A Current Evaluation of U.S. Banking Legislation:
The Federal Deposit Insurance Corporation Improvement Act and Its Performance in Terms of Financial Services Industry Impacts

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1. INTRODUCTION

Except for the years of the Great Depression, the regulatory authorities in the U.S. have never closed so many banks and S&Ls as they did during the 1980s and early 1990s. For example, over the 1943–1981 period, in the U.S., very few banks failed due to insolvency. This situation began to change dramatically in 1982, however, when 42 banks failed, followed by 48 failures in 1983 and 79 more in 1984. The annual number of bank failures increased sharply thereafter, surpassing 100 (and sometimes surpassing 200) through the early 1990s. A very similar pattern in the U.S. for savings and loan (S&L) failures was also experienced [see, especially, BARTH (1991)]. For the 1934–1979 period, there were only three years in which the number of S&L failures reached 10 or more (13 in 1941; 10 in 1966; and 10 in 1970). Beginning with the 1980–1982 period, the annual number of S&L failures increased dramatically, however, reaching peaks of 205 in 1988, 315 in 1990, and 232 in 1991.

Several studies of the determinants of commercial bank and S&L failures in the U.S. have been conducted in recent years. Among the most frequently mentioned determinants of such failures has been the system of expanding federal deposit insurance coverage, in conjunction with reduced capital requirements [BARTH (1991), BARTH and BARTHLOMEO (1992), BARTH and BRUMBAUGH (1992), BARTH, BRUMBAUGH and LITAN (1992), BRUMBAUGH (1988), CEBULA (1993), CEBULA and BELTON (1994; 1997), SALTZ (1995; 1997)].

Since 1966, federal statutes in the U.S. have elevated the ceiling level of federal deposit insurance coverage per account on the following four occasions:

1. as of October 16, 1966, the Financial Institutions Supervisory Act increased the ceiling per account from $10,000 to $15,000;

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1. In the U.S., S&Ls (often referred to as «thrifts») have traditionally served a primary role of providing mortgage loans to homeowners at reasonable interest rates. The income-generating activities of S&Ls broadened as a result of the deregulation that began in 1980 and thereafter.
(2) as of December 23, 1969, the Credit Control Act increased the ceiling per account to $20,000;
(3) the Act of October 28, 1974 elevated the ceiling to $40,000 for individuals and $100,000 for states and political subdivisions; and
(4) as of March 31, 1980, the Depository Institutions Deregulation and Monetary Control Act, hereinafter referred to as the DIDMCA, elevated the ceiling for individuals per account to $100,000.

In addition, banks and S&Ls in the U.S. have experienced, under certain provisions of the DIDMCA and the Garn-St. Germain Depository Institutions Act of 1982 (hereinafter, the GSGDIA), dramatically reduced capital requirements. For instance, the DIDMCA eliminated the then-existing five percent minimum capital requirement in 1980; in replacement thereof, the DIDMCA authorized a capital requirement within the range of three to six percent. By January, 1982, the capital requirement put into effect by the regulators was the three percent level. Later in 1982, the GSGDIA ended the three-to-six-percent requirement and required instead only the maintenance by each institution of «adequate» capital.

Prior to the implementation of FDICIA (the Federal Deposit Insurance Corporation Improvement Act of 1991), banks and S&Ls whose capital became very low (or negative) had little incentive to engage in safe, sound banking practices because their own equity at stake was minimal and because regulator tolerance of insolvency or near-insolvency conditions («forebearance») implied the absence of any imminent threat of being closed.

As observed by TAGGART and JENNINGS (1934, pp. 514–515), «...the possibility of losing owners’ capital is, without doubt, the strongest force in operation to prevent unsound banking [practices].» As BARTH (1991, p. 51) has more recently observed, «...inadequately capitalized institutions have every incentive to engage in high-risk activities or to gamble for resurrection. It is the <heads I win, tails the federal insurer loses> scenario at work.» Regulatory forebearance gave inadequately capitalized institutions the time to embark on go-for-broke strategies that were very risky but – if they worked out – profitable. If they worked out well, institutional resurrection might occur, whereas if they failed (as was too often the case), the failed activities were funded by the federal insurer. This was particularly the case after March 31, 1980, when the DIDMCA increased the ceiling level of federal deposit insurance to $100,000, greatly increasing the extent to which institutions could engage in risky ventures. Thus, expanding federal deposit insurance coverage, combined with declining capital requirements and regulator forebearance, created risk incentives, opportunity, and increased risk-taking capacity that ultimately contributed to financial institution failures on a historically large scale.

2. There was also a liberalizing by regulatory agencies of what constituted capital; this action in some cases made the regulatory capital requirement of dubious value [BARTH (1991), BARTH and BRUMBAUGH (1992), BARTH, BRUMBAUGH and LITAN (1992), SALTZ (1997)].
3. The studies by BARTH (1991) and BARTH and BARTHOLOMEW (1992) are especially enlightening on this subject.
A number of other factors in the U.S. have also been identified as playing important roles in the financial services industry's economic problems. For instance, high and rising interest rates have been cited as raising the cost of funds to banks and S&Ls, thereby cutting into profit margins [BARTH (1991), BARTH and BARTHOLOMEW (1992), BARTH and BRUMBAUGH (1992), BARTH, BRUMBAUGH and LITAN (1992), BRADLEY and JANSEN (1986), CEBULA (1993), SALTZ (1994; 1995; 1997)]. Offsetting this effect to some degree were rising mortgage interest rate yields, particularly for the S&Ls, and rising yields on various U.S. Treasury issues that U.S. financial institutions, especially commercial banks, have been inclined to purchase. In point of fact, the FDIC (1994, p. 63) indicates a significant commercial bank portfolio of a variety of Treasury issues, especially notes maturing in 1–3 years. Recessionary conditions (or reduced rates of real GDP growth) have also been depicted as exacerbating the ills of the financial services industry by inducing loan defaults and foreclosures [AMOS (1992), BARTH (1991), BARTH, BRUMBAUGH and LITAN (1992), CEBULA (1993), CEBULA and BELTON (1997), LOUCKS (1994), SALTZ (1994; 1995)]. In addition, as stressed in studies by BARTH (1991, esp. p. 45), BARTH and BARTHOLOMEW (1992), CEBULA and BELTON (1997), SALTZ (1997), and others, the financial services industry deregulation of the early 1980s – largely the consequence of the DIDMCA and the GSGDIA – marked the beginning of an increasingly competitive environment for financial institutions in the U.S. This increased competition allegedly reduced the profitability of banks and S&Ls and thereby increased the likelihood of insolvency. The increased competition and profit reduction may also have reduced the value of financial institution corporate charters [CEBULA (1997), CEBULA and BELTON (1997, esp. p. 282), SALTZ (1997, esp. p. 4), KEELEY (1990)], thereby making financial institutions more susceptible to the perverse incentives of the federal deposit insurance system.

