

The Cost of Implementing Consumer Financial Regulations:  
An Analysis of Experience with the Truth in Savings Act

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## The Cost of Implementing Consumer Financial Regulations: An Analysis of Experience with the Truth in Savings Act

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The Truth in Savings Act, like many other federal consumer protection laws concerning financial services, is primarily a disclosure statute. It mandates that financial institutions disclose certain information about the terms of deposit accounts in specific forms and at specific times. Although many banks provided disclosures of account terms before the act was passed in 1991, most did not completely satisfy the requirements of the regulation (Regulation DD) adopted by the Federal Reserve Board in September 1992 to implement the law. Thus, the Truth in Savings law likely caused virtually every depository institution in the United States to change some of its practices for consumer deposit accounts.

Relatively little is known about institutions' costs of implementing such changes. Generally, consumer regulations are believed to be costly, and a few studies have investigated scale economies in complying with regulations.<sup>1</sup> Many other questions about compliance costs have not been answered, however. For example, do compliance costs rise proportionately with the number of changes required, or are there economies or diseconomies associated with the number of changes? Do the costs of specific compliance activities vary systematically with bank size, the extent of change, or the complexity of institutions' product offerings? To what extent do institutions raise fees, change interest rates, or limit product offerings in response to compliance costs? The increasing volume of regulation in recent years and the rapid pace of regulatory change make knowledge of the cost of implementing regulations important.

To improve understanding of the process and costs of regulatory compliance, the Federal Reserve Board conducted the Survey of Compliance Costs for Truth in Savings in 1992–93 during the implementation period of the regulation.<sup>2</sup> The survey had several advantages over previous investigations of the costs of implementing

regulations: (1) its respondents represented the population of banks and savings institutions better than did the respondents to previous surveys of costs, (2) it collected data while the regulation was being implemented, resulting in a more accurate picture of the effects of the law than would have been possible had the data been collected retrospectively, and (3) it permitted a more comprehensive analysis of costs because it obtained information on the nature of the cost-generating efforts needed to comply with the law.

This paper presents findings from the survey on the changes in consumer deposit account practices and the costs of compliance at U.S. commercial banks.<sup>3</sup> The remainder of the paper is divided into five main sections. The first section reviews earlier studies that examined the start-up costs of complying with other consumer protection regulations for financial services. The second examines banks' practices regarding consumer deposit accounts before Truth in Savings and discusses changes in practices that resulted from the law. Subsequent sections present descriptive statistics on compliance costs per bank and per consumer deposit account by various demographic characteristics of banks and describe the results of a statistical analysis of compliance costs. The final section provides some conclusions from the study.<sup>4</sup>

### Previous Studies

Of the many studies of government regulation of financial institutions, only a few have addressed the costs of such regulation. Accounting systems used by financial institutions do not normally separate the costs of complying with regulations from other costs. Thus, data on compliance costs are generally available only from case studies or from surveys specifically designed to collect such information. Because most efforts to estimate compliance costs have been conducted some time after the regulation took effect, they have concen-

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1. See Elliehausen (forthcoming) for a review of studies of the costs of consumer protection regulations for financial services. An earlier version appeared in Federal Financial Institutions Examination Council (1992, appendix C).

2. A representative sample of commercial banks and virtually all savings institutions were asked to participate in the survey. The survey requested information on these financial institutions' deposit account practices before the law was passed, changes in or plans to change practices due to the law, and the costs of changing practices to comply with the law. The survey design and methods are described in the appendix.

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3. Findings on savings institutions are reported elsewhere (Elliehausen and Lowrey, 1995).

4. This paper seeks to document the changes required by the Truth in Savings law and investigates the costs of implementing them. No attempt is made to evaluate benefits or to provide a cost-benefit analysis of the law.

trated on identifying ongoing activities that were being performed solely because of regulation and on estimating the costs of those activities.<sup>5</sup>

Unfortunately, such retrospective data on implementation costs are likely to be unreliable after the passage of much time. A few studies conducted shortly after the adoption of new regulations also considered start-up costs, however.

In one early study, Murphy (1980) investigated start-up and ongoing costs of complying with the Equal Credit Opportunity Act incurred during the first year the law was in effect. The data were from a survey of thirty-seven relatively large commercial banks conducted by the Consumer Bankers Association in August 1976.<sup>6</sup> Murphy estimated statistical cost functions to test for the existence of economies of scale.<sup>7</sup>

For his analysis, Murphy assumed that compliance costs consist of two separable components: legal costs and all other costs. He estimated Cobb–Douglas cost functions for each component.<sup>8</sup> The results suggest large economies of scale in legal and other compliance costs at relatively large banks for the first year of compliance with the Equal Credit Opportunity Act. In the legal costs function, the coefficients for both output and wage rate for legal services were significantly different from zero. Of particular importance is the result that the output coefficient was significantly less than one. This result indicates the existence of economies of scale in compliance costs; that is, larger banks have a relative cost advantage in complying with the regulation. The size of the output coefficient suggests that a 10 percent increase in output (measured by the volume of consumer credit outstanding) increased legal costs

5.7 percent.<sup>9</sup> In the “all other costs” function, the wage rate coefficient, but not the output coefficient, was significantly different from zero. The output coefficient was significantly different from one, however, indicating that a 10 percent growth in output volume increased other compliance costs 4.1 percent.

Studies of other regulations also provide consistent evidence of economies of scale in implementation. In 1981, the Federal Reserve Board surveyed commercial banks on the costs of complying with regulations implementing the Electronic Fund Transfer, Truth in Lending, and Equal Credit Opportunity Acts. Because the Electronic Fund Transfer Act was relatively new (the regulation had been issued two years before the survey), the survey attempted to obtain information on both start-up and ongoing compliance costs related to that law.

Respondents were asked to estimate the incremental costs of the regulations in eight cost categories. They were given a list of requirements and possible compliance activities to assist them in completing the questionnaire. The sample consisted of eighty-five commercial banks that either had attempted on their own initiative to estimate compliance costs or had been identified by Federal Reserve Banks as having the resources or documentation that would enable them to complete the questionnaire. Sixty-seven of the banks provided usable data on compliance costs related to the Electronic Fund Transfer Act.

Schroeder (1985) used the data from the Federal Reserve survey to estimate separate cost functions for start-up and ongoing compliance costs related to the regulation implementing the Electronic Fund Transfer Act. In each equation, compliance costs were specified to be functions of the level of output (measured by the number of electronic fund transfers), the type of electronic fund transfer services offered by the bank, and selected other characteristics of the bank. In both equations, coefficients of the output variables were significantly less than one, indicating economies of scale. The size of the coefficient in the equation for start-up costs indicates that a 10 percent

5. For example, a 1981 Federal Reserve survey on compliance costs (discussed later) was conducted twelve years after the effective date of the Truth in Lending Act and six years after the effective date of the Equal Credit Opportunity Act.

6. Results of the survey were reported in testimony presented by the Consumer Bankers Association before a subcommittee of the House Committee on Government Operations and have been cited frequently in other studies. For example, see Commission on Federal Paperwork (1977), Smith (1977), and Carroll and others (1989).

