measures we attempt to address potential endogeneity issues by lagging the independent variables by one period. Although the significance on insurance is lost in the idiosyncratic regression (*Table 17.1*), and trading is no longer statistically significant in the interest rate risk regression (*Table 17.4*), overall our results are robust.

We also perform robustness tests to control for other bank characteristics not considered in *equations 2 – 5*. The number of dependent variables we examine in this study limits our choice of control variables. Several of the intermediation efficiency variables we examine are commonly used in financial institutions studies to control for bank characteristics. Credit risk, net interest margin, equity capital, and provisions for loan losses can be used as proxies for loan quality, profitability, and liquidity. Given the number of regressions in this study, we did not want to complicate our models by switching control variables in and out based on our dependent variables. In addition, we found that several of the control variables under consideration were highly correlated with our noninterest income components. For example, most banking studies would include equity capital as a control variable for capital adequacy and capital structure. However our measurement for equity capital, CoreCapital, is highly correlated with *i_banking*, one of our main test vari-

ables. Intuitively, this makes sense because as banks move away from traditional intermediation activities and carry fewer customer deposits on the liabilities side of the balance sheet, the equity portion will increase. Moreover, regulators require banks to be well capitalized when diversifying into riskier business lines like securities activities and trading. Another example would be off-balance sheet activity. In recent years this topic has received a growing amount of attention in the literature, and considering that banks can carry positions in derivative instruments equal to the level of total assets listed on their balance sheets, it would be logical to incorporate this activity into the model. In the FR Y-9C reporting forms we have access to information on all the derivative activities a bank engages in, however trading income already controls for this. Further potential missing variables biases were tested by controlling for net interest income (the other half of banks' operating income), commercial and industrial loans, and consumer loans. However, including these variables did not significantly change our results.

The following tests are motivated from our sample construction. As discussed in *Section 4*, size is a key factor in the study of noninterest income, and we attempt to construct our sample in order to best capture the effects of non-traditional noninterest income on bank performance. In our original sample we include only the top 25% of banks. To verify our results we perform the same tests using the top 30% and top 20% of banks. There are some minor changes in the significance levels of some variables but overall our results hold. However when we include the entire sample in our regressions we find some interesting results.¹⁷ For the market based risk measures many of the noninterest income components become negative and significant for idiosyncratic and total risk. Security activities in particular changes from insignificant to negative with a p-value of 0.0165. We know that smaller banks tend to derive less of their operating income from noninterest activities, which is consistent with our suspicion that for some noninterest income activities, diversification benefits are primarily realized with smaller weights. Another interesting result come from the regression for interest rate risk, where the coefficient on trading income switches from negative and significant to positive and significant. Previously, the negative coefficient suggested larger banks are using trading activities to hedge their in-

¹⁷ For our full market-based sample we have a total of 2862 observations, while for the accounting based-sample there are 7276 observations.

terest rate risk. However when smaller banks are included in the sample trading income appears to have the opposite effect. Larger banks are the market makers for derivatives and employ highly skilled labour to trade swaps, options, and forwards. It may be the case that smaller banks lack the size, scope, and expertise to effectively trade in the derivatives market. The nature of trading activities between large and small banks may be fundamentally different. In fact, when we observe summary statistics for small banks we see that mean and median values for positions in credit default swaps, interest rate derivatives, and other trading contracts are not significantly different from zero.

For the accounting-based data we observe some differences when including the full sample as well. Insurance income appears to lose some of its efficiency with respect to operational risk. It appears as though smaller banks are not able to capture, to the same degree, scale and scope economies from combining traditional lending activities and insurance. In addition, insurance, trading, and securities activities show no significance with respect to the banks' intermediation efficiency. The larger banks appear to be benefiting from the size of their networks, the scale and scope of their activities, and the highly skilled labour employed to effectively manage their risk.

CHAPTER 7: CONCLUSIONS

This study investigates the relationship between noninterest income and bank performance in the post Gramm-Leach-Bliley Act period. Deregulation in 1999 allowed bank holding companies to operate securities and insurance affiliates, representing a major shift in the US financial services industry. Results from our sample, which includes large BHCs from the FR Y-9C reporting forms, provide evidence that diversification benefits extend beyond income smoothing and reduced risk.

Using FR Y-9C reporting forms collected from the Federal Reserve Bank of Chicago, we obtain bank holding company data from 2001 to 2009. Daily stock return data is retrieved from the CRSP database and interest rates are collected from the Federal Reserve Bank of St. Louis. In this study we examine what impact noninterest income components have on market-based risk measures, and we extend the literature by evaluating how fee income affects the operational efficiency of banks and traditional intermediation activities.

Insurance income reduces firm specific and total risk for banks. The other noninterest components present insignificant results, which may suggest is evidence that the majority of large banks have already reached the optimal level of those activities to reduce risk. Noninterest income as a whole and securities activities increase the level of systematic risk for banks. This result is consistent with other studies that argue investment banking practices are sensitive to fluctuations in the market. Finally, results show that insurance activities are exposed to interest rate risk. It can be argued that the long-term and fixed nature of insurance contracts exposes this income stream to changes in interest rates.

For operational efficiency we find some evidence supporting the existence of economies of scale and scope for insurance activities. Banks that earn more insurance income are associated with a lower ratio of salaries per employee. Once a BHC has already established a network of clients, personal bankers can distribute additional products at almost no extra cost. Contrary to this result, total noninterest income increases employee compensation. This result is largely driven by securities and trading activities, financial services that are well known for the significant salaries and bonuses distributed to

their employees. In addition, while personal bankers can distribute banking and insurance products, we know that securities and trading activities require a more highly skilled labour force that is for the most part separate from retail banking. However, despite the higher salaries noninterest income produces a proportionately higher amount of income, and decreases the ratio of expenses to revenues.

Overall, noninterest income improves intermediation efficiency. Banks that diversify into noninterest income increase the margin on traditional lending activities, achieve higher returns on their loan portfolios, and reduce credit risk. BHCs that offer a wider range of services could be benefiting from having access to all of their clients' information. This allows BHCs to more easily identify customer needs, and more accurately price credit products. In addition, trading and securitization activities allow banks to diversify and hedge their lending activities. Shifting more focus to noninterest activities does provide the bank with more liquidity given that they are less reliant on customer deposits, however more volatile activities like securities have to be hedged with higher proportions of equity capital.

For robustness, we examine the effects of noninterest income during the crisis period and find that the diversification benefits of noninterest income appear to be more prevalent during the market crisis. Our results are robust with respect to different data frequencies, the removal of outliers, and endogeneity between the independent and dependent variables. Given the importance of size when studying noninterest income, we adjust our sample to include the largest 20% and 30% of banks. We also incorporate several additional variables to control for other bank characteristics. Overall we find similar results. When the entire sample of banks is included in the regressions, diversification benefits appear to be more prevalent. Smaller banks produce proportionately smaller amounts of noninterest income. Consistent with portfolio theory, the risk reducing benefits of noninterest income decrease gradually as higher weights of the same income stream are added to the portfolio. Finally, the operational and intermediation efficiencies of noninterest income are reduced when small banks are introduced to the sample. Consistent with theories on economies of scope and scale, it appears as though bank size is important when analyzing noninterest income.

These results provide new evidence for the debate on noninterest income. Previous research has focused on the volatility and correlation of noninterest income streams with traditional intermediation activities. While trading, securitization, and securities activities can be more risky than traditional banking, we argue that the diversification into noninterest income is motivated by other factors than decreasing the volatility of cash flows. First, there are many synergies created by combining similar activities. Larger banks with significant networks can benefit from economies of scope and scale by broadening into other services. Secondly, expanding the number of services a bank offers enables customers to execute all of their financial needs in one location. BHCs then accumulate more information through a variety of activities, which enhances traditional intermediation activities.

There are limitations to our study. First, we do not differentiate between BHCs that were active in securities and insurance activities prior to the GLBA. Secondly, we do not distinguish between firms that have acquired subsidiaries and those that have grown noninterest components organically, nor do we identify the year when firms began operating a securities or insurance affiliate. Our study is primarily concerned with the combination of banking, securities, and insurance activities in the post-GLBA era. Whether financial institutions develop non-bank services internally through growth or externally through acquisition is beyond the scope of this study. Finally, our approach to noninterest income is very broad. We attempt to evaluate the effect of noninterest income in several different areas of a bank's operations. A much higher degree of focus and attention could be given to each topic, something that we hope will encourage future research.

The Gramm-Leach-Bliley Act represented a major shift in US banking practices and is a key motivation for this study. Although the aim of this paper is not to directly address the causes of the financial crisis that began in 2007, our results provide some evidence in favour of deregulation. However in July of 2010, the US government signed into law the Dodd-Frank Wall Street Reform and Consumer Protection Act. The primary aim of the new act is to protect consumers and the public at large by ending "too big to fail" financial institutions and avoiding government bailouts. The Dodd-Frank Act proposes stricter requirements for capital, leverage, liquidity, and other ratios that discourage banks from growing large enough to pose a significant threat to the economy. Counter to our

results, this could force large financial conglomerates to break apart and focus on core business lines. As our results suggest, combining financial services can result in more diverse cash flows, reduced volatility, economies of scope and scale, and improvements in traditional intermediation activities. Despite these improvements, overwhelming public pressure may have influenced decision makers. Although it is clear that banks do require some regulation, especially with respect to transparency, accountability, and complexity of financial instruments, our results suggest that diversification of financial services, when managed responsibly, can enhance banks' traditional intermediation activities through larger returns and lower credit risk.

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APPENDIX A: TABLES

Table 1: Bank Operating Revenue Components

This table decomposes bank operating revenue and reports each component's weight, volatility, and correlation with net interest income. These figures are based on our accounting-based performance data in *Table 3* that includes the top 25% of banks according to asset size in any given year. In the first column (% of Operating Income), we sum the aggregate value of each income component across all bank holding companies in our sample period (2001 – 2009), and divide by total operating income (Net interest income + noninterest income). The volatility and correlation measures are based on definitions from our methodology section where all variables are scaled by total assets.

	% of Operating In- come	Volatility	Correlation with Net Interest Income
Net Interest Income	51.59%	9.55E-03	1.00
Noninterest Income	48.41%	3.86E-02	-0.09
Insurance	6.50%	5.04E-03	0.07
Investment Banking	8.51%	3.45E-02	-0.15
Trading	2.56%	2.10E-03	-0.14
Service Charges	5.71%	4.38E-03	0.16
Securitization	3.11%	5.55E-03	0.10
Other Noninterest Income	11.83%	8.06E-03	0.18
Fiduciary	4.81%	5.92E-03	-0.24
Loans and Leases	1.00%	3.62E-03	0.07
Other Assets	0.83%	8.43E-04	-0.04
Real Estate	-0.09%	5.84E-04	0.01
Servicing Fees	3.32%	2.67E-03	0.11
Venture	0.32%	4.55E-04	-0.04

Table 2: Summary Statistics for Market-Based Risk Data

This table contains summary statistics for the variables included in the market-based risk regressions. The sample includes the largest 25% of BHCs from our original set spanning from 2001 to 2009.

Variable	N	Minimum	Maximum	Mean	Median	Std Dev	Skewness	Kurtosis
<i>Dependent - Market</i>								
Idiosyncratic	712	0.0059	0.1001	0.0186	0.0137	0.0137	2.3223	6.2456
Beta	712	0.0924	3.1363	1.2232	1.1503	0.5081	0.8241	0.6159
StdDev	712	0.0065	0.1038	0.0235	0.0171	0.0177	1.9793	3.7433
IRRisk	712	-8.0184	10.6161	0.1903	0.0094	1.2304	2.5332	27.4255
<i>Control and Independent</i>								
D_E	712	0.2655	28.5631	10.2193	9.9735	2.9851	0.5376	3.6701
Assets	712	5.94E+09	2.23E+12	1.06E+11	1.67E+10	2.95E+11	4.812404	24.81972
ln_Asset	712	22.5058	28.4306	24.0261	23.5388	1.3612	1.2312	0.9782
Non_II	712	-0.0021	0.6722	0.0274	0.0175	0.0552	8.1791	75.2000
Insurance	712	0.0000	0.0777	0.0019	0.0004	0.0077	8.0568	67.5419
I_Banking	712	0.0000	0.6514	0.0079	0.0009	0.0521	9.5759	94.9712
Service_Charge	712	0.0000	0.0235	0.0040	0.0037	0.0030	1.9618	8.8558
Trading	712	-0.0189	0.0255	0.0007	0.0000	0.0024	2.2926	34.3539
Securitization	712	-0.0005	0.1013	0.0012	0.0000	0.0079	9.1755	92.3549
Other_NonII	712	-0.0070	0.0627	0.0061	0.0042	0.0072	4.2644	23.6033
OtherAsset	712	-0.0020	0.0205	0.0002	0.0000	0.0010	13.8441	261.0593
RealEst	712	-0.0098	0.0004	-0.0001	0.0000	0.0006	-11.1193	160.6487
Loans_Leases	712	-0.0050	0.0395	0.0010	0.0003	0.0032	7.5170	70.8104
Service_Fee	712	-0.0231	0.0289	0.0007	0.0001	0.0030	4.9286	49.9430
Venture	712	-0.0104	0.0052	0.0000	0.0000	0.0007	-6.2677	102.2692
Fiduciary	712	0.0000	0.0544	0.0037	0.0014	0.0073	3.2970	11.2131

Table 3: Summary Statistics for Accounting-Based Performance Data

This table contains summary statistics for the variables included in the accounting-based risk regressions. The sample includes the largest 25% of BHCs from our original set spanning from 2001 to 2009.