Attempting to address the problem of bank and S&L failures and to protect federal deposit insurance, the U.S. Congress passed the FDICIA, which was very quickly implemented. This statute contains numerous provisions directed at diminishing bank and S&L failure rates and at reducing the numbers of «problem» banks and «problem» S&Ls, i.e., banks and S&Ls identified as potential insolvencies. Success in achieving these objectives would serve to re-establish and protect the financial integrity of the deposit insurance funds.

This study has several objectives. In particular, it seeks: (a) to provide an updated elaboration of major, potentially significant FDICIA provisions; (b) to identify quantitative improvements in the bank failure rate, the number of problem banks, and the Bank Insurance Fund (BIF) since FDICIA was implemented; (c) to identify quantitative improvements in the S&L failure rate, the number of problem S&Ls, and the Savings Association Insurance Fund (SAIF) since FDICIA was implemented; and (d) to provide a formal empirical assessment of FDICIA in terms of its impact on the bank failure rate and the S&L failure rate. This inquiry is motivated by the implications of bank and S&L failures for the integrity of the deposit insurance funds, and hence for U.S. citizens who are depositors and/or taxpayers. If FDICIA fails to effectively address the bank failure-BIF and S&L failure-SAIF problems, the future may find «...the American taxpayer fac-
ing ever larger potential costs» [BARTH and BRUMBAUGH (1992, p. xvii)]. On the other hand, if FDICIA acts to reduce bank and S&L failures and thereby to help restore the integrity of the BIF and the SAIF, then depositors will be protected and taxpayers will not become vulnerable to potential tax increases or other financial burdens that might be required in order to restore the BIF and the SAIF. Clearly, to the extent that various FDICIA provisions have yielded successful outcomes, other nations might in certain cases find benefits in emulating various features of the FDICIA.

Section 2 of this study describes provisions in FDICIA that attempt to address bank-failure and S&L-failure causes. Section 3 then provides a formal empirical analysis of the bank-failure-rate impact of FDICIA, whereas Section 4 provides a formal empirical analysis of the S&L-failure-rate impact of FDICIA. Section 5 consists of concluding observations.

2. SOME OF THE IMPORTANT PROVISIONS OF FDICIA

Following in principle long-established practices of the insurance industry, Section 302(a) of FDICIA authorized the FDIC to charge higher deposit insurance premiums to banks and S&Ls posing greater risks to the BIF and SAIF. These risk-related deposit insurance premiums were intended to create an incentive for banks and S&Ls to reduce the riskiness of their assets and business practices.

Under the rule adopted by the FDIC (and approved on September 15, 1992) under FDICIA provision 302(a), the initial schedule of risk-related premiums mandated that a commercial bank would pay a deposit insurance premium within the range of 23 cents per $100 of assessable deposits, which was the previous rate paid by all banks and S&Ls, to 31 cents per $100 of assessable deposits, depending upon the institution’s own particular risk classification. This risk-related deposit insurance schedule was intended to be a transition stage between the previously existing flat-rate system (which was insensitive to risk factors and therefore violated the basic principles of insurance premium assessment) and the «final» risk-related premium system mandated under Section 302(a) of FDICIA to be implemented no later than January 1, 1994. The transitional risk-related assessment system went into effect on January 1, 1993. The rates under this initial system are indicated in Table 1. As shown, there were nine different assessment rates.

The current risk-related deposit-insurance rate structure for banks is quite different from the original scheme. This is illustrated in Table 2, where the lowest rate, for well-capitalized, subgroup A banks, is actually zero, whereas the highest current rate for banks is 27 cents per $100 of assessable deposits\(^4\). Observe that the vast majority (95.2 percent) of banks currently are subject to the zero percent deposit insurance premium.

\(^4\) Banks classified as «1A» are subject to a $2,000 payment to the BIF annually.
Table 1:
Original Risk-Related Deposit Insurance Premiums for Banks

<table>
<thead>
<tr>
<th>Supervisory Subgroup</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Capitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment Rate</td>
<td>$0.23/$100</td>
<td>$0.26/$100</td>
<td>$0.29/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>9,820 (91%)</td>
<td>634 (6%)</td>
<td>168 (2%)</td>
</tr>
<tr>
<td>Adequately Capitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment Rate</td>
<td>$0.26/$100</td>
<td>$0.29/$100</td>
<td>$0.30/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>79 (1%)</td>
<td>29 (0%)</td>
<td>47 (0%)</td>
</tr>
<tr>
<td>Undercapitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment Rate</td>
<td>$0.29/$100</td>
<td>$0.30/$100</td>
<td>$0.31/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>2 (0%)</td>
<td>1 (0%)</td>
<td>34 (0%)</td>
</tr>
</tbody>
</table>