7. Economies of scale exist over a range of output if the average cost decreases with the number of units produced. Economies of scale typically focus on the costs of production, but the concept is also applied to the costs of specific activities such as marketing, financing, training, or compliance. See Scherer (1990).

8. In the Cobb–Douglas cost function, the value of the parameter for output indicates the existence of economies or diseconomies of scale. A value less (greater) than one indicates economies (diseconomies) of scale as costs rise proportionately less (more) than output and average cost decreases (increases).

9. This interpretation of the regression coefficient (as well as all subsequent interpretations of regression coefficients) assumes that the estimated coefficient reflects only the effect of the independent variable (in this case, output) on the dependent variable and is not affected by specification errors (for example, omitted variables, measurement errors, and incorrect functional forms).

increase in output increased start-up costs 7.7 percent.<sup>10</sup>

Schroeder reported that nearly half of total start-up costs for the Electronic Fund Transfer Act were for changing data processing systems. The second largest component, accounting for 18.4 percent of total start-up costs, was management cost. The distribution of start-up costs across categories varied by size of bank. The cost of changing data processing systems was relatively lower, and management cost was relatively higher, at smaller banks than at larger banks.

In a study conducted for the Federal Trade Commission, Boyle (1982) surveyed 201 mortgage banking companies on the total costs of complying with the Truth in Lending Act in 1980 and 1981. A major revision of the regulation implementing the act became effective in 1981 and mandatory in 1982. Because some mortgage banks adopted the revisions early and others did not, Boyle was able to construct estimates of the cost of implementing the revision.

The questionnaire followed the approach taken by the 1981 Federal Reserve survey: Respondents were asked to estimate incremental costs of the regulation in eight cost categories and were given a list of requirements and possible compliance activities. The sample was drawn from the membership of the Mortgage Bankers Association. The members of this organization originate the vast majority of mortgages in the industry, and a reasonable response rate was obtained. Therefore, the sample can be viewed as reasonably representative of the mortgage banking industry.

To estimate start-up costs for complying with the revised Truth in Lending regulation, Boyle compared cost estimates of firms that had begun conversion to the revised regulation in 1981 with those of firms that had not begun conversion. Only about 8 percent of firms that had begun conversion reported any savings in ongoing costs from the revised regulation, and these savings were in peripheral areas.<sup>11</sup> Average compliance costs for this group of firms rose \$6.11 per credit application, from \$13.61 in 1980 to \$19.72 in 1981. In contrast, average compliance costs for firms that

had not begun conversion hardly changed (\$13.91 per application in 1980 and \$13.10 per application in 1981). Because the savings in ongoing compliance costs were small, Boyle concluded that most of the 45 percent rise in compliance costs at mortgage banks that had begun conversion was due to the cost of implementing the revised regulation.

Smith (1977) used data from several sources—the Consumer Bankers Association survey that Murphy used later, unpublished Federal Reserve surveys, an econometric study, case studies, and other sources—to estimate creditors' aggregate start-up and ongoing compliance costs related to the Equal Credit Opportunity Act. Smith identified the requirements of the act that would affect creditors' costs, constructed per unit cost estimates for these requirements using available secondary data, and then converted the per unit data to aggregates. As these estimates were constructed from a variety of sources, they are not based on a single, consistent framework for measuring costs. They also lack an assurance regarding the representativeness of the data.

Smith estimated that creditors' start-up costs for complying with the Equal Credit Opportunity Act were \$131.8 million: \$34.8 million at commercial banks and \$97.0 at other creditors. These costs comprised expenses for legal services (\$2.4 million at banks, not estimated for other creditors); employee training (\$1.4 million, banks; \$6.2 million, other creditors); destruction of obsolete forms (\$2.4 million, banks; \$9.5 million, other creditors); printing and mailing notices on married persons' right to separate credit histories (\$15.4 million, banks; \$33.1 million, other creditors); and changing computer and reporting systems to maintain the separate credit histories (\$13.2 million, banks; \$48.2 million, other creditors).<sup>12</sup>

In sum, the few studies of the costs of implementing consumer regulations suggest that compliance is costly and that its effect is proportionately greater on smaller institutions than on larger institutions. In addition, one study of a disclosure regulation found that the costs of data processing system changes and management accounted for the bulk of start-up costs for that regulation. Unfortunately, the generality of existing studies is unknown because of limitations in the consistency of the data collected and the coverage of the samples used. Even without these limita-

10. The descriptive statistics from the survey reflect these economies of scale. Average start-up compliance costs per electronic transaction ranged from \$0.116 for banks with deposits of less than \$100 million to \$0.061 for banks with deposits of \$3 billion or more.

11. Reported savings in ongoing costs were primarily in the area of forms and printing, which accounted for about 5 percent of total compliance costs related to Truth in Lending in 1980.

12. Smith also estimated that credit reporting agencies would incur start-up costs of \$34.0 million for maintaining separate credit histories.

tions, however, the small amount of available evidence alone makes further study of the cost of implementing regulations important.

### Changes in Deposit Account Practices Resulting from Truth in Savings

Truth in Savings and its implementing regulation, Federal Reserve Regulation DD, require that depository institutions disclose certain information and follow certain other practices for their consumer deposit accounts. These accounts include checking, savings, and time accounts held by individuals primarily for personal or household purposes. Because almost every commercial bank offers one or more types of consumer deposit accounts, the regulation affects virtually the entire population of banks. To assess the extent of change in banking practices resulting from adoption of the regulation, the survey asked banks about their practices in disclosing deposit account information and about their methods of calculating the account balance on which interest was paid before Truth in Savings. Regulation of the latter is the only substantive provision of Truth in Savings (that is, the only provision dealing with practices other than supplying information).

#### Method of Calculating Balance for Computation of Interest

Under Truth in Savings, depository institutions must pay interest on the full principal balance in a consumer account. They may use either the exact daily balance or the average daily balance method to calculate the amount of interest. Methods that do not pay interest on the full principal balance are prohibited.

Before Truth in Savings, the vast majority of banks already conformed to the law's requirements for balance-computation methods. About 90 percent of banks reported using the daily or average daily balance method for each of the four types of interest-bearing accounts (table 1).<sup>13</sup> Small banks (assets of less than \$100 million) were more likely than medium-sized banks (assets of \$100 million–\$499 million) or large banks (assets of \$500 million or more) to pay interest on the full principal balance.

13. Descriptive statistics in this and other tables are weighted to account for unequal rates of sampling and nonresponse.