Variable	N	Minimum	Maximum	Mean	Median	Std Dev	Skewness	Kurtosis
<i>Dependent - Accounting</i>								
CoreCapital	1828	0.0000	0.7853	0.0947	0.0889	0.0536	7.7243	85.4964
LLRR	1828	-0.0041	0.1046	0.0060	0.0025	0.0098	3.7329	19.9948
NonIE_NonIR	1828	-78.8738	115.2405	2.7999	2.1204	4.8492	7.5889	238.4396
NIM	1828	-0.0075	0.4605	0.0395	0.0374	0.0211	10.6809	172.8594
Return_loan	1828	0.0024	0.5571	0.0679	0.0648	0.0249	8.0838	125.6657
Income_EmpSalary	1828	-19.2828	164.4000	0.6167	0.6365	4.0588	35.9976	1454.2910
Liquidity_Risk	1828	0.0000	0.6169	0.1619	0.1556	0.1055	0.5940	0.3406
Credit_Risk	1828	0.0000	0.6659	0.0188	0.0095	0.0337	8.3608	116.5987
Operational_Risk	1828	0.0013	0.8542	0.0705	0.0627	0.0408	7.3820	98.1828
<i>Control and Independent</i>								
D_E	1828	0.2655	3112649	4840	10.2014	119430	24.8282	617.9018
Assets	1828	2.18E+09	2.23E+12	6.22E+10	7.99E+09	2.07E+11	6.4125	48.1455
ln_Asset	1828	21.5007	28.4306	23.2370	22.8010	1.4817	1.2076	0.9152
Non_II	1828	-0.0070	0.6722	0.0199	0.0129	0.0386	10.6697	138.8246
Insurance	1828	0.0000	0.0777	0.0011	0.0002	0.0050	11.7511	151.5250
I_Banking	1828	0.0000	0.6514	0.0042	0.0006	0.0345	14.0626	209.6193
Service_Charge	1828	0.0000	0.0878	0.0039	0.0034	0.0044	9.3416	148.3435
Trading	1828	-0.0189	0.0274	0.0005	0.0000	0.0021	3.4345	52.9142
Securitization	1828	-0.0049	0.1013	0.0007	0.0000	0.0056	11.7918	161.3926
Other_NonII	1828	-0.0070	0.1481	0.0055	0.0035	0.0081	7.4417	87.2548
OtherAsset	1828	-0.0023	0.0205	0.0002	0.0000	0.0008	12.6509	239.2212
RealEst	1828	-0.0099	0.0060	-0.0001	0.0000	0.0006	-6.9221	111.2469
Loans_Leases	1828	-0.0076	0.0734	0.0010	0.0003	0.0036	9.9290	137.7091
Service_Fee	1828	-0.0246	0.0384	0.0006	0.0001	0.0027	5.9931	77.4329
Venture	1828	-0.0104	0.0052	0.0000	0.0000	0.0005	-6.6744	193.9195
Fiduciary	1828	0.0000	0.0632	0.0024	0.0009	0.0059	5.4570	35.4398

Table 4: Number of Banks by Year in Market and Accounting Samples

Year	Market	Accounting
2001	77	163
2002	82	175
2003	84	186
2004	85	196
2005	86	232
2006	83	214
2007	75	215
2008	71	219
2009	69	228
Total	712	1828

Table 5: Pearson Correlation Matrix for Market-Based Sample

This table contains the pair wise correlation coefficients for all test variables for the 25% largest BHCs from our market-based sample.

	D_E	Ln_Asset	Fiduciary	I_Banking	Insurance	Loans_Leases	Non_II	Other_NonII	OtherAsset	RealEst	Securitization	Service_Charge	Service_Fee	Trading	Venture	
D_E	1															
Ln_Asset	0.09	1														
Fiduciary	0.02	0.05	1													
I_Banking	-0.35	-0.06	0.21	1												
Insurance	0.19	0.22	-0.10	-0.03	1											
Loans_Leases	-0.03	-0.05	-0.12	-0.04	-0.02	1										
Non_II	-0.34	0.03	0.30	0.95	0.08	0.00	1									
Other_NonII	-0.05	0.11	-0.05	-0.04	-0.03	-0.05	0.12	1								
OtherAsset	0.01	0.10	-0.01	-0.02	-0.04	0.00	-0.01	-0.02	1							
RealEst	0.03	0.01	0.06	0.02	0.03	0.01	0.04	-0.01	0.03	1						
Securitization	-0.18	0.12	-0.07	-0.02	0.03	0.03	0.17	0.21	-0.05	0.02	1					
Service_Charge	0.01	-0.05	-0.13	-0.13	-0.14	-0.08	-0.12	0.15	0.02	0.00	-0.17	1				
Service_Fee	-0.16	0.20	-0.06	0.03	-0.02	0.03	0.20	0.19	0.07	-0.02	0.70	-0.09	1			
Trading	0.06	0.15	0.29	0.02	-0.04	0.03	0.10	0.04	0.01	-0.20	-0.02	0.03	0.10	1		
Venture	-0.06	0.04	-0.04	0.06	0.00	0.06	0.05	-0.10	0.09	0.00	-0.02	-0.04	0.02	0.04	1	
N	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712	712

Table 6: Pearson Correlation Matrix for Accounting-Based Sample

This table contains the pair wise correlation coefficients for all test variables for the 25% largest BHCs from our accounting-based sample.

	D_E	Ln_Asset	Fiduciary	I_Banking	Insurance	Loans_Leases	Non_II	Other_NonII	OtherAsset	RealEst	Securitization	Service_Charge	Service_Fee	Trading	Venture	
D_E	1															
Ln_Asset	-0.01	1														
Fiduciary	-0.02	0.13	1													
I_Banking	0.00	0.01	0.18	1												
Insurance	0.00	0.20	-0.05	-0.01	1											
Loans_Leases	-0.01	-0.04	-0.07	-0.02	-0.01	1										
Non_II	-0.01	0.13	0.30	0.91	0.11	0.06	1									
Other_NonII	-0.02	0.17	-0.02	0.00	0.02	0.01	0.27	1								
OtherAsset	0.01	0.08	-0.01	0.00	-0.02	0.00	0.03	0.04	1							
RealEst	-0.02	0.03	0.05	0.04	0.02	-0.01	0.06	0.00	0.03	1						
Securitization	0.00	0.15	-0.03	-0.01	0.06	0.04	0.22	0.23	-0.04	0.02	1					
Service_Charge	-0.03	-0.08	-0.07	-0.07	-0.07	-0.05	0.04	0.13	0.07	0.00	-0.09	1				
Service_Fee	0.00	0.17	-0.03	0.02	0.02	0.00	0.21	0.18	0.05	-0.03	0.59	-0.05	1			
Trading	0.03	0.19	0.18	0.07	-0.01	-0.06	0.14	0.02	0.02	-0.08	0.00	-0.03	0.07	1		
Venture	0.00	0.04	-0.03	0.05	0.00	0.01	0.04	-0.06	0.07	0.00	-0.01	-0.03	0.02	0.05	1	
N	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828	1828

Table 7.1: Market-Based Risk – Idiosyncratic Risk

This table presents OLS regressions of firm specific risk (idiosyncratic) on measures of noninterest income. Idiosyncratic risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ by calculating the volatility of the error term (e_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009.

Table 7.1: Market-Based Risk – Idiosyncratic Risk

VARIABLES	1	2	3	4
	Idiosyncratic			
non_ii	0.0018 (0.289)			
insurance		-0.0411* (-1.934)		-0.0762*** (-3.250)
i_banking			0.0019 (0.277)	-0.0004 (-0.051)
service_charge				-0.4869*** (-5.769)
trading				-0.0863 (-0.638)
securitization				0.1022*** (4.050)
other_nonii				-0.0075 (-0.211)
d_e	0.0006*** (3.584)	0.0006*** (3.815)	0.0006*** (3.540)	0.0007*** (3.971)
ln_asset	-0.0002 (-0.883)	-0.0001 (-0.639)	-0.0002 (-0.872)	-0.0002 (-0.915)
year_2002	-0.0014* (-1.935)	-0.0014* (-1.902)	-0.0014* (-1.934)	-0.0013** (-1.971)
year_2003	-0.0057*** (-8.426)	-0.0057*** (-8.343)	-0.0057*** (-8.411)	-0.0056*** (-8.518)
year_2004	-0.0062*** (-9.710)	-0.0062*** (-9.620)	-0.0062*** (-9.707)	-0.0064*** (-10.091)
year_2005	-0.0057*** (-7.430)	-0.0057*** (-7.394)	-0.0057*** (-7.441)	-0.0060*** (-8.181)
year_2006	-0.0061*** (-8.614)	-0.0061*** (-8.605)	-0.0061*** (-8.654)	-0.0063*** (-9.201)
year_2007	-0.0009 (-1.011)	-0.0010 (-1.035)	-0.0010 (-1.030)	-0.0011 (-1.204)
year_2008	0.0240*** (12.995)	0.0240*** (13.072)	0.0240*** (13.040)	0.0238*** (13.020)
year_2009	0.0244*** (11.389)	0.0244*** (11.453)	0.0244*** (11.405)	0.0244*** (11.509)
Constant	0.0149*** (3.232)	0.0137*** (2.840)	0.0148*** (3.211)	0.0166*** (3.354)
Observations	712	712	712	712
R-Squared	0.677	0.678	0.677	0.694
Adjusted R-squared	0.672	0.672	0.672	0.687
F-Statistic	133.420	133.690	133.420	98.630
Prob (F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 7.2: Market-Based Risk – Systematic Risk

This table presents OLS regressions of market risk (Beta) on measures of noninterest income. Systematic risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta I_{it} + e_{it}$ as the coefficient for daily market returns (β_M). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009.

Table 7.2: Market-Based Risk – Systematic Risk

VARIABLES	1	2	3	4
	Beta			
non_ii	1.0896*** (4.305)			
insurance		-0.9775 (-0.812)		-2.6074** (-2.175)
i_banking			1.0330*** (3.888)	0.9066*** (3.575)
service_charge				-21.6047*** (-4.432)
trading				8.4514 (1.270)
securitization				6.1006** (2.394)
other_nonii				-2.0414 (-1.093)
d_e	0.0181*** (3.405)	0.0112** (1.980)	0.0172*** (3.044)	0.0203*** (3.813)
ln_asset	0.0120 (1.064)	0.0159 (1.350)	0.0159 (1.406)	0.0109 (0.929)
year_2002	0.5034*** (8.657)	0.5057*** (8.427)	0.5030*** (8.533)	0.5066*** (8.996)
year_2003	0.3836*** (7.288)	0.3860*** (7.134)	0.3837*** (7.187)	0.3886*** (7.616)
year_2004	0.1217** (2.580)	0.1196** (2.484)	0.1204** (2.529)	0.1182*** (2.616)
year_2005	0.3770*** (6.591)	0.3743*** (6.480)	0.3743*** (6.541)	0.3669*** (6.411)
year_2006	0.1961*** (3.564)	0.1897*** (3.349)	0.1911*** (3.449)	0.1855*** (3.475)
year_2007	0.7064*** (13.197)	0.6980*** (12.754)	0.6984*** (12.956)	0.7004*** (13.276)
year_2008	0.8947*** (14.860)	0.8820*** (14.463)	0.8849*** (14.646)	0.8881*** (14.953)
year_2009	1.1712*** (16.211)	1.1560*** (16.002)	1.1633*** (16.107)	1.1648*** (15.946)
Constant	0.2553 (0.947)	0.2684 (0.944)	0.1974 (0.731)	0.3772 (1.328)
Observations	712	712	712	712
R-Squared	0.464	0.452	0.461	0.480
Adjusted R-squared	0.455	0.443	0.453	0.480
F-Statistic	55.038	52.433	54.507	42.040
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 7.3: Market-Based Risk – Total Risk

This table presents OLS regressions of stock price volatility (StdDev) on measures of noninterest income. Total risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the standard deviation of daily stock returns (R_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_noniii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009.

