The Effects of Underwriting Practices on Loan Losses:

Evidence from the FDIC Survey of Bank Lending Practices*

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August 2009

Key words: Lending Standards, Loan Underwriting, Lending, Credit Cycles

JEL classification code: G21, G28, E32, E44

*The views and opinions expressed here are those of the author and do not necessarily reflect those of the Federal Deposit Insurance Corporation. The author would like to thank Steve Burton for helpful comments and suggestions, and Lynne Montgomery and Jane Coburn for assistance and information on the FDIC underwriting survey data.

Abstract

Using data from the FDIC survey of lending practices from January 1996 to March 2009, we investigate possible determinants of loan underwriting practices and the influence of these practices on loan losses. Specifically, we fit a two-step treatment effects model to consider the effects of underwriting practices on loan losses. In the selection step, we find that for business loans, the selection of low-risk underwriting practices is positively related to strong prior period bank financial condition, management quality, hierarchical complexity, and negatively related to market competition. Results for the selection of lending practices for consumer loans and three categories of real estate loans are similar to those found for business loans but show weaker statistical relationships to all explanatory variables. In the loss determination step we find that lower (higher) risk underwriting practices are generally associated with lower (higher) loan losses for five categories of loans: business, consumer, commercial real estate, home equity, and construction and land development loans. Our results support the commonly held view that credit standards vary cyclically with banking market conditions and demonstrate the important influence lending standards have on loan portfolio performance.

1. Introduction

The proximate cause of the 2007 – 2009 U.S. financial crisis is the collapse of the housing market (IMF, 2009c). That collapse followed a classic boom-bust cycle in residential real estate prices, fueled by the rapid expansion and subsequent contraction of credit made available to potential homebuyers. In the boom phase, low interest rates and strong economic growth increased the affordability of housing in the U.S to historic levels. Lenders dramatically increased mortgage originations, supported by strong market demand for mortgage backed securities which, in turn, fueled securitization activities at banks. Decreases in lending standards for residential mortgages, coupled with increases in household leverage played a significant role in the crisis (Dell'Ariccia, Igan, and Laeven, 2008). Had the expansion of credit been constrained by prudent lending standards, or alternatively, adequate financial transparency and due diligence on the part of investors in mortgage-related loan securitizations, it is possible that real estate price volatility would have been similarly constrained.[1]

The expectation that lending standards vary with macroeconomic conditions is central to many theoretical models of credit cycles: lenders relax lending standards during periods of macroeconomic expansion and tighten standards during periods of macroeconomic contraction, smoothing the overall risk profile of their institutions (Weinberg, 1995). The risk smoothing hypothesis suggests that the affects of variations in lending standards on loan portfolios can be offset, to some degree, by countervailing macroeconomic conditions. Rapid expansion of credit can lead to banking crises, however, if the boom in credit availability is accompanied by

[1] According to IMF (2009a) credit rating agencies (CRA) pursuing security issuers' fees "diluted risk assessments" of the mortgage loans that served as collateral for securities. Hedge funds and other investors, also failed to conduct due diligence, accepted CRA risk assessments, overestimated the protection of credit enhancements and underestimated liquidity risk.

substantial reductions in lending standards and increases in borrower and lender leverage (Dell'Ariccia and Marquez, 2006).

While changes in lending standards play an important role in theoretical models of credit cycles and financial crises, there is little direct evidence of the affect of lending standards on loan portfolio performance. This is because direct measures on lending criteria are, in general, not publically available. Direct measures of the lending standards include the criteria used to approve loans, loan pricing, repayment terms, sources of repayment, collateral requirements, loan portfolio management and administration, written lending policies, and adherence to polices. Since these data are typically only available from lenders or their supervisors, empirical studies rely on indirect measures of lending criteria such as loan growth, loan denial rates, and loan-to-income ratios.

The primary objective of this paper is to assess whether bank lending standards are statistically and economically significant determinants of loan portfolio performance for business, consumer, commercial real estate, home equity, and construction and land development loans. While there is evidence of the role that lax lending standards played in recent years in residential real estate markets (Dell'Ariccia, Igan, and Laeven, 2008) we are unaware of any published empirical studies on the importance of lending standards for the performance of other loan portfolios.[2] A second objective of this paper is to learn the determinants of bank lending standards. In response to the global financial crisis, the Group of Twenty (G20) Leaders called on bank supervisors to be more forward looking and, to the extent possible, dampen the procyclicality of bank regulation (e.g., capital adequacy requirements, loan-loss reserving and

[2] O'Keefe, Olin and Richardson (2003) find a relationship between the riskiness of general lending practices and total nonperforming assets but do not investigate the importance of lending standards for specific types of loan portfolios. Their study uses supervisory assessments of lending standards obtained from the FDIC Examination Supplement on Current [Loan] Underwriting Standards.

deposit insurance pricing).[3] Supervisors must understand the factors influencing bank lending standards if they are to anticipate and correct behaviors countercyclically.

2. Background and Findings

In 1995 the FDIC developed an Examination Supplement on Current Underwriting Standards—a survey that is completed by the examiner in charge at the conclusion of each FDIC safety-and-soundness examination. The survey contains over 50 questions on bank lending practices overall and on practices in specific loan categories. FDIC bank examiners assess both the risk of lending practices and the frequency of certain practices that regulators determined had contributed to the banking crises of the 1980s and early 1990s. Using these unique examination data, we investigate possible determinants of loan underwriting practices and the influence of these practices on loan losses. Specifically, we fit a treatment effects model using a two-step Heckman consistent estimator to consider the effects of an endogenously chosen binary variable (low-risk underwriting practices) on loan losses. In the selection step, we find that for business loans, the selection of low-risk underwriting practices is positively related to strong prior period bank financial condition, management quality, hierarchical complexity, and negatively related to market competition. Results for the selection of lending practices for consumer loans and three categories of real estate loans are similar to those found for business loans but show weaker statistical relationships to all explanatory variables. In the loss determination step we find that lower (higher) risk underwriting practices are generally associated with lower (higher) loan losses for five categories of loans: business, consumer, commercial real estate, home equity, and construction and land development loans. Our results support the commonly held view that credit standards vary cyclically with banking market conditions and demonstrate the important

[3] London Summit – Leaders' Statement, April 2, 2009. Group of Twenty Central Bankers and Finance Ministers.

influence lending standards have on loan portfolio performance. We believe ours is the first study to model the determinants of loan underwriting practices with the practices being characterized in terms of their risk to the bank. In addition, we believe this is the first study to consider the effect of the riskiness of lending practices on loan losses, controlling for the endogeneity of practices.

Section 3 discusses the previous literature on the determinants of banks' loan underwriting practices, as well as the determinants of loan losses. Section 4 discusses the FDIC underwriting survey and therefore our sample. Section 5 discusses the methodology we use to investigate the determinants of loan underwriting practices and loan losses. Section 6 presents our empirical results. Section 7 concludes.

3. Previous Literature

Loan underwriting practices are an amalgam of a number of things: the criteria used to approve loans, loan pricing, repayment terms, sources of repayment, collateral requirements, loan portfolio management and administration (including decisions about loan growth and concentrations), written lending policies, and adherence to polices. Given the breadth of loan underwriting practices and their effect on bank performance and credit availability there is a vast literature that bears either directly or indirectly on loan underwriting practices. This literature can be divided into studies of the relationship between organizational form and firms' decision making (Stein, 2000), studies that deal directly with the determinants of loan underwriting practices for small-business finance (Cole, Goldberg, and White, 2004; Berger, Miller, Peterson, Rajan, and Stein, 2002), studies of the effect of loan underwriting practices on credit cycles

(Berger and Udell, 2002; Rajan, 1994; Weinberg, 1995), as well as the effect of loan underwriting practices on the risk of bank failure (OCC, 1988; FDIC, 1997)

Cole, Goldberg, and White (2004)—who are primarily concerned with differences between large and small banks in their small-business lending practices—model both banks' decisions to approve loan applications and borrowers' selections of lenders (banks). Using data obtained from the 1993 Federal Reserve National Survey of Small Business Finance and bank financial reports, the authors estimate the lender and borrower choices using full information maximum likelihood estimation of two simultaneous probit equations, with controls for selection. They find that small businesses prefer to borrow from small banks and that small banks, in turn, approve small-business loan applications more often than large banks do. The authors also conclude that small banks prefer to lend to small businesses that are relatively informationally opaque, whereas large banks prefer to lend to larger businesses that are able to provide hard data on their financial condition. The Cole, Goldberg, and White (2004) study is particularly relevant to our study because their results suggest that smaller banks adopt small-business loan underwriting practices that are riskier than those of larger banks, riskier in that small banks prefer to lend to small firms that lack hard financial data to support the lending decision and riskier to the extent that the failure rates of small businesses are higher than those of larger, established firms.

Berger, Miller, Peterson, Rajan, and Stein (2002), use the 1993 Federal Reserve National Survey of Small Business Finance to analyze businesses' choices of lenders. Their results indicate among other things that smaller businesses tend to form long-term banking relationships with local, smaller banks. They argue that this occurs partly because smaller banks are more willing to make business loans to borrowers whose finances are relatively opaque. Their results

agree with those of Cole, Goldberg and White (2004), however, Berger et al. do not study banks' lending decisions directly.

