Gregory Elliehausen Staff, Board of Governors

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# 1. Introduction

The cost of government regulation of business has become a political issue in recent years, and the cost is no less controversial for banks than for other types of businesses. Banks commonly complain that regulatory requirements are costly; regulatory agencies often invoke high regulatory costs as an excuse for leaving matters unchanged or, conversely, blithely assert that the cost of a particular requirement is trivial. Many politicians say they deplore regulatory burden, but regulatory requirements are seldom repealed, and legislatures continue to pass new laws imposing greater regulation. Surprisingly, considering the attention given the subject and the need for data on which to base informed decisions, there have been relatively few attempts to obtain empirical evidence on regulatory costs in banking.

The few available empirical studies of regulatory costs in banking differ widely in content and quality. Most have simply tried to document the cost of regulations. These efforts might be useful if the issue were one of revoking entire regulations. However, proposals to revoke entire regulations are not very frequent. More common are proposals to modify or revoke parts of regulations. In such cases, the questions are whether the benefits of regulation could be obtained at a lower cost and whether the benefits of a particular part of a regulation are worth the cost. To answer these questions, one needs to understand the process of regulatory compliance. Some studies have investigated economies of scale in regulatory costs. Almost none have considered the way in which

regulatory costs are affected by the quality and quantity of products offered or by the number of regulatory requirements that must be satisfied. A better understanding of the determinants of regulatory costs would be helpful in reducing regulatory burden without diminishing any benefits to the public.<sup>1</sup>

This paper evaluates the evidence from available empirical studies of regulatory costs, suggests what can reasonably be concluded about the effects of regulation on banks' costs, and recommends directions for further research.<sup>2</sup> It begins with a discussion of sources and types of regulatory costs. Then the requirements of the various methods used to measure regulatory costs are discussed, and published empirical studies are evaluated in light of these requirements. Finally, the substantive findings of the studies are reviewed. The paper focuses on costs at commercial banks. However, because the same (or similar) regulations in many cases apply to other types of financial institutions, a few studies of the costs at financial institutions other than banks are also considered.

<sup>1.</sup> Estimating the benefits of a regulation or other public policy is difficult and controversial. For a summary of the issues, see Hahn and Hird (1991). A discussion of the benefits of bank regulation is beyond the scope of this paper.

<sup>2.</sup> The Federal Financial Institutions Examination Council in 1992 published a review of studies of regulatory cost in banking. Several new studies have appeared since then. This paper updates the FFIEC report and provides a new discussion of methodological issues.

The cost of regulation consists of opportunity and operating costs that arise from activities or changes in activities that are required by the regulation. For a bank, *opportunity costs* occur when a regulation prevents it from engaging in profitable activities. An example is the cost resulting when branching restrictions prevent a bank from taking advantage of profitable lending opportunities outside its local area and possibly make it vulnerable to downturns in local business conditions. Another opportunity cost is the interest forgone as a result of the prohibition on investing reserves in interest-bearing assets.

*Operating costs* arise from requirements that banks perform certain actions, for example, reporting to government agencies (Call Reports, currency transaction reports, and 1099 reports), providing disclosures to customers (Truth in Lending, Truth in Savings), and meeting certain operating standards (Expedited Funds Availability, error-resolution procedures). In each case, employee time, material, and equipment must be devoted to performing specific acts; and managerial effort must be devoted to understanding the regulation's requirements, implementing required actions, and ensuring compliance with the regulation.

There are two types of operating costs—start-up and ongoing. *Start-up costs* are the one-time costs of implementing changes to conform to the requirements of a regulation. They include legal expenses for interpreting the regulation, advising managers, and reviewing procedures and forms; managerial expenses for reviewing and revising procedures and forms, coordinating compliance activities, and designing internal audit programs; training expenses; costs for modifying information systems and storing records; expenses for programming and testing of software; and costs for designing new forms and destroying obsolete forms.

Ongoing costs are the recurring costs of performing the activities required by a regulation. They include managerial expenses for monitoring employee compliance and for coordinating compliance examinations with regulatory agencies; labor expenses for preparing reports and disclosure statements and responding to customer questions; legal expenses for reviewing complaints; and printing and postage expenses to provide written disclosures to customers. The distinction between start-up and ongoing costs is not always clearcut. Many regulations change frequently.<sup>3</sup> The process of monitoring and implementing regulatory changes may, in itself, be an ongoing activity, and the cost of this activity may legitimately be considered an ongoing cost. The cost of implementing frequent changes may be substantial, possibly greater than other recurring costs.

Some regulations require institutions to undertake activities in which they would not engage in the absence of regulation. An example is the Bank Secrecy Act, which requires banks to file with government agencies reports of certain currency transactions. Other regulations govern activities that banks would undertake in the absence of regulation. An example is the Truth in Savings Act, which requires banks to disclose certain information about deposit account terms at certain times. Many banks would provide disclosures without being required to do so, and indeed most banks provided disclosure statements before the law was enacted (although they generally did not provide all of the information exactly as subsequently required by the law).

The *total cost* of a regulation is the cost of performing all the activities that it requires. The *incremental cost* of a regulation is the cost of activities that are performed only because the law mandates them.<sup>4</sup> The costs of performing activities that are mandated by the law but would be performed anyway in the ordinary course of business are part of the total cost of a regulation but are not part of the incremental cost. In the case of the Bank Secrecy Act, for example, the total cost of performing the activities required by the regulation is probably about the same as the incremental cost. In the case of the Truth in Savings Act, in contrast, the incremental cost is likely to be less than the total cost because most

<sup>3.</sup> Formal rulemaking is not the only way regulatory requirements can be changed; they can also be changed by agency interpretations and policy statements and by court decisions.

<sup>4.</sup> The benchmark for determining the incremental cost of a regulation may not be an unregulated regime. For example, when the Federal Trade Commission issued the Unfair Credit Practices regulation, which restricts legal remedies available to creditors in the event of consumer default, the use of these remedies was already regulated by the states. For further discussion of benchmarks for measuring regulatory costs, see Joskow and Rose (1989).

banks provided disclosure statements before the regulation.

Because the total cost includes costs that banks would have incurred anyway, this measure seems to overstate the true cost of a regulation. Incremental cost may be a more relevant measure of the economic cost of a regulation. However, identifying activities that are performed only because the law mandates them is difficult. Over time, many such activities may come to be viewed as part of routine banking business especially if they are a relatively small part of a necessary or unregulated activity—and thus may be overlooked when identifying required activities. Moreover, regulation may force an institution to perform an activity in a different, more costly way than it would otherwise choose. This added cost is a component of incremental cost that may be overlooked and difficult to measure. Accounting systems used by banks do not normally separate regulatory costs from other costs. Therefore, researchers working in the area of regulatory costs in banking have had to find other ways to obtain data or to construct estimates of costs. Most have collected data through case studies or through surveys specifically designed to collect such information. Others have attempted to infer costs by econometric methods or through analogy. Each approach has particular requirements that must be met if the studies are to produce valid results.

# **Collecting Data on Regulatory Costs**

Case studies and surveys of regulatory costs are similar in that both require the researcher to question bank employees about actions taken to comply with regulations. Success in obtaining valid responses can be evaluated by considering the cognitive process of response. The process is typically described in five stages: (1) encoding of information and formation of records in memory, (2) comprehension of the questions, (3) retrieval of information from memory, (4) judgment about the appropriate level of effort to make in formulating responses, and (5) communication of responses (see Biemer and Fecso, 1995; Groves, 1989). Each stage suggests different sources of possible response errors and several actions that can be taken to reduce such errors. The sources of error in case studies and surveys are similar, but the ease of reducing such errors for the two methods may differ.

Encoding—the first stage—is the process of acquiring, processing, and storing relevant knowledge in memory. Because business records do not separate regulatory costs from other costs, and for some regulatory actions may not exist, the researcher must rely especially heavily on information stored in the respondent's memory. Respondents' ability to recall stored information is influenced by the characteristic that memory is organized in a way that economizes on storage. This characteristic causes individuals to recall events as a series of actions, with frequently repeated events tending to be recalled as the set of actions that are taken under most circumstances. Some aspects of an event are more important to an individual than others and are

therefore more easily retrieved. To estimate regulatory costs, a respondent must recall a set of actions that constitute regulatory compliance.

Obviously, the researcher requesting estimates of regulatory costs must choose respondents who have encoded the relevant information. However, identifying a qualified respondent may not be straightforward. Banks typically assign primary responsibility for compliance to a single employee, and the type of employee is not the same at all banks (for example, the individual may be a bank officer, a board member, a full-time compliance officer, or an attorney). Moreover, no single bank employee is likely to know about all the actions taken to comply with regulations. Because regulatory activities are often diffused within the bank, the researcher may have to question different department managers to obtain information about compliance activities in different areas. Identifying and arranging interviews with many people within an organization can be difficult, so case studies (which allow greater personal involvement of the researcher in each interview) are more likely than surveys to be successful when collecting data on a large number of regulations. Surveys may have a greater chance for success when collecting data on just one regulation (for example, Truth in Lending) or on a set of related regulations (for example, consumer regulations).

The next stages of the response process are comprehension of questions and retrieval of information from memory. Comprehension is the process of giving meaning to the question. Different respondents may interpret the same question differently, depending on their background, training, and experiences. A case study or survey can be successful only if respondents and the researcher share a common understanding of the meanings of the questions.

After comprehending a question, the respondent must retrieve the relevant information from memory. As noted earlier, individuals retain information about an event as part of a more general set of actions. In responding to questions, they attempt to reconstruct the specific event from the general set of actions. For some actions, recall is aided by business records (for example, records of training seminars, software purchases, or fees paid for outside legal services). For other actions, a respondent may rely heavily on memory (for example, memory of the amount of time employees spent monitoring regulatory developments, preparing compliance reports, and reviewing compliance procedures). The accuracy of recollection depends on the length of time since the event, the importance of the event to the individual, the amount of detail to be reported, and the depth of cognitive processing required to retrieve the requested information. Respondents may be inclined to exert minimal effort in reconstructing events when retrieving information is burdensome or difficult. In such cases, some respondents may provide answers that are "good enough" rather than precise (Krosnick and Alwin, 1987). This inclination threatens the validity of studies collecting data on regulatory costs because the data cannot be retrieved directly from accounting records. Fortunately, there is at least a partial remedy: Pointedly asking respondents to answer with a high degree of accuracy has been found to encourage recall of details.

Researchers in studies of regulatory costs can take several steps to help ensure uniform comprehension of questions. One is to specify carefully the regulations or regulatory requirements that are the subject of the study. Another is to make clear distinctions between total and incremental costs and between start-up and ongoing costs. To stimulate retrieval of information from memory, the researcher can identify actions that might have been undertaken to satisfy regulatory requirements. Finally, to facilitate understanding and simplify the formulation of responses, the researcher can provide simple instructions on how to estimate costs.

The fourth stage of the response process is judging the appropriate level of response. Respondents' tendency to avoid burdensome, intensive thought causes them to use easily accessible information. They choose heuristics, or shortcuts, and thereby risk providing less accurate information in return for reducing the amount of cognitive processing they must do. One frequent shortcut is reporting the most important, most recent, or most visible event. This approach may produce acceptable results, but it may cause the respondent to focus on the last action or the most annoying action taken to comply with regulations; other regulatory activities may be overlooked, and as a result the respondent may underestimate regulatory costs. Another shortcut is making a preliminary estimate and then adjusting it to suit the question. For example, a respondent may estimate the total cost of some actions taken to satisfy a regulatory requirement and then adjust the estimate to obtain the incremental cost. It is not obvious whether the

use of this shortcut would result in underestimation or overestimation of costs. A third frequent shortcut is overgeneralizing from partial information. In estimating the amount of time spent monitoring developments, a respondent may generalize from the previous month's experience. Because regulatory changes often occur irregularly and sometimes come in bunches, overgeneralization is a potential problem in studies of regulatory costs.

The use of shortcuts sometimes produces acceptable responses, but often it does not. Taking steps taken to aid the retrieval of information from memory can help discourage the use of undesirable shortcuts. For example, providing a list of regulatory requirements and possible compliance activities may compensate for respondents' tendency to focus on the most easily accessible information. In addition, providing simple guidance on estimating regulatory costs and requesting that details be recalled accurately may reduce overgeneralization from limited experience.

In the final stage of the response process, the respondent reports to the researcher relevant information retrieved from memory. This communication may be influenced by a desire to give a socially acceptable answer or by concerns about adverse economic or legal consequences. Maintaining impartiality in all communications with respondents may help counteract any effects of respondents' need for social approval. Concerns about economic or legal consequences can usually be addressed by promising confidentiality. Because compliance can more easily be observed directly by the actions taken to satisfy requirements than by the cost of the actions, these influences probably do not have much of a role in studies of regulatory cost.

Communication may also be influenced by banks' self interest, which, it is sometimes alleged, may cause them to inflate estimates of regulatory costs in order to obtain regulatory relief. Theoretical studies have considered a regulatory process in which regulators request cost information from regulated firms in order to set optimal levels of pollution taxes or quality standards. The results have been ambiguous: Regulated firms report truthfully in some cases and untruthfully in others, depending on the assumptions of the particular model (see Gruenspecht and Lave, 1989). These studies have involved a regulatory process much different from the one in banking, however, and it is unlikely that they could provide much insight on the truthfulness of respondents

in the case studies and surveys discussed in this paper.<sup>5</sup>

Several considerations argue against deliberate misreporting. One is the psychological cost of responding. Fabricating a plausible overestimate of regulatory costs is more difficult than preparing a truthful response. A careless effort may focus on the costs of the most visible aspects of compliance and fail to overestimate regulatory costs. An implausibly large estimate, regardless of whether carefully or carelessly prepared, risks detection.<sup>6</sup> Respondents' inclination to avoid burdensome thought would tend to discourage misrepresentation and overreporting. The cynical banker would probably be a nonrespondent rather than an untruthful respondent.