#### 1. Banks' methods of computing balances for payment of interest before Truth in Savings, by type of account and size of bank

Percentage distribution

Type of account and method of computing balances	All banks	Small banks	Medium-sized banks	Large banks
<i>Interest-bearing checking</i>				
Investable balance ..	11.3	8.9	16.1	19.8
Low balance .....	.9	1.0	.7	.5
Daily or average daily balance ..	87.4	89.8	82.7	79.3
Other method .....	.4	.3	.5	.5
<i>Money market deposit</i>				
Investable balance ..	10.0	8.5	12.9	13.3
Low balance .....	.5	.5	.5	.9
Daily or average daily balance ..	89.1	90.7	86.1	85.3
Other method .....	.4	.3	.5	.5
<i>Statement savings</i>				
Investable balance ..	9.2	8.7	11.1	6.4
Low balance .....	.7	.7	.8	.9
Daily or average daily balance ..	89.7	90.3	87.6	92.9
Other method .....	.4	.4	.6	.0
<i>Passbook savings</i>				
Investable balance ..	4.4	4.2	5.1	3.6
Low balance .....	1.1	.5	2.7	3.7
Daily or average daily balance ..	93.0	94.2	89.6	91.4
Other method .....	1.5	1.2	2.7	1.3

NOTE. Small banks are those with assets of less than \$100 million; medium-sized banks, assets of \$100 million–\$499 million; large banks, assets of \$500 million or more. In this and subsequent tables, distributions may not sum to 100 because of rounding.

Descriptive statistics in this and other tables are weighted to account for unequal rates of sampling and nonresponse.

The investable balance method, whereby interest is paid on only the portion of the balance that reserve requirements allow the bank to invest or lend, was the most common of the subsequently prohibited balance-computation methods. Overall, about one in ten banks used the investable balance method for interest-bearing checking, money market deposit, and statement savings accounts. Use of the investable balance method was generally greater at medium-sized and large banks than at small banks; the difference was especially pronounced for interest-bearing checking accounts. These results are not surprising, as reserve requirements increase to some extent with the size of the depository institution and at one time were higher on interest-bearing checking accounts than on money market deposit or savings accounts.

A very small percentage of banks (fewer than 1 percent) used the low balance method, whereby

interest is paid on the lowest amount of principal in the account on any one day in the period. Banks used the low balance method a little more frequently for passbook savings accounts than for other types of accounts, perhaps because at one time the low balance method provided a simpler basis for manual calculation.

### Disclosures for Checking, Money Market Deposit, and Savings Accounts

Truth in Savings is primarily a disclosure statute, and the regulation implementing it imposes many requirements to disclose certain information at specific times. The requirements for checking, money market deposit, and savings accounts are somewhat different from those for other time deposits. For checking, money market deposit, and savings accounts, the regulation requires written, retainable disclosures for new accounts, advance written notices of adverse changes in account terms, and inclusion of certain information in periodic statements (table 2).

### 2. Disclosure requirements for consumer checking, money market deposit, and savings accounts under Truth in Savings

#### *Initial disclosures (for new accounts)*

Disclosures must be in writing  
Disclosures must include information on the following terms:

- Rates paid, including both annual percentage yield and interest rate
- Frequency of compounding and crediting
- Minimum balance requirements
- Method of computing balance
- Fees
- Limitations on transactions
- Amount or type of any bonuses provided and conditions for receiving bonuses

#### *Subsequent disclosures*

Notice of adverse changes in terms must be provided 30 days in advance of the change  
Changes in all the terms covered in the initial disclosure, and the effective dates of the changes, must be disclosed

#### *Periodic statement disclosures*

Periodic statements are not required, but if they are provided, they must include information on the following terms:

- Annual percentage yield earned during statement period
- Amount of interest earned
- Fees imposed
- Number of days in reporting period

#### *Disclosures in advertising*

If a rate of return is stated, it must be stated as an annual percentage yield  
Advertising must also include, if relevant, information on the following terms:

- For variable rates, a statement that the rate may change
- Period of time for which rate will be offered
- Minimum balance required to receive rate
- Minimum opening deposit
- Statement that fees could reduce earnings
- Conditions for receiving bonuses

### 3. Banks' practices before Truth in Savings in providing written disclosure statements for new interest-bearing checking accounts

Practice	Percentage of banks
<i>Provided written disclosures</i>	
All banks .....	95.8
Small banks .....	95.2
Medium-sized banks .....	96.7
Large banks .....	98.6
<i>Included in disclosures the following terms, as subsequently required by Truth in Savings:</i>	
Method of determining balance for payment of interest .....	76.6
Rate of simple interest .....	57.9
Effective yield .....	21.7
Frequency of compounding .....	79.0
Statement on bank's right to change the rate of interest .....	84.3
Minimum balance to earn interest .....	88.7
Minimum balance to avoid fees .....	95.9
Account-maintenance fees .....	95.0
ATM usage fees .....	88.2
Per-check fees .....	91.9
Fees for insufficient funds .....	91.0
Included in disclosures all terms subsequently required by Truth in Savings .....	16.4

NOTE. See note to table 1 for definitions of bank size categories.

The survey questions on account practices asked whether before Truth in Savings banks had provided the disclosures that were subsequently required by the regulation. Banks were asked to describe their practices for the most common varieties of non-interest-bearing checking, interest-bearing checking, money market deposit, statement savings, and passbook savings accounts. The disclosure practices for all five types of accounts before Truth in Savings were similar. To simplify discussion, we report in the remainder of this section tabulations for interest-bearing checking accounts only.

Before Truth in Savings, banks commonly provided customers with written statements disclosing terms for new interest-bearing checking accounts: More than 95 percent of all banks and 98 percent of large banks provided such statements (table 3).

Although most banks provided written statements for new accounts, they generally did not include in the statements all the terms specified in the regulation. Well over 75 percent of banks included most of the terms, but some terms were not commonly included. Fewer than 60 percent of banks included the rate of simple interest, for example, and only 22 percent included the

4. Banks' practices before Truth in Savings in providing written notice of adverse changes in account terms for interest-bearing checking accounts

Practice	Percentage of banks
<i>Provided written notice</i>	
All banks .....	83.7
Small banks .....	81.9
Medium-sized banks .....	86.0
Large banks .....	94.4
<i>Provided written notice before changes took effect</i>	
All banks .....	75.3
Small banks .....	72.7
Medium-sized banks .....	78.7
Large banks .....	92.1
<i>Provided written notice of changes in the following terms, as subsequently required by Truth in Savings:</i>	
Method of determining balance for payment of interest .....	61.3
Rate of simple interest .....	50.4
Minimum balance to earn interest .....	81.9
Minimum balance to avoid fees .....	89.6
Account-maintenance fees .....	91.5
ATM usage fees .....	88.0
Per-check fees .....	91.1
Fees for insufficient funds .....	83.8
Provided written notice of changes for all terms subsequently required by Truth in Savings .....	20.2

NOTE. See note to table 1 for definitions of bank size categories.

effective yield. Only 16 percent of banks included in new account disclosures all of the account terms subsequently required by the regulation.

Truth in Savings also requires banks to send consumers written notice of adverse changes in account terms before the changes take effect. Before Truth in Savings, almost 84 percent of banks provided written notice of adverse changes in terms for interest-bearing checking accounts at some time (possibly at the time the changes took effect) (table 4). Large banks were more likely than small or medium-sized banks to have informed consumers in writing of adverse changes: 94 percent of large banks provided such notice, but only 86 percent of medium-sized banks and 82 percent of small banks did so.