Berger and Udell (2002) develop an institutional-memory hypothesis as a partial explanation of two common observations about banking cycles. The first observation is that bank lending appears to be procyclical, expanding during economic booms and contracting during economic recessions. The second is that bank loan performance, as indicated by past due and nonaccrual loans and loan losses, is also procyclical, with performance generally declining as economic conditions worsen and improving with the economy. They attribute both observations about banking cycles to changes in loan underwriting practices. Berger and Udell suggest that when bank loan officers make lending decisions, they tend to rely on past experience. Berger and Udell hypothesize that with the passage of time between problem-loan periods, loan officers' memories fade. This loss of knowledge, combined with bank employee turnover, weakens banks' institutional memory, with loan officers then repeating past mistakes. Berger and Udell suggest that the result is a relaxation of loan underwriting standards as time passes since the last problem-loan period. Conversely, they suggest that standards are tightened as bankers gain experience during a banking crisis. Berger and Udell infer lending standards from three sources: (1) measures of growth in both commercial and industrial loans and in commercial real estate loans, (2) loan-level data on interest-rate premiums from the Federal Reserve's Survey of the Terms of Bank Lending, and (3) data on overall credit standards and bank-level loan spreads from the Federal Reserve's Senior Loan Officer Opinion Survey on Bank Lending Practices. In the senior loan officer survey, bank loan officers voluntarily report whether credit terms have tightened or loosened since the previous quarter for four major loan

categories.[4] Among their sample of banks, Berger and Udell find support for the institutional-memory hypothesis when they use loan growth proxies for lending standards, but generally they do not find support for their hypothesis when they use lending-standard measures from either the Survey of the Terms of Bank Lending or the Senior Loan Officer Survey.[5] Berger and Udell's hypothesis does not suggest other reasons that lending standards might change over the business cycle. Under the institutional-memory hypothesis, the relationship between lending standards and business cycles is based solely on the suggested atrophy of loan officers' knowledge and abilities.[6]

Most academic researchers do not have access to the types of confidential survey data used by Cole, Goldberg, and White (2004) and Berger and Udell (2002). Consequently, most academic studies try to infer underwriting practices from banks' financial reports. Rapid growth in bank loans, changes in loan concentrations, and changes in loan interest rates are commonly interpreted as reflecting underlying changes in bankers' risk acceptance and, by inference, in loan underwriting standards. Supply-side explanations of the expansion of bank loans frequently suggest a relaxation of underwriting standards, whereas loan contractions are said to suggest a tightening of standards. Aside from the obvious need to control for loan demand, the extent to which changes in loan levels reflect changes in standards or in bankers' risk acceptance or in both is open to question. Loan performance is influenced by underlying economic conditions: booming economies can mitigate the risks of lowered lending standards, while contracting

[4] To measure credit standards using the senior loan officer survey, Berger and Udell use a single question taken from the survey: "over the past three months, how have your bank's credit standards for approving loan applications for C&I loans or credit lines changed?" Respondents can pick one of five possible answers: tightened considerably, tightened somewhat, remained basically unchanged, eased somewhat, and eased considerably.
[5] Berger and Udell state that in the paper their main indicator of lending standards is commercial loan growth.
[6] Berger and Udell state, "Although the institutional memory hypothesis is rooted in the bank's own loan performance problems rather than the aggregate business cycle, this hypothesis may help explain the stylized facts about bank lending over the aggregate cycle because banks tend to experience problem loans simultaneously" (2002, p.2).

economies can aggravate risks. For this reason, theoretical studies (Rajan, 1994; Weinberg, 1995) have suggested that loan underwriting practices follow a cycle associated with that of the underlying economy. Rajan (1994) hypothesizes that bank managers have short-term decision horizons because their reputations are strongly influenced by public perceptions of their performance, as evidenced by short-term earnings. Managers' reputations suffer if they fail to expand credit when the economy is expanding and bank earnings are improving. This heard behavior will result in some loans going to customers with higher default risk and, ultimately, to higher loan losses. Weinberg (1995) suggests that bank managers adjust lending standards as market conditions change, seeking to smooth overall lending risk. Weinberg hypothesizes that risk-neutral lenders increase lending during periods of economic expansion because the expected returns from investment projects improve, and therefore the expected returns from all loan customers rise. Weinberg uses data on the growth rate of total loans and loan charge-offs in the United States from 1950 to 1992 to show a pattern of increases in lending preceding increases in loan losses, and argues that these patterns are consistent with the notion of underwriting cycles.

U.S. bank regulators have relied on confidential supervisory information from bank examinations and from interviews with examiners to understand how bank management and underwriting practices shape bank performance. The Office of the Comptroller of the Currency (OCC, 1988) concludes that the dominant reason for bank failure in the early 1980s was poor bank management, which encompasses lax lending standards. A study of the causes of the banking crises of the 1980s and early 1990s (FDIC, 1997) finds that a combination of factors—economic, legislative, managerial, and regulatory—led to the banking crises. Importantly, the FDIC study finds that bank managers adjusted lending practices as economic conditions changed, increasing lending into economic and sectoral booms and reducing lending during

economic contractions. In addition, the FDIC study suggests that bank managers reacted to competition from other bankers and that this competition might have encouraged weaker lending standards.

The previously discussed studies are important to us because they identify several possible determinants of banks' loan underwriting practices. The determinants are both internal to the bank and external: (1) bank organizational form, as indicated by size and complexity, (2) bank management quality, (3) bank financial condition, (4) local economic conditions, and (5) competition from other lenders. These studies also suggest that loan losses are determined by some of these same factors (bank financial condition and local economic conditions) and by underwriting practices. Our empirical methodology (section 4) is designed to take account of these interrelationships. We next discuss the FDIC underwriting survey and our sample, followed by a discussion of our empirical methodology.

4. Data and Sample

Our sample consists of observations from the FDIC underwriting survey (completed by the examiner in charge at the conclusion of all examinations of FDIC-supervised banks) between January 1996 and March 2009. The survey covers FDIC-supervised commercial and savings banks, the vast majority of which are smaller, community banks.[7] As table 1 shows, the number of survey responses differs across loan types and practices, varying between approximately 20,000 and 9,000 observations.[8] There are several reasons for this variation in responses.

[7] As of March 31, 2009 the number and total assets of FDIC-supervised banks (industry shares in parentheses), were 4,660 (57 percent) and $1,996 billion (15 percent), respectively.

[8] In this study we focus on the loan-level survey questions for all categories of loans covered in the survey except agricultural loans and credit card loans. The reasons for the two exclusions are the relatively low risk currently in agricultural loans and the very small number of credit card lenders in the sample. The survey does not include questions on residential mortgage loans.

Examiners report survey results only if the loan category is reviewed during the examination and if the practice is relevant, given the bank's activities. A missing response for a loan category would typically occur if a bank was not actively lending in that category. Additionally, the number and frequency of survey responses are determined by congressional statute and supervisory policy on examination frequency. The Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 established minimum examination frequencies of between 12 and 18 months for all banks, and current requirements call for annual examinations for all banks except those with composite safety-and-soundness ratings (CAMELS ratings) of 1 or 2 and assets under $250 million. The FDIC shares examination responsibilities with state bank supervisors and typically alternates examinations with state supervisors unless a bank's condition is poor. As a result, one typically observes underwriting survey responses every two to three years for FDIC-supervised banks. More information about the purpose and design of the FDIC underwriting survey is provided in an appendix to this paper.

5. Methodology

The literature discussed above suggests factors that influence *both* loan underwriting practices and loan losses. As noted, we address this possibility econometrically by fitting a treatment effects model using a two-step Heckman consistent estimator to consider the effects of an endogenously chosen binary variable (low-risk underwriting practices) on loan losses. More generally, our empirical methodology is designed to test the hypothesis that there are important, unobservable factors that influence both underwriting practices and loan losses. One such unobservable factor is the state of the economy. Others factors are the states of banking market

competition and regulation. Failure to control for such unobserved factors can result in overestimation of the effect of underwriting practices on loan losses.[9]

5.1 Selection of Lending Practices

The FDIC underwriting survey asks respondents to rank the relative frequency of specific risky lending practices for a loan category, using three mutually exclusive levels of frequency: never or infrequently, frequently enough to warrant notice, and commonly or standard practice (table 1). Given the relatively low number of "commonly" responses, we combine responses of "commonly" and "frequently" into one category to simplify the estimations. There is also a high degree of similarity in examiner rankings of the riskiness of different lending practices within a loan category.[10] As a result, we measure the dependent variable in our model of the selection of lending practices using a binomial (0, 1) variable, where a value of 1 indicates a response of "never or infrequently" for *any surveyed risky lending practice within a loan category* and a value of 0 indicates a response of "commonly" or "frequently" for the same summary risk practice measure. That is, the response variable for lending practices aggregates responses across all surveyed risk practices within a loan category for a specific survey date-bank observation. As such, a value of 1 for our binomial variable is interpreted as indicating the selection of low-risk lending practices and a value of 0 is interpreted as indicating the selection of high-risk lending practices.[11] For brevity, in our discussion we treat responses of "never or

[9] See Greene (2003), pp. 787–789 for a discussion of treatment effects models.
[10] We find that for individual lending practices that there is about an 80 to 90 percent correspondence in ratings of low risk across lending practices within a loan category.
[11] We also estimated the selection model for each surveyed lending practice within loan categories separately using a binary dependent variable to indicate low and high risk lending practice selection. As before, survey responses of "never or infrequently" for *individual* practices are interpreted as low risk and all other responses interpreted as high risk. The results of estimations of the selection model using individual practices were very similar to those based on our summary risk practice measure for each loan category.

infrequently" as synonymous with the occurrence of low-risk lending practices, and responses of "frequently" or "commonly" as synonymous with the occurrence of high-risk lending practices.

Drawing upon the previous literature, we hypothesize that underwriting practices are related to lagged measures of banks' financial condition, local economic conditions, bank management quality, bank hierarchical complexity, and local market competition. We now discuss the motivation for each of these explanatory variables and each variable's expected influence on the selection of loan underwriting practices.

