Regulatory Change and the Availability of Banking Facilities in Low-Income Areas: A Texas Empirical Study

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Articles

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Abstract: The issue of how financial institutions serve low-income communities has recently been at the center of public debate. Enforcement under the Community Reinvestment Act has been increased so as to better promote such service, and the Riegle-Neal Act permitting interstate branch banking was enacted only after the bill's proponents pledged to better serve low-income consumers. Prior academic research generally suggests that changes in bank regulations of this kind should increase the availability of banking services in low-income communities. Empirical evidence from the state of Texas, however, shows this not to be the case. Indeed, the number of branches in low-income areas were found to have decreased in the period following the relevant regulatory changes. While the exact reasons for such a result are unclear, this evidence raises questions about the possible impact the Riegle-Neal Act may have on the country's low-income communities.

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I. INTRODUCTION

HOW do banks and other financial institutions serve low-income communities? This question has recently been at the center of public debate. Federal regulators recently completed rulemaking changes to the Community Reinvestment Act ("CRA")[1], changes designed to increase banking services and lending in low-income communities.[2] On August 22, 1994, the U.S. Department of Justice announced an historic, multi-million dollar settlement with Maryland's Chevy Chase Federal Savings Bank[3] for violations of federal fair lending laws.[4] The thrust of the Justice Department's allegations against Chevy Chase was the bank's failure to open branches in certain low-income, minority areas; and, as part of the settlement, the bank agreed to open four branches and mortgage offices in such areas.[5]

On September 13, 1994, Congress passed the Riegle-Neal Interstate Banking and Branching Efficiency Act,[6] legislation overturning the Mc-

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1. 12 U.S.C. §§ 2901-2906 (1988 & Supp. IV 1992).

2. *See* Amendments to Regulations Promulgated under the Community Reinvestment Act, 60 Fed. Reg. 22,156 (1995).

3. United States v. Chevy Chase Fed. Sav. Bank, [1994 Transfer Binder] Fed. Banking L. Rep. (CCH) ¶ 90,166, at 85,434 (D.D.C. Aug. 22, 1994) [hereinafter *Chevy Chase Fed. Sav. Bank*].

4. Chevy Chase was accused of violating the Fair Housing Act, 42 U.S.C. §§ 3601-3605 (1994) and the Equal Credit Opportunity Act, 15 U.S.C. §§ 1691a-1691f (1988 & Supp. IV 1992). *See* Peter P. Swire, *The Persistent Problem of Lending Discrimination: A Law and Economic Analysis*, 73 TEX. L. REV. 787, 831-32 n.235 (1995).

5. *See Chevy Chase Fed. Sav. Bank*, *supra* note 3. *See generally* Jonathan R. Macey, *Banking by Quota*, WALL ST. J., Sept. 17, 1994, at A12; Paul C. Roberts, *Holding Banks Hostage Is a Rotten Way to Battle Bias*, BUS. WEEK, Oct. 3, 1994, at 22.

6. *See* Riegle Community Development Act, Pub. L. No. 103-325, 1994 U.S.C.C.A.N. (108 Stat.) 1885.

Fadden Act's[7] decades old prohibition against interstate branch banking.[8] This new interstate banking law was passed, however, only after the bill's banking industry proponents publicly pledged to provide better services to low-income consumers.[9] Nevertheless, the issue has clearly been in the forefront during the rash of recent Riegle-Neal-prompted bank mergers. At the December 11, 1995 shareholders vote regarding the merger of Chemical Banking Corp. and Chase Manhattan Corp., for example, protesters expressed concern about the potentially "meager benefits" the merger creating the nation's largest bank offered to low-income neighborhoods.[10]

Will the advent of interstate branch banking and changes in the CRA result in better banking services for low-income consumers? Obviously, the answer to this question turns in part on how one defines "services." In an era of increasing technology, it may be possible for financial institutions to provide a considerable number of consumer services without the existence of actual brick-and-mortar branches.[11] Indeed, as Cornell University Professor Jonathan R. Macey has noted, major nonbank mortgage lenders such as Household International and Merrill Lynch frequently extend credit in areas where they lack an actual physical presence.[12]

Nevertheless, as the recent Chevy Chase consent decree starkly points out, the existence of an actual bank branch in a certain area can, at least from a regulatory perspective, be seen as an important indicator of "service" and commitment to a given community.[13] Along these lines, this Article examines the effect of regulatory initiatives on the change in the number of bank and savings and loan branches between 1985 and 1993 in the state of Texas, one of the three most populous states in the nation.[14] These dates were chosen because they represent periods before and after a major regulatory change—the advent of statewide branch banking in the state of Texas.[15] The dates also represent periods before and after

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7. 12 U.S.C. §§ 36, 321 (1988).

8. *See* Douglas H. Ginsburg, *Interstate Banking*, 9 HOFSTRA L. REV. 1133, 1137 (1981).

9. *See* Amy Barrett & David Greising, *Right This Way, Mr. McColl. Your Hot Seat Is Ready*, BUS. WEEK, Oct. 3, 1994, at 125 (citing pledges by NationsBank to provide assistance in low-income areas while lobbying for interstate banking bill).

10. *See* Timothy L. O'Brien, *Critics of Chase-Chemical Deal Worry Big Bank Mergers Offer Little to Poor*, WALL ST. J., Dec. 12, 1995, at A14.

11. Computer programs such as "Quicken," for example, enable individuals to handle a wide range of personal banking matters without ever even leaving their home. *See* Brett Schlender, *Bill Gates Makes Like J.P. Morgan*, FORTUNE, Nov. 14, 1994, at 14.

12. *See* Jonathan R. Macey, *Porkbarrel Banking*, WALL ST. J., July 19, 1993, at A10.

13. *See generally* O'Brien, *supra* note 10 (discussing possible diminution in the number of branches in low-income areas due to interstate banking and bank mergers and the importance of such branches to community groups). *See also* Gary Putka and James S. Hirsch, *Fed Delays Vote on Fleet's Purchase of NatWest Bank*, WALL ST. J., Apr. 11, 1996, at A6.

14. During the time periods examined, Texas was the third most populous state in the nation. *See* STATISTICAL ABSTRACT OF THE UNITED STATES 28 (114th ed. 1994). Texas is currently the country's second most populous state in the nation. *See* DEMOGRAPHICS USA 1995—COUNTY EDITION 2-3 (1995).

15. *See infra* notes 53-62 and accompanying text.

Congress' 1989 enactment of the Financial Institutions Reform, Recovery and Enforcement Act ("FIRREA") which significantly strengthened the mandates of the CRA.[16]

What follows is an examination and analysis of the relevant data. Part II provides an overview of the pertinent federal regulatory scheme, while Part III gives a similar overview of the relevant state regulation. This material is summarized in Part IV, and followed in Part V by a brief review of relevant prior research. In Parts VI and VII we present and analyze our data, and in Part VIII we present our conclusions and their implications. Overall, our data questions whether current financial industry reforms will lead to increased bank branching service for low-income communities.

II. FEDERAL REGULATORY SCHEME

A. COMMUNITY REINVESTMENT ACT

The most important federal statute dealing with a financial institution's service to low-income communities is the CRA. The statute, enacted in 1977, places upon each insured depository institution a "continuing and affirmative obligation to help meet the credit needs of the local communities in which [it is] chartered" and requires that each such institution be assessed on its "record of meeting the credit needs of its entire community, including low- and moderate-income neighborhoods, consistent with the safe and sound operation of such institution."[17] The law's legislative history reveals that its primary goal was to encourage financial institutions to extend credit and promote lending opportunities in low- and moderate-income neighborhoods.[18] As such, the CRA can perhaps be seen as something of an "affirmative action" statute going beyond requiring that financial institutions not discriminate in their activities against certain groups to actually mandating that they do business in low- and moderate-income communities.[19]

In 1989, Congress enacted the FIRREA[20] which, as Professors Jonathan R. Macey and Geoffrey P. Miller have noted, put "teeth" into the CRA.[21] Post-FIRREA, financial institution CRA ratings are no

16. The Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA), Pub. L. No. 101-73, 1989 U.S.C.C.A.N. (103 Stat.) 183, 527-28, significantly strengthened the CRA by, among other things, lifting the confidentiality of CRA ratings. The result has been stricter enforcement of the CRA. *See* Jonathan R. Macey & Geoffrey P. Miller, *The Community Reinvestment Act: An Economic Analysis*, 79 VA. L. REV. 291, 300-02 (1993). *See also* Swire, *supra* note 4, at 805 (discussing FIRREA's strengthening of the CRA).