Also arguing against deliberate misreporting is the reality that a large estimate of regulatory costs does not necessarily translate into economic benefits to banks. Politicians and regulators impose regulations because they perceive a need for them. They may conclude that the benefits to the public or to themselves justify the cost of regulation, even if the cost is large (or is believed to be large).<sup>7</sup>

Regulators are usually sensitive to the effect of regulations on banks' operations and costs, however. They often modify requirements if they believe that the regulatory objectives could be achieved in a less burdensome way. Reasonable estimates of the costs of alternatives may influence requirements, but implausibly large estimates are unlikely to produce the desired relief. Implausibly large estimates may also compromise banks' credibility with regulators and reduce their ability to influence future proposals. Thus, considering the extent of bank regulation, the benefits of providing dubious estimates of regulatory costs would seem small.

Even if a large estimate of regulatory costs results in regulatory relief, banks still may not

benefit. The markets for many bank products are reasonably competitive. In these markets, competition can be expected to force banks to pass on to customers any cost savings from regulatory relief.

A third consideration arguing against deliberate misreporting is that the self interest of bank managers—who have the relevant information, decide whether to participate in the study, and prepare the responses—may not coincide with that of bank owners, to whom any benefits of regulatory relief would primarily belong. Compliance officers may owe their jobs to the existence of regulation, and other managers may have larger staffs because of regulation. Bank managers' interest in regulatory relief is not obvious.<sup>8</sup>

Finally, even if it were in the interest of bank owners and managers to inflate estimates of regulatory costs, it does not follow that they would want to do so. Self-interest is only one of many factors that motivate individuals' behavior (others include altruism, religious beliefs, and patriotism).<sup>9</sup> Many regulations do provide public benefits. Bankers are members of society and enjoy the benefits of living in society. It is not surprising, then, that bankers sometimes support regulatory requirements that they believe would benefit customers or the public, even when the requirements are costly.

In sum, consideration of a cognitive model of response suggests that obtaining estimates of regulatory costs is not a simple matter that can be accomplished by asking a few questions. However, researchers can do several things to be more

9. Economists are especially guilty of dismissing estimates of regulatory costs on the basis of narrow assumptions about self-interest. Perhaps economists' views on self-interest are a consequence of the way they themselves tend to think and behave (see Frank, Gilovich, and Regan, 1993). These views are not a limitation of the economic models; nor are they held by all economists. Gary Becker (1993, pp. 385–86) has pointed out that some economists' narrow assumptions confuse the motives for behavior and the method of achieving goals: "Behavior is driven by a much richer set of values and

preferences [than selfishness]. . . . individuals maximize [their] welfare as they conceive it, whether it be selfish, altruistic, loyal, spiteful, or masochistic. Their behavior is forward-looking. . . . In particular, they try as best they can to anticipate the uncertain consequences of their actions."

<sup>5.</sup> In banking, the regulatory process typically is one in which the Congress or the regulatory agency sets the level of a remedy to a perceived problem with little regard to cost. Data on costs are rarely, if ever, collected for the purpose of specifying the level of the remedy, although consideration of cost may influence the way in which the remedy is implemented. The limited availability of data on regulatory costs itself is evidence of the lack of consideration of costs in the regulation of banking.

<sup>6.</sup> It is unlikely that many respondents could collude to produce a consistent set of inflated estimates of regulatory costs. Respondents would not ordinarily know each other. Collusion would be especially difficult in connection with a survey because the number of respondents is large.

<sup>7.</sup> For discussion of political and bureaucratic decision processes, see Buchanan and Tullock (1962), Tullock (1965), and Niskanen (1971).

<sup>8.</sup> Bankers often seem more concerned with the way regulations interfere with their operations than with regulatory cost per se. They tend to object to requirements that make marketing, delivery, and the servicing of customers more difficult or bureaucratic. The Grant Thornton study of regulatory burden (1992a, 1992b, 1993) provides some support for this observation. The first part of the study (1992a) asked bankers to rank individual regulations in several categories on the basis of cost and aggravation and to identify individual regulations that they considered "most burdensome." Regulations cited by bankers as the most burdensome were always among the most costly regulations in their category.

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certain of obtaining reliable estimates of regulatory costs from case studies and surveys. They include identifying the regulations and the specific requirements of the regulations, suggesting activities that may have been undertaken to satisfy the requirements, defining the types of costs that are being measured, and providing instructions for estimating the components of those costs. These things are easier to do in relation to case studies (in which the researcher can interact closely with respondents) than surveys (for which the greater number of respondents generally precludes much personal contact by the researcher). However, surveys have an advantage in the assessment of the validity of individual estimates: Individual responses can be compared with the responses of other banks in the survey that have similar characteristics.

Several of the studies reviewed later in this paper took steps to obtain reliable estimates. In reporting on one of the more successful studies, Boyle (1983, p. 27) discussed reasons for believing that the study's estimates were reliable:

Mortgage banking institutions generally requested at least a week from receipt of the survey questionnaire to complete their estimates. Individual respondents reported spending weekends developing these estimates, in order to complete the questionnaire within the field period.

Three-quarters of the sampled firms were able to provide breakdowns of regulatory costs by major expense category. Nearly one-third were willing to provide line-item breakdowns in the worksheets. This is not surprising since a number of participants report that total regulatory expense estimates are not routinely made and they must be generated from the ground up. As the field period for the study was concluding, some participants asked for extensions in order to finish their cost reviews. They were "unwilling to give an estimate off the top of the head."

This experience supports the view that properly conducted studies can yield reliable estimates of regulatory costs.

# Inferring Regulatory Costs by Econometric Methods

A few researchers have used econometric methods with conventional accounting data to infer regulatory costs. In most cases they have attempted to measure the difference between the costs of activities in regulated and unregulated jurisdictions or the change in the costs of activities when regulations change. The task is difficult because the regulations in question are seldom the only factor affecting costs. Even when using multivariate statistical models, it is not always possible to conclude with confidence whether the estimated difference in the cost of an activity is due to the regulation or to some other factor (see Phillips and Calder, 1979, 1980; Joskow and Rose, 1989).

An econometric study to infer regulatory costs begins by specifying a cost function for producing a financial service.<sup>10</sup> Typically, costs are viewed as a function of output, factor input prices, the regulatory regime, and other factors:

# C = f(Q, P, R, H),

where *C* is operating costs for a particular activity, Q is output, *P* is a vector of factor input prices, *R* is the regulatory regime, and *H* represents other factors that affect costs. Cross-section studies exploit differences in regulations across states or countries to identify the costs of regulation; the difference in costs between banks in regulated and unregulated jurisdictions, ceteris paribus, is attributed to the regulation. Time-series studies exploit difference in costs before and after a regulatory change, ceteris paribus, is attributed to the regulatory environments over time; the difference in costs before and after a regulatory change, ceteris paribus, is attributed to the regulation.

In designing an econometric study to infer regulatory costs, researchers must (1) identify the regulatory regime, (2) specify the functional form for the regulatory regime, and (3) account for other factors that may affect costs.

The problems of identifying regulatory regimes differ in cross-section and time-series studies. In cross-section studies, jurisdictions that are grouped together must have substantially similar regulations. In some cases, defining jurisdictions with similar regulations is relatively straightforward; for example, states can be separated according to whether they prohibit or allow particular creditor remedies, such as holder-in-due-course status or waiver of defense clauses. In other cases, defining jurisdictions with similar regulations may be more difficult. For example, before the federal Truth in Savings law, several states had laws governing disclosures for deposit accounts. Some of the state laws were comprehensive, but others were quite limited. It is doubtful that grouping all states with disclosure laws would have revealed much about the cost of such regulations; on the other hand,

<sup>10.</sup> Other measures of behavior or performance, such as product or share prices, are sometimes used to estimate the effects of differences in regulatory regime. Regulatory regime–related differences in these other measures cannot generally be attributed solely to differences in costs, however.

having a separate group for each distinct regulatory regime when the available sample is small may not be possible.

In time-series studies, the time at which a regulation caused banks to incur costs for regulatory activities must be identified. This time is seldom a single date. Typically, a law is implemented by a regulation, which may be issued some time after the law is passed. There is generally an implementation period, after which compliance with the regulation is mandatory. During the implementation period, banks incur start-up costs. The implementation period may not correspond to the accounting period for the cost data, and it may span two or more accounting periods; thus, different banks may incur start-up costs in different time periods. Also, banks that implement the regulation soon after it is issued will incur some ongoing costs during the implementation period. As a consequence, costs incurred before the mandatory compliance date will be both start-up and ongoing costs. Costs incurred after the mandatory compliance date will generally be only ongoing costs, but the extent of these costs may change over time as banks gain experience and learn how to comply with the regulation.<sup>11</sup> The many possibilities during this process, then, suggest the need for a fairly lengthy time-series to avoid confounding start-up and ongoing costs.

The second task in designing an econometric study is specifying the functional form for the regulatory regime. Many studies specify the regulatory regime as a dummy variable indicating whether the observation is from the regulated or the unregulated regime, with the value of the estimated coefficient representing the mean difference in costs arising from the regulation. Such a specification may be inappropriate because the effect of regulation may not be a constant value. For example, the effects of a regulation on costs probably depend on the level of output, the technology used for production, and the types of financial services offered. A regulation requiring the collection of specific data may impose a relatively lower cost if the bank's recordkeeping process is highly automated than if it is more labor intensive; or the restriction of some creditor remedy may be relatively more expensive for a creditor that accepts high-risk applicants than for one that has a more conservative lending policy.

11. As mentioned, some regulations undergo frequent minor revisions, and the costs of implementing these revisions would likely appear as ongoing costs. The best way to specify a regulation may not always be obvious.

The third task is accounting for other factors that may affect costs. A law is seldom enacted in a vacuum. The particular events or conditions that prompted its adoption may affect banks' costs in other ways and cause them to take certain other actions on their own. For example, a rise in defaults may prompt regulators to restrict lending practices or to impose new reporting requirements. At the same time, banks may screen applicants more carefully or intensify their collection efforts. The researcher must be aware of the interactions between regulations and other factors and attempt to account for them statistically, possibly by measuring the actions that banks take on their own or using quasi-experimental designs that exploit cross-section and time-series differences in the regulation and the other activities.12 Failure to account for interactions between regulations and other factors may bias estimates of regulatory costs.

# Inferring Regulatory Costs by Analogy

A third means of estimating regulatory costs is drawing analogies between activities required by a regulation and activities for which data are available. For example, the activities undertaken to comply with a regulatory requirement for annual disclosure of error-resolution procedures may be similar to those involved in mailing marketing materials. Thus, an estimate of the cost of the regulatory requirement could be derived from available data on the cost of mailing marketing materials.

To estimate costs by drawing analogies, researchers must specify a regulation's requirements, identify activities necessary to comply with those requirements, and then search existing sources for data on the costs of performing activities similar to the ones necessary to comply with the regulation. Potential sources of data include cost accounting records; special surveys conducted by trade associations, government agencies, or other researchers; price lists; case studies, testimony, comment letters, or anecdotal evidence from banks; reports to regulatory agencies; trade journals; and econometric studies. If necessary, available data can be converted to

<sup>12.</sup> Phillips and Calder (1979, 1980) evaluated the ability of various research designs to distinguish between the effects of a regulation and of other variables.

per unit costs and multiplied by the number of units that are affected by the regulatory requirement. In the example involving annual disclosure of error-resolution procedures, cost per item mailed might be multiplied by the number of accounts that are subject to the disclosure requirement. In a calculation of the expenses of bad debts resulting from restrictions imposed by the Equal Credit Opportunity Act on information used to evaluate creditworthiness, Smith (1977) estimated expenses as the product of (1) estimated change in the percentage of losses from bad debts when ECOA-restricted information was not used in credit evaluation (from an academic paper analyzing data for a large finance company); (2) ratios of bad-debt losses to the amount of consumer credit outstanding (from conventional accounting data published by three trade associations, three large finance companies, a regulatory agency, and consultants); and (3) the aggregate amount of consumer credit outstanding (from data reported by a regulatory agency).

Inferring regulatory costs by analogy has several disadvantages. First, calculations must often be based on data from several sources. For example, in the Smith study the estimate for a single large finance company undoubtedly did not reflect the experiences of a small commercial bank or a credit union, both of which probably had applicant pools very different from that of a large finance company. Even if differences in loan losses at different financial institutions had been small, the error would have been magnified when multiplied by the aggregate amount of consumer credit outstanding. Furthermore, the ratios of bad-debt losses to the amount of consumer credit outstanding were based on data for the entire industry for some classes of financial institutions but on data for only a few companies in the

industry for other classes of financial institutions. This example suggests that estimates of regulatory costs produced by the analogy method may be inconsistent and unrepresentative.

Another potential problem is that for some activities, good analogies may not exist. In some cases, the researcher may have to substitute judgment for hard data. For example, Smith had only commercial bank data on which to base an estimate of the cost of disposing of obsolete forms at credit unions. Believing that commercial banks' extensive branch systems caused them to have higher costs for disposing of forms than credit unions, he subjectively adjusted the credit union estimate downward. When good analogies are lacking, the researcher may have to ignore an activity. For example, finding an analogy for management efforts in formulating policies and coordinating compliance activities may be difficult. Smith did not identify this activity; moreover, the legal fees for interpreting the regulation and reviewing compliance activities, which he did consider, probably included only a fraction of the management costs. Thus, inferences of regulatory costs based on analogies are likely to contain substantial errors.

Despite its considerable limitations, this method of estimating regulatory costs has two important advantages. First, it can provide timely and inexpensive estimates of regulatory costs. Second, the exercise of carefully identifying the activities required to comply with a regulation is useful per se: An inference by analogy requires the researcher to think about the process of compliance, even if the exercise produces an incorrect estimate; a carelessly conducted survey, in contrast, produces both a questionable estimate and no insight into the process of compliance. The requirements discussed in the preceding section provide criteria for the evaluation of empirical studies of regulatory costs in banking. They suggest procedures to ensure that survey findings are valid and representative of the population of interest.