A bank's financial condition should reflect the cumulative effect of loan underwriting practices the bank chose in the recent past (OCC, 1988; FDIC, 1997). If a bank adopted high-risk lending practices in the past, we anticipate higher loan concentrations, as well as higher nonperforming loans and loan losses, all other things being equal. Additionally, high-risk practices will also mean high allowances for loan losses and high equity capitalization to absorb potential loan losses, assuming management properly anticipated lending risks. Accordingly, we measure financial condition using lagged values for performing loans and nonperforming loans for the loan category relevant to the lending practice. The loan categories we use are business, consumer, commercial real estate, home equity, and construction and land development.[12] Nonperforming loans consist of all loans past due 90 days or more and nonaccrual loans for the particular loan category. We normalize each loan category of performing and nonperforming loans by total gross loans and leases. In addition, we also include lagged equity and allowances

[12] The FDIC underwriting survey provides more detailed descriptions of the loan categories. Using those descriptions, we relate the survey loan categories to loans reported in quarterly Call Reports as follows: "business loans" include traditional commercial & industrial loans and business loans collateralized by real estate (commercial and agricultural real estate, excluding commercial real estate development loans); "construction loans" are construction and land development loans, including both commercial and residential real estate development; "permanent commercial (nonresidential) real estate loans" are a Call Report loan category; and "consumer loans" are all installment loans to households and individuals for personal (non-business) use, except credit card loans. Finally, home equity loans are a Call Report loan category. Loan charge-offs are those for the corresponding loan categories. Note that as defined the loan categories overlap where business loans are secured by real estate.

for loan and lease losses (both normalized by bank assets) as measures of financial condition. We do not use lagged measures of loan losses (gross loan charge-offs) as measures of financial condition in the lending practice selection model because of timing considerations and potential seasonality in loan losses.[13] Timing considerations are explained in the remainder of section 5.1 and in section 5.2.

The relationship between lagged financial condition and current lending practices should depend on the amount of time between lagged financial condition and practices. There are two possible scenarios. In the first scenario, if the time interval between lagged financial condition and current lending practices is sufficiently long, bank management may have chosen to reduce the frequency of risky practices in order to offset previous adverse outcomes (or alternatively, to accept more risk if previous outcomes were beneficial). In the first scenario if the time interval is sufficiently long, weak prior-period financial condition—as indicated by high levels of nonperforming loans, high allowances for loan losses, and low equity capitalization—would be positively related to the selection of a low-risk practice today. In contrast, if prior-period financial condition is strong, the reverse would occur.

In the second scenario, if the time interval between lagged financial condition and current lending practices is sufficiently short, bank management may not have had enough time to alter their lending practices. In the second scenario, lagged financial condition serves as an indicator of ongoing lending practices. In this situation, we anticipate relationships the exact opposite of those we hypothesized under the first scenario. That is, we anticipate that weak (strong) prior-

[13] In sum, for the lending practice selection model we relate lending practices selected in one quarter to bank financial condition in the prior quarter, as well as to other nonfinancial variables in the prior quarter. Quarterly loan losses tend to exhibit seasonality, however. To avoid the seasonality problem, we exclude loan losses from the practice selection model and use annual loan losses in the loss determination model.

period financial condition will be negatively (positively) related to the selection of low-risk practices today.

The amount of time required to alter lending practices is not known to us and likely depends on loan type and terms, especially maturity. FDIC examiners review banks' current loan portfolios when determining current lending practices, so examiners' responses largely reflect practices seen in the seasoned loan portfolio. In the selection model, however, the time interval between lagged financial condition and current practices is one quarter, so we anticipate that lagged financial condition will serve as an indicator of ongoing practices. Timing considerations are discussed in more detail in section 5.2.

Local economic conditions also have a bearing on lending practices (Rajan, 1994; Weinberg, 1995; FDIC, 1997). We anticipate that strong (weak) local economies give banks an incentive to loosen (tighten) lending standards, allowing banks to smooth fluctuations in credit risk over the business cycle. We tested alternative measures of state economic conditions in order to find those measures that best explain selection of lending practices and loan losses. Specifically, using quarterly data on state economic conditions, we tested the growth rate in state unemployment rates, growth rate in real per capita income, personal loan delinquency rates and mortgage foreclosures as a percentage of mortgage loans in the practice selection model and chose those measures exhibiting the strongest statistical significance (if any statistical significance was found). For the business loan model we measure local economic conditions using the growth rate in state unemployment rates. For all other loan categories we measure state economic conditions using mortgage loan foreclosure rates.

The overall quality of bank management, as indicated by examiner assignments of the CAMELS component rating for management quality, should also influence the choice of lending

practice in much the same way that financial condition does. Management quality ratings vary from "1" (strongest) to "5" (weakest) under the uniform financial institution rating system. If bank management has recently been determined to be of poor quality, we anticipate that ongoing lending practices will be relatively riskier than if bank management had been well rated. We measure management quality using two dummy variables for management quality ratings of "1" and "2".[14]

Studies have suggested that the extent of organizational hierarchy present in a bank influences the bank's decision-making processes, including its lending practices (Berger, Miller, Peterson, Rajan, and Stein, 2002; Cole, Goldberg, and White, 2004). The general notion is that large, complex banking organizations need hard data on loan applicants in order to approve loans. This need is largely due to the fact that in large banking organizations, second-level management reviews loan officers' work. Conversely, smaller, simpler banking organizations—where the same individual serves as both the loan officer and the loan approver—can focus on developing relationships with more informationally opaque borrowers. If a small-bank loan officer is adept at making loans to informationally opaque customers, he or she will be rewarded. But if the person had worked in a larger, more hierarchical organization, he or she would not have been able to demonstrate this ability to higher management in the absence of hard financial data from the loan applicant. To capture organizational complexity and the degree of hierarchy, we use three measures: the natural logarithm of bank assets (bank size), the number of bank employees, and a dummy variable indicating whether the bank is a member of a multibank holding company. On the basis of the previous literature, we anticipate that bank size, the number of employees, and multibank holding company membership will be positively related to

[14] We chose not to include dummy variables to indicate for management ratings of "3", "4" and "5" due to the relatively low number of ratings of "3" or worse over our sample period.

the selection of low-risk lending practices. While the aforementioned literature does not suggest benchmarks for what constitutes large and/or complex banking organizations, we anticipate that most of the FDIC-supervised banks that comprise our sample are not large and/or complex. This characteristic of our sample might limit the significance of our measures of bank size and complexity in the lending practice selection model.

The degree of competition from other lenders in a market is also expected to influence the selection of lending practices. Previous studies suggest that competitive pressures encourage banks to loosen lending standards in order to maintain market share (FDIC, 1997). To measure banking market competition, we use a Herfindahl-Hirschman Index (HHI) of county deposit concentrations, measured using bank branch deposit data contained in the Summary of Deposit (SOD) reports that banks file with their primary federal regulator each June. For other quarters of the year, we compute the HHI index by using the most recent lagged value of the SOD data.

Equation 1 presents the selection model in general form. Our dependent variable, $D^k_{j,t-4}$ is a dummy variable used to indicate the selection of low-risk lending practices for loan type *k* by bank *j* at quarter *t-4* and $Z^k_{j,t-5}$ represents a vector of the previously discussed explanatory variables as of the previous quarter (*t-5*) and $\mu_{j,t}$ is the error term for the model.[15] Equation 1 is estimated by probit regression in the first step of a two-step treatment model.

1.) $D^k_{j,t-4} = \theta' Z^k_{j,t-5} + \mu_{j,t}$

[15] Specifically, lending practices are observations from an FDIC examination that took place between 365 and 455 days prior to the end date used for loss measurement in equation 2.

5.2 Loan Losses

In the second stage of the estimation we model loan losses (gross loan charge-offs) for each loan category as being determined by lagged measures of banks' financial condition, local economic conditions, and lending practices, controlling for the endogeneity of practices. These explanatory variables overlap with the corresponding variables in the selection model and are defined identically. We now discuss the motivation for these explanatory variables and each variable's expected relationship with loan losses.

Following Dahl, O'Keefe, and Hanweck (1998), we assume that loan losses for each loan category are determined by the bank's previous financial condition as measured by lagged performing loans, nonperforming loans, equity and the allowance for loan and lease losses. Nonperforming loans are expected to be the primary source of loan losses, while performing loans are included to account for general lending risk. Loan losses, like performing and nonperforming loans, are normalized by total gross loans and leases. Using this normalization, we can measure the effect of increases in loan concentrations on loan losses, holding constant the relative shares of performing and nonperforming loans, by the sum of the coefficients for the performing and nonperforming loans. Equity capitalization might influence management's ability and willingness to recognize loan losses (especially if regulatory capital standards might become binding). We anticipate a positive relationship between equity capitalization and subsequent loan losses. Similarly, the allowance for loan losses (as a percentage of bank assets) is expected to be related to management's expectations of future loans losses and, therefore to be positively related to subsequent loan losses. Local economic conditions affect borrowers' ability to make loan payments. To control for local economic conditions, we include lagged values for state unemployment growth rates in the business loan loss model and mortgage default rates in

the consumer and real estate loan loss models. To control for the effect of lending practices on loan losses, we include a dummy variable for indicating the riskiness of the bank's chosen lending practices in the relevant loan category. This explanatory dummy variable is defined exactly like the dependent variable in equation 1. We anticipate that the use of lower-risk lending practices reduces subsequent loan losses. Finally, following Greene (2003), we control for the effect of a potentially endogenously determined dummy explanatory variable (low-risk lending practices) by including the estimated hazard rate (inverse Mills ratio) obtained from equation 1 in the loss determination model (equation 2). This control treats the unobserved variable as a missing explanatory variable and corrects the estimated coefficient for lending practices for any endogeneity.