About 75 percent of banks provided written notice of adverse changes in account terms before the changes took effect, and about 84 percent provided written notice at some time. Providing written notice of adverse changes was especially common among large banks: Ninety-two percent of large banks gave advance notice, and 94 percent provided written notice at some time.

Banks typically sent notice of adverse changes in most of the account terms for which Truth in Savings requires advance written notice (table 4): Eighty percent or more of banks sent notice of adverse changes in all such terms except the method of determining balances for interest payments and the rate of simple interest. Only 20 percent sent notices for all the terms specified in the regulation.

Nearly all banks provided periodic statements for checking, money market deposit, and statement savings accounts before Truth in Savings, and about a quarter of banks provided periodic statements for passbook accounts. Not all banks included in their periodic statements all of the information that the regulation now requires, however. For example, before the regulation took effect, all banks included the dollar amount of interest paid on their periodic statements for interest-bearing checking accounts, but only 38 percent included the number of days in the statement period, and only 19 percent gave information on the effective yield (table 5).

5. Banks' practices before Truth in Savings in including account terms on periodic statements for interest-bearing checking accounts

Practice	Percentage of banks
<i>Included the following terms on statements:</i>	
Dollar amount of interest paid .....	100.0
Effective yield .....	19.4
Itemized list of fees .....	57.0
Number of days in statement period .....	37.8
Beginning and ending date for statement period ..	97.4
Included all terms subsequently required by Truth in Savings .....	7.8

Thus, most banks had to change their periodic statements to provide all of the required information. Indeed, the survey indicates that the periodic statements of more than 90 percent of the banks were missing at least one of the subsequently required elements.

Disclosures for Time Deposits

The regulation implementing Truth in Savings also requires specific written disclosures for time deposits (table 6). According to the survey, disclosure practices before Truth in Savings varied by size of bank but not typically by maturity of the account. We use time deposit accounts with

## 6. Disclosure requirements for time deposit accounts under Truth in Savings

### *Initial disclosures (for new accounts)*

Disclosures must include information on the following terms:

- Term to maturity
- Penalty provisions for early withdrawal
- Options available at maturity, including withdrawal or reinvestment
- Interest rate, including all applicable calculation and compounding rules
- Interest reinvestment and disbursement options
- Grace period transactions, including withdrawals and deposits
- Security interest and offset provisions

### *Notices for maturing accounts*

Accounts that are automatically renewed

- Advance notice must be given 30 days before maturity or 20 days before end of grace period

Notice must include the following:

- Interest rate and annual percentage yield
- Maturity date
- Change in terms or full disclosures for account

Accounts that are not automatically renewed and have terms to maturity greater than 1 year

- Advance notice must be given 10 days before maturity date
- Notice must include maturity date

a term to maturity of greater than one year to illustrate disclosure practices for time accounts.

Before Truth in Savings, more than 80 percent of banks overall provided written disclosure statements for new consumer time deposits, and more than 95 percent of large banks provided such statements (table 7). Seventy percent or more of banks included most of the required terms in their written disclosures. However, only 17 percent included the effective yield. Thus, most banks had to change their disclosure forms to comply with the regulation.

## 7. Banks' practices before Truth in Savings in providing written disclosure statements for new time deposits with a term to maturity of more than one year

Practice	Percentage of banks
<i>Provided written disclosures</i>	
All banks .....	82.3
Small banks .....	78.3
Medium-sized banks .....	89.6
Large banks .....	96.0
<i>Included in disclosures the following terms, as subsequently required by Truth in Savings:</i>	
Rate of simple interest .....	77.7
Effective yield .....	16.9
Frequency of compounding .....	73.3
Penalty for early withdrawal .....	80.6
Maturity date .....	69.9
Length of grace period .....	72.7

NOTE. See note to table 1 for definitions of bank size categories.

The regulation also requires that for automatically renewed time deposits, advance notice be given either thirty days before maturity or twenty days before the expiration of the grace period (nearly all banks provided a grace period). Before Truth in Savings, 95 percent of banks sent advance notice of upcoming renewals and more than 60 percent provided information on the terms of renewal (table 8). The regulation caused many banks to change the timing of disclosures, however: Before the regulation, banks sent notices on average twelve days in advance and provided grace periods of nine days. For about one-third of banks, however, the number of days of advance notice plus grace period was less than the twenty days subsequently required by the regulation. For non-automatically renewed accounts, the regulation imposes advance notice requirements only for accounts with an initial maturity of more than one year. The notice must be sent ten days in advance. As shown in the table, for such accounts, nearly 95 percent of banks sent such notices, and on average they were sent the subsequently required ten days in advance.

## 8. Banks' practices before Truth in Savings in providing notification for maturing time deposits with a term to maturity of more than one year

Practice	Percentage of banks
<i>Deposits that were automatically renewed</i>	
Sent advance notice of upcoming renewal .....	95.3
Provided a grace period for withdrawing reinvested funds .....	98.4
Provided information on terms of renewal .....	62.7
MEMO:	
Mean number of days notice was sent before maturity date .....	12.0
Mean number of days in grace period .....	9.4
<i>Deposits that were not automatically renewed</i>	
Sent advance notice of upcoming renewal .....	94.4
MEMO:	
Mean number of days notice was sent before maturity date .....	10.2

## Summary of the Effects of Regulation on Account Practices

The survey results show that Truth in Savings requires banks to provide disclosures of specific account terms that most banks already provided in the absence of regulation. Also, most banks disclosed these terms in written statements, as

prescribed by the regulation. Few banks provided written information on all the account terms specified in the regulation, however. Thus, most banks had to review their disclosure documents and change their materials and practices to conform with the regulatory requirements.

### Costs of Implementing Truth in Savings

Even if it was providing written disclosures that contained all of the required information when Truth in Savings took effect, a bank undoubtedly incurred expenses, because the law also specifies requirements about the timing of disclosures, rules about advertising, formulas for computing yields, and requirements for documentation that the bank had to learn about and implement. Thus, every bank with consumer deposits likely had to take actions to comply with the regulation and hence incurred some costs. A brief discussion of the actions banks had to take to comply with the regulation is useful in understanding the survey findings on costs.<sup>14</sup>

#### Sources of Start-Up Costs

Truth in Savings requires specific disclosures regarding many account terms, making it necessary for managers to review documents for all varieties of all types of accounts. As indicated in the preceding section, most documents were not in full compliance and, consequently, required revision. Also, managers had to consider whether compliance costs or the actions of competitors

made it desirable to continue offering the same set of account varieties at the same terms. In addition, marketing programs had to be reviewed because the regulation has provisions governing the content of advertising.

Banks needed to inform tellers of the law's basic requirements and to train them either to give the required disclosures or to refer customers to customer service representatives. Customer service representatives had to be trained to prepare disclosures or assemble information from rate and fee schedules or computers, to give the proper disclosures at specified times, and to answer customer questions about the disclosures.

