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The Return to Retail and the Performance of U.S. Banks

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Abstract

The U.S. banking industry is experiencing a renewed focus on retail banking, a trend often attributed to the stability and profitability of retail activities. This paper examines the impact of banks' retail intensity on performance from 1997 to 2004 by developing three complementary definitions of retail intensity (retail loan share, retail deposit share, and branches per dollar of assets) and comparing these measures with both equity market and accounting measures of performance. We find that an increased focus on retail banking across U.S. banks is linked to significantly lower equity market and accounting returns for all banks but lower volatility for only the largest banking companies. We conclude that retail banking may be a relatively stable activity, but it is also a low-return one.

Key words: retail banking, bank risk, banking, bank performance, risk and return

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I. Introduction

U.S. banks, particularly the largest, have dramatically expanded their retail banking operations over the last few years. This increased focus has been widely noted with industry observers emphasizing the critical importance deposit-taking via a strong branch network, while extolling retail's virtue in terms of returns, stability, and growth potential.

Standard & Poor's concluded that "an increasing emphasis on the retail sector has become the stand-out characteristic supporting the success of these institutions" (in reference to six of the largest U.S. bank holding companies)[1], while *Business Week* noted that "after years of envying investment banks, many lenders have decided the traditional banking biz ain't so bad after all."[2] Similarly, *The American Banker* concludes that "retail makes an above-average contribution to most banks' P/E and market-to-book ratios"[3] and a study by Morgan Stanley and Mercer Oliver Wyman describes retail banking as the "Cinderella of U.S. financial services…high margins, stable income, and modest capital consumption."[4] This is in sharp contrast to the late 1990s when many large banks shifted their focus toward less traditional banking activities like investment banking and insurance, and attempted to shift consumers out of the branch and into alternative delivery channels like automated teller machines, electronic banking, and telephone call centers.

This paper examines the link between retail banking activity and performance for U.S. banks from 1997 to 2004 to better understand the drivers and the impact of the renewed focus on retail banking. In particular, we compare measures of both equity market returns and accounting profits to measures of retail banking intensity. This allows us to evaluate the conventional wisdom that has emerged in the last few years that retail banking offers stable revenue flows and also relatively high returns. This study is the first, to our knowledge, to systematically examine the risk and return of the retail-based banking strategies that have emerged in recent years.

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[1]Standard & Poor's, "Retail Sector Anchors Large Complex Banks in U.S.," October 4 2004.
[2]*Business Week*, "Banking and Securities: Back to Main Street," January 13, 2003, 110-111.
[3]*American Banker*, "Comment: Why Banks are Getting the Urge to Merge in '04," February 10, 2004.
[4]Morgan Stanley, Mercer Oliver Wyman, "US Retail Banking and Consumer Credit: An Agenda for Growth", August 2004.

One difficulty, however, is that there is no single definition that consistently delineates retail banking from other financial activities. In annual reports, for instance, some define retail as deposit-taking activity, consumer lending, and small business lending, while others include national credit card operations or mortgage businesses. An important contribution of our paper, therefore, is to develop three metrics of retail banking focus that can be consistently generated from bank regulatory reports. These measures are the retail loan share, the deposit retail share, and branches per dollar of assets. These metrics cover several complementary aspects of a bank's retail banking activities, one based on the asset side, one based on liabilities, and the third based on a key retail banking delivery channel. These measures are correlated, so we also extract the first principal component to develop a single measure of retail banking intensity. This summary measure has risen substantially over the period 1999-2004, after declining during the previous five years, which supports the notion of a renewed focus on retail banking activities.

Our empirical approach for understanding the relative risks and return of retail banking is straightforward. We regress ex post measures of performance like return on equity (ROE), stock market returns, and stock market volatility on these metrics, controlling for other factors that might affect performance. Our sample includes 3110 annual observations for 708 distinct institutions that operated between 1997 and 2004.

We find that the data are not fully consistent with the perceived wisdom about the relative stability and higher returns associated with retail banking. Greater retail banking intensity, for example, tends to lower equity market volatility only for the very largest bank holding companies (assets exceeding $10 billion). For small and mid-sized bank holding companies, the relationship between retail banking intensity and market volatility is weak.

A key factor in this result is the role of branches: greater branching intensity leads to lower volatility for large banking organizations, but to higher volatility for smaller ones. Our interpretation is that large branch networks for the biggest banks are more likely to span many markets and thus provide the benefits of geographic diversification.[5] In addition, branch-

[5]This counters Morgan and Samolyk (2003), who find that more geographically diversified banks do not show higher returns or lower volatility than more concentrated ones.

based retail activities may be a more potent hedge for the relatively high-risk activities like trading and capital market services that the largest banks pursue. In either case, because analysts typically focused on large institutions, our finding does lend some support to the claim that branch-based activities are relatively stable. Regardless of organization size, however, higher retail banking intensity is also consistently associated with lower average returns, measured both with market and accounting data.

Our bottom line conclusion is that that while retail banking may be a relatively stable activity, particularly for the largest banks, it is also a relatively low return one. This is completely reasonable from a traditional finance perspective where firms trade off risk and expected return, but counters the perception of some that retail activities offer the possibility of both high returns and low risk. Given the historical shifts in strategies among banks, one implication is that the current focus on retail may simply be a cyclical response to the low-returns and turbulence in capital market activities since 2000. If so, we may expect waning interest in retail as relative returns rise in other activities.

II. The Return to Retail Banking

The U.S. banking industry has undergone considerable changes over the last two decades in response to major deregulation, financial innovation, and technological advance. This section discusses one recent trend – the return to retail banking – and places it in the larger context of the evolving banking industry. To do so, we examine analyst reports, industry commentary, and the statements of bankers. While this information is in some sense "soft," it does provide a useful and novel perspective on the evolution of banking strategies.

Our discussion begins in the mid-1990s with the well-known Reigle-Neal Act of 1994, which allowed banking and branching on a nationwide scale. There is considerable evidence that this law capped a period of deregulation that fundamentally changed the way banks operate, altered the competitive dynamics of the industry, and directly impacted economic outcomes across U.S. states.[6]

At the same time, there were fundamental changes in strategy among banks. Within traditional banking, many banks attempted to shift consumers out of the bank branch and

[6]See Strahan (2003) for a summary of that research.

toward alternative distribution channels such as telephone, automated teller machines (ATMs), and electronic delivery. For example, one executive argued that branches could "eventually be supplemented by videoconferencing kiosks where customers talk to bank officers"[7] and another stated that "as soon as we really do have a choice for the customer to make that's realistic, then he will move away from branches."[8] Electronic banking was seen as a low-cost alternative to high-cost branches, and some banks imposed fees on seeing branch tellers to facilitate the substitution towards alternative channels. This focus on electronic banking continued through the late 1990s and may have peaked with Bank One's introduction of Wingspanbank.com, an internet-only banking subsidiary, on June 29, 1999.

A second major strategic shift in the late 1990s was the move to create more diversified financial service firms that could reap cross-selling and diversification gains. The late 1990s saw several large deals across traditional industry lines that created large, well-diversified financial firms. These include BankAmerica's purchase of Robertson Stephens, an investment bank boutique (announced June 1997), Nationsbank purchase of Montgomery Securities (announced June 1997), the Travelers/Citicorp merger (announced April 1998) that created Citigroup, and ChaseManhattan's purchase of Hambrecht and Quist (announced September 1999). These deals were generally well-regarded by the investment community. For the largest deal, Citicorp and Travelers, for example, one analyst report headlined "You Gotta Like It," and praised the deal as enhancing "longer term growth via improved cross-sales" and raising "hopes for revenue enhancements and unprecedented diversification in financial services."[9]

The extreme focus on the diversified model, however, was short-lived. By 2002 the U.S. economy had experienced the bursting of the NASDAQ bubble, the events of September 11, 2001, and a massive decline in capital market activity. One observer concluded that "the initial hope of many financial companies that welding brokerage, insurance, and retail banking businesses would create sales synergies just didn't pan out."[10]

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[7] *Business Week*, "Industry Outlook, Finance: Banking, Another Year in 'Bank Heaven?," January 10, 1994, 103.
[8] *Business Week*, "Industry Outlook, Finance: Banking, A Few New Blots on the Ledger," January 8, 1996, 114.
[9] Merrill Lynch, "Citicorp: You Gotta Like It," April 7, 1998.
[10] *Business Week*, "Citi: A Whole New Playbook," February 14, 2005, 72-74.

In response, a renewed focus on retail, particularly branch and deposit-based activities, emerged. A typical view was that "banks have concluded that businesses with no deposits may also have no returns,"[11] while another analyst noted that bank buyers were "developing an affinity for branch activity."[12] This shift reflected the growing attractiveness of consumer lending and refinancing; increased realization of the risks associated with less traditional operations, e.g., volatility in capital markets and regulatory reform like Sarbanes-Oxley; and operational difficulties with the diversified model, e.g., culture clashes between commercial and investment banking and operational risk.[13]

This shift is also seen in the motivation and discussion of large bank mergers, particularly since the First Union and Wachovia deal in 2001. In an analysis of the BankAmerica and Fleet merger in 2003, for example, one commentary observed that "The deal spotlights a growing trend, as many banks return to their consumer roots after years of getting rid of branches while pursuing corporate clients…plain-vanilla products have turned out to be much more reliable sources of profits…big banks that have made bold moves into investment banking during the bull market, including Fleet Boston, have scaled back those operations since the stock-market collapse."[14]

There was similar action on the divestiture side. For example, FleetBoston announced plans to sell Robertson Stephens in 2002 as part of a plan to generate "a more consistent, lower-risk business model."[15] Citigroup's sale of its Travelers Life and Annuity business was viewed as part of "a large step in moving Citigroup away from becoming a one-stop financial shop" and part of a "larger vision to get back to basics."[16]

A key perception driving the recent return to retail was that retail banking provides revenue and profit flows that are more stable than other financial activities. For example, one analyst wrote that "as large complex banks have added retail banking to their business mix over the last 10 years, this focus on consumer services has created a level of profitability to

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[11] *Business Week*, "Banking and Securities: Back to Main Street," January 13, 2003, 110-111.
[12] *American Banker*, "After Quiet Year, Is Dealmaking Ready to Return?," February 11, 2003.
[13] Stiroh (2004) documents the relative volatility of noninterest income and less traditional banking activities.
[14] *Wall Street Journal*, "Branching Out: Bank of America Bets on Consumer," October 28, 2003, A1.
[15] FleetBoston, "Fleet's Gifford Announces Strategic Actions," News Release, April 16, 2002.
[16] *Business Week*, "Citi: A Whole New Playbook," February 14, 2005, 72-74.

counter the volatility of other areas, such as corporate lending."[17] In a discussion of the merger between J.P. Morgan Chase and Bank One, another analyst remarked that "the new JP Morgan will be an enormous national player in many retail and product areas and the new combined entity promises to greatly mitigate old JPMs' historically unpredictable earnings… by adding One's stable source of retail-oriented earnings."[18]

Two factors make this increased focus on retail activities particularly interesting. First, there has been a clear shift in the view on what is the most effective and profitable retail banking distribution channel. The mid- to late-1990s were focused on replacing branches with high-tech, low-cost alternatives, while the recent retail expansion is based on a much more branch-centric conception, including in-store branches. Evidence suggests that branches remain the primary point of contact, e.g., 86% of bank customers use a branch once a month compared to 36% for Internet banking.[19] The conclusion is that "after experimenting with pushing customers to the Internet and the call center to control expenses, banks are now taking a second look at their branch networks and investing heavily in them."[20] One banker laments that "as an industry, for years we've been driving customers away from the branch…the customer frankly sees this as an annoyance."[21] Speiker (2004) reports that bank branches are a highly effective and profitable distribution channel. Second, the very largest banks have been heavily involved in branch acquisition and now earn substantial revenue from retail activities (Hirtle and Metli (2004)). We document and discuss this issue in greater detail below.