Table 2:
Current Risk-Related Deposit Insurance Premiums for Banks

<table>
<thead>
<tr>
<th>Supervisory Subgroup</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Capitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>0/$100</td>
<td>$0.03/$100</td>
<td>$0.17/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>8,891 (95.2%)</td>
<td>243 (2.6%)</td>
<td>44 (0.5%)</td>
</tr>
<tr>
<td>Adequately Capitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>$0.03/$100</td>
<td>$0.10/$100</td>
<td>$0.24/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>117 (1.2%)</td>
<td>20 (0.2%)</td>
<td>13 (0.1%)</td>
</tr>
<tr>
<td>Undercapitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>$0.10/$100</td>
<td>$0.24/$100</td>
<td>$0.27/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>5 (0.1%)</td>
<td>0 (0.0%)</td>
<td>9 (0.1%)</td>
</tr>
</tbody>
</table>

In order to provide a basic sense for the way in which risk-related federal deposit insurance premiums are assessed, note in Tables 1 and 2 that each banking institution, based on its own particular capital/asset ratio, is first assigned to one of three broad categories: «well capitalized,» «adequately capitalized,» or «undercapitalized.» Next, the FDIC then assigns each bank in each of these three broad categories to one of three supervisory subgroups – A, B, or C – based on an FDIC evaluation of the risk posed by the bank. Table 1 indicates not only the nine risk-related deposit-insurance premium classifications, but also the deposit insurance premium initially associated with each, and the number of banks in each of the nine classifications as of December 31, 1994. Table 2 provides the very same kinds of detailed data but as of December 31, 1997. The fact that the percentage of insured banks that was subject to the minimum deposit insurance premium rose from 91 percent on December 31, 1994 to 95.2 percent on December 31, 1997 may be indicative of a sounder banking system.

The current deposit insurance premium schedule for S&Ls is shown in Table 3, where deposit insurance premiums range from a low of zero cents per $100 of assessable deposits to a high of 27 cents per $100 of assessable deposits. Clearly, this structure parallels that imposed on the banks. Observe further that 90.9 percent of all S&Ls are subject to a zero deposit insurance premium.

<table>
<thead>
<tr>
<th>Supervisory Subgroup</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well Capitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment:</td>
<td>0/$100</td>
<td>$.03/$100</td>
<td>$.17/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>1,383 (90.9%)</td>
<td>94 (6.2%)</td>
<td>17 (1.1%)</td>
</tr>
<tr>
<td>S&amp;Ls (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequately Capitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment:</td>
<td>$.03/$100</td>
<td>$.10/$100</td>
<td>$.24/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>12 (0.8%)</td>
<td>7 (0.5%)</td>
<td>6 (0.4%)</td>
</tr>
<tr>
<td>S&amp;Ls (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undercapitalized:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment:</td>
<td>$.10/$100</td>
<td>$.24/$100</td>
<td>$.27/$100</td>
</tr>
<tr>
<td>Number of Insured</td>
<td>1 (0.1%)</td>
<td>1 (0.1%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>S&amp;Ls (%)</td>
<td></td>
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</table>

As of December 19, 1992, Section 131 of the FDICIA mandates «prompt corrective action» whenever an insured institution’s capital falls below certain prescribed levels. For instance, Section 131 of the FDICIA restricts or prohibits certain activities while requiring the insured institution to submit a capital restoration plan when it has become undercapitalized. The prohibitions and restrictions imposed on the undercapitalized institution become more severe as the institution’s capital level declines, commencing with such measures as restrictions on dividends and management fees if such payments would in the judgment of the FDIC result in the institution’s becoming more seriously undercapitalized, and potentially leading to the closing by the FDIC of banks and S&Ls that are critically undercapitalized. Under Section 304, FDICIA also provided certain real estate lending guidelines. To accommodate Section 304 of FDICIA, the FDIC added Part 365 to its regulations. Part 365 requires banks as well as S&Ls to develop written policies for prudent real estate lending that are appropriate for the size of each bank and the nature and scope of its operations. Regulation 365, which was required by Section 304 of FDICIA, suggests maximum loan-to-value limits for various categories of loans under guidelines that banks and S&Ls should consider when establishing real estate lending policies. Lending policies are required to include loan underwriting, documentation, approval and reporting standards, and portfolio diversification and administration requirements. Moreover, the policies of each institution must be reviewed and approved at least once per year by the institution’s board of directors. Part 365 became effective as of March 19, 1993. Among several other changes supplementing this rule, the FDIC adopted changes in its risk-based capital standards (Part 325 of the FDIC regulations) that are intended to facilitate prudent lending for multi-family housing. This rule implemented Section 618(b) of the Resolution Trust Corporation Refinancing, Restructuring and Improvement Act of 1991. The rule lowers from 100 percent to 50 percent the «risk weight» accorded to loans secured by multi-family residential properties that meet certain specified criteria. The effective date for implementation was January 27, 1994.

As of June 7, 1994, the FDIC amended its rules on real estate appraisals, with the intention of reducing costs and encouraging lending without diminishing safe and sound banking practices. The FDIC revisions of Part 323 of its rules include provisions that: increase the threshold from $100,000 to $250,000 for real estate loans that require appraisal by a certified or licensed real estate appraiser; exempt from appraisal requirements business loans of $1,000,000 or less where the sale of, or rental income derived from, the real estate is not the primary source of repayment; expand and clarify other exemptions from appraisal requirements; and reduce and simplify standards for conducting appraisals.