Table 7.3: Market-Based Risk – Total Risk

VARIABLES	1	2	3	4
			StdDev	
non_ii	0.0081 (1.360)			
Insurance		-0.0413** (-2.052)		-0.0820*** (-3.721)
i_banking			0.0083 (1.269)	0.0057 (0.873)
service_charge				-0.5390*** (-5.613)
Trading				-0.0851 (-0.579)
securitization				0.1169*** (4.033)
other_nonii				-0.0137 (-0.333)
d_e	0.0006*** (3.557)	0.0006*** (3.477)	0.0006*** (3.485)	0.0007*** (4.012)
ln_asset	0.0001 (0.508)	0.0002 (0.783)	0.0002 (0.640)	0.0001 (0.517)
year_2002	0.0013 (1.552)	0.0013 (1.563)	0.0013 (1.538)	0.0013* (1.663)
year_2003	-0.0051*** (-6.709)	-0.0051*** (-6.604)	-0.0051*** (-6.664)	-0.0050*** (-6.797)
year_2004	-0.0066*** (-9.195)	-0.0066*** (-9.105)	-0.0066*** (-9.165)	-0.0068*** (-9.663)
year_2005	-0.0060*** (-7.100)	-0.0060*** (-7.072)	-0.0060*** (-7.112)	-0.0063*** (-7.791)
year_2006	-0.0065*** (-8.235)	-0.0066*** (-8.230)	-0.0066*** (-8.284)	-0.0068*** (-8.858)
year_2007	0.0013 (1.291)	0.0012 (1.227)	0.0012 (1.234)	0.0011 (1.129)
year_2008	0.0349*** (17.505)	0.0348*** (17.492)	0.0348*** (17.508)	0.0346*** (17.606)
year_2009	0.0356*** (15.289)	0.0355*** (15.288)	0.0355*** (15.288)	0.0355*** (15.403)
Constant	0.0097* (1.786)	0.0087 (1.532)	0.0092* (1.695)	0.0113* (1.940)
Observations	712	712	712	712
R-Squared	0.765	0.765	0.765	0.778
Adjusted R-squared	0.761	0.761	0.761	0.773
F-Statistic	207.333	207.021	207.279	152.197
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 7.4: Market-Based Risk – Interest Rate Risk

This table presents OLS regressions of interest rate risk (IRRisk) on measures of noninterest income. Interest rate risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the coefficient on the daily returns of the equally weighted CRSP index (β_I). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009.

Table 7.4: Market-Based Risk – Interest Rate Risk

VARIABLES	1	2	3	4
	IRRisk			
non_ii	0.4495 (0.822)			
insurance		7.3543** (2.427)		5.8640* (1.696)
i_banking			0.3498 (0.591)	0.3555 (0.561)
service_charge				-7.3146 (-0.562)
trading				-27.2916** (-2.316)
securitization				3.9217 (1.104)
other_nonii				-0.9830 (-0.141)
d_e	0.0476 (1.571)	0.0414 (1.478)	0.0467 (1.534)	0.0472 (1.428)
ln_asset	-0.6329*** (-12.687)	-0.6337*** (-13.081)	-0.6329*** (-12.702)	-0.6394*** (-12.418)
year_2002	-0.1543*** (-4.098)	-0.1618*** (-4.284)	-0.1528*** (-4.130)	-0.1559*** (-4.157)
year_2003	-0.0929 (-1.431)	-0.0928 (-1.417)	-0.0927 (-1.425)	-0.0961 (-1.445)
year_2004	0.0436 (0.961)	0.0390 (0.856)	0.0430 (0.949)	0.0218 (0.461)
year_2005	-0.0356 (-0.781)	-0.0383 (-0.846)	-0.0367 (-0.816)	-0.0528 (-1.103)
year_2006	-0.0900 (-1.438)	-0.0955 (-1.554)	-0.0922 (-1.501)	-0.1042 (-1.597)
year_2007	0.0367 (0.670)	0.0338 (0.642)	0.0333 (0.635)	0.0172 (0.306)
year_2008	0.3387*** (4.714)	0.3325*** (4.891)	0.3344*** (4.847)	0.3075*** (4.230)
year_2009	-1.4067*** (-3.249)	-1.4157*** (-3.275)	-1.4105*** (-3.261)	-1.4028*** (-3.231)
Constant	3.2116*** (3.991)	3.4571*** (4.115)	3.1952*** (3.958)	3.3146*** (4.008)
Observations	712	712	712	712
R-Squared	0.186	0.187	0.186	0.191
Adjusted R-squared	0.173	0.175	0.173	0.173
F-Statistic	14.513	14.665	14.498	10.275
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 8.1: Operational Efficiency – Operational Risk

This table presents OLS regressions of the ratio total salaries and benefits to number of full-time employees (Operational_Risk) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Operational_Risk			
non_ii	0.1067*** (8.087)			
insurance		-0.7041*** (-5.766)		-0.6976*** (-5.754)
i_banking			0.1381*** (7.859)	0.1067*** (4.590)
trading				3.6066*** (3.166)
service_charge				-1.8355*** (-4.069)
securitization				-0.1111 (-1.014)
other_nonii				0.0531 (0.337)
d_e	-0.0000*** (-4.375)	-0.0000*** (-4.351)	-0.0000*** (-4.341)	-0.0000*** (-4.891)
ln_asset	0.0073*** (7.166)	0.0081*** (7.737)	0.0076*** (7.583)	0.0066*** (6.588)
Constant	-0.1162*** (-4.877)	-0.1315*** (-5.370)	-0.1210*** (-5.147)	-0.0935*** (-4.045)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.108	0.105	0.112	0.190
Adjusted R-squared	0.103	0.100	0.106	0.183
F-Statistic	20.026	19.458	20.787	26.542
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 8.2: Operational Efficiency – Net Income to Employee Salary

This table presents OLS regressions of the ratio net income to total salaries and benefits (Income_EmpSalary) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Income_EmpSalary			
non_ii	2.3347*** (3.523)			
insurance		-1.0450 (-0.153)		-0.4965 (-0.070)
i_banking			0.7087 (1.255)	0.5316 (0.725)
trading				-6.9362 (-0.393)
service_charge				-29.7269 (-1.037)
securitization				-16.3283 (-1.020)
other_nonii				54.8893 (1.563)
d_e	0.0000 (0.475)	0.0000 (0.369)	0.0000 (0.381)	0.0000 (0.746)
ln_asset	0.0070 (0.282)	0.0147 (0.512)	0.0138 (0.541)	-0.0310** (-2.024)
Constant	0.5486 (0.926)	0.4229 (0.626)	0.4394 (0.725)	1.2720*** (3.414)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.024	0.024	0.024	0.034
Adjusted R-squared	0.018	0.018	0.018	0.026
F-Statistic	4.069	3.986	3.992	4.038
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 8.3: Operational Efficiency – Noninterest Expense to Noninterest Revenue

This table presents OLS regressions of the ratio noninterest expense to noninterest revenue (NonIE_NonIR) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	NonIE_NonIR			
non_ii	-13.2181*** (-4.410)			
insurance		-20.3729** (-2.553)		-37.1694*** (-3.008)
i_banking			-5.4856*** (-9.766)	-4.6111 (-1.319)
trading				-505.9672* (-1.671)
service_charge				-106.6502*** (-3.714)
securitization				-21.9203*** (-3.291)
other_nonii				-47.0527*** (-4.884)
d_e	0.0000 (0.790)	0.0000 (0.826)	0.0000 (0.818)	0.0000 (1.179)
ln_asset	-0.3022*** (-2.870)	-0.3286*** (-3.089)	-0.3408*** (-3.294)	-0.1582 (-1.006)
Constant	10.4241*** (4.114)	10.7518*** (4.176)	11.0397*** (4.367)	7.9488** (2.470)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.032	0.022	0.023	0.085
Adjusted R-squared	0.027	0.016	0.017	0.077
F-Statistic	5.523	3.703	3.892	10.551
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 9.1: Intermediation Efficiency – Net Interest Margin

This table presents OLS regressions of the ratio net interest income divided by held-to-maturity securities, available-for-sale securities, and loans and leases (NIM) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	NIM			
non_ii	0.0328** (2.224)			
insurance		0.2679*** (2.965)		0.2563*** (3.080)
i_banking			0.0099 (0.627)	0.0132 (0.837)
trading				0.0563 (0.088)
service_charge				0.1305 (1.602)
securitization				0.6279*** (5.054)
other_nonii				0.1509** (2.025)
d_e	-0.0000*** (-4.059)	-0.0000*** (-4.097)	-0.0000*** (-4.059)	-0.0000*** (-3.971)
ln_asset	0.0020*** (3.000)	0.0019*** (2.802)	0.0021*** (3.226)	0.0014** (2.033)
Constant	-0.0035 (-0.226)	-0.0011 (-0.070)	-0.0050 (-0.332)	0.0065 (0.401)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.039	0.039	0.036	0.074
Adjusted R-squared	0.033	0.033	0.030	0.065
F-Statistic	6.677	6.746	6.094	8.980
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 9.2: Intermediation Efficiency – Return on Loan

This table presents OLS regressions of the ratio interest and fee income from loans to total loans and leases (Return_Loan) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Return_Loan			
non_ii	0.0942*** (5.018)			
insurance		0.2596 (1.503)		0.1839 (1.342)
i_banking			0.0664*** (3.820)	0.0750*** (4.079)
trading				-1.2965*** (-3.594)
service_charge				-0.0786 (-0.723)
securitization				1.4625*** (4.477)
other_nonii				0.1538* (1.777)
d_e	-0.0000 (-0.452)	-0.0000 (-0.523)	-0.0000 (-0.501)	-0.0000 (-0.308)
ln_asset	0.0004 (0.842)	0.0005 (1.130)	0.0006 (1.476)	-0.0000 (-0.105)
Constant	0.0768*** (7.445)	0.0762*** (7.303)	0.0725*** (7.135)	0.0867*** (7.723)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.147	0.128	0.134	0.264
Adjusted R-squared	0.142	0.123	0.129	0.257
F-Statistic	28.377	24.322	25.595	40.528
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 9.3: Intermediation Efficiency – Credit Risk

This table presents OLS regressions of the ratio loans past due and not accruing to total loans and leases (Credit_Risk) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Credit_Risk			
non_ii	-0.0334*** (-2.592)			
insurance		-0.0362 (-0.214)		-0.1147 (-0.777)
i_banking			-0.0378*** (-3.465)	-0.0382*** (-3.175)
trading				-0.8925*** (-2.807)
service_charge				-0.6147*** (-3.449)
securitization				0.6604* (1.752)
other_nonii				0.0182 (0.094)
d_e	0.0000*** (18.615)	0.0000*** (18.719)	0.0000*** (18.699)	0.0000*** (17.168)
ln_asset	0.0017*** (4.120)	0.0016*** (4.117)	0.0016*** (3.919)	0.0014*** (3.216)
Constant	-0.0218** (-2.311)	-0.0208** (-2.118)	-0.0203** (-2.170)	-0.0133 (-1.167)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.201	0.200	0.201	0.223
Adjusted R-squared	0.196	0.195	0.196	0.217
F-Statistic	41.535	41.172	41.552	32.574
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 9.4: Intermediation Efficiency – Loan Loss Reserve Ratio

This table presents OLS regressions of the ratio provision for loan and leases loss to total assets (LLRR) on measures of noninterest income. The first three specifications test our primary independent variables; non-interest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	LLRR			
non_ii	0.0011 (0.179)			
insurance		-0.0516* (-1.811)		-0.0694*** (-2.935)
i_banking			-0.0140*** (-3.468)	-0.0132*** (-3.065)
trading				-0.2387* (-1.949)
service_charge				-0.1032** (-2.111)
securitization				0.2777*** (6.067)
other_nonii				0.1807*** (5.440)
d_e	-0.0000* (-1.679)	-0.0000* (-1.686)	-0.0000* (-1.702)	-0.0000 (-1.540)
ln_asset	0.0005*** (3.810)	0.0005*** (4.080)	0.0005*** (3.831)	0.0002** (2.122)
Constant	-0.0059** (-2.077)	-0.0067** (-2.336)	-0.0060** (-2.088)	-0.0018 (-0.653)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.286	0.287	0.288	0.348
Adjusted R-squared	0.282	0.282	0.284	0.342
F-Statistic	66.137	66.348	66.917	60.440
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 10.1: Liquidity and Capital Adequacy – Liquidity Risk

