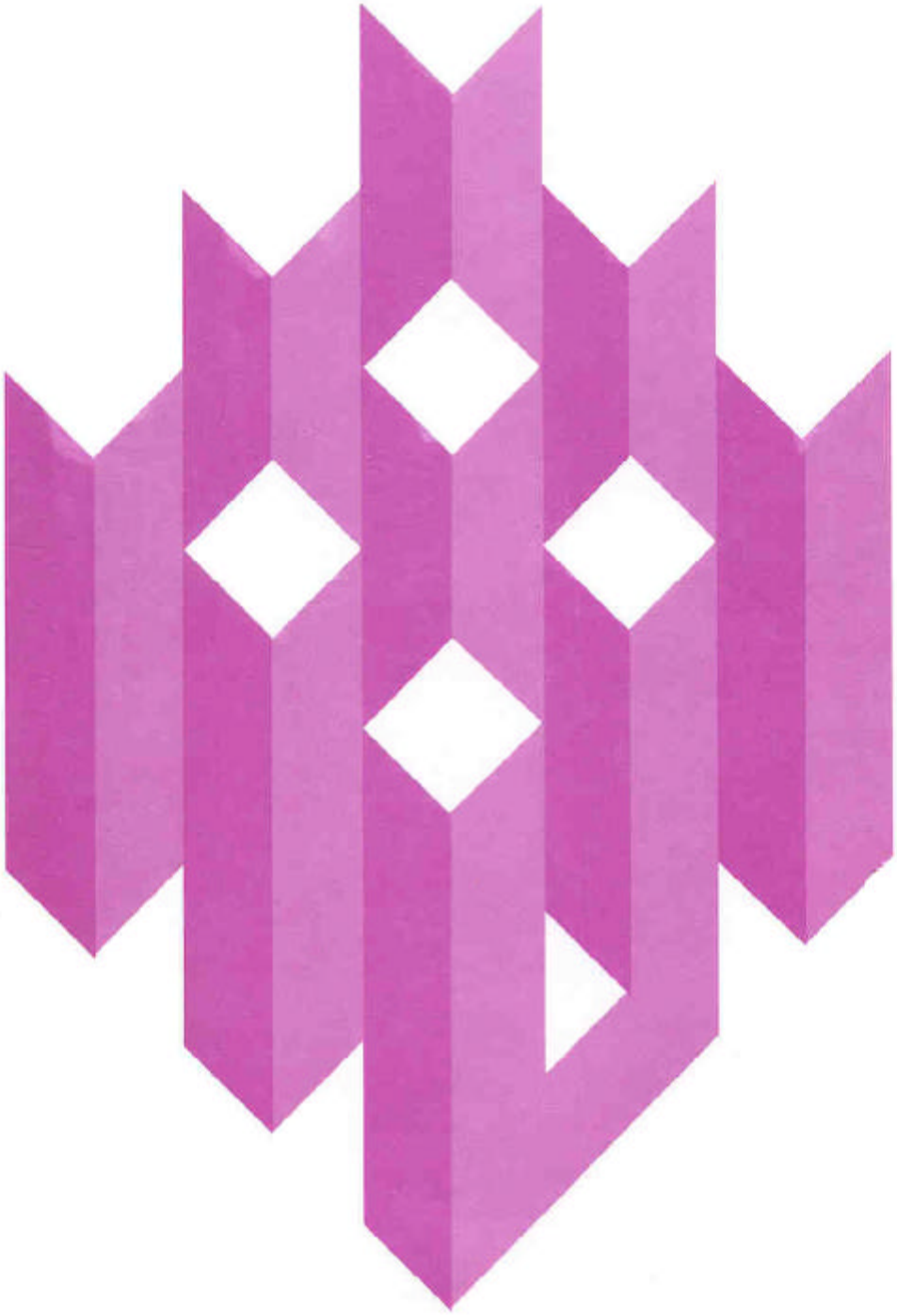
An Evaluation of Short-Time Compensation Programs

Unemployment Insurance Service
Occasional Paper 86-4

U.S. Department of Labor
Employment and Training Administration
Unemployment Insurance Service
1986



An Evaluation of Short-Time Compensation Programs

Unemployment Insurance Service
Occasional Paper 86-4

U.S. Department of Labor
William E. Brock, Secretary

Employment and Training Administration
Roger D. Semerad
Assistant Secretary for Employment and Training

Unemployment Insurance Service
1986

This report was prepared by Stuart Kerachsky, Senior Economist, Mathematica Policy Research; Walter Nicholson, Professor of Economics, Amherst College and Senior Fellow, Mathematica Policy Research; Edward Cavin, Senior Economist, Mathematica Policy Research; and Alan Hershey, Senior Policy Analyst, Mathematica Policy Research. The research was sponsored by the Office of Strategic Planning and Policy Development, Employment and Training Administration, U.S. Department of Labor under contract No. 99-3-0805-77-117-01. Because researchers are encouraged to express their own viewpoints, the opinions offered in this document do not necessarily represent the official position or policy of the Department of Labor.

The UIOP Series presents research findings and analyses dealing with unemployment insurance issues. Papers are prepared by research contractors, staff members of the unemployment insurance system, or individual researchers. Manuscripts and comments from interested individuals are welcome. All correspondence should be sent to UI Occasional Papers, Unemployment Insurance Service, Patrick Henry Building, Room 7422, 601 D Street, N.W., Washington, D.C. 20213.

Contract No. 99-3-0805-77-117-01 OMB No. 1205-0230

TECHNICAL REPORT

AN EVALUATION OF SHORT-TIME COMPENSATION PROGRAMS

December 1985

Authors: Stuart Kerachsky
Walter Nicholson
Edward Cavin
Alan Hershey

Programmer: Margaret Beardslee

Editor: Thomas Good

Prepared for:
Office of Strategic Planning and
Policy Development
Employment and Training Administration
U.S. Department of Labor
601 D Street, N.W.
Washington, D.C. 20213

Prepared by:
Mathematica Policy Research, Inc.
P.O. Box 2393
Princeton, New Jersey 08540

This report was prepared for the Employment and Training Administration, U.S. Department of Labor, under Research and Evaluation Contract No. 99-3-0805-77-117-01. Since contractors conducting research and evaluation projects under government sponsorship are encouraged to express their own judgments freely, this report does not necessarily represent the official opinion or policy of the Department of Labor. Mathematica Policy Research, Inc., is solely responsible for the contents of this report.

ACKNOWLEDGMENTS

This report is based on the experiences of three states that have pioneered the development of short-time compensation programs. Agency officials in all states were extremely supportive of the research effort, and the study could not have been undertaken without their active assistance. While the list of individuals who provided assistance is very long, three persons provided our main link with the respective states and were particularly generous with their time and expertise. They are Carrie Okita in Oregon, Stanley Gorodenski in Arizona, and Charlis McNally in California. In addition, Dean Tibbs, formerly with the California agency, provided valuable information on California's STC program, its early evaluation, and the program data that are currently available. In addition, Robert St. Louis, formerly with the Arizona agency, served as a consultant on the project, and lent his expertise to issues pertaining to the administrative structure and operations of the Arizona program.

The Department of Labor project officer for this study was Gerald Gundersen, who provided consistent support and assistance both within the Department and in contacts with the states. Within the Unemployment Insurance Service, Stephen Wandner has provided unwavering support for a careful and fair investigation of the value of STC programs. His comments and suggestions have greatly benefited our effort. Tom Joyce, currently with the Unemployment Insurance Service, was the first project officer for this study, and he provided great assistance in its formative stages. Others in the Department of Labor provided valuable assistance at various stages of the project.

The project team has received invaluable advice from our advisory panel, which includes C.F. Koziol of Motorola, Frank Schiff of the Committee for Economic Development, Robert Spiegelman of the W.E. Upjohn Institute for Employment Research, and John Zalusky of the AFL-CIO. Mr. Koziol's assistance has extended well beyond his role on the advisory panel.

Many MPR staff made important contributions to the study and this report. Gay Rowe performed expertly as both project manager and an analyst for the administrative portion of the study. Anne Ciemnecki directed the highly successful survey of employers. The actual questionnaire was designed by Andrea Vayda. Margaret Beardslee was the principal programmer for the final research, but several other individuals, including David Fox and Michael McCormick, were responsible for much of the initial programming work. Walter Corson was a constant source of information about UI programs and data, and he provided a great many valuable suggestions throughout the life of the study. Finally, this report was produced through the tireless efforts of MPR's excellent secretaries, including Monica Capizzi and Annette Protonentis, and was edited by Thomas Good.

Stuart Kerachsky
Project Director

CONTENTS

LIST OF TABLES

LIST OF TABLES (continued)

LIST OF TABLES (continued)

EXECUTIVE SUMMARY

Short-time compensation (STC) is an alternative to employee layoffs, whereby a larger group of workers simply work shorter work weeks and are compensated for their lost work time with partial Unemployment Insurance (UI) benefits. STC may offer a mechanism for neutralizing the pro-layoff bias inherent in the regular UI system by allowing UI compensation to be paid under a much broader set of conditions than those that apply to total layoffs. As it has been implemented in the United States, STC is viewed as a work-force stabilization program to be used during periods of economic downturn that are expected to have only short-term effects on the labor needs of employers.

As an idealized example of how STC can be used, an employer which must temporarily lay off 20 percent of its workforce may instead reduce all workers' time only by 20 percent (e.g., by one day per week) in lieu of any full layoffs. All affected workers would be eligible for 20 percent of their weekly UI entitlement to compensate for the 20 percent reduction in hours. This larger group of workers would work 80 percent of their traditional hours and would receive more than 80 percent of their previous take-home income, and no workers would lose their jobs.

STC programs offer promising benefits to both employees and employers. For employees, STC protects them against the financial burden of job loss and preserves their job-specific skills. For employers, STC keeps the production process running smoothly without disruption, mitigates the costs of hiring and training new employees during economic recovery,

and offers greater flexibility in terms of responding quickly to both adverse economic conditions and economic recovery.

However, costs may also be associated with STC use. For employees, the major cost would be the partial income loss for those who would not have been laid off in the absence of STC. For employers, the major costs would consist of higher fringe-benefit payments (since they are likely to maintain most or all benefits for short-time employees), and the ongoing administrative costs associated with using STC. In addition, concern has been expressed that an STC program may place a greater burden on the UI trust fund than does the regular UI program.

Despite some previous efforts to evaluate the advantages and disadvantages of STC programs, many uncertainties have remained. This report attempts to resolve some of these uncertainties by addressing the major issues surrounding STC as defined by the U.S. Congress. This executive summary follows the broad outline of the report by presenting the background of the study, its design, and the substantive results organized in the manner in which they are presented in the main report.

BACKGROUND

Although short-time compensation programs have a long history in many European countries, they were introduced in the United States only recently in 1978, when California implemented its Work Sharing Unemployment Insurance program to mitigate the public-sector employment problems that were expected to be caused by the Proposition 13 revenue declines. STC remained a much-discussed concept for several years after its implementation in California, but the catalyst for its further implementation seems to have been the onset of the 1982 recession. Arizona

implemented an STC program in January 1982, and Oregon began its program in July 1982. Programs followed in Washington (August 1983), Florida (January 1984), and Illinois and Maryland (both in July 1984). As this report was being prepared, programs were being implemented in Arkansas and Texas.

During this period, the U.S. Congress recognized the utility of STC as a program that might prevent temporary layoffs. The Tax Equity and Fiscal Responsibility Act of 1982 (P.L. 97-248) contained a section (Section 194) devoted specifically to short-time compensation. In addition to suggesting a number of ways in which the federal government could assist states that are implementing STC programs, the Act mandated that a study be undertaken in consultation with employee and employer representatives. The law states explicitly that the study address the following nine issues:

1. The impact of the program on the unemployment trust fund and a comparison with the estimated impact on the fund of layoffs that would have occurred but for the existence of the program

2. The extent to which the program has protected and preserved the jobs of workers, with special emphasis on newly hired employees, minorities, and women

3. The extent to which layoffs occur in the unit subsequent to the initiation of the program, and the impact of the program on the entitlement to unemployment compensation of the employees

4. Where feasible, the effect of varying methods of program administration

5. The effect of short-time compensation on employers' state unemployment tax rates, including both users and nonusers of short-time compensation

6. The effect of various state laws and practices on the retirement and health benefits of employees who are in short-time compensation programs

7. A comparison of the benefits and costs to employees, employers, and communities from using short-time compensation and layoffs

8. The cost of administration of the short-time compensation program

9. Such other factors as may be appropriate

The report attempts to analyze the full set of issues, although practical data and other constraints limit, in some cases severely, the conclusions that can be drawn about some of them. The results of the analysis are summarized in Chapters V through VIII of Part Three: "Policy Analysis." Program-administration issues (issues 4 and 6) are addressed in Chapter V, "The Implications of Administrative Design and Methods"; UI-system-related issues (issues 1 and 5) are addressed in Chapter VI, "The Effects on Tax Rates and the Trust Fund"; layoff prevention and other program-impact issues (issues 2 and 3) are addressed in Chapter VII, "The Effects on Employment Stability"; and monetary benefit and cost issues (issues 7 and 8) are addressed in Chapter VIII, "The Effects on the Relative Costs of Layoffs and Reduced Hours."

STUDY DESIGN

This study was based on the program experiences of Arizona, Oregon, and California--the three states that had implemented STC programs by July 1982, and, hence, whose program results provided a sufficient analytical foundation for the study. However, even in these states, STC remains a very small operational program, consistently accounting for less than 1 percent of all regular state UI payments and involving fewer than 1 percent of all employers in each state.