In addition to the above, FDICIA provisions addressed a variety of other financial practices. For instance, FDICIA imposed restrictions on the industry’s use of brokered deposits. The FDIC amended Part 337 of its regulations in order to implement Section 301 of FDICIA. Doing so tightens restrictions on brokered deposits and interest rates first mandated by the Financial Institutions Recovery, Reform, and Enforcement Act (FIRREA) of 1989. The amended rule formally defines key terms, establishes the maxi-
imum allowable interest rates payable by banks and S&Ls that are not well capitalized (which is somewhat reminiscent of «Regulation Q,» which had been phased out over a six-year period ending March 31, 1986, under provisions of the DIDMCA), requires brokers (of deposits) to register with the FDIC, and establishes record-keeping requirements of brokers. Section 301, in its amended form, took effect on June 16, 1992. As a result of a rule change approved on October 19, 1993, institutions classified as «well capitalized» may accept funds through deposit brokers without restriction; however, other institutions may be subject to restrictions or even prohibitions imposed by the FDIC.

In addition, the FDIC revised Parts 333 and 362 of its regulations to implement new statutory restrictions, mandated by Section 303 of FDICIA, concerning the ability of insured state chartered institutions to own corporate stock and mutual funds shares and to have equity ownership in investments such as real estate development projects. FDICIA formally prohibits insured state chartered banks and S&Ls from making equity investments of a variety or in a magnitude not permitted for national banks or S&Ls; it further required divestiture of disallowed investments – if already in existence – by no later than December 19, 1996. The FDICIA makes a partial exception for stock and mutual fund ownership by institutions meeting certain defined conditions. A bank or S&L meeting those conditions and also receiving formal FDIC approval to continue making such investments is subject to an aggregate dollar limit on stock and mutual fund ownership not to exceed the firm’s capital. This set of rule revisions became effective as of December 9, 1992.

Interestingly, almost simultaneous with the passage and implementation of many FDICIA provisions, interest rates in general and the cost of deposits to financial institutions in particular dropped very sharply in the 1990s, supposedly «...leading to strengthened bank earnings and a significant decline in the number of problem institutions» [FDIC (1992, p. 22)].

In any event, Table 4 provides recent data on three measures of the health of the banking industry: (1) the number of problem banks, (2) the number of failed banks (banks that were either closed or forced to merge with another institution), and (3) a summary of the magnitude of the BIF. As shown in the table, both the numbers of problem banks and bank failures have declined dramatically since the enactment of FDICIA. For example, the number of problem banks fell by roughly 93 percent between 1990 and 1997. Paralleling this pattern, bank failures fell from 168, 124, and 120 for the years 1990, 1991, and 1992, respectively, to 41, 13, 6, 5, and 1, respectively, for 1993, 1994, 1995, 1996, and 1997. In addition, the status of the BIF has vastly improved since the enactment of FDICIA, having gone from negative $7 billion at the end of 1991 to in excess of $28 billion at the end of 1997.

Moreover, paralleling this pattern for commercial banks is similar descriptive information on the S&L industry. These data are provided in Table 5. As shown in Table 5, the number of problem S&L institutions fell sharply over the period (by 96 percent), as did the number of S&L failures. Indeed, since enactment of FDICIA, the number of S&L failures actually declined more sharply than the number of bank failures declined. For in-
stance, whereas there were 315 S&L failures in 1990, there were no failed S&Ls in 1997. Furthermore, the SAIF rose very sharply over the period, from $18 million in 1990 to in excess of $9 billion in 1997.

Table 4:
Selected Banking Industry Data

<table>
<thead>
<tr>
<th></th>
<th>Problem Banks</th>
<th>Failed Banks</th>
<th>BIF [Millions of Current Dollars]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>1,046</td>
<td>168</td>
<td>4,044.5</td>
</tr>
<tr>
<td>1991</td>
<td>1,089</td>
<td>124</td>
<td>(7,027.9)</td>
</tr>
<tr>
<td>1992</td>
<td>856</td>
<td>120</td>
<td>(100.6)</td>
</tr>
<tr>
<td>1993</td>
<td>472</td>
<td>41</td>
<td>13,121.6</td>
</tr>
<tr>
<td>1994</td>
<td>264</td>
<td>13</td>
<td>21,847.8</td>
</tr>
<tr>
<td>1995</td>
<td>151</td>
<td>6</td>
<td>25,454.0</td>
</tr>
<tr>
<td>1996</td>
<td>86</td>
<td>5</td>
<td>26,854.0</td>
</tr>
<tr>
<td>1997</td>
<td>73</td>
<td>1</td>
<td>28,292.5</td>
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</tbody>
</table>


Table 5:
Selected Savings and Loan Industry Data

<table>
<thead>
<tr>
<th></th>
<th>Problem S&amp;Ls</th>
<th>Failed S&amp;Ls</th>
<th>SAIF [Millions of Current Dollars]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>446</td>
<td>315</td>
<td>18</td>
</tr>
<tr>
<td>1991</td>
<td>337</td>
<td>232</td>
<td>94</td>
</tr>
<tr>
<td>1992</td>
<td>207</td>
<td>59</td>
<td>279</td>
</tr>
<tr>
<td>1993</td>
<td>100</td>
<td>9</td>
<td>1,156</td>
</tr>
<tr>
<td>1994</td>
<td>54</td>
<td>2</td>
<td>1,937</td>
</tr>
<tr>
<td>1995</td>
<td>42</td>
<td>2</td>
<td>3,358</td>
</tr>
<tr>
<td>1996</td>
<td>31</td>
<td>1</td>
<td>8,888</td>
</tr>
<tr>
<td>1997</td>
<td>19</td>
<td>0</td>
<td>9,368</td>
</tr>
</tbody>
</table>

Nevertheless, the unsubstantiated claims of the FDIC (1992, pp. 22-23) as cited above notwithstanding, to what extent the trends summarized in Tables 4 and 5, especially the declining bank and S&L failure rates, were the actual result of FDICIA and to what extent they were induced by changing interest rate patterns and/or other factors is still unclear. Consequently, this study next investigates empirically whether FDICIA provisions may have acted to reduce (a) the bank failure rate and (b) the S&L failure rate. While allowing for a number of other factors, the empirical analyses focus on the potential direct effects of FDICIA provisions on the bank and S&L failure rates and on the effects of FDICIA provisions on the bank-failure-rate sensitivity and S&L-failure-rate sensitivity to federal deposit insurance coverage.