17. 12 U.S.C. §§ 2901(a)(3), 2903(1) (1994).

18. *See* 123 CONG. REC. 31,885-87 (1977) (statements of Sen. William Proxmire).

19. *See* Anthony D. Taibi, *Banking, Finance, and Community Economic Empowerment: Structural Economic Theory, Procedural Civil Rights, and Substantive Racial Justice*, 107 HARV. L. REV. 1463, 1467 (1994).

20. Financial Institutions Reform, Recovery, and Enforcement Act of 1989, Pub. L. No. 101-73, 1989 U.S.C.C.A.N. (103 Stat.) 183.

21. *See* Macey & Miller, *supra* note 16, at 302.

longer confidential,[22] and the publication of these ratings has increased political pressure on regulatory agencies to ensure CRA compliance.[23] Moreover, federal regulators have become increasingly aggressive in denying bank applications to expand on CRA grounds.[24]

One of the five factors upon which financial institutions are evaluated under the post-FIRREA CRA is the geographic distribution and record of opening and closing offices.[25] There are two specific "assessment factors" within this general evaluative category. One of these specific factors, "Factor G" on the form used in conducting CRA evaluations, is "[t]he institution's record of opening and closing offices and providing services at offices."[26] Pursuant to this factor, regulators carefully examine the number of branches in the low- and moderate-income communities served by the financial institution.[27] Given the 1989 amendments to the CRA and the fact that the amended statute requires that regulators specifically examine the number of bank branches in low- and moderate-income communities, it would seem that the number of financial institution branches in such communities should have increased post-FIRREA.[28]

B. Equal Credit Opportunity Act, Home Mortgage Disclosure Act, Fair Housing Act

In contrast to the "affirmative action"-type mandates of the CRA, the Equal Credit Opportunity Act,[29] the Home Mortgage Disclosure Act,[30] and the Fair Housing Act[31] are essentially "nondiscrimination"-type statutes.[32] Thus, while the CRA seeks to mandate that financial institutions actually serve and lend in low- and moderate-income communities, the goal of these other statutes is simply to ensure that financial institutions do not discriminate in the provision of their services.[33] For example, the Fair Housing Act prohibits discrimination in the sale or rental of residen-

22. *See* Swire, *supra* note 4, at 805.
23. *See* Macey & Miller, *supra* note 16, at 302.
24. Most significant forms of bank expansion require applications be subject to CRA scrutiny. 12 U.S.C. § 2903 (1994). In recent years, federal regulators have become extremely aggressive about denying bank acquisition applications on CRA grounds. *Shawmut's National Merger Bid Fails as Fed Deadlocks Over Lending Record*, 61 BNA's Banking Rep. 789 (1993).
25. *See* Office of Thrift Supervision, *Community Reinvestment Act Performance Evaluation Form* (on file with the Texas A&M Business School) [hereinafter *CRA Evaluation Form*]. *See generally* Linda Corman, *Bankers Brace for Life in Fishbowl as Era of CRA Disclosure Begins*, Am. Banker, June 29, 1990, at 1, 16.
26. *CRA Evaluation Form*, *supra* note 25, at 5.
27. *Id.* at 4-5.
28. *See generally* A. Brooke Overby, *The Community Reinvestment Act Reconsidered*, 143 U. Pa. L. Rev. 1431, 1509-10 (1995) (discussing that the CRA is designed to encourage branching in such areas).
29. 15 U.S.C. §§ 1691a-1691f (1988 & Supp. IV 1992).
30. 12 U.S.C. §§ 2801-2810 (1988 & Supp. IV 1992).
31. 42 U.S.C. §§ 3601-3619 (1994).
32. *See generally* Taibi, *supra* note 19; Swire, *supra* note 4, at 802-04.
33. Taibi, *supra* note 19.

tial housing on the basis of race, religion, sex, or national origin.[34] Banks and other specified financial institutions may not use those factors to deny a housing loan application or discriminate among successful applicants as to the terms and conditions of a housing loan.[35]

Similarly, although broader in scope, the Equal Credit Opportunity Act ("ECOA") prohibits discrimination in the granting of all types of credit on the basis of race, color, national origin, sex, marital status, receipt of public assistance income, or the good faith exercise of rights guaranteed by the Consumer Credit Protection Act.[36] ECOA covers all phases of credit transactions.[37]

Finally, the Home Mortgage Disclosure Act supplements these other statutes by mandating that mortgage lenders publicly disclose the race, sex, and income of all mortgage applicants including those who were rejected.[38] Recent data released pursuant to this statute purports to show that some minority group members are rejected for mortgages more often than whites even when they have similar incomes.[39]

While on their face the Fair Housing Act and the ECOA appear to focus on the direct non-discriminatory provision of credit, and have little to do with bank branching, the recent Chevy Chase Case[40] to some extent suggests the contrary. In that case, the U.S. Department of Justice convinced Chevy Chase Federal Savings Bank to sign a consent decree as part of the settlement stating that the bank had violated the ECOA and the Fair Housing Act by not opening branches in certain low-income minority areas.[41] While the Justice Department's actions with respect to Chevy Chase have been sharply criticized as representing governmental "overreaching,"[42] they clearly signal a concern on the part of federal regulators regarding the need for bank branches in low-income and minority areas.

III. CHANGES IN THE TEXAS BANKING ENVIRONMENT

A. OVERVIEW

Two major and interrelated events dramatically affected the number and size distribution of commercial banks and savings and loans (and

34. 42 U.S.C. § 3605 (1994).
35. *Id.*
36. *See* 15 U.S.C. § 1691(a) (1988).
37. *See* 12 C.F.R. § 202.1 (1993).
38. *See* 12 U.S.C. § 2803(b)(4) (1994).
39. *See* Glenn B. Canner & Dolores S. Smith, *Expanded HMDA Data on Residential Lending: One Year Later*, 78 FED. RES. BULL. 801 (1992).
40. *See supra* notes 3-5 and accompanying text.
41. *See Chevy Chase Fed. Sav. Bank*, *supra* note 3. Professor Peter Swire speculates the bank simply did this to avoid heavy litigation costs and gain regulatory approval of its expansion efforts. *See* Swire, *supra* note 4, at 831-32 n.235.
42. *See* Roberts, *supra* note 5. Cornell University Law Professor Jonathan Macey has said that the government's willingness to proceed in the *Chevy Chase Fed. Sav. Bank* case in the absence of any evidence of discrimination is "scandalous." *See* Macey, *supra* note 5, at A12.

their offices) in the state of Texas in the late 1980s. The first event was the collapse of the energy and real estate-based economy and the subsequent wave of failures among the lenders to those (and related) industries. The second was the metamorphosis of the state's banking laws and regulations that for the first time permitted commercial banks to branch throughout the state and also permitted out-of-state banking organizations to acquire Texas-based banks.

B. Crisis in the Texas Financial Industry

The origins of the crisis that enveloped the Texas financial industry in the late 1980s may be traced first to the surge in crude oil prices that followed the OPEC oil embargo of 1973, and then to the decline of crude oil prices that began in 1982 (and their subsequent collapse in 1986).[43] The increase in oil prices during the 1970s and 1980s greatly stimulated the Texas economy, encouraged existing banks to expand their lending, and led to an explosion in the number of new bank charters.[44] Indeed, 371 new banks were chartered in Texas in the 1983-1985 period, representing 51% of all new bank charters in the United States.[45] The subsequent decline in crude oil prices, however, produced an even greater downward spiral in the Texas financial industry. During the 1980s, 349 Texas commercial banks failed, and 76 required FDIC financial assistance.[46] The Texas bank failures represented almost 40% of the bank failures nationwide during the 1980's.[47] Similar patterns exist for savings and loans. In fact, 468 Texas savings and loans became insolvent during the 1980-1988 period, representing almost 20% of all U.S. thrift insolvencies during this period.[48] The effects of the economy (and other factors) on Texas savings and loans is revealed by trends in membership in the state trade association. The number of members in the Texas Savings and Loan League fell from 264 at the start of 1985 to 64 at the start of 1993, roughly the period of our study.[49]

These failures of Texas banks and savings and loans did not, however, generally result in the liquidation of the institutions and the closing of

43. J. O'Keefe, *The Texas Banking Crisis: Causes and Consequences: 1980-1989*, FDIC Banking Rev., Winter 1990, at 1.

44. Thomas B. Fomby and Joseph G. Hirschberg, *Texas in Transition: Dependence on Oil and the National Economy*, Fed. Reserve Bank of Dallas Econ. Rev., Jan. 1989, at 11.