Systems and operations personnel had to reprogram computers or purchase software to calculate interest in accordance with the regulation. Reprogramming was also needed to make appropriate disclosures on periodic statements and to provide maturity notices for certificates of deposit at prescribed times. All of these changes required testing and verification. Information systems also had to be developed to comply with the law's requirements regarding record retention.

#### Survey Estimates of Costs

Banks reported spending, on average, about \$29,390 to implement Truth in Savings (table 9). Average start-up costs were \$16,110 at small banks, \$25,860 at medium-sized banks, and \$194,270 at large banks. Summing over all banks, start-up costs for Truth in Savings amounted to \$337 million.<sup>15</sup>

14. For further discussion of activities required to implement Truth in Savings, see Chamness (1992, 1993).

15. Survey evidence reported in Elliehausen and Lowrey (1995) indicated start-up costs at savings institutions of \$80 million, or an average of \$30,870 per institution.

### 9. Cost of implementing Truth in Savings, by size of bank

Cost category	All banks	Small banks	Medium-sized banks	Large banks
<i>Mean cost</i>				
Per bank (thousands of dollars) .....	29.39	16.11	25.86	194.27
Per consumer deposit account (dollars) .....	2.66	3.19	1.47	1.23
Per \$1,000 of consumer deposits (dollars) .....	.41	.51	.21	.14
Aggregate cost (millions of dollars) .....	337.07	129.99	70.68	136.40
MEMO:				
Mean number of consumer deposit accounts (thousands) .....	35.60	5.88	21.49	296.01
Mean volume of consumer deposits (thousands of dollars) .....	182.65	37.64	140.60	1,922.72
Percentage of banks .....	100.0	70.1	23.7	6.2

NOTE. See note to table 1 for definitions of bank size categories.

10. Mean cost and percentage distribution of selected costs of implementing Truth in Savings

Cost category	Mean cost per bank (thousands of dollars)	Percentage of total
Costs incurred before issuance of final regulation .....	1.18	4.0
<i>Costs incurred after issuance of final regulation</i>		
Management and in-house legal services .....	5.23	17.8
Outside legal services and consultants .....	.71	2.4
Training .....	4.00	13.6
Data processing and information system changes .....	11.14	37.9
Redesign and replacement of disclosure statements .....	3.67	12.5
Notification of existing account holders .....	2.79	9.5
Other .....	.68	2.3
<b>Total .....</b>	<b>29.39</b>	<b>100.0</b>

The most expensive compliance activities, according to the survey, were data processing and information system changes. Such changes accounted for 37.9 percent of total start-up compliance costs, or \$11,139 of the \$29,390 average cost per bank (table 10). This amount is

more than twice that spent for the second largest cost category (management and in-house legal expenses for reviewing the regulation and existing products, changing account varieties and terms, and developing procedures for auditing compliance), which accounted for 17.8 percent of the total. The next largest cost categories were training (13.6 percent of total costs) and redesign and replacement of disclosure forms (12.5 percent of total costs).

Costs by Scale of Operations and Holding Company Ownership

The reported costs of implementing Truth in Savings varied significantly by scale of operations in a pattern that suggests scale economies in compliance. For example, banks with fewer than 5,000 consumer deposit accounts spent on average \$4.31 per account to comply with the law (table 11). The average compliance cost per account was \$2.49 for the next largest category (5,000 to 7,499 accounts), and it continued to fall as the number of accounts rose. For the largest category (100,000 or more accounts), average cost per account was \$0.82, which is less than 20 percent of the average compliance cost per account for banks with fewer than 5,000 accounts. Similar patterns suggesting scale economies are found

11. Mean cost of implementing Truth in Savings, by number of consumer deposit accounts and amount of consumer deposits

Bank category	Cost category			Memo: Percentage of banks
	Per bank (thousands of dollars)	Per consumer deposit account (dollars)	Per \$1,000 of consumer deposits (dollars)	
<i>Number of consumer deposit accounts</i>				
Fewer than 5,000 .....	13.15	4.31	.61	33.6
5,000–7,499 .....	15.47	2.49	.36	19.0
7,500–12,499 .....	18.65	1.92	.29	20.4
12,500–19,999 .....	23.34	1.55	.25	11.0
20,000–49,999 .....	37.89	1.26	.18	9.7
50,000–99,999 .....	62.14	.92	.17	2.9
100,000 or more .....	301.30	.82	.11	3.4
<i>Amount of consumer deposits (thousands of dollars)</i>				
Less than 25,000 .....	10.04	3.74	.74	21.8
25,000–49,999 .....	14.90	3.03	.43	29.5
50,000–74,999 .....	19.23	2.50	.32	17.9
75,000–224,999 .....	27.55	1.89	.26	21.2
225,000–374,999 .....	46.57	1.25	.17	3.8
375,000–749,999 .....	56.24	.90	.11	2.6
750,000 or more .....	321.12	1.19	.12	3.3
All banks .....	29.39	2.66	.41	100.0

when costs are measured per \$1,000 of consumer deposits and when scale of operations is measured by dollar amount of consumer deposits.

It is possible that banks organized in multibank holding companies have an advantage over independent banks (including banks owned by one-bank holding companies) in implementing new regulations. Many of the activities required to implement a regulation—assessing the regulation and its effects on existing practices, designing a compliance program, and changing data processing systems, for example—involve substantial fixed components. Banks belonging to a multibank holding company may be able to share the costs of such activities with other banks in the organization.<sup>16</sup>

Survey data suggest that multibank holding company affiliation may reduce start-up costs for small banks. Small independent banks on average incurred costs of \$19,930, or \$4.13 per account, to implement Truth in Savings, whereas small banks owned by multibank holding companies on average incurred costs of \$8,480, or \$1.31 per account (table 12). Average start-up costs at medium-sized independent banks and medium-sized multibank holding company banks also

differed—\$1.94 and \$1.00 per account respectively. The latter difference is relatively smaller than the difference for small banks, and thus multibank holding company affiliation appears to have benefited small banks relatively more than medium-sized banks.

### Bank Responses to Compliance Costs

In addition to the start-up costs of complying with the regulation, Truth in Savings is likely to entail ongoing costs for activities that would not have been undertaken in the absence of regulation. Because of these start-up and ongoing compliance costs, banks may seek ways of increasing revenue or reducing expenses. On the revenue side, 35 percent of banks reported that they had raised or planned to raise fees or service charges for one or more types of accounts (table 13). For all types of accounts, the percentage of banks raising or expecting to raise fees or service charges decreased from the smallest to the largest asset size groups. Fees and service charges were most likely to be raised for checking and passbook accounts (27 percent to 30 percent of banks) and least likely to be raised for time deposit accounts (12 percent of banks).

Banks may reduce expenses by reducing interest rates paid on consumer deposits or by reducing the variety in their account offerings to simplify the task of compliance. Overall, 27 percent of banks lowered or planned to lower interest rates paid on deposit accounts. Small banks were more likely

16. In a study of ongoing costs for three consumer regulations, Barefoot, Marrinan & Associates (1993) found some evidence supporting the hypothesis that holding company affiliation matters: Banks belonging to multibank holding companies had significantly lower compliance costs relative to net income than independent banks. However, bank holding company affiliation was not significantly related to compliance costs relative to total assets.