3. EMPIRICAL ANALYSIS OF THE IMPACT OF FDICIA ON BANK FAILURES

Based on the aforementioned studies by Amos (1992), Barth (1991), Barth and Bartholomew (1992), Barth and Brumbaugh (1992), Barth, Brumbaugh and Litan (1992), Bradley and Jansen (1986), Brumbaugh (1988), Cebula (1993), Cebula and Belton (1994; 1997), Loucks (1994), and Saltz (1994; 1995; 1997), as well as the FDIC (1992, p. 22; 1994, p. 4), it is hypothesized that the bank failure rate (BFR) is an increasing function of the extent of federal deposit insurance coverage (FDI) and the degree of competitiveness (COMP) and a decreasing function of the bank capital/asset ratio (CAR), the growth rate of real GDP (RGDPG), and the spread between the yield on securities that are widely held by banks, such as that on three-year Treasury notes (THREE), and the cost of deposits to commercial banks (COST). The specification of the interest-rate variable as the excess of THREE over COST is based on arguments by the FDIC (1994, p. 4) that improvements in banking industry health in part reflect a higher «...net interest income...» i.e., a greater spread between interest income received by banks and interest paid by banks for deposits. In addition, in view of the objective of FDICIA to increase the integrity of the BIF and to protect depositors and taxpayers from unsafe banking practices, and in view of specific provisions in FDICIA that act to reform the federal deposit insurance system, it is hypothesized that the bank failure rate should be reduced by FDICIA. This may well be reflected in at least two ways. First, the sensitivity of the bank failure rate to federal deposit insurance coverage should decline if FDICIA provisions are effective in reducing such risky banking practices as result from the perverse incentives impounded in the federal deposit insurance system. Second, the bank failure rate might well be a decreasing function of a variable introduced into the system to directly reflect the various FDICIA provisions. Given that there are numerous FDICIA provisions and that they are generally very difficult to quantify, in this study we represent these various FDICIA components simply by a dummy (binary) variable, DUMMY. This variable assumes a value of 0 prior to 1992, since it is 1992 when FDICIA provisions were beginning to be implemented, and a value of 1 for 1992 and thereafter.
The reduced-form equation to be estimated here is given by:

\[
BFR_t = a_0 + a_1 FDI_{t-1} + a_2 (\text{THREE-COST})_{t-1} + a_3 \text{COMP} + a_4 \text{CAR}_{t-1} + a_5 \text{RGDPG}_{t-1} + a_6 \text{DUMMY} + \mu
\]

where:

- \(BFR_t\) = the percentage of federally insured banks in year \(t\) that failed, i.e., were closed or forced to merge with another institution;
- \(a_0\) = constant term;
- \(FDI_{t-1}\) = measure of the extent of federal deposit insurance coverage: the percentage of deposits at federally insured banks that was covered by federal deposit insurance in year \(t-1\);
- \((\text{THREE-COST})_{t-1}\) = the nominal average interest rate yield in year \(t-1\) on three-year Treasury notes \((\text{THREE}_{t-1})\) minus the nominal average cost of deposits at commercial banks in year \(t-1\) \((\text{COST}_{t-1})\), as a percent per annum;
- \(\text{COMP}\) = a dummy (binary) variable to represent the increased competitiveness in the financial services industry during the 1980s and 1990s: \(\text{COMP} = 1\) for the more competitive 1980s and 1990s and \(\text{COMP} = 0\) otherwise;
- \(\text{CAR}_{t-1}\) = the average ratio at commercial banks in year \(t-1\) of regulatory capital to assets, as a percent;
- \(\text{RGDPG}_{t-1}\) = the percentage growth rate of real GDP over year \(t-1\);
- \(\text{DUMMY}\) = a dummy (binary) variable indicating the years during which provisions of FDICIA were in effect: \(\text{DUMMY} = 1\) for the years 1992–1996 and \(\text{DUMMY} = 0\) otherwise;
- \(\mu\) = stochastic error term.

The time period studied runs from 1965–1996. Year 1965 is the earliest for which entirely dependable published data are available for all of the variables; 1996 represents the most recent year for which reliable data on all of the variables are currently available. The data are annual since two of the variables, \(\text{COST}_{t-1}\) and \(BFR_t\), are readily available only in this form. The Treasury note data \((\text{THREE}_{t-1})\) and the \(\text{RGDPG}_{t-1}\) data were obtained from the Council of Economic Advisors (1997, Tables B–71 and B–2). The data for \(BFR_t\) and \(FDI_{t-1}\) were obtained from the FDIC (1996, Tables A and E). The \(\text{COST}_{t-1}\) and \(\text{CAR}_{t-1}\) data were obtained from the Research Department of the Federal Reserve Bank of Atlanta. The model is estimated in levels because the Augmented Dickey-Fuller (ADF) test reveals that the time series variables are all stationary in levels over the 1965–1996 time period. Finally, since all of the right-hand-side variables are lagged, there is no concern about simultaneity bias. The means and standard deviations of the variables in this model are provided in Table 6.
Table 6: Description of the Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFR</td>
<td>0.379</td>
<td>0.29</td>
</tr>
<tr>
<td>FDI</td>
<td>66.59</td>
<td>7.91</td>
</tr>
<tr>
<td>THREE-COST</td>
<td>1.32</td>
<td>0.69</td>
</tr>
<tr>
<td>CAR</td>
<td>6.77</td>
<td>2.90</td>
</tr>
<tr>
<td>RGDPG</td>
<td>3.01</td>
<td>1.95</td>
</tr>
<tr>
<td>SLFR</td>
<td>1.11</td>
<td>0.61</td>
</tr>
<tr>
<td>FDIS</td>
<td>68,610</td>
<td>14,989</td>
</tr>
<tr>
<td>MORTS-COSTS</td>
<td>1.36</td>
<td>0.79</td>
</tr>
<tr>
<td>CARS</td>
<td>6.49</td>
<td>2.98</td>
</tr>
<tr>
<td>OILP</td>
<td>12.91</td>
<td>5.22</td>
</tr>
</tbody>
</table>