This return to "old retail" banking marks an important shift in the business model of U.S. commercial banks and motivates our analysis of the risk and return of U.S. retail banking activities. In particular, we examine whether the conventional wisdom that retail banking is a relatively stable source of earning holds is supported by the data, whether a strong branch

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[17]Standard & Poors, "Retail Sector Anchors Large Complex Banks in U.S.," October 4, 2004.
[18]Deutsche Bank Securities, "Banks/Large Cap," January 15, 2004.
[19]*American Banker*, "More are Warming to the Idea of Cozier Branches," November 17, 2004. *American Banker*, "Data Show New-Branch Talk Wasn't Just Talk," November 28, 2004.
[20]*American Banker*, "More are Warming to the Idea of Cozier Branches," November 17, 2004. *American Banker*, "Data Show New-Branch Talk Wasn't Just Talk," November 28, 2004.
[21]*American Banker*, "More are Warming to the Idea of Cozier Branches," November 17, 2004.

network leads to improved performance, and whether there are meaningful differences across size groups.

III. Data and Performance Measure

a) Measuring Retail Intensity

A key difficulty in assessing the impact of retail activities on the risk and return of banking organizations is the lack of a consistent metric of retail banking intensity. Without such a metric, it is difficult to compare the extent of retail activities across institutions or over time. Developing a metric of retail intensity requires both a definition of retail banking and institution-level data consistent with that definition. An important first contribution of this paper is to propose a definition of retail banking based on industry norms and then to generate complementary metrics that can be blended into a single, consistently calculated measure of retail banking intensity for a large number of banking organizations over time.

Although retail banking has received considerable attention in recent years, there is no generally agreed upon definition among analysts or bankers. In annual reports and other financial statements, large commercial banks frequently report results for retail-oriented business segments that include consumer deposit-taking and lending and small business financial services. These services are provided through a range of distribution channels, with brick-and-mortar branches being the most prominent (others include internet sites and call centers). Some institutions also have consumer credit businesses – particularly mortgage origination and credit cards, both prime and sub-prime – that are provided on a national scale that is separate from the firm's branch-based retail activities. In some cases, these businesses are grouped with branch-based activities into a single "retail" business segment, while in other cases, they are reported as separate business lines in financial statements. Those institutions that provide retail brokerage services almost universally include these activities in a broader brokerage or asset management business line rather than in the "retail banking" segment. Finally, at some institutions, the "retail" business segment also contains financial services provided to middle-market corporate customers, though it is becoming increasingly common for these activities to be grouped with services provided to larger corporations.[22]

[22]This discussion is based on readings of annual reports of many large banks.

Drawing from these sources, we propose a broad definition of retail banking that encompasses deposit-taking, lending, and other financial services provided to consumers and small businesses through all delivery channels, including branches, loan offices, call centers, and the internet. Our definition encompasses national consumer credit businesses. The diversity of customers, products and services, and delivery channels covered by this definition suggests that a meaningful metric of retail banking intensity should be similarly broad. Potential candidates might be the share of revenue or profit derived from these activities or the share of risk capital allocated to these business units. Both measures are holistic, in that they condense the full range of retail activities – both those that generate balance sheet positions and those that do not – into a single measure that is comparable across business lines in the firm.

Unfortunately, although a number of large bank holding companies report revenue, profits, and risk capital figures for identifiable retail business lines in annual reports and other public financial statements, such information is not readily available for most banking companies and is not consistently defined. Instead, we turn to regulatory reports to generate three complementary measures of retail banking intensity. In particular, we use balance sheet and income statement data from the FR Y-9C reports filed quarterly with the Federal Reserve by bank holding companies and from the Call Reports filed quarterly by all commercial banks, and data on branch ownership from the Summary of Deposits reports filed annually with the Federal Deposit Insurance Corporation (FDIC) by commercial banks and thrifts.[23] The advantage of using regulatory report data is that they are available on a consistent basis for all banking organizations over a relatively long period of time.

The first measure we generate is the retail loan share, defined as credit card, other consumer, 1-to-4 family mortgage (including home equity), and small business loans as a share of all loans held on the balance sheet. Data on credit card, other consumer, and mortgage loans are derived for bank holding companies from their year-end FR Y-9C reports,

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[23]The FR Y-9C data are available at http://www.chicagofed.org/economic_research_and_data/bhc_data.cfm. The Call Report data are available at http://www.chicagofed.org/economic_research_and_data/commercial_bank_data.cfm. The Summary of Deposit data are available at http://www2.fdic.gov/sod.

while small business loan data are derived from the Call Reports filed by the banks within the holding company.[24] This measure covers loans to the consumer and small business customers included in our definition of retail banking. It captures exposures held on the books of the bank holding company, but excludes loans originated and later sold or securitized and lines of credit granted but not yet drawn down. These exclusions mean that the retail loan share may be understated for those banking companies that operate national credit card or mortgage origination businesses, since these businesses tend to securitize a significant share of these loans.

Figure 1 reports the overall retail loan share for the U.S. banking industry from 1993 to 2004. Clearly, this share has cycled over time, with the "return to retail" evident in the run-up in the retail loan share since 2000. As Figure 2 illustrates, however, the movement in retail loan share differs significantly by bank holding company asset size, with the recent increase driven by institutions with assets of $10 billion or more, particularly the very largest of these. In contrast, the retail loan share at smaller institutions has been falling since the mid-1990s.[25] These contrasting trends have reversed the ordering of retail banking intensity across asset size categories over the sample period, with the very largest institutions now having the greatest focus on retail lending as indicated by this metric.

A similar picture emerges when we examine our second retail banking metric, the retail deposit share. This measure is defined as NOW account, small time, and savings account deposits as a share of total deposits. These deposits are the types most likely to be held by consumers and, to a lesser extent, small businesses. Although consumers and small business also hold non-interest-bearing demand deposits and large time deposits (those exceeding $100,000), we exclude these balances from our retail deposit measure because a

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[24]Small business loans are defined as all loans to commercial and industrial borrowers with initial loan amounts of $1 million or less. Small business loan data are reported by commercial banks, but not by bank holding companies, once a year in the June Call Reports. To create small business loans at the bank holding company level, we add the small business loan volumes reported (as of June) for all commercial banks held by the holding company as of December. For some small bank holding companies, small business loans as of June exceeded total reported C&I loans as of December; in those cases, we took the smaller of June small business loans and December C&I loans as the small business loan figure.

[25]These institutions are now holding higher shares of commercial real estate and construction and land development loans.

significant portion are derived from non-retail customers, such as mid-sized and larger businesses, especially at larger banks.[26]

Figure 3 presents the aggregate retail deposit share for the U.S. banking system over the years 1986 to 2004. Like the retail loan share, this measure cycles over time, reaching a recent peak in 2003. Further, as Figure 4 illustrates, the recent increase in retail deposit share has been driven by the very largest banking organizations, whose retail deposit share has increased steadily since the mid-1990s. In contrast, the retail deposit share has trended slightly downward at smaller institutions over this period. While these smaller institutions continue to have greater retail "intensity" by this measure, there has been very notable convergence across institutions of different asset sizes.

Our final metric of retail banking intensity departs from balance sheet measures of retail activity and instead focuses on a key retail banking delivery channel, bank branches. As noted above, despite considerable consolidation in the U.S. banking industry and the technology-driven emergence of alternative, lower cost delivery channels such as the internet and phone call centers, the number of brick-and-mortar bank branches has increased steadily since the mid-1990s.[27] A growing proportion of these branches is held in large branch networks. As of mid-2003, nearly 25 percent of U.S. branches were held by the 10 bank and thrift holding companies with 1000 or more branches, up from 11 percent in 1994 (Hirtle and Metli (2004)). This shift is consistent with a greater focus on retail banking activities among largest organizations, as suggested by the retail loan share and retail deposit share variables.

Our third metric, therefore, is based on the number of branches held by each banking organization. Because number of branches is highly correlated with institution size, we divide the number of branches by total assets so that our measure captures differences in retail banking intensity across organizations rather than merely differences in scale. Note that we

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[26]Our retail deposit measure captures retail deposits held in domestic offices only. Regulatory reports contain information on deposits held in foreign offices, but do not break these deposits out by product type. While this may introduce some bias into our retail deposit measure, the bias is likely to be small, as few U.S. commercial banking organizations have significant foreign deposit-taking (branching) operations.

[27]The growth in the number of bank branches in the U.S. differs from the experience in Europe, where the number of bank branches did not increase significantly during the 1990s (Humphrey et al. (2005)).

use overall asset size, rather than a measure of retail-related assets, to capture the size of the branch network relative to the overall size of the institution; a branches-to-retail-assets measure would reflect retail banking efficiency rather than the degree of institutional focus on retail banking. The results discussed below are quite similar if we use alternative measures of institutional scale, including total loans, equity capital, and revenue. The asset figures we use are in billions of constant (2004) dollars.

Figure 5 presents our branches-to-assets measure for the aggregate U.S. banking industry between 1994 and 2004. In contrast to our other retail banking metrics, this measure has declined over time, falling from about 13 branches per billion dollars of assets to just under eight. This indicates that the number of branches has grown more slowly than U.S. banking system as a whole, a somewhat contrary finding to the "return to retail" focus in the industry. Figure 6 presents this ratio by bank holding company asset size group. The figures suggest a direct relationship between asset size and retail intensity as measured by branches-to-assets, with smaller banks having significantly more branches per dollar of assets. The downward trend in branches-to-assets is evident for each of the asset size groups.