12. Mean cost of implementing Truth in Savings, by bank size and structure

Bank size and structure	Cost category			Memo: Mean number of consumer accounts (thousands)	Memo: Mean volume of consumer deposits (thousands of dollars)	Memo: Percentage of banks
	Per bank (thousands of dollars)	Per consumer deposit account (dollars)	Per \$1,000 of consumer deposits (dollars)			
<i>Small banks</i>						
Independent .....	19.93	4.13	.62	5.48	36.57	47.0
Owned by multibank holding company .....	8.48	1.31	.28	6.69	39.97	23.1
<i>Medium-sized banks</i>						
Independent .....	31.98	1.94	.26	21.59	145.38	12.1
Owned by multibank holding company .....	19.43	1.00	.16	21.38	135.69	11.6
Large banks .....	194.27	1.23	.14	296.01	1,922.72	6.2
All banks .....	29.39	2.66	.41	27.98	182.63	100.0

NOTE. See note to table 1 for definitions of bank size categories.

13. Changes in account practices resulting from but not required by Truth in Savings,  
by type of account and asset size of bank  
Percentage of banks

Change and type of account	All banks	Small banks	Medium-sized banks	Large banks
Raised or planned to raise fees or service charges .....	35.4	39.8	27.5	15.5
Non-interest-bearing checking .....	29.0	32.9	22.0	11.9
Interest-bearing checking .....	29.8	34.0	22.2	13.3
Money market deposit .....	24.8	28.0	19.6	9.4
Statement savings .....	21.8	25.2	16.4	12.3
Passbook savings .....	27.5	31.3	19.4	8.0
Time deposit .....	12.3	13.8	10.1	4.5
Lowered or planned to lower interest rate .....	27.1	31.3	16.7	20.4
Non-interest-bearing checking .....	...	...	...	...
Interest-bearing checking .....	25.1	29.3	14.0	20.3
Money market deposit .....	21.4	24.7	13.6	15.1
Statement savings .....	14.2	17.8	7.9	6.3
Passbook savings .....	22.4	26.9	11.3	8.8
Time deposit .....	16.1	20.4	6.4	3.9
Offered or planned to offer fewer varieties of accounts ...	33.5	32.9	36.7	28.4
Non-interest-bearing checking .....	16.2	16.0	17.5	13.6
Interest-bearing checking .....	22.8	23.8	21.8	15.4
Money market deposit .....	10.6	10.5	10.6	11.9
Statement savings .....	12.0	12.4	11.3	11.6
Passbook savings .....	12.3	13.8	6.6	14.2
Time deposit .....	19.1	18.7	20.0	21.1

NOTE. See note to table 1 for definitions of bank size categories.  
... Not applicable.

than medium-sized and large banks to reduce interest rates because of the regulation. Interest-bearing checking accounts were the account type most likely to have interest rate reductions.

About a third of banks offered or planned to offer fewer varieties of accounts because of Truth in Savings. Again, interest-bearing checking accounts were the type of account most likely to be cut back (23 percent of banks). A relatively large percentage of banks (19 percent) reported reducing or planning to reduce the number of varieties of time deposit accounts. Reductions in the number of account varieties differed by size group. Small and medium-sized banks were most likely to reduce or plan to reduce offerings of interest-bearing checking accounts, whereas large banks were most likely to reduce varieties of time deposit accounts.

### Statistical Analysis of Costs of Truth in Savings

To investigate the effects of individual factors—such as scale and holding company affiliation—on compliance costs, we used a cost function with output, factor prices, and output homogeneity variables as its arguments. Output has several dimensions in the context of compliance with

Truth in Savings. The first is scale of operations, which we measured conventionally by the number of consumer deposit accounts. This dimension is used to measure economies of scale in compliance. If economies of scale exist, then the average cost per account of implementing a new regulation (or adjusting to changes in an existing one) would be higher for smaller banks than for larger banks, putting smaller banks at a disadvantage in competing with larger banks.

The second dimension of output is the amount of required change in deposit account practices. We measured the amount of change by comparing Truth in Savings' requirements with five pre-regulation deposit account policies for six types of deposit accounts and counting each instance in which the bank had to change a policy to comply with the regulation.<sup>17</sup> Results for this variable would give an indication of how closely com-

17. The policies were (1) the method of determining the balance on which interest is paid (for example, investable balance, low balance, or average daily balance) for four types of accounts, (2) the provision of written disclosure statements on account opening for six types of accounts, (3) the provision of written notification of adverse changes in account terms for five types of accounts, (4) the notification of upcoming maturity of certificates of deposit that are automatically reinvested for four ranges of term to maturity, and (5) the notification of upcoming maturity of certificates of deposit that are not automatically reinvested for four ranges of term to maturity.

pliance costs are related to specific changes.<sup>18</sup> If compliance costs are closely related to specific changes, imposing general regulations to address infrequently occurring practices will impose costs primarily on those banks that have the policies in question. Alternatively, if costs are not closely related to specific changes, regulation will be costly to all banks regardless of the extent of the changes they have to make.

The third dimension of output is the number of account varieties offered. Some banks offer several varieties of a single type of account. Each variety has different terms and may require different disclosures under Truth in Savings. Therefore, offering more varieties of accounts may be associated with greater compliance costs.

The model included two factor prices—the prices of labor and capital. The price of labor was measured by the ratio of salary and benefits expense to number of employees. The price of capital was measured by the replacement cost of bank office buildings, which was derived from data on new construction (McGraw-Hill, F.W. Dodge Division, 1993).

We also included average size of consumer deposit account as an output homogeneity variable, a dummy variable to control for state disclosure laws for consumer deposit accounts, and a dummy variable to control for affiliation with a multibank holding company.<sup>19</sup> Holding company banks may be able to share some compliance activities with the lead bank or other affiliated banks, thereby achieving lower overall compliance costs than otherwise-similar independent banks.

For this paper, we estimated separate Cobb–Douglas cost functions for small, medium-sized, and large banks. An advantage of the Cobb–Douglas functional form is its tractability. It has a manageable number of parameters, and estimated coefficients—such as the coefficient for

scale—can be interpreted directly as elasticities. It has the disadvantage that it maintains restrictive assumptions about technology. In particular, the assumption of homogeneity in output restricts estimates of economies of scale to be constant values. However, previous work on cost functions for financial institutions suggests that this assumption is unlikely to be satisfied. Our approach mitigates this disadvantage of the Cobb–Douglas form by allowing compliance technologies to vary by size group of banks. It provides a more flexible structure for studying costs than does a single Cobb–Douglas function.<sup>20</sup>

Including the variables discussed above, the Cobb–Douglas compliance cost function for the  $i$ th size group of banks is written as follows:

$$\begin{aligned} \ln C = & \alpha^i + \beta_1^i \ln Q_1 + \beta_2^i \ln Q_2 + \beta_3^i \ln Q_3 \\ & + \gamma^i \ln P_1 + (1 - \gamma^i) \ln P_2 + \delta_1^i \ln H_1 \\ & + \delta_2^i H_2 + \delta_3^i H_3 + \varepsilon \end{aligned}$$

where  $Q_1$  is the number of consumer deposit accounts;  $Q_2$  is the amount of change in deposit account practices required by Truth in Savings;  $Q_3$  is the number of account varieties;  $P_1$  is the price of labor;  $P_2$  is the price of capital;  $H_1$  is the average size of consumer deposits;  $H_2$  is a dummy variable that equals one if the bank is located in a state with a state disclosure law for consumer deposit accounts; and  $H_3$  is a dummy variable that equals one if the bank is owned by a multibank holding company.