Estimating equation (1) by ordinary least squares (OLS), using the WHITE (1980) procedure to correct for heteroskedasticity, yields the following results:

$$ BFR_t = 0.12 + 0.017 \text{FDI}_{t-1} - 0.063 \text{(THREE-COST)}_{t-1} + 0.473 \text{COMP} $$

(\(+1.94\)) (\(-2.37\)) (\(+3.73\))

$$ - 0.13 \text{CAR}_{t-1} - 0.001 \text{RGDPG}_{t-1} - 0.865 \text{DUMMY} $$

(\(-4.18\)) (\(-0.06\)) (\(-5.71\))

$$ R^2 = 0.88, \text{adj}R^2 = 0.86, F = 32.04, DF = 25, DW = 2.08, \text{Rho} = -0.05 $$

where terms in parentheses are t-values.

In equation (2), all six of the estimated coefficients exhibit the expected signs. In addition, three of these coefficients [those for COMP, CAR{t-1}, and DUMMY] are statistically significant at the one percent level or beyond, whereas one coefficient [that for (THREE-COST){t-1}] is significant at the three percent level. By contrast, the estimated coefficients on the federal deposit insurance coverage (FDI{t-1}) and real GDP growth (RGDPG{t-1}) variables both clearly fail to be statistically significant at the five percent level. The $R^2$ and adjusted $R^2$ values are 0.88 and 0.86, respectively, so that the model ex-
explains nearly nine-tenths of the variation in the bank failure rate for the 1965–1996 period. The F-ratio is significant at beyond the one percent level.

These results imply that the bank failure rate over the period has been a decreasing function of the commercial bank capital/asset ratio, a result that is consistent with Barth (1991), Barth and Bartholomew (1992), Barth, Brumbaugh and Litman (1992), Cebula (1993), Saltz (1995; 1997), and other studies. The bank failure rate also is apparently an increasing function of the increased competitiveness of the 1980s and 1990s, as argued by Barth (1991), Barth and Brumbaugh (1992), Barth, Brumbaugh and Litman (1992), Saltz (1997), and others. There is compelling evidence that the bank failure rate has also been a decreasing function of the spread between the three-year Treasury note rate and the commercial bank cost of deposits, a finding that is consistent with claims by the FDIC (1992, p. 22; 1994, p. 4) and with studies of earlier time periods by Barth (1991), Cebula (1993), Cebula and Belton (1997), and Saltz (1997). On the other hand, in contrast to empirical findings in Amos (1992), Cebula and Belton (1994; 1997), and Saltz (1994) for earlier periods, the real GDP growth rate does not appear to have significantly impacted the bank failure rate. Finally, over the period 1965–1996, the last five years of which were characterized by the implementation of various FDICIA provisions, the estimated coefficient on the variable DUMMY is negative and highly significant while the estimated coefficient on the variable FDI$_{t-1}$ is not statistically significant at an acceptable, i.e., five percent, level. These two results combined constitute reasonably compelling evidence that FDICIA provisions acted to reduce the bank failure rate in a number of ways, including neutralizing the perverse incentive effects of the federal deposit insurance system which have been found elsewhere (for the pre-FDICIA period) to have increased the financial institution failure rate.

The evidence regarding the impact of FDICIA on bank failures is more compelling once one also considers the findings from estimating equation (1) for the period 1965–1991, i.e., for the study period prior to FDICIA’s implementation. This estimate is shown in equation (3), where the variable DUMMY disappears since the FDICIA was not in effect during the 1965–1991 period. In this estimate, the White (1980) heteroskedasticity correction is again adopted, along with the Cochrane-Orcutt procedure to correct for first-order serial correlation:

\[
\begin{align*}
BFR_t &= -0.44 + 0.023 \text{FDI}_{t-1} - 0.07 \text{THREE-COST}_{t-1} + 0.463 \text{COMP} \\
&\quad (+3.19) \quad (-2.67) \quad (+4.69) \\
&\quad - 0.112 \text{CAR}_{t-1} + 0.01 \text{RGDPG}_{t-1} \\
&\quad (-4.70) \quad (+1.62)
\end{align*}
\]

\[
R^2 = 0.95, \text{adj}R^2 = 0.94, F = 74.2, DF = 20, DW = 1.95, \text{Rho} = -0.04
\]

In equation (3), the $R^2$ and adjusted $R^2$ values suggest that the model explains over nine-tenths of the variation in the bank failure rate for the 1965–1991 period. The results in
equation (3) for the variables (THREE-COST)\(_t-1\), COMP, CAR\(_t-2\), and RGDP\(_t-1\), are consistent with those found in (2) for the 1965–1996 period.