The metrics discussed above capture three complementary aspects of a bank's retail banking activities, one based on retail-related assets, one based on retail-related liabilities, and the third based on a key retail banking delivery channel. An important question is whether they can be combined in some way to provide a single, unified measure of retail banking intensity. On a pair-wise, cross-sectional basis, the three measures are significantly positively correlated: correlation coefficients range between 10 and 40 percent, depending on the year, with the strongest correlation between the retail deposit share and retail loan share variables.

Given the significant correlation among the three metrics, we extract the first principal component of the cross-sectional variation to develop a single measure of retail banking intensity. The first principal component captures about 50 percent of the variation, suggesting a meaningful common component among our three metrics. Figure 7 presents this combined retail intensity metric for the U.S. banking industry from 1994 to 2004. In the figure, the values for individual bank holding companies are weighted by asset size. Like the retail deposit share and retail loan share variables, the combined retail intensity metric cycles over time, with the "return to retail" evidenced by the peak in 2004.

Figure 8 presents the metric by bank holding company asset size group. Once again, the recent overall increase in the retail intensity metric is driven by the very largest bank holding companies, where values have increased sharply since 1999. Overall, the figures indicate considerable convergence across asset size groups in the average degree of retail banking intensity as the largest banks shift their strategic focus.

Thus far, we have illustrated trends in our retail banking metrics for the U.S. banking industry as a whole and for groups of institutions defined by asset size. While our measures are useful for tracking developments at an aggregate level, it is also important to establish that they capture cross-sectional differences in retail banking focus. As discussed above, there is no independent "all-in" measure of retail banking intensity available for a large number of banking institutions. However, several large bank holding companies report revenue and net income in their public financial disclosures broken out by recognizable retail banking business segments in ways that are consistent with our definition of retail banking. Using these data, we can calculate the share of net income and revenue – defined as net interest income plus non-interest income – from retail banking activities and examine the cross-sectional correlation of these ratios with our retail banking metrics.

To do this, we collected data from annual reports and quarterly financial statements for 12 large bank holding companies from 2001 through 2005:Q2.[28] For each institution, we used these data to calculate annual retail revenue and retail net income shares – defined as revenue or net income from retail banking business segments as a share of the institution's aggregate revenue or net income. We then matched these revenue and net income shares with regulatory report data on retail loan share, retail deposit share, and branches scaled by assets from the previous year-end. Due to mergers and changes in financial statement reporting that make cross-year comparisons difficult, we lose some observations, resulting in a final sample of 52 BHC-year observations.

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[28]The BHCs are Bank of America, Bank of New York, Bank One, Citigroup, FleetBoston Financial, J.P. Morgan Chase, M&T, National City, SunTrust, U.S. Bancorp, Wachovia, and Wells Fargo. These firms were selected based on asset size, branch network size, and on whether they reported business segment financial information that allowed us to identify a retail banking business line consistent with our definition. This group does not necessarily represent an exhaustive list of bank holding companies for which such information may be available, but it is a representative sample spanning a range of asset sizes and extent of retail focus.

Table 1 reports the results of some simple regression analysis examining the cross-sectional correlation of the retail revenue and net income shares and our retail banking metrics. The regressions include year dummy variables and are estimated with robust standard errors that take account of the possibility of clustering by bank holding company. We note that this sample includes only a small set of the very largest banks, so the statistical significance may not be particularly large as there may not be enough variation to precisely identify any relationships.

The results suggest a positive and significant correlation between the shares of revenue and net income accounted for by retail banking business lines and our retail banking metrics. The correlation is strongest for the retail loan share metric and for the first principal component of the three metrics and is weakest for the retail deposit share, but it is certainly evident for all the measures, both individually and jointly. Overall, this evidence supports the contention that our three retail banking metrics and their first principal component track cross-sectional differences in retail banking intensity among these large institutions, as reflected in the "all-in" activity measures of revenue and net income.

Taken together, the retail banking intensity measures are consistent with the general view of the increased importance of retail activities in the U.S. banking industry. The balance-sheet-based measures suggest that this growth has been driven primarily by large bank holding companies, resulting in considerable convergence among institutions of different asset sizes. Somewhat in contrast, the branch-based measure suggests a continued differentiation across asset size categories in the degree of retail intensity. In the work that follows, we will use these three measures, as well as their common component, to examine the impact of differences in institution-level retail banking intensity on risk and return.

b) Measuring Return and Risk with Equity Market Data

Many observers have claimed that retail activities are relatively less volatile than other forms of banking activities like trading or underwriting. Theory, of course, suggests that high-risk activities will demand a premium in the form of higher returns, so one needs to

evaluate both the risk and the return to judge relative performance across business lines.[29] In this section, we briefly discuss our measure of equity market return and risk.

We begin with daily equity market returns, including dividends and adjusted for splits, for each bank and cumulate these into weekly measures. We then define the return for bank *i* in a year *t*, $R_{i,t}$, as the mean of those weekly returns. We define the risk of the bank as the standard deviation of those weekly returns in a year, $\sigma_{i,t}$. This gives us an unbalanced panel of equity market risk and returns from 1997 to 2004. We also calculate a measure of risk-adjusted returns, $RAR_{i,t}$, as the ratio of average returns to the standard deviation of returns. These three performance measures are calculated as:

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\begin{aligned}
R_{i,t} &= \sum_{s \in t}^{S} R_{i,s} \Big/ S \\
(1) \qquad \sigma_{i,t}^2 &= \sum_{s \in t}^{S} \left(R_{i,s} - R_{i,t}\right)^2 \Big/ \left(S - 1\right) \\
RAR_{i,t} &= \frac{R_{i,t}}{\sigma_{i,t}}
\end{aligned}
$$

where *s* is the weekly observation and S is the number of the bank's weeks in a year.

One issue is whether our focus should be on the total risk of the bank (as above) or on the idiosyncratic component that remains after common market forces have been controlled for. That is, one could estimate a market model and decompose the variance of returns, "total risk," into the model-predicted component, "systematic risk," and the variance of the residuals, "idiosyncratic" or "firm-specific risk."

All three measures are informative and the choice depends on the specific question being addressed. For example, Demsetz and Strahan (1997) and Stiroh (forthcoming) are interested in questions about size-related diversification gains and theory suggests that idiosyncratic risk is the appropriate measure. A large, internally diversified firm should be able to shed the idiosyncratic component of it many exposures, so idiosyncratic risk should decline with size. An investor, on the other hand, may care primarily about the systematic part if idiosyncratic risk can be shed by holding a well-diversified portfolio.

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[29] In practice, the link between risk and return has not been as tight as theory predicts (Fama and French (2004)).

Alternatively, regulators and supervisors will likely be interested in the total risk of a banking institution because default and market disruption could result from either the systematic or the idiosyncratic component. This can be seen in Merton-type portfolio models of credit risk, developed by Merton (1974) and implemented in KMV risk models, which are driven by assumptions about total asset return volatility and estimated using total equity return volatility. Similarly, risk-adverse managers may care about total risk if a large portion of their wealth is tied up in the firm's equity (Stulz (1984)) or if they can't diversify their skills or human capital (Cummins et al. (1998)). Bank borrowers may care about the total risk of the bank if failure breaks valuable, intangible banking relationships (Slovin et al. (1993)) or if internal capital market frictions reduce lending and the efficient allocation of scarce capital resources (Houston et al. (1997)). Finally, even shareholders will likely care about total volatility (and not just the systematic component as finance theory implies) due to nonlinear costs of external funds, non-traded risks, costs of financial distress, and the convexity in the corporate tax code (Froot, Scharfstein, and Stein (1993) and Froot and Stein (1998)).

Our empirical work focuses on the total volatility of equity market returns as our preferred measure of risk. This reflects the broad importance of equity market volatility to regulators and supervisors, managers, borrowers, and investors. As robustness checks, we examined the link between the systematic and idiosyncratic components of total risk and found results that were broadly consistent.[30]

As a complement to market-based returns, we also examine average returns and return volatility based on accounting data. We calculate the average return on equity (ROE) for each bank holding company as the ratio of net income to end-of-period equity capital on a quarterly basis, and average across the four quarters in a year to get an annual figure. The volatility of returns is calculated as the standard deviation of quarterly ROE within a year. Risk-adjusted ROE is calculated as the ratio of average ROE to the within-year volatility of ROE.

c) Data and Regression Sample Construction

Our data set consists of information on equity market returns, accounting returns, balance sheet and income statement information, and branch data for publicly traded bank

[30]These results are available from the authors upon request.

holding companies over the years 1997 to 2004. This sample period covers the recent cycle in retail intensity in the U.S. banking industry.

Equity market data are obtained from the University of Chicago's Center for Research in Security Prices (CRSP) data for publicly-traded bank holding companies (BHCs) that operated between 1997 and 2004. Publicly-traded BHCs were identified as those institutions that appeared both in the Y-9C regulatory database and in CRSP, where the firms were linked based on the CUSIP-identifier available from Compustat. We include only those BHCs with at least thirty weekly observations in a given year.

These market data were matched with balance sheet and income statement data for top-tiered bank holding companies (BHCs) from the "Consolidated Financial Statements for Bank Holding Companies," known as the FR Y-9C Reports, that BHCs file quarterly with the Federal Reserve. Equity market data from one year are matched with accounting data from the prior year's FR Y-9C report, i.e., the BHC accounting data from 2000 were linked with equity market data from 2001. The timing of the accounting-based return data matches that of the market return data, however. Throughout the paper, the observation year refers to the equity market or return data period and not the regulatory data period unless explicitly mentioned. Accounting data are deflated with the CPI.

Finally, data on branch ownership is derived from the Summary of Deposits data collected annually by the FDIC. The Summary of Deposits collects information on individual branches as of June 30 of each year, including branch ownership, location, deposit amounts, and the type of branch. We aggregate these to the bank holding company level to calculate the number of full time, full service branches held by each organization. These data are then matched with year-end BHC accounting data from the FR Y-9C reports.

The final data set consists of 3110 observations for 708 individual bank holding companies over the years 1997 to 2004. The BHCs in the sample have a median asset size of just over $1 billion, so they are large relative to the full range of organizations, as would be expected since they are all publicly traded. That said, the sample contains BHCs with assets as small as $150 million, so a wide range is represented in the sample. As a rough control for the impact of significant mergers, we identify holding companies where year-over-year asset growth is in the upper 5 percent tail for a particular year as "mergers" and create a new

holding company identifier for the post-merger period. The results discussed below are not affected by this adjustment.

Table 2 presents some basic statistics of the regression data set. The first panel of the table presents information on the three individual retail banking intensity metric – the retail loan share, retail deposit share, and branches scaled by assets – as well as the first principal component measure. The second panel of the table contains information on the market-based and accounting-based return, return volatility, and risk-adjusted return measures, while the final panel presents information on the control variables.