# **Case Studies**

Case studies have the advantage that researchers can exercise considerable control over the quality of the data collected by concentrating on one or a few financial institutions. As a result, a carefully designed, well-executed case study can provide accurate and comprehensive information about regulatory costs at the institution studied. Studies by Darnell (1980), McKinsey & Company (1992), and Grant Thornton (1992b) are examples of well-executed case studies of regulatory costs at banks. The three studies used a similar cost accounting methodology to estimate the operating costs associated with extensive sets of regulations. They estimated operating costs in three categories: direct labor costs, other direct costs, and overhead expenses. Working with bank managers, the researchers first identified the requirements of each regulation and the activities that had to be

performed to comply with the requirements on a department-by-department basis. To estimate direct labor expenses, they questioned employees about the time they had spent performing the identified activities and then converted time spent to dollar amounts using actual compensation rates for the employees performing the activities. Other direct expenses (such as examination fees, printing costs for disclosures, and postage) were also estimated, by department, for each regulation. Finally, overhead expenses were allocated using standard overhead rates for direct labor or total direct costs.

Although the three studies took the same approach to estimating costs, they examined different sets of regulations and different types of regulatory costs. Darnell (1980) studied the total ongoing costs in 1979 of complying with federal, state, and local government regulations regulations covering all businesses and those specific to financial institutions—at a commercial bank with assets of \$1.6 billion.<sup>13</sup> He estimated that the bank incurred operating costs of \$6.2 million in 1979 to comply with regulations, or 13.7 percent of the bank's total noninterest expenses in that year (table 1). Darnell noted that

13. See also Smethills (1981).

1. Estimated Ongoing Operating Costs for Complying with Regulations Percentage of total noninterest expense

				Estimated cost per institution		
Researcher	Regulations covered	Type of cost measured	Year	All covered regulations	Consumer regulations	
Darnell (1980)	All federal, state, and local regulations	Total	1979	13.7	5.9	
Grant Thornton (1992b) (case study)	13 "most burdensome" bank regulations	Total	1991	14.2	8.6	
Grant Thornton (1993) (survey)	rnton (1993) (survey) 13 "most burdensome" bank regulations		1991	12.6	8.1	
American Bankers Association (1992)	Unspecified bank regulations	Total	1991	12.6		
Barefoot and others (1993)	14 consumer regulations	Total	1991		2.6	
Joyal and others (1993)	13 federal nonsupervisory regulations	Total	1991	8.9		
McKinsey & Co. (1992)	60 bank regulations	Incremental	1991	6.1	.8	

. . . Not applicable.

bank managers considered consumer regulations to be especially costly. The bank's cost of complying with consumer regulations was 5.9 percent of its 1979 noninterest expenses.

The accounting firm Grant Thornton (1992b) conducted a case study involving nine community banks to develop a methodology for a survey of regulatory costs.<sup>14</sup> The costs measured were total ongoing operating costs, including the costs of routine amendments and modifications, in 1991. The set of regulations comprised thirteen regulations or requirements (including eight consumer regulations) that community bankers deemed "most burdensome."<sup>15</sup> Over the nine banks, the costs for the thirteen regulations averaged 14.2 percent of noninterest expenses, and the costs for the eight consumer regulations averaged 8.6 percent of noninterest expenses.<sup>16</sup>

McKinsey & Company (1992) studied incremental ongoing regulatory costs at four large commercial banks in 1991. The regulations were sixty regulations that applied solely to institutions insured by the Federal Deposit Insurance Corporation and covered deposit insurance, safety and soundness, the holding company, consumer compliance, and "other compliance." The average cost of complying with all sixty regulations

15. The regulations or regulatory requirements were (1) Call Reports, (2) regulatory examinations, (3) Expedited Funds Availability Act, (4) rules governing loans to insiders, (5) formal written policy requirements, (6) Bank Secrecy Act, (7) Community Reinvestment Act, (8) Home Mortgage Disclosure Act, (9) Equal Credit Opportunity Act, (10) appraisal requirements, (11) geographic coding of loans and deposits, (12) Truth in Lending Act, and (13) Real Estate Settlement Procedures Act; the latter eight were the consumer regulations. The choice of regulations was guided by responses to an opinion survey that asked community bankers to identify the "most burdensome" regulations from a list of fifty-two regulations or regulatory requirements (Grant Thornton, 1992a). The opinion survey also grouped regulations in several categories (for example, regulatory reports, examinations and audits, and lending-related regulations) and asked bankers to rank the regulations in each category on the basis of cost and aggravation. About 2,000 of the 10,000 banks receiving questionnaires responded to the survey.

16. In this paper, the results of the various studies are reported using a common denominator, noninterest expense. Grant Thornton and several other researchers used other denominators, making recalculation necessary; thus, the findings reported here may be different from those in the original source. It was not possible to account for all differences across studies, however, and despite all efforts to state results consistently, definitions and methodology are not uniform across studies. was estimated to be 6.1 percent of noninterest expenses; the most costly area was deposit insurance, which accounted for 4.1 percent of noninterest expenses (not shown in table). The average cost of complying with consumer regulations was 0.8 percent of noninterest expenses.

These three studies were conducted carefully and likely provide reasonably accurate results for the banks studied. The differences in results among the studies have plausible explanations. The increase in the number and intrusiveness of regulations during the 1980s (Federal Financial Institutions Examination Council, 1992) may help explain why Darnell's 1979 estimate of the cost of all government regulations at a large commercial bank (as a percentage of noninterest expenses) is about the same as Grant Thornton's 1991 estimate of the average cost of the thirteen "most burdensome" federal regulations at community banks.17 McKinsey & Company's estimate should be and is lower than Darnell's and Grant Thornton's estimates because it covers only incremental costs whereas the latter cover total costs.<sup>18</sup> However, the McKinsey estimate is substantially lower, suggesting that many activities required by regulation would have been performed in the absence of regulation, though perhaps not in the same way.<sup>19</sup>

All three studies identified consumer regulations as especially costly. The 1991 Grant Thornton

18. One category of cost that was higher in the McKinsey & Company study than in the Darnell study (4.1 percent of noninterest expenses compared with 1.0 percent) was that associated with deposit insurance, including the deposit insurance premium and preparation of the Call Report. The difference can be attributed to the large increase in premium rates between 1979 and 1991—from \$0.0083 per \$100 of domestic deposits in 1979 to \$0.19 per \$100 at the beginning of 1991 to \$0.23 per \$100 on July 1, 1991 (Federal Deposit Insurance Corporation, 1980, 1992a). McKinsey & Company considered the entire cost of the deposit insurance premium to be incremental, making this component comparable in the two studies.

19. Other results support this hypothesis. Darnell found that bank managers judged about 42 percent of the reports prepared for regulatory agencies to be desirable or essential for the management of the bank. Undoubtedly, some part of the cost of preparing these desirable or essential reports would have been incurred in the absence of regulation. Likewise, banks would probably have used some written disclosures for consumer accounts even if consumer regulations had not required written disclosures. Elliehausen and Lowrey (1995), for example, found that the vast majority of banks and savings institutions used written disclosures for consumer deposit accounts before Truth in Savings mandated such disclosures.

<sup>14.</sup> Community banks were defined by the sponsor of the study, the Independent Bankers Association of America, as locally owned and operated institutions. In 1992, 84 percent of banks were community banks, ranging in asset size from less than \$1 million to almost \$5 billion. The nine banks in the case study ranged in asset size from about \$17 million to \$221 million.

<sup>17.</sup> Economies of scale may also have enabled Darnell's large bank to have lower per unit costs than the smaller community banks studied by Grant Thornton. Statistical analyses discussed later in this paper (Murphy, 1980; Schroeder, 1985; Elliehausen and Kurtz, 1985, 1988; Barefoot and others, 1993; Elliehausen and Lowrey, 1997) have found evidence of economies of scale in regulatory compliance.

study, which was based on a smaller set of consumer regulations, produced a larger estimate of total cost than the 1979 Darnell study, which was based on all federal, state, and local regulations. New and expanded consumer regulations contributed significantly to the increase in regulation in the 1980s, making the difference between the Grant Thornton and Darnell results plausible. McKinsey & Company's estimate of the incremental cost of consumer regulations is not as large as Darnell's and Grant Thornton's estimates of total costs, suggesting that institutions would provide substantial consumer information and protection without being required to do so.

The results of these case studies should be generalized with great care. The few institutions included in a few case studies may not represent the population or a particular subgroup of banks. Any observed differences (or similarities) among studies may be actual differences (or similarities), but they may also be statistical artifacts. Relationships suggested by the results of case studies, therefore, should be regarded as hypotheses rather than definitive evidence. Only from well-executed surveys is it possible to make reliable judgments about relationships.

#### Surveys

The requirements for successful surveys of regulatory costs are similar to those for successful case studies. For instance, surveys require nearly as much attention to detail, though on a much larger scale. Researchers cannot exercise the same degree of personal control over the quality of responses in surveys, however—a limitation that makes questionnaire design especially important.

# Surveys Involving Many Regulations

Surveys of regulatory costs involving many regulations are difficult to execute successfully. The listing of the requirements of each regulation may make the questionnaire appear burdensome and thus may discourage response. Also, a survey of many regulations may involve more than one bank department, making it difficult to select an appropriate respondent: A single individual may not have sufficient information to respond to all the questions, and a busy bank manager may not be inclined to make much effort to collect the requested information from knowledgeable employees in different departments. Moreover, it may be difficult, if not impossible, to select different individuals within the bank and coordinate their responses.

Despite these difficulties, several attempts have been made recently to estimate the costs of many regulations. Grant Thornton (1993) surveyed independent banks to estimate the aggregate cost of complying with thirteen "most burdensome" regulations (or regulatory requirements), which had been identified in an earlier phase of the project (Grant Thornton, 1992a). The sample, which consisted of 2,600 independent banks, was stratified into three asset-size groups. Each bank was asked to report the number of employee hours spent on compliance activities for one of the thirteen regulations (thus, the sample for each regulation was 200 banks). The questionnaires listed several specific compliance activities for each regulation and asked that compliance hours for each activity be reported by position or department. Seven hundred sixty-five banks returned questionnaires (between 43 and 83 responses per regulation). Standard salary, benefit, overhead, and "other direct cost" rates derived from the case study results (Grant Thornton, 1992b) were used to estimate compliance costs from compliance hours. Survey results were weighted by asset-size classes to represent the population of independent banks. Overall, estimated regulatory costs were 12.6 percent of noninterest expenses, a somewhat smaller percentage than was estimated in the case study (table 1).20

The Grant Thornton survey gave respondents considerable guidance on the actions that are part of compliance with each regulation. By asking each respondent about only one regulation, the survey reduced the burden of responding and may have obtained more accurate responses than it would have had it asked each respondent about all thirteen regulations. Asking each respondent about only one regulation had a cost, however:

<sup>20.</sup> The difference is not surprising, as the case study results are representative only of the nine banks studied; the results of the two studies would be the same only by coincidence. However, experience with the case study does suggest that the survey estimates for two regulations (the Expedited Funds Availability Act and regulatory examinations) were too low (Grant Thornton, 1993, pp. 27–28). In the case study, employees at several banks initially underestimated by a large amount the number of hours required for compliance with these regulations. To avoid underreporting, the survey provided respondents with more guidance. Nevertheless, the survey estimates for the two regulations were relatively low, close to the initial case study estimates.

The number of observations per regulation was not large, and therefore sampling errors were relatively large. The Grant Thornton survey also reduced the burden of responding to the survey by using standard salary, benefit, overhead, and other direct cost rates derived from an earlier study; however, these standard rates may not have been representative of the population of banks, possibly biasing resulting estimates of aggregate and per bank regulatory costs.

Another survey prompted by a desire for an aggregate estimate of regulatory costs was an American Bankers Association (1992) survey of the association's members conducted during the spring of 1992. Respondents were asked to estimate (1) the percentage of noninterest expenses incurred for outside legal and consulting services, compliance training for bank employees, and training materials; (2) the dollar amount of salary and benefit expenses for compliance staff; and (3) the percentage of noninterest expenses incurred for salary and benefits for the time that noncompliance staff devoted to regulatory matters. About 900 of the association's 9,000 member banks responded. Their responses indicated that regulatory costs amounted to 12.6 percent of total noninterest expenses (table 1).

This American Bankers Association survey had serious limitations. The questionnaire did not specify which regulations were to be considered and did not provide guidance on the compliance activities associated with the regulations. Consequently, the set of regulations and compliance activities on which responses were based likely differed from respondent to respondent. Also, any time spent by compliance staff on nonregulatory matters was apparently included in the estimates of regulatory costs, but overhead costs and most nonlabor compliance costs were not included. Moreover, the 10 percent response rate left considerable room for nonresponse bias to affect the results. In light of these limitations, the response errors for this survey may be quite large.21

Barefoot and others (1993) surveyed banks on their 1991 costs in complying with fourteen federal laws and regulations intended "to protect consumers and further community interests."<sup>22</sup> Three of the regulations—the Bank Secrecy Act (BSA), the Community Reinvestment Act (CRA), and the Real Estate Settlement Procedures Act (RESPA)—were also analyzed separately. Banks were selected for participation primarily because of their inclusion on one of several lists, although a small, nonrandom sample was also chosen.<sup>23</sup> The data were collected in two mail surveys.