Equation 2 shows the loan loss determination model in general form: Where $L^{k}_{j,t\,to\,t-4}$ represents gross loan charge-offs by bank j for loan type k summed for four quarters (from end of quarters t-4 to t) and normalized by total gross loans at period t, $X^{k}_{j,t-5}$ is a vector of the previously discussed determinants of gross loan charge-offs, $D^{k}_{j,t-4}$ is a dummy variable indicating whether bank j uses low-risk lending practices for loan type k (as defined in equation 1), $H^{k}_{j,t-4}$ is the hazard rate obtained from estimation of equation 1 and $\varepsilon_{j,t}$ is the error term.

$$2.)\ L^{k}_{j,t\,to\,t-4} = \beta' X^{k}_{j,t-5} + \delta D^{k}_{j,t-4} + \lambda H^{k}_{j,t-4} + \varepsilon_{j,t}$$

6. Empirical Results

In this section we present the results of univariate and multivariate statistical analyses of the causes and consequences of lending practices. As shown in table 1, the FDIC underwriting

survey includes several questions for each loan category. We study the effect of lending practices on each of five loan categories separately over the March 1996 to March 2009 period. To allow for potential variation in the affect of lending practices on loan losses over time, we estimate the treatment effects models bi-annually. We first describe univariate statistics and then move on to the multivariate analysis.

6.1 Univariate Results

Table 2 presents univariate statistics for both the dependent variables (loan charge-offs) and the explanatory variables used in the treatment effects model. The univariate statistics indicate that the highest loss rates occur for business and consumer loans, with mean four quarter charge-off rates of 0.23 and 0.13 percent of gross loans and leases, respectively. The mean four quarter charge-off rates for the remaining loan categories are lower: commercial real estate (0.06 percent), construction loans (0.02 percent), and home equity loans (0.01 percent). These average loss rates reflect the benign economic conditions banks faced over much of the time period used in this paper. These banking market conditions are very important in that our statistical analysis tests for the relationships between underwriting practices and loan losses under both benign banking market conditions (1996 to 2006) and the recent period of financial market stress (2007 to the first quarter of 2009). We believe that these banking market conditions provide us with a robust test of the influence of underwriting practices on loan losses across a range of economic conditions. Table 2 also indicates there are many outliers in our initial sample, where some

reported loss rates and performing loan levels appear to be misstated. To control for bank reporting error, we eliminate these outliers from the final sample.[16]

6.2 Multivariate Results

The results for the selection of business lending practices (tables 3 and 4) are for the most part consistent with our prior expectations and in agreement with previous studies. The selection of low-risk business lending practices is positively related to the prior quarter's performing business loans and negatively related to nonperforming business loans. Bank equity capitalization is statistically significant in three of seven model estimations; however, there is inconsistency in the coefficient sign. Allowances for loan losses are negatively related to the selection of low-risk practices, in agreement with our prior expectations. Similarly, management ratings indicating well-rated management (ratings of 1 or 2) are consistently statistically significant and positively related to selection of low-risk business lending practices. As predicted by the literature on small-business lending practices, we find that two of our proxies for complex hierarchical banking organizations—the dummy variable indicating membership in a multibank holding company and the number of bank employees—are positively related to the selection of low-risk business lending practices. Our measure of bank size, the natural logarithm of bank assets, is generally not statistically significant. One possible explanation for the asset size results is that bank asset size may be too crude a measure for organizational complexity, especially among FDIC-supervised banks, the vast majority of which are small community-based organizations. We find that our measure of market competition, the deposit market HHI, is in general negatively related to the selection of low-risk business lending practices. This result

[16] We eliminate all observations in which reported performing and nonperforming loans for a loan category exceed 100 percent of gross loans and leases or are less than zero. Similarly, observations where loss rates are less than -1 percent or greater than 100 percent of gross loans and leases are eliminated.

agrees with our prior expectations and many previous studies, which suggest that competition among banks can result in the relaxation of lending standards. Finally, we find that our measures for state-level macroeconomic conditions, the growth rate in state unemployment rates for periods *t - 4* to *t - 8*, are not statistically significant determinants of business lending practices. For brevity, those results are not shown on table 3.[17] In addition to the coefficient estimations, table 3 also shows the Pseudo R squared statistic for the overall fit of the probit model.[18] The Pseudo R squared statistics range in value between 10 percent and 13 percent and is in order with summary fit statistics reported in other studies on lending practices.[19]

The results for business loan-loss determination also agree with our prior expectations. Charge-offs on business loans are positively related to both performing and nonperforming loans. As expected, nonperforming loans have a much larger influence on loan losses than do performing loans. For example, in table 4 we see that for the 1996 – 1997 period estimates a 1 percent increase in performing business loans will increase annual loan charge-off rates 0.003 percent; however, the same increase in nonperforming loans will increase the charge-off rate 0.10 percent. As was the case for business lending-practice selection, equity capitalization is generally not statistically significant. The allowance for loan losses, however, is positively related to business loan losses. As was the case for the selection of business lending practices, we find that measures of state economic conditions are not statistically significant in the loss determination model. As a robustness check we also estimate the Chi Square statistic for a joint

[17] As robustness checks we tested alternative measures of state-level macroeconomic conditions, including the growth rates in real per capita income, growth in the rate of personal loan delinquencies, and mortgage foreclosure rates. The results for these macroeconomic control variables are very similar to those for growth in unemployment rates.

[18] The Pseudo R squared is defined here as one minus the ratio of the log likelihood function maximized with all the explanatory variables in the model to the value of the log likelihood function maximized with none of the explanatory variables (intercept only) in the model. Thus, this Pseudo R squared statistic does not control for the number of parameters estimated and should not be used to compare models when the number of regressors varies.

[19] See, for example, Berger and Udell (2002).

test of the significance of the identifying terms in the probit equation (i.e., all explanatory variables included in risk practice selection model but excluded from the charge-off model). The Chi Square statistics indicate that one can reject the null hypothesis that the coefficients on the identifying terms are all zero.

We now come to the main result of this study, the influence of lending practices on loan losses. Tables 4 shows that low-risk business lending practices reduce business loan charge-offs rates. The economic significance of lending practices is large. To see this, we return to the results in table 4 for 1996 to 1997. If a bank exhibited low-risk business lending practices as of time $t - 4$, the business loan charge-off rate (as a percentage of gross loans and leases) would fall approximately 0.20 percent. To appreciate the magnitude of this decline, one should recall that the mean business loan charge-off rate for the March 1996 to March 2009 period is 0.23 percent (table 2). Finally, the coefficient for the hazard rate is, in general, not statistically significant in table 3 indicating that the correction for the endogeneity of business lending practices does not appear to be necessary.

Tables 5 and 6 present the results of estimation of the treatment effects model for consumer loans. The results for consumer loans are very similar to those obtained for business loans. (In the interest of brevity we will henceforth point out only important differences and other interesting results.) In contrast to the results for business loans, we find that performing consumer loans are *negatively* related to the selection of low-risk consumer lending practices. One possible explanation for this result is that higher concentrations of consumer loans pose greater generic lending risk than do concentration of business loans. The effect of concentrations of consumer loans on practice selection (holding the mix of performing and nonperforming consumer loans constant) is measured by the sum of the coefficients on performing and

nonperforming consumer loans. The results for our measures of complex banking organizations indicate that the hypothesized relationships between organization form and lending practices do not extend to consumer lending. Finally, banking market competition, as measured by the HHI index for deposit market share, is not related to the selection of low-risk consumer lending practices.

The results for consumer loan-loss determination agree with our prior expectations. Charge-offs on consumer loans are positively related to both performing and nonperforming loans. As expected, nonperforming loans have a much larger influence on loan losses than do performing loans. For example, in table 6 we see that in the 1996 – 1997 period, a 1 percent increase in performing consumer loans will increase annual loan charge-off rates 0.009 percent; however the same increase in nonperforming loans will increase the charge-off rate 0.60 percent. Table 6 also shows that consumer loan losses are, in general, positively related to mortgage foreclosure rates. Importantly, as for business loans, we find a strong negative relationship between the selection of low-risk consumer lending practices and subsequent loan losses. The economic significance of lending practices is also very large for consumer loans. For example, table 6 shows that for the 1996 – 1997 period, banks that exhibited low-risk consumer lending practices reduced consumer loan charge-off rates by approximately 0.26 percent. To gauge the magnitude of this decline, one should recall that the mean consumer loan charge-off rate for the March 1996 to March 2009 period is 0.13 percent (table 2).

Tables 7 through 12 present the results of estimation of the treatment effects model for three categories of real estate loans: construction and land development loans, commercial real estate and home equity loans. Although the results are generally consistent with our expectations, the overall significance of the explanatory variables of the treatment effects model

is weaker than is seen for business and consumer loans. We do find, however, that lending practices are important determinants of real estate loan loss rates, particularly in the post 2002 period. We believe the weak results for real estate loans are due largely to the very low loss rates experienced during most of the sample period (table 2).

7. Conclusions

We find that loan losses for business, consumer and three categories of real estate loans are strongly influenced by loan underwriting practices, as characterized by the frequency of specific risky practices. We also find evidence that lending practices for business loans are determined by banks' prior-period financial condition, management quality, hierarchical complexity, and market competition, but these factors are not strongly related to consumer and real estate lending practices. We base these conclusions on estimates of two-step treatment effects models that control for the endogeneity of dummy explanatory variables for lending practices.