This table presents OLS regressions of the ratio core deposits (NOW, ATS, time deposits, and other transaction accounts) to total assets (Liquidity_Risk) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Liquidity_Risk			
non_ii	-0.3780*** (-10.834)			
insurance		-0.8416*** (-4.939)		-0.8079*** (-4.699)
i_banking			-0.4187*** (-10.618)	-0.3710*** (-8.521)
trading				-4.5551*** (-4.916)
service_charge				3.7328*** (3.042)
securitization				0.1520 (0.389)
other_nonii				0.0090 (0.033)
d_e	0.0000*** (9.381)	0.0000*** (9.119)	0.0000*** (9.004)	0.0000*** (13.298)
ln_asset	-0.0311*** (-27.170)	-0.0317*** (-26.786)	-0.0322*** (-27.797)	-0.0295*** (-24.933)
Constant	0.8972*** (30.545)	0.9028*** (29.887)	0.9144*** (30.886)	0.8417*** (27.518)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.270	0.252	0.270	0.303
Adjusted R-squared	0.265	0.248	0.265	0.297
F-Statistic	60.932	55.730	60.930	49.212
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 10.2: Liquidity and Capital Adequacy – Core Capital

This table presents OLS regressions of the ratio total equity capital to total assets (CoreCapital) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	CoreCapital			
non_ii	1.0699*** (16.020)			
insurance		-0.3143*** (-3.507)		-0.2384*** (-3.019)
i_banking			1.2272*** (18.366)	1.2326*** (18.270)
trading				-0.7471 (-1.509)
service_charge				-0.0882 (-0.487)
securitization				1.4144*** (8.337)
other_nonii				0.2478* (1.921)
d_e ¹⁸	-0.0000*** (-30.694)	-0.0000*** (-22.341)	-0.0000*** (-25.069)	-0.0000*** (-18.958)
ln_asset	-0.0039*** (-6.548)	-0.0005 (-0.757)	-0.0010* (-1.859)	-0.0016*** (-2.784)
Constant	0.1572*** (11.194)	0.1020*** (6.490)	0.1088*** (8.303)	0.1207*** (8.869)
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,828	1,828	1,828	1,828
R-Squared	0.591	0.009	0.633	0.659
Adjusted R-squared	0.589	0.003	0.631	0.656
F-Statistic	238.766	1.456	285.017	218.908
Prob(F-Stat)	0.000	0.142	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

¹⁸ Given that we expect a high correlation between the debt-to-equity ratio and equity-to-assets, we also test CoreCapital by removing d_e from the equation. Results remain robust and our conclusions do not change.

Table 11.1: Market-Based Risk (Crisis) – Idiosyncratic Risk

This table presents OLS regressions of firm specific risk (idiosyncratic) on measures of noninterest income. Idiosyncratic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ by calculating the volatility of the error term (e_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	Idiosyncratic			
non_ii	0.0148** (2.367)			
non_iicrisis	-0.0323*** (-4.248)			
insurance		-0.0073 (-0.292)		-0.0377 (-1.355)
insurance_crisis		-0.1067 (-0.795)		-0.1038 (-0.778)
i_banking			0.0121** (2.015)	0.0100 (1.576)
i_bankingcrisis			-0.0256*** (-4.171)	-0.0256*** (-4.070)
service_charge				-0.4963*** (-4.493)
trading				-0.0027 (-0.017)
securitization				0.0870*** (2.825)
other_nonii				0.0414 (0.928)
d_e	0.0006*** (2.631)	0.0006*** (2.840)	0.0006** (2.550)	0.0007*** (2.808)
ln_asset	-0.0002 (-0.568)	-0.0001 (-0.309)	-0.0002 (-0.487)	-0.0002 (-0.649)
crisis	0.0205*** (14.961)	0.0198*** (14.944)	0.0199*** (15.187)	0.0201*** (14.933)
Constant	0.0106 (1.440)	0.0090 (1.177)	0.0104 (1.398)	0.0128 (1.584)
Observations	712	712	712	712
R-Squared	0.427	0.424	0.426	0.442
Adjusted R-squared	0.423	0.420	0.421	0.434
F-Statistic	105.383	104.032	104.604	50.499
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 11.2: Market-Based Risk (Crisis) – Systematic Risk

This table presents OLS regressions of market risk (Beta) on measures of noninterest income. Systematic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta I_{it} + e_{it}$ as the coefficient for daily market returns (β_M). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	Beta			
non_ii	1.7614*** (4.547)			
non_iicrisis	-1.4103*** (-3.525)			
insurance		-1.4510 (-0.867)		-2.8997* (-1.693)
insurance_crisis		2.4553 (0.556)		2.2156 (0.512)
i_banking			1.7058*** (4.180)	1.5002*** (3.822)
i_bankingcrisis			-1.3253*** (-3.335)	-1.1828*** (-2.842)
service_charge				-21.2506*** (-4.100)
trading				10.2894 (1.582)
securitization				5.7273* (1.872)
other_nonii				-1.4960 (-0.686)
d_e	0.0170*** (3.029)	0.0089 (1.505)	0.0159*** (2.666)	0.0185*** (3.274)
ln_asset	0.0115 (0.889)	0.0165 (1.229)	0.0166 (1.290)	0.0106 (0.790)
crisis	0.6876*** (18.528)	0.6339*** (17.067)	0.6539*** (18.178)	0.6526*** (17.813)
Constant	0.5286* (1.718)	0.5458* (1.693)	0.4543 (1.474)	0.6580** (2.036)
Observations	712	712	712	712
R-Squared	0.348	0.331	0.345	0.373
Adjusted R-squared	0.344	0.326	0.340	0.364
F-Statistic	75.461	69.787	74.209	37.933
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 11.3: Market-Based Risk (Crisis) – Total Risk

This table presents OLS regressions of stock price volatility (StdDev) on measures of noninterest income. Total risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the standard deviation of daily stock returns (R_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	StdDev			
non_ii	0.0204** (2.578)			
non_iicrisis	-0.0320*** (-2.603)			
insurance		-0.0202 (-0.638)		-0.0539 (-1.543)
insurance_crisis		-0.0462 (-0.249)		-0.0440 (-0.237)
i_banking			0.0176** (2.222)	0.0145* (1.752)
i_bankingcrisis			-0.0254** (-2.156)	-0.0246** (-2.043)
service_charge				-0.5515*** (-4.040)
trading				0.0381 (0.176)
securitization				0.0954** (2.282)
other_nonii				0.0504 (0.912)
d_e	0.0006** (2.234)	0.0005** (2.210)	0.0005** (2.150)	0.0006** (2.374)
ln_asset	0.0001 (0.337)	0.0002 (0.547)	0.0002 (0.460)	0.0001 (0.205)
crisis	0.0281*** (17.232)	0.0272*** (17.169)	0.0274*** (17.564)	0.0275*** (17.156)
Constant	0.0057 (0.589)	0.0045 (0.457)	0.0051 (0.527)	0.0085 (0.805)
Observations	712	712	712	712
R-Squared	0.491	0.489	0.490	0.502
Adjusted R-squared	0.488	0.485	0.487	0.494
F-Statistic	136.439	135.115	135.813	64.221
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 11.4: Market-Based Risk (Crisis) – Interest Rate Risk

This table presents OLS regressions of interest rate risk (IRRisk) on measures of noninterest income. Interest rate risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_{II} I_{it} + e_{it}$ as the coefficient on the daily returns of the equally weighted CRSP index (β_I). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
			IRRisk	
non_ii	1.2966* (1.724)			
non_iicrisis	-1.6026 (-1.289)			
insurance		6.3557*** (3.324)		5.7356** (2.357)
insurance_crisis		1.7880 (0.396)		0.5879 (0.132)
i_banking			0.9069 (1.263)	0.7567 (0.963)
service_charge				-7.1676 (-0.539)
trading				8.8572 (0.493)
trading_crisis				-116.9910*** (-2.847)
securitization				5.9318 (1.479)
other_nonii				-4.8729 (-0.651)
d_e	0.0547** (2.099)	0.0470* (1.943)	0.0537** (2.050)	0.0518* (1.829)
ln_asset	-0.1572*** (-3.573)	-0.1622*** (-3.625)	-0.1536*** (-3.559)	-0.1679*** (-3.634)
crisis	-0.1428 (-0.930)	-0.1943 (-1.279)	-0.1834 (-1.240)	-0.1075 (-0.717)
Constant	3.0464*** (3.139)	3.2730*** (3.199)	3.0023*** (3.094)	3.3962*** (3.229)
Observations	712	712	712	712
R-Squared	0.050	0.050	0.049	0.062
Adjusted R-squared	0.043	0.043	0.042	0.058
F-Statistic	7.465	7.452	7.294	4.209
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 12.1: Operational Efficiency (Crisis) – Operational Risk

This table presents OLS regressions of the ratio total salaries and benefits to number of full-time employees (Operational_Risk) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	Operational_Risk			
non_ii	0.1033*** (6.588)			
non_iicrisis	-0.0008 (-0.029)			
insurance		-0.6988*** (-5.293)		-0.6940*** (-5.290)
insurance_crisis		0.0130 (0.086)		0.0069 (0.051)
i_banking			0.1518*** (8.330)	0.1063*** (5.841)
i_bankingcrisis			-0.0293 (-0.898)	-0.0010 (-0.022)
service_charge				-1.8747*** (-4.033)
trading				3.5469*** (3.063)
securitization				-0.1392 (-1.249)
other_nonii				0.0285 (0.188)
d_e	-0.0000*** (-3.806)	-0.0000*** (-3.800)	-0.0000*** (-3.789)	-0.0000*** (-4.398)
ln_asset	0.0070*** (6.925)	0.0078*** (7.517)	0.0073*** (7.369)	0.0064*** (6.429)
crisis	0.0119*** (6.125)	0.0115*** (5.711)	0.0117*** (6.030)	0.0113*** (6.012)
Constant	-0.0981*** (-4.263)	-0.1136*** (-4.793)	-0.1032*** (-4.552)	-0.0756*** (-3.393)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.089	0.086	0.093	0.172
Adjusted R-squared	0.086	0.084	0.091	0.167
F-Statistic	35.443	34.466	37.372	34.292
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 12.2: Operational Efficiency (Crisis) – Net Income to Employee Salary

This table presents OLS regressions of the ratio net income to total salaries and benefits (Income_EmpSalary) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	Income_EmpSalary			
non_ii	0.4936 (0.730)			
non_iicrisis	3.6457*** (2.837)			
insurance		-4.4290 (-0.527)		-3.7742 (-0.453)
insurance_crisis		13.2680 (1.165)		10.7826 (0.986)
i_banking			-1.0141 (-1.170)	-0.9924 (-1.064)
i_bankingcrisis			3.4587*** (3.853)	3.0839*** (3.061)
service_charge				-30.5252 (-1.019)
trading				-17.1154 (-0.856)
securitization				-15.7320 (-0.960)
other_nonii				51.5183 (1.493)
d_e	0.0000 (1.602)	0.0000 (1.053)	0.0000 (1.199)	0.0000** (1.999)
ln_asset	0.0069 (0.333)	0.0117 (0.482)	0.0114 (0.529)	-0.0296* (-1.883)
crisis	-1.1335*** (-7.840)	-1.0834*** (-6.917)	-1.0846*** (-7.099)	-1.1009*** (-6.688)
Constant	0.8335** (2.101)	0.7381 (1.639)	0.7433* (1.832)	1.5595*** (3.849)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.017	0.163	0.016	0.026
Adjusted R-squared	0.014	0.014	0.014	0.020
F-Statistic	6.277	6.031	6.105	4.464
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 12.3: Operational Efficiency (Crisis) – Noninterest Expense to Noninterest Revenue

This table presents OLS regressions of the ratio noninterest expense to noninterest revenue (NonIE_NonIR) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	NonIE_NonIR			
non_ii	-14.4883*** (-3.771)			
non_iicrisis	2.5069 (0.449)			
insurance		-17.7853* (-1.951)		-34.8579*** (-2.639)
insurance_crisis		-10.9706 (-0.721)		-9.5971 (-0.710)
i_banking			-6.0285*** (-7.029)	-3.9346* (-1.788)
i_bankingcrisis			1.0536 (0.927)	-1.3762 (-0.213)
service_charge				-106.7470*** (-3.705)
trading				-505.6579* (-1.687)
securitization				-22.2194*** (-3.377)
other_nonii				-46.5004*** (-5.284)
d_e	0.0000 (0.811)	0.0000 (0.844)	0.0000 (0.837)	0.0000 (1.211)
ln_asset	-0.3025*** (-2.889)	-0.3315*** (-3.140)	-0.3443*** (-3.352)	-0.1561 (-0.983)
crisis	0.5336 (1.628)	0.6251** (2.225)	0.6128** (2.212)	0.5895** (2.161)
Constant	9.9052*** (4.068)	10.2962*** (4.173)	10.5977*** (4.399)	7.1869** (2.039)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.029	0.018	0.019	0.082
Adjusted R-squared	0.026	0.015	0.016	0.076
F-Statistic	10.722	6.618	7.031	14.742
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 13.1: Intermediation Efficiency (Crisis) – Net Interest Margin