The first survey, a nine-page questionnaire, requested itemized cost information by specific cost categories (for example, training, purchase of publications, and legal advice).<sup>24</sup> Information was collected for the three designated regulations and for the fourteen regulations overall. The second survey, a two-page questionnaire, was apparently sent out because of the limited response to the first.<sup>25</sup> It requested information on the total dollar costs of the three designated consumer regulations and of all fourteen covered regulations. Details on costs were not requested; nor were further instructions provided on what was, or was not, to be included in the estimates. A total of 445 commercial banks (4.4 percent of institu-

23. The geographic distribution of the sample or of the final respondents was not reported, but it seems likely that the sample underrepresented banks in the northeast, south, and west. Only one very small part of the sample (4.0 percent) was drawn from the entire population; other parts were drawn from lists of subscribers to a compliance newsletter published by Barefoot and others and of members of banking associations in several midwestern states. Assuming that the response rates for all parts of the sample were equal and that subscribers to the newsletter were geographically distributed proportionately to the population of banks, one would estimate that about 1 percent of respondents to the survey (four banks) were from the northeast, for example. However, the percentage of banks located in the northeast is about 7 percent of all banks.

24. A total of 3,700 commercial banks and thrift institutions received this first questionnaire: 1,300 subscribers to the compliance newsletter; 2,000 institutions belonging to the state banking associations of Colorado, Minnesota, North Dakota, Ohio, and South Dakota; and 400 randomly selected institutions from across the United States. One hundred twenty-nine (3.5 percent) responded.

<sup>21.</sup> It is not obvious whether the lack of guidance on which regulations were to be considered and other matters would bias responses or simply increase the variability of responses. Judging from the distributions of costs in the case studies, the negative bias from the omission of overhead and most nonlabor costs would likely be greater than the positive bias from the inclusion of the costs of the noncompliance activities of compliance staff.

<sup>22.</sup> The covered laws, which Barefoot and others termed "consumer regulations," were (1) Community Reinvestment Act, (2) Truth in Lending Act, (3) rules governing loans to insiders, (4) Equal Credit Opportunity Act, (5) Real Estate Settlement Procedures Act, (6) Bank Secrecy Act, (7) Expedited Funds Availability Act, (8) Home Mortgage Disclosure Act, (9) Consumer Leasing Act, (10) Credit Practices Rule, (11) Electronic Fund Transfer Act, (12) Fair Credit Reporting Act, (13) Fair Housing Act, and (14) Flood Disaster Protection Act. The first eight of these laws were included in Grant Thornton's (1993) thirteen most burdensome regulations.

<sup>25.</sup> A total of 6,400 commercial banks located in the central part of the United States received this second questionnaire, and 1,105 (17.3 percent) responded. The report does not indicate what areas composed the "central part," the name of the list from which bank names were obtained, or whether the population or a sample of banks on the list was selected for participation.

#### 2. Estimated Ongoing Operating Costs for Complying with Selected Consumer Regulations

		Estimated cost per institution									
		1991 dollars				Percentage of noninterest expenses					
Researcher	Year	TIL	ECOA	CRA	RESPA	BSA	TIL	ECOA	CRA	RESPA	BSA
Grant Thornton (1992b) (case study)	1991	36,747	14,989	63,448	5,287	10,818	1.73	.70	2.98	.25	.51
Grant Thornton (1993) (survey)	1991	58,806	20,975	69,579	8,971	5,455	2.26	.91	4.00	.36	.23
Barefoot and others (1993)	1991			25,586	13,934	10,172			2.69	.51	.31

NOTE. TIL, Truth in Lending Act; ECOA, Equal Credit Opportunity Act; CRA, Community Reinvestment Act; RESPA, Real Estate Settlement Procedures Act; BSA, Bank Secrecy Act.

tions selected to participate in one of the two surveys) provided usable data.<sup>26</sup> Results indicate that the fourteen covered consumer regulations cost these banks about 2.6 percent of noninterest expenses.

Barefoot and others' set of fourteen consumer regulations included eight of Grant Thornton's (1993) thirteen "most burdensome" regulations, including the two costliest regulations, yet their cost estimate was one-third that of Grant Thornton. Both surveys separately estimated the ongoing operating costs of complying with three federal regulations. Barefoot and others' estimate of the average cost as a percentage of noninterest expenses for the Community Reinvestment Act was 67 percent of Grant Thornton's (table 2), and for the Real Estate Settlement Procedures and Bank Secrecy Acts it was 42 percent and 35 percent greater. Considering the questionable representativeness of the sample, the change in the questionnaire after the limited response to the first mailing, and the low response overall, it seems likely that the Barefoot and others estimates contain larger errors and are less reliable than those of Grant Thornton.

The Credit Union National Association conducted a survey to measure the total cost in 1991 of thirteen federal nonsupervisory regulations . . . Not applicable.

(Joyal and others, 1993).<sup>27</sup> The sample was a stratified random sample of credit unions, with large credit unions being given a greater probability of selection than small and medium-sized credit unions. The four-page questionnaire identified the regulations that were to be considered in the estimates and specified ten categories of costs that were to be considered in arriving at an estimate of total cost.<sup>28</sup> Respondents were encouraged to use available records in preparing cost estimates. They were asked to identify the regulations that they considered especially burdensome, obsolete, and duplicative; estimate time spent on regulatory activities; identify personnel most involved in regulatory activities; and report the effects of regulatory costs on the availability of services. In total, 829 credit unions responded (42 percent of credit unions selected to participate in the survey), but only 438 (22 percent) estimated the dollar amount of compliance costs. The results were weighted to reflect the distribution of the population of credit unions by asset-size class. The average cost

<sup>26.</sup> The distribution of respondents by sample segment (that is, compliance newsletter subscribers, state banking association members, random-sample institutions, recipients of the two-page questionnaire) was not reported. Also not reported were the number of thrift institutions selected for the sample or the number of thrift institutions that responded. The responses of thrift institutions were not analyzed.

<sup>27.</sup> The regulations were (1) Americans with Disabilities Act, (2) Bank Secrecy Act, (3) Equal Credit Opportunity Act, (4) Expedited Funds Availability Act, (5) Flood Disaster Protection Act, (6) Home Mortgage Disclosure Act, (7) backup withholding requirements, (8) dividend reporting requirements, (9) mortgage interest reporting requirements, (10) retirement account reporting requirements, (11) Real Estate Settlement Procedures Act, (12) Soldiers' and Sailors' Civil Relief Act, and (13) Truth in Lending Act. This set includes six of Grant Thornton's thirteen "most burdensome" regulations and seven of Barefoot and others' fourteen regulations.

<sup>28.</sup> The categories were legal advice; consulting services; personnel; costs of forms, disclosures, and brochures; record storage and retrieval; data processing; training; accounting services; printing and postage; and other expenses.

of complying with the fourteen regulations was about 8.9 percent of noninterest expenses (table 1).

In 1995, the Federal Deposit Insurance Corporation (1995) questioned FDIC-supervised banks about the incremental ongoing costs of sixteen regulatory requirements. They ranged from entire regulations (for example, the Home Mortgage Disclosure Act) to specific sections of laws (for example, section 7(j)9 of the Federal Deposit Insurance Act, which requires the reporting of credit extensions secured by bank stock).29 Some requirements were vaguely defined (for example, respondents were asked about "all Truth in Lending disclosures except the annual percentage rate"). The sample consisted of sixty-one banks-about seven banks in each FDIC regionselected with regard to size and location in an unspecified nonrandom manner. The questionnaire instructed respondents to estimate incremental costs, including both direct and overhead expenses. It provided no further guidance, however, and respondents were discouraged from expending much effort in answering the questions. The summary of the survey results reported that the median incremental cost of the sixteen requirements was about 1 percent of the noninterest expenses of reporting banks. Means were not reported.30

Because of the lack of guidance and discouragement of effort, the responses to this FDIC survey most likely were inconsistent and imprecise.

30. The FDIC staff weighted survey responses as if they were representative to obtain estimates of the aggregate cost for FDIC-insured institutions. The estimated cost was \$500 million when aggregated using weighting class medians and \$1 billion when aggregated using weighting class medians. After adjusting for differences in the target populations, the FDIC staff estimated that these estimates were 15 percent to 30 percent of the American Bankers Association (1992) estimate and 10 percent to 20 percent of the Grant Thornton (1993) estimate. The FDIC staff concluded that these differences were probably reasonable given the more limited scope of the FDIC survey.

Furthermore, the sample was representative only of the institutions participating in the survey, not of the population of FDIC-supervised banks.<sup>31</sup> Together, these two limitations raise doubts about the accuracy of the survey's estimates of regulatory cost.

# Surveys Involving One or a Few Regulations

Collecting cost data for a single regulation or a small number of related regulations is far easier than collecting similar data for many regulations. Most of the compliance activities for one or just a few related regulations may take place within a single department. A single manager is likely to be familiar with the regulation's requirements, to know about the activities necessary to comply with the requirements, and to have the information needed to estimate costs. These conditions facilitate the development of survey procedures. It is not surprising, therefore, that most surveys of regulatory costs are concerned with a single regulation.

### **Consumer Regulations**

Perhaps because consumer regulation is relatively recent and different from traditional bank regulation, some of the earliest surveys of regulatory costs were concerned with consumer regulation. In 1976, the Consumer Bankers Association conducted a survey of start-up and ongoing costs at thirty-seven commercial banks through the first year that the Equal Credit Opportunity Act was in effect. Little information has been published about the survey itself. The results were reported in the association's testimony to the House Committee on Government Operations and have been cited in several other studies (see, for example, Commission on Federal Paperwork, 1977; Smith, 1977; Carroll and others, 1989). Murphy (1980) used the data to investigate scale economies in regulatory costs.32

In 1977, the staff of the Federal Reserve Board (1978) conducted a small survey to obtain information on the cost of several requirements of the Equal Credit Opportunity and Fair Credit Billing

<sup>29.</sup> FDIC-supported proposals for regulatory changes governed the choice of requirements included in the study. The other requirements were Truth in Lending disclosures other than the annual percentage rate; the right of rescission requirement of Truth in Lending; duplication and discrepancies in disclosures required under the Truth in Lending and Real Estate Settlement Procedures Acts; Truth in Savings disclosure requirements other than the rate and method used to calculate interest; required reports on small business and agricultural lending; start-up and ongoing costs of required disclosures of insurance coverage on deposits in employee benefit plans; required applications or notices for changes in branch location, changes in officers or directors, the exercise of trust powers, solper national banks; and the reporting of loans to insiders.

<sup>31.</sup> The FDIC acknowledged this limitation but in some cases interpreted the results as if they were representative.

<sup>32.</sup> Murphy's results are discussed later in this paper.

Acts.<sup>33</sup> The sample was limited to eight large companies-three retailers, three commercial banks, a travel and entertainment card company, and an oil company-that were believed to have readily available records on the costs of the regulatory provisions of interest. The intent of this approach was to cover a large number of accounts with a minimal reporting burden on the consumer credit industry. Unfortunately, the results of the effort are not very useful. For instance, making estimates for the population is not feasible: The eight companies did not hold a significant share of industry accounts or a representative sample of accounts. Moreover, accepting whatever data were readily available did not produce complete or consistent data. The tables reporting the survey results contain many qualifications, and some data are missing. Even after considering all the qualifications, it is not possible to determine whether some estimates are lower than others because costs actually were lower or because some elements of cost were not included.

In 1981, the Federal Reserve Board conducted a mail survey of the costs of regulations implementing the Electronic Fund Transfer, Truth in Lending, and Equal Credit Opportunity Acts. Respondents were asked to report start-up costs for the recently enacted Electronic Fund Transfer Act and to estimate incremental ongoing costs for each of the three regulations. The questionnaire had several features that cognitive psychology suggests should improve response quality: It specified cost categories for reporting data, defined incremental costs and provided some guidance on calculating them, and listed the requirements of the regulations and possible activities to satisfy them.<sup>34</sup> 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 able to provide the desired information. Sixty-seven of the banks provided usable data for the Electronic Fund Transfer Act, and fifty-one provided usable data for the Truth in Lending and Equal Credit Opportunity Acts. Analyses focused on scale economies (Schroeder, 1985; Elliehausen and Kurtz, 1985, 1988). Because the analyses involved cross-section comparisons rather than projections to the population, the lack of representativeness of the data was not a critical limitation. Within the range of output covered by the sample, the basic relationships between cost and output, input prices, and other explanatory variables may be valid even if the sample was biased in a way that the expected values of the sample means were not equal to the population means (Kosobud and Morgan, 1964). For example, the observed relationship between compliance costs and output might be valid, even if average compliance costs or average output from the sample do not reflect the population averages.

Boyle (1983) adopted the methodology of the 1981 Federal Reserve Board study to survey mortgage banking companies on the cost of complying with the Truth in Lending Act.<sup>35</sup> The survey asked about incremental costs in 1980 and 1981 and also about the costs of implementing a major revision of the law, which had begun in 1981 and was continuing at the time Boyle conducted interviews in mid-1982. The sample was drawn from the membership of the Mortgage Bankers Association, which accounts for the vast majority of mortgage originations in this industry. A total of 201 mortgage banking companies responded to the survey.

Like the Federal Reserve questionnaire, Boyle's questionnaire asked respondents to estimate their incremental costs in several cost categories and provided a list of requirements and possible activities in each category. It did not distinguish between ongoing and start-up costs in each year, however. A separate set of questions asked respondents to report on the timing of their conversion to the revised regulation and on total start-up costs as of the time of the interview.

To reduce the risk of low response associated with mail surveys, Boyle's survey was designed as a mail-assisted telephone survey. The questionnaire was mailed to sampled firms before the telephone interviews to give respondents time to prepare for the interview, a procedure that seems necessary to obtain reliable information

<sup>33.</sup> The Equal Credit Opportunity Act requirements were providing notices of adverse action, maintaining separate credit histories for married customers, and mailing notices of the right of married persons to have separate credit histories. The Fair Credit Billing Act requirement was notifying customers of their rights in relation to, and procedures for resolving, billing errors.

<sup>34.</sup> In an effort to keep response burden low, the questionnaire allowed some freedom in how respondents reported information. This design feature caused problems. In many returned questionnaires, it was ambiguous whether benefits and overhead were included and whether certain costs were zero, unavailable, or reported in other categories. Almost all respondents were contacted by telephone while the responses were being reviewed to resolve such questions. Numbers were adjusted to be consistent across observations, and some missing data were imputed using statistical methods.