Our findings add to the literature on loan-loss determination in two important ways. First, ours is the first study to present evidence of lending practice selection for specific types of loans, with the practices being characterized by their risk to the bank. We believe that the dependent variables in our practice selection model (FDIC-underwriting-survey data on practices) are direct measures of actual lending practices rather than proxies for practices. Importantly, FDIC-underwriting-survey data on lending practices are defined in terms of the risk of practices known to have led to bank and thrift failures. Second, we find that lending practices have a statistically significant and economically large affect on loan portfolio losses. We believe our findings reinforce the usefulness of bank supervisors' monitoring of bank loan underwriting

practices and show that underwriting practices are altered as market conditions change. This latter result is a useful explanation of the need for frequent on-site examinations, as required by FDICIA, and explains previous research showing that the informational content of bank examination ratings deteriorates quickly.[20]

[20] Hirtle and Lopez (1999) estimate that the private supervisory information contained in CAMELS ratings decays within 6 to 12 quarters of an examination. They state that the decay occurs more quickly for banks with composite CAMELS ratings of 3, 4, or 5 than for well-rated banks.

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Appendix

Purpose and Design of the FDIC Examination Supplement on current Underwriting Standards

In early 1995, the FDIC began to require that a supplementary examination questionnaire on current underwriting practices at FDIC-supervised banks be filled out at the end of each FDIC-supervised bank examination. The questionnaire focuses on three topics: material changes in underwriting practices for new loans, the overall degree of risk in underwriting practices for new loans, and the frequency of specific risks in underwriting practices within major categories of loans (business, consumer, commercial [nonresidential] real estate, agricultural, construction, home equity, and credit card loans). Examiners are also asked to report whether the institution is active in additional loan categories (unguaranteed portions of Small Business Administration [SBA] loans, subprime loans [automobiles, mortgages], dealer paper loans, low-/no-document business loans, high loan-to-value-ratio home equity loans [up to 125 percent], or any category of loan not mentioned). The systematic collection and analysis of questionnaire responses provides an early-warning mechanism for identifying potential lending problems.

Examiners evaluate underwriting practices in terms of FDIC supervisory practices. **Until October 1, 1998**, examiners were asked to rate the risk associated with a bank's underwriting practices in relative terms: "above average," "average," or "below average." **Beginning October 1, 1998,** examiners began rating the risk associated with a bank's underwriting practices in absolute terms: "low," "medium," or "high." New questions about underwriting practices were also added to the questionnaire. Examiners continue to classify the frequency of specific risky underwriting

practices as “never or infrequently,” “frequently enough to warrant notice,” or, if the risky practice is used more often, “commonly or as standard procedure.”[21]

As noted above, the questionnaire is completed at the end of each bank examination the FDIC conducts. Which banks are included during a reporting period, therefore, depends on how the FDIC schedules bank examinations. Examination schedules are heavily influenced by the financial condition of a bank, with the examinations generally becoming more frequent the poorer a bank's financial condition. In addition, the FDIC shares examination authority of state-chartered nonmember banks (those that are not members of the Federal Reserve System) with state bank regulators. To avoid excessive regulatory burden, the FDIC generally alternates examinations with state regulators, and the latter do not fill out questionnaires. Finally, examination schedules are affected by the availability of examination staff. For these reasons the group of banks included in any given report is not randomly selected and therefore may not be representative of the population of FDIC-supervised banks.

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[21] **Never or infrequently:** The institution does not engage in the practice, or does so only to an extent that does not warrant notice by bank supervisors. **Frequently enough to warrant notice:** The institution engages in the practice often enough for it to be brought to the attention of bank supervisors. There may or may not be factors that offset the risks the practice imposes on the institution. **Commonly or as standard procedure:** The practice is either common or standard at the institution and therefore should be brought to the attention of bank supervisors. There may or may not be factors that offset the risks the practice imposes on the institution.

Table 1. Examiner Responses for Underwriting Practices by Loan Type (January 1996 – March 2009)

Question	Responses	Number	Percent
Business Loans			
To what extent does the institution make business loans without a clear and reasonably predictable source of repayment?	Never or infrequently	20,348	85.3%
	Frequently enough to warrant notice	3,122	13.1%
	Commonly or as standard procedure	390	1.6%
To what extent does the institution make business loans to borrowers who lack documented financial strength to support such lending?	Never or infrequently	18,972	79.5%
	Frequently enough to warrant notice	4,411	18.5%
	Commonly or as standard procedure	467	2.0%
With respect to asset-based business loans, to what extent does the institution fail to monitor collateral?	Never or infrequently	11,437	79.5%
	Frequently enough to warrant notice	2,537	17.6%
	Commonly or as standard procedure	419	2.9%
Construction Loans			
To what extent is the institution funding construction projects on a speculative basis (i.e., without meaningful pre-sale, pre-lease, or take-out commitments)?	Never or infrequently	4,196	73.1%
	Frequently enough to warrant notice	1,252	21.8%
	Commonly or as standard procedure	292	5.1%
To what extent are residential or commercial real estate development loans made without consideration of repayment sources other than the project being funded? (Refer only to those loans where the institution has not set loan terms, such as collateral, pricing, and loan-to-value ratios, that fully mitigate the need to consider an outside repayment source.)	Never or infrequently	13,258	84.4%
	Frequently enough to warrant notice	2,036	13.0%
	Commonly or as standard procedure	413	2.6%
When alternative repayment sources are required, to what extent does the institution fail to take appropriate steps to verify the quality of these sources?	Never or infrequently	13,218	84.2%
	Frequently enough to warrant notice	2,087	13.3%
	Commonly or as standard procedure	388	2.5%
To what extent does the institution fail to use realistic appraisal values relative to the current economic environment and/or to the performance observed on similar credits?	Never or infrequently	13,621	86.7%
	Frequently enough to warrant notice	1,852	11.8%
	Commonly or as standard procedure	231	1.5%
To what extent does the institution fund, or defer, interest payments (for example, through interest reserves) during the term of its residential or commercial real estate development loans?	Never or infrequently	10,570	75.9%
	Frequently enough to warrant notice	2,050	14.7%
	Commonly or as standard procedure	1,312	9.4%
To what extent does the institution fund 100% of the cost of construction and land, with no cash equity on the part of the borrower/developer?	Never or infrequently	11,511	85.5%
	Frequently enough to warrant notice	1,621	12.0%
	Commonly or as standard procedure	334	2.5%

Table 1. Continued

Examiner Responses for Underwriting Practices by Loan Type (January 1996 - March 2009)

Question	Responses	Number	Percent
Commercial Real Estate Loans			
To what extent are commercial real estate loans made without consideration of repayment sources other than the project being funded?	Never or infrequently	17,809	88.0%
	Frequently enough to warrant notice	2,146	10.6%
	Commonly or as standard procedure	284	1.4%
To what extent does the institution make interest-only, extended amortization, or negative amortization permanent commercial real estate loans?	Never or infrequently	18,355	90.7%
	Frequently enough to warrant notice	1,672	8.3%
	Commonly or as standard procedure	221	1.1%
To what extent does the institution make short-term commercial real estate loans ("mini-perms") with minimal amortization terms and large "balloon" payments at maturity?	Never or infrequently	16,307	80.5%
	Frequently enough to warrant notice	3,190	15.8%
	Commonly or as standard procedure	752	3.7%
To what extent does the institution fail to use realistic appraisal values relative to the current economic environment and/or performance observed on similar credits?	Never or infrequently	18,253	90.1%
	Frequently enough to warrant notice	1,861	9.2%
	Commonly or as standard procedure	148	0.7%
Consumer Loans			
To what extent does the institution make "secured" consumer loans without adequate collateral protection?	Never or infrequently	15,803	84.8%
	Frequently enough to warrant notice	2,437	13.1%
	Commonly or as standard procedure	399	2.1%
To what extent does the institution make consumer loans to borrowers who lack demonstrable ability to repay?	Never or infrequently	15,220	81.7%
	Frequently enough to warrant notice	2,937	15.8%
	Commonly or as standard procedure	463	2.5%
Home Equity Loans			
To what extent does the institution make home equity loans that push mortgage indebtedness above 90 percent of collateral value?	Never or infrequently	7,942	87.8%
	Frequently enough to warrant notice	943	10.4%
	Commonly or as standard procedure	157	1.7%
To what extent does the institution qualify borrowers for home equity credit on the basis of loan rates that are initially discounted ("teaser rates")?	Never or infrequently	8,875	98.3%
	Frequently enough to warrant notice	113	1.3%
	Commonly or as standard procedure	38	0.4%

Table 2. Sample Characteristics

	Number of Observations	Mean	Median	Standard Deviation	Min	Max	1st Percentile	99th Percentile
Performing business loans	43,568	37.28	37.13	19.85	0.00	100.00	0.00	88.10
Nonperforming business loans	43,568	0.72	0.33	2.17	0.00	89.52	0.00	5.62
Business loan gross chargeoffs (yr)	43,568	0.23	0.08	0.83	-0.96	82.23	0.00	2.43
Performing commercial real estate loans	43,568	17.53	15.99	12.64	0.00	100.00	0.00	59.30
Nonperforming commercial real estate loans	43,568	0.34	0.09	0.77	0.00	22.23	0.00	3.49
Commercial real estate loan gross chargeoffs (yr)	43,568	0.06	0.00	0.25	-0.81	25.89	0.00	0.96
Performing construction & development loans	43,568	4.31	2.73	5.14	0.00	60.75	0.00	24.56
Nonperforming construction & development loans	43,568	0.13	0.00	1.14	0.00	100.00	0.00	2.05
Construction & development loan gross chargeoffs (yr)	43,568	0.02	0.00	0.14	-0.27	9.03	0.00	0.45
Performing consumer loans	43,568	11.73	8.43	12.03	0.00	100.00	0.00	53.06
Nonperforming consumer loans	43,568	0.07	0.02	0.52	0.00	91.94	0.00	0.64
Consumer loan gross chargeoffs (yr)	43,568	0.13	0.06	0.43	-0.48	30.48	0.00	0.94
Performing home equity loans	43,568	31.73	27.99	22.63	0.00	100.00	0.00	94.33
Nonperforming home equity loans	43,568	0.03	0.00	0.13	0.00	4.83	0.00	0.52
Home equity loan gross chargeoffs (yr)	43,568	0.01	0.00	0.15	-0.38	25.89	0.00	0.17
Herfindahl-hirschman Index	33,832	1,954	1,726	1,145	405	10,000	580	6,622
Natural logarithm of bank assets	43,568	13.79	13.32	1.45	7.69	21.00	11.27	18.40
Equity-to-assets	43,568	9.36	8.30	5.14	0.41	99.08	4.93	30.65
Allowance for loan losses-to-assets	43,568	1.10	0.92	0.89	0.00	28.88	0.04	4.71

Note: All financial variables are expressed as percentages of gross loans and leases, unless otherwise stated.