Because the issues outlined by Congress pertain largely to the decisions faced by individual employers, the analysis focused primarily on the behavior of employers.[1] Some issues pertained more directly to employees, and were addressed on the basis of employee data aggregated on a per-employer basis. However, because data on individual employees were generally unavailable for the study, the ability of the study to examine the issues that required such data was very limited. Additional issues pertaining to the UI system were also addressed, primarily on a per-employer basis. The STC-use study period was defined as the state fiscal year (FY) 1983 (July 1, 1982, through June 30, 1983). In general, the study sought to answer three basic questions:

1. Given the economic conditions facing employers during FY1983, what choices did they make regarding STC use versus layoffs?
2. What were the implications of those choices during FY1983?
3. What were the implications of those choices in the subsequent period?

Because the study period was encompassed primarily within a national recession and (in late 1983) the beginning of a recovery, the study results should be interpreted in terms of this type of period in a business cycle.

To provide the basis for responding to the congressional issues, a telephone survey was administered to all employers which used STC in Arizona and Oregon during the study period and to a stratified random sample of employers which used STC in California during the same period. A

---

[1] Specifically, the analysis focused on the Unemployment Insurance tax-filing unit.

telephone survey was also administered to a comparison sample of non-STC users from each state, which was selected to match the STC sample in terms of key employer characteristics (industry, employment size, and 1982 UI tax rates). The matching procedure yielded a sample of employers which exhibited similar characteristics and presumably faced the same economic conditions and pressures as did the STC sample, but which did not use STC.

In addition to information gleaned from these telephone surveys with employers, data were collected from two other primary sources:

1. UI administrative records on the UI and STC benefits paid to employees and the UI taxes paid by employers in the sample
2. In-person interviews with state UI and STC administrative personnel

The study relied on the UI records data for most of its quantitative analyses, since these data were believed to be more complete and accurate than the survey data.

Before the results of the study are summarized, four important limitations with its overall design should be stressed:

1. The study involved only three states, all of which exhibited low levels of STC use. Generalizing to a greater number of states or to situations in which STC would be used to a greater extent may be inappropriate.
2. The study compared STC users with nonusers, but was not based on a formal random design. Conclusions about the "effects" of STC use may thus be subject to greater methodological problems than had it been possible to study STC within an experimental setting.

3. The study did not collect data directly from employees. Many issues that pertain to the attitudes and overall well-being of workers could not be addressed directly.

4. The study did not measure productivity effects on firms. Hence, hypotheses about the beneficial effects of STC on worker productivity could not be tested.

In the summary of results that follows, situations in which these shortcomings posed especially severe problems for the analysis are explicitly highlighted.

EVALUATION RESULTS

Our full report consists of three major parts: (1) "Background," (2) "Quantitative Analysis," and (3) "Policy Analysis." Because many of the conclusions of the first two parts are also reflected in Part Three, "Policy Analysis," we provide only a brief summary of that final part here. Our discussion is organized around the four chapters in Part Three, and covers the general topics outlined previously in our discussion of the congressional mandate for the study.

The Implications of Administrative Design and Methods

In Chapter V, we summarize a variety of issues pertaining to the administration of STC programs in the states that have implemented them.[1] The analysis presented therein is based on our review of state STC laws and operating procedures and on personal interviews with program administrators

---

[1] A full description of our findings on STC administration is presented in "Shared Work Compensation: An Administrative Analysis of State Programs," Mathematica Policy Research, March 1985.

and employers in the states. The following are the principal findings that emerged from this examination:

- The states have implemented administrative rules that seek to limit STC use only for its intended purpose: to avoid layoffs in temporary business downturns. The key rules are limits on the duration of the plan and individual participation, surtaxes on employers with poor experience-ratings, and requirements that employers certify that they are using STC to avoid layoffs.

- State requirements for a minimum number of employees in an STC plan do little to ensure that STC use is always equivalent to at least one layoff. The minimum number of participants (2-3) and the relatively low level of reduced hours allowed (generally 10-40 percent) mean that hours reductions in small plans can be considerably less than the equivalent of one layoff.

- Surtax provisions that apply to STC employers are still viewed in Arizona, Oregon, and California as politically necessary to the initial passage and continued support of STC. However, in Arizona and California, a clear decision has been made to limit surtaxes on negative-balance employers to amounts which are believed to ensure that STC benefits are recoverable, and to avoid surtaxes which impose penalties on such employers beyond the amount of STC benefits.

- UI agency officials generally view STC as a self-policing program in terms of protecting the interests of employees. Requirements to obtain the consent of unions to implement the plans and information provided directly to employees about the program are viewed as guarantees that abuses by employers can be prevented or detected and reported. Agency officials reported that almost all employers maintained regular fringe benefits, even in the absence of a legislative requirement to do so.

- The states have developed two distinct methods for processing ongoing STC claims that present an important choice for future programs. California and Oregon require individual claims cards, with information to be entered by both the claimant and the employer. Arizona has adopted a "streamlined" approach in which a single list of employees is provided to the employer, who collects employee-hours data and their signatures,

certifies the accuracy of the entire listing, and submits it as a single claims transaction for the entire plan. Such an approach may have advantages in terms of administrative efficiency, particularly if STC use were to grow to larger proportions in a future recession (see the summary of Chapter VIII for a discussion of administrative costs).

The Effects on Tax Rates and Trust Funds

Concern that STC programs might further strain the UI trust funds of states has led all states (except Washington) to impose special taxes on some employers which use the program. In Chapter VI, we use the UI records data that were collected on employers to assess the extent to which STC does pose such problems. Although the absence of long-term data on the tax liabilities of employers which use STC somewhat limited our quantitative analysis of these issues, we were able to reach several important qualitative conclusions:

- Total UI benefit charges (including both regular UI benefits and, where applicable, STC benefits) were significantly higher during the program period for employers which used STC than for otherwise similar employers in our comparison group. Two primary factors accounted for the difference. First, higher-wage employees who collected STC benefits tended to collect higher benefits per hour of compensated unemployment than did laid-off employees in comparison firms who collected UI. Second, employees of STC participants tended to have more hours of compensated unemployment than did employees of similar comparison employers (see our summary of Chapter VII for a discussion of this result).

- The experience-rating tax formulas of study states caused many employers in both the participant and comparison groups to pay higher UI tax rates in the subsequent tax year. However, increases for STC employers were relatively more prevalent, both because STC employers experienced higher total benefit charges in FY1983 and because some of those employers were subject to STC surtaxes.

- Employers which participated in the STC program posed some additional short-term pressure on UI trust funds relative to employers in the comparison group. In large part, these additional pressures arose from the higher benefit charges incurred by STC employers in FY1983, which were not immediately compensated for by higher tax contributions. Even though STC employers did pay higher taxes in subsequent tax years, which thus reduced this impact, our results suggested that the additional benefit charges were unlikely to be repaid fully within the following tax year.

- The long-term impact of STC participation on the UI trust fund is likely to be far less severe than its short-term impact. The existence of STC surcharges and the fact that STC benefit receipt does not involve issues pertaining to employee separation act to ensure that STC benefits are more fully experience-rated than are regular UI benefits. Therefore, benefit payments under the program should ultimately be repaid (assuming that the experience-rating formulas of states are adequate), and such payments should not lead to secular increases in UI tax rates for all employers.

The Effects on Employment Stability

In Chapter VII we examine the ways in which STC participation may have affected employers' work-force adjustments to the 1982-1983 recession. Our examination was based primarily on UI agency records data, although we used information from the employer survey to provide further insight into the observed outcomes. The following are the major findings of our analyses:

- STC employers used both layoffs and reduced hours substantially in the FY1983 program period. Hence, for those firms, STC did not totally replace layoffs (and subsequent UI collection) as a method for making adjustments in the workforce. However, users of STC did significantly lower their levels of layoffs and regular UI collection. Overall, the employees of STC employers spent about 12 percent less time collecting UI benefits during FY1983 than did the employees of similar comparison employers. However, this result varied significantly among the states; it was largest in Oregon and smallest in California.

- After accounting for time spent on reduced hours, the amount of total compensated unemployment was greater for STC employers than for similar comparison employers. The estimated extent of this additional compensated unemployment varied considerably according to the precise methodology used to measure it. Overall, these estimates ranged from 5 percent to 13 percent additional time spent on compensated unemployment, depending on how the concepts were defined. Again, the estimates varied widely by state. An important component of the additional time spent on compensated unemployment was represented by the use of STC by employers which might not have made any layoffs in the absence of the program.[1]

- Layoffs subsequent to STC use occurred only infrequently. Hence, employers used STC primarily to make temporary work-force adjustments rather than to postpone permanent work-force reductions. In general, employees' participation in STC did not seriously affect their entitlements to future UI benefits.

- Although large state-by-state differences in outcomes were observed, given the small number of states in the evaluation, it was not possible to attribute these results to any particular influences of the economic environments of the states or of UI and STC administrative practices.

- The use of STC by employers did not appear to offer significant advantages in terms of affirmative action. The composition of actual layoffs by sex, race, and age was quite similar between STC employees and our comparison-group employees. The composition of layoffs also reflected the general composition of the workforces of employers. We did find that female employees were more likely to participate in STC in a greater proportion than their representation in the workforce, and younger workers were less likely to participate in STC.

---

[1] The study did not measure reduced hours that were not compensated by STC. Hence, the extent to which such reductions occurred among comparison employers is unknown.

The Effects on the Relative Costs of Layoffs and Reduced Hours

In Chapter VIII, we summarize our findings on the effects of STC on the relative costs of layoffs and reduced hours from the perspective of both employers and the UI system. Unfortunately, because the scope of the present study did not include any direct data collection from employees, we were unable to provide a relative assessment of layoffs and reduced hours under STC from the workers' perspective. Even from the perspectives of employers and the UI system, such important issues as the possible effects of STC on productivity remained unanswered by our study. Nevertheless, we did reach a number of important conclusions about the relative costs of layoffs and reduced hours:

- Using STC rather than layoffs can save significant costs in terms of recruiting and training new hires. However, on a per-layoff basis, the expected value of these savings is mitigated by the fact that most employees on temporary layoff do return to work for their previous employers.

- The vast majority of employers opted to retain full fringe benefits for employees on STC. Therefore, they incurred higher labor costs relative to a situation in which those employees would have been laid off. In most hypothetical cases, these additional fringe-benefit costs would exceed the expected savings in recruitment and training costs made possible by STC. Only if employers had very restrictive fringe-benefit policies or had work reductions of a very short duration would this not be the case.

- Although the factors that could be measured suggest that STC use imposed net costs on many employers, the fact that employers chose to participate and were generally satisfied with their experiences suggests that they must have derived compensating benefits--for example, improved employee productivity, better labor relations, or other benefits stemming from the enhanced

well-being of employees.[1] However, we were unable to develop quantitative estimates of the magnitude of such effects.

- Under current cost relationships, administering STC claims is more expensive than administering UI claims on an equivalent work-reduction basis. The per-unit costs of serving STC claims are not sufficiently lower than those of serving regular UI that they compensate for the much greater number of claims inherent under STC. However, that situation may change in the future as states adopt more efficient STC claims-processing procedures.

---

[1] Because the study did not measure productivity changes, it could not evaluate the possibility that STC might "save" on labor costs by reducing the hours of higher-wage workers. Without information on productivity, the effect of reduced hours on unit labor costs cannot be calculated.

PART ONE

BACKGROUND

I. INTRODUCTION

Short-time compensation (STC)[1] is an alternative to laying off selected workers, whereby a larger group of workers simply work shorter work weeks and are compensated for their lost work time with partial Unemployment Insurance (UI) benefits. STC may therefore neutralize the pro-layoff bias inherent in the regular UI system by allowing UI compensation to be paid under a much broader set of conditions than those that apply to total layoffs.[2] As it has been implemented in the United States, STC is viewed as a work-force stabilization program which is used during periods of economic downturn that are expected to have only short-term effects on employers' labor needs.

As an idealized example of how STC can be used, an employer which must temporarily lay off 20 percent of its workforce may instead reduce all workers' time only by 20 percent (e.g., one day per week) in lieu of any layoffs. Subject to variability in UI benefit eligibility, the amount of benefits that would have been paid to the laid-off workers would now be divided among those who are working reduced hours: all affected workers

---

[1] The terminologies used to refer to this concept vary among individual states. For instance, the concept is alternatively referred to as "shared-work compensation," "shared-work unemployment insurance," and "worksharing." This report follows the lead of the U.S. Congress in referring to the concept as "short-time compensation."

[2] In fact, all states do have some type of partial benefit schedule, but these schedules are usually characterized by a dollar-for-dollar reduction in benefits for wages in excess of a modest weekly earnings disregard. For a typical worker in manufacturing, these schedules usually mean that no benefits are paid if an employee works two or more days per week. Thus, meaningful partial employment during business downturns is not encouraged under the regular UI system.

would be eligible for 20 percent of their weekly UI entitlement to compensate for the 20 percent reduction in hours. Therefore, the larger group of workers would work 80 percent of their traditional hours and would receive more than 80 percent of their take-home income, and no workers would lose their jobs.

Again, it is important to stress that this example is an idealized situation that assumes a perfect correspondence between layoff hours averted and work hours lost under STC. As our discussion in this report unfolds, we will evaluate this assumption carefully.

Proponents of STC have hypothesized significant financial and other benefits associated with STC. These potential benefits include the following:

- Employers may be less likely to lose workers during economic downturns, because no one is actually laid off, and all remain employed by the firm; this scenario would avoid the disruptions and costs of hiring and training new workers if those on temporary layoffs found new employment.
- The managerial and productivity costs of the general disruption caused by layoffs (e.g., a reorganization of the production process) would be minimized, and long-term productivity gains might be realized.
- Affected workers would lose only part of their weekly earnings, and their losses would be significantly reimbursed by partial UI payments; thus, economic disruptions to individual households would be minimized.
- Spreading the effects of the downturn over a larger group of workers would avoid placing a disproportionate share of the burden on recently hired workers and may promote broader goals of equal employment opportunity.

- The fact that workers may not feel the economic necessity to seek new employment during a downturn would allow them to continue to develop skills in their chosen careers and to avoid relying on social service programs.

- Employers would have considerably greater flexibility in responding quickly to both adverse economic conditions and economic recovery.