<sup>35.</sup> Boyle consulted with staff members working on the Board's survey and patterned his questionnaire after the Board's questionnaire.

on regulatory costs by telephone. Collecting data by telephone enables interviewers to encourage reluctant respondents, but it risks respondents using failure to receive the mailed questionnaire as an excuse for breaking off the interview. It also risks inviting respondents to provide rough estimates or guesses when they have not completed the mailed questionnaire. In Boyle's survey, the procedure appears to have worked reasonably well in encouraging responses without compromising data quality: About 40 percent of the firms selected to participate in the study provided cost estimates, a response rate higher than those commonly achieved in mail surveys.<sup>36</sup> Boyle reported that respondents generally used the questionnaires to prepare estimates of regulatory costs (see quotation in section 3).

Boyle examined economies of scale in complying with the Truth in Lending Act and the costs of implementing the revision to the law. His estimates of the cost of Truth in Lending probably are not strictly comparable with those of Elliehausen and Kurtz (1985, 1988) because the activities of the mortgage banking companies in his survey differed substantially in scale and scope from those of the commercial banking firms in the Federal Reserve survey. Nevertheless, comparisons may be appropriate because the disclosure activities required by Truth in Lending are substantially the same for mortgages and consumer loans. Large and medium-sized mortgage banking companies had loan volumes similar to these of the commercial banks in the lowest loan volume category in the Federal Reserve survey.<sup>37</sup> In 1980, the average cost per loan made for large and medium-sized mortgage banking companies was \$11.72 and \$22.30 respectively. For the same year, the average cost per account (accounts defined as closed-end loans made and

open-end accounts outstanding) for the smallest output category of commercial banks was \$13.13.<sup>38</sup> Thus, there appears to be some consistency in these two estimates of compliance costs for Truth in Lending.

Elliehausen and Lowrey (1995, 1997) surveyed commercial banks and savings institutions on their start-up costs for complying with the regulation implementing the Truth in Savings Act. A stratified sample of banks that was representative but not randomly selected, plus all savings institutions, were questioned.39 Respondents were asked to itemize their costs in several categories; the questionnaire listed activities that should be included in each category and provided a worksheet with instructions on how to calculate different types of costs. Also covered by the survey were institutions' deposit account practices before Truth in Savings and changes in interest rates, fees, and product offerings necessitated by the regulation. The survey materials were mailed to respondents shortly after the final regulation was adopted, and completed questionnaires were to be returned after implementation of the regulation. Overall, about 1,000 banks (42 percent of eligible banks) and 400 savings institutions (20 percent of eligible savings institutions) responded. Survey responses indicated that implementation of Truth in Savings cost, on average, \$29,000 per commercial bank and \$31,000 per savings institutions.

Elliehausen and Lowrey probably provide better data on start-up costs for a regulation than either Boyle or the 1981 Federal Reserve Board survey analyzed by Schroeder (1985). Schroeder relied heavily on respondents' memories, as the survey was conducted after implementation of the regulation, and Boyle's estimates of start-up costs may be incomplete because some of the respondents had only partly implemented the 1981 revision at the time of the survey. Elliehausen and Lowrey, in contrast, conducted the survey during the implementation period. They collected complete data and did not require respondents to reconstruct regulatory compliance activities

<sup>36.</sup> The survey was in the field for a relatively short period of time because of a deadline for reporting results. Interviews could not be arranged for about a third of the selected sample during that period. Many of these companies would likely have responded had the interview period been longer.

<sup>37.</sup> Banks in the lowest output category in the Federal Reserve survey, those with fewer than 5,000 consumer credit accounts (consisting of mortgages made, closed-end consumer loans made, and open-end accounts outstanding), had an average of 1,767 accounts. In Boyle's survey, medium-sized mortgage banking companies, those with loan originations totaling \$50 million to \$199 million, made, on average, 1,879 mortgages in 1980; and large mortgage banking companies (loan originations of \$200 million or more) made, on average, 5,082 mortgages. It seems likely that substantial proportions of medium-sized and large mortgage banking companies made fewer than 5,000 loans and would thus be roughly comparable in scale to commercial banks in that output category.

<sup>38.</sup> Elliehausen and Kurtz (1985) reported that the average cost per account for complying with the Truth in Lending and Equal Credit Opportunity regulations was \$20.51 and that Truth in Lending accounted for 64 percent of that amount.

<sup>39.</sup> The bank sample contained a nonrandom component consisting of banks solicited by the American Bankers Association, the Consumer Bankers Association, and the Independent Bankers Association of America and banks participating in the Federal Reserve System's Functional Cost Analysis Program. The remaining banks in the sample were selected randomly. The sample was stratified by asset size and census region.

entirely from memory. They also collected data on more variables possibly affecting regulatory costs—such as the amount of change required (by comparing the requirements of the law with institutions' deposit account practices before the law) and the complexity of the institutions' product offerings—than either Schroeder or Boyle.

# Call Reports

In 1976, the Federal Home Loan Bank Board (FHLBB) sponsored a survey of savings and loan associations as part of a review of its industry data collection system (Crowne, 1977). The survey, conducted by Peat, Marwick, Mitchell & Company, collected data on the ongoing cost of providing financial and other economic data to the Federal Home Loan Bank System. It also collected estimates of the possible costs of implementing one recent change in reporting requirements, the costs of several proposed changes in reporting requirements, and respondents' opinions on reporting burdens. The sample was stratified by asset-size group and geographic location. Of the 1,655 savings and loan institutions selected for the sample, 820 (50 percent) provided usable responses. The survey was conducted through the mail. Information on how respondents estimated costs is not provided, but published results include statistics on costs by expense category and type of Call Report, suggesting that the questionnaire offered some guidance on what was to be included in the estimates. Results were presented in tabular form and addressed issues of scale economies, the effects of automation on costs, and the costs

of implementing changes. The average annual cost associated with the Call Report was \$2,140 per institution (\$5,120 in 1991 dollars) (table 3).

More recently, the Federal Deposit Insurance Corporation (1992b) conducted a study of the burden of Call Reports at commercial banks. Only the direct labor costs of actually preparing the reports were estimated. The direct labor costs of responding to regulators' questions, revising reports, learning of changes in requirements, modifying information systems, and training bank personnel were not included; nor were other direct costs or overhead considered. The questionnaire asked a series of questions about the personnel and procedures used to prepare the report and also for estimates of staff time required in four stages of report preparation: (1) reading and understanding the instructions; (2) gathering information to produce the report; (3) producing the report; and (4) obtaining final approval of the report. Questionnaires were mailed to all FDIC-insured banks and were to be completed by the bank employee responsible for preparing the report. Of the 12,664 banks that received questionnaires, 6,740 (53 percent) returned them. Results indicate that banks spent on average twenty-one hours preparing each quarterly report. Assuming an average salary and benefit cost rate of \$24 per hour, the annual direct labor cost of preparing Call Reports was \$2,016 per bank (1991 dollars) (table 3).40

		Cost per institution				
		1991 dollars		Percentage o	Percentage of net income	
Researcher	Year	Direct labor	Total	Direct labor	Total	
Crowne (1977)	1976		5,120		.19	
Darnell (1980)	1979	8,411	15,368	.02	.03	
Federal Deposit Insurance Corporation (1992b)	1992	2,0161		.04		
Grant Thornton (1992b)	1991	3,885	9,316	.18	.44	
Grant Thornton (1993)	1991	3,499	8,448	.15	.36	

#### 3. Estimated Annual Operating Costs Associated with the Call Report

1. Includes only direct labor expenses for report preparation. See text for further explanation.

. . . Not applicable.

<sup>40.</sup> The \$24 per hour rate is from Grant Thornton (1993). The average rate of salary and benefit cost for all employees estimated from data submitted in 1992 Call Reports was \$18 per hour, but that rate reflects a different composition of labor than the one used to prepare Call Reports.

Available documentation suggests that both the FHLBB and FDIC studies of reporting burden for Call Reports were reasonably well executed. They covered a well-defined set of regulatory requirements and provided guidance about which costs were to be included in the estimates. The response rates were quite high for mail surveys. The estimates of cost are plausible and consistent with data from other sources (Darnell, 1980; Grant Thornton, 1992b, 1993). The FDIC estimate of direct labor cost does not include all direct labor costs and, therefore, is less than the estimates from the Grant Thornton case study (1992b) and survey (1993).<sup>41</sup> The FHLBB's estimate for savings and loan associations (Crowne, 1977) is lower than the estimates for commercial banks studied by Darnell and Grant Thornton, but the savings and loan industry had less burdensome reporting requirements than the commercial banking industry.

#### Evaluation of Experience with Surveys

The requirements for a survey of regulatory costs are no different from those for other surveys. Thus, the successful surveys of regulatory costs are those designed to overcome limitations of respondents' cognitive processes. They used detailed questionnaires that provided some assurance that the estimates consistently measured the intended regulatory costs, even if those costs were measured with error. Surveys by the Federal Home Loan Bank Board (Crowne, 1977), the Federal Reserve Board (Schroeder, 1985; Elliehausen and Kurtz, 1985, 1988), Boyle (1983), the Federal Deposit Insurance Corporation (1992b), Grant Thornton (1993), Joyal and others (1993), and Elliehausen and Lowrey (1995, 1997) used such questionnaires. Despite the burden to respondents of detailed questionnaires, these surveys had higher response rates than did surveys that relied on extemporaneous responses. Good questionnaire design helps to motivate response, and the detailed questionnaires used in these successful surveys may have signaled the seriousness of the effort and assured potential respondents that they could

provide reasonably accurate information. The higher response rate was not due to the expenditure of more money, as most surveys—both successful and unsuccessful ones--have used relatively inexpensive mail collection procedures. Indeed, the successful surveys achieved respectable response rates using the mail despite the difficulty of the subject.

Considering the importance of a detailed questionnaire, it is not surprising that only two of the surveys that attempted to obtain estimates of costs for more than a few regulations were successful. One (Grant Thornton) actually consisted of thirteen separate surveys of single regulations. The other (Joyal and others) had about half the response rate of most of the other surveys that can be judged successful. Experience provides little encouragement for efforts to collect data on the regulatory costs for many regulations.

The reason for conducting a survey rather than a case study is to make it possible to generalize results. Thus, most surveys of regulatory costs have used random or representative sampling methods. Although well-executed surveys using convenience samples can probably provide useful results in careful cross-section analyses, there is little reason to use one. Convenience sampling is not markedly simpler, as accurate list frames of banks are available from which random samples can easily be selected. Nor does convenience sampling have any obvious advantages that offset its disadvantages (notably, the lack of a basis for evaluating the accuracy of estimates and the inability to generalize). Convenience sampling does not obviate the need for a detailed questionnaire; nor have respondents to surveys using convenience samples (for example, Barefoot and others, 1993) been more cooperative than respondents to surveys using random samples (for example, Grant Thornton, 1993).

# **Econometric Studies**

Benston (1975) pioneered the use of econometric methods to study the operating costs of regulation. Using 1968–70 cross-section data on 124 consumer finance companies, he estimated Cobb– Douglas cost functions. Included among the explanatory variables were dummy variables indicating the restrictiveness of state regulations governing four creditor remedies (wage assignments, holder in due course, wage garnishment, and confession of judgment). Results of estimation indicate that restrictions on creditor remedies were

<sup>41.</sup> It is difficult to judge whether the difference in FDIC's direct labor cost of preparing the Call Report and Grant Thornton's total direct labor cost for the Call Report is reasonable. Other responses to the FDIC survey indicate that modifying information systems for changes in requirements and responding to regulators' questions about submissions are frequent sources of additional costs. Unreported data from Grant Thornton's case studies suggest that these other direct labor costs could be substantial.

associated with higher operating costs; however, the estimated coefficients were generally not statistically significant and seem unreasonably high.

Benston's experience illustrates some of the difficulties of using econometric methods to estimate regulatory costs. The effect of each creditor remedy on total operating cost was probably relatively small, which may explain the lack of statistical significance of Benston's estimated coefficients. The dummy variables probably did not adequately reflect differences in regulatory regimes across states. For example, the restriction on wage assignment or garnishment could have been a prohibition, or it could have been a limitation on the amount that could be assigned or garnished. Further, there were correlations among creditor remedies (that is, states that restricted one remedy were likely to restrict others) and among creditor remedies and other credit regulations, which made it difficult to distinguish the effects of one regulation from those of another. Under these conditions, it seems unlikely that the regulatory restrictions were measured with sufficient precision to detect their relatively small effect on total operating cost.42

The example provided by Benston's experience does not offer much encouragement for efforts to infer operating costs for other bank regulations using econometric methods. Cost data are generally available only from banks' income statements. Bank regulations account for a small part of total operating cost, and each regulation accounts for only a minuscule part of the total. As described earlier, regulatory regimes must be identified, functional forms for regulatory regimes specified, and other factors that affect costs controlled for. The potential errors associated with these tasks make it unlikely that the researcher will be able to detect the relatively small effects that individual regulations or changes in regulations might have on banks' operating costs. It is probably no coincidence that studies inferring regulatory costs by econometric methods are rare.

# **Studies Using Analogies**

Because obtaining data on regulatory costs is costly and difficult, estimates of regulatory costs are sometimes constructed by drawing analogies between regulatory activities and other activities for which information is available. Smith (1977). for example, used this method to construct estimates of creditors' aggregate start-up and ongoing costs for complying with the Equal Credit Opportunity Act. Data were from the 1976 Consumer Bankers Association survey (discussed earlier), the Federal Reserve survey of compliance costs at large creditors (Federal Reserve Board staff, 1978), an academic study, case studies, trade associations and government agencies (aggregate statistics), and other sources. Estimated start-up costs were \$34.8 million at commercial banks and \$97.0 million at other creditors.43 Estimated ongoing costs during 1977 were \$24.4 million at commercial banks and \$103.1 million at other creditors.44 Noninterest expenses at commercial banks were about \$24 billion in that year, making banks' start-up costs about 0.14 percent, and their ongoing costs about 0.10 percent, of their noninterest expenses in 1997.