For each size group of banks, the estimated compliance cost function is significant at the 1 percent level (table 14). Taken together, the three equations explain 59 percent of the variation in compliance costs for implementing Truth in Savings.<sup>21</sup>

18. Counting the number of times a policy must be changed is somewhat arbitrary, for the changes are unlikely to require equal efforts. To ensure that our results did not depend on a particular way of counting changes, we constructed several variables that counted additional requirements, including one that counted each item that is required in Truth in Savings disclosures. We also considered other ways of counting changes: (1) counting changes in representative accounts—in this case, interest-bearing checking and one- to six-month certificates, (2) counting each change once if it is required for any one of the account types, and (3) including dummy variables for specific changes. No matter which measure of change we used, the results of estimation were substantially similar to those reported here.

19. Illinois, Iowa, Maryland, Massachusetts, New York, Ohio, Rhode Island, Texas, and Wisconsin had disclosure laws for consumer deposit accounts.

20. We also estimated a compliance cost function using the transcendental logarithmic (translog) function, which permits estimation of a nonhomogeneous cost function. The translog function also has limitations. It is more difficult to interpret because it has numerous squared and cross-product terms, and recent evidence (McAllister and McManus, 1993) raises questions about its ability to represent behavior globally. Our estimates of elasticities from the translog compliance cost function do not differ substantially from estimates from the Cobb–Douglas compliance cost functions.

21. The F-statistic for testing the hypothesis that the cost function coefficients are equal across groups (that is,  $\alpha^1 = \alpha^2 = \alpha^3$ ;  $\beta_j^1 = \beta_j^2 = \beta_j^3$  for all  $j$ ;  $\gamma^1 = \gamma^2 = \gamma^3$ ; and  $\delta_j^1 = \delta_j^2 = \delta_j^3$  for all  $j$ ) is 3.000. This value is significant at the 1 percent level, and we reject the hypothesis that the coefficients are equal. Thus, our statistical analysis supports the use of separate cost functions for different sizes of banks rather than a single Cobb–Douglas cost function for all banks.

## 14. Estimated compliance cost functions for implementing Truth in Savings

Variable	Small banks	Medium-sized banks	Large banks
Number of consumer deposit accounts (ln $Q_1$ ) .....	.560** (6.881)	.600** (6.287)	.652** (9.045)
Amount of change in account practices (ln $Q_2$ ) .....	-.041 (.730)	.171** (2.841)	.044 (.414)
Number of account varieties (ln $Q_3$ ) .....	.219* (2.171)	.220* (2.106)	-.040 (.279)
Price of labor input (ln $P_1$ ) .....	.734** (4.415)	.772** (4.926)	.697** (4.761)
Price of capital input (ln $P_2$ ) .....	.266 (1.600)	.228 (1.452)	.303* (2.065)
Average size of consumer deposit accounts (ln $H_1$ ) ...	.481** (2.832)	.356† (1.815)	.263 (1.167)
State disclosure law dummy ( $H_2$ ) .....	-.014 (.132)	-.042 (.385)	-.141 (.780)
Multibank holding company bank ( $H_3$ ) .....	-1.146** (10.820)	-.583** (5.647)	.099 (.515)
Intercept .....	-3.929* (2.220)	-3.512 (1.574)	-2.512 (1.047)
MEMO:			
F-ratio .....	27.810**	16.358**	17.758**
Number of banks .....	392	321	174

NOTE. See note to table 1 for definitions of bank size categories.

† Significantly different from zero at the 10 percent level.

\* Significantly different from zero at the 5 percent level.

\*\* Significantly different from zero at the 1 percent level.

Several coefficients are of particular interest in assessing start-up costs. First, the coefficients for number of consumer deposit accounts,  $Q_1$ , are positive and significantly less than unity, which suggests the existence of economies of scale for number of accounts for all three size groups. This conclusion for the Truth in Savings Act is consistent with those of Murphy (1980) for the Equal Credit Opportunity Act and Schroeder (1985) for the Electronic Fund Transfer Act. The coefficients for  $Q_1$  indicate that a 10 percent increase in the number of consumer deposit accounts increases compliance costs 5.6 percent for small banks, 6.0 percent for medium-sized banks, and 6.5 percent for large banks.<sup>22</sup> Because start-up costs rose less than proportionately with number of accounts, banks with fewer accounts faced higher average costs in implementing Truth in Savings than did banks with more accounts. This conclusion holds regardless of bank size group, although scale economies for number of accounts are not constant and decline from the smallest to the largest size group. Thus, the relative differences in costs attributable to scale of operations became less

important from the smallest to the largest size group.

The coefficients for amount of change in deposit account practices,  $Q_2$ , are also significantly less than unity. For the small and large bank groups, the coefficients are small and not significantly different from zero. For the medium-sized bank group, the estimated coefficient indicates that a 10 percent rise in the number of required changes increases compliance costs 1.7 percent. These results suggest that the costs of implementing Truth in Savings were insensitive to the extent to which banks had to change their practices for deposit accounts.<sup>23</sup> Banks incurred costs in implementing the regulation—for example, costs for evaluating the requirements of a regulation, determining the extent to which the regulation required changes in existing practices, and ensuring that practices complied with the regulation—even if little or no substantive change in existing practices were necessary. In other words, a substantial share of the costs of implementing Truth in Savings were fixed. This is a new finding

22. Estimates of scale economies for number of accounts from a translog cost function are similar: A 10 percent rise in the number of accounts increases compliance costs 5.6 percent for small banks, 6.2 percent for medium-sized banks, and 7.0 percent for large banks when the elasticities are evaluated at the means of the asset-size groups.

23. All the different ways of counting changes produced results similar to these. In models using dummy variables to indicate changes, the coefficients of the dummy variables were small and generally insignificant and summed to less than unity. Elasticities for changes estimated from a translog cost function were between about zero and 0.14 depending on the amount of change assumed.

for a question not previously investigated. If applicable to other new regulations or regulatory changes, it suggests that a general requirement to alter an infrequent practice may impose costs on all banks, not just on those that must make changes. In addition, this result argues against a policy of making frequent minor revisions in regulations. Instead, a policy of delaying minor revisions until some number have been accumulated and then making infrequent major revisions may reduce implementation costs by allowing banks to exploit economies in changing their practices.