45. See O'Keefe, *supra* note 43.

46. Gunther reports that 39% of the new banks established in the 1980-1985 period failed in the subsequent four years. *See* Jeffery W. Gunther, Fed. Reserve Bank of Dallas, Pub. No. 6-90, Risk and Failure Among Newly Established Texas Banks 10 (1990).

47. Kenneth J. Robinson, *The Performance of Eleventh District Financial Institutions in the 1980's: A Broader Perspective*, Fed. Reserve Bank of Dallas Fin. Industry Stud., May 1990, at 13-24. In the year 1989, almost 70% of all bank failures nationwide occurred in Texas. *See id.*

48. Rebel A. Cole, *Thrift Resolution Activities: Historical Overview and Implications*, Fed. Reserve Bank of Dallas Fin. Industry Stud., May 1990, at 1-11.

49. *See* Texas Savings and Loan Directory (1994).

their headquarters and branches. In most cases, the assets and liabilities of the failed institutions (though not necessarily their physical facilities) were acquired by an in-state or out-of-state entity—only 15 of the 396 Texas bank failures in the 1980-1989 period resulted in deposit payoff or liquidation.[50]

C. State Regulatory Scheme

Directly related to the economic crisis facing Texas in the 1980s were changes in the scheme of regulations facing the Texas financial services industry, changes engendered in significant measure by the economic crisis. Prior to 1986, Texas had extremely restrictive regulations governing the ability of commercial banks in the state to branch, and the ability of out-of-state banks to acquire banks in the state. All this changed dramatically in 1986 during the state's financial crisis when it became evident that branch banking was necessary to prevent a massive shrinkage in the number of banking facilities due to the simultaneous existence of bank failures and lack of potential acquirers.[51] In addition, it became evident that the state would have to permit out-of-state acquirers to enter the Texas market in order to inject capital into the state's banking system, and that out-of-state banking organizations would be more interested in entering the market if branching restrictions were liberalized.[52]

During the summer of 1986 a special session of the Texas Legislature was called to address these issues. The Legislature enacted interstate banking legislation which permitted out-of-state bank holding companies headquartered in any state to acquire banks or bank holding companies located in Texas.[53] Interestingly, the Texas Legislature also directly incorporated the CRA into this new legislation in an effort to guarantee that any out-of-state acquirers would be responsive to local credit needs in Texas.[54]

During the same special legislative session, the Texas Legislature passed an amendment to the state constitution which permitted county-wide branch banking for commercial banks in the state.[55] State voters approved this amendment on November 4, 1986.[56]

Despite the liberalization of branching restrictions contained in the 1986 legislation, commercial bankers in the state still felt disadvantaged

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50. *See* Robinson, *supra* note 47. Also, by October 1988, 53 insolvent thrift institutions in Texas with assets totaling $21.8 billion had been resolved under the so-called Southwest Plan. Genie D. Short & Jeffery W. Gunther, *The New Financial Landscape in Texas*, BANKERS MAG., Mar./Apr. 1989, at 15.

51. *Texas Governor White Signs Interstate Banking Bill, Opens New Era In State*, WASH. FIN. REP. (BNA) Vol. 47, at 501-02 (Sept. 29, 1980).

52. *Id.* at 501.

53. *See* TEX. REV. CIV. STAT. ANN. arts. 342-101 to 342-901 (Vernon 1973 & Supp. 1995).

54. *See* Stephen K. Huber, *Interstate and Branch Banking Come to Texas*, HOUSTON LAWYER, Jan.-Feb. 1987, at 36-38.

55. *See* TEX. REV. CIV. STAT. ANN. arts. 342-903 & 342-910(a) (Vernon Supp. 1996).

56. *See* TEXAS CONST. art. XVI, § 16d(e).

vis-à-vis state savings and loan associations which were allowed to branch *state-wide* as opposed to *county-wide*.[57] The commercial bankers argued that under federal law, and under the "parity provision" of the Texas Constitution,[58] they should be afforded the same branching rights and privileges afforded state savings and loans. The U.S. Comptroller of the Currency upheld this argument from Texas commercial bankers,[59] and in a landmark June 1988 test case, a federal court upheld the Comptroller's decision permitting Texas commercial banks to branch state-wide.[60]

In response to this federal court decision, Texas State Banking Commissioner Kenneth Littlefield issued a ruling permitting commercial banks to branch state-wide under the "parity clause" of the Texas Constitution on October 26, 1988.[61] During its regular 1989 session, the Texas Legislature then amended the state banking code to permit state-wide branching for commercial banks.[62]

IV. SUMMARY

The years 1986-1989 represented a period of incremental reductions of the restrictions on branch banking in the State of Texas. It also represented a period during which Texas opened its borders to out-of-state banks, so long as these banks agreed to serve the needs of the state's low- and moderate-income communities. At the federal level, the 1989 amendments to FIRREA, effective in 1990, considerably strengthened the CRA with regulators now specifically examining institutions' records in terms of branch office availability. Consequently, one would expect the coupling of fewer branch banking restrictions and increased CRA enforcement to have resulted in an increase in branch office availability in Texas in low- to moderate-income communities over the period from 1985-1993.

V. IMPLICATIONS OF PRIOR RESEARCH

The expectation that the accessibility of banking facilities should increase with liberalized branching regulations is also supported by prior research. For example, Seaver and Fraser analyzing 219 standard metropolitan areas found that the population per banking office is substantially less in branching than in unit banking states.[63] More recently, Evanoff measured the number of banking offices per square mile for both metropolitan and nonmetropolitan areas and found that the accessibility to banking offices is improved for both urban and rural areas when branch-

57. *See generally* TEXAS BANKERS ASSOCIATION, STATEWIDE BRANCHING UPHELD (1988) [hereafter *Statewide Branching*].
58. *See* TEXAS CONST. art. XVI, § 16(c).
59. *See Statewide Branching*, *supra* note 57.
60. *See* State v. Clarke, 690 F. Supp. 573 (W.D. Tex. 1988).
61. *See* 7 TEX. ADMIN. CODE § 3.91 (West 1996) (Texas Finance Commission).
62. *See* TEX. REV. CIV. STAT. ANN. art. 342-903 (Vernon Supp. 1996).
63. William Seaver & Donald Fraser, *Branch Banking and The Availability of Banking Services in Metropolitan Areas*, J. FIN. & QUANTITATIVE ANALYSIS, Mar. 1979, at 153.

ing is allowed.[64] Indeed, Evanoff found that "holding demographic factors constant, branching increases the number of banking offices per square mile by 65 percent."[65]

A number of other studies have addressed related though not identical issues. Most of these studies have focused on the issue of whether the level of branches per capita differs by income and racial status.[66] For example, Avery found that low-income and minority zip code areas in Atlanta, Boston, Cleveland, Detroit, and Philadelphia had fewer branches per capita in 1989 than other areas.[67] However, these findings lost their significance once other economic variables were added to the analysis. Moreover, when Avery examined the change in the number of offices (per capita) from 1977 to 1989, he observed no significant association between that variable and the income and minority status of the area.[68] In a separate study, Caskey examined branch bank locations in Atlanta, Denver, New York City, San Jose, and Washington, D.C. in the period from 1970 through 1989.[69] Using census tracts as the measure of the market area, he found that in two of the cities studied, low-income areas are "significantly less likely to have a local bank than are other communities. In the other three cities, this is not the case," and "communities with a majority of African-American residents were substantially less likely to have a local bank compared to other communities."[70] In addition, using regression analysis, Caskey found that "even after controlling for differences in income levels, communities with higher percentages of African-American or Hispanic residents are less likely to have bank branches."[71]

Based upon this prior research, we would expect that the number of bank and savings and loan offices in low-income areas should have increased in Texas following the advent of state-wide banking. While this regulatorily-induced change might be obscured by the effects of the Texas financial crisis, or by increases in technology which may make it possible for financial institutions to provide consumer services without the existence of actual brick-and-mortar branches, the focus of our analysis is on the *relative* change in banking offices in low- as contrasted with high-in-

64. Douglas Evanoff, *Branch Banking and Service Accessibility*, J. MONEY, CREDIT & BANKING, May 1988, at 191-201.

65. *Id.* at 201.