Table 3. Selection of Low-risk Business Lending Practices

Explanatory Variables	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing business loans/Gross loans,(t-5)	0.000	0.010 ***	0.003	0.007 ***	0.006 ***	0.007 ***	0.000
	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Nonperforming business loans/Gross loans,(t-5)	-0.034	-0.045 *	-0.133 ***	-0.114 ***	-0.059 *	-0.140 ***	-0.124 ***
	(0.038)	(0.026)	(0.025)	(0.032)	(0.031)	(0.034)	(0.044)
Equity/Assets,(t-5)	0.002	-0.018 **	-0.007	-0.010	0.026 **	0.014	0.033 ***
	(0.022)	(0.008)	(0.008)	(0.009)	(0.011)	(0.009)	(0.012)
Allowance for loan losses/Assets, (t-5)	0.152	-0.030	-0.053	-0.132 *	-0.257 ***	-0.291 ***	-0.343 ***
	(0.171)	(0.068)	(0.063)	(0.073)	(0.066)	(0.076)	(0.085)
Management rating = 1 dummy, (t-5)	1.131 ***	1.096 ***	1.047 ***	1.048 ***	1.126 ***	0.911 ***	0.885 ***
	(0.271)	(0.124)	(0.116)	(0.110)	(0.121)	(0.124)	(0.139)
Management rating = 2 dummy, (t-5)	0.716 ***	0.544 ***	0.499 ***	0.497 ***	0.489 ***	0.393 ***	0.540 ***
	(0.167)	(0.097)	(0.097)	(0.091)	(0.091)	(0.097)	(0.117)
Member multibank holding co. dummy, (t-5)	0.373 *	0.014	0.273 ***	0.258 ***	0.302 ***	0.124	0.382 ***
	(0.211)	(0.086)	(0.092)	(0.090)	(0.101)	(0.101)	(0.138)
log_e (assets), (t-5)	-0.249 *	-0.066	0.034	-0.047	-0.017	-0.012	0.036
	(0.138)	(0.061)	(0.054)	(0.049)	(0.056)	(0.057)	(0.065)
Number of employees, (t-5)	0.005 *	0.003 ***	0.001 *	0.002 **	0.002 **	0.002 **	0.002 *
	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Herfindahl-Hirschman Index/1000, (t-5)	-0.091 **	-0.054 ***	-0.049 **	-0.063 ***	-0.026	0.006	-0.031
	(0.038)	(0.021)	(0.020)	(0.020)	(0.021)	(0.021)	(0.025)
Constant	3.795 ***	1.289 **	0.484	1.376 **	0.714	0.796	0.264
	(1.449)	(0.655)	(0.601)	(0.559)	(0.630)	(0.657)	(0.758)
Observations	1,378	2,740	3,131	3,239	3,180	3,060	1,814
Pseudo R Squared	0.1245	0.0989	0.1193	0.1031	0.1313	0.1159	0.1207

Notes: The dependent variable is a dummy variable indicating the selection of the low-risk lending practice. The selection model is estimated by probit regression and is the first step of a two-step treatment regression. The explanatory variables, lagged growth rates in state unemployment rates for periods t-5 to t-8, are not shown. The table presents estimated coefficients (and standards errors in parentheses): * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 4. Business Loan Charge-offs and Low-risk Lending Practices

Explanatory Variables	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing business loans/Gross loans,(t-5)	0.003 ***	0.003 ***	0.003 ***	0.002 ***	0.002 ***	0.002 ***	0.004 ***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Nonperforming business loans/Gross loans,(t-5)	0.105 ***	0.125 ***	0.113 ***	0.090 ***	0.091 ***	0.096 ***	0.119 ***
	(0.006)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.012)
Equity/Assets,(t-5)	0.004	0.000	0.002	-0.002	0.004 *	-0.002	-0.004 **
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Allowance for loan losses/Assets, (t-5)	0.151 ***	0.102 ***	0.142 ***	0.215 ***	0.210 ***	0.085 ***	0.142 ***
	(0.020)	(0.018)	(0.016)	(0.017)	(0.014)	(0.014)	(0.021)
State unemployment growth rate, (t-5)	-0.011 ***	0.001	-0.001	0.001	0.001	0.000	0.003
	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
State unemployment growth rate, (t-6)	0.000	0.001	0.001	-0.003 **	0.001	0.000	-0.002
	(0.003)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
State unemployment growth rate, (t-7)	0.000	0.001	0.000	-0.001	0.000	0.000	0.003
	(0.003)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
State unemployment growth rate, (t-8)	-0.003	-0.003	0.000	0.000	0.002	0.000	0.002
	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Low-risk business lending practices, (t-4)	-0.201 ***	-0.133 ***	-0.169 ***	-0.134 ***	-0.239 ***	-0.093 ***	-0.150 ***
	(0.040)	(0.038)	(0.032)	(0.031)	(0.030)	(0.026)	(0.040)
Hazard	0.018	0.032	0.012	-0.012	0.071 ***	0.004	0.000
Standard error	(0.029)	(0.025)	(0.022)	(0.020)	(0.020)	(0.018)	(0.027)
Observations	1,378	2,740	3,131	3,239	3,180	3,060	1,814
Chi square	35.9	98.7	119.9	128.9	118.2	75.6	65.2
Prob > Chi square	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The table presents the estimated coefficients (and standard errors in parentheses) of a model of the determinants of gross loan charge-offs. The dependent variable is annual gross business loan charge-offs as a percentage of gross loans and leases. The model is estimated as the second step in a two-step treatment effects model. * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 5. Selection of Low-risk Consumer Lending Practices

Explanatory Variables	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing consumer loans/Gross loans,(t-5)	-0.012 **	-0.014 ***	-0.008 ***	-0.018 ***	-0.021 ***	-0.009 **	-0.014 ***
	(0.005)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)
Nonperforming consumer loans/Gross loans,(t-5)	-0.477 ***	-0.418 ***	-0.858 ***	-0.403 ***	-0.191 **	-0.514 ***	-0.953 ***
	(0.151)	(0.076)	(0.114)	(0.098)	(0.088)	(0.163)	(0.248)
Equity/Assets,(t-5)	-0.001	0.018 *	0.015	-0.003	0.014	0.010	0.048 ***
	(0.016)	(0.010)	(0.009)	(0.008)	(0.011)	(0.009)	(0.015)
Allowance for loan losses/Assets, (t-5)	-0.065	-0.121 *	-0.109 *	-0.194 ***	-0.242 ***	-0.256 ***	-0.320 ***
	(0.106)	(0.069)	(0.064)	(0.069)	(0.062)	(0.070)	(0.095)
Mortgage foreclosures as % of loans, (t-5)	0.549	0.865 **	-0.135	-0.730 ***	0.140	0.354	-0.050
	(0.568)	(0.405)	(0.308)	(0.227)	(0.263)	(0.280)	(0.266)
Management rating = 1 dummy, (t-5)	1.010 ***	0.760 ***	0.833 ***	0.866 ***	0.980 ***	0.950 ***	1.060 ***
	(0.204)	(0.127)	(0.119)	(0.111)	(0.123)	(0.134)	(0.184)
Management rating = 2 dummy, (t-5)	0.569 ***	0.416 ***	0.419 ***	0.324 ***	0.475 ***	0.450 ***	0.398 ***
	(0.142)	(0.106)	(0.102)	(0.095)	(0.098)	(0.109)	(0.142)
Member multibank holding co. dummy, (t-5)	0.325 **	0.092	0.192 **	0.090	0.105	-0.015	-0.004
	(0.154)	(0.090)	(0.092)	(0.090)	(0.101)	(0.109)	(0.155)
log_e (assets), (t-5)	-0.101	-0.020	0.048	0.044	0.051	0.138 ***	0.193 ***
	(0.075)	(0.038)	(0.038)	(0.042)	(0.055)	(0.041)	(0.059)
Number of employees, (t-5)	0.001	0.000	0.000	0.000	0.001	0.000	0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Herfindahl-Hirschman Index/1000, (t-5)	-0.080 **	0.002	-0.038 *	-0.027	-0.019	-0.016	0.009
	(0.032)	(0.024)	(0.021)	(0.020)	(0.022)	(0.023)	(0.031)
Constant	2.289 ***	0.963 **	0.598	1.147 **	0.474	-0.544	-1.363 *
	(0.863)	(0.449)	(0.449)	(0.510)	(0.630)	(0.530)	(0.719)
Observations	1,286	2,247	2,838	2,751	2,511	2,202	1,283
Pseudo R Squared	0.1241	0.0940	0.1353	0.1288	0.1405	0.1280	0.1756