Smith's estimate of ongoing costs for the Equal Credit Opportunity Act is substantially less than Grant Thornton's (1993) 0.91 percent estimate. The difference is due partly to the measurement of different costs: Smith measured incremental cost whereas Grant Thornton measured total cost. The difference may also be due partly to measurement error: As noted earlier, Smith's estimate probably did not count much of the time managers spent formulating policies and supervising employees' compliance activities, which was included in Grant Thornton's estimate and may be a large component of compliance costs (see section 5 on the distribution of ongoing costs across cost categories). Moreover, some of the data used to construct Smith's estimates were not representative; for example, much of the information was from large creditors, which likely have lower

<sup>42.</sup> For further discussion of the ability of dummy variables to represent regulatory restrictions, see Barth and others (1983).

<sup>43.</sup> Start-up costs covered legal services (\$2.4 million at banks; not estimated for other creditors), employee training (\$1.4 million, banks; \$6.2 million, other creditors), the destruction of obsolete forms (\$2.4 million, banks; \$9.5 million, other creditors), the printing and mailing of notices on married persons' rights to separate credit histories (\$15.4 million, banks; \$33.1 million, other creditors), and the changing of information systems to maintain separate credit histories (\$13.2 million, banks; \$48.2 million, other creditors).

<sup>44.</sup> Ongoing costs covered increased computer use and report preparation time due to the requirement to maintain separate credit histories (\$2.3 million, banks; \$10.2 million, other creditors), additional credit reports (\$8.5 million, banks; \$36.5 million, other creditors), additional losses due to prohibitions on the use of information in credit evaluation (\$9.0 million, banks; \$36.2 million, other creditors), increased collection expense (\$2.9 million, banks; \$12.9 million, banks; \$7.3 million, other creditors).

per unit regulatory costs than the mostly small independent banks in Grant Thornton's sample.

Baer (1988) and Hannan (1988, 1989) used analogies to estimate opportunity costs for reserve and capital requirements. Baer defined the cost of reserve requirements to be the average reserve requirement multiplied by the interest rate that reserves would have earned had they been invested. Assuming a constant interest rate of 10 percent, the cost of reserve requirements per dollar of assets fell from 45 basis points to 18 basis points between 1976 and 1985 because of the general decline in reserve requirements over this period. Baer defined the cost of capital requirements to be essentially the additional taxes that banks paid because they were required to finance assets with equity (capital) rather than debt. In the 1980s, capital requirements were increased, and the cost of capital requirements per dollar of assets rose from 20 basis points to 45 basis points between 1976 and 1985. Thus, according to Baer's estimates, the rise in capital requirements largely offset the fall in reserve requirements during the period: In 1986, the opportunity cost of reserve and capital requirements together was 63 basis points, about the same as it had been a decade earlier. These estimates probably overstate the opportunity cost of reserve and capital requirements because they assume that all reserves and capital are maintained to satisfy regulatory requirements and would not otherwise be maintained.

Hannan (1988, 1989) derived equations for calculating the incremental costs of reserve and capital requirements from a theoretical model of a bank's lending decision. The equation for the cost of reserve requirements showed that each additional dollar of loans required more than one dollar in additional funds at the marginal cost of funds plus the deposit insurance premium rate. Assuming that the interest rate for time deposits was the marginal cost of marginal funds at banks, Hannan estimated that the cost of reserve require-

ments per dollar of assets increased from 20 basis points in 1976 to 83 basis points in 1980 and then fell gradually to 27 basis points in 1997. The equation for the cost of capital requirements showed that each additional dollar of loans required a fraction of a dollar in additional funds at the difference between the marginal cost of equity and debt plus the loss of the tax deduction for interest payments. However, Hannan considered capital requirements to be costly only if they were binding. Arguing that regulators pressure banks to keep more than the required minimum amount of capital, he assumed that capital requirements were binding at banks with a primary capital-to-assets ratio less than one-half percentage point more than the required minimum ratio. In contrast to Baer, Hannan estimated that the cost of capital requirements fell during the 1980s. Using a relatively low threshold to determine when capital requirements were binding, Hannan concluded that, depending on bank size, the cost of capital requirements fell 70-80 basis points, to 42-51 basis points, from the early 1980s to 1985. Hannan's calculations were based on a better theoretical framework than Baer's, but Hannan's estimates depend critically on arbitrary assumptions about the amount of reserves and capital held because of regulatory requirements.

These exercises provided insights into the consequences of regulation, even if the accuracy of the estimates is doubtful. Better data were not available, and collection of new data would have been costly and likely would have required considerable time. Moreover, in the case of estimating the cost of capital requirements, determining the extent to which the requirements were binding would be especially difficult in a survey or case study. The judgment of a respondent may well be less accurate than that of an analyst who relies on analogies with other firms or other industries. Studies of regulatory cost address issues of the aggregate cost of regulation, the distribution of regulatory costs by cost category, economies of scale, and the costs associated with changes in regulations.

# The Aggregate Cost of Regulation

The sole objective of several studies of regulatory costs was to estimate the aggregate total cost of regulation in banking. It is doubtful that these studies accomplished this objective. The survey methods lead one to question the accuracy of some of the survey results. The representativeness of some of the surveys is also questionable because of high levels of nonresponse. The case studies' cost estimates are probably more accurate than the surveys', but the case studies cannot be relied upon to represent the industry.

Despite the inadequacy of the data, it seems reasonable to conclude that regulation accounts for a small but not inconsiderable share of the cost of providing financial services. Grant Thornton's (1993) survey, perhaps the best of the comprehensive surveys, estimated that the ongoing cost in 1991 of complying with the thirteen "most burdensome" regulations at independent banks was 12.6 percent of noninterest expense, or \$3.2 billion.<sup>45</sup> The total cost of all regulations can only be larger.

The Grant Thornton estimate excludes the 16 percent of banks (controlling 75 percent of bank assets) that are not locally owned and operated. In contrast, Darnell's case study involved a bank belonging to a multibank holding company, and the American Bankers Association survey included all banks. The results of those studies are not much different from Grant Thornton's. (See table 1.) Lacking a better number, 12 percent to 13 percent of noninterest expenses seems a reasonable basis for estimating the aggregate cost of bank regulation. Noninterest expenses for commercial banks were \$125.9 billion in 1991, producing an estimate of about \$15.7 billion for the cost of bank regulation at all banks in that year.

The only comprehensive estimate of the incremental cost of bank regulation is from the case study by McKinsey & Company. That estimate, 6.1 percent of noninterest expenses, is about half Grant Thornton's estimate of the total cost of bank regulation. Thus, the aggregate incremental cost of bank regulation in 1991 would have been about \$7.7 billion.

Incremental cost seems a better measure of the economic cost of regulation than total cost, and the \$7.7 billion estimate clearly deserves attention. That amount is more than three-fourths the amount of interest paid on transaction accounts in 1991, almost as much as banks paid in taxes that year, and more than half banks' net income in that year. Even if this estimate of incremental regulatory cost is rough, it seems sufficiently large to suggest that regulatory costs are consequential in banking.

# Distribution of Regulatory Costs across Cost Categories

The detailed questionnaires used in some of the surveys yielded information on the distribution of regulatory costs across categories of cost. This information suggests that labor costs account for a large share of the total cost of implementing a new regulation and an even greater share of the costs of satisfying regulatory requirements on a day-to-day basis. The specific labor requirements for start-up and ongoing costs differ, however.

# Start-Up Costs

Schroeder (1985) found that managerial and legal expenses accounted for more than a third of the cost of implementing the Electronic Fund Transfer Act (table 4). More than a decade later, Elliehausen and Lowrey (1997) found that managerial and legal expenses accounted for about a quarter of the cost of implementing the Truth in Savings Act. Both regulations are primarily disclosure regulations. Both require initial disclosures when consumers first obtain any of a broad range of financial services or products and periodic disclosures of transactions or events thereafter.

<sup>45.</sup> The case studies (Grant Thornton, 1992b) from which the survey methodology was developed provide some assurance that the survey results are reasonably accurate for most regulations studied. For two regulations, however, the case studies suggest that the survey may underestimate costs. See footnote 20.

 Estimated Incremental Costs of Complying with Selected Regulations, by Category of Cost Percentage distribution

	Start-Up Costs			
Cost category	Electronic Fund Transfer Act	Truth in Savings Act		
Managerial and legal Training Data processing Disclosure forms Other Total	38.0 11.5 28.9 12.3 9.2 100	24.3 13.4 38.5 12.0 11.7 100		
	Ongoing Costs			
	Electronic Fund Transfer Act	Truth in Lending and Equal Credit Opportunity Acts		
Managerial and legal Nonsupervisory labor Training Disclosure forms Postage Equipment, furniture, supplies, and premises . Other Total	22.6 46.6 3.6 11.3 9.0 3.4 3.4 100	14.2 51.4 8.0 10.4 8.9 2.4 4.7 100		

NOTE. Distributions may not sum to 100 because of rounding.

SOURCES. Schroeder (1985), Elliehausen and Kurtz (1985), and Elliehausen and Lowrey (1997).

In addition, the Electronic Fund Transfer Act governs the resolution of disputes and unauthorized transactions, and the Truth in Savings Act regulates the advertising of deposit accounts. Because these two acts have far-reaching implications for the design, marketing, and distribution of financial services and products, they would seem to require substantial managerial and legal resources, which the results of the Schroeder study and the Elliehausen and Lowrey study confirm.

The cost of changing data processing systems also accounted for a considerable share of the total cost of implementing these regulations. Data processing costs accounted for 28.9 percent of start-up costs for the Electronic Fund Transfer Act and 38.5 percent for the Truth in Savings Act.<sup>46</sup> This cost category includes the purchase and installation of software and equipment, programming and testing, and charges by third-party processors. The labor expenses in this category, like those in the managerial and legal category, are for highly skilled and highly compensated personnel.

Redesigning disclosure forms and replacing old forms accounted for only a small share of start-up costs for these regulations, as did training.

#### Ongoing Costs

Ongoing regulatory costs have a larger labor component than do start-up costs. In contrast to start-up costs, ongoing costs include substantial expenses for nonsupervisory labor. Nonsupervisory employees perform many routine activities, including preparing and distributing disclosure statements, explaining disclosed information to customers, correcting errors, and resolving disputes. Schroeder (1985) found that 46.6 percent of the incremental ongoing costs of complying with the Electronic Fund Transfer Act were for nonsupervisory employees, and Elliehausen and Kurtz (1985) found that 51.4 percent of the incremental ongoing costs of complying with the Truth in Lending and Equal Credit Opportunity Acts were for nonsupervisory employees.

Managerial and legal expenses account for a smaller share of ongoing costs than they do of start-up costs, but they are still a significant component. They constituted the second largest component of incremental ongoing costs, accounting for 22.6 percent of incremental ongoing costs for the Electronic Fund Transfer Act and 14.2 percent of incremental ongoing costs for the Truth in Lending and Equal Credit Opportunity Acts. The small but significant share of managerial and legal expenses arises from the need to monitor employee compliance; coordinate compliance reviews with regulators; handle customer disputes that employees cannot resolve; and learn about regulatory changes, regulator interpretations, and court decisions that affect compliance.

Other categories accounted for about a third of the incremental ongoing costs of complying with these regulations. The largest categories were printing or purchase of disclosure forms (about 10 percent in each case), postage (about 9 percent in each case), and training (about 4 percent for the Electronic Fund Transfer Act and 8 percent for the Truth in Lending and Equal Credit Opportunity Acts).

<sup>46.</sup> That data processing would account for nearly one-third of start-up costs for the Electronic Fund Transfer Act is not surprising, as that regulation governs services that are delivered electronically. The finding that the share for the Truth in Savings Act is even larger is also reasonable considering the pervasiveness of computers at the time the regulation was issued.

Other studies also found that labor costs account for a substantial share of regulatory costs. Darnell's (1980) case study of the costs associated with a broad set of regulations at a large commercial bank, for example, found that labor expenses accounted for a sizable share of total ongoing costs, though smaller than the labor shares found by Schroeder and by Elliehausen and Kurtz. Grant Thornton's (1993) survey of the total cost of thirteen regulations at independent banks produced a labor share nearly equal to those found by Schroeder and by Elliehausen and Kurtz. Darnell and Grant Thornton measured total costs rather than incremental costs, as did Schroeder as well as Elliehausen and Kurtz, but they covered larger set of regulations. Their findings support the view that the labor component of regulatory costs is substantial.

The surveys by Schroeder and by Elliehausen and Kurtz suggest that nonsupervisory employees performing routine regulatory compliance activities account for the largest portion of ongoing labor costs. Darnell's careful analysis of regulatory expenses at a large bank reached a similar conclusion. Perhaps a survey conducted more recently would show that less routine compliance work is now being performed by nonsupervisory employees. Today, even small institutions can afford automated systems that perform calculations and prepare disclosures that were once prepared manually. Routine tasks are likely to remain substantial, however. Employees are still needed to enter data, instruct the computer to produce the appropriate disclosures, and answer customers' questions.

# **Economies of Scale**

Economies of scale exist when greater output is associated with lower average cost. If regulatory costs exhibit economies of scale, smaller banks would face higher average cost in complying with regulations than larger banks. Regulatory costs might thus inhibit the entry of new firms into banking or might stimulate consolidation of the industry into fewer, larger banks.

Economies of scale arise when the use of factor inputs is subject to indivisibilities—that is, when factor inputs cannot be used in smaller units (see Silvestre, 1987). It is possible that there are indivisibilities in regulatory compliance. For example, software used to generate required disclosures generally cannot be divided. A bank must buy the entire package. However, it can then use the product to produce any number of disclosures. If the cost of the software is fixed, the average cost of disclosures decreases as the number of disclosures increases. Another example of indivisibility is the time needed to learn the requirements of a regulation. Bank officers cannot afford to learn only part of a regulation's requirements, and employees cannot be partly trained.