IV. Empirical Results

Our basic empirical approach is to regress market-based and accounting-based measures of returns, return volatility, and risk-adjusted returns on our retail banking intensity metrics, as well as on a series of control variables. We then test to see whether cross-sectional differences in retail banking intensity are associated with higher returns and/or lower volatility, as has been claimed by analysts and bankers. We perform this analysis for the sample as a whole and for different sub-sets based on asset size.

The core regression equation is the following:

$$(2) \qquad Y_{i,t} = \beta_0 + \sum_{k=1}^{K} \beta_k RETAIL_{i,t}^{k} + \sum_{j=1}^{J} \gamma_j Z_{i,t}^{j} + \sum_{m=1998}^{2004} \phi_m D_m + \varepsilon_{i,t}$$

where $Y_{i,t}$ is one of the performance variables (market-based or accounting-based returns, return volatility, or risk-adjusted returns) for BHC i in year t, $RETAIL^k$ is one or more of the retail intensity metrics, Z is a vector of J control variables, and D_m are a series of year dummy variables. We estimate the equation with robust standard errors that take account of potential clustering in the residuals by bank holding company.

These regressions, of course, are reduced form, so we include a set of control variables to capture a range of institution-specific factors that might affect performance. These include the log of BHC asset size and its square, the ratio of loans to assets, the ratio of deposits to assets, the log of the equity capital ratio, and variables controlling for the composition of the BHC's loan portfolio and revenue stream. We divide the loan portfolio into four broad categories – retail loans, non-retail C&I loans, non-retail real estate loans, and other loans – and control for the share of loans in each category (non-residential real estate is the omitted category in the regression), as well as concentration across the categories, measured as the

Herfindahl-Hirschman Index (HHI).[31] We also control for the share of each BHC's revenue derived from non-interest income, as higher shares of non-interest income have been shown to be associated with higher return volatility (Stiroh and Rumble (forthcoming) and Stiroh (forthcoming)). Finally, we include a revenue HHI to control for concentration across the sources of each BHC's interest and non-interest income.[32]

a) Full Sample

Tables 3 to 5 present the estimation results using equity market returns, market volatility, and risk-adjusted market returns, respectively, as the BHC performance measures. The tables present specifications in which each of the three retail intensity metrics – retail loan share, retail deposit share, and branches scaled by assets – is included separately, as well as specifications where they are included together and in which the first principal component of the three metrics is included. To conserve space, the coefficients on the year dummy variables are not reported, though these variables are included in all specifications.

Turning first to Table 3, the results indicate that greater retail banking intensity is consistently associated with lower average market returns. The coefficients on each of the three retail intensity metrics is negative and statistically significant (columns (1) to (3)), and the coefficients are negative and jointly significant when they are included together (column (4)). Finally, the coefficient on the first principal component is also negative and statistically significant.

While the impact of increased retail intensity is statistically significant, the estimates suggest that it is relatively small in economic terms. A one-standard-deviation increase in the retail loan share variable, for instance, would result in just a 0.08 standard deviation decrease in equity market returns (4.4 basis points). Even a simultaneous one-standard-deviation increase in all three retail banking metrics would decrease equity market returns by only 0.12 standard deviations (6.9 basis points), all else equal.

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[31]The HHI is calculated as the sum of the square of the shares of each category. As such, it ranges between 1.0 for a BHC with all its loans in a single category to 0.0 for a BHC with loans distributed evenly across a large number of categories. With 4 loan categories, the minimum value for the HHI is 0.25.

[32]We divide revenue into net interest income, and into 4 components on non-interest income: fees on deposit accounts, fiduciary income, trading income, and other non-interest income.

We also note several other consistent results. First, there is consistent hump-shaped pattern between asset size and equity market returns with returns first rising and then falling with size, which suggests the presence of eventual diminishing returns. Second, capital is clearly important as banks with higher equity ratios show lower returns, on average. This could reflect a direct leverage effect or be a proxy for risk, e.g., high-risk institutions may hold less capital and earn higher returns. Third, non-interest revenue is largely insignificant as in Stiroh (forthcoming).

The picture is slightly more mixed with regard to the impact of retail banking activities on the volatility of market returns (Table 4). The balance-sheet-based retail intensity metrics – retail loan share and retail deposit share – suggest a negative relationship between retail banking activities and market return volatility. However, there appears to be a positive and marginally statistically significant relationship between branches scaled by assets and volatility, especially when all three metrics are included in the specification (column (4)). The coefficient on the principal component variable is negative (column (5)), suggesting that the net effect of retail intensity on market return volatility may be negative, though the coefficient is significant only at the 19 percent level (see the last row of the table).

Given these differences in coefficient sign, the net impact of variation in retail banking intensity on market volatility is small. The estimates imply that a simultaneous one-standard-deviation increase in the three retail banking metrics would result in just a 0.040 standard deviation decrease in market volatility (6.2 basis points, as against a 1.56 percent standard deviation). A one-standard-deviation increase in the first principal component would result in a similarly sized impact on market volatility (7.4 basis points).

We also see no impact of size on volatility. Demsetz and Strahan (1997) argue that large banks are internally diversified, which lowers idiosyncratic volatility, but exploit those gains by holding lower capital ratios and making more high-risk loans. The net effect is that overall volatility is unrelated to size, as shown here. We also find that commercial and industrial loans are relatively high risk, as is common (Demsetz and Strahan (1997) and Stiroh and Rumble (forthcoming)). Finally, we see that concentration in both lending market and revenue sources, as measured by HHIs, tends to increase volatility as one would expect if there are diversification gains.

Combining the impact on returns and volatility in Table 5, we find a significant negative relationship between retail banking intensity and risk-adjusted market returns. As with unadjusted returns, each of the three metrics enters the equation with negative and statistically significant coefficients, as does the first principal component (column (5)). This highlights our main conclusion that retail banking is not conditionally linked to improved risk-adjusted returns.

As check on these basic results, Table 6 presents results using accounting-based measures of returns (ROE) and return volatility as the BHC performance variables. For conciseness, the table presents just the specifications that include all three retail intensity metrics and the first principal component. The results based on accounting data are generally consistent with those based on market return data. The results suggest a negative and statistically significant relationship between retail banking intensity and average returns, though no significant relationship with return volatility or with risk-adjusted accounting returns. Again, we find no evidence that retail intensity is associated with higher risk-adjusted returns.

b) Size-Based Sub-Samples

The review of the retail intensity metrics in Section II suggests that there are important differences among bank holding companies across sizes. To explore this observation further, and to develop a better understanding of our core results, we divide our sample into sub-sets by asset size and repeat the regression analysis. In particular, we separate the sample into those BHCs with assets less than $1 billion (roughly half the sample), those with assets between $1 and $10 billion, and the comparatively small number of BHCs (84) with assets greater than $10 billion. These results are presented in Tables 7 to 9. Again, we report only the regressions with all three retail metrics and the first principal component.

The negative relationship between retail banking intensity and equity market returns is evident within the sets of both larger and smaller BHCs (Table 7). The coefficients on the retail loan share, retail deposit share, and branches scaled by assets variables are uniformly negative in all three partitions of the sample, as are the coefficients on the first principal components. The results are strongest for the $1-to-$10 billion sub-sample, where both the

first principal component and three separate retail banking metrics are statistically significant at high confidence levels (see the last row of the table).[33] The coefficients are somewhat less precisely estimated for the under-$1 billion sub-sample, though the first principal component enters the equation with a statistically significant coefficient. The coefficients are least precisely estimated for the sub-set of very large bank holding companies (those with assets exceeding $10 billion), perhaps due to the comparatively small sample size (just under 400 observations for 84 bank holding companies). Higher branches-per-assets are significantly associated with lower returns for this subset of institutions, however.

We also note differences in the impact of the control variables across size classes. For example, the share of revenue from noninterest sources and revenue concentration are negatively linked to returns only for the largest banks. This likely reflects the very different set of activities in which these banks engage, e.g., more proprietary trading and capital market activities, and the different degree of intensity.

As before, the results for the market volatility specification are a bit more complex (Table 8). The first two columns suggest that the contrasting results for the overall sample – in which increases in the retail loan and retail deposit shares were associated with decreases in volatility, while increases in retail intensity as indicated by branches-per-assets were associated with increases in volatility – are driven primarily by the smaller bank holding companies. The coefficients on retail loan share and retail deposit share are negative and jointly statistically significant, while the coefficient on branches-per-assets is positive and significant. The coefficient on the first principal component is negative, but not precisely estimated, consistent with the idea of a small net impact of increased retail intensity on market volatility for this group of institutions.

This pattern appears to reverse for larger bank holding companies, however. For mid-sized BHCs (those with $1 to $10 in assets), the coefficient on the retail loan share is negative and significant, while the coefficients on the other variables are essentially zero. The coefficient on the first principal component variable suggests a net negative impact of

[33]The three retail banking metrics are jointly statistically significant. In results not reported here, the coefficient on each variable is negative and statistically significant when they metrics are included in the specification individually.

increased retail banking intensity for these firms, though the coefficient is not precisely estimated. This negative impact is more marked for the set of very large BHCs (those with assets exceeding $10 billion). Here, the coefficients on all three retail banking metrics are negative (though just marginally statistically significant), while the coefficient on the first principal component is more than three times the size for the mid-sized BHCs and is significant at the 6 percent confidence level.

The most striking change in impact across BHC asset size groups is for the branch-based retail banking metric. The coefficients on this variable go from large and positive in the under $1-billion sample to large and negative in the over-$10 billion cohort. A one-standard deviation increase in branches-per-assets would result in a 0.11 standard-deviation increase in volatility in the under-$1 billion sub-sample as compared to a 0.11 standard deviation *decrease* in volatility in the over-$10 billion group. These results suggest that for smaller bank holding companies, greater emphasis on branch banking increases volatility, while among large holding companies, the opposite is the case. A reasonable interpretation is that large branch networks of the very large banks span many geographical markets and thus provide diversification benefits.

Table 9 illustrates the net effect of retail activity on equity market returns and volatility by examining risk-adjusted returns. Risk-adjusted returns are negatively associated with increased retail intensity for small and mid-sized bank holding companies. The coefficients on the individual retail banking metrics are negative and jointly statistically significant, as are the coefficients on the first principal component variable. For the very largest bank holding companies, however, there does not appear to be a significant relationship between retail banking intensity and risk-adjusted returns. While the coefficients are all negative, they are not individually or jointly statistically significant. Evidently, any reduction in volatility resulting from greater retail banking intensity is offset by a corresponding reduction in returns for these institutions.