This table presents OLS regressions of the ratio net interest income divided by held-to-maturity securities, available-for-sale securities, and loans and leases (NIM) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	NIM			
non_ii	0.0319*			
	(1.658)			
non_iicrisis	0.0051			
	(0.182)			
insurance		0.3544***		0.3277***
		(2.915)		(3.140)
insurance_crisis		-0.3464**		-0.2877**
		(-2.531)		(-2.385)
i_banking			-0.0170	-0.0118
			(-1.463)	(-0.998)
i_bankingcrisis			0.0559**	0.0516*
			(2.214)	(1.961)
service_charge				0.1316
				(1.551)
trading				0.1199
				(0.183)
securitization				0.6209***
				(4.983)
other_nonii				0.1664**
				(2.254)
d_e	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(-3.948)	(-3.954)	(-3.930)	(-3.923)
ln_asset	0.0020***	0.0019***	0.0021***	0.0015**
	(3.135)	(2.973)	(3.392)	(2.107)
crisis dummy	-0.0020	-0.0017	-0.0023*	-0.0015
	(-1.583)	(-1.337)	(-1.886)	(-1.208)
Constant	-0.0070	-0.0054	-0.0087	0.0037
	(-0.480)	(-0.356)	(-0.605)	(0.237)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.031	0.033	0.030	0.070
Adjusted R-squared	0.029	0.030	0.027	0.064
F-Statistic	11.768	12.279	11.185	12.340
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 13.2: Intermediation Efficiency (Crisis) – Return on Loan

This table presents OLS regressions of the ratio interest and fee income from loans to total loans and leases (Return_Loan) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	Return_Loan			
	1	2	3	4
non_ii	0.1512*** (5.790)			
non_iicrisis	-0.1242*** (-3.252)			
insurance		0.3825 (1.583)		0.2771 (1.501)
insurance_crisis		-0.5190** (-2.065)		-0.3859** (-2.077)
i_banking			0.0958*** (4.492)	0.1125*** (5.404)
i_bankingcrisis			-0.0583* (-1.682)	-0.0741** (-2.272)
service_charge				-0.0726 (-0.723)
trading				-1.3200*** (-3.814)
securitization				1.4554*** (4.367)
other_nonii				0.1507* (1.701)
d_e	-0.0000 (-0.717)	-0.0000 (-0.741)	-0.0000 (-0.727)	-0.0000 (-0.422)
ln_asset	0.0003 (0.569)	0.0005 (1.086)	0.0006 (1.343)	-0.0001 (-0.146)
crisis dummy	-0.0008 (-0.726)	-0.0029*** (-2.787)	-0.0032*** (-2.955)	-0.0018* (-1.832)
Constant	0.0599*** (5.792)	0.0575*** (5.644)	0.0546*** (5.306)	0.0686*** (6.457)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.037	0.011	0.017	0.148
Adjusted R-squared	0.035	0.009	0.014	0.143
F-Statistic	14.069	4.179	6.352	28.619
Prob(F-Stat)	0.000	0.001	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 13.3: Intermediation Efficiency (Crisis) – Credit Risk

This table presents OLS regressions of the ratio loans past due and not accruing to total loans and leases (Credit_Risk) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	Credit_Risk			
non_ii	0.0050 (0.444)			
non_iicrisis	-0.0695*** (-2.872)			
insurance		0.1313 (0.556)		0.0486 (0.243)
insurance_crisis		-0.6526* (-1.953)		-0.5817* (-1.892)
i_banking			-0.0206*** (-4.238)	-0.0189*** (-4.339)
i_bankingcrisis			-0.0336*** (-3.749)	-0.0397*** (-4.056)
service_charge				-0.6156*** (-3.329)
trading				-0.5460* (-1.731)
securitization				0.6284* (1.677)
other_nonii				0.1410 (0.709)
d_e	0.0000*** (8.431)	0.0000*** (8.496)	0.0000*** (8.517)	0.0000*** (8.213)
ln_asset	0.0018*** (3.979)	0.0018*** (4.175)	0.0018*** (3.897)	0.0014*** (2.970)
crisis dummy	0.0234*** (12.949)	0.0228*** (13.027)	0.0223*** (12.598)	0.0233*** (13.498)
Constant	-0.0313*** (-3.032)	-0.0316*** (-3.158)	-0.0304*** (-2.938)	-0.0205* (-1.928)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.128	0.128	0.127	0.150
Adjusted R-squared	0.126	0.125	0.125	0.145
F-Statistic	53.583	53.281	53.230	29.195
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 13.4: Intermediation Efficiency (Crisis) – Loan Loss Reserve Ratio

This table presents OLS regressions of the ratio provision for loan and leases loss to total assets (LLRR) on measures of noninterest income. The first three specifications test our primary independent variables; non-interest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	LLRR			
non_ii	0.0222** (2.141)			
non_iicrisis	-0.0410*** (-3.491)			
insurance		0.0051 (0.167)		-0.0135 (-0.680)
insurance_crisis		-0.2205*** (-4.635)		-0.1975*** (-4.824)
i_banking			-0.0071*** (-4.618)	-0.0050*** (-3.194)
i_bankingcrisis			-0.0137*** (-4.316)	-0.0169*** (-4.185)
service_charge				-0.1041* (-1.835)
trading				-0.1187 (-0.999)
securitization				0.2662*** (6.051)
other_nonii				0.2249*** (7.000)
d_e	-0.0000*** (-7.715)	-0.0000*** (-7.726)	-0.0000*** (-7.990)	-0.0000*** (-5.765)
ln_asset	0.0005*** (3.747)	0.0006*** (4.337)	0.0005*** (4.053)	0.0002* (1.856)
crisis dummy	0.0089*** (15.406)	0.0084*** (15.287)	0.0082*** (15.125)	0.0086*** (15.979)
Constant	-0.0086*** (-2.910)	-0.0100*** (-3.336)	-0.0091*** (-3.029)	-0.0034 (-1.157)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.162	0.159	0.159	0.230
Adjusted R-squared	0.160	0.157	0.157	0.225
F-Statistic	70.692	68.883	68.792	49.324
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 14.1: Liquidity and Capital Adequacy (Crisis) – Liquidity Risk

This table presents OLS regressions of the ratio core deposits (NOW, ATS, time deposits, and other transaction accounts) to total assets (Liquidity_Risk) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	Liquidity_Risk			
non_ii	-0.4139*** (-8.699)			
non_iicrisis	0.0815 (1.261)			
insurance		-0.8602*** (-4.194)		-0.8309*** (-4.011)
insurance_crisis		0.0305 (0.099)		0.0477 (0.168)
i_banking			-0.4643*** (-8.992)	-0.4011*** (-7.584)
i_bankingcrisis			0.0936 (1.345)	0.0619 (0.829)
service_charge				3.7531*** (3.075)
trading				-4.5189*** (-5.117)
securitization				0.1516 (0.388)
other_nonii				0.0173 (0.064)
d_e	0.0000*** (12.786)	0.0000*** (12.512)	0.0000*** (12.326)	0.0000*** (13.055)
ln_asset	-0.0310*** (-27.437)	-0.0317*** (-27.031)	-0.0321*** (-28.077)	-0.0295*** (-25.286)
crisis	0.0254*** (5.108)	0.0278*** (5.840)	0.0276*** (5.933)	0.0279*** (5.885)
Constant	0.8809*** (32.058)	0.8885*** (31.364)	0.8999*** (32.435)	0.8275*** (28.746)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.260	0.243	0.261	0.294
Adjusted R-squared	0.258	0.241	0.259	0.290
F-Statistic	128.343	117.067	128.394	68.841
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 14.2: Liquidity and Capital Adequacy (Crisis) – Core Capital

This table presents OLS regressions of the ratio total equity capital to total assets (CoreCapital) on measures of noninterest income. The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). We include a crisis dummy as an interaction term with our main independent variables. The crisis dummy takes a value of 1 in years 2007 to 2009, and zero otherwise. The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). A crisis dummy is included.

VARIABLES	1	2	3	4
	CoreCapital			
non_ii	1.1161*** (14.076)			
non_iicrisis	-0.1106 (-0.848)			
insurance		-0.2532** (-2.560)		-0.1642** (-2.003)
insurance_crisis		-0.2236 (-1.133)		-0.2443* (-1.726)
i_banking			1.3280*** (23.107)	1.3395*** (23.651)
i_bankingcrisis			-0.2076* (-1.883)	-0.2193** (-1.985)
service_charge				-0.1105 (-0.623)
trading				-0.8737* (-1.768)
securitization				1.3964*** (7.958)
other_nonii				0.2438* (1.927)
d_e	-0.0000*** (-34.912)	-0.0000*** (-21.718)	-0.0000*** (-23.948)	-0.0000*** (-17.891)
ln_asset	-0.0042*** (-7.218)	-0.0006 (-0.987)	-0.0011** (-2.157)	-0.0017*** (-3.075)
crisis	0.0067*** (2.620)	0.0019 (0.673)	0.0025 (1.583)	0.0037** (2.334)
Constant	0.1686*** (12.789)	0.1078*** (7.712)	0.1154*** (9.360)	0.1274*** (9.803)
Observations	1,828	1,828	1,828	1,828
R-Squared	0.588	0.007	0.635	0.661
Adjusted R-squared	0.587	0.004	0.634	0.659
F-Statistic	519.630	2.505	635.225	322.461
Prob(F-Stat)	0.000	0.029	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 15.1: Market-Based Risk (Weekly Returns) – Idiosyncratic Risk

This table presents OLS regressions of firm specific risk (idiosyncratic) on measures of noninterest income. Idiosyncratic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ by calculating the volatility of the error term (e_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Idiosyncratic			
non_ii	-0.0006 (-0.043)			
insurance		-0.1508** (-2.121)		-0.2308*** (-3.070)
i_banking			0.0008 (0.057)	-0.0026 (-0.161)
service_charge				-1.0765*** (-5.037)
trading				-0.5653 (-1.579)
securitization				0.1733*** (2.832)
other_nonii				0.0934 (0.875)
d_e	0.0011*** (2.961)	0.0012*** (3.390)	0.0011*** (2.962)	0.0013*** (3.533)
ln_asset	-0.0002 (-0.443)	-0.0001 (-0.110)	-0.0002 (-0.452)	-0.0001 (-0.237)
Constant	0.0320*** (2.757)	0.0273** (2.294)	0.0319*** (2.750)	0.0319*** (2.601)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	712	712	712	712
R-Squared	0.614	0.616	0.614	0.633
Adjusted R-squared	0.608	0.610	0.608	0.625
F-Statistic	101.422	102.015	101.422	74.993
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 15.2: Market-Based Risk (Weekly Returns) – Systematic Risk

This table presents OLS regressions of market risk (Beta) on measures of noninterest income. Systematic risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the coefficient for daily market returns (β_M). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Beta			
non_ii	1.0665*** (4.560)			
insurance		-0.3643 (-0.229)		-2.3120 (-1.432)
i_banking			1.0521*** (4.253)	0.9202*** (3.757)
service_charge				-23.8601*** (-4.451)
trading				-1.6474 (-0.187)
securitization				4.9843** (2.464)
other_nonii				-0.9934 (-0.440)
d_e	0.0181*** (3.288)	0.0110* (1.926)	0.0174*** (3.009)	0.0202*** (3.497)
ln_asset	0.0428*** (3.019)	0.0459*** (3.094)	0.0466*** (3.296)	0.0439*** (2.884)
Constant	-0.7405** (-2.181)	-0.7093** (-1.971)	-0.8011** (-2.351)	-0.6575* (-1.794)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	712	712	712	712
R-Squared	0.402	0.392	0.401	0.427
Adjusted R-squared	0.393	0.382	0.392	0.414
F-Statistic	42.862	41.005	42.616	32.423
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 15.3: Market-Based Risk (Weekly Returns) – Total Risk

This table presents OLS regressions of stock price volatility (StdDev) on measures of noninterest income. Total risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the standard deviation of daily stock returns (R_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	StdDev			
non_ii	0.0147 (1.158)			
insurance		-0.1111** (-2.004)		-0.2126*** (-3.415)
i_banking			0.0168 (1.212)	0.0119 (0.774)
service_charge				-1.2836*** (-5.099)
trading				-0.6880 (-1.388)
securitization				0.2006*** (3.568)
other_nonii				0.0757 (0.623)
d_e	0.0012*** (3.264)	0.0011*** (3.265)	0.0012*** (3.228)	0.0014*** (3.812)
ln_asset	0.0011 (1.629)	0.0013* (1.823)	0.0012* (1.726)	0.0013* (1.702)
Constant	0.0023 (0.147)	-0.0005 (-0.033)	0.0013 (0.079)	0.0028 (0.163)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	712	712	712	712
R-Squared	0.684	0.684	0.684	0.700
Adjusted R-squared	0.679	0.679	0.679	0.693
F-Statistic	137.704	137.745	137.746	101.155
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 15.4: Market-Based Risk (Weekly Returns) – Interest Rate Risk