It is also generally recognized that some costs may be associated with STC, and these would offset some part of the benefits. These potential costs include the following:

- Total fringe-benefit costs may be higher under STC, because employers are likely to maintain most or all of the fringe benefits for short-time employees, which would not have been the case with laid-off workers.

- Spreading the effects of the downturn over a larger group of workers would reduce the income of many workers who would otherwise have been unaffected financially.

- Firms may incur some internal administrative costs in applying for and participating in a new program.

- Because of the increased number of individual applicants, some of whom may be high-wage employees, UI benefits-administration costs may rise.

At the time this study began, little direct evidence was available on the magnitude of the effects associated with these and other issues. The two major studies that did attempt to address these issues (State of California, 1982, and Employment and Immigration Canada, 1984) did make important contributions, particularly in establishing the significance of certain factors. However, despite their broad coverage of the issues surrounding STC, their ability to address key issues was ultimately

constrained by data limitations. This study takes a different approach: the resources that were available for research were directed by the U.S. Congress (P.L. 97-248) to assess/evaluate a specific set of issues that are central to the continued growth and acceptance of STC. (The specific issues raised by Congress are discussed later in Section I.A.) The study focuses on the programs that were instituted in Arizona, Oregon, and California, the three states whose program experience can provide a sufficient analytical foundation at this time. As appropriate, particularly when we discuss administrative practices, we will use additional information from the states that have implemented STC programs more recently.

This chapter is the first of two that provide the background for the study. The first section of this chapter sets the focus for the study, based on the congressional concerns. Subsequent sections describe the history of STC, the state contexts within which STC programs currently operate, and an overview of STC programs. Chapter II concludes the introductory part of the report by providing a detailed explanation of the study design and its implementation.

The second part of this report presents the results of the quantitative analysis that provides much of the information required to address the congressional issues. Chapter III considers employers' decisions to participate in STC, while Chapter IV compares employment patterns in firms that use STC with patterns in similar firms that do not use STC.

The third part of this report is the policy analysis that responds to the needs of Congress. The individual chapters do not correspond to the

congressional issues on a one-to-one basis, but instead address sets of issues in a logical manner. Chapter V considers issues pertaining to STC administration; Chapter VI evaluates the effects of STC participation on the UI trust fund; Chapter VII evaluates the effects of STC participation on various dimensions of employment stability, including employment patterns during the period of STC use, employment patterns in the period after such use, and affirmative-action outcomes; and Chapter VIII presents evidence on the relative costs of layoffs and reduced hours.

A. FOCUS OF THE REPORT

The Tax Equity and Fiscal Responsibility Act of 1982 (P.L. 97-248) contained a section (Section 194) devoted specifically to short-time compensation. For the first time, the U.S. Congress recognized the emergence of state programs that have attempted to prevent temporary layoffs by providing partial UI benefits for temporary work-week reductions. In addition to suggesting a number of ways in which the federal government could assist states that are implementing STC programs, the Act mandated that a study be undertaken in consultation with employee and employer representatives. The law states explicitly that the study address the following nine issues:

1. The impact of the program on the unemployment trust fund and a comparison with the estimated impact on the fund of layoffs that would have occurred but for the existence of the program

2. The extent to which the program has protected and preserved the jobs of workers, with special emphasis on newly hired employees, minorities, and women

3. The extent to which layoffs occur in the unit subsequent to the initiation of the program, and the impact of the program on the entitlement to unemployment compensation of the employees

4. Where feasible, the effect of varying methods of program administration

5. The effect of short-time compensation on employers' state unemployment tax rates, including both users and nonusers of short-time compensation

6. The effect of various state laws and practices on the retirement and health benefits of employees who are in short-time compensation programs

7. A comparison of benefits and costs to employees, employers, and communities from using short-time compensation and layoffs

8. The cost of administration of the short-time compensation program

9. Such other factors as may be appropriate

Given the resources available for this study, it was important to set priorities for what would be evaluated. To have done so otherwise would have meant that many issues could have been evaluated superficially, but none adequately. A decision was made to conduct the study on the basis of what could be evaluated from the perspectives of state governments and employers. Such an approach maximizes what can be learned about the issues raised by Congress within the available resources.

To understand why this approach was chosen, one need only consider the sequence of stages involved in actual STC use. The first stage is program development: a program is initially specified by state laws, and the appropriate design features and administrative practices are then developed by responsible agencies. The next stage is program participation: once a program has been developed, individual employers

decide whether or not to participate. The third stage is program use: for those employers that have chosen to participate, they face an on-going decision process that involves the extent, timing, and nature of use. The fourth stage involves the consequences of the programs: employers' program use has a range of consequences for themselves, their employees, and government.

Each of these stages covers a broad set of policy concerns, and each is important for addressing the specific issues raised by Congress. By collecting data from government agencies and employers, it is possible to work fairly completely through the first three stages--program development, participation, and use. It is also possible to address the fourth stage (program consequences) sufficiently to respond to congressional issues. However, a full investigation of program consequences would require a much larger and time-consuming study.

As will become clear as this report unfolds, the congressional issues provided a focus and goal for the study, but the information required to address the issues was developed from answers to a series of more basic questions:

- Which employers participate in STC?
- What is the extent and pattern of worktime lost under STC relative to the regular UI program?
- What is the amount of worktime lost by type of employee?
- What is the total amount of benefits charged under STC and regular UI?
- How do employer contributions to the UI trust fund for benefits charged under STC compare with those for benefits charged under regular UI?

- What are the administrative and fringe-benefit costs (and offsetting savings) of STC to employers?
- What are the administrative costs of STC relative to regular UI?
- What are the administrative burdens of STC on state agencies? What are the implications of different regulations and methods of administration?

We attempt to answer many of these questions in Part II of this report. Additional information can be found in a separate background study for this report, "An Administrative Analysis of State Programs" (Hershey, 1985). This information is then used to address the congressional issues in Part III of the report. However, before we turn to those issues, it is useful to review some historical evidence on STC programs and the state context for this study.

B. HISTORY OF SHORT-TIME COMPENSATION

Although the concept of short-time compensation has only recently been embraced by states as one method for combating unemployment, it really has a much longer history. This section briefly reviews that history, and describes the introduction of the concept in the United States.

1. Development of the Concept--Experience Outside of the United States

Worksharing programs that provide some compensation to workers on shortened work schedules were implemented in several Western European countries shortly after World War II, and much earlier in some countries.[1] Although the programs have continued to develop since their

[1] Information on the European experience is drawn from a variety of sources, including Reubens (1970), Henle (1976), Levitan and Belous (1977), Fisher (1978), Henle et al. (1979), and Meisel (1984).

inception, their current versions were shaped by the economic problems of the mid-1970s. All programs share the common feature that their respective governments reimburse some percentage of the foregone earnings of workers on shortened work schedules. However, the programs vary by such features as benefit levels, the maximum duration of benefits, the length of the eligibility period, the presence and length of a waiting period, the financing method, and administration.[1]

Federal Republic of Germany. The program generally cited as having generated the most interest in this country is the Federal Republic of Germany's STC program, called "Kurzbarbeitergeld-Kug." This program had its origins in the late 1920s, but has been modified frequently, particularly since World War II. Part of its appeal as a model for the United States is its compatibility with the regular UI system: it is administered within the broader UI framework; worker eligibility follows regular UI eligibility; and firm certification is based on the necessity of preventing layoffs rather than on long-term economic decline.

Unfortunately, for what we can learn from the German experience, a number of important differences exist between that program and what has been implemented or considered to date in this country. For example, implementing a German-type plan would be very much a shared responsibility of the employer, employees, and the government. This is true of both financing and decision-making. In addition, the German program is much more generous than the plans that have been discussed in this country: plan duration can be very long--up to two years in periods of economic

---

[1] For a summary description of each nation's program, see Henle et al. (1979).

distress, and even longer in special cases (Meisel, 1984)--and benefits are quite generous, even for relatively senior workers, because of the high benefit ceiling--"2.4 times higher than the highest ceiling in the United States" (Henle et al., 1979).

Despite our inability to generalize from the German experience, it is interesting to note that the program has been used extensively since the early 1970s.[1] However, very little research has been reported on such issues as which firms used the program and why, or how many additional workers would have been laid off had the program not been used. Claims have been made about the number of jobs that were saved by the program, but the calculations appear to be based on the untested assumption that a percentage work-time reduction through STC would translate directly into the same percentage work-force reduction through layoffs.

Canada. The cultural and programmatic differences that limit the generalizability of the German experience are just as evident from the experience of other European countries. However, prior to its introduction in the United States, short-time compensation was implemented in Canada in 1977 as an experimental program. Generally modeled after the Federal Republic of Germany's program, the Canadian program differed from its European predecessors in (1) its emphasis on preserving the economic viability of firms and (2) its lack of enthusiastic support by organized labor.[2]

---

[1] As an example of the program's current level of use, the number of workers who benefited from the program in the first quarter of 1983 totaled 45 percent of the number unemployed (Meisel, 1984).

[2] A discussion of the background of the Canadian program is presented by Sadlier-Brown (1978).

Actual implementation took the form of twenty-four pilot programs--independent agreements between employers and employees under the flexible regulations of the Canada Employment and Immigration Commission (CEIC).[1] Each pilot program was defined after government, management, and labor entered into negotiations. Consequently, notable variations existed among programs in terms of waivers of benefit ceilings, extensions of the limit on the duration of benefits, and the use of the program in declining industries. The key design problem, then, was not only that the programs were too different to evaluate together, but also that the individual programs were too small to generate reliable evaluation results separately. The evaluation results that are available are based on individual analyses of nineteen of the twenty-four programs, each conducted by independent consultants. However, while the specific research results may not be highly reliable, some very general patterns of results do emerge:

- Employees who participated in the program had modest income losses relative to their hours losses; they generally reported favorable impressions about the program.
- Local union representatives reported favorable impressions about the program, although regional union officials reported some reservations.
- Employers reported a range of positive to negative financial experiences with STC relative to regular UI, and they also reported a range of reasons for these experiences.

---

[1] This discussion draws on Canada Employment and Immigration Commission (1979) and Reid (1982).

- Program costs were calculated to be much higher than regular UI costs.[1]

Largely because of the high program costs, this initial Canadian program was allowed to expire in 1979. However, the worsening economic conditions that began in late 1981 led Canada to institute a full-scale "Work Sharing" program by early 1982 to combat rising unemployment.

An employer qualifies for participation in the current program under the following conditions: it has been in business for at least two years, its work reductions are not seasonal, its expected use of the program will be at least six weeks, and its work reductions will be at least 20 but not more than 60 percent. In addition, the work reduction cannot exceed 26 weeks, unless a special 12-week extension is approved. The Work Sharing program entails no special taxation considerations, most likely because employers are not experience-rated in Canada.

The eligibility of employees to participate follows the usual criteria for participation in the regular UI program. However, the program offers two additional benefits for employees: first, the amount of benefits received under the program do not count against the regular UI benefit entitlement; second, the usual waiting period is not applied to Work Sharing claims.

The Canadian government conducted an evaluation of the program, based largely on a group of early program applicants (Employment and

---

[1] Reid (1982) attributes the greatly increased program costs to special provisions that were designed to induce employee participation, including (1) eliminating the normal waiting period, (2) eliminating the benefit ceiling at two firms, and (3) not counting STC benefits against regular UI benefit entitlements when subsequent layoffs occurred.

Immigration Canada, 1984). The evaluation is broad in scope, although it is limited by the information that can be gleaned only from participating employers, participating employees, and government records. Key findings contained in the evaluation report include the following:

- The manufacturing sector was disproportionately represented among program applicants, although the proportion of manufacturing employers among all applicants dropped dramatically between the start of the program and 1983 (from 72 percent at the start to 39 percent in 1983). The sectors that exhibited the largest increases in their representation over that period were services (from 4 to 17 percent) and trade (from 17 to 29 percent).

- There is no evidence that employers with "chronic layoff histories . . . made abusive use of the Work Sharing program."

- A significant proportion of employers (25 percent in 1982) reported combining the use of shorter work weeks with layoffs.

- Forty-three percent of the employers believed that Work Sharing was more expensive for them than were layoffs: administrative, production, and fringe-benefit costs tended to be rated higher (although these costs were partially offset by perceived savings in wage, layoff, and other costs). However, the government's own cost estimates tended to show no clear difference in the costs to employers.

- Few employees (7 percent) reported any loss in fringe benefits due to Work Sharing participation. From the employer perspective, 92 percent reported that they fully maintained benefits, with the possible exception of pension benefits. Eighty-eight percent fully maintained pension benefits, while 11 percent lowered the level of pension benefits to the work level.

- Of the employees who were designated by employers for layoffs in lieu of Work Sharing, 43 percent were laid off within twelve weeks after the end of the respective Work Sharing plans. However, this fraction may be too large to be attributed to the "failure" of the program. It is possible that the

layoffs of only between 12 and 26 percent of those who were originally designated could be attributed to the program's failure to avert layoffs. However, these figures do not include layoffs that occurred during the period of Work Sharing participation.

- Work Sharing was more expensive to the government than was the regular UI program, particularly during the recessions.

Thus, the overall impression generated by the Canadian evaluation is that the Work Sharing program is highly regarded by participating employers and employees, and that it is likely to be used by employers as a countercyclical tool. However, it is estimated to be somewhat more expensive than the regular UI program from the government's perspective (although there may well be social benefits that cannot be valued monetarily). Further, because the evaluation provided little information on the layoffs that were made during the life of the plans, the ability of the program to avert layoffs was not well established.

In summary, the experience of STC programs outside of the United States demonstrates the administrative feasibility of the concept, but provides only limited evidence on the implications of program use, particularly for the United States. We now turn to the STC concepts implemented in this country.