The principal difference between the results in equations (2) and (3), aside from the necessary absence of the variable DUMMY, which was negative and highly significant in equation (2), involves the impact of the FDI\(_t-1\) variable. As shown in equation (3), the impact of the federal deposit insurance coverage variable during the pre-FDICIA period is very different from what is shown in equation (2) for the entire 1965–1996 period, where a five-year experience with FDICIA implementation was reflected. In particular, for the 1965–1996 period, the estimated coefficient on this variable was +0.017 and the coefficient was clearly not significant at the five percent level. By contrast, the estimated coefficient on this variable is +0.023, or 35 percent larger, as well as statistically significant at well beyond the one percent level. Alternatively stated, over the period including the experience with FDICIA, the federal deposit insurance coverage variable exercised no significant impact on bank failures, whereas during the pre-FDICIA period, the estimated coefficient on the bank failure rate apparently did exercise a highly significant and positive impact on the bank failure rate. Moreover, as observed above, the FDICIA dummy variable in equation (2) is negative and very highly significant. Thus, combining the findings in equations (2) and (3), it appears that FDICIA provisions and implementation may have reduced the bank failure rate directly (as reflected in the results for DUMMY) and indirectly (as reflected in the sharply reduced sensitivity of the bank failure rate to federal deposit insurance coverage). Thus, the empirical evidence that FDICIA significantly reduced the bank failure rate appears to be very compelling, especially when also combined with the statistics found in Table 4.

4. EMPIRICAL ANALYSIS OF THE IMPACT OF FDICIA ON S&L FAILURES

In this section, we extend the analysis in Section 3 by investigating empirically whether FDICIA may have helped to reduce the S&L failure rate. To do this, we modify the model to reflect S&Ls rather than banks. We do this essentially by adopting the framework introduced in the well-known study by BARTH (1991), as well as certain related studies.

BARTH (1991), as well as BARTH and BARTHOLOMEW (1992), BARTH and BRUMBAUGH (1992), and BRUMBAUGH (1988), argue that the S&L failure rate has been an increasing function of the extent (level) of federal deposit insurance coverage per account and a decreasing function of the capital/asset ratio at S&Ls [see also TAGGART and JENNINGS (1934), SALTZ (1995)]. BARTH (1991) and BARTH and BARTHOLOMEW (1992) also argue that the 1981–1982 recession damaged the S&Ls severely. The experience of a rising cost of funds to S&Ls also was seen by BARTH (1991), CHOU and CEBULA (1996), and SALTZ (1994) as contributing to their financial woes, although higher mortgage rates presumably acted to offset this to some degree [CEBULA (1993), CHOU and CEBULA (1996),
SALTZ (1995). BARTH (1991) also argues that the falling price of energy (especially crude oil) during the 1980s damaged the S&L industry substantially.

Accordingly, the following reduced-form equation is to be estimated, first with the FDICIA dummy variable included for the period 1965–1996, and then, for the 1965–1991 pre-FDICIA period, with the variable DUMMY excluded since FDICIA was not in effect for any of the 1965-1991 period:

\[
SLFR_t = b_0 + b_1 FDIS_{t-2} + b_2 (MORTS\text{-}COSTS)_{t-1} + b_3 CARS_{t-2} \\
+ b_4 \text{REC} + b_5 OILP_{t-2} + b_6 \text{DUMMY} + \mu'.
\]

where:

\(SLFR_t\) = the percentage of federally insured S&Ls in year \(t\) that failed, i.e., were closed or forced to merge with another institution;

\(b_0\) = constant term;

\(FDIS_{t-2}\) = the ceiling level of federal deposit insurance per account in year \(t-2\), expressed in 1992 dollars;

\((MORTS\text{-}COSTS)_{t-1}\) = the nominal average interest rate yield on home mortgages at S&Ls in year \(t-1\) minus the nominal average cost of funds at S&Ls in year \(t-1\), as a percent per annum;

\(CARS_{t-2}\) = average ratio at S&Ls in year \(t-2\) of regulatory capital to assets, as a percent;

\(\text{REC}\) = a binary (dummy) variable indicating the 1981–1982 recession; \(\text{REC} = 1\) for the years 1981 and 1982, and \(\text{REC} = 0\) otherwise;

\(OILP_{t-2}\) = the average price per barrel of imported crude oil in year \(t-2\), expressed in 1992 dollars;

\(\text{DUMMY}\) = as above;

\(\mu'\) = stochastic error term.

Aside from the data sources identified in Section 3, BARTH (1990), the Ors (1989), FDIC (1996), and Research Department of the Federal Reserve Bank of Atlanta provided data on the variables SLFR, FDI, COST, CAR and OILP. The ADF test reveals that, for the 1965–1996 period, the time series variables are all stationary in levels; thus, the estimate is performed in levels. Also, since the right-hand-side variables are all lagged, there is no concern over possible simultaneity bias. The means and standard deviations of the variables are described in Table 6.

Estimating equation (4) for the 1965–1996 period, using the WHITE (1980) heteroskedasticity correction, yields:
SLFR<sub>t</sub> = 14.7 + 0.01 FDIS<sub>t-2</sub> − 0.55 (MORTS-COSTS)<sub>t-1</sub> − 1.03 CARS<sub>t-2</sub>  
\[ (+1.78) (-3.13) (-2.77) \]
+ 2.01 REC − 0.16 OILP<sub>t-2</sub> − 5.63 DUMMY  \( (5) \)
\[ (+2.29) (-2.84) (-2.99) \]
\[ R^2 = 0.78, \quad \text{adj} R^2 = 0.74, \quad F = 12.1, \quad DF = 25, \quad DW = 2.09, \quad \text{Rho} = -0.06 \]

Meanwhile, the estimation for the 1965–1991 pre-FDICIA period, where the variable DUMMY disappears, is given by equation (6). In this equation, the White (1980) heteroskedasticity correction is again adopted, along with the Cochrane-Orcutt procedure to correct for first-order serial correlation:

SLFR<sub>t</sub> = −0.4 + 0.027 FDIS<sub>t-2</sub> − 0.32 (MORTS-COSTS)<sub>t-1</sub> − 1.09 CARS<sub>t-2</sub>  
\[ (+3.70) (-2.35) (-3.93) \]
+ 2.57 REC − 0.19 OILP<sub>t-2</sub>  \( (6) \)
\[ (+3.02) (-3.59) \]
\[ R^2 = 0.81, \quad \text{adj} R^2 = 0.77, \quad F = 17.3, \quad DF = 20, \quad DW = 2.04, \quad \text{Rho} = -0.03 \]

In equations (5) and (6), ten of the 11 estimated coefficients are significant at the five percent level or better; however, the coefficient on the federal deposit insurance variable in equation (5) is significant at only the nine percent level, i.e., it fails to be significant at the five percent level. The \( R^2 \) and adjusted \( R^2 \) values imply that equation (5) explains roughly three-fourths of the variation in the S&L failure rate for the 1965–1996 period whereas equation (6) explains essentially four-fifths of that variation for the 1965–1991 period. The F-statistics are both significant at the one percent level.