Notes: The dependent variable is a dummy variable indicating the selection of the low-risk lending practice. The selection model is estimated by probit regression and is the first step of a two-step treatment regression. The table presents estimated coefficients (and standards errors in parentheses): * denotes significance at 10
** significance at 5%; *** significance at 1%

Table 6. Consumer Loan Charge-offs and Low-risk Lending Practices

Explanatory Variable	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing consumer loans/Gross loans,(t-5)	0.009 ***	0.015 ***	0.012 ***	0.011 ***	0.010 ***	0.016 ***	0.020 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Nonperforming consumer loans/Gross loans,(t-5	0.604 ***	0.368 ***	0.203 ***	0.294 ***	0.382 ***	0.060 **	0.176 ***
	(0.034)	(0.033)	(0.031)	(0.023)	(0.017)	(0.026)	(0.057)
Equity/Assets,(t-5)	0.001	0.009 ***	0.001	-0.001	-0.003 **	-0.001	0.001
	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Allowance for loan losses/Assets, (t-5)	0.091 ***	0.305 ***	0.301 ***	0.120 ***	0.091 ***	0.123 ***	0.105 ***
	(0.016)	(0.023)	(0.014)	(0.014)	(0.009)	(0.010)	(0.018)
Mortgage foreclosures as % of loans, (t-5)	0.316 ***	0.324 **	0.162 ***	0.032	0.057 *	-0.015	-0.006
	(0.081)	(0.127)	(0.061)	(0.042)	(0.033)	(0.038)	(0.044)
Low-risk consumer lending practices, (t-4)	-0.258 ***	-0.680 ***	-0.416 ***	-0.170 ***	-0.131 ***	-0.160 ***	-0.195 ***
	(0.036)	(0.056)	(0.031)	(0.026)	(0.021)	(0.024)	(0.040)
Hazard	0.061 ***	0.3374 ***	0.1775 ***	0.023	0.048 ***	0.055 ***	0.0804 ***
Standard error	(0.024)	(0.035)	(0.020)	(0.018)	(0.014)	(0.016)	(0.027)
Observations	1,286	2,247	2,838	2,751	2,511	2,202	1,283
Chi square	41.2	40.1	68.4	87.3	84.7	71.8	47.9
Prob > Chi square	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: The table presents the estimated coefficients (and standard errors in parentheses) of a model of the determinants of gross loan charge-offs. The dependent variable is annual gross consumer loan charge-offs as a percentage of gross loans and leases. The model is estimated as the second step in a two-step treatment effects model. * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 7. Selection of Low-risk Construction and Land Development Lending Practices

	1996 - 1996	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing construction loans/Gross loans,(t-5)	0.004	-0.011	-0.018 **	-0.006	0.002	-0.012 **	-0.011 **
	(0.021)	(0.009)	(0.008)	(0.007)	(0.010)	(0.005)	(0.005)
Nonperforming construction loans/Gross loans,(t-5)	-0.394 **	-0.132	-0.375 ***	-0.274 **	-0.039	-0.175	-0.173 ***
	(0.195)	(0.212)	(0.128)	(0.138)	(0.131)	(0.196)	(0.061)
Equity/Assets,(t-5)	-0.023	0.049	-0.017	-0.027	-0.009	0.064 **	0.027
	(0.046)	(0.033)	(0.026)	(0.017)	(0.030)	(0.030)	(0.020)
Allowance for loan losses/Assets, (t-5)	-0.317	-0.166	0.018	-0.087	-0.372 **	-0.667 ***	-0.412 **
	(0.304)	(0.198)	(0.209)	(0.181)	(0.173)	(0.167)	(0.162)
Mortgage foreclosures as % of loans, (t-5)	-1.012	-0.477	0.585	-0.150	-0.152	-0.039	0.685 **
	(1.102)	(0.768)	(0.850)	(0.554)	(0.641)	(0.459)	(0.337)
Management rating = 1 dummy, (t-5)	0.577	0.537 *	0.544 **	0.738 ***	0.928 ***	0.250	0.383 *
	(0.490)	(0.287)	(0.256)	(0.242)	(0.296)	(0.265)	(0.215)
Management rating = 2 dummy, (t-5)	0.641 *	0.305	0.782 ***	0.490 **	0.851 ***	0.133	0.264
	(0.371)	(0.232)	(0.252)	(0.203)	(0.248)	(0.231)	(0.190)
Member multibank holding co. dummy, (t-5)	0.500	0.058	-0.215	0.108	6.962	-0.033	0.297
	(0.502)	(0.198)	(0.191)	(0.210)	0.000	(0.186)	(0.214)
log_e (assets), (t-5)	-0.536	-0.128	-0.176	-0.092	-0.370	-0.046	-0.067
	(0.343)	(0.127)	(0.120)	(0.091)	(0.177)	(0.107)	(0.083)
Number of employees, (t-5)	0.009	0.001	0.001	0.000	0.002	0.000	0.000
	(0.006)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.000)
Herfindahl-Hirschman Index/1000, (t-5)	-0.067	-0.111 **	-0.129 ***	0.025	0.034	0.045	0.083
	(0.082)	(0.0439)**	(0.044)	(0.056)	(0.071)	(0.051)	(0.053)
Constant	8.457 **	3.299 **	4.250 ***	3.195 ***	6.312 ***	2.718 **	2.074 *
	(3.699)	(1.418)	(1.430)	(1.150)	(2.141)	(1.355)	(1.102)
Observations	859	1,310	1,860	2,056	2,032	2,257	1,403
Pseudo R Squared	0.1988	0.0675	0.1519	0.0724	0.1668	0.0996	0.1286

Notes: The dependent variable is a dummy variable indicating the selection of the low-risk lending practice. The selection model is estimated by probit regression and is the first step of a two-step treatment regression. The table presents estimated coefficients (and standards errors in parentheses): * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 8. Construction Loan Charge-offs and Low-risk Lending Practices

	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2008
Performing construction loans/Gross loans,(t-5)	0.001	0.000 ***	0.000	0.001 *	0.000	0.001 ***	0.020 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)
Nonperforming construction loans/Gross loans,(t-5)	0.045 ***	0.005	0.072 ***	0.126 ***	0.066 ***	0.030 ***	0.341 ***
	(0.009)	(0.004)	(0.006)	(0.008)	(0.006)	(0.007)	(0.056)
Equity/Assets,(t-5)	0.000	0.000	0.000	0.001 **	-0.001	0.001 *	-0.002
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.008)
Allowance for loan losses/Assets, (t-5)	0.021 ***	0.006 ***	0.009 **	0.000	0.055 ***	0.017 ***	0.021
	(0.006)	(0.002)	(0.004)	(0.006)	(0.006)	(0.005)	(0.105)
Mortgage foreclosures as % of loans, (t-5)	0.066 ***	0.006	0.038 **	0.013	-0.001	0.022 **	0.489 ***
	(0.023)	(0.009)	(0.016)	(0.017)	(0.018)	(0.011)	(0.188)
Low-risk construction lending practices, (t-4)	-0.034 ***	-0.002	-0.015 *	-0.020 *	-0.038 ***	-0.033 ***	-0.507 ***
	(0.013)	(0.004)	(0.008)	(0.011)	(0.013)	(0.008)	(0.180)
Hazard	0.045 ***	-0.002	-0.010	-0.010	-0.046 ***	-0.005	0.146
Standard error	(0.011)	(0.004)	(0.007)	(0.009)	(0.012)	(0.007)	(0.129)
Observations	859	1,310	1,860	2,056	2,032	2,257	1,403
Chi square	6.0	10.2	19.8	11.3	14.8	2.0	9.0
Prob > Chi square	0.43	0.12	0.00	0.08	0.01	0.92	0.17

Notes: The table presents the estimated coefficients (and standard errors in parentheses) of a model of the determinants of gross loan charge-offs. The dependent variable is annual gross construction loan charge-offs as a percentage of gross loans and leases. The model is estimated as the second step in a two-step treatment effects model. * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 9. Selection of Low-risk Commercial Real Estate Lending Practices