Some researchers have inferred economies of scale by comparing the average costs for banks in different size groups. This method has the advantage of being easily understood by the public; however, it may not accurately reflect economies of scale because it fails to account for the possibility that average costs may also be influenced by other factors that vary systematically with size. Other researchers have studied economies of scale using a statistical cost function. The cost function relates cost to the level of output and input prices (for example, wage rates, capital costs, and materials prices). Estimation of the cost function makes it possible to separate differences in costs due to different output levels from those due to different input prices, combinations of inputs, or other explanatory variables.

Economies of Scale in Start-Up Costs

Murphy (1980) used a cost function to analyze data from the Consumer Bankers Association's survey of compliance costs in the first year of the Equal Credit Opportunity Act. Murphy assumed that the compliance process consisted of two separable components—legal expenses and other operating costs.<sup>47</sup> He specified a Cobb–Douglas cost function for each component, with cost depending on output and the applicable wage rate.<sup>48</sup> The dollar amount of consumer credit

<sup>47.</sup> The reason for separating these components was that the legal component involves highly skilled labor and little less-skilled labor and capital, while the other component involves less-skilled labor and more capital and materials.

<sup>48.</sup> The Cobb–Douglas is one of many functional forms that satisfy theoretical requirements for a well-behaved cost function. In the Cobb–Douglas cost function, the logarithm of cost is a linear function of the logarithms of output and factor prices. The coefficients can be interpreted directly as percentage changes in costs associated with a percentage change in output or factor prices. In Murphy's formulation, capital and materials costs were treated as constants and were subsumed in the intercept.

outstanding was the measure of output.<sup>49</sup> In both equations, the estimated coefficients for output are significantly less than unity. They show that for each 10 percent increase in output, legal costs increased 5.7 percent and other costs increased 4.1 percent.<sup>50</sup> These results are equivalent to falling average costs and thus suggest economies of scale in the legal and other costs of complying with the Equal Credit Opportunity Act in its first year.

Murphy's data combined start-up and ongoing costs. However, it seems likely that start-up costs contributed substantially to the finding of scale economies. Start-up activities such as learning the requirements of a regulation, reviewing and redesigning credit applications, changing data processing systems, and revising credit evaluation models likely have a large indivisible component and thus involve about the same amount of time and expense regardless of the scale of bank lending activities. Evidence presented in the next subsection supports this belief.

Other studies, using additional explanatory variables and more accurate data, provide clearer evidence than Murphy's of economies of scale in start-up costs. Schroeder (1985) analyzed Federal Reserve data on start-up costs for the Electronic Fund Transfer Act. He estimated a log-linear cost function that had as explanatory variables the dollar amount of consumer transaction deposits (output), holding company assets, number of offices, and a variable indicating whether the bank offered automated teller machine services.51 Results of estimation indicate that a 10 percent increase in output was associated with a 7.7 percent increase in start-up costs.<sup>52</sup> This result is consistent with the hypothesis of economies of scale.

Perhaps the best data for studying start-up costs for a regulation are from a Federal Reserve survey of the cost of implementing the Truth in Savings Act (Elliehausen and Lowrey, 1995). That survey provided more observations and data for studying more explanatory variables than did the ones analyzed by Murphy and Schroeder, and the survey sample represented the population. Using this survey, Elliehausen and Lowrey estimated separate Cobb-Douglas cost functions for banks in three asset-size groups. Costs depended on output (measured by number of consumer deposit accounts), labor and capital input prices, and several other explanatory variables. Coefficients for output were significantly less than unity in each equation.<sup>53</sup> With a 10 percent increase in the number of consumer deposit accounts, start-up costs increased 5.6 percent at small banks (assets of less than \$100 million), 6.0 percent at mediumsized banks (assets of \$100 million-\$499 million), and 6.8 percent at large banks (assets of \$500 million or more). Again, the statistical evidence supports the hypothesis that there are economies of scale in the start-up costs of complying with a regulation, in this case the Truth in Savings Act.54

#### Economies of Scale in Ongoing Costs

The Federal Home Loan Bank Board survey of reporting burden at savings and loan associations (Crowne, 1977) was one of the first studies to provide evidence suggesting scale economies for regulatory costs. When costs were computed per million dollars of assets, generally the larger the institution, the lower the costs: Costs for institutions with the fewest assets (less than \$10 million) were more than twice the costs for institutions in the medium group (assets of \$10 million–\$24 million)—\$275 per million of assets compared with \$120—and costs for the

<sup>49.</sup> Studies of operating costs for financial services often use number of accounts outstanding as the measure of output because most of the activities associated with providing financial services arise because an account exists. Regulatory costs also may be more closely related to the existence of, rather than the dollar amount of, accounts. For the Equal Credit Opportunity Act, the number of accounts opened, or perhaps the number of applications, may be a better measure of output than either the amount or number of accounts outstanding.

<sup>50.</sup> Both equations were statistically significant at conventional confidence levels. Coefficients of determination were 0.42 for the legal function and 0.28 for the "other costs" function.

<sup>51.</sup> Schroeder's cost function was similar to a Cobb– Douglas cost function in that it was linear in logarithms, but unlike a properly specified Cobb–Douglas cost function, it excluded variables for factor input prices.

<sup>52.</sup> The equation is statistically significant at conventional confidence levels. The coefficient of determination is 0.76.

<sup>53.</sup> The estimated equations were statistically significant at conventional confidence levels and explained 59 percent of the variation in the dependent variable.

<sup>54.</sup> Elliehausen and Lowrey included a dummy variable indicating whether or not the bank was part of a multibank holding company. They hypothesized that banks belonging to a multibank holding company would have lower costs than independent banks because they could share some costs with other banks in the holding company. Coefficients for the multibank holding company variable were negative and significantly different from zero for small and medium sizedbanks, supporting their hypothesis. These findings imply that affiliation with a larger organization may mitigate the effects of economies of scale. In contrast, Schroeder found no significant relationship between start-up costs for the Electronic Fund Transfer Act and holding company affiliation.

medium-size institutions were about twice those for banks with the most assets (\$56 per million dollars).

Schroeder (1985) estimated cost functions for the incremental ongoing costs of complying with the Electronic Fund Transfer Act. Like his cost function for start-up costs, Schroeder's cost function for ongoing costs was linear in logarithms. Explanatory variables were number of electronic fund transfers (output), holding company assets, number of offices, and a dummy variable indicating whether the bank offered automated teller machine services.<sup>55</sup> His results indicate that a 10 percent increase in output was associated with 4.3 percent higher ongoing costs.

Elliehausen and Kurtz (1988) investigated scale economies in ongoing compliance costs for the Truth in Lending and Equal Credit Opportunity Acts. They estimated a Cobb-Douglas function and a modified Cobb-Douglas function, in which a quadratic term for the logarithm of output was added to allow economies of scale to vary with the level of output. In both equations, coefficients of output (measured by number of consumer credit accounts), factor prices, and output homogeneity variables (which controlled for differences in the types of consumer credit held by the banks) were significantly different from zero. The Cobb-Douglas model indicates significant economies of scale, with a 10 percent increase in output being associated with a 6.8 percent increase in compliance costs. Results for the modified Cobb-Douglas function, however, suggest that scale economies vary with the level of output. The coefficient allowing scale economies to vary with output was significant, and estimates of scale economies suggest substantial scale economies at relatively low levels of output, then a gradual reduction in scale economies as output expands in the intermediate range of outputs to higher levels of output, and finally the possibility of diseconomies of scale at the highest levels of output.

Thakor and Beltz (Barefoot and others, 1993; Thakor and Beltz, 1993) also estimated cost functions using the Cobb–Douglas functional form, measuring costs by the ratio of regulatory costs to total assets or net income. Explanatory variables were bank size (total assets); population of the community in which the bank was located; and a dummy variable indicating multibank holding company affiliation, which was crossed with bank size (thus, the effect of holding company affiliation depended on bank size).<sup>56</sup> Bank size was treated as the output variable, and its coefficient was interpreted as the measure of scale economies in compliance. Thus, a negative coefficient would suggest declining average cost and would imply the existence of economies of scale.

Thakor and Beltz estimated an equation for a set of fourteen consumer regulations and separate equations for the Community Reinvestment, Bank Secrecy, and Real Estate Settlement Procedures Acts.<sup>57</sup> In the equations measuring costs relative to total assets, the coefficients for bank size were significant and negative, suggesting the existence of economies of scale.58 The size of the coefficients indicates that a 10 percent increase in assets reduces compliance costs relative to assets 8.0 percent to 8.4 percent, depending on the regulation. In the equations measuring costs relative to net income, the estimated coefficients for bank size were also significant and negative, with a 10 percent increase in assets reducing compliance costs relative to net income 2.3 percent to 2.8 percent.59

57. Thakor and Beltz also estimated a second model for Community Reinvestment Act (CRA) compliance costs that included the bank's most recent CRA rating as an explanatory variable. They reported that CRA rating is not significantly related to CRA compliance costs, but they did not present the results for this model in either the published report (Barefoot and others, 1993) or the working paper (Thakor and Beltz, 1993).

58. The estimated equations were statistically significant at conventional confidence levels. Coefficients of determination were between 0.54 and 0.66. Coefficients for community size were significant and positive in all four equations. The latter results are consistent with the hypothesis that banks in larger communities face greater regulatory costs. Coefficients for holding company affiliation, however, were not significantly different from zero.

59. The estimated equations were statistically significant at conventional confidence levels. Coefficients of determination were between 0.08 and 0.14. The coefficient for community size was significant and positive in three of the four equations (it was not significant in the equation for Real Estate Settlement Procedures Act compliance costs). The holding company variable was negative in all four equations and significant in three of the four equations. Its negative coefficient suggests that banks that are part of a multibank holding company have lower regulatory costs than do independent banks.

<sup>55.</sup> The equation was statistically significant at conventional confidence levels, and the coefficient of determination was 0.52.

<sup>56.</sup> Thakor and Beltz hypothesized that banks in larger communities may have higher compliance costs than banks in smaller communities for regulations such as the Community Reinvestment Act because the diversity of the population in larger communities makes evaluation of community needs more difficult and because community groups in urban areas tend to be aggressive toward financial institutions. They also hypothesized that banks that are part of a multibank holding company may have lower regulatory costs than independent banks because they are able to share some regulatory costs with affiliated banks.

#### The Cost of Changing Regulations

There is some evidence that the start-up costs for complying with new regulations and revised regulations are significant. Schroeder (1985) found in his analysis of the costs of complying with the Electronic Fund Transfer Act that start-up costs were nearly one and one-half times greater than ongoing costs.

Boyle (1983) attempted to estimate the cost of the regulation implementing a major revision to the Truth in Lending Act that became effective in 1981 and mandatory in 1982. By comparing the costs of firms that had begun conversion to the revised regulation in 1981 with those that had not begun conversion, Boyle was able to estimate at least part of the start-up costs associated with the revision. For firms that had begun conversion, the average compliance cost per application rose \$6.11, from \$13.61 in 1980 to \$19.72 in 1981. For firms that had not begun conversion, the average compliance cost per application hardly changed (\$13.91 in 1980 and \$13.10 in 1981). Thus, the start-up cost for the revision was roughly \$6 to \$7 per application, or about half the ongoing cost of the old regulation.

Elliehausen and Lowrey (1997), in their statistical analysis of the cost of implementing the Truth in Savings Act, looked at how the extent to which banks had to change existing practices affected the cost of implementing a new regulation. They collected information on banks' disclosure practices before Truth in Savings, and by comparing responses with the requirements of the law, they were able to construct a variable measuring the number of account practices and disclosures that had to be changed because of the regulation.<sup>60</sup> As mentioned earlier, this variable for number of changes was an explanatory variable in their cost functions. The estimated coefficients for number of changes were very small for all three size groups and were significantly different from zero for two of the three size groups, indicating that start-up costs were insensitive to the number of changes required.

Intuition suggests why start-up costs may be insensitive to the amount of change. Activities such as learning the requirements of a regulation, evaluating existing disclosures and procedures, formulating policies to ensure compliance, training employees, and assessing the effect of the regulation on the bank's position in the market would have had to be performed even if no changes were required. The costs of other activities such as designing new disclosures, revising procedures, and destroying obsolete forms may not have been completely fixed, but the activities likely had substantial indivisible components, making their cost largely fixed once any change had to be made.

The insensitivity of start-up costs to the amount of change has several implications for regulatory policy. It suggests that general regulations to control rare practices may impose start-up costs on all banks, not just on the few banks whose behavior is affected. It also suggests that a regulatory policy of making frequent small changes in regulations may be more costly than one of making infrequent major changes.

<sup>60.</sup> The variable was created by comparing a bank's account practices and disclosures before regulation with the regulation's requirements for several different types of accounts. The number of practices that became violations was summed over all accounts. This method of measuring change is arbitrary because changes do not require equal effort. Different sets of practices and different rules for counting changes were considered, but the results using other measures were similar to those described here.

## 6. Conclusions

Information is insufficient to make a highly reliable estimate of the aggregate cost of regulations at commercial banks. A few case studies and surveys have attempted to produce a comprehensive estimate of regulatory costs. However, case studies cannot be used as a basis for estimating aggregate costs, and the surveys have limited usefulness. The representativeness of one of the comprehensive surveys is unknown, and the data from that survey probably contain a large amount of measurement error. The other comprehensive survey covers a subset of regulations at mainly smaller banks and therefore is not representative of the banking industry.