In both equations (5) and (6), the S&L failure rate is a decreasing function of the spread between the S&L mortgage rate and the S&L cost of funds, the S&L capital/asset ratio, and the real price per barrel of imported crude oil, while being increased by the 1981–1982 recession. These findings are entirely consistent with the analyses in Barth (1991), Barth and Bartholomew (1992), and Barth and Brumbaugh (1992), and with earlier empirical results in Cebula (1993) and Saltz (1995).

The model in equation (4) differs from that in equation (1) to reflect differences between commercial banks and S&Ls. Nevertheless, the findings in equations (5) and (6) for S&Ls can be considered jointly to yield conclusions regarding the performance of FDICIA that largely parallel those obtained from combining the findings in equations (2) and (3) for the case of commercial banks.

In particular, in equation (5), the federal deposit insurance coverage variable fails to be statistically significant at an acceptable, i.e., five percent, level. In fact, this coefficient is barely significant at the ten percent level. In addition, in equation (5), the FDICIA
dummy variable is negative and significant at beyond the one percent level. Thus, for the 1965–1996 period including the FDICIA experience, the federal deposit insurance variable is not a significant determinant of S&L failures but FDICIA, as captured in the variable DUMMY, does act to significantly reduce the S&L failure rate. Moreover, in equation (6), the estimated coefficient on the federal deposit insurance variable is positive and significant at the one percent level, so that deposit insurance in the 1965–1991 pre-FDICIA period clearly appears to have exercised a positive and significant impact on the S&L failure rate. Combining these results from equations (5) and (6) with the statistics summarized in Table 5, it appears that there is compelling evidence that FDICIA may have reduced the S&L failure rate directly and also may have reduced the S&L failure rate by significantly diminishing its sensitivity to the perverse incentives of the federal deposit insurance system.

5. CONCLUSION

This empirical study has endeavored (a) to provide relevant updated information on various provisions of the FDICIA, (b) to provide updated evidence that FDICIA may have helped to reduce the number of bank failures and problem banks in the U.S., as well as the number of S&L failures and problem S&Ls in the U.S., while building up the deposit insurance funds (the BIF and the SAIF), and also (c) to provide an updated formal empirical evaluation of the effectiveness of FDICIA provisions in actually reducing the failure rates of both commercial banks and S&Ls in the U.S.

The empirical estimates provided in Sections 3 and 4 for 1965–1996 and also for 1965–1991 (the pre-FDICIA period), along with the statistics summarized in Tables 4 and 5, indicate that FDICIA may have both directly reduced the bank failure rate and the S&L failure rate and indirectly done so by significantly mitigating the sensitivity of financial institution failure rates to the perverse incentives impounded in the traditional system of federal deposit insurance coverage.

Moreover, it should be observed that the robustness of the empirical findings presented in this study is not strongly sensitive to changes in the lag structure of the models. For example, in the bank-failure estimates, increasing the lag on the FDI, (THREE-COST), CAR, or RGDPG variables to two or three periods leaves our basic conclusions regarding FDICIA unchanged. Similarly, in the S&L failure estimates, changing the lags on the FDIS, (MORTS-COSTS), CARS, or OILP variables in a variety of ways leaves the basic conclusion regarding FDICIA unchanged;5 furthermore, even changing the time period for the second estimate involving S&L failures from 1965–1991 to 1965–1989 in order to allow for the potential impact on S&L failures of the Financial Institutions Recovery, Reform and Enforcement Act of 1989 (FIRREA) leaves the conclusions regarding the impact of FDICIA unchanged.

5. These results will be provided upon written request.
Clearly, there is strong evidence that future reform of the financial services system in the U.S. should follow FDICIA in resisting any increase in the ceiling level of federal deposit insurance\(^6\) while following the many kinds of constructive reforms initiated/implemented as a consequence of FDICIA provisions. Moreover, other nations that face or expect to face crises in their financial services sector might find various of the provisions in FDICIA to be potentially useful guides to improved regulation of this critical industry.

REFERENCES


BARTH, JAMES R., Statement before the House Committee on Banking, Finance, and Urban Affairs. 101st Congress, 2d session, April 11, 1990.


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\(^6\) The U.S. Congress should resist raising the ceiling for a period of at least several years, until there is some pressing economic/financial (as opposed to political) need for doing so, and only if the insurance funds are extremely solvent, bank and S&L failures are minimal, and problem banks and S&Ls are minimal.


SUMMARY

This study describes the principal provisions in the *Federal Deposit Insurance Corporation Improvement Act* of 1991. The study then empirically investigates the impact of this statute on bank and savings and loan failures. The empirical findings indicate that, because of the changes brought about by this legislation, both the bank failure rate and the savings and loan failure rate declined significantly.

ZUSAMMENFASSUNG


RESUME

Cette étude décrit les provisions principales du *Federal Deposit Insurance Corporation Improvement Act* de 1991. Ensuite, l’étude examine empiriquement l’impact de ce statut sur les échecs des banques et des caisses d’épargne. Les résultats ou conclusions empiriques indiquent que, grâce aux changements effectués par cette législation, le taux des échecs des banques ainsi que le taux des échecs des caisses d’épargne ont diminué de façon significative.