2. STC Implementation in the United States

Short-time compensation programs were introduced in this country in 1978, when California implemented its Work Sharing Unemployment Insurance program as an experimental effort to mitigate the public-sector employment problems that were expected to be caused by Proposition 13 revenue declines. This program, which is integrated into the regular UI program, consisted of the following features at its inception:

- An employer could propose a plan that placed its entire workforce or simply a specified unit on reduced hours; however, the actual use of STC was to include at least 10 percent of the specified unit.

- Each employee participating in the program was to be eligible for regular UI benefits.

- Each employee was entitled to 20 weeks of partial benefits in a 52-week period, after which he/she was still entitled to regular UI benefits, less the amount used under the program.

- Work-search requirements for program participants were generally suspended.

- Where a collective bargaining agreement was in effect, the union was to agree to program implementation.

- For taxation purposes, STC benefit charges counted in the same way as did regular UI benefit charges, except that STC employers who had a negative reserve balance at the end of a fiscal year incurred a UI surtax for the succeeding calendar year.

Although many of these program features have since changed from its inception (which we will discuss later in this report), this program has largely been the prototype for other STC programs in this country.

STC remained a much-discussed concept for several years after its implementation in California, but the catalyst for its expansion seems to have been the onset of the 1982 recession. Arizona implemented an STC program in January 1982, and Oregon began its program in July 1982. Programs followed in Washington (August 1983), Florida (January 1984), and Illinois and Maryland (both in July 1984). As this report was being prepared, programs were being implemented in Arkansas and Texas.

Because the California program was the first to be implemented in the United States, the California Employment Development Department (EDD)

conducted an evaluation of participation in and the financial impacts of the program during the initial years of its operation (State of California, 1982).[1] Although the study was conducted under some severe data constraints, it did address most of the major issues in some fashion. The study was based on interview and records data from employers which used STC, and on interview and records data from employees covered under the STC plans. The following are some of the key findings from the EDD study:

- Relative to employers which used regular UI, employers which used STC tended to be larger (in terms of employment) and more likely to be engaged in manufacturing. They also tended to have higher reserve ratios.

- Relative to regular UI claimants, employees on STC were more often in blue-collar occupations, older, and of Hispanic or Asian background. However, little evidence was available to suggest that STC promoted affirmative action goals.

- Employers benefited financially from using STC in lieu of layoffs, through savings in direct labor costs and in hiring and training costs (which, however, were offset partially by higher fringe-benefit costs).

- Employees experienced the expected pattern of gains and losses under STC; employees who would not have been laid off experienced modest income losses, and those who would have been laid off experienced substantial income gains.

- The net impact of STC on the UI system was negative, due primarily to larger benefit payments and higher administrative costs. From the broader government perspective, STC use also reduced federal and state income tax collection.

---

[1] Arizona has compiled a much briefer document on its early program implementation (State of Arizona, 1983).

As part of this current study, we conducted a thorough assessment of the EDD evaluation, which is the subject of a separate report (Kerachsky and Nicholson, 1984). We found one underlying problem with the EDD conclusions: due to funding limitations, the evaluation was based almost entirely on a sample of STC users. Since no data were available on a sample of employers which faced the same economic conditions but did not use STC, the evaluation results are sensitive to the quality and completeness of the large number of assumptions that were necessary to enable EDD researchers to simulate what would have happened in the absence of STC use.

Most importantly, we are concerned that the EDD report may have overstated both the financial advantages of STC for employers and the financial disadvantages of the program to the UI system. Although we also have some concerns about the magnitudes of the financial calculations for employees, these results seem less sensitive to the simulation assumptions.

With respect to employers, we have the following concerns: (1) how differences in direct labor costs between STC and regular layoffs were handled (the study made no allowance for the higher productivity of more senior and thus more expensive employees who lost work time under STC); (2) the extent to which the hiring and training costs associated with recovering from temporary layoffs may have been overstated (the most important considerations are the likely overestimates of actual hiring and training costs, and the assumption that an exact correspondence exists between work time lost under STC and work time lost under layoffs); and (3) the failure to include either the administrative costs of STC to employers or the potential impact of STC use on the future UI tax rates of

employers. With respect to the UI system, our concerns are as follows: (1) the extent to which the administrative costs may have been overestimated (particularly due to the newness of the STC program when the costs were measured) and (2) the failure to account for the effect of STC use on future UI tax rates and tax collections.

In summary, the EDD report on the early program experience in California does not provide the information necessary to address the congressional concerns. However, from both its methodological strengths and its weaknesses, it does serve as a guide for this study.

C. STATE CONTEXT FOR THE EVALUATION

As we mentioned at the start of this chapter, this study focuses on the program experiences of Arizona, Oregon, and California--the three states that had implemented STC programs by July 1982, and, hence, whose program experience provides a sufficient analytical foundation for this study. Since three states can hardly be taken as representative of all the states in this country, this section provides some context for the evaluation by describing the characteristics of both the general employment patterns and the regular UI program of each state.

Table I.1 shows a sample of state characteristics as of June 1982. That month was chosen because it is just prior to state fiscal year 1983, which is the focal point for our analysis. The cross-state pattern of characteristics is qualitatively similar for other months.

While the states were broadly similar, some noteworthy differences did exist. In terms of employment, a smaller proportion of the labor force in Arizona was engaged in manufacturing than was true in the other two states, and the average weekly wage for production workers in manufacturing

TABLE I.1

CHARACTERISTICS OF THE EVALUATION STATES

Characteristics (June 1982)	Arizona	Oregon	California
General Employment Characteristics			
Average Weekly Wage of Production Workers	$344	$396	$363
Average Weekly Hours of Production Workers	39.2	39.0	39.2
Unemployment Rate (Percent)	10.4	11.2	9.4
Percent Employed in Manufacturing	15.1	19.0	19.5
Regular UI Program Characteristics			
Taxes			
Method of experience-rating	Reserve Ratio	Benefit Ratio	Reserve Ratio
Tax rate range (percent)	.1 - 2.9	2.0 - 3.8	.9 - 4.2
Percent of employers at maximum tax rate	10.9	7.5	7.6
Benefits			
Maximum weekly benefit amount (WBA)	$95	$158	$136
Method of computation	High Quarter Wages	Annual Wage Formula	High Quarter Wages
Duration (weeks)	12 - 26	8 - 26	12 - 26
Partial benefit earnings disregard	$15	1/3 WBA	$25 or 1/4 Wages

in Arizona was the lowest of the three states. In terms of unemployment rates, California had the lowest and was just about at the national average. As was generally true throughout that recessionary period, the unemployment rate in Oregon was the highest of the three states and was consistently above the national average.

More dissimilarities are evident in the UI program characteristics of the states. Oregon used a benefit-ratio method of experience-rating, while Arizona and California used the reserve-ratio method. With its shorter averaging period, the benefit-ratio calculation in Oregon was likely to make its taxation more responsive to employers' actions. The tax rate schedule in Arizona was distinctly lower than the schedules in the other states, which may be the cause of a higher proportion of employers which paid the maximum rate. All three states applied the tax rate to the Federal Unemployment Tax Act (FUTA) minimum taxable wage base, although Oregon subsequently switched and set the taxable wage base to 80 percent of average annual wages. California had the most generous benefits in June 1982, as measured by the maximum weekly benefit amount.

An important pattern that emerges from Table I.1 is that, while the states show some dissimilarities, they are by no means an atypical set of states. Thus, conclusions drawn from a study of STC programs in those states should be broadly generalizable to other states.

D. OVERVIEW OF THE STC PROGRAMS

State STC programs, policies, and practices were the subject of a special report prepared as part of this study (Hershey, 1985). While that report considers those issues in greater detail and while Chapter V of this report discusses the particular issues that are of interest to Congress, it

is useful to provide an overview of state STC programs here. Table I.2 is included to summarize more fully the characteristics of the state programs of the principal three study states, but a comprehensive review of STC programs in these and other states is left to Hershey (1985). We first discuss the general characteristics of state STC programs; we then turn to specific issues pertaining to STC use in the states.

1. General Characteristics of the STC Programs

Despite differences among the respective state programs, their programs exhibit several important elements of consistency. All state programs are defined in terms of employer plan requirements, eligibility conditions for individuals, procedures for modifying plans, methods for determining benefit amounts, and provisions for financing STC benefits.

All states require employers to submit an STC plan, and they use that plan as the primary basis for ensuring adherence to the program's purposes. Moreover, they require that a plan application be submitted at the initiative of the employer. Although the states differ in how they define an acceptable plan, their requirements cover common topics. Plans are generally limited to a certain duration, either six or twelve months. All states also require a certain minimum level of employee participation (stated as a set number of employees or a percentage of the defined "affected unit") and require that the employer provide information on the extent of such participation in its application. States commonly limit the time period in which individuals may draw benefits, most often to 26 weeks in a benefit year. Employers' plans usually must specify the percentage by which the work hours of employees will be reduced, and that reduction must fall within a range specified by state law.

TABLE I.2

CHARACTERISTICS OF STATE STC PROGRAMS

Characteristics of Program	Arizona	California		Oregon
	Shared Work Unemployment Compensation Program	Work Sharing Unemployment Insurance Program (Senate Bill 130, 1/81 Legislation)	Work Sharing Unemployment Insurance Program (Senate Bill 57, 7/83 Legislation)	Workshare
PLAN				
Range of Reduction (percent)	10-40	10+	10+	20-40
Required # of Participating Employees	2+	2+/10% of employees in STC unit must participate in the plan in any affected week.	2+/10% of employees in STC unit must participate in each week or in at least 1 week of of a 2-consecutive-week period.	3+
Duration of Plan	Up to 52 weeks	No time limit	6 months, with provisions for subsequent approval. Can be terminated if not carried out according to terms & intent.	Up to 52 weeks
Subsequent Plan Approval	4/81 Legislation: No provision for extension. When plan expires, a new one must be submitted. 11/83 Legislation: Extension of plan with written request of employer for one year from date of request.	None	If average seasonally adjusted civilian unemployment rate in California equals or exceeds 7.5% during the first 3 of the 4 months preceding the beginning of the quarter in which the plan expires, a new plan can be approved immediately. If not, no new plan can be approved until 26 weeks after previous plan.	No subsequent plan approved until 52 weeks have elapsed following the week for which final payment of benefits is made under prior plan.
Duration for Employees (Weeks of Payment)	1981 Legislation: 26-week limit 1983 Legislation: 26-week limit. This limit does not apply to a week if in the period that consists of that week and in the immediately preceding 12 weeks the insured unemployment rate (not seasonally adjusted) is 4% or more.	Up to 20 weeks during a period of 52 consecutive weeks, beginning with the first week that benefits are paid.	No limit	26-week limit
Number of Plans at One Time	1 or more	1 or more	1 or more	No more than 1 plan at a time.
Administration	Centralized (Special Programs)	Centralized (Workshare Unit)	Centralized (Workshare Unit)	Centralized (Special Programs)

TABLE I.2 (continued)

Characteristics of Program	Arizona: Shared Work Unemployment Compensation Program	California: Work Sharing Unemployment Insurance Program (Senate Bill 130, 1/81 Legislation)	California: Work Sharing Unemployment Insurance Program (Senate Bill 57, 7/83 Legislation)	Oregon: Workshare
Change/Modify Existing Plan				
To Delete or Add Individuals or Subgroups	1981 Legislation: To add employee, employer must submit a new plan. 1983 Legislation: Employee who joins affected group is automatically covered under plan upon written notice to Department and certification of employer. 1983 Legislation: Employer can add employee to plan or transfer employee from one approved plan to another with written request.	Amended plan by submitting names of employees to be added or deleted. Employer can rotate employees so that different employees have reduced hours of work, and can rotate employees from department to department, as long as the 10% reduction criterion is met.	Employer can do so without notifying department of changes.	Plan modification required.
To Change Percent of Reduction for Affected Employees	This information is not required to be submitted on the plan and thus can be changed without notifying the Department.	Employer can so do without notifying Department.	Employer can do so without notifying Department.	Plan modification required.
INDIVIDUAL ELIGIBILITY				
Basic Qualification	Must qualify for Arizona claim. If previously established a claim & was disqualified, must be able to requalify. If disqualified with definite end date, not eligible until that date has passed.	Must qualify for regular UI. Wages in base quarter are used to compute UI claim.	Must qualify for regular UI. Wages in base quarter are used to compute UI claims.	Able to qualify for Oregon UI claims or to reopen existin claim.
Required Job Tenure	Must have earned $1,000 or more from STC employer in 6 months before plan is submitted.	Must have worked one full pay period and be considered a permanent employee.	Must have worked one full pay period and be considered a permanent employee.	1982 Legislation: Must have worked 6 months full-time or one year part-time with STC employer before plan submission. 1983 Amendment: same required tenure, but it may be established after plan submission.

TABLE I.2 (continued)

Characteristics of Program	Arizona	California		Oregon
	Shared Work Unemployment Compensation Program	Work Sharing Unemployment Insurance Program (Senate Bill 130, 1/81 Legislation)	Work Sharing Unemployment Insurance Program (Senate Bill 57, 7/83 Legislation)	Workshare
BENEFITS				
Computation of STC Benefit Amount	WBA reduced in proportion to hours by which employer reduces normal work week, rounded to nearest $1.00.	WBA x % of reduction in individual wages resulting from reduced hours of work (rounded to nearest 5%). Benefit rounded to next higher $1.00.	WBA x % of reduction in individual wages resulting from reduced hours of work (rounded to nearest 5%). Benefit rounded to next higher $1.00.	UI WBA x % of hours reduction specified in approved plan. Remains constant until a modification of plan is approved.
Compensated Hours of Work/Pay	Actual hours of work, holiday pay, sick leave pay, vacation or annual leave pay.	All hours (paid and/or volunteer) worked.	All hours (paid and/or volunteer) worked.	Earnings, vacation pay, sick leave pay.
Extended Benefits	1983 Legislation: STC claimant is eligible to receive STC benefits under EB.	No STC benefits payable under EB.	No STC benefits payable under EB.	No STC benefits payable under EB.
Denial of or Reduction in Benefits				
Able & Available/Work Search	Not required to look for work. Disqualified if refuses full-time work with STC employer.	On temporary lay-off, need not seek work while collecting STC benefits. If faced with permanent layoff, must seek work while collecting STC benefits. No disqualification under A&A if absences from work are approved and claimant accepted all work from STC employer.	On temporary lay-off, need not seek work while collecting STC benefits. If faced with permanent layoff, must seek work while collecting STC benefits. No disqualification under A&A if absences from work are approved and claimant accepted all work from STC employer.	Excluded from normal available and work search requirements. Must be available to STC employer. Temporary illness which involves lesser portion of work week will be disregarded.
Earnings from Other than STC Employer - Partial Benefit Disregard	Does not affect STC benefits.	Deducted on a dollar-for-dollar basis.	Deducted on a dollar-for-dollar basis.	Amount in excess of 1/3 WBA is deducted dollar for dollar from STC benefits.
Paid Vacations & Holiday Pay/Sick Leave	Counted as compensable hours of work.	Counted as compensable hours of work.	Counted as compensable hours of work.	Benefits not affected as long as some work is performed in week claimed and total hours (including work and paid leave) remain within allowable reduction range.