Our results suggest that retail banking is a relatively low return activity for the full range of bank holding companies in our sample, but that these activities reduce institution-level risk only among the very largest firms. This result may reflect the broader range of activities pursued by large bank holding companies as compared to smaller ones, such as trading and capital market services, some of which are comparatively high risk. In addition,

among large institutions, those with higher retail intensity may be diversified relative to the norm, whereas among smaller BHCs, those with a higher degree of retail focus may actually be more concentrated, to the extent that retail activities tend to be more dominant for these firms. Whatever the case, the net impact of greater retail intensity, in terms of risk-adjusted returns, is negative for small and mid-sized BHCs and neutral for the very largest.

A key factor in these findings is the role of branches, which appear to have opposite effect on market volatility for small and large banking companies. Greater branching intensity leads to higher market volatility for smaller bank holding companies, but to (marginally) lower volatility for large ones. The finding for large BHCs is consistent with trends in branching, which have seen more concentration of branches at these large institutions (Hirtle and Metli (2004)), and with the perception of analysts, who have focused on larger institutions.

V. Conclusions

The U.S. banking industry has recently renewed its focus on retail banking. This can be seen in the continued growth in bank branches, the motivation for recent large mergers, and industry commentary from a broad range of sources. Our study is the first, to our knowledge, to systematically examine the risk and return of retail-based strategies.

We conclude that a focus on retail activities is not associated with improved performance, measured by equity market returns and volatility, for the largest banks, and may actually lower performance for small and medium-sized institutions. For the largest banks that dominate U.S. banking, both equity market returns and volatility tend to fall with retail intensity. From a finance perspective, this is completely reasonable if consumer-driven retail banking is simply a low-risk, low-return business, but it does counter the perception of some that retail banking offers the advantages of both higher returns and higher risk.

Looking toward the future, we offer some speculation based the recent past. Our examination of the industry trends and commentary suggests a cyclical nature to the interest in retail activities. In this sense, the current level of focus may well be temporary as banks react to the turbulence in capital markets since 2000. As technology continues to evolve and relative returns in other financial activities improve, banks may once again switch their focus to developing other businesses and shifting away from the branch-centric mode of retail banking.

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Table 1
Correlation of Retail Revenue and Profit Shares and Retail Banking Intensity Metrics
for Selected Large Bank Holding Companies

Retail Share of Revenue

	(1)	(2)	(3)	(4)	(5)
Retail Loan Share	102.072***			97.721***	
	(22.820)			(18.140)	
Retail Deposit Share		47.338		2.046	
		(34.781)		(24.867)	
Branches per Assets			1.937**	1.668	
			(0.833)	(0.984)	
First Principal Component					9.565**
					(3.739)
Observations	52	52	52	52	52
R-squared	0.51	0.19	0.20	0.67	0.42
Prob[Retail Variables = 0]	0.00	0.20	0.04	0.00	0.03

Retail Share of Net Income

	(1)	(2)	(3)	(4)	(5)
Retail Loan Share	100.660***			96.299***	
	(22.323)			(18.899)	
Retail Deposit Share		37.077		11.946	
		(34.443)		(22.537)	
Branches per Assets			1.122	0.567	
			(1.037)	(1.018)	
First Principal Component					8.133*
					(4.149)
Observations	52	52	52	52	52
R-squared	0.51	0.13	0.08	0.55	0.31
Prob[Retail Variables = 0]	0.00	0.30	0.30	0.00	0.08

This table reports the results of regressions of the share of revenues and profits from retail banking activities as reported in public financial statements on three measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 12 large bank holding companies whose public financial statements report business segment information for identifiable retail banking business lines over the years 2001 to 2005. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "Prob[Retail Variable = 0]" reports the p-value of the test of statistical significance of the coefficients on the retail intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2
Basic Statistics of the Regression Data

	Mean	Median	Standard Deviation	Minimum	Maximum
Retail Intensity Variables					
Retail Loan Share	0.530	0.543	0.177	0.005	0.993
Retail Deposit Share	0.709	0.727	0.121	0.000	0.944
Branches per Million Dollars of Assets	0.020	0.019	0.010	0.0001	0.079
First Principal Component	0.000	0.165	1.273	-6.649	3.630
BHC Performance Variables					
Market Return	0.399	0.939	0.582	-2.984	3.027
Market Return Volatility	4.066	3.786	1.556	0.617	18.045
Risk-Adjusted Market Return	0.108	0.108	0.145	-0.400	0.727
Book Return on Equity (ROE)	12.625	13.228	7.218	-134.89	45.283
ROE Volatility	2.832	1.219	7.284	0.000	200.63
Risk-Adjusted ROE	16.809	10.316	23.005	-2.455	506.41
Control Variables					
Asset Size	12.127	1.028	64.295	0.156	1264.0
Loan-to-Asset Ratio	0.648	0.662	0.116	0.021	0.904
Deposit-to-Asset Ratio	0.765	0.787	0.106	0.088	0.936
Equity Capital Ratio	0.090	0.086	0.032	0.015	0.681
Non-retail C&I Loan Share	0.082	0.049	0.097	0.000	0.714
Non-retail Real Estate Loan Share	0.345	0.321	0.173	0.000	0.995
Other Loan Share	0.043	0.024	0.061	0.000	0.802
Loan Concentration (HHI)	0.483	0.468	0.115	0.258	0.989
Non-interest Income Share of Revenue	0.233	0.205	0.130	-0.560	0.984
Revenue Concentration (HHI)	0.647	0.653	0.133	0.271	2.767

Source: Equity market data as reported by the Center for Research in Securities Prices (CRSP). Bank holding company balance sheet and income statement data are from the Federal Reserve Y-9C reports, except for small business loan data, which are from the FFIEC Reports on Condition and Income for commercial banks. Branch data are from the FDIC's Summary of Deposits database.

Table 3
Retail Activity and Equity Market Returns

	(1)	(2)	(3)	(4)	(5)
Retail Variables					
Retail Loans/Loans	-0.248***			-0.203***	
	(0.070)			(0.068)	
Retail Deposits/ Deposits		-0.221***		-0.107	
		(0.084)		(0.079)	
Branches/Assets			-2.926***	-2.040**	
			(1.070)	(1.024)	
First Principal Component					-0.040***
					(0.010)
Log of Assets	0.221***	0.254***	0.207***	0.216***	0.230***
	(0.066)	(0.066)	(0.067)	(0.065)	(0.066)
Log of Assets Squared	-0.007***	-0.008***	-0.007***	-0.007***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Loans/Assets	-0.044	-0.036	-0.029	-0.035	-0.030
	(0.073)	(0.073)	(0.074)	(0.072)	(0.072)
C&I Loans/Loans	0.017	0.063	0.046	-0.060	-0.063
	(0.114)	(0.125)	(0.120)	(0.125)	(0.129)
Other Loans/Loans	-0.243	-0.148	-0.143	-0.210	-0.183
	(0.189)	(0.203)	(0.186)	(0.189)	(0.196)
Loan Share HHI	0.268**	0.153	0.105	0.240**	0.215**
	(0.115)	(0.105)	(0.103)	(0.116)	(0.106)
Deposits/Assets	0.142	0.164*	0.223**	0.190**	0.196**
	(0.089)	(0.091)	(0.097)	(0.091)	(0.090)
Log(Equity Capital Ratio)	-0.093**	-0.092**	-0.092*	-0.084*	-0.082*
	(0.047)	(0.046)	(0.047)	(0.047)	(0.046)
Non-interest Income/ Revenue	0.237*	0.187	0.208	0.162	0.136
	(0.128)	(0.136)	(0.134)	(0.137)	(0.138)
Revenue Share HHI	0.365***	0.406***	0.371***	0.314**	0.322**
	(0.128)	(0.130)	(0.131)	(0.135)	(0.136)
Observations	3110	3110	3110	3110	3110
R-squared	0.39	0.39	0.39	0.39	0.39
F-Statistic P-Value: Retail Variables Equal 0?	0.00	0.01	0.01	0.00	0.00

This table reports the results of regressions of BHC equity market returns on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4
Retail Activity and Market Return Volatility

	(1)	(2)	(3)	(4)	(5)
Retail Variables					
Retail Loans/Loans	-0.627**			-0.600**	
	(0.257)			(0.276)	
Retail Deposits/ Deposits		-0.688**		-0.591	
		(0.331)		(0.379)	
Branches/Assets			8.302	11.586*	
			(5.895)	(6.052)	
First Principal Component					-0.051
					(0.039)
Log of Assets	-0.202	-0.106	-0.103	-0.043	-0.177
	(0.291)	(0.290)	(0.283)	(0.271)	(0.294)
Log of Assets Squared	0.004	0.001	0.001	-0.000	0.003
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Loans/Assets	0.172	0.195	0.155	0.141	0.197
	(0.363)	(0.366)	(0.359)	(0.365)	(0.363)
C&I Loans/Loans	1.867***	1.939**	2.425***	2.042***	1.908**
	(0.694)	(0.761)	(0.719)	(0.762)	(0.760)
Other Loans/Loans	1.032	1.279*	1.190*	1.006	1.211
	(0.751)	(0.751)	(0.712)	(0.754)	(0.744)
Loan Share HHI	1.308***	1.032**	1.011**	1.449***	1.065**
	(0.479)	(0.472)	(0.482)	(0.493)	(0.468)
Deposits/Assets	-0.052	0.006	-0.178	-0.286	0.043
	(0.469)	(0.472)	(0.502)	(0.489)	(0.476)
Log(Equity Capital Ratio)	-1.171***	-1.162***	-1.218***	-1.185***	-1.165***
	(0.180)	(0.179)	(0.186)	(0.182)	(0.184)
Non-interest Income/ Revenue	2.931***	2.758***	3.177***	2.953***	2.838***
	(0.599)	(0.573)	(0.593)	(0.576)	(0.580)
Revenue Share HHI	1.955***	2.037***	2.345***	2.146***	1.991***
	(0.515)	(0.508)	(0.521)	(0.502)	(0.510)
Observations	3110	3110	3110	3110	3110
R-squared	0.25	0.24	0.24	0.25	0.24
F-Statistic P-Value: Retail Variables Equal 0?	0.02	0.04	0.16	0.01	0.19

This table reports the results of regressions of BHC equity market return volatility on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5
Retail Activity and Risk-Adjusted Market Returns