66. There are a number of other dimensions of banking services in addition to office availability. Much of the research on these other dimensions has focused on the issue of racial discrimination in lending, a topic that is outside the scope of our study. For a recent representative study, see Andrew Holmes & Paul Horvitz, *Mortgage Redlining: Race, Risk, and Demand*, 49 J. FIN. 81 (1994).

67. Robert Avery, *Deregulation and Location of Financial Institution Offices*, FED. RESERVE BANK OF CLEVELAND ECON. REV., 3rd Quarter 1991, at 30.

68. *Id.*

69. JOHN P. CASKEY, FED. RESERVE BANK OF KANSAS CITY, PUB. NO. 92-10, BANK REPRESENTATION IN LOW-INCOME AND MINORITY URBAN COMMUNITIES (1992).

70. *Id.* at 1.

71. *Id.* at 2.

come areas rather than on whether the number of offices increased or decreased for all areas.

Prior research and analysis also generally suggest that increased enforcement of the CRA should lead to increased availability of banking facilities in low-income areas. Taibi refers to the CRA as serving a "remedial/affirmative action" purpose of providing greater service to low-income areas.[72] He notes that post-FIRREA CRA regulations have specifically called for regulators to examine institutional records of opening and closing branches and other information indicating the servicing of low-income areas.[73] Indeed, Lawrence Lindsey, the member of the Federal Reserve Board of Governors responsible for the CRA, has recently stated that the CRA exists "to help prod banks to serve . . . historically underserved areas and populations" and that regulators need to push banks to serve such communities.[74] Swire notes the CRA's role in serving low- and moderate-income communities and in dealing with problems of residential segregation.[75] Overby, in a recent analysis of the CRA, asserts that the statute is specifically designed to encourage financial institution *branching* in low-income areas.[76]

Macey and Miller, however, have offered a counterintuitive argument explaining why stricter enforcement of the CRA might lead to *fewer* bank branches in low-income neighborhoods.[77] They note that since bank CRA ratings are based on bank lending and other practices in the areas contiguous to their offices, banks will be reluctant to open or maintain offices in low-income areas since regulators will then force them to devote a larger proportion of their resources to such areas than they desire.[78] Macey and Miller thus observe that the CRA may have the perverse effect of making banks less likely to have branches in poor areas.[79] Overby, however, directly disputes this contention by Macey and Miller by arguing that regulators are likely to assign low CRA ratings simply for a financial institution's refusal to enter low-income areas.[80]

VI. MARKET DEFINITION, DATA, AND METHODOLOGY

A. MARKET DEFINITION

Traditional definitions of banking markets such as Standard Metropolitan Statistical Areas ("SMSAs") were considered too broad for the

72. Taibi, *supra* note 19, at 1484.
73. *See id.* at 1489 n.105. *See also CRA Evaluation Form*, *supra* note 25 (Factor "G").
74. *Letters*, REGULATION, Issue 1 1995, at 2-3 (letter from Lawrence B. Lindsey, Member, Board of Governors, Federal Reserve System).
75. Swire, *supra* note 4, at 829-33.
76. Overby, *supra* note 28, at 1509-10.
77. Macey & Miller, *supra* note 16, at 314-15, 340.
78. *Id.*
79. *Id.* at 314.
80. Overby, *supra* note 28, at 1509. The heretofore highly subjective nature of CRA ratings makes it difficult to know exactly how regulators operate in this regard. *See* Macey & Miller, *supra* note 16, at 326-30; Peter P. Swire, *Safe Harbors and a Proposal to Improve the Community Reinvestment Act*, 79 VA. L. REV. 349, 369-77 (1993).

analysis required in this study. Performing this analysis at the SMSA level could lead to an aggregation problem in which critical differences in income and banking services among neighborhoods within an area would be lost. Hence, we analyze the availability of banking services at a *zip code level.* Although even lower levels of aggregation are feasible (for example, the census track), the zip code was the lowest level of aggregation at which all the necessary data are publicly available.

A distinctive characteristic of our analysis is the use of two alternative measures of the relevant market for availability of banking services. In its narrowest definition, we can consider the geographical market for banking services to be primarily at the zip code level, in which case we should only consider the availability of banking services in the zip code area. However, zip codes are not of homogeneous size. Some zip codes, particularly urban ones, are relatively small, while rural zip codes have greater geographical extension. In urban areas it is possible that banking services are available to a population not within the zip code itself, but in other adjacent zip codes which are at a convenient distance. To account for that possibility, we consider alternative definitions of the area where banking services should be available. Thus, we also examined the availability of banking services in zip codes located within a two mile distance. This measure reflects a more homogeneous definition of the relevant market across the sample. Increasing the size of the relevant market, however, may dilute the possible effect of income and poverty levels on the localized availability of banking services.

B. DATA

We created a database consisting of information on: (a) the demographic characteristics of the zip code (including population, average household income, racial composition, and number of people below the poverty line); (b) geographic information which located each zip code in the geographic coordinates (thus allowing us to calculate distances among any pair of zip codes); and (c) banking information from which we obtained the number of offices of banks and savings and loan associations ("SLAs") in each zip code in 1985 (before the regulatory changes) and in 1993 (after the regulatory changes).

The U.S. Census of Population and Housing is the only source of reliable demographic information at the zip code level. This Census takes place every ten years, the last one occurring in 1990.[81] We extracted the SMSA classification of each zip code in Texas, as well as relevant demographic information including the population in the zip code, average household income, percentage of non-Hispanic whites, and percentage of people in the zip code above the poverty status level.[82]

81. We used the Summary Tape File (STF) 3B available in CD-ROM from the U. S. Census Bureau which covers population, housing, and economic items at the zip code level.

82. Poverty status refers to a household below a poverty threshold which takes into account family size, number of children, and age of the family householder. *See* DOWELL

For geographical location information a file providing the latitude and longitude of the centroids of all the zip codes in Texas was obtained from the software ATLAS GIS.[83] These spherical coordinates were used to calculate the distance between any two zip codes in Texas using the procedure provided by Muehrcke and Muehrcke.[84] Using that distance measure allowed us to determine which zip codes were within a desired distance from any given zip code.

For banking information, we obtained data compiled by Sheshunoff Information Services, Inc. on the offices of banks and savings and loan institutions in Texas as of June 1985 and June 1993. Sheshunoff obtains data on all federally insured banks from the Federal Deposit Insurance Corporation ("FDIC"), and on all federally insured savings and loan institutions from the Office of Thrift Supervision ("OTS"). We then calculated the number of offices of each type of lending institution in every zip code in 1985 and 1993. This allowed us to measure the number of combined bank and SLA offices in the zip code. This extended definition of banking services (rather than just using the number of banks) was selected in order to avoid any bias introduced by the collapse of the SLA industry in Texas. As a result of the crisis, many banks acquired SLA offices and thus greatly increased the number of banking offices. By defining the dependent variable as the sum of bank and SLA offices, the effect of the SLA crisis is absorbed within the variable of interest.

These three sources of information were pooled in a single file coded by zip code. These 1657 zip codes were then classified into three categories representing geographically homogeneous sets of zip codes. These categories include: (a) zip codes in the four largest metropolitan SMSAs (Austin, Dallas-Fort Worth, Houston-Galveston-Brazoria, and San Antonio); (b) zip codes in other SMSAs in Texas;[85] and (c) zip codes in non-SMSA (rural) areas.

Zip codes for SMSAs were classified as being in the top 25%, medium 50%, or bottom 25% of the distribution within their respective SMSA in terms of average household income, percent above poverty line, and percentage of non-Hispanic whites. For non-SMSA (rural) areas, zip codes were similarly ranked and classified within the set of rural zip codes. Thus, income, poverty, and minority ranks are based on comparisons with other zip codes within the same city or homogeneous category rather

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MYERS, ANALYSIS WITH LOCAL CENSUS DATA 33 (1992) (discussing definitions of census variables).