This table presents OLS regressions of interest rate risk (IRRisk) on measures of noninterest income. Interest rate risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_{I_{it}} + e_{it}$ as the coefficient on the daily returns of the equally weighted CRSP index (β_I). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	IRRisk			
non_ii	1.0246 (0.403)			
insurance		18.9373 (1.517)		11.6776 (0.806)
i_banking			1.1442 (0.416)	1.4366 (0.501)
service_charge				-11.7051 (-0.231)
trading				-167.7002*** (-3.308)
securitization				17.4312 (1.177)
other_nonii				-17.3413 (-0.603)
d_e	0.1845 (1.431)	0.1694 (1.423)	0.1847 (1.427)	0.1938 (1.380)
ln_asset	-0.5273*** (-3.861)	-0.5470*** (-4.038)	-0.5235*** (-3.930)	-0.4975*** (-3.775)
Constant	10.7751*** (3.845)	11.4020*** (3.881)	10.7038*** (3.824)	10.2855*** (3.647)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	712	712	712	712
R-Squared	0.062	0.063	0.062	0.072
Adjusted R-squared	0.047	0.048	0.047	0.051
F-Statistic	4.196	4.255	4.197	3.371
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 16.1: Market-Based Risk (Outliers) – Idiosyncratic Risk

This table presents OLS regressions of firm specific risk (idiosyncratic) on measures of noninterest income. Idiosyncratic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ by calculating the volatility of the error term (e_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
		Idiosyncratic		
non_ii	0.0017 (0.661)			
insurance		0.0198 (1.610)		-0.0050 (-0.381)
i_banking			-0.0002 (-0.080)	-0.0020 (-0.787)
service_charge				-0.3517*** (-6.044)
trading				0.0678 (0.975)
securitization				0.0961*** (4.622)
other_nonii				-0.0438** (-2.559)
d_e	0.0003*** (3.447)	0.0002*** (3.287)	0.0002*** (3.061)	0.0003*** (4.203)
ln_asset	-0.0006*** (-5.063)	-0.0006*** (-5.146)	-0.0006*** (-5.028)	-0.0007*** (-6.316)
Constant	0.0287*** (10.569)	0.0293*** (10.598)	0.0288*** (10.566)	0.0326*** (11.964)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	638	638	638	638
R-Squared	0.650	0.650	0.649	0.696
Adjusted R-squared	0.643	0.644	0.643	0.688
F-Statistic	105.516	105.630	105.429	88.810
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 16.2: Market-Based Risk (Outliers) – Systematic Risk

This table presents OLS regressions of market risk (Beta) on measures of noninterest income. Systematic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the coefficient for daily market returns (β_M). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	Beta			
	1	2	3	4
non_ii	1.2816*** (5.895)			
insurance		-0.4087 (-0.418)		-1.7301* (-1.722)
i_banking			1.1756*** (5.306)	1.0650*** (4.477)
service_charge				-19.2803*** (-4.121)
trading				17.8947*** (2.861)
securitization				6.9867*** (2.768)
other_nonii				-3.3450* (-1.924)
d_e	0.0190*** (3.219)	0.0084 (1.345)	0.0174*** (2.699)	0.0214*** (3.721)
ln_asset	-0.0147 (-1.284)	-0.0105 (-0.867)	-0.0099 (-0.861)	-0.0211* (-1.901)
Constant	0.8827*** (3.201)	0.9330*** (3.185)	0.8152*** (2.936)	1.1167*** (4.078)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	638	638	638	638
R-Squared	0.339	0.311	0.332	0.387
Adjusted R-squared	0.327	0.299	0.320	0.372
F-Statistic	29.122	25.740	28.279	24.543
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 16.3: Market-Based Risk (Outliers) – Total Risk

This table presents OLS regressions of stock price volatility (StdDev) on measures of noninterest income. Total risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the standard deviation of daily stock returns (R_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	StdDev			
non_ii	0.0095*** (3.369)			
insurance		0.0131 (1.012)		-0.0154 (-1.133)
i_banking			0.0075*** (2.699)	0.0054* (1.807)
service_charge				-0.3940*** (-5.839)
trading				0.1362* (1.706)
securitization				0.1171*** (4.752)
other_nonii				-0.0544** (-2.463)
d_e	0.0003*** (3.382)	0.0002** (2.401)	0.0003*** (2.907)	0.0003*** (4.177)
ln_asset	-0.0005*** (-3.228)	-0.0005*** (-3.015)	-0.0004*** (-2.981)	-0.0006*** (-4.223)
Constant	0.0277*** (7.961)	0.0285*** (7.856)	0.0273*** (7.799)	0.0319*** (9.300)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	638	638	638	638
R-Squared	0.756	0.754	0.755	0.788
Adjusted R-squared	0.752	0.749	0.751	0.782
F-Statistic	176.658	174.005	175.426	143.851
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 16.4: Market-Based Risk (Outliers) – Interest Rate Risk

This table presents OLS regressions of interest rate risk (IRRisk) on measures of noninterest income. Interest rate risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the coefficient on the daily returns of the equally weighted CRSP index (β_I). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	IRRisk			
non_ii	-0.6186 (-1.429)			
insurance		4.5498** (2.552)		3.6567* (1.879)
i_banking			-0.6347 (-1.396)	-0.6374 (-1.581)
service_charge				-3.5585 (-0.427)
trading				-29.2165** (-2.350)
securitization				-2.1593 (-1.265)
other_nonii				0.1427 (0.085)
d_e	-0.0034 (-0.471)	0.0002 (0.027)	-0.0031 (-0.445)	-0.0042 (-0.562)
ln_asset	-0.0439*** (-2.910)	-0.0507*** (-3.287)	-0.0462*** (-3.087)	-0.0382** (-2.398)
Constant	1.1562*** (3.136)	1.2567*** (3.294)	1.1963*** (3.223)	1.0599*** (2.791)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	638	638	638	638
R-Squared	0.162	0.162	0.162	0.180
Adjusted R-squared	0.147	0.147	0.147	0.159
F-Statistic	11.004	10.994	10.990	8.506
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 17.1: Market-Based Risk (Lagged Dependent) – Idiosyncratic Risk

This table presents OLS regressions of firm specific risk (idiosyncratic) on measures of noninterest income. Idiosyncratic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ by calculating the volatility of the error term (e_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Lag_Idiosyncratic			
non_ii	0.0068 (1.497)			
insurance		0.0013 (0.052)		-0.0236 (-0.895)
i_banking			0.0062 (1.243)	0.0041 (0.796)
service_charge				-0.3708*** (-5.463)
trading				0.0994 (0.611)
securitization				0.1149*** (4.942)
other_nonii				-0.0130 (-0.479)
d_e	0.0006*** (2.891)	0.0005*** (2.784)	0.0006*** (2.807)	0.0006*** (2.951)
ln_asset	-0.0005*** (-2.831)	-0.0005*** (-2.860)	-0.0005*** (-2.781)	-0.0006*** (-3.582)
Constant	0.0228*** (6.460)	0.0232*** (6.426)	0.0225*** (6.376)	0.0268*** (7.080)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	598	598	598	598
R-Squared	0.690	0.689	0.690	0.710
Adjusted R-squared	0.685	0.683	0.684	0.702
F-Statistic	130.600	129.846	130.406	94.887
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 17.2: Market-Based Risk (Lagged Dependent) – Systematic Risk

This table presents OLS regressions of market risk (Beta) on measures of noninterest income. Systematic risk is derived from equation (1) $R_{it} = \alpha + \beta_M R_{Mit} + \beta I_{it} + e_{it}$ as the coefficient for daily market returns (β_M). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	Lag_Beta			
	1	2	3	4
non_ii	1.1417*** (5.162)			
insurance		-0.3386 (-0.309)		-1.8268 (-1.631)
i_banking			0.9758*** (4.691)	0.8453*** (3.563)
service_charge				-22.3481*** (-4.172)
trading				16.7272*** (2.880)
securitization				8.6142*** (3.795)
other_nonii				-1.2210 (-0.685)
d_e	0.0103* (1.846)	0.0026 (0.445)	0.0088 (1.464)	0.0121** (2.176)
ln_asset	-0.0047 (-0.395)	-0.0021 (-0.167)	-0.0011 (-0.095)	-0.0121 (-1.023)
Constant	0.7520*** (2.631)	0.8016*** (2.648)	0.7076** (2.467)	1.0197*** (3.556)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	598	598	598	598
R-Squared	0.383	0.364	0.376	0.431
Adjusted R-squared	0.372	0.353	0.366	0.416
F-Statistic	36.414	33.590	35.437	29.334
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 17.3: Market-Based Risk (Lagged Dependent) – Total Risk

This table presents OLS regressions of stock price volatility (StdDev) on measures of noninterest income. Total risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the standard deviation of daily stock returns (R_{it}). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	Lag_StdDev			
	1	2	3	4
non_ii	0.0129*** (3.190)			
insurance		-0.0070 (-0.296)		-0.0346 (-1.364)
i_banking			0.0116*** (2.732)	0.0092** (2.009)
service_charge				-0.4216*** (-5.234)
trading				0.2052 (1.296)
securitization				0.1380*** (4.725)
other_nonii				-0.0176 (-0.565)
d_e	0.0005*** (2.997)	0.0004*** (2.602)	0.0005*** (2.859)	0.0006*** (3.160)
ln_asset	-0.0002 (-1.161)	-0.0002 (-0.994)	-0.0002 (-0.973)	-0.0004* (-1.793)
Constant	0.0193*** (4.169)	0.0197*** (4.124)	0.0187*** (4.037)	0.0239*** (4.958)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	598	598	598	598
R-Squared	0.769	0.766	0.768	0.785
Adjusted R-squared	0.765	0.762	0.764	0.779
F-Statistic	195.214	192.420	194.485	141.676
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

Table 17.4: Market-Based Risk (Lagged Dependent) – Interest Rate Risk

This table presents OLS regressions of interest rate risk (IRRisk) on measures of noninterest income. Interest rate risk is derived from *equation (1)* $R_{it} = \alpha + \beta_M R_{Mit} + \beta_I I_{it} + e_{it}$ as the coefficient on the daily returns of the equally weighted CRSP index (β_I). The first three specifications test our primary independent variables; noninterest income (non_ii), insurance income (insurance), and securities activities (i_banking). The fourth regression tests several components of noninterest income in addition to insurance and i_banking jointly; trading income (trading), service charges (service_charge), securitization (securitization), and other noninterest income (other_nonii). All noninterest income components are scaled by total assets. In all regressions we control for bank characteristics such as the debt to equity ratio (d_e), and the natural logarithm of total assets (ln_asset). Year dummy variables are included from 2002 to 2009 but not reported.

VARIABLES	1	2	3	4
	Lag_IRRisk			
non_ii	0.0520 (0.269)			
insurance		-3.8142** (-2.417)		-3.9908** (-2.469)
i_banking			0.0983 (0.512)	0.1610 (0.823)
service_charge				0.5968 (0.138)
trading				-3.9684 (-0.608)
securitization				1.7275 (0.888)
other_nonii				0.2766 (0.255)
d_e	-0.0024 (-0.497)	-0.0011 (-0.226)	-0.0022 (-0.443)	0.0010 (0.205)
ln_asset	0.0270*** (3.422)	0.0314*** (4.026)	0.0273*** (3.473)	0.0313*** (3.973)
Constant	-0.6775*** (-3.696)	-0.7880*** (-4.304)	-0.6853*** (-3.730)	-0.8120*** (-4.434)
Fixed Year Effects	Yes	Yes	Yes	Yes
Observations	598	598	598	598
R-Squared	0.443	0.449	0.443	0.451
Adjusted R-squared	0.433	0.439	0.433	0.437
F-Statistic	46.624	47.792	46.649	31.875
Prob(F-Stat)	0.000	0.000	0.000	0.000

Regressions are estimated using robust standard errors and t-statistics are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% respectively.

APPENDIX B: FIGURES

Figure 1: Noninterest Income to Operating Income

This figure plots the aggregate annual amounts of noninterest income from all US BHCs as a percentage of operating income (noninterest income + net interest income).