	(1)	(2)	(3)	(4)	(5)
Retail Variables					
Retail Loans/Loans	-0.049***			-0.040***	
	(0.013)			(0.013)	
Retail Deposits/ Deposits		-0.046***		-0.024	
		(0.016)		(0.016)	
Branches/Assets			-0.538**	-0.356	
			(0.233)	(0.228)	
First Principal Component					-0.008***
					(0.002)
Log of Assets	0.049***	0.056***	0.047***	0.049***	0.051***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Log of Assets Squared	-0.002***	-0.002***	-0.001***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Loans/Assets	-0.000	0.002	0.003	0.002	0.003
	(0.016)	(0.017)	(0.017)	(0.016)	(0.016)
C&I Loans/Loans	-0.015	-0.007	-0.008	-0.030	-0.032
	(0.020)	(0.020)	(0.022)	(0.022)	(0.022)
Other Loans/Loans	-0.077**	-0.058*	-0.058*	-0.071**	-0.065*
	(0.035)	(0.035)	(0.034)	(0.035)	(0.034)
Loan Share HHI	0.056***	0.033	0.024	0.051**	0.046**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Deposits/Assets	0.018	0.022	0.033	0.026	0.029
	(0.019)	(0.019)	(0.021)	(0.020)	(0.019)
Log(Equity Capital Ratio)	-0.007	-0.007	-0.007	-0.005	-0.005
	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)
Non-interest Income/ Revenue	-0.002	-0.013	-0.007	-0.017	-0.023
	(0.027)	(0.028)	(0.028)	(0.030)	(0.029)
Revenue Share HHI	0.047	0.054*	0.049*	0.037	0.038
	(0.029)	(0.028)	(0.029)	(0.030)	(0.030)
Observations	3110	3110	3110	3110	3110
R-squared	0.50	0.50	0.50	0.50	0.50
F-Statistic P-Value: Retail Variables Equal 0?	0.00	0.00	0.02	0.00	0.00

This table reports the results of regressions of BHC risk-adjusted equity market returns (average returns divided by the standard deviation of returns) on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6
Retail Activity and Accounting-Based Returns and Volatility

	Average ROE		ROE Volatility		Risk-Adjusted ROE	
Retail Variables						
Retail Loans/Loans	-3.853**		-0.707		-1.141	
	(1.852)		(1.997)		(3.685)	
Retail Deposits/ Deposits	-2.479		1.759		1.805	
	(1.934)		(1.812)		(4.655)	
Branches/Assets	-67.215**		13.086		-33.736	
	(32.839)		(23.698)		(56.547)	
First Principal Component		-0.925***		0.144		-0.169
		(0.241)		(0.199)		(0.422)
Log of Assets	6.625***	7.074***	-3.282**	-3.181**	14.906***	15.408***
	(1.566)	(1.576)	(1.505)	(1.536)	(4.038)	(3.992)
Log of Assets Squared	-0.179***	-0.193***	0.099**	0.095*	-0.413***	-0.428***
	(0.051)	(0.051)	(0.049)	(0.049)	(0.133)	(0.131)
Loans/Assets	-0.278	-0.255	0.394	0.447	3.422	3.380
	(1.819)	(1.821)	(1.608)	(1.584)	(3.927)	(3.970)
C&I Loans/Loans	-8.480***	-8.390***	5.420**	5.495**	-3.778	-3.622
	(2.791)	(2.795)	(2.475)	(2.414)	(7.508)	(7.540)
Other Loans/Loans	-5.790	-5.570	-4.681	-4.188	5.558	5.755
	(4.346)	(4.384)	(3.660)	(3.566)	(7.413)	(7.104)
Loan Share HHI	-0.376	-0.311	3.694	3.083	3.267	3.451
	(3.054)	(2.752)	(3.201)	(2.667)	(6.643)	(6.181)
Deposits/Assets	4.094*	3.764*	2.019	2.247	-1.858	-2.296
	(2.220)	(2.156)	(1.764)	(1.816)	(7.119)	(6.835)
Log(Equity Capital Ratio)	1.985	1.995	-5.922***	-5.899***	3.153	3.168*
	(1.729)	(1.705)	(1.876)	(1.854)	(1.928)	(1.904)
Non-interest Income/ Revenue	8.195**	7.871**	14.662***	14.322***	-16.753***	-17.178***
	(3.697)	(3.618)	(3.366)	(3.345)	(6.235)	(6.115)
Revenue Share HHI	2.398	2.782	8.125***	8.182***	-7.078	-6.745
	(3.367)	(3.369)	(2.792)	(2.836)	(6.226)	(6.092)
Observations	3110	3110	3110	3110	3066	3066
R-squared	0.11	0.11	0.07	0.07	0.04	0.04
F-Statistic P-Value: Retail Variables Equal 0?	0.00	0.00	0.58	0.47	0.88	0.69

This table reports the results of regressions of BHC accounting-based returns, return volatility, and risk-adjusted returns (average returns divided by the standard deviation of returns) on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7
Retail Activity and Equity Market Returns by BHC Asset Size

	Less Than $1 Billion		$1 to $10 Billion		More than $10 Billion	
Retail Variables						
Retail Loans/Loans	-0.128		-0.229***		-0.159	
	(0.112)		(0.082)		(0.164)	
Retail Deposits/	-0.117		-0.122		-0.002	
Deposits	(0.151)		(0.109)		(0.189)	
Branches/Assets	-2.027		-1.258		-6.850**	
	(1.371)		(1.385)		(3.191)	
First Principal		-0.034*		-0.039***		-0.034
Component		(0.017)		(0.010)		(0.030)
Log of Assets	0.643	0.673	0.952	1.015	-0.156	0.046
	(1.463)	(1.463)	(0.657)	(0.669)	(0.432)	(0.398)
Log of Assets Squared	-0.023	-0.024	-0.033	-0.035	0.002	-0.003
	(0.056)	(0.056)	(0.022)	(0.023)	(0.012)	(0.011)
Loans/Assets	-0.067	-0.066	-0.053	-0.057	-0.059	-0.069
	(0.121)	(0.117)	(0.101)	(0.100)	(0.168)	(0.165)
C&I Loans/Loans	-0.385	-0.400*	0.097	0.097	-0.195	-0.117
	(0.243)	(0.240)	(0.155)	(0.160)	(0.195)	(0.205)
Other Loans/Loans	-0.749**	-0.741**	0.048	0.075	-0.142	-0.166
	(0.309)	(0.310)	(0.167)	(0.174)	(0.399)	(0.390)
Loan Share HHI	0.018	0.021	0.282**	0.239*	0.334	0.343*
	(0.197)	(0.171)	(0.142)	(0.136)	(0.203)	(0.181)
Deposits/Assets	0.353**	0.341**	0.131	0.140	-0.075	-0.175
	(0.154)	(0.137)	(0.129)	(0.128)	(0.212)	(0.221)
Log(Equity Capital	-0.044	-0.044	-0.098**	-0.094*	0.013	0.028
Ratio)	(0.073)	(0.072)	(0.049)	(0.048)	(0.107)	(0.108)
Non-interest Income/	0.159	0.149	0.269	0.243	-0.818***	-0.780***
Revenue	(0.249)	(0.246)	(0.179)	(0.184)	(0.205)	(0.192)
Revenue Share HHI	0.320	0.324	0.529***	0.538***	-1.185***	-1.046***
	(0.210)	(0.209)	(0.186)	(0.189)	(0.322)	(0.324)
Observations	1513	1513	1203	1203	394	394
R-squared	0.42	0.42	0.42	0.42	0.53	0.53
F-Statistic P-Value: Retail Variables Equal 0?	0.21	0.05	0.00	0.00	0.15	0.25

This table reports the results of regressions of BHC equity market returns on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004, where the sample is split by BHC asset size in real (2004) dollars. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8
Retail Activity and Market Return Volatility by BHC Asset Size

	Less Than $1 Billion		$1 to $10 Billion		More than $10 Billion	
Retail Variables						
Retail Loans/Loans	-0.446		-0.817**		-1.259	
	(0.414)		(0.326)		(0.897)	
Retail Deposits/ Deposits	-1.686***		0.130		-0.396	
	(0.626)		(0.593)		(0.547)	
Branches/Assets	18.404**		4.490		-22.136	
	(8.422)		(6.133)		(14.220)	
First Principal Component		-0.041		-0.052		-0.162*
		(0.064)		(0.046)		(0.084)
Log of Assets	-17.049***	-17.047***	12.732***	13.094***	-1.978	-1.460
	(5.809)	(6.067)	(2.722)	(2.829)	(1.464)	(1.450)
Log of Assets Squared	0.653***	0.651***	-0.436***	-0.449***	0.055	0.041
	(0.222)	(0.232)	(0.092)	(0.095)	(0.040)	(0.040)
Loans/Assets	-0.351	-0.224	0.571	0.545	-0.296	-0.301
	(0.537)	(0.530)	(0.488)	(0.512)	(0.773)	(0.778)
C&I Loans/Loans	1.284	1.433	2.485**	2.471**	0.198	0.770
	(1.107)	(1.172)	(1.039)	(1.129)	(0.960)	(0.794)
Other Loans/Loans	1.195	1.292	1.434	1.599	2.490*	2.663**
	(1.483)	(1.563)	(1.100)	(1.153)	(1.253)	(1.237)
Loan Share HHI	1.552*	0.985	1.317**	0.988*	2.621**	2.181**
	(0.791)	(0.756)	(0.596)	(0.585)	(1.017)	(0.927)
Deposits/Assets	-0.315	0.572	-0.823	-0.742	-0.123	-0.363
	(0.791)	(0.760)	(0.598)	(0.592)	(0.884)	(0.826)
Log(Equity Capital Ratio)	-1.412***	-1.381***	-0.829***	-0.797***	-0.332	-0.311
	(0.286)	(0.291)	(0.180)	(0.184)	(0.325)	(0.335)
Non-interest Income/ Revenue	4.563***	4.590***	2.208***	2.035***	-0.605	-0.348
	(0.897)	(0.995)	(0.649)	(0.657)	(1.068)	(1.045)
Revenue Share HHI	3.163***	2.976***	1.481**	1.495**	-1.461	-0.658
	(0.771)	(0.816)	(0.652)	(0.683)	(1.573)	(1.414)
Observations	1513	1513	1203	1203	394	394
R-squared	0.21	0.19	0.33	0.32	0.70	0.69
F-Statistic P-Value: Retail Variables Equal 0?	0.01	0.52	0.04	0.25	0.14	0.06

This table reports the results of regressions of BHC equity market return volatility on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004, where the sample is split by BHC asset size in real (2004) dollars. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9
Retail Activity and Risk-Adjusted Market Returns
by BHC Asset Size