83. This file determines the location of the centroid of the zip code area, calculated by averaging the point of the zip code boundary. This file is compiled by Geographic Data Technology which makes it available to mapping software firms.

84. PHILLIP MUEHRCKE & JULIANA O. MUEHRCKE, MAP USE 221-25 (2nd ed. 1986).

85. Other SMSAs in Texas, with the number of zip codes in each, are as follows: Abilene (12), Amarillo (15), Beaumont-Port Arthur (23), Brownsville-Harlingen (11), Bryan-College Station (6), Corpus Christi (27), El Paso (23), Killeen-Temple (22), Laredo (5), Longview-Marshall (13), Lubbock (19), McAllen-Edinburg-Mission (16), Midland (4), Odessa (8), San Angelo (9), Sherman-Denison (13), Texarkana (8), Tyler (15), Victoria (4), Waco (21), and Wichita Falls (13).

than on absolute levels of income, poverty, or minority presence. These classifications allow us to focus on the question of whether the availability of banking services within individual cities or rural areas has changed differentially for low-income, poor, or minority areas, as compared to other areas within the same city or homogeneous category.

C. METHODOLOGY

The focus of our analysis is on the change in the number of branches. A method often used in this type of analysis is to construct a change score ($Y_{t+1} - Y_t$) or a percent change ($(Y_{t+1} - Y_t)/Y_t$) as a dependent variable. Although these methods to measure change are often observed in practice, they both suffer from an important drawback, the *regression to the mean* effect—or simply, regression effect.[86] This effect occurs when subjects that had large disturbances in the first observation period (unusually large values) display lower growth (or higher decline) than those with initially lower disturbances.

For example, a particular area (A_1) may have a relatively large number of financial institutions (considerably above the mean for all areas at time t) while another area (A_2) may have few financial institutions at time t. When the number of financial institutions is observed at time $t+1$, A_1 may be expected to have experienced a decline in the number of institutions while area A_2 may be expected to have experienced an increase. This regression toward the mean cannot be uniquely attributed to the independent variables of interest, since it is caused by the unusually large or small initial number of institutions. Therefore, the use of difference scores to measure change would not permit valid inferences to be drawn regarding the impact of such variables of interest as income and race.

Several researchers have suggested a model with lagged values of the dependent variable on the right side of the equation in order to develop explicitly dynamic models.[87] These models are generally of the following form:

$$Y_{t+1}=\alpha+\gamma Y_t+\Sigma\beta_i X_{it}+e,$$

where Y_{t+1} is the value of the dependent variable at time $t+1$, Y_t is the value of the dependent variable at time t, X_{it} represents all the variables which influence the amount of change in the dependent variable between the two observations, α is a constant, and e is an error term. Such a model explicitly addresses the regression effect by including the influence of initial values of the dependent variable upon subsequent values.

In our analysis, in addition to the lagged dependent variable, two independent variables are used to explain the change in office availability

86. *See* GREGORY B. MARKUS, ANALYZING PANEL DATA (1979) and SCOTT MENARD, LONGITUDINAL RESEARCH (1991).

87. *See* Lee J. Cronbach & Lita Furby, *How We Should Measure Change—Or Should We?*, 74 PSYCHOL. BULL. 68, 68-80 (1970); RONALD C. KESSLER & DAVID F. GREENBERG, LINEAR PANEL ANALYSIS: MODELS OF QUANTITATIVE CHANGE (1981); and IAN PLEWIS, ANALYSING CHANGE (1985).

between 1985 and 1993: (a) the population in the zip code (people) and (b) the income status of the zip code (represented by a set of dummy variables indicating whether the zip code is among the lowest quartile of income zip codes, the 50% medium-income, or the highest quartile of income, within the SMSA or homogeneous category). These dummy variables test the differences between the two groups of interest (low- and moderate-income) and the control group (high-income).

Two main statistical tests are employed to draw results from the coefficients of the estimated models. We report first the results of an F-test of non-existence of income effects on the changes in banking service availability, in which the null hypothesis is that the zip codes of low-, medium-, and high-income zip codes have the same average change in number of branches, after controlling for population. We also report a *t*-test of the difference between the high- and low-income areas within a homogeneous category in terms of service change. This test contrasts the differences in number of branches between zip codes in high- and low-income areas of an SMSA or homogeneous category. The null hypothesis in this case is that both groups (high- and low-income zip codes) have the same average change in number of branches, after controlling for population.

VII. EVIDENCE

A. Univariate Analysis

Table One provides basic population and demographic information on Texas grouped as follows: each of the major metropolitan areas in the state (the major urban areas category); the smaller metropolitan areas (the other MSA category); and the non-metropolitan communities (the non-MSA category). For each of these geographic categories, zip codes in those areas were separately classified by income, by the percentage of the population with income below the poverty level, and by the percentage of the population composed of non-Hispanic whites. The classification depended on the zip code's ranking of those variables within their respective SMSA or homogeneous area (for rural areas). Thus, the 405 lowest-income zip codes in Texas include the lowest quartile of zip codes in terms of income for each SMSA and the lowest quartile of zip codes in terms of income among rural areas. Similarly, the 140 highest-income zip codes in major urban areas represent the highest quartile of zip codes in terms of income for each of the four major metropolitan areas in Texas. Our interest centers on the top and bottom quartiles.

Looking initially at the entire state, the 1657 zip codes contained an average of 10,245 people with an average household income of $31,865. This initial overall view also revealed that 18.4% of the population reported income below the poverty level and 70.2% of the population consisted of non-Hispanic whites (most of the remaining individuals would be African-American or Hispanic). Breaking the data down by income, poverty status, and minority status is particularly interesting. The average income of households in the top-quarter of the zip codes is more than

double that of households in the bottom-quarter ($44,876 versus $21,760). Only 10.8% of families in the top-quarter are below the poverty level (versus 29.0% for the lowest income quartile) and less than 20% are minority (versus almost 50% for the bottom quartile income zip codes). Dividing the zip codes by poverty and racial status provides similar evidence of disparities. The zip codes with a high level of poverty have much lower incomes of $23,449 (versus $40,764 for the zip codes with the least poverty), are much more populated with minorities (more than 50% versus about 15% for the zip codes with the least poverty) and have poverty rates almost five times those of zip codes with the least poverty. Classifying the zip codes by racial mix indicates that those zip codes with the largest fraction of non-Hispanic whites have higher incomes ($36,726 versus $25,407) and less poverty (12.2% versus 28.7%) when compared to the minority zip codes.

Table 1
Division of Texas Population by Geographic Area, Income Rank, Poverty Rank, and Minority Rank, 1990

		Number of Zip Codes	Total Persons	Proportion	Persons per Zip	Average Income	Poverty Index	Majority
TOTAL TEXAS		**1,657**	**16,976,68**	**1.00**	**10,245**	**31,865**	**18.4**	**70.2**
INCOME	Lowest Income Quartile	405	3,712,45	0.22	9,167	21,760	29.0	54.6
RANK	Middle Income Half	831	8,902,22	0.52	10,611	30,339	17.1	72.6
	Highest Income Quartile	414	4,361,99	0.26	10,562	44,876	10.8	80.7
POVERTY	Lowest Poverty Quartile	405	3,594,45	0.21	8,875	40,764	7.2	84.1
RANK	Middle Poverty Half	839	8,706,27	0.51	10,377	31,712	16.9	74.8
	Highest Poverty Quartile	413	4,675,95	0.28	11,322	23,449	32.4	47.4
MINORITY	Lowest Non-Hispanic White Quartile	405	5,325,08	0.31	13,148	25,407	28.7	38.2
RANK	Middle Non-Hispanic White Half	839	9,100,70	0.54	10,847	32,590	16.5	75.0
	Highest Non-Hispanic White Quartile	413	2,550,88	0.15	6,176	36,726	12.2	91.8
MAJOR URBAN AREAS		**560**	**9,674,45**	**1.00**	**17,276**	**40,478**	**13.4**	**66.8**
INCOME	Lowest Income Quartile	139	2,490,45	0.26	17,917	24,591	25.7	41.6
RANK	Middle Income Half	281	4,902,21	0.51	17,446	37,250	11.3	71.1
	Highest Income Quartile	140	2,281,78	0.23	16,298	62,732	5.3	83.3
POVERTY	Lowest Poverty Quartile	139	2,241,03	0.23	16,123	56,716	3.4	82.6
RANK	Middle Poverty Half	281	4,616,81	0.48	16,430	39,710	11.1	73.4
	Highest Poverty Quartile	140	2,816,60	0.29	20,119	25,899	27.8	37.9
MINORITY	Lowest Non-Hispanic White Quartile	139	3,055,87	0.32	21,985	27,551	25.8	30.6
RANK	Middle Non-Hispanic White Half	281	5,208,53	0.54	18,536	41,561	10.3	72.8