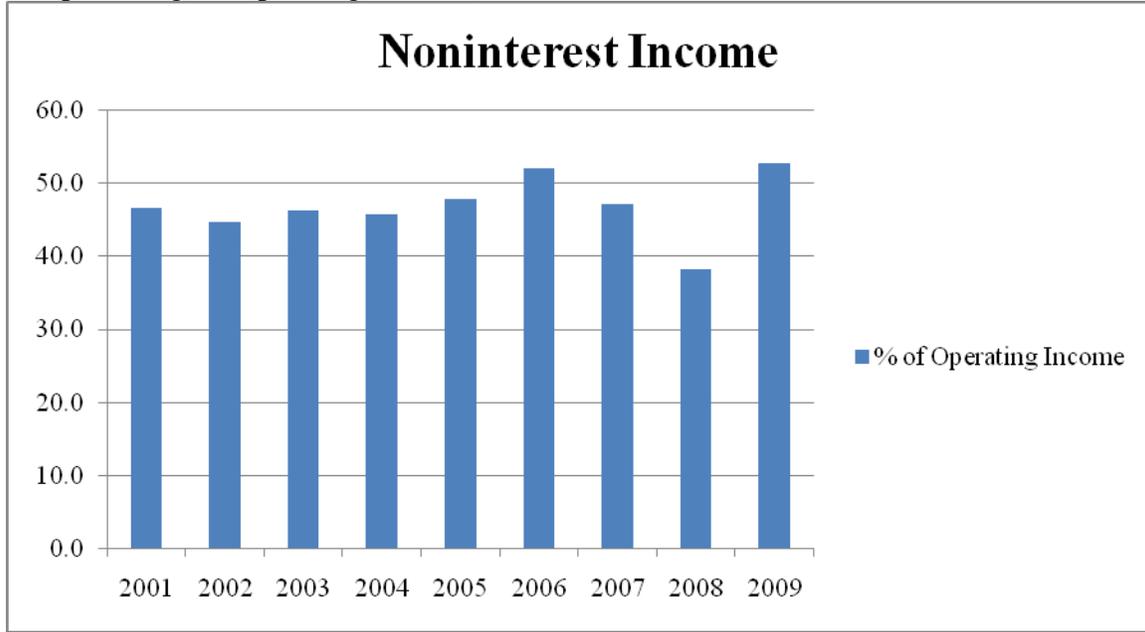


Figure 2: Noninterest Income by Asset Size

This figure depicts what proportion of operating revenue (noninterest income + interest income) is derived from noninterest income according to how large the BHC. The x-axis groups banks in percentiles based on asset size from smallest to largest.

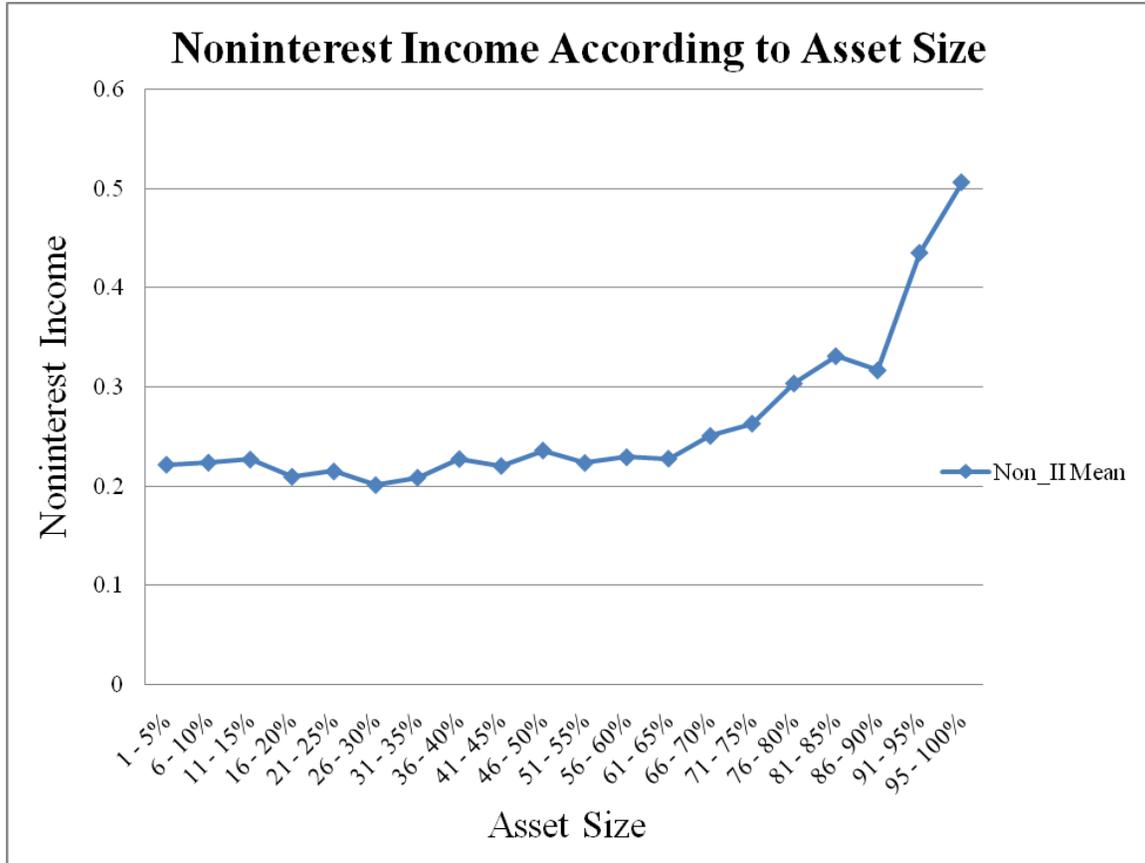


Figure 3: Definitions of Dependent Variables Used to Analyze Bank Performance

Variable	Definition
<i>Market-Based Risk Measures^a</i>	
Firm specific risk (Idiosyncratic)	Also called diversifiable it is the risk that is specific to each company
Systematic risk (Beta)	Market or un-diversifiable risk
Total risk (StdDev)	Volatility of daily stock returns
Interest rate risk (IRRisk)	Risk derived from fluctuations in interest rates
<i>Operational Efficiency</i>	
Employee expense to employees (Operational_Risk)	Salaries and employees' benefits to number of full-time employees
Income to employee's salary (Income_EmpSalary)	Net income after taxes to salaries and employees' benefits
Noninterest expense to noninterest Revenue (NonIE_NonIR)	Noninterest expense as a % of noninterest revenue
<i>Intermediation Efficiency</i>	
Net interest margin (NIM)	Net interest income as a % of investment securities and loans
Return on loans (Return_Loan)	Interest and fees on loans to total loans and leases
Credit risk (Credit_Risk)	Noncurrent loans to total loans and leases
Loan loss reserve ratio (LLRR)	Provision for loan and lease loss to total assets
<i>Capital Adequacy and Liquidity</i>	
Liquidity risk (Liquidity_Risk)	Transaction deposits plus time deposits less than \$100,000 to total assets
Equity to assets (CoreCapital)	Equity capital to total assets

^aSee equation (1) for the estimation of market-based risk measures.

APPENDIX C: FR Y-9C REPORTING FORM DETAILS

Definitions of noninterest income variables from FR Y-9C reporting forms

Line Item 5(a) Income from fiduciary activities – BHCK4070¹⁹

Report gross income from services rendered by the trust departments of the bank holding company's banking subsidiaries or by any of the bank holding company's consolidated subsidiaries acting in any fiduciary capacity. Include commissions and fees on the sales of annuities by these entities that are executed in a fiduciary capacity.

Exclude commissions and fees received for the accumulation or disbursement of funds deposited to Individual Retirement Accounts (IRAs) or Keogh Plan accounts when they are not handled by the trust departments of the holding company's subsidiary banks (report in item 5(b), "Service charges on deposit accounts in domestic offices").

Leave this item blank if the subsidiary banks of the reporting bank holding company have no trust departments and the bank holding company has no consolidated subsidiaries that render services in any fiduciary capacity.

Line Item 5(b) Service charges on deposit accounts in domestic offices – BHCK4483

Report in this item amounts charged depositors in domestic offices:

- (1) For the maintenance of their deposit accounts with the bank holding company or its consolidated subsidiaries, so-called "maintenance charges."
- (2) For their failure to maintain specified minimum deposit balances.
- (3) Based on the number of checks drawn on and deposits made in their deposit accounts.
- (4) For checks drawn on so-called "no minimum balance" deposit accounts.
- (5) For withdrawals from nontransaction deposit accounts.
- (6) For the closing of savings accounts before a specified minimum period of time has elapsed.
- (7) For accounts which have remained inactive for extended periods of time or which have become dormant.
- (8) For deposits to or withdrawals from deposit accounts through the use of automated teller machines or remote service units.
- (9) For the processing of checks drawn against insufficient funds, so-called "NSF check charges," that the subsidiary banks of the bank holding company assess regardless of whether it decides to pay, return, or hold the check. Exclude subsequent charges levied against overdrawn accounts based on the length of time the account has been overdrawn, the magnitude of the overdrawn balance, or which are otherwise equivalent to interest (report in the appropriate subitem of item 1(a)(1), "Interest and fee income on loans in domestic offices").
- (10) For issuing stop payment orders.

¹⁹ Eight digit codes after each line item represent the alpha-numeric identifiers for the items listed in the FR Y-9C reporting forms.

- (11) For certifying checks.
- (12) For the accumulation or disbursement of funds deposited to Individual Retirement Accounts (IRAs) or Keogh Plan accounts when not handled by the trust departments of subsidiary banks of the reporting bank holding company.

Report such commissions and fees received for accounts handled by the trust departments of the holding company's banking subsidiaries or by other consolidated subsidiaries in item 5(a), "Income from fiduciary activities."

Exclude penalties paid by depositors for the early withdrawal of time deposits (report in item 5(l), "Other noninterest income," or deduct from the interest expense of the related category of time deposits, as appropriate).

Line Item 5(c) Trading revenue – BHCKA220

Report the net gain or loss from trading cash instruments and off-balance-sheet derivative contracts (including commodity contracts) that has been recognized during the calendar year-to-date. The amount reported in this item must equal the sum of Schedule HI, Memoranda item 9(a) through 9(d).

Include as trading revenue:

- (1) Revaluation adjustments to the carrying value of cash instruments reportable in Schedule HC, item 5, "Trading assets," and Schedule HC, item 15, "Trading liabilities," resulting from the periodic marking to market of such instruments.
- (2) Revaluation adjustments from the periodic marking to market of interest rate, foreign exchange rate, commodity, and equity derivative contracts reportable in Schedule HC-L, item 12, "Total gross notional amount of derivative contracts held for trading," and credit derivative contracts reportable in Schedule HC-L, item 7, "Credit derivatives," that are held for trading purposes. The effect of the periodic net settlements on derivative contracts held for trading purposes should be included as part of the revaluation adjustments from the periodic marking to market of these contracts.
- (3) Incidental income and expense related to the purchase and sale of assets and liabilities reportable in Schedule HC, item 5, "Trading assets," and Schedule HC, item 15, "Trading liabilities," and off-balance-sheet derivative contracts reportable in Schedule HC-L, item 12, "Total gross amount of derivative contracts held for trading," and credit derivatives contracts reportable in Schedule HC-L, item 7, that are held for trading purposes.

If the amount to be reported in this item is a net loss, report with a minus (-) sign.

Line Item 5(d) Investment banking, advisory, brokerage, and underwriting fees and commissions – BHCKB490 (BHCKC886, BHCKC887, & BHCKC888)²⁰

Report fees and commissions from underwriting (or participating in the underwriting of)

²⁰ Definition taken from 2006 reporting forms.

securities, private placements of securities, investment advisory and management services, merger and acquisition services, and other related consulting fees. Also include fees and commissions from securities brokerage activities, from the sale and servicing of mutual funds, and from the purchase and sale of securities and money market instruments where the bank holding company is acting as agent for other banking institutions or customers (if these fees and commissions are not included in Schedule HI, item 5(a), “Income from fiduciary activities,” or item 5(c), “Trading revenue”). Include commissions and fees from the sale of annuities to bank holding company customers by the bank holding company’s securities brokerage subsidiary. Also include fees and commissions from the placement of commercial paper, both for transactions issued in the bank holding company’s name and transactions in which the bank holding company acts as an agent for a third party issuer.

Also include the bank holding company’s proportionate share of the income or loss before extraordinary items and other adjustments from its investment in:

- (1) Unconsolidated subsidiaries,
- (2) Associated companies, and
- (3) Corporate joint ventures, unincorporated joint ventures, general partnerships, and limited partnerships over which the bank exercises significant influence

that are principally engaged in investment banking, advisory, brokerage, or securities underwriting activities.

Line Item 5(e) Venture capital revenue – BHCKB491

In general, venture capital activities involve the providing of funds, whether in the form of loans or equity, and technical and management assistance, when needed and requested, to start-up or high-risk companies specializing in new technologies, ideas, products, or processes. The primary objective of these investments is capital growth.