	Less Than $1 Billion		$1 to $10 Billion		More than $10 Billion	
Retail Variables						
Retail Loans/Loans	-0.034*		-0.038**		-0.006	
	(0.019)		(0.019)		(0.049)	
Retail Deposits/	-0.034		-0.018		-0.004	
Deposits	(0.027)		(0.022)		(0.047)	
Branches/Assets	-0.366		-0.199		-1.439	
	(0.296)		(0.383)		(0.944)	
First Principal		-0.008***		-0.006***		-0.006
Component		(0.003)		(0.002)		(0.007)
Log of Assets	0.554*	0.563*	0.033	0.044	-0.072	-0.032
	(0.323)	(0.322)	(0.182)	(0.182)	(0.112)	(0.100)
Log of Assets Squared	-0.021*	-0.021*	-0.001	-0.001	0.001	0.000
	(0.012)	(0.012)	(0.006)	(0.006)	(0.003)	(0.003)
Loans/Assets	-0.009	-0.008	-0.014	-0.015	0.013	0.008
	(0.026)	(0.025)	(0.024)	(0.024)	(0.051)	(0.051)
C&I Loans/Loans	-0.071	-0.075	-0.020	-0.020	-0.018	-0.012
	(0.055)	(0.054)	(0.028)	(0.025)	(0.056)	(0.058)
Other Loans/Loans	-0.115*	-0.112*	-0.074*	-0.069*	-0.102	-0.112
	(0.068)	(0.067)	(0.040)	(0.038)	(0.104)	(0.099)
Loan Share HHI	0.043	0.041	0.029	0.022	0.011	0.031
	(0.035)	(0.033)	(0.029)	(0.028)	(0.060)	(0.046)
Deposits/Assets	0.052	0.055*	0.017	0.018	-0.008	-0.031
	(0.035)	(0.031)	(0.028)	(0.028)	(0.058)	(0.061)
Log(Equity Capital	0.003	0.004	-0.007	-0.007	-0.006	-0.003
Ratio)	(0.013)	(0.012)	(0.011)	(0.011)	(0.027)	(0.028)
Non-interest Income/	-0.050	-0.053	0.033	0.029	-0.212***	-0.203***
Revenue	(0.053)	(0.052)	(0.036)	(0.037)	(0.060)	(0.062)
Revenue Share HHI	0.017	0.017	0.103***	0.105***	-0.288***	-0.268***
	(0.050)	(0.050)	(0.038)	(0.038)	(0.085)	(0.085)
Observations	1513	1513	1203	1203	394	394
R-squared	0.52	0.52	0.54	0.54	0.64	0.64
F-Statistic P-Value: Retail Variables Equal 0?	0.05	0.00	0.04	0.01	0.51	0.40

This table reports the results of regressions of BHC risk-adjusted equity market returns (average returns divided by the standard deviation of returns) on measures of retail banking intensity derived from bank holding company regulatory reports. The data are for 708 bank holding companies over the years 1997 to 2004, where the sample is split by BHC asset size in real (2004) dollars. The regressions include year dummy variables and the standard errors have been corrected to reflect the possibility of clustering by bank holding company. The rows labeled "F-Statistic P-Value: Retail Variables Equal 0?" reports the p-value of the test of statistical significance of the coefficients on the retail banking intensity measure(s). Robust standard errors are reported in parentheses. The symbols ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Figure 1