Characteristics of Program	Arizona Shared Work Unemployment Compensation Program	California Work Sharing Unemployment Insurance Program (Senate Bill 130, 1/81 Legislation)	California Work Sharing Unemployment Insurance Program (Senate Bill 57, 7/83 Legislation)	Oregon Workshare
FILING PROCEDURES				
Initial Claims	In most cases, after plan is approved someone from central unit goes to employer's establishment and takes mass claims. Otherwise, claimants are instructed to file in person at local office, or employer takes the initial claims and mails the forms to the central unit with an affidavit.	After plan is approved, STC weekly certification is sent to employer. Claimant must report in person to field office and present STC certification to file an initial claim or reopen an existing claim.	After plan is approved, STC weekly certification is sent to employer. If claimant has no existing claim on file, must report in person to field office and present STC certification. If there is an existing claim, need not report in person, but can mail in completed STC weekly certification to the central STC unit.	After plan is approved, forms are mailed to employer for distribution. After employees complete the forms, they return them to the STC employer, which then returns completed forms to STC unit. If current claim exists, files are transferred to STC unit. Where no claim exists, new claim is established, and a monetary determination is mailed to the claimant.
Continued Claim/Weeks Claimed	Every other week, employer is mailed a list of the STC plan employees. Claimant certifies for the following 2 weeks the hours that would be compensated for by the employer and whether claimant refused job offer or full-time work with employer. Employer certifies information on list and returns list to agency. Check or reason for denial is mailed to claimant. (Multi-claimant form.)	Upon approval of plan, employer receives a supply of weekly certification forms for distribution to STC employees. Forms are completed by both employer and employee. Employee takes completed form to field office to file claim or receive payment. (Single claimant form.)	Upon approval of plan, employer receives a supply of weekly certification forms for distribution to STC employees. Forms are completed by both employer and employee. Employer mails completed form to central STC unit, and employee receives payment by mail. (Single claimant form.)	Bi-weekly certification form sent to employer. Employer completes one part and delivers it to employee, who completes last portion and returns it to STC unit. Each employee claiming benefits completes a separate certification form. (Single claimant form.)
Waiting Period	Must serve or have served a 1-week waiting period. Benefits are not payable for that week.	Must serve or have served a 1-week waiting period. Benefits are not payable for that week.	Must serve or have served a 1-week waiting period. Benefits are not payable for that week.	Must serve or have served a 1-week waiting period. Benefits are not payable for that week.
CONTRIBUTIONS				
Additional Taxes	1981 Legislation: Surtax on employers with negative reserve ratio: Between 0 and -5% .25% -5% or Between -5% & -15% 1.00% Minus 15% or Less 3.00% 1984 Legislation: Between 0 and -5% 0% -5% or Between -5% & 15% 1.00% Minus 15% or Less 2.00%	STC employers with a negative reserve balance on June 30 of any year required to pay into the unemployment fund additional contributions at a rate from 0.5% to 3.0% in the succeeding calendar year.	Employers with negative reserve balance on June 30 of two consecutive years, whose reserve account has been charged for benefits paid under STC program during the 12-month period ending on the second June 30, pay into the unemployment fund additional contributions equal to the amount of STC benefits paid during that 12-month period. Credit allowed for amounts collected in excess of this computation during the prior year.	Benefits paid under STC plan are charged against employer account same as regular UI. In the year following STC use, employers whose scheduled tax rates are below true benefit ratio pay at a rate equal to their benefit ratio, up to a maximum of 3 percentage points above the regular maximum tax rate.

In addition, all of the state STC programs acknowledge the possibility that employers' plans, once approved, may need to be modified, and establish procedures for doing so. Employers are allowed to change the roster of employees included in their shared-work unit and the percentage by which their work hours are reduced. The formality of the modification procedure and the nature of the changes for which it must be used vary across states.

State STC laws specify how benefits are to be computed. All states calculate benefits as a percentage of each employee's regular, computed weekly benefit amount (WBA). The percentage of the WBA paid is based on a measure of the "employment reduction" imposed by the plan. This measure varies in subtle ways across programs, but is always based on the reduction either in hours or in wages from the "normal work week." The state programs also vary in other respects, such as the treatment of earnings from employers other than the STC employer, and the manner in which time away from work (absences, vacation, sick time, and holidays) is treated in computing benefits.

Finally, all state programs specify how STC benefits are to be financed. Provisions in the laws of each state define how participation in the program and the payment of benefits affect each employer's UI tax obligation, and specifically the types of special tax obligations that are imposed on participating employers with negative reserve balances or high benefit ratios. Two types of special tax obligations have been used: "percentage surtaxes," computed by adding an increment to the regular tax rate applied to employers' taxable payrolls, and "surcharges" or "additional contributions," computed to equal the amount of STC benefits

issued under employers' plans. Under the percentage surtax method, a schedule is used to determine the amount by which the employer's regular tax rate should be increased: the more negative the reserve ratio or the higher the benefit ratio, the greater the increment to the tax rate. The states that use this method have adopted a variety of schedules, and thus set different maximum increments that can be added as surtax percentages.

2. The Implementation and Utilization of STC Programs in the States

As STC programs have been used in the states, they have remained very small programs, although their acceptance over economic downturns is noteworthy. This section documents the utilization of the state programs, and highlights the distinguishing programmatic features of and the trends exhibited by the state programs.

California. In July 1978, California passed its first STC legislation as part of Senate Bill 1471, and began accepting and approving employer plans. As shown in Table I.3, participation developed slowly in 1978 and 1979, increased sharply in 1980, and stabilized in 1981. Participation reached its peak in 1982, when close to 2,500 plans were approved, including over 99,000 employees in the affected units. However, even at its peak, the California STC program has represented only a small part of total UI activity. In the last quarter of calendar year 1982, when shared-work payments peaked, they accounted for .95 percent of all regular state UI payments. Since 1982, participation has dropped dramatically as the economy has improved. Only 1,129 plans were approved in 1983, which included 33,525 employees. Overall participation in 1984 was still lower: total STC benefits paid in 1984 were just over $5-million, which was about 37 percent of the payments made in the previous year. There is

TABLE I.3

PARTICIPATION IN THE CALIFORNIA STC PROGRAM

Calendar Year	STC Plans Approved	Employees in STC Affected Units	STC Benefits Paid	STC Weeks Paid
1978	15	708	NA	NA
1979	452	9,902	NA	NA
1980	896	30,122	NA	NA
1981	785	38,741	$2,039,537	76,869
1982	2,467	99,332	$18,567,681	612,719
1983	1,129	33,525	$13,538,460	398,698
1984	NA[a]	NA[a]	$5,051,384	150,959

[a]Accurate data on the number of plans approved and the number of employees in approved plans are not available for 1984 in terms comparable to those used for earlier years. In February and March 1984, the first plans that were affected by the six-month limit on duration imposed by Senate Bill 57 expired. In the first half of 1984, California counted plan renewals as approvals and did not distinguish between new and renewed plans. Thus, data on new plans and their member employees, which are what was reported for earlier years, cannot be reported for 1984.

some indication that program participation stablized, and perhaps that even some modest, renewed growth occurred throughout 1984. Although 1984 payments were far lower than 1983 payments, participation in the latter half of 1984 was about the same as it was in the first half, and the number of initial claims in the latter half actually exceeded the number of initial claims for the first half of the year. In contrast, participation in the latter half of 1983, as measured by initial claims, was less than half the volume in the first half of the year.

California's Work Sharing Unemployment Insurance program has undergone considerable legislative revision since it was first implemented. As was shown in Table I.2, the major changes made in the original law have affected (1) the amount of time that individual employees may participate in shared work, (2) the allowable duration of employers' plans, and (3) the special surtax provisions used to finance the program:

1. Relaxation of Individual Duration Limits. California originally limited individual employees to 20 weeks of STC benefits in each benefit year. In September 1979, Senate Bill 210 tightened this limit to 20 weeks in any consecutive 52-week period, so that employees who were enrolled in a plan towards the end of an already established benefit year could not establish a new benefit year and continue beyond 20 weeks under STC. In July 1983, Senate Bill 57 removed all limitations on the duration of individual participation.

2. Creation of a Plan Duration Limit. In its original form, the California law limited the use of STC by placing a limit on employees' participation, but placed no limit on how long an employer's plan could run. When the limitation on individual participation was removed in 1983, Senate Bill 57 placed a qualified limit on plan duration; plans could run for six months, but could be extended indefinitely if the unemployment rate were above a defined rate.

3. Surtax Changes. As defined in the original California law, percentage-based surtaxes imposed large additional tax obligations on some employers which used the program only to a relatively small degree. In July 1983, Senate Bill 57 substituted the "additional contribution" method for determining surtaxes. However, this method proved disadvantageous to some employers which had enrolled in the program under the assumption that their taxes would be determined under the percentage method. Thus, in August 1984, the California legislature adopted an amendment which allowed employers, for a transitional period, to choose which surtax method should be used to determine their special tax obligation.

Arizona. Arizona's Shared Work Compensation program was created by the passage of Senate Bill 1005 in April 1981, and went into operation in January 1982. The program was used heavily during its first year, with 597 plans approved for 244 different employers, which included a total of 25,889 employees. STC benefits were paid for 94,085 weeks claimed. In 1983, activity declined considerably: 239 plans were approved, which included 6,921 employees, and benefits were paid for 58,320 weeks claimed. These 1983 totals summarize a dramatic decline in STC activity in the middle of 1983: 49,049 weeks of benefits were paid in the first half of the year, but only 9,271 in the latter half. This decline in program use continued in 1984: only 50 plans were approved through October, which included 2,099 employees, and benefits were paid for 11,545 weeks.

Like the California program, the Arizona program has undergone some important changes since its inception. These changes have tended to relax some of the original controls on program use. A March 1983 amendment (House Bill 2232) allowed a longer period of participation in STC by individual employees. Whereas the original law had limited employees to 26 weeks of STC benefits in a benefit year, this amendment allowed a longer

period of participation when the unadjusted unemployment rate exceeded 4 percent. In 1984, the Arizona legislature simplified and reduced the surtax rates that applied to negative-balance employers which participated in STC--a change that accompanied a general increase in the range of regular UI tax rates that affected negative-balance employers. In the same session, the legislature simplified the process for both extending an existing STC plan and adding employees to the plan, allowing employers to do both simply by notifying the UI agency.

Oregon. The third STC program was created by the Oregon legislature in January 1982, with an effective date of operation set for October 1982. However, the demand for the program by employers led to more rapid approval--the plan was implemented in July 1982. The number of active plans increased from 19 in that first month to 136 by the end of the year. Over the course of 1983, the number of active plans increased to a maximum of 168 around midyear, and then declined to 70 by the end of 1983. In 1984, STC use continued to drop as the economy improved; by August, only 16 active plans were being operated. The number of employees who actually participated in the program has followed a similar pattern. The number of employees submitting biweekly claims rose from around 331 in July 1982 to a peak of about 665 in December 1982, and then gradually declined, to about 65 in December 1983 and about 35 in August 1984.[1]

The Oregon program has remained somewhat more restrictive than the programs in most other states. Oregon limits employers' plans to one year and does not allow a subsequent plan until a year-long "waiting period" has

---

[1] Data on the number of participating employees are estimated from the number of bi-weekly claims filed.

elapsed. Employers may operate only one plan at a time, and must submit plan modifications to change either the percentage by which hours are reduced or the membership in a plan. The Oregon program provides for percentage-rate surtaxes on employers with high benefit ratios, with a maximum rate increment of 3 percentage points. Unlike California and Arizona, Oregon has not amended the surtax features of its original law. However, one change has been made to ease an original restriction on program use. As a condition for participation under its original law, Oregon required that employees must have worked at least six months full-time or a year part-time for the STC employer prior to the employer's submission of the STC plan. In July 1983, this restriction was loosened: employees must work six months full-time or a year part-time before joining an STC plan, but their tenure need not have begun before the employer initiated the plan.

Other States. The Washington Shared Work Compensation program, authorized by Chapter 207 of the Washington laws of 1983, went into effect in August 1983. Forty-one employer plans were approved during the period from August to December 1983, which included 646 employees. Over the first three quarters of 1984, an additional 81 plans were approved, which included 1,280 employees.

The Washington program could be regarded as the least restrictive of the four earliest programs. The Washington law does not provide for any surtax addition to regular UI tax rates. Employers are allowed to create a STC unit consisting of only a single employee on reduced hours, whereas the other states require that at least two "share" the work. In Washington, employees may participate for up to an entire year; in Arizona (except

during high unemployment) and Oregon, they are limited to 26 weeks. Week-to-week adjustments in the percentage of reduced hours are allowed under recent administrative changes in the program.