Explanatory Variables	1996 - 1997	1998 -1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing commercial real estate loans/Gross loans,(t-5)	0.010	0.015	-0.004	-0.003	0.001	0.000	-0.003
	(0.015)	(0.009)	(0.005)	(0.006)	(0.005)	(0.005)	(0.006)
Nonperforming comercial real estate loans/Gross loans,(t-5)	-0.121	-0.179 *	-0.282 **	-0.190 **	-0.072	-0.236 ***	0.117
	(0.135)	(0.107)	(0.124)	(0.089)	(0.092)	(0.075)	(0.128)
Equity/Assets,(t-5)	0.005	0.055	0.018	0.023	-0.007	0.004	0.076 **
	(0.049)	(0.038)	(0.024)	(0.030)	(0.018)	(0.017)	(0.030)
Allowance for loan losses/Assets, (t-5)	-0.192	0.195	0.047	-0.294 **	-0.200 *	-0.438 ***	-0.547 ***
	(0.372)	(0.242)	(0.183)	(0.126)	(0.120)	(0.121)	(0.163)
Mortgage foreclosures as % of loans, (t-5)	-0.747	-0.671	-0.802	-0.813	0.223	-0.454	-0.038
	(1.327)	(0.932)	(0.550)	(0.591)	(0.450)	(0.398)	(0.340)
Managment rating = 1 dummy, (t-5)	5.051	1.128 ***	0.590 **	1.504 ***	1.510 ***	0.237	0.512 **
	0.000	(0.319)	(0.230)	(0.377)	(0.349)	(0.216)	(0.238)
Management rating = 2 dummy, (t-5)	0.680	0.798 ***	0.367 *	0.500 **	0.513 ***	0.209	0.337 *
	(0.451)	(0.221)	(0.199)	(0.200)	(0.164)	(0.186)	(0.197)
Member multibank holding co. dummy, (t-5)	-0.372	-0.266	0.100	0.010	0.390	0.448 **	0.177
	(0.446)	(0.207)	(0.177)	(0.213)	(0.236)	(0.221)	(0.220)
log_e (assets), (t-5)	-0.776 **	-0.114	-0.115	-0.235 ***	-0.245 **	-0.175	-0.004
	(0.385)	(0.181)	(0.096)	(0.087)	(0.117)	(0.118)	(0.126)
Number of employees, (t-5)	0.006	0.005	0.000	0.000	0.002	0.003	0.001
	(0.004)	(0.004)	(0.001)	(0.000)	(0.001)	(0.002)	(0.002)
Herfindahl-Hirschman Index/1000, (t-5)	-0.100	-0.060	-0.110 ***	-0.123 ***	-0.014	-0.002	0.014
	(0.100)	(0.054)	(0.035)	(0.042)	(0.040)	(0.040)	(0.052)
Constant	11.292 ***	2.221	3.580 ***	5.424 ***	4.508 ***	4.439 ***	1.409
	(4.233)	(1.922)	(1.122)	(1.124)	(1.341)	(1.381)	(1.486)
Observations	1,113	2,076	2,474	2,758	2,737	2,706	1,627
Pseudo R Squared	0.2700	0.1380	..0836	0.1965	0.1267	0.0884	0.1018

Notes: The dependent variable is a dummy variable indicating the selection of the low-risk lending practice. The selection model is estimated by probit regression and is the first step of a two-step treatment regression. The table presents estimated coefficients (and standards errors in parentheses): * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 10. Commercial Real Estate Loan Charge-offs and Low-risk Lending Practices

Explanatory Variables	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing commercial real estate loans/Gross loans,(t-5)	0.000	0.000	0.000 *	0.000	0.000	0.001 *	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Nonperforming commercial real estate loans/Gross loans,(t-5)	0.030 ***	0.065 ***	0.040 ***	0.049 ***	0.059 ***	0.045 ***	0.115 ***
	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)	(0.008)	(0.008)
Equity/Assets,(t-5)	-0.001	-0.002 **	0.000	0.000	-0.001	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Allowance for loan losses/Assets, (t-5)	0.077 ***	0.016 ***	0.007	0.053 ***	0.061 ***	0.017 *	0.055 ***
	(0.009)	(0.005)	(0.004)	(0.007)	(0.006)	(0.009)	(0.012)
Mortgage foreclosures as % of loans, (t-5)	0.207 ***	0.030	0.015	0.021	0.041 **	0.036	0.055 **
	(0.035)	(0.020)	(0.015)	(0.020)	(0.017)	(0.022)	(0.022)
Low-risk commercial real estate lending practices, (t-4)	-0.099 ***	0.000	-0.004	-0.042 ***	-0.053 ***	-0.028	-0.054 **
	(0.016)	(0.010)	(0.008)	(0.014)	(0.013)	(0.017)	(0.021)
Hazard	0.019	-0.002	-0.001	0.000	0.009	-0.004	0.007
Standard error	(0.025)	(0.010)	(0.007)	(0.013)	(0.010)	(0.014)	(0.017)
Observations	1,113	2,076	2,474	2,758	2,737	2,706	1,627
Chi square	7.6	20.5	16.8	27.7	25.9	8.7	8.6
Prob > Chi square	0.18	0.00	0.01	0.00	0.00	0.19	0.20

Notes: The table presents the estimated coefficients (and standard errors in parentheses) of a model of the determinants of gross loan charge-offs. The dependent variable is annual gross commercial real estate loan charge-offs as a percentage of gross loans and leases. The model is estimated as the second step in a two-step treatment effects model. * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 11. Selection of Low-risk Home Equity Lending Practices

	1996 - 1997	1998 - 1999	2000 - 2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing home equity loans/Gross loans,(t-5)	-0.018	0.009	0.008	-0.004	-0.007	-0.002	-0.007
	(0.015)	(0.011)	(0.009)	(0.008)	(0.006)	(0.008)	(0.009)
Nonperforming home equity loans/Gross loans,(t-5)	1190.715	7.152	-1.655	1.088	0.143	-0.186	-0.199
	0.000	(14.772)	(1.136)	(1.188)	(0.355)	(0.178)	(0.270)
Equity/Assets,(t-5)	0.059	0.214	0.024	0.039	0.116 *	0.041	0.224 **
	(0.102)	(0.149)	(0.061)	(0.065)	(0.067)	(0.060)	(0.097)
Allowance for loan losses/Assets, (t-5)	0.382	0.476	0.217	0.031	-0.183	-0.199	-0.590
	(0.936)	(0.759)	(0.524)	(0.377)	(0.244)	(0.391)	(0.376)
Mortgage foreclosures as % of loans, (t-5)	1.823	0.417	0.558	1.267	-0.791	0.371	1.243
	(3.107)	(1.652)	(1.665)	(1.279)	(0.787)	(0.916)	(1.008)
Managment rating = 1 dummy, (t-5)	5.586	0.747	0.635	1.191 ***	0.154	0.401	-1.119
	0.000	0.000	(0.583)	(0.438)	(0.413)	(0.476)	(0.996)
Managment rating = 2 dummy, (t-5)	0.750	-4.380	0.175	6.402	0.271	0.257	-0.903
	(0.615)	(3.944)	(0.485)	0.000	(0.383)	(0.425)	(0.949)
Member multibank holding co. dummy, (t-5)	4.862	-0.383	0.155	0.107	0.337	0.170	5.257
	0.000	(0.459)	(0.433)	(0.453)	(0.396)	(0.395)	0.000
log_e (assets), (t-5)	-0.145	-0.168	-0.128	-0.428 ***	0.006	-0.062	-0.099
	(0.518)	(0.343)	(0.153)	(0.154)	(0.125)	(0.136)	(0.226)
Number of employees, (t-5)	0.000	0.001	0.000	0.000	0.000	-0.0004 ***	0.001
	(0.009)	(0.003)	(0.000)	(0.000)	(0.000)	(0.0002)	(0.002)
Herfindahl-Hirschman Index/1000, (t-5)	-0.024	0.391	0.210	0.098	0.239	0.082	0.196
	(0.200)	(0.314)	(0.211)	(0.140)	(0.150)	(0.111)	(0.165)
Constant	2.968	5.100	2.666	5.850 ***	1.284	2.536	1.845
	(5.458)	0.000	(2.116)	(2.037)	(1.823)	(1.961)	(3.127)
Observations	531	614	1,253	1,299	1,218	1,212	744
Psuedo R Squared	0.2736	0.2565	0.1765	0.3892	0.1103	0.2086	0.2264

Notes: The dependent variable is a dummy variable indicating the selection of the low-risk lending practice. The selection model is estimated by probit regression and is the first step of a two-step treatment regression. The table presents estimated coefficients (and standards errors in parentheses): * denotes significance at 10%; ** significance at 5%; *** significance at 1%

Table 12. Home Equity Loan Charge-offs and Low-risk Lending Practices

	1996 - 1997	1998 - 1999	2000 -2001	2002 - 2003	2004 - 2005	2006 - 2007	2008 - 2009
Performing home equity loans/Gross loans,(t-5)	0.000	0.001 **	0.000	0.000 **	0.000 *	0.000	0.001 *
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Nonperforming home equity loans/Gross loans,(t-5)	0.114 ***	0.086	0.033	0.060 ***	0.059 ***	0.015 ***	0.089 ***
	(0.013)	(0.095)	(0.023)	(0.007)	(0.006)	(0.004)	(0.012)
Equity/Assets,(t-5)	-0.001 *	-0.004	0.001 ***	-0.001 ***	-0.001 *	0.001	-0.002 *
	(0.000)	(0.002)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)
Allowance for loan losses/Assets, (t-5)	0.011 ***	-0.011	-0.006	0.037 ***	0.042 ***	0.046 ***	0.133 ***
	(0.003)	(0.020)	(0.004)	(0.005)	(0.005)	(0.006)	(0.018)
Mortgage foreclosures as % of loans, (t-5)	0.030 ***	-0.062	0.022 *	0.046 ***	0.047 ***	0.066 ***	0.150 ***
	(0.011)	(0.082)	(0.013)	(0.013)	(0.015)	(0.012)	(0.028)
Low-risk home equity lending practices, (t-4)	-0.010	0.037	-0.009	-0.031 ***	-0.039 ***	-0.058 ***	-0.163 ***
	(0.006)	(0.044)	(0.007)	(0.009)	(0.012)	(0.010)	(0.033)
Hazard	0.005	-0.017	-0.008	0.001	0.014	0.016 *	0.084 ***
Standard error	(0.008)	(0.049)	(0.008)	(0.011)	(0.010)	(0.010)	(0.029)
Observations	531	614	1,253	1,299	1,218	1,212	744
Chi square	1.5	17.1	9.1	15.2	5.4	8.5	2.927
Prob > Chi square	0.82	0.00	0.17	0.01	0.49	0.20	0.711

Notes: The table presents the estimated coefficients (and standard errors in parentheses) of a model of the determinants of gross loan charge-offs. The dependent variable is annual gross home equity loan charge-offs as a percentage of gross loans and leases. The model is estimated as the second step in a two-step treatment effects model. * denotes significance at 10%; ** significance at 5%; *** significance at 1%