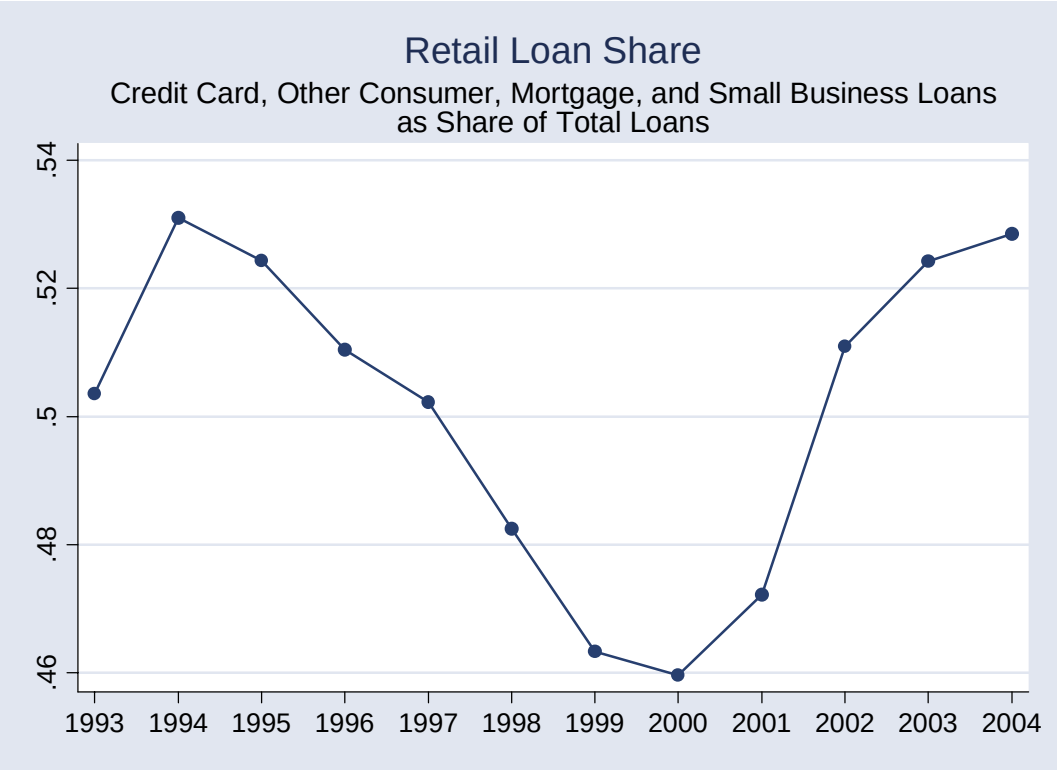

Figure 2

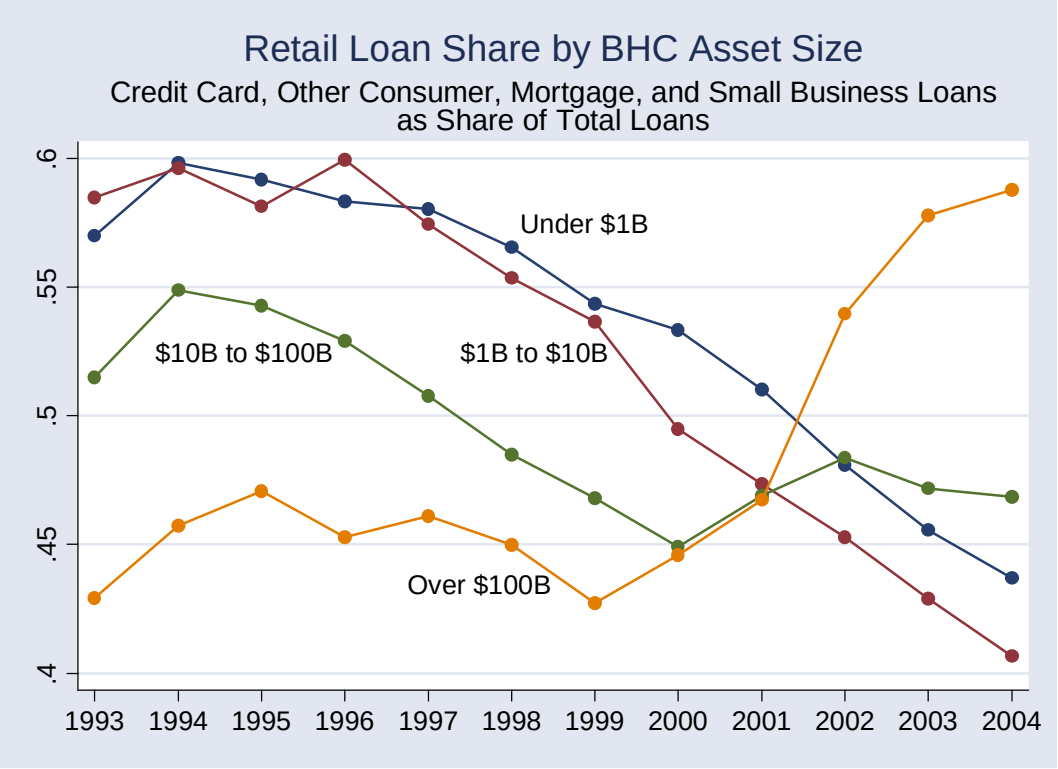

Figure 3

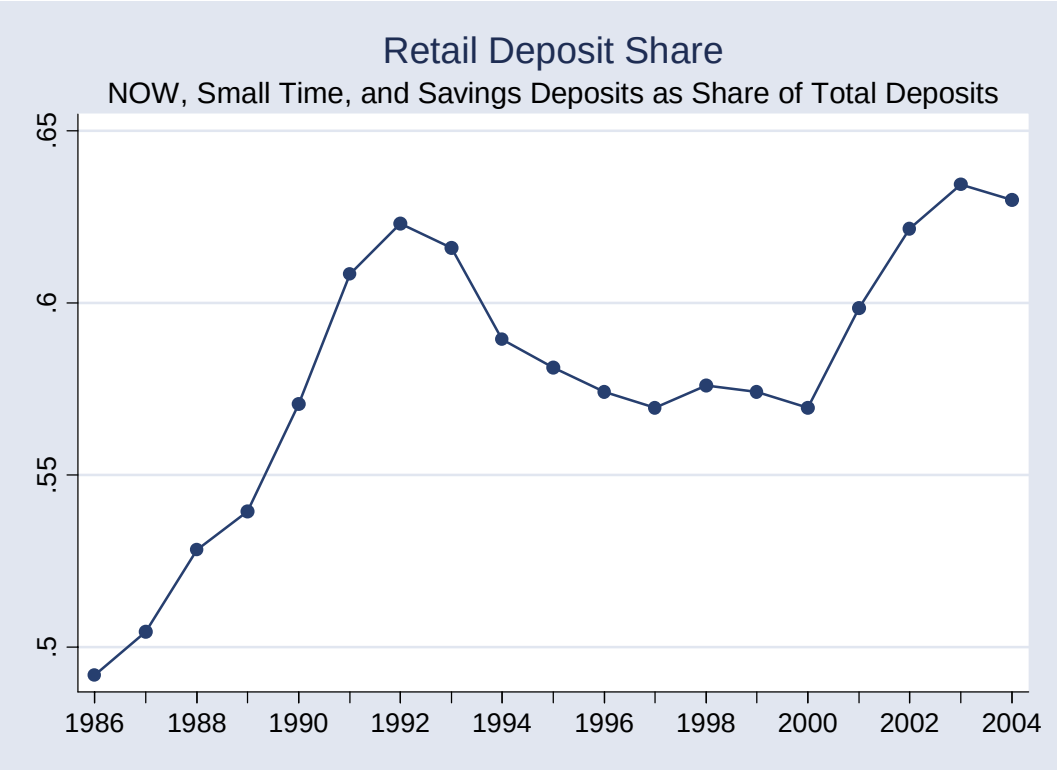

Figure 4

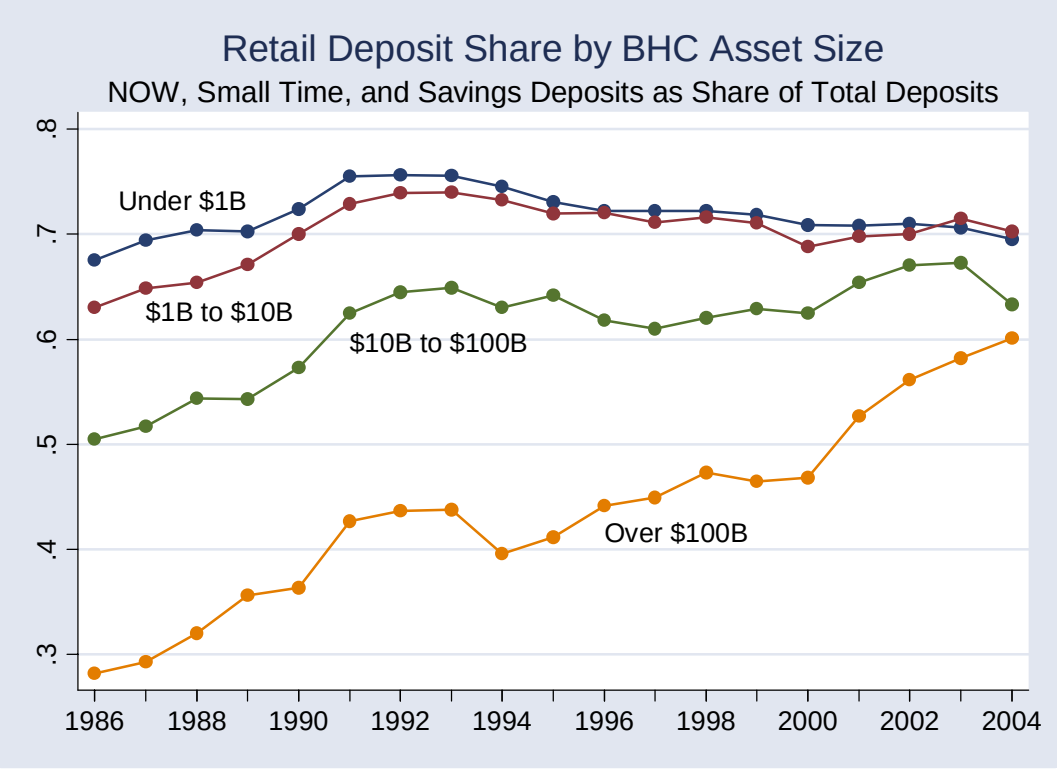

Figure 5

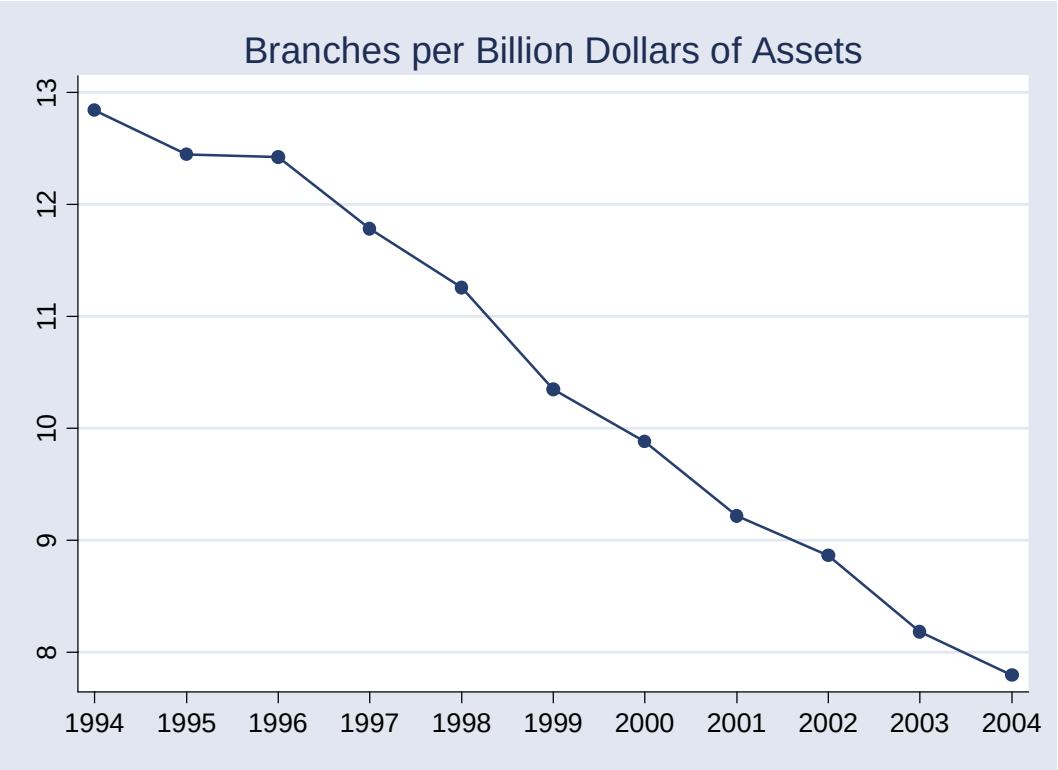

Figure 6

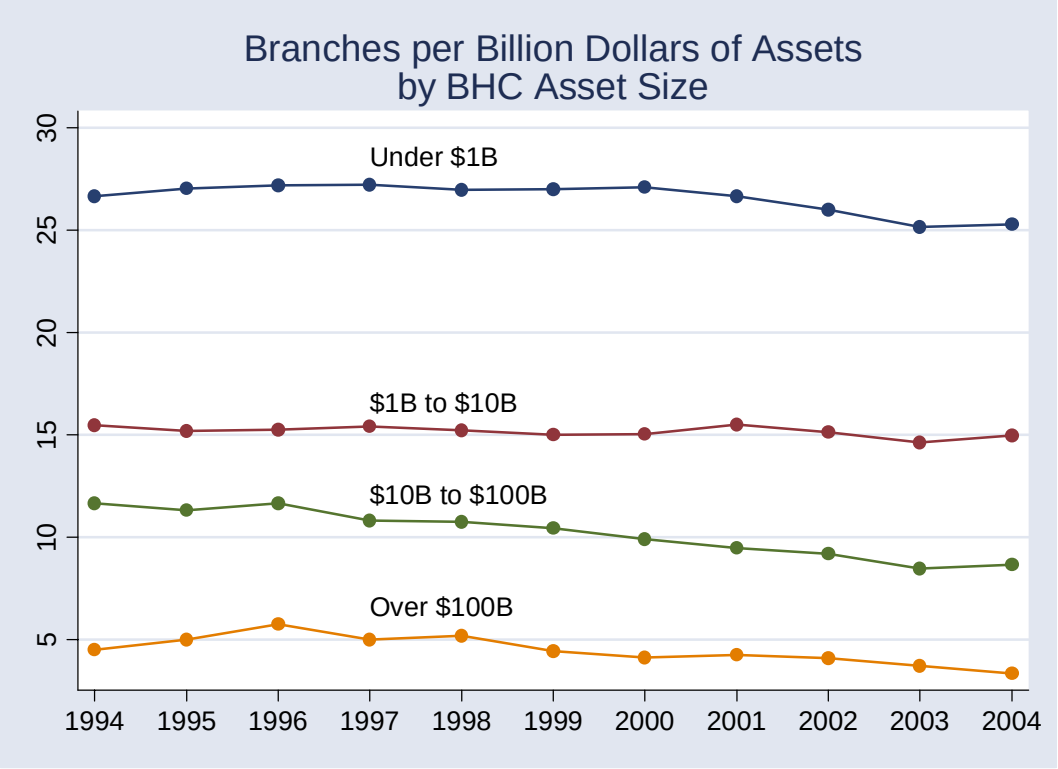

Figure 7

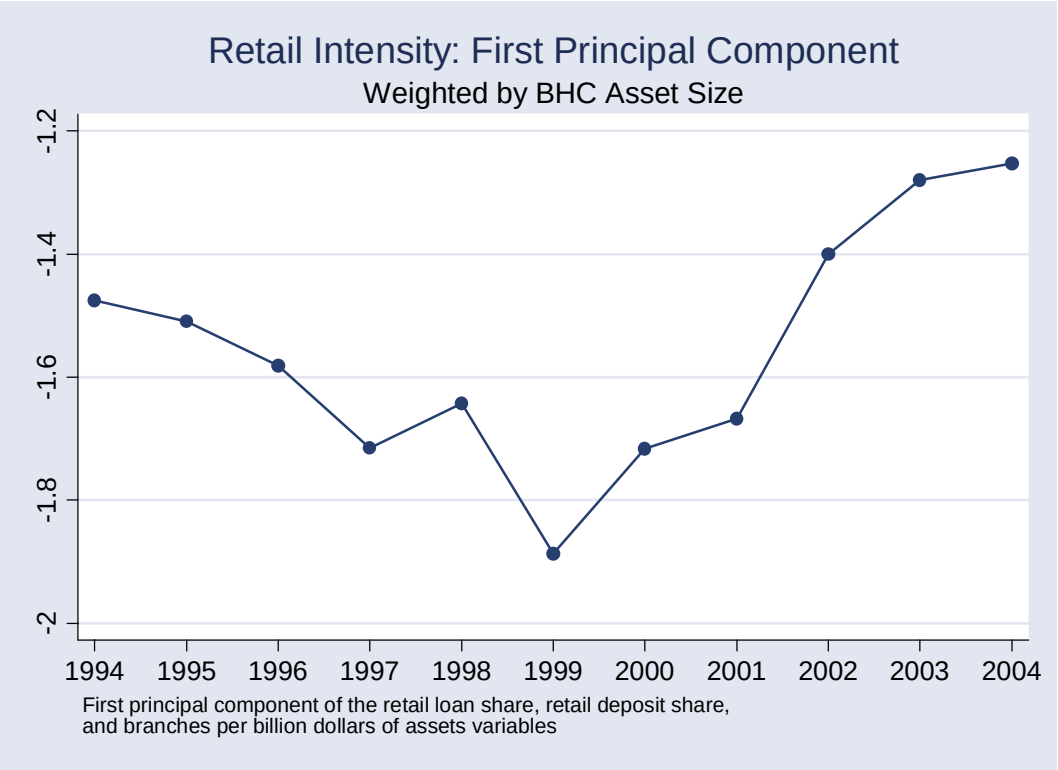

Figure 8