Florida, Illinois, and Maryland have passed shared-work laws but have not yet had experience with their programs on a scale comparable to the experience of the first four states. In Florida, the Short-Time Compensation program was created by Senate Bill 610 in 1983, and took effect on January 1, 1984. Program procedures have been implemented, but the program has been used very little: the program coordinator reported in October 1984 that only three firms had participated thus far, all of relatively small size.

In Illinois, Senate Bill 25, which was passed in the 1983 session, authorized the payment of shared-work benefits beginning on July 1, 1984. Forms and procedures have been developed for the program, but, according to UI agency personnel, very limited interest has been expressed in the program, possibly because employers are required to reimburse the UI agency in advance for STC benefit payments, thereby bypassing the usual UI financing method under which benefit payments are charged to an account which affects the tax rate in the following year. Thus, employers that are faced with the necessity of reducing their workforce are not likely to be attracted to a program that requires payment for use during the period of immediate economic distress.

Maryland's Worksharing Unemployment Insurance Program was adopted by the legislature in 1984, with an effective date of July 1, 1984. Although the law mandated that the program be implemented in January 1985, the Department of Employment and Training was ready for operations earlier,

and the program began in the fall of 1984. The program reportedly has approved about 32 employer plans, which have included about 750 employees.

More recently, STC programs have been introduced in Arkansas, Texas, and New York. However, at the time that the data were collected for this study, these states had not yet implemented the programs.

II. STUDY DESIGN AND IMPLEMENTATION

As we described in Section A of Chapter I, the purpose of this study is to address the issues raised by Congress, but its design was actually guided by a series of questions that underlie the congressional concerns. To answer many of these questions, we must acquire an understanding of why employers have used STC, how they have used the program, and what the consequences of their using the program were to themselves, their employees, and the government. These questions also require very detailed information on what STC employers would have done had an STC program not been available. In the first section of this chapter, we describe how we designed the study around these considerations. We then review the various aspects entailed in implementing the study. The chapter concludes with a brief overview of the strengths and limitations of our study design.

A. OVERVIEW OF STUDY DESIGN

Because of the primary role of employers in terms of the questions we sought to answer, they served as the primary focus of the research design. Of course, many questions about STC pertain more directly to employees. However, financial and time constraints precluded the collection of data directly from employees. Hence, the study could only examine those employee-related questions that could be addressed with aggregate, per-employer data. For most of the design considerations, we approached the study as one whose purpose was to examine the behavior of a sample of employers.

Once the decision was made to focus on "employers," it was necessary to determine how that concept should be defined. In organizations that consist of subsidiaries, major production units, branch plants, and so forth, the aegis of decision-making may be quite complex, and no single "correct" definition may apply. We thus defined employers in terms of each state's Unemployment Insurance tax filing unit, largely for operational reasons: the concept can be defined unambiguously, it facilitates developing a sampling frame from state UI records, and it corresponds to the states' data collection units. In addition, as a standardized unit, it is conceptually as satisfying as possible alternatives.

With this employer definition, selecting a sample of STC employers from state UI records could easily be accomplished, and we describe the sample selection process in Section II.B. Selecting a sample of similar employers which did not use STC was necessary to approximate what STC employers would have done had they not used the program. This necessity raised some methodological complications. An ideal study design would have assigned employers randomly to one status that would have permitted STC use and to another status that would not have permitted STC use. Doing so was clearly impractical given the on-going nature of the state programs. As we explain in Section II.C, we decided that the best option available to the study was to match the STC sample with a sample of employers from among all those which did not use STC in the respective study states. This match yielded a sample of employers which exhibited the same characteristics and presumably faced the same economic conditions and pressures as did the STC sample, but which chose not to use STC (or did not know about the

availability of STC). However, it must be recognized that, unlike a randomly selected control sample, a comparison sample may provide only an imperfect alternative to the STC sample. This is true despite our best efforts both to match the samples and, in the analysis, to control statistically for any remaining differences among the samples. Consequently, the conclusions of this study cannot be considered as definitive as those generated through a process in which the "treatment" is randomly assigned.

An important factor in both defining the sample and undertaking the analysis was the time frame for the study. It was important to define a specific period in which the decisions of employers to use STC and the implications of those decisions under standard economic conditions could be evaluated. Further, it was important to observe the behavior of employers for a sufficient length of time to determine the implications of STC use in the period after employers had stopped using their STC plans. This necessity suggested selecting a time period of STC use that was not too recent; however, moving too far back in time was constrained by the start date of the Oregon program (July 1, 1982) and by the unavailability of records data from other states that were necessary for the analysis. Our decision was to define the basic period for observing STC plan implementation and use in each state as <u>state</u> fiscal year 1983 (FY1983), which ran from July 1, 1982, to June 30, 1983. To be included in the initial STC sample, employers were to have had an STC plan approved during FY1983; the comparison sample was selected from among employers which had no plans approved in this period. As we describe in the following

sections, the final samples required further refinement as the states provided us with additional data.

Data for the analysis were collected from two sources--interviews with employers and UI agency records. In addition to the FY1983 period, data were collected for the first six months of 1982 and for the last six months of 1983. Data for the former period were used in the analysis to control for differences between the STC and comparison samples in terms of pre-STC-use behavior. In fact, the second quarter of 1982 is used throughout this report as the period of "baseline" data. Data for the latter period are used to evaluate the post-STC-use behavior of employers.[1] However, the effects of STC use that persisted from FY1983 into calendar year 1984 or beyond could not be measured in the study. Other aspects of our data collection strategy are described in Section II.D below.

These design decisions facilitated an analysis of the determinants of STC use and of the consequences of such use on employment. These two components of the analysis are described in Chapters III and IV, respectively. Evidence from this analysis, from our administrative

---

[1] It is important to note that the on-going nature of STC programs meant that some STC use occurred in the "post-STC" period. Most of the STC use in this period is attributable to new plans and plan renewals, both of which were easily obtainable in Arizona and California; in addition, under special conditions, plan extensions were allowable in Oregon. However, since 10 percent of the plans that were approved during FY1983 were approved in the last quarter and because an additional 30 percent were approved in the third quarter, some STC use from our basic period of observation could have extended into the "post-STC" period. The extent of this carry-over should be slight, since the average length of STC use fell over time to about 13 weeks for plans that were approved in the second half of FY1983.

analysis (Hershey, 1985), and from the data gleaned from the states are used in Chapters V through VIII to address the concerns of Congress.

B. SELECTION OF THE STC SAMPLE

While the previous section described in broad terms how the initial STC sample was selected, the details of that process, including the necessity for additional sample refinement, require further discussion. This section focuses on the sample selection issues and describes the final sample.

1. Employer Selection Process

The first consideration in selecting the sample of STC employers was how to sample from among all employers in each state which had a plan approved in FY1983. We set a target sample of 250 STC employers in each state, which, given an expected interview response rate of 70 percent, was to yield a sample of 175 employers per state. However, Arizona had only 230 plans approved in that year, and Oregon, even by stretching the year a few months, had only 212 approved. Therefore, we did not sample in those states, but accepted all employers with approved STC plans. Because California had over 2,000 plans approved in this period, we selected a stratified random sample of employers in this state. The stratification was based on employment: because so many modest-size firms were represented relative to small and large firms, we were concerned that a simple random sample might provide too few small and large firms. (Except when noted, all tabular analysis in this report was reweighted back to the original employer distribution.)

An immediate concern for us was how to adjust our sample definition as better data became available. The problem was that the application process for an STC plan is an easy procedure in all states, and one that does not bind employers to using the program as the necessity for work-time reductions arises. Thus, data on the UI benefit charges that were assigned to sample employers were used to reclassify employers between the STC and comparison samples. Consequently, 12 percent of the final research sample which had STC plans approved but did not use STC during FY1983 and did lay off employees were placed into the comparison sample. Another 3 percent of the sample also did not use STC but did not lay off employees. They were included in the comparison sample when we evaluated the types of employers which participate in STC, since, for this component of the analysis, we were interested in determining who actually uses the program. The proper classification was more ambiguous in our evaluation of employment patterns, and the sensitivity of the analysis to alternative classifications is explored in Chapter IV. In addition, a small number of employers in the original comparison sample had plans approved just prior to FY1983, but implemented the main plan during that year. These employers were reclassified into the STC sample.

Our final sample consists of 430 STC employers. This sample size represents 82 percent of the number we had originally sought for the research sample, with the difference accounted for by the sample-size constraints in Arizona and Oregon, the reclassification of the 15 percent of the employers which did not use STC, and the unavailability of data on employers which went out of business.

The basic characteristics of the STC sample by state are shown in Tables II.1A through II.1D. It is difficult to infer much from these raw numbers of sample characteristics. The small representation of specific types of employers might limit the generalizability of the analysis. Consistently across states, construction and other primary industries (i.e., agriculture and mining), transportation/communications/utilities, and retail trade are not well represented. In addition, employers in the lowest and highest UI tax-rate categories (i.e., those at the minimum and maximum rates), which may mean that they might not be effectively experience-rated, are not well represented.

2. Comparison of STC Employers with All Employers in the State

An evaluation of the types of employers which use STC is presented in the next chapter. However, it is instructive to review the raw data to acquire some basic understanding of which types of employers in the states tend to use STC. Tables II.2A through II.2C show the percentage distribution of STC sample employers and all employers in the respective states for categories of each of three major characteristics--industry, UI tax rate, and employment. For industry, manufacturing firms are disproportionately heavy users of STC, particularly those classified as durable manufacturers. In Oregon and California, employers which are engaged in wholesale trade are also disproportionately heavy users of STC, which is not the case in Arizona. At the other extreme, employers which are engaged in construction and other primary activities, in retail trade, in finance and services, and in transportation/communications/utilities do not use STC in proportion to their numbers in the states.

TABLE II.1A

BASIC CHARACTERISTICS OF THE STC SAMPLE

ARIZONA
(Number of Employers)

Characteristics	Employers by Employment Size 1-10	11-50	51-250	>250	All Sample Employers in State
Industry					
Construction and Other Primary	1	1	0	2	4
Nondurable Manufacturing	3	3	6	2	14
Durable Manufacturing	10	27	19	8	64
Transportation, Communications, and Utilities	0	2	0	0	2
Wholesale Trade	2	4	5	1	12
Retail Trade	5	1	3	1	10
Finance and Services	9	9	7	0	25
Regular UI Tax Rates[a]					
Minimum	2	1	0	0	3
Middle	22	41	31	13	107
High	5	5	9	0	19
Maximum	1	0	0	1	2
All Employers	30	47	40	14	131

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	0.10
Middle	0.11 - 1.60
High	1.61 - 2.70
Maximum	2.70 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Arizona.

TABLE II.1B

BASIC CHARACTERISTICS OF THE STC SAMPLE

OREGON
(Number of Employers)

Characteristics	Employers by Employment Size 1-10	11-50	51-250	>250	All Sample Employers in State
Industry					
Construction and Other Primary	0	4	2	0	6
Nondurable Manufacturing	1	8	2	0	11
Durable Manufacturing	6	15	17	5	43
Transportation, Communications, and Utilities	0	0	0	0	0
Wholesale Trade	7	16	4	0	27
Retail Trade	5	3	1	0	9
Finance and Services	18	12	6	1	37
Regular UI Tax Rates[a]					
Minimum	14	5	0	0	19
Middle	19	42	25	6	92
High	4	9	6	0	19
Maximum	0	2	1	0	3
All Employers	37	58	32	6	133

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	2.20
Middle	2.21 - 3.40
High	3.41 - 3.70
Maximum	3.71 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Oregon.

TABLE II.1C

BASIC CHARACTERISTICS OF THE STC SAMPLE

CALIFORNIA - Unweighted
(Number of Employers)

Characteristics	Employers by Employment Size				All Sample Employers in State
	1-10	11-50	51-250	>250	
Industry					
Construction and Other Primary	3	5	1	2	11
Nondurable Manufacturing	1	4	5	4	14
Durable Manufacturing	10	20	20	19	69
Transportation, Communications, and Utilities	1	1	0	1	3
Wholesale Trade	1	6	2	8	17
Retail Trade	6	1	2	1	10
Finance and Services	19	9	6	8	42
Regular UI Tax Rates[a]					
Minimum	0	0	0	0	0
Middle	34	40	33	43	150
High	6	4	2	0	12
Maximum	1	2	1	0	4
All Employers	41	46	36	43	166

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	0.90
Middle	0.91 - 3.60
High	3.61 - 4.00
Maximum	4.01 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in California.

TABLE II.1D

BASIC CHARACTERISTICS OF THE STC SAMPLE

ALL STATES
(Number of Employers)

Characteristics	Employers by Employment Size 1-10	11-50	51-250	>250	All Sample Employers in State
Industry					
Construction and Other Primary	4	10	3	4	21
Nondurable Manufacturing	5	15	13	6	39
Durable Manufacturing	26	62	56	32	176
Transportation, Communications, and Utilities	1	3	0	1	5
Wholesale Trade	10	26	11	9	56
Retail Trade	16	5	6	2	29
Finance and Services	46	30	19	9	104
Regular UI Tax Rates[a]					
Minimum	16	6	0	0	22
Middle	75	123	89	62	349
High	15	18	17	0	50
Maximum	2	4	2	1	9
All Employers	108	151	108	63	430

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined for each state as described in Tables II.1A through II.1C.

TABLE II.2A

COMPARISON OF STC SAMPLE EMPLOYERS WITH ALL EMPLOYERS IN THE STATE

ARIZONA
(Percent)

Characteristics	STC Employers	All Employers in State
Industry		
Construction and Other Primary	3.1	15.1
Nondurable Manufacturing	10.7	2.3
Durable Manufacturing	48.9	3.1
Transportation, Communications, and Utilities	1.5	2.9
Wholesale Trade	9.2	10.1
Retail Trade	7.6	20.7
Finance and Services	19.1	45.3
Regular UI Tax Rates[a]		
Minimum	2.2	9.3
Middle	82.7	71.3
High	13.7	8.6
Maximum	1.4	10.9
Employment Size		
1-10	22.9	75.8
11-50	35.9	19.2
51-250	30.5	4.3
251+	10.7	0.7

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows in (percent):

Minimum	0.10
Middle	0.11 - 1.60
High	1.61 - 2.70
Maximum	2.70 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Arizona.