The coefficients for number of account varieties,  $Q_3$ , are positive and significantly different from zero for small and medium-sized banks. The coefficient for large banks, on the other hand, is small and not significant. Thus, offering a large number of account varieties was associated with higher costs of implementing Truth in Savings at small and medium-sized banks but not at large banks.<sup>24</sup> If these results are generally true, then a policy of making frequent regulatory changes may discourage small and medium-sized banks from offering customers many account choices. Thus, regulation might inhibit small and medium-sized banks' ability to compete with large banks.

The coefficients for the state disclosure law dummy variable are negative but small and not significant. Although both the federal Truth in Savings law and state disclosure laws primarily require written disclosures, the specific requirements of federal and state laws differ. Moreover, the state laws differ from each other. Hence, there is no significant relationship between state disclosure laws and the cost of implementing Truth in Savings.

The significance of the coefficients for the dummy variables for multibank holding company ownership is notable. The coefficients for small and medium-sized banks are significant, but the coefficient for large banks is not. The coefficients indicate that small and medium-sized banks owned by multibank holding companies had proportionately lower start-up costs than did similarly sized independent banks (including banks owned by one-bank holding companies). This result is consistent with the hypothesis that holding company banks may be able to share some compliance

activities with affiliated banks. The coefficient for medium-sized banks owned by bank holding companies is about half the size of that of small banks, and, as mentioned, the coefficient for large banks is not significant. Thus, the ability of multibank holding company banks to share costs appears to decline with size and may not be much of an advantage for large banks.

## Conclusions

In 1992–93, the Federal Reserve Board undertook the Survey of Compliance Costs for Truth in Savings to learn more about the process and costs of implementing a new federal regulation. Responses to the survey indicate that most U.S. commercial banks provided consumers with extensive written disclosures about their deposit accounts before passage of the Truth in Savings Act but that most such banks, if not all, had to change some policies and practices for consumer deposit accounts to comply with the law.

The survey data indicate that the cost to banks for implementing Truth in Savings was \$337 million, or \$29,390 per bank. The largest components of this total were the cost of data processing and information system changes (about 40 percent of total compliance costs) and management and in-house legal expenses (nearly 20 percent of the total). These findings on the distribution of compliance costs for Truth in Savings are similar to the results of an earlier study (Schroeder, 1985) of start-up costs for a different disclosure regulation.

Statistical analysis using a cost function reveals that there were economies of scale in compliance related to Truth in Savings: A 10 percent greater number of consumer accounts was associated with higher costs of implementing the regulation of 5.6 percent for small banks, 6.0 percent for medium-sized banks, and 6.5 percent for large banks. This result gives further credence to earlier studies involving other federal regulations that also found economies of scale in compliance (Murphy, 1980; Schroeder, 1985). The implication is that small firms have a cost disadvantage in complying with new regulations.

This study breaks new ground in examining the effect of the amount of change required on compliance costs. We found that start-up costs for complying with Truth in Savings were insensitive to the extensiveness of necessary changes. Banks incurred costs in implementing the regulation regardless of how much they had to change their

24. By itself, this result does not indicate whether or not the implementation costs for Truth in Savings caused banks to offer fewer account varieties. The law might induce banks to offer fewer account varieties to lower the ongoing costs of regulation. Banks might also use the law as an excuse to eliminate less profitable account varieties.

practices. This result has important implications for regulatory policy. It suggests that a general requirement to alter an infrequent practice may impose costs on all banks, not just on those that must make changes. In addition, this finding argues against a policy of making frequent minor revisions in regulations. An alternative policy of delaying minor revisions until some number have been accumulated and then making infrequent major revisions may reduce implementation costs by allowing banks to exploit economies in changing their practices. As with all new findings, however, further study of the question is necessary to justify its general application.

Other findings of the study are that for small and medium-sized banks, start-up costs for Truth in Savings increased with the number of account varieties offered and were greater for independent banks than for multibank holding company banks. Also, banks subject to state disclosure laws for consumer deposit accounts did not incur significantly lower start-up costs for Truth in Savings than did other banks, probably because the state laws generally had different provisions than the federal law.

## Appendix: Description of Survey

The objective of the Survey of Compliance Costs for Truth in Savings was to collect contemporaneous data on the activities and costs of bringing consumer deposit account practices into compliance with Regulation DD, the regulation implementing the Truth in Savings Act. At the time the regulation was adopted, consumer deposit accounts were established products. Banks had to review these products for compliance with the regulation, assess the effects of the regulation on the practices of competitors, and change account terms and practices to satisfy the regulation and to respond to competitors' actions. These activities occurred solely because of the regulation and therefore represent incremental costs of regulation. By recording the data contemporaneously, respondents were able to report the start-up costs associated with the Truth in Savings law more accurately than they might have done some months later.

The target population for the survey was U.S. commercial banks in operation on June 30, 1993, the deadline for compliance with the Truth in Savings regulation. The sample frame was constructed from the December 1991 Report of Condition and Income (Call Report). The sample consisted of both non-random and random components. The non-random component was made up of (1) banks solicited by the American Bankers Association, the Consumer Bankers Association, and the Independent Bankers Association of America, (2) banks participating in the Federal Reserve System's Functional Cost Analysis program, (3) and banks that volunteered to complete the survey. The random component was a random sample drawn from the complement of the non-random component.

Banks were stratified by three size groups (small, assets of less than \$100 million; medium, assets of \$100 million to \$499 million; and large, assets of \$500 million or more) and four census regions (northeast, north central, south, and west). The four strata for large banks contained all banks in the population. For the remaining eight strata, the non-random banks were assigned to the appropriate stratum and the remaining banks needed to achieve the target sample size were drawn randomly.

The questionnaire was in two parts. Part I covered deposit account policies and practices that are regulated by Truth in Savings. It asked banks to report the policies and practices that were in place before the law became effective. Part II asked banks to report their one-time start-up costs of changing policies and procedures to comply with Regulation DD. To facilitate respondents' understanding of what information was desired, cost data were collected for nine general categories: (1) costs incurred before issuance of the final regulation for reviewing the proposed regulation and preparing comments, (2) management and in-house legal costs for reviewing the final regulation, assessing existing products and account practices, revising products and account practices, and developing a compliance program, (3) fees for outside legal services and consultants, (4) costs for training employees, (5) costs for data processing and information system changes, including purchases of hardware and software, installation and testing of software, costs of outside contractors, and assessments of third-party processors, (6) costs for designing new disclosure statements and destroying old ones, (7) costs for notifying existing account holders of their right to receive account disclosures, and (8) any other expenses. To assist banks, specific compliance activities were suggested for each category. These procedures helped ensure that the cost data would be comparable across banks.<sup>25</sup> Part II also asked for information on the number and dollar amount of consumer deposit accounts and about changes in interest rates, fees, and other deposit account practices that resulted from Truth in Savings.

Questionnaires were mailed to sampled banks at the beginning of November 1992, shortly after Regulation DD was issued. Respondents returned completed questionnaires to the Federal Reserve Board for data processing. Overall, 42 percent of eligible respondents returned both parts and provided sufficiently complete information for analysis.

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25. See Elliehausen (forthcoming).

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