Ignoring for the moment the issue of data adequacy and focusing on the findings, which are the best available, regulatory costs account for 12 percent to 13 percent of noninterest expenses. The noninterest expenses of commercial banks in 1991 (the year on which most of these studies were focused) were \$125.9 billion. Therefore, total regulatory costs at commercial banks in 1991 could have been about \$15.7 billion. One case study suggests that incremental regulatory costs were about 6.1 percent of noninterest expenses, or about \$7.7 billion. Whatever the true costs attributable to regulation alone, these rough estimates suggest that the amount is considerable.

The available evidence from case studies and surveys suggests that, overall, each regulation may contribute only a very little to the total, although a few regulations are clearly very costly. Truth in Lending, for example, appears in more than one study as a major source of regulatory cost. Deposit insurance premiums, which were included in some of the studies, also appear to be a large component of regulatory costs. Taken as a whole, the set of regulations imposed on commercial banks appears to be a significant component of noninterest expenses.

The case studies and surveys suggest that compliance activities are labor intensive: Labor costs are the major component of compliance costs. Some of these studies also suggest that a large part of the labor cost of complying with regulations is the time that bank officers and managers devote to compliance activities, especially the time devoted to complying with new regulations or major revisions of regulations.

Several studies that used survey data to investigate the effects of bank size or level of output on the costs of complying with regulations affecting consumer financial services suggest that, regardless of the specific regulation, there are scale economies in compliance costs. For every 10 percent increase in output, compliance costs rise 6 percent to 8 percent depending on the type of cost and the regulation. In one study, scale economies varied with the level of output: Economies of scale were large at relatively low levels of output and declined as output increased.

The basic conclusion is similar for all of the studies of economies of scale: Average compliance costs for regulations are substantially greater for banks at low levels of output than for banks at moderate or high levels of output. This conclusion has important implications. Higher average regulatory costs at low levels of output may inhibit the entry of new firms into banking or may stimulate consolidation of the industry into fewer, larger banks. Scale economies for some individual regulations may also inhibit inter-institutional competition in markets for specific financial products. Thus, regulatory costs may undermine deregulatory efforts in other areas, such as efforts to remove legal restrictions that segment financial service markets. In addition, scale economies for regulatory costs may reduce incentives for financial innovation: The possibility of regulation in early stages of the product life cycle, when output is low and average regulatory cost would be high, could discourage the introduction of new financial services, for example.

One survey found that start-up costs for a new regulation were insensitive to the number of changes required to bring a bank's practices and policies into compliance with the regulation. If this result is generally true, it has important implications for regulatory policy. Applying regulations generally to address the practices of a few institutions would impose costs on all institutions, not just on the few that must change their practices. Also, making frequent minor revisions to regulations would be more costly to banks than making infrequent major revisions.

Experience suggests that surveys provide reasonably good data on costs if good survey methods are followed. Carefully designed studies can increase knowledge of the effects of regulation on banks' costs; however, exercises that measure only costs without seeking to explain the determinants of cost are likely to have limited value. At this time, information on the determinants of regulatory costs is based on analyses of a small number of regulations by a few researchers. Further research covering more and different types of regulations and regulatory requirements is clearly needed to make informed decisions about regulation.

# Chronological Listing of Major Studies of Regulatory Costs in Banking

Researcher	Means of collecting data	Regulations covered	Type of cost measured	Year	Institutions providing data	
Murphy (1980)	Survey	Equal Credit Opportunity Act	Start-up and ongoing costs during first year the law was in effect	1976	37 large commercial banks	
Crowne (1977)	Survey	Financial and economic reporting requirements	Total ongoing costs	1976	820 savings and loan associations	
Federal Reserve Board staff (1978)	Survey	Adverse action notice and separate credit history (Equal Credit Opportunity Act); billing inquiries (Fair Credit Billing Act)	Start-up and total ongoing costs of selected activities	1977	8 large credit-granting companies	
Darnell (1980)	Case study	All federal, state, and local regulations	Total ongoing costs	1979	1 large commercial bank	
Schroeder (1985); Elliehausen and Kurtz (1985, 1988)	Survey	Electronic Fund Transfer, Truth in Lending, and Equal Credit Opportunity Acts	Start-up for EFT; incremental ongoing for all three regulations	1980	67 and 51 commercial banks	
Boyle (1983)	Survey	Truth in Lending Act	Start-up costs of major revision and incremental and ongoing costs	1980–81	201 mortgage banks	
McKinsey & Co. (1992)	Case study	60 federal bank regulations	Incremental ongoing costs	1991	4 large commercial banks	
Grant Thornton (1992b)	Case study	13 "most burden- some" bank regulations	Total ongoing costs	1991	9 commercial banks	
Federal Deposit Insurance Corporation (1992b)	Survey	Call Report	Bank employees' time spent preparing the Call Report	1992	6,740 commercial banks	
American Bankers Association (1992)	Survey	Unspecified bank regulations	Total ongoing costs	1991	About 900 commer- cial banks	
Grant Thornton (1993)	Survey	13 "most burdensome" bank regulations	Total ongoing costs	1991	765 independent commercial banks	
Barefoot and others (1993); Thakor and Beltz (1993)	Survey	14 consumer	Total ongoing costs	1991	445 commercial banks	
Joyal and others (1993)	Survey	13 federal nonsuper- visory regulations	Total ongoing costs	1991	829 credit unions	
Elliehausen and Lowrey (1995, 1997)	Survey	Truth in Savings Act	Start-up costs	1992–93	About 1,000 com- mercial banks and 400 savings institutions	
Federal Deposit Insurance Corporation (1995)	Survey	16 regulatory requirements	Incremental ongoing costs	1994	61 commercial banks	

- American Bankers Association. "Survey of Regulatory Burden: Summary of Results." June 1992.
- Baer, Herbert L. "Regulatory Burden Handicaps Low-Risk Banking," Federal Reserve Bank of Chicago, *Chicago Fed Letter*, January 1988.
- Barefoot, Marrinan & Associates, Inc., Anjan V. Thakor, and Jess C. Beltz. Common Ground: Increasing Consumer Benefits and Reducing Regulatory Costs in Banking. Madison, Wisc.: Herbert V. Prochnow Educational Foundation, 1993.
- Barth, James R., and others. "The Effect of Government Regulations on Personal Loan Markets: A Tobit Estimation of a Microeconomic Model," *Journal of Finance*, vol. 38 (September 1983), pp. 1233–51.
- Becker, Gary S. "Nobel Lecture: The Economic Way of Looking at Behavior," *Journal of Political Economy*, vol. 101 (June 1993), pp. 385–409.
- Benston, George J. The Costs to Consumer Finance Companies of Extending Consumer Credit, vol. 2, National Commission on Consumer Finance. Washington: Government Printing Office, 1975, pp. 1–158.
- Biemer, Paul P., and Ronald S. Fecso. "Evaluating and Controlling Measurement Error in Business Surveys," in Brenda G. Cox and others, eds. *Business Survey Methods*. New York: John Wiley & Sons, 1995, pp. 257–81.
- Boyle, John M. A Survey of the Mortgage Banking Industry Concerning Costs and Benefits of Regulations. Washington: Government Printing Office, 1983.
- Buchanan, James M., and Gordon Tullock. *The Calculus of Consent: Logical Foundations of Constitutional Democracy.* Ann Arbor: University of Michigan Press, 1962.
- Carroll, Evelyn F., and others. *The Burden of Bank Regulation.* Washington, D.C.: American Bankers Association, 1989.

- Commission on Federal Paperwork. *Consumer Credit Protection*. Washington: Government Printing Office, 1977.
- Crowne, Frank J. "Industry Reporting Requirements: Benefits or Burden?" *Federal Home Loan Bank Board Journal*, vol. 10 (March 1977), pp. 7–12.
- Darnell, Jerome C. "A Study of the Costs of Complying with Government Regulations." Report prepared for the United Bank of Denver, 1980.
- Elliehausen, Gregory E., and Robert D. Kurtz. "Scale Economies in Compliance Costs for Federal Consumer Credit Regulations," *Journal of Financial Service Research*, vol. 1 (January 1988), pp. 147–59.
- \_\_\_\_\_\_, and \_\_\_\_\_\_. Scale Economies in Compliance Costs for Consumer Credit Regulations: The Truth and Lending and Equal Credit Opportunity Laws. Staff Studies 144. Washington: Board of Governors of the Federal Reserve System, 1985.
- Elliehausen, Gregory E., and Barbara R. Lowrey. "The Cost of Implementing Truth in Savings." Working Paper. Washington: Board of Governors of the Federal Reserve System, Office of the Secretary, Regulatory Planning and Review Section, 1995.
  - \_\_\_\_\_, and \_\_\_\_\_. The Cost of Implementing Consumer Financial Regulations: An Analysis of Experience with the Truth in Savings Act. Staff Studies 170. Washington: Board of Governors of the Federal Reserve System, 1997.
- Federal Deposit Insurance Corporation. *Annual Report, 1991.* Washington: Federal Deposit Insurance Corporation, 1992a.
  - \_\_\_\_\_. Annual Report, 1979. Washington: FDIC, 1980.
  - \_\_\_\_\_. Call Report Study. Washington: FDIC, 1992b.

. "Costs of Selected Regulatory and Legislative Requirements: An Informal Survey," 1995.

- Federal Financial Institutions Examination Council. *Study on Regulatory Burden*. Washington: FFIEC, 1992.
- Federal Reserve Board Staff. "Exercise of Consumer Rights Under the Equal Credit Opportunity and Fair Credit Billing Acts," *Federal Reserve Bulletin*, vol. 64 (May 1978), pp. 363–66.
- Frank, Robert H., Thomas Gilovich, and Dennis T. Regan. "Does Studying Economics Inhibit Cooperation?" *Journal of Economic Perspectives*, vol. 7 (Spring 1993), pp. 159–71.
- Grant Thornton. "Regulatory Burden: The Cost to Community Banks." Study prepared for the Independent Bankers Association of America, January 1993.

. "Regulatory Burden: Phase I— National Opinion Survey of Community Banks." Study prepared for the Independent Bankers Association of America, June 1992a.

. "Regulatory Burden: Phase II—Field Cost Studies." Study prepared for the Independent Bankers Association of America, August– September 1992b.

Groves, Robert M. Survey Errors and Costs. New York: John Wiley & Sons, 1989.

- Gruenspecht, Howard K., and Lester B. Lave. "The Economics of Health, Safety, and Environmental Regulation," in Richard Schmalensee and Robert D. Willig, eds., *Handbook of Industrial Organization*, vol. 2. New York: North-Holland, 1989, pp. 1507–50.
- Hahn, Robert W., and John A. Hird. "The Costs and Benefits of Regulation: Review and Synthesis," *Yale Journal of Regulation*, vol. 8 (Winter 1991), pp. 237–78.
- Hannan, Timothy H. "The Impact of Bank Regulatory Requirements on Large Corporate Lending." Finance and Economics Discussion Series 63. Washington: Board of Governors of the Federal Reserve System, Division of

Research and Statistics and Division of Monetary Affairs, 1989.

- \_\_\_\_\_\_. "The Regulatory Burden and its Impact on Large Corporate Lending." Board of Governors of the Federal Reserve System, staff memorandum, September 14, 1988.
- Joskow, Paul L., and Nancy L. Rose. "The Effects of Economic Regulation," in Richard Schmalensee and Robert D. Willig, eds., *Handbook of Industrial Organization*, vol. 2. New York: North-Holland Publishing Co., 1989, pp. 1449–1506.
- Joyal, Victoria, and others. Federal Regulatory Burden: Measuring the Cost of Select Regulations to the Nation's Credit Unions. Madison, Wisc.: Credit Union National Association, 1993.
- Kosobud, Richard F., and James N. Morgan, eds. *Consumer Behavior of Individual Families Over Two, and Three Years.* Ann Arbor, Mich.: Institute for Social Research, 1964.
- Krosnick, J.A., and D.F. Alwin. "An Evaluation of a Cognitive Theory of Response-Order Effects in Survey Measurement," *Public Opinion Quarterly*, vol. 51 (1987), pp. 201–19.
- McKinsey & Company. "Estimating Bank Regulatory Cost Burdens." Presentation to Federal Reserve officials, May 1, 1992.
- Murphy, Neil B. "Economies of Scale in the Cost of Compliance with Consumer Credit Protection Laws: The Case of the Implementation of the Equal Credit Opportunity Act of 1974," *Journal of Bank Research*, vol. 10 (Winter 1980), pp. 248–50.
- Niskanen, William A. Bureaucracy and Representative Government. Chicago: Aldine, 1971.
- Phillips, L.W., and B.J. Calder. "Evaluating Consumer Protection Programs: Part I, Promising Methods," *Journal of Consumer Affairs*, vol. 14 (Summer 1980), pp. 9–36.
- \_\_\_\_\_, and \_\_\_\_\_. "Evaluating Consumer Protection Programs: Part I, Weak but Commonly Used Research Designs," *Journal of Consumer Affairs,* vol. 13 (Winter 1979), pp. 157–85.

Schroeder, Frederick J. Compliance Costs and Consumer Benefits of the Electronic Fund Transfer Act: Recent Survey Evidence. Staff Studies 143. Washington: Board of Governors of the Federal Reserve System, 1985.

Silvestre, Joaquim. "Economies and Diseconomies of Scale," in John Eatwell, Murray Milgate, and Peter Newman, eds., *The New Palgrave: A Dictionary of Economics*, vol. 2. New York: Stockton Press, 1987, pp. 80–83.

Smethills, Harold R., Jr. "The Cost of Government Regulation: How Much Is Enough?" ABA Bank Compliance, vol. 2 (Winter 1981), pp. 13–17.

Smith, James F. "The Equal Credit Opportunity Act of 1974: A Cost/Benefit Analysis," *Journal of Finance*, vol. 32 (May 1977), pp. 609–22.

Thakor, A.V., and J.C. Beltz. "An Empirical Analysis of the Costs of Regulatory Compliance." Working Paper. Indiana University, School of Business, April 1993.

Tullock, Gordon. *The Politics of Bureaucracy*. Washington: Public Affairs Press, 1965.