		Number of Zip Codes	Total Persons	Proportion	Persons per Zip	Average Income	Poverty Index	Majority
	Highest Non-Hispanic White Quartile	140	1,410,05	0.14	10,072	51,139	7.2	90.8
OTHER MSA		**287**	**4,182,57**	**1.00**	**14,573**	**29,975**	**20.0**	**62.9**
INCOME	Lowest Income Quartile	64	780,25	0.19	12,191	21,222	30.6	46.9
RANK	Middle Income Half	152	2,172,79	0.52	14,295	28.770	19.3	64.3
	Highest Income Quartile	71	1,229,52	0.29	17,317	40,446	11.9	74.2
POVERTY	Lowest Poverty Quartile	64	850,69	0.20	13,292	36,973	9.0	76.1
RANK	Middle Poverty Half	152	2,197,83	0.53	14,459	30,609	18.6	66.3
	Highest Poverty Quartile	71	1,134,04	0.27	15,972	22,310	32.7	43.6
MINORITY	Lowest Non-Hispanic White Quartile	64	1,260,12	0.30	19,689	23,225	30.2	38.7
RANK	Middle Non-Hispanic White Half	152	2,145,31	0.51	14,114	30,352	19.1	64.7
	Highest Non-Hispanic White Quartile	71	777,12	0.19	10,945	35,252	12.6	80.6
NON-MSA		**810**	**3,119,65**	**1.00**	**3,851**	**26,581**	**21.3**	**75.2**
INCOME	Lowest Income Quartile	202	441,74	0.14	2,187	19,982	30.7	66.0
RANK	Middle Income Half	406	1,827,22	0.59	4,501	26,143	20.3	76.8
	Highest Income Quartile	202	850,69	0.27	4,211	34,058	14.2	81.1
POVERTY	Lowest Poverty Quartile	202	502,73	0.16	2,489	30,989	9.3	87.8
RANK	Middle Poverty Half	406	1,891,62	0.61	4,659	26,591	20.3	78.9
	Highest Poverty Quartile	202	725,30	0.23	3,591	22,152	35.6	55.2
MINORITY	Lowest Non-Hispanic White Quartile	202	1,009,09	0.32	4,995	24,624	30.2	43.3
RANK	Middle Non-Hispanic White Half	406	1,746,86	0.56	4,303	27,218	19.8	80.4
	Highest Non-Hispanic White Quartile	202	363,70	0.12	1,801	27,255	15.6	96.5

The population of the zip codes varies considerably, with the levels seemingly related to poverty and racial status. Zip codes which have a lower poverty level and greater fraction of the non-Hispanic white population tend to have smaller populations, a factor that is relevant in understanding the distribution of branch locations. The variations in population for high and low minority representation is particularly striking. Those zip codes that fall into the highest quartile on the basis of percentage of the population that is non-Hispanic whites have an average population of only 6176. This compares with an average population of 13,148 for those zip codes with the lowest percentage of non-Hispanic whites.

There are also considerable differences in the distribution of income and racial characteristics throughout the state. The major metropolitan areas have higher incomes than the smaller metropolitan areas (and Aus-

tin and Dallas-Ft. Worth stand out among those areas) while the smaller metropolitan areas have higher incomes than the non-metropolitan areas. Also, the major metropolitan areas have smaller fractions of their populations with income below the poverty level than either the smaller metropolitan or the non-metropolitan areas. The pattern is much more mixed regarding racial composition, with rural Texas having the highest percentage of non-Hispanic whites.

Tables Two and Three provide information on the number of commercial banks and savings and loans and the change in these numbers for the entire state of Texas as well as for selected subunits of the state.[88] Table Two presents the number of commercial bank and savings and loan branches, for 1985 to 1993, classified both by zip codes and by a two-mile radius criterion. Looking initially at the entire state, we note that the number of bank and SLA branches per zip code contracted slightly from 1985 to 1993 (2.04 in 1985 to 1.93 in 1993, a decline of 5%). The number also falls when the market area is measured in terms of a two-mile radius (from 2.66 in 1985 to 2.52 in 1993 or 5%). This contraction in the number of branches reflects a nationwide trend as banks rely less on "bricks and mortar" to deliver banking services.[89] The tremendous turmoil in the banking industry in Texas during this period provided great flexibility for Texas banks to accelerate this trend. The changes in the number of bank and SLA branches that are discussed below must be interpreted within this context of declines generally in the number of branches.

Dividing the data by income, poverty, and racial ranks produces some interesting patterns. As Table Two shows, for the state as a whole the average number of branches per zip code for the highest-income quartile zip codes stayed roughly constant (2.54 versus 2.55) but *declined* by 11% for the lowest-income quartile areas (from 1.54 to 1.38). This reduction in the number of branches for the lowest-income zip codes is particularly striking. A similar pattern is observed when the zip codes are stratified by percentage of the population with incomes below the poverty level. In fact, those zip codes that had the highest (quartile) percentage of residents living in poverty experienced a sharp 13% decline in the availability of bank and SLA branches (from 2.03 to 1.76). This pattern is consistent when the zip codes are classified by racial characteristics. Dominantly white zip codes experience a 4% increase in the average number of branches statewide (from 1.30 to 1.35), while minority zip codes experience a significant decline (from 2.11 to 1.87, a reduction of over 10%). In short, there appears to be a substantial and consistent association between the changes in branch availability and the income, poverty, and racial characteristics of Texas zip codes. Low-income areas, high-poverty areas, and high-minority areas all experienced a decline in the availability

88. A separate analysis was done of the number of areas that experienced an increase or decrease in the number of branches during the period of the study. These results are consistent with and support the analysis presented in Tables Two and Three.

89. *See supra* notes 11-12 and accompanying text.

of branches between 1985 and 1993, a time when the number of branches was increasing or staying constant for high-income, low-poverty, and low-minority areas.

The two-mile radius definition of the market exhibits patterns similar to the zip code definition. The number of bank and SLA branches declines for low-income market areas from an average of 2.37 in 1985 to 2.22 in 1993. Availability of facilities also fell for those areas with the highest incidence of poverty (while increasing in areas with low poverty rates). Again, dominantly white economic areas experienced a slight increase in the average number of branches while minority areas experienced a substantial decline (from 3.30 to 3.04).

Table Two also presents the branch data for the three major geographic areas—major urban areas, other metropolitan statistical areas, and non-metropolitan statistical areas. The patterns for the major urban areas are perhaps most interesting and relevant to the issue under investigation. For these major urban areas—those that comprise about 60% of the population of the state—the changes in the number of branches are also closely related to the income, poverty, and racial characteristics of the areas. For example, focusing on zip codes, the high-income quartiles experienced an increase in the number of branches (from 4.06 to 4.18) while the lowest-income quartile experienced a decline (from 2.37 to 2.29). The pattern is similar for the two-mile radius areas.

While the patterns for the other MSA and non-MSA zip codes are similar to those just discussed, two characteristics of these data are particularly noteworthy. First, the decline in the availability of facilities is much more pronounced for these areas than for the major urban areas. Indeed, most of the decline in branches took place outside the major urban areas. This decline may reflect differences in the economic prosperity among these areas or it may be associated with the shift in the state's banking structure towards large, statewide branching systems, often owned by out-of-state banking organizations. Second, the absolute decline in branches is quite pronounced in the other MSAs and the non-MSAs. The largest declines in the availability of offices when the data are classified by income levels, distribution, and minority status took place in the smaller metropolitan and non-metropolitan areas of the state. For example, the lowest-income quartile zip codes in the other MSAs experience a 28.5% reduction in the number of branches per zip code (25.9% using the two-mile radius measure). In addition, for the highest-poverty quartile zip codes in non-MSAs, the reduction in the number of branches is 19.0%.[90]

90. This pattern is also observed when the analysis focuses on the number of areas that experience increases or decreases in the number of their branches. For example, 28% of the zip codes in the lowest-income quartile in the other MSA group experienced a decline in the number of branches in both 1985 and 1993 (versus only 16% experiencing an increase). This is a much larger relative decline than in the major urban areas.