TABLE II.2B

COMPARISON OF STC SAMPLE EMPLOYERS WITH ALL EMPLOYERS IN THE STATE

OREGON
(Percent)

Characteristics	STC Employers	All Employers in State
Industry		
Construction and Other Primary	4.5	12.9
Nondurable Manufacturing	8.3	2.3
Durable Manufacturing	32.3	5.9
Transportation, Communications, and Utilities	0.0	4.2
Wholesale Trade	20.3	10.4
Retail Trade	6.8	24.0
Finance and Services	27.8	40.3
Regular UI Tax Rates[a]		
Minimum	12.8	33.0
Middle	69.6	48.1
High	16.0	11.4
Maximum	2.1	7.5
Employment Size		
1-10	27.8	80.1
11-50	43.6	16.4
51-250	24.1	3.0
251+	4.5	0.5

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	2.20
Middle	2.21 - 3.40
High	3.41 - 3.70
Maximum	3.71 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Oregon.

TABLE II.2C

COMPARISON OF STC SAMPLE EMPLOYERS WITH ALL EMPLOYERS IN THE STATE

CALIFORNIA
(Percent)

Characteristics	STC Employers	All Employers in State
Industry		
Construction and Other Primary	7.0	16.5
Nondurable Manufacturing	8.7	3.0
Durable Manufacturing	41.7	4.8
Transportation, Communications, and Utilities	2.0	2.9
Wholesale Trade	10.0	7.1
Retail Trade	5.8	19.4
Finance and Services	24.7	46.5
Regular UI Tax Rates[a]		
Minimum	0.0	3.6
Middle	90.1	79.5
High	7.4	1.3
Maximum	2.5	14.5
Employment Size		
1-10	23.6	75.0
11-50	42.0	19.3
51-250	22.7	4.8
251+	11.7	0.9

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	0.90
Middle	0.91 - 3.60
High	3.61 - 4.00
Maximum	4.01 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in California.

With respect to UI tax rates, employers at the minimum and maximum rates are less likely to use STC than are employers in the other categories. This observation for maximum-rate employers is particularly noteworthy, since it has been speculated that such employers might gain special benefits from STC and would be heavy users. It may well be that the surtax provisions of state STC laws discouraged use by such employers, or it may simply be that for certain types of employers with high tax rates (e.g., construction firms) layoffs are more appropriate for their needs than are shorter work weeks.

Small employers are distinctly less likely to use STC than would be indicated by their representation in the states, which may be due to the minimum-use requirements of STC programs. Conversely, employers in all of the three larger size categories are found with greater frequency among STC employers than would be indicated by their representation among all employers, which is increasingly true among larger employers.

While the patterns of STC use shown in Tables II.2A to II.2C are interesting, it is important to note again that they should be interpreted with caution. First, the STC sample sizes are quite small, and they might not represent the longer-term and more widespread use of the program very well. Second, the numbers reported in the table were not generated from a statistical analysis that isolates the effect of each variable. Thus, they cannot be used to evaluate or predict program participation.

C. SELECTION OF THE COMPARISON SAMPLE

Selecting the comparison sample was a complex undertaking, in part because of the necessity of developing the sample selection methodology.

We first describe that process, and then discuss the employer selection process for the methodology that was chosen.

1. Selecting a Methodology

From the beginning of the study, we were committed to selecting a comparison sample whose activities could be compared with the activities of the STC sample. Alternatives to a comparison sample were ruled out as either infeasible or undesirable. A randomly selected control group, while conceptually ideal, was infeasible because of the entitlement nature of the STC programs in the study states. At the other extreme, going without a non-STC sample was undesirable, because no reliable data would have been available on the employment activities of STC employers in the absence of STC. The lack of such data was the central problem with the previous STC studies that were described in Chapter I. We did investigate the possibility of using historical data for the STC sample to simulate their employment activities in the absence of STC; however, historical data were not consistently available, and the predictive accuracy of the simulation was subject to question, particularly given the unusual depth of the 1982 recession.

Our basic decision was to select a comparison sample from within the three study states. We were somewhat concerned that employers which chose to use STC would be a special, self-selected group that could not easily be replicated by nonusing employers. If, indeed, the STC and comparison samples were not comparable due to real but unmeasurable differences between the samples (the self-selection factor), the results of the analysis would have been unreliable due to "selection bias." However, STC use in the states has been very limited, with less than 1 percent of

all employers having initiated plans in any given year. State program administrators felt strongly that such limited use was due at least in part to the lack of knowledge about STC. Therefore, we had a strong sense that self-selection would have constituted only a modest analytical problem. In addition, we took steps both in the actual selection of the comparison sample and in the analysis to mitigate any self-selection problems. The sample selection included a complex sample-matching procedure, which we describe in the next section. The analysis included a well-established statistical procedure to control for residual self-selection problems, which we describe in Chapter IV.

A final option that was considered was to draw at least part of the comparison sample from a state that did not use an STC program. This procedure had been suggested to minimize selection bias problems in the analysis. However, our conclusion that self-selection would be a minor problem that could best be dealt with in other ways obviated the necessity of this option. Furthermore, even with very sophisticated sample matching methods, a comparison sample drawn from another state would likely have had the same problem inherent within it: only a small fraction of the sampled employers would have used STC had it been offered (at least as it was offered in the study states), and we would have had no way of knowing the magnitude of the latent self-selection problem. In addition, even if a sample from another state would serve to reduce the magnitude of the selection bias problem, the differences between the states in terms of UI laws, economic conditions, and labor forces and markets would have created analytical problems in attempting to pool observations across states--

problems that would have been likely to swamp any advantages to an external comparison sample.

2. Employer Selection Process

To select the comparison sample, we devised a selection process that would maximize the effectiveness of the sample in terms of analyzing the employment patterns associated with STC use. Thus, for the comparison sample selection, employers which did not initiate an STC plan during FY1983 were matched with the STC sample employers through an intricate cell-matching process designed to achieve similarity in the economic circumstances faced by the employers. The cells were defined by (1) a three-digit industry code (SIC), to reflect production technologies and market conditions and trends; (2) the UI tax rate, to reflect employment and labor-turnover trends; and (3) employment size, to reflect scale. Since it was not always possible to achieve an exact match between the characteristics of STC employers and those of comparison employers, we assigned priorities to the characteristics. Our judgment was that the first two digits of the industry code were the most important characteristics for a match; the tax rate was next, followed by employment and the third digit of the industry code. We selected the comparison sample first by categorizing each STC employer by a five-digit number, as follows:

- The first and second numbers were an employer's two-digit industry code.
- The third digit took on a value of 1 to 4 for an employer, with each value corresponding to a range of UI tax rates (which was specified separately for each state).

- The fourth digit took on a value of 1 to 8 for an employer, with each number corresponding to employment size 1-4, 5-10, 11-25, 26-50, 51-100, 101-250, 251-500, and over 500, respectively.

- The fifth digit was the third digit of an employer's industry code.

Once each STC employer was thus categorized, we then selected three non-STC employers (to allow for the higher expected interview nonresponse rate among such employers) whose categorization numbers matched as closely as possible each STC employer's five-digit number. When no exact match was possible, we deviated from the match number in a manner that corresponded to our predetermined priorities: we deviated the fifth digit first, then the fourth, and so on. We were not concerned about how few or how many employers would be contained in each cell (as identified by the five-digit number), since those cells did not form the basis for any analyses.

To further enhance the value of the comparison sample for our analysis of employment patterns, we continued the matching process through the employer interview stage. Specifically, we were concerned about the STC and comparison sample match after taking into account all of the interview refusals and other types of nonresponse. This portion of the match was undertaken by delaying the comparison group interviews somewhat; an interview with a given comparison employer was attempted only after the matched STC employer was successfully interviewed or was confirmed to have closed (having closed was considered a valid "outcome"). Since three comparison employers were selected for each STC employer, one of the comparison employers (the best match, when the quality of the match varied) was designated as the primary comparison employer, and the others as its backups. Only when an STC employer was interviewed successfully or

confirmed closed, and when the primary comparison employer could not be interviewed or confirmed closed, was a back-up comparison employer released for interviewing. Through this procedure, we sought to maximize the internal validity of the final sample.

Of course, as it became necessary to adjust our sample definitions as better data became available, the extreme sample comparability brought about by the matching process was somewhat reduced. In our description of the STC sample selection process, we discussed changing the status of STC plan applicants which had never used their plans. In addition, a very small number of comparison employers had plans approved just prior to FY1983 but had used STC primarily in FY1983. These employers were thus reclassified into the STC sample. Another small number of comparison employers had used STC in FY1983 but had had no plan approved in that period or in the previous six months. These employers were part of the sample from California, where it would have been possible to have had a plan approved prior to the period for which we obtained data, and still to have been using the plan during FY1983. Those employers were dropped from the sample, but too late for us to obtain replacements.[1]

The quality of the match between the final STC and comparison samples for each state is revealed in Tables II.3A through II.3C. Overall, the samples seem to match quite closely, as should be expected. However, a

---

[1] California is the only state that selected the comparison sample for us. Other states simply provided us with data to enable us to select the sample. It is noteworthy that all but two of the problem cases in the comparison sample were from California, where the incidence of STC use in the comparison sample was far higher than can be attributed to chance. Although we adopted a number of procedures to cope with the problems pertaining to the California sample, these considerations should be kept in mind when the results from that state are interpreted.

TABLE II.3A

COMPARISON OF STC SAMPLE EMPLOYERS WITH
COMPARISON SAMPLE EMPLOYERS

ARIZONA
(Percent)

Characteristics	STC Employers	Comparison Employers
Industry		
Construction and Other Primary	3.1	6.7
Nondurable Manufacturing	10.7	8.4
Durable Manufacturing	48.9	44.4
Transportation, Communications, and Utilities	1.5	1.1
Wholesale Trade	9.21	10.1
Retail Trade	7.6	10.1
Finance and Services	19.1	19.1
Regular UI Tax Rates[a]		
Minimum	2.2	1.6
Middle	82.7	72.2
High	13.7	22.0
Maximum	1.4	4.2
Employment Size		
1-10	22.9	27.0
11-50	35.9	42.7
51-250	30.5	21.9
251+	10.7	8.4

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	0.10
Middle	0.11 - 1.60
High	1.61 - 2.70
Maximum	2.70 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Arizona.

TABLE II.3B

COMPARISON OF STC SAMPLE EMPLOYERS WITH
COMPARISON SAMPLE EMPLOYERS

OREGON
(Percent)

Characteristics	STC Employers	Comparison Employers
Industry		
Construction and Other Primary	4.5	5.4
Nondurable Manufacturing	8.3	11.3
Durable Manufacturing	32.3	31.0
Transportation, Communications, and Utilities	0.0	0.0
Wholesale Trade	20.3	17.7
Retail Trade	6.8	5.4
Finance and Services	27.8	29.1
Regular UI Tax Rates[a]		
Minimum	12.8	10.3
Middle	69.6	76.7
High	16.0	12.6
Maximum	2.1	1.5
Employment Size		
1-10	27.8	32.0
11-50	43.6	43.8
51-250	24.1	21.7
251+	4.5	2.5

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	2.20
Middle	2.21 - 3.40
High	3.41 - 3.70
Maximum	3.71 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Oregon.

TABLE II.3C

COMPARISON OF STC SAMPLE EMPLOYERS WITH COMPARISON SAMPLE EMPLOYERS

CALIFORNIA
(Percent)

Characteristics	STC Employers	Comparison Employers
Industry		
Construction and Other Primary	6.6	10.2
Nondurable Manufacturing	8.4	9.0
Durable Manufacturing	41.6	33.9
Transportation, Communications, and Utilities	1.8	4.0
Wholesale Trade	10.2	7.4
Retail Trade	6.0	9.0
Finance and Services	25.3	26.5
Regular UI Tax Rates[a]		
Minimum	0.0	1.1
Middle	90.9	87.9
High	6.8	7.2
Maximum	2.8	5.5
Employment Size		
1-10	24.7	33.3
11-50	27.7	27.7
51-250	21.7	21.5
251+	25.9	17.5

NOTE: Characteristics are based on the 1982.2 quarter.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	0.90
Middle	0.91 - 3.60
High	3.61 - 4.00
Maximum	4.01 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in California.

few differences are worth noting. First, in both Arizona and California, a smaller proportion of STC than of comparison employers are at or near the maximum UI tax rates. The opposite is true in Oregon. Second, a higher proportion of STC employers in all states fall into the larger size categories. Nevertheless, the differences are small, and can be controlled for statistically in the analysis.

D. DATA COLLECTION STRATEGY

Answering the questions posed in Chapter I required extensive data on the STC programs, the activities and characteristics of employers, and, at least on an aggregate per-employer basis, the activities and characteristics of employees. To obtain the data that were necessary, we developed a mixed-mode data collection strategy which provided appropriate data from UI agency records, a survey of employers, and discussions with UI agency staff. The types of data items that we sought by source are listed in Table II.4. The discussions that follow describe each of these sources.

1. UI Agency Records

Given that the UI tax filing unit defined the employer as our basic unit of analysis, it was logical and convenient to use the data that were collected and compiled by the state UI agencies. This source was particularly valuable for data that were several years old, since they remained easily accessible in the agency records, even when they faded from individuals' memories or became buried in employers' records.