Report as venture capital revenue market value adjustments, interest, dividends, gains, and losses (including impairment losses) on venture capital investments (loans and securities). Include any fee income from venture capital activities that is not reported in one of the preceding items of Schedule HI—Income Statement.

Also include the bank holding company’s proportionate share of the income or loss before extraordinary items and other adjustments from its investments in:

- (1) Unconsolidated subsidiaries,
- (2) Associated companies, and
- (3) Corporate joint ventures, unincorporated joint ventures, general partnerships, and limited partnerships over which the bank holding company exercises significant influence that are principally engaged in venture capital activities.

Line Item 5(f) Net servicing fees – BHCKB492

Report income from servicing real estate mortgages, credit cards, and other financial assets held by others. Report any premiums received in lieu of regular servicing fees on such loans only as earned over the life of the loans. For servicing assets and liabilities measured under the amortization method, bank holding companies should report servic-

ing income net of the related servicing assets' amortization expense, include impairments recognized on servicing assets, and also include increases in servicing liabilities recognized when subsequent events have increased the fair value of the liability above its carrying amount. For servicing assets and liabilities remeasured at fair value under the fair value option, include changes in the fair value of these servicing assets and liabilities. For further information on servicing, see the Glossary entry for "servicing assets and liabilities."

Line Item 5(g) Net securitization income – BHCKB493

Report net gains (losses) on assets sold in the bank holding company's own securitization transactions, i.e., net of transaction costs. Include unrealized losses (and recoveries of unrealized losses) on loans and leases held for sale in the bank holding company's own securitization transactions. Report fee income from securitizations, securitization conduits, and structured finance vehicles, including fees for providing administrative support, liquidity support, interest rate risk management, credit enhancement support, and any additional support functions as an administrative agent, liquidity agent, hedging agent, or credit enhancement agent. Include all other fees (other than servicing fees and commercial paper placement fees) earned from the bank holding company's securitization and structured finance transactions.

Exclude income from servicing securitized assets (report in item 5(f), above), fee income from the placement of commercial paper (report in item 5(d), above), and income from seller's interests and residual interests retained by the bank holding company (report in the appropriate subitem of item 1, "Interest income"). Also exclude net gains (losses) on loans sold to—and unrealized losses (and recoveries of unrealized losses) on loans and leases held for sale to—a government-sponsored agency or another institution that in turn securitizes the loans (report in item 5(i), "Net gains (losses) on sales of loans and leases").

Line Item 5(h) Insurance commissions and fees – BHCKB494 (BHCKC386, & BHCKC387)²¹

Report the amount of premiums earned by property-casualty insurers and the amount of insurance premiums written by life and health insurers. Report income from insurance agency and brokerage operating (includes sales of annuities and supplemental contracts); service charges, commissions, and fees from the sale of insurance and related services; management fees from separate accounts, deferred annuities and universal life products.

Also include the bank holding company's proportionate share of the income or loss before extraordinary items and other adjustments from its investments in:

- (1) Unconsolidated subsidiaries
- (2) Associated companies, and
- (3) Corporate joint ventures, unincorporated joint ventures, general partnerships, and limited partnerships over which the bank holding company exercises significant influence

²¹ Definition taken from 2002 reporting forms.

that are principally engaged in insurance underwriting, reinsurance, or insurance sales activities.

Line Item 5(i) Net gains (losses) on sales of loans and leases – BHCK8560

Report the amount of net gains (losses) on sales and other disposals of loans and leases (reportable in Schedule HC-C), including unrealized losses (and subsequent recoveries of such net unrealized losses) on loans and leases held for sale. Exclude net gains (losses) on loans and leases sold in the bank holding company's own securitization transactions and unrealized losses (and recoveries of unrealized losses) on loans and leases held for sale in the bank holding company's own securitization transactions (report these gains (losses) in Schedule HI, item 5(g), "Net securitization income").

Line Item 5(j) Net gains (losses) on sales of other real estate owned – BHCK8561

Report the amount of net gains (losses) on sales and other disposals of other real estate owned (reportable in Schedule HC, item 7), increases and decreases in the valuation allowance for foreclosed real estate, and write-downs of other real estate owned subsequent to acquisition (or physical possession) charged to expense. Do not include as a loss on other real estate owned any amount charged to the allowance for loan and lease losses at the time of foreclosure (actual or physical possession) for the difference between the carrying value of a loan and the fair value less cost to sell of the foreclosed real estate.

Line Item 5(k) Net gains (losses) on sales of other assets (excluding securities) – BHCKB496

Report the amount of net gains (losses) on sales and other disposals of assets not required to be reported elsewhere in the income statement (Schedule HI). Include net gains (losses) on sales and other disposals of premises and fixed assets; personal property acquired for debts previously contracted (such as automobiles, boats, equipment, and appliances); and coins, art, and other similar assets. Do not include net gains (losses) on sales and other disposals of loans and leases (either directly or through securitization), other real estate owned, securities, and trading assets (report these net gains (losses) in the appropriate items of Schedule HI).

Line Item 5(l) Other noninterest income – BHCKB497

Report all operating income of the bank holding company for the calendar year to date not required to be reported elsewhere in Schedule HI. Disclose in Schedule HI, Memoranda items 6(a) through 6(j), each component of other noninterest income, and the dollar amount of such component, that is greater than \$25,000 and exceeds 3 percent of the other noninterest income reported in this item. If net losses have been reported in this item for a component of "Other noninterest income," use the absolute value of such net losses to determine whether the amount of the net losses is greater than \$25,000 and exceeds 3 percent of "Other noninterest income" and should be reported in Schedule HI, Memoranda item 6. (The absolute value refers to the magnitude of the dollar amount without regard to whether the amount represents net gains or net losses.) Pre-printed captions have been provided in Memoranda items 6(a) through 6(g) for reporting

the following components of other noninterest income if the component exceeds this disclosure threshold: income and fees from the printing and sale of checks, earnings on/increase in value of cash surrender value of life insurance, income and fees from automated teller machines (ATMS), rent and other income from other real estate owned, safe deposit box rent, net change in the fair values of financial instruments accounted for under a fair value option, and bank card and credit card interchange fees. For each component of other noninterest income that exceeds this disclosure threshold for which a preprinted caption has not been provided describe the component with a clear but concise caption in Schedule HI, Memoranda items 6(h) through 6(j). These descriptions should not exceed 50 characters in length (including spacing between words).

For disclosure purposes in Schedule HI, Memoranda items 6(a) through 6(g), when components of “Other noninterest income” reflect a single credit for separate “bundled services” provided through third party vendors, disclose such amounts in the item with the preprinted caption that most closely describes the predominant type of income earned, and this categorization should be used consistently over time.

Include as other noninterest income:

- (1) Service charges, commissions, and fees for such services as:
 - a. The rental of safe deposit boxes.
 - b. The safekeeping of securities for other depository institutions (if the income for such safe keeping services is not included in Schedule HI, item 5(a), “Income from fiduciary activities”).
 - c. The sale of bank drafts, money orders, cashiers’ checks, and travelers’ checks.
 - d. The collection of utility bills, checks, notes, bond coupons, and bills of exchange.
 - e. The redemption of U.S. savings bonds.
 - f. The handling of food stamps and the U.S. Treasury Tax and Loan Account, including fees received in connection with the issuance of interest-bearing demand notes by a depository institution that is a consolidated subsidiary of the reporting bank holding company.
 - g. The execution of acceptances and the issuance of commercial letters of credit, standby letters of credit, deferred payment letters of credit, and letters of credit issued for cash or its equivalent. *Exclude* income on bankers acceptances and trade acceptances (report such income in the appropriate subitem of Schedule HI, item 1(a), “Interest and fee income on loans,” or in Schedule HI, item 1(e), “Interest income from trading assets,” as appropriate).
 - h. The notarizing of forms and documents.
 - i. The negotiation or management of loans from other lenders for customers or correspondents.
 - j. The providing of consulting and advisory services to others. *Exclude* income from investment advisory services, which is to be reported in Schedule HI, item 5(d).

- k. The use of the bank holding company subsidiary bank's automated teller machines or remote service units by depositors of other depository institutions.
- (2) Income and fees from the sale and printing of checks.
 - (3) Gross rentals and other income from all real estate reportable in Schedule HC, item 7, "Other real estate owned."
 - (4) Earnings on or other increases in the value of the cash surrender values of life insurance policies owned by the bank holding company's subsidiary bank(s).
 - (5) Annual or other periodic fees paid by holders of credit cards issued by the bank holding company or its consolidated subsidiaries. Fees that are periodically charged to cardholders shall be deferred and recognized on a straight-line basis over the period the fee entitles the cardholder to use the card.
 - (6) Charges to merchants for the bank's handling of credit card or charge sales when the bank holding company does not carry the related loan accounts on its books. Bank holding companies may report this income net of the expenses (except salaries) related to the handling of these credit card sales.
 - (7) Interchange fees earned from credit card transactions.
 - (8) Gross income received for performing data processing services for others. *Do not* deduct the expense of performing such services for others (report in the appropriate items of noninterest expense).
 - (9) Loan commitment fees that are recognized during the commitment period (i.e., fees retrospectively determined and fees for commitments where exercise is remote) or included in income when the commitment expires and loan syndication fees that are not required to be deferred. Refer to the Glossary entry for "loan fees" for further information.
 - (10) Service charges on deposit accounts in foreign offices.
 - (11) Net tellers' overages (shortages), net recoveries (losses) on forged checks, net recoveries (losses) on payment of checks over stop payment orders, and similar recurring operating gains (losses) of this type. Bank holding companies should consistently report these gains (losses) either in this item or in Schedule HI, item 7(d).
 - (12) Net gains (losses) from the sale or other disposal of branches (i.e., where the reporting bank holding company sells a branch's assets to another depository institution, which assumes the deposit liabilities of the branch). Bank holding companies should consistently report these net gains (losses) either in this item or in Schedule HI, item 7(d).
 - (13) Net gains (losses) from all transactions involving foreign currency or foreign exchange other than trading transactions. Bank holding companies should consistently report these net gains (losses) either in this item or in Schedule HI, item 7(d).
 - (14) Rental fees applicable to operating leases for furniture and equipment rented to others.
 - (15) Interest received on tax refunds.
 - (16) Life insurance proceeds on policies for which the bank holding company or its subsidiaries are the beneficiary.
 - (17) Credits resulting from litigation or other claims.

- (18) Portions of penalties for early withdrawals of time deposits that *exceed* the interest accrued or paid on the deposit to the date of withdrawal, if material. Penalties for early withdrawals, or portions of such penalties, that represent the forfeiture of interest accrued or paid *to* the date of withdrawal are a reduction of interest expense and should be deducted from the gross interest expense of the appropriate category of time deposits in Schedule HI, item 2(a), “Interest on deposits.”
- (19) Interest income from advances to, or obligations of, and the bank holding company’s proportionate share of the income or loss before extraordinary items and other adjustments from its investments in:
- a. Unconsolidated subsidiaries,
 - b. Associated companies, and
 - c. Corporate joint ventures, unincorporated joint ventures, general partnerships, and limited partnerships over which the bank holding company exercises significant influence
- other than those that are principally engaged in investment banking, advisory, brokerage, or securities underwriting activities; venture capital activities; insurance and reinsurance underwriting activities; or insurance and annuity sales activities (the income from which should be reported in Schedule HI, items 5(d)(1) through 5(d)(5) and 5(e), as appropriate. *Exclude* the bank holding company’s proportionate share of material extraordinary items and other adjustments of these entities (report in Schedule HI, item 12, “Extraordinary items and other adjustments, net of income taxes”).
- (20) Net gains (losses on nonhedging derivative instruments held for purposes other than trading. Bank holding companies should consistently report these net gains (losses) either in this item or in Schedule HI, item 7(d). for further information, see the Glossary entry for “derivative contracts.”
- (21) Gross income generated by securities contributed to charitable contribution Clifford Trusts.
- (22) Income from ground rents and air rights.
- (23) Revaluation adjustments to the carrying value of all assets and liabilities reported in Schedule HC at fair value under a fair value option (excluding servicing assets and liabilities reported in Schedule HC, item 10(b), “Other intangible assets,” and Schedule HC, item 20, “Other liabilities,” respectively, and assets and liabilities reported in Schedule HC, item 5, “Trading assets,” and Schedule HC, item 15, “Trading liabilities,” respectively) resulting from the periodic marking of such assets and liabilities to fair value. Exclude the contractual amounts of interest income earned and interest expense incurred on financial assets and liabilities reported at fair value under a fair value option, which should be reported in the appropriate interest income or interest expense items on Schedule HI.

Line Item 5(m) Total noninterest income – BHCK4079

Report the sum of items 5(a) through 5(l).