Table 2
Average Number of Commercial Banks and Savings and Loan Branches (Combined) per Zip Code and per Two-Mile Radius in Texas, 1985 and 1993, Classified by Income Rank, Poverty Rank, and Minority Rank

		Zip Code			Two-Mile Radius		
		1985	1993	Δ	1985	1993	Δ
TOTAL TEXAS		**2.04**	**1.93**	**-0.11**	**2.66**	**2.52**	**-0.13**
INCOME RANK	Lowest Income Quartile	1.54	1.38	-0.17	2.37	2.22	-0.15
	Highest Income Quartile	2.54	2.55	0.01	3.33	3.31	-0.02
POVERTY RANK	Lowest Poverty Quartile	1.71	1.84	0.13	1.95	2.07	0.13
	Highest Poverty Quartile	2.03	1.76	-0.26	3.12	2.86	-0.26
MINORITY RANK	Lowest Non-Hispanic White Quartile	2.11	1.87	-0.24	3.30	3.04	-0.25
	Highest Non-Hispanic White Quartile	1.30	1.35	0.05	1.66	1.68	0.02
MAJOR URBAN AREAS		**3.03**	**3.02**	**-0.01**	**4.69**	**4.66**	**-0.03**
INCOME RANK	Lowest Income Quartile	2.37	2.29	-0.08	4.54	4.55	0.01
	Highest Income Quartile	4.06	4.18	0.11	6.29	6.36	0.08
POVERTY RANK	Lowest Poverty Quartile	3.02	3.27	0.25	3.67	3.94	0.27
	Highest Poverty Quartile	2.84	2.65	-0.19	5.84	5.69	-0.15
MINORITY RANK	Lowest Non-Hispanic White Quartile	2.79	2.68	-0.12	6.02	5.88	-0.14
	Highest Non-Hispanic White Quartile	2.24	2.36	0.12	3.13	3.24	0.11
OTHER MSA		**2.22**	**1.97**	**-0.25**	**2.54**	**2.20**	**-0.34**
INCOME RANK	Lowest Income Quartile	2.14	1.53	-0.61	2.66	1.97	-0.69
	Highest Income Quartile	3.23	3.15	-0.07	3.41	3.28	-0.13
POVERTY RANK	Lowest Poverty Quartile	2.14	2.25	0.11	2.22	2.27	0.05
	Highest Poverty Quartile	2.76	2.25	-0.51	3.23	2.66	-0.56
MINORITY RANK	Lowest Non-Hispanic White Quartile	2.48	2.16	-0.33	2.97	2.59	-0.38
	Highest Non-Hispanic White Quartile	1.86	1.73	-0.13	2.18	1.94	-0.24
NON-MSA		**1.29**	**1.16**	**-0.13**	**1.29**	**1.16**	**-0.13**
INCOME RANK	Lowest Income Quartile	0.78	0.70	-0.08	0.78	0.70	-0.08
	Highest Income Quartile	1.24	1.20	-0.04	1.25	1.20	-0.04
POVERTY RANK	Lowest Poverty Quartile	0.67	0.73	0.06	0.68	0.73	0.05
	Highest Poverty Quartile	1.21	0.98	-0.23	1.21	0.98	-0.23
MINORITY RANK	Lowest Non-Hispanic White Quartile	1.53	1.23	-0.30	1.53	1.23	-0.30
	Highest Non-Hispanic White Quartile	0.45	0.50	0.06	0.45	0.50	0.05

Table Three shows the number of facilities per 10,000 population for the zip code as well as for the two-mile radius definition of the market area. Looking initially at the entire state, we note that the number of offices per 10,000 population fell (from 4.17 to 3.98) in the lowest-income zip codes but increased in the highest-income zip codes (from 3.12 to 3.23). Using a two-mile radius measure of the market area, we observe that the number of branches per 10,000 population decreased for both the highest- and the lowest-income areas.

A similar pattern is evident when we examine the distribution of income within a given area rather than its level (as proxied by the percentage of the population below the poverty level). Market areas with a large percentage of the population living below the poverty level experienced declines in the availability of facilities while market areas with a small percentage of the population in poverty experienced increases in the availability of facilities (whether measured by zip code or the two-mile radius). Dividing the market areas by the minority status of the population produced similar results.

Table Three also shows the number of facilities per 10,000 population broken into the major metropolitan areas, the smaller metropolitan areas, and the rural areas. For the major metropolitan areas, whether classified by income levels, poverty status, or racial status, the patterns are consistent with those reported for the entire state: low-income areas, higher-poverty areas, and high-minority areas experienced declines in the availability of facilities whether the market is measured in terms of zip codes or a two-mile radius definition. The patterns are similar for both the other MSAs and the non-MSAs. For the other MSAs, the lowest-income quartiles experienced a decline in the average number of branches per 10,000 population while the highest-income quartiles experienced more than a 10% increase. For the non-SMSA zip codes, the lowest-income quartiles exhibited a decline from 3.22 to 3.03 (per 10,000 population) while the highest-income quartiles show a slight increase in the number of branches.

Table 3
Average Number of Commercial Banks and Savings and Loan Branches (Combined) per 10,000 Population per Zip Code and per Two-Mile Radius in Texas, 1985 and 1993, Classified by Income Rank, Poverty Rank, and Minority Rank

		Zip Code			Two-Mile Radius		
		1985	1993	Δ	1985	1993	Δ
TOTAL TEXAS		**3.21**	**3.13**	**-0.08**	**4.35**	**4.20**	**-0.15**
INCOME RANK	Lowest Income Quartile	4.17	3.98	-0.19	5.88	5.72	-0.15
	Highest Income Quartile	3.12	3.23	0.11	5.25	5.19	-0.07
POVERTY RANK	Lowest Poverty Quartile	2.25	2.59	0.34	2.55	2.80	0.25
	Highest Poverty Quartile	4.15	3.77	-0.38	6.31	5.84	-0.47
MINORITY RANK	Lowest Non-Hispanic White Quartile	3.85	3.47	-0.38	6.19	5.64	-0.55
	Highest Non-Hispanic White Quartile	1.98	2.45	0.47	2.68	3.05	0.37
MAJOR URBAN AREAS		**3.59**	**3.64**	**0.05**	**6.42**	**6.37**	**-0.05**
INCOME RANK	Lowest Income Quartile	6.34	6.14	-0.20	10.91	10.89	-0.02
	Highest Income Quartile	4.65	4.86	0.21	9.62	9.50	-0.13
POVERTY RANK	Lowest Poverty Quartile	2.26	2.38	0.12	2.93	2.99	0.06
	Highest Poverty Quartile	6.40	6.00	-0.39	12.35	11.76	-0.59
MINORITY RANK	Lowest Non-Hispanic White Quartile	6.09	5.86	-0.23	12.53	11.87	-0.66
	Highest Non-Hispanic White Quartile	1.19	2.08	0.17	2.57	2.69	0.13
OTHER MSA		**1.79**	**1.73**	**-0.06**	**2.74**	**2.56**	**-0.18**
INCOME RANK	Lowest Income Quartile	2.45	2.27	-0.18	3.31	2.98	-0.33
	Highest Income Quartile	1.76	1.98	0.22	4.02	4.21	0.19
POVERTY RANK	Lowest Poverty Quartile	1.35	1.61	0.26	1.42	1.62	0.20
	Highest Poverty Quartile	2.50	2.11	-0.39	3.29	2.77	-0.52
MINORITY RANK	Lowest Non-Hispanic White Quartile	1.47	1.56	0.09	2.31	2.23	-0.08
	Highest Non-Hispanic White Quartile	1.62	1.90	0.29	4.01	4.22	0.20
NON-MSA		**3.45**	**3.27**	**-0.18**	**3.48**	**3.27**	**-0.21**
INCOME RANK	Lowest Income Quartile	3.22	3.03	-0.19	3.22	3.03	-0.19
	Highest Income Quartile	2.53	2.54	0.01	2.66	2.54	-0.11
POVERTY RANK	Lowest Poverty Quartile	2.52	3.04	0.52	2.65	3.04	0.39
	Highest Poverty Quartile	3.18	2.81	-0.37	3.18	2.81	-0.37
MINORITY RANK	Lowest Non-Hispanic White Quartile	3.06	2.44	-0.63	3.06	2.44	-0.63
	Highest Non-Hispanic White Quartile	2.16	2.89	0.73	2.28	2.89	0.61