Agencies were asked to provide quarterly data on employment, total wages, taxable wages, UI contributions, benefit ratios, and tax rates. These data were generally contained in the master and experience-rating

TABLE II.4

DATA REQUIREMENTS AND SOURCES FOR
THE STC EVALUATION

Data Item	Source
Characteristics of Employers That Used STC and of Matched Comparison Employers	
Industry	Records
Length of time in business	Interview
Ownership	Interview
Annual revenue	Interview
Payroll	Records/Interview
Employment	Records/Interview
Distribution of employees by skill level	Interview
Average compensation by skill level	Interview
Demographic characteristics of employees	Interview
Unionization	Interview
Seasonal variation in production	Interview
Changes in business	Interview
Financial Health and Previous Responses to Changing Economic Conditions	
Annual revenue history	Interview
Profit and loss history	Interview
Employment history	Interview
Layoff history	Records/Interview
Percent of employees recalled	Interview
Length of temporary layoff spells	Interview
Costs of hiring/training new employees	Previous studies
Benefit charges	Records
UI tax rate	Records
UI reserve/benefit ratio	Records
Use of overtime	Interview
Use of contract/temporary workers	Interview
Changes in work-week hours	Interview
Prevalence of shifts	Interview
Plant openings/closings	Interview

TABLE II.4 (continued)

Data Item	Source
Factors Affecting Employers' Decisions to Use STC or Regular UI	
Fringe-benefit costs	Interview
Extent to which laid-off workers were not available for recall	Interview
Ease of hiring/training workers, by skill level	Interview
Ease of obtaining STC information	Interview
Employers' perceptions of likely advantages and disadvantages of STC	Interview
Employee attitudes	Interview
Union attitudes	Interview
Use of STC	
Total hours reduction	Records
Number of participating employees	Records/Interview
Skill levels of participating employees	Interview
Demographic characteristics of participating employees	Records
Number of weeks in which plan was used	Interview
STC benefit charges	Records
Number of weeks charged	Records
Use of program flexibility (changing number of employees, hours reduction, etc.)	Interview
Whether/how fringe benefits were affected	Interview
Employers' perceptions of actual advantages and disadvantages	Interview
Layoffs before/during/after program use	Records/Interview
Demographic characteristics of laid-off employees	Records
Administration of STC	
Program design and regulations	Agency
Methods of financing	Agency
Program considerations for the concerns and rights of employees	Agency
Administrative processes	Agency

files of employers. In addition, for both regular UI and STC employers, we sought quarterly data on benefit charges, claims weeks, the number of claimants, the number of new claimants, and the sex, age, and race of new claimants. These data were gleaned from employee claims and payment files, and were aggregated to the employer level.

Both Oregon and California provided us with raw data files to enable us to extract and construct the required data items. Arizona constructed the data items for us according to our specifications. The final data set covered all quarters from the third quarter of 1981 (1981.3) through the fourth quarter of 1983 (1983.4). At the time we obtained the data, these quarters were the only ones for which most of the data were consistently available.

2. Employer Survey

A number of data needs could not be met through agency records. These pertained to some aspects of employers' characteristics, financial considerations, and opinions on and attitudes toward STC. To obtain the data necessary to address these areas (see Table II.4), we developed an employer survey questionnaire, and attempted to administer the survey by telephone to the STC sample and to the comparison sample in the manner described in Section II.C.

The survey completion rates were excellent: approximately 82 and 77 percent for, respectively, the STC and comparison samples, for an overall rate of over 79 percent. We actually exceeded out target of 1,050 employers (175 of each type of employer in each of the three states). However, firm closings, various problems with the original sample frame

(described in the previous two sections), and missing data items reduced the final research sample to 988 employers.

3. UI Agencies

Information on the administration of STC programs could not be obtained from either of the two sources described above. Instead, to collect such information, we undertook (1) discussions with agency staff who were involved in designing, implementing, and operating STC programs, (2) discussions with other interested parties in the states which had a major interest in the programs, and (3) a careful review of state documents. For this purpose, we designed and conducted an administrative analysis based on four steps. First, we prepared a site-visit topic guide that consisted of a detailed outline of questions and issues to be discussed with state respondents. Second, we prepared a specific site-visit agenda that consisted of a set of selected questions chosen for discussion with each respondent. The selection was based on a respondent's particular expertise and function relative to the STC program. Third, we conducted two- to three-day site visits in each state, in which we held discussions with UI agency staff, legislators and legislative aides, and representatives of employer associations and major employers. Finally, we reviewed documents that were collected during the site visits and, when necessary, held follow-up discussions by telephone with state respondents to clarify information obtained during the visits.

E. A SUMMARY OF THE STRENGTHS AND LIMITATIONS OF THE DESIGN

Before we present our results, we should highlight four specific limitations with the study design so as to place these results into their

proper perspective. First, the study of the STC program was limited only to three states and to the late-recession, early-recovery phase of the business cycle. The extent to which the results of the study can be extrapolated either to situations in which STC is used more extensively or to other periods is open to question. Generalizing to other states is particularly problematic given the rather large state-by-state differences that were found in their responses to STC.

The comparison group methodology used in the study posed a second potential problem for the study. Since it was infeasible to consider some type of random assignment approach, we were forced to develop a comparison group of employers which did not use STC and to adopt this strategy as the best alternative available to having a formal control group. The potential pitfalls of such an approach are well known, and despite using a variety of statistical techniques to adjust for them we cannot be sure that we have done so completely. Therefore, the statistical results to be reported should be regarded as suggestive, not definitive.

The final two limitations of the study pertain to the financial and time constraints that restricted our data-collection efforts. As noted earlier in this chapter, we did not collect any data directly from employees. Hence, many important questions about how STC affected workers could not be addressed herein. Even for employers, we were restricted to UI administrative records and to a relatively brief telephone interview. Hence, we could not investigate outcomes for employers that required collecting more extensive information. Specifically, because we gathered very little information on the possible effects of STC on productivity, such questions must go largely unaddressed here. To the extent that the

absence of direct data from employers and data on firm-based productivity levels is crucial to an overall appraisal of the STC concept, the results reported herein should be considered incomplete. Throughout the report, we have attempted to indicate areas in which such incompleteness is particularly salient.

Despite these limitations, it is important also to point out the strengths of the study. The present study offers for the first time comparative information on STC users and nonusers. All other studies have been forced to assume what the behavior of nonusers would have been. The study is also based on more extensive administrative information on UI and STC claims than has previously been available. Since many important issues pertaining to UI financing and labor-market adjustment strategies are reflected in these data, the study design would be especially appropriate for answering questions in these areas (which represent many of the congressional questions). Finally, the fact that the study contains a great deal of up-to-date information on STC participation in the three states that have used the program to the greatest extent should be stressed. These data will help characterize STC users in more complete ways than has previously been possible, and may help illuminate a variety of issues that explain why STC participation rates have been relatively low.

PART TWO

QUANTITATIVE ANALYSIS

III. PARTICIPATION IN SHORT-TIME COMPENSATION

One of the major topics for analysis in this study focuses on the types of employers which choose to participate in short-time compensation programs and why. State STC programs are currently used only by a small fraction of employers which face temporary work-time adjustments, and cover only a small proportion of all UI claimants. A clear objective of this study was to identify which types of employers do use STC, the pros and cons of using STC, and how and to whom STC use might be extended. Unless STC use becomes a feasible and desirable policy for a significant number of employers in this country, as it has in other countries, the results of this study have little policy relevance.

The first two sections of this chapter provide the respective perceptions of and attitudes toward STC by program nonparticipants and participants. These sections provide the employers' own insights into how the program might or has helped or hurt them. Section C moves to a more quantitative framework to analyze actual STC participation. This section builds heavily on the simple description of STC participants contained in Section II.B of Chapter II, but it considers many more factors that potentially determine participation, and evaluates them within a regression framework.

A. THE VIEWS OF COMPARISON EMPLOYERS TOWARD STC

The survey questionnaire contained a set of questions designed to collect information on what employers thought about the STC program prior to their using the program. We posed these questions to both comparison sample employers, which of course had no experience with STC, and to STC

employers. However, asking STC sample employers to describe their views of STC before they used the program was unsuccessful, since the recollection of STC employers was clearly distorted by their actual program experience. Consequently, the analysis of employers' views toward STC was based solely on the views of the comparison sample.

A logical concern was whether the views of comparison employers represented unbiased views of STC employers prior to their using the program, or, instead, whether the views of comparison employers represented those of firms that may have rejected STC use, and were thus unrepresentative, negative views toward STC. (This concern also pertains to the selection bias issue discussed in terms of the comparison sample selection in Section C of Chapter II.) As shown in Table III.1, only half of the comparison employers had heard about STC at the time we interviewed them, and only 41 percent of those (20 percent of all comparison employers) had considered using it. Therefore, we had little reason to believe that the comparison sample was dominated by employers which had considered and rejected using STC.

The advantages of STC that were reported by comparison employers which had heard about the program are reported in Table III.2. The numbers listed are responses as a percentage of all employers which responded. Employers could describe multiple advantages, and because all such advantages are reflected in the table the total exceeds 100 percent.[1]

---

[1] Employers were also asked to rank the advantages of STC use, but the relative rankings did not change when the most important (or only) advantage cited was considered.

TABLE III.1

COMPARISON EMPLOYERS' KNOWLEDGE AND CONSIDERATION OF STC

(Percent)

State	Heard about STC	Of Those Which Had Heard About STC, Those Which Had Considered Using It
Arizona	51.7	43.7
Oregon	56.4	39.1
California	40.5	40.7
All	49.9	41.0

NOTE: The sample size for the first column is 557 employers. The sample size for the second is restricted to those which had heard about STC and responded to the question, or 263 employers.

TABLE III.2

ADVANTAGES WITH STC CITED BY COMPARISON EMPLOYERS

(Percent)

Advantage	All Cited
Keeping a Larger Number of Employees Employed	22.4
Retaining Valued Employees	19.6
Reducing Costs Associated with Hiring/Rehiring	7.0
Flexibility to Adjust Employment Levels to Demand	5.1
Avoiding Disruptions to Business Operations	4.2
Allowing Employees to Retain Benefits	2.3
Maintaining Employee Morale	1.4
Other	8.9
None Cited	40.7

NOTE: The sample size is 214 employers.

Response categories were not read to respondents; instead, this question was open-ended, and the responses were then coded.

The major advantages that were reported pertain directly to concerns about maintaining the workforce. The category with the most responses reflects a desire to spread the available workload over the entire workforce so as not to force a few employees to bear a disproportionate share of the burden of a downturn. The second advantage, which closely follows the first category and is not distinctly different from it, pertains to concerns about retaining (i.e., not losing) valued employees. The third most often cited advantage, although distinctly less often than the other two, pertains to savings in the hiring and rehiring costs associated with restoring the workforce after a period of temporary layoffs. This advantage is clearly associated with the more general concern about retaining valued employees. It is noteworthy that 41 percent of the employers which had heard about STC reported that they saw no advantage to it or did not even consider the advantages.

The results for a parallel set of questions about the disadvantages of STC are reported in Table III.3. Very few employers offered specific disadvantages; two-thirds reported that they simply had no need for the program or had no reason to consider using it. The only specific reason that is noteworthy is a concern about inefficiencies in the production process.

Several specific concerns about STC are commonly raised in debates about the program. They involve the effects of STC use (relative to layoffs) on the UI tax rate, fringe-benefit costs, administrative burden, and productivity. After employers had the opportunity to offer their views

TABLE III.3

DISADVANTAGES WITH STC CITED BY COMPARISON EMPLOYERS

(Percent)

Disadvantage	All Cited
Inefficiency in Production Process	10.2
General Avoidance of Government Programs	4.0
Not Enough Information Available	3.1
Inflexibility of Program Rules	2.7
Worker or Union Opposition	2.7
Administrative Burden	2.2
Increase in UI Tax Rate	0.4
Higher Fringe-Benefit Costs	0.4
Other	11.1
No Need or Otherwise Did Not Consider	64.0

NOTE: The sample size is 225 employers.

freely about the program, they were asked specifically about each of these issues. As shown in Table III.4, comparison employers were very divided about the expected effects on the UI tax rate; nearly equal numbers expected it to be lower or higher. Those which expected it to be lower may have anticipated a smaller work-time reduction under STC, or simply may not have understood the program. A similar pattern is evident in terms of fringe-benefit costs. It is very difficult to speculate on why some employers would expect costs to fall by using STC rather than layoffs. The pattern for administrative burden is unambiguous: 63 percent of the respondents expected that the burden would be higher, and most of the rest expected that it would be the same. Finally, only 14 percent of the respondents expected that productivity would increase under STC, while the remaining 86 percent were evenly divided in their expectation that productivity would remain the same or would fall. On balance, respondents were not overly optimistic about using STC relative to layoffs in terms of these areas of concern. However, given the specific pattern of responses (e.g., the relatively high numbers that expected UI tax rates and fringe-benefit costs to fall), it is not at all clear whether their responses reflected a realistic understanding of the program.

B. THE EXPERIENCE OF STC EMPLOYERS WITH STC

STC employers were asked a set of questions similar to those reported for comparison employers, except that they were asked to provide information on their actual program experience. Table III.5 records the actual advantages cited by those employers which had used STC; the advantages are listed as a percentage of respondents. With so many respondents reporting some distinct advantages, the figure associated with

TABLE III.4

COMPARISON EMPLOYERS' VIEWS TOWARD THE SPECIFIC EFFECTS OF STC

(Percent)

Compared with Layoffs, What Do You Expect Would be the Effect of STC On:	Higher	Same	Lower
UI Tax Rate?	30.6	41.9	27.5
Fringe-Benefit Costs?	28.7	46.3	24.9
Administrative Burden?	62.5	34.2	3.3
Productivity?	13.7	43.5	42.8

TABLE III.5

ADVANTAGES WITH STC REALIZED BY STC EMPLOYERS

(Percent)

Advantage	All Cited
Retaining Valued Employees	50.0
Keeping a Larger Number of Employees Employed	34.9
Reducing Costs Associated with Hiring/Rehiring	15.9
Maintaining Employee Morale	14.8
Avoiding Disruptions to Business Operations	11.2
Flexibility to Adjust Employment Levels to Demand	8.9
Allowing Employees to Retain Benefits	5.6
Other	21.5

NOTE: The sample size is