B. Multivariate Analysis

We separately analyzed the determinants of the changes in the number of branches in terms of the multivariate model discussed above. Analyses were done using income levels, percentage of the population with incomes below the poverty level, and minority status of the population. Since these analyses provide consistent results, we focus on income levels as the independent variable in the interest of brevity. This focus on income levels is also consistent with the CRA's focus on low- and moder-

ate-income neighborhoods.[91]

Tables Four and Five provide the results of the multivariate analysis using the income variable. In this procedure, the number of facilities for each market area in 1993 is regressed upon: (a) the population of the market area (this allows us to control for the fact that population varies considerably among market areas); (b) the number of branches in 1985 (to deal with the regression to the mean phenomenon discussed earlier); and (c) dummy variables contrasting the lowest-income rank group to the highest (1 if zip code is low-income, 0 if moderate-, and -1 if highest-income) and the middle-income rank group to the highest (1 if zip code is middle-income, 0 if low-income, and -1 if highest-income). The coefficient of the Lowest-Income Rank dummy variable is of particular interest because it provides evidence on the question of whether there is a significant association between the change in the number of branches and the income rank of the market area once the population of the market area and the number of branches in 1985 are held constant.[92] A negative coefficient indicates that, *ceteris paribus*, the lowest-income areas are associated with a greater decline (or conversely lower increase) in the number of branches than that present in otherwise similar highest-income areas. Tables Four and Five also present the results of "*t*" tests to determine the statistical significance of the difference between the lowest- and highest-income level market areas. Table Four used the zip code measure of the market area while Table Five used the two-mile radius measure.

Table Four shows that there is a negative and statistically significant association between the income rank and the change in the number of branches in Texas zip codes between 1985 and 1993. Holding population and the number of branches in 1985 constant, the lowest-quartile income zip codes experienced a loss of bank branches. This statistically significant decline is observed for Texas as a whole, for the major MSAs, and for the other MSAs; however, in the non-MSAs, the sign of the coefficient, while negative, is not statistically significant. The sign of the variable denoting middle-income rank status is also negative and statistically significant. The importance of income rank in its association with changes in the number of branches is reinforced by the "*t*" tests, which show statistically significant differences between the lowest- and highest-income MSAs for the entire state, the major MSAs, and the other MSAs (but not for the non-MSAs).[93]

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91. *See supra* notes 19-28 and accompanying text.

92. The number of branches in 1985 already reflects the underlying banking demand in a zip code, including the effects of such factors as zip code population, income, and racial distribution. Assuming that population, income, or racial distribution did not change radically between 1985 and 1993, the significance of the income rank on the change in number of branches reflects a relative change of focus by banks and S&Ls from low-income to high-income neighborhoods.

93. An alternative interpretation of these findings might be that the Texas energy and banking crisis affected neighborhoods differently. Our analysis already controls for the possibility that cities or SMSAs were affected differently by the crisis by defining income ranks within each SMSA. However, if the crisis affected zip codes within the same SMSA

Table 4
Determinants of Changes in Bank and Savings and Loan Branches in Texas, 1985 - 1993, Zip Code Classification

Variables	Area			
	Texas	Major MSAs	Other MSAs	Non MSAs
Intercept	0.34***	0.57***	0.79***	0.13*
	(5.2)	(3.7)	(4.3)	(2.4)
Population	0.01***	0.01***	0.01***	0.01***
	(8.7)	(3.7)	(5.2)	(7.6)
1985 Branch Level	0.76***	0.80***	0.54***	0.60***
	(61.9)	(41.7)	(16.5)	(28.1)
Lowest Income Rank	−0.38***	−0.56**	−0.66***	−0.08
	(4.4)	(2.9)	(3.5)	(1.2)
Middle Income Rank	−0.27***	−0.41*	−0.66***	−0.07
	(3.7)	(2.5)	(3.5)	(1.2)
Least Squares Mean				
Lowest	1.78	2.81	1.66	1.14
Medium	1.89	2.96	1.85	1.14
Highest	2.16	3.37	2.51	1.22
R^2	0.81	0.82	0.71	0.81
F value (no income effect on branch change)	10.7***	4.7***	8.4***	0.92
t-value (Lowest versus Highest)	4.4***	2.9**	3.8***	1.2

† indicates statistical significance at the .1 level
* indicates statistical significance at the .05 level
** indicates statistical significance at the .01 level
*** indicates statistical significance at the .001 level

differently based on their income distribution, the observed changes in number of branches might reflect changes in demand for banking services rather than a relative redistribution of branches due to regulatory changes.

Table 5
Determinants of Changes in Bank and Savings and Loan Branches in Texas, 1985 - 1993, Two-Mile Classification

Variables	Area			
	Texas	Major MSAs	Other MSAs	Non MSAs
Intercept	0.20*	0.41*	0.82***	0.12*
	(2.6)	(2.0)	(4.3)	(2.4)
Population	0.01	0.01	0.01***	0.01***
	(3.4)***	(1.4)	(5.3)	(7.6)
1985 Branch Level	0.90***	0.92***	0.55***	0.69***
	(114.4)	(80.0)	(18.8)	(28.1)
Lowest Income Rank	-0.21*	-0.21	-0.73**	-0.08
	(2.1)	(0.90)	(3.2)	(1.1)
Middle Income Rank	-0.25**	-0.37†	-0.66***	-0.07
	(2.9)	(1.8)	(3.4)	(1.2)
Least Squares Mean				
Lowest	2.49	4.68	1.99	1.14
Medium	2.45	4.52	2.05	1.15
Highest	2.70	4.89	2.71	1.21
R^2	0.91	0.93	0.72	0.81
F value (no income effect on branch change)	4.4*	1.7	6.7**	0.8
t-value (Lowest versus Highest)	2.1*	0.9	3.15**	1.2

† indicates statistical significance at the .1 level
* indicates statistical significance at the .05 level
** indicates statistical significance at the .01 level
*** indicates statistical significance at the .001 level

Similar patterns exist for the two-mile radius definition of the market area. The signs of the coefficient are negative for the lowest-income rank areas and statistically significant for the entire state and for the other MSAs (but not for the major MSAs and the non-MSAs). For the middle-income rank areas, the signs are also negative (and significant for all the metropolitan areas). Also, "*t*" tests reveal significant differences between the lowest-income rank areas and the highest-income rank areas for changes in the number of branches for the entire state and for the other MSAs.

VIII. CONCLUSIONS AND IMPLICATIONS

The profound regulatory changes that took place in Texas in the late 1980s provide a unique laboratory in which to explore the effects of such change on the availability of bank and SLA facilities to the community generally, and especially to subsets of the community such as low-income and minority areas. Previous academic research suggests that the shift to state-wide branch banking should have *increased* the availability of these banking facilities. In Texas, however, during the relevant time period,

this did not happen. Indeed, the number of offices of commercial banks and SLAs declined slightly.

Perhaps more significant from a public policy perspective, however, is the change which occurred in the distribution of facilities throughout the state. Consistent with our *a priori* expectations and with prior research, the availability of facilities did increase in upper-income areas. Access to banking services as measured by the availability of offices, however, *declined* in low-income areas. This decline occurred despite the greater emphasis on providing banking services to low- and moderate-income areas that was mandated by FIRREA's 1989 amendments to the CRA. While we can only speculate about the reasons for these changes, the fact remains that, despite the provisions of the CRA, there has been a decline in the availability of bank and SLA facilities in low-income areas in Texas in recent years. Consequently, our data appears to throw into some question whether the Riegle-Neal Act's move toward nationwide branch banking will have a positive impact on bank and SLA facility availability in low-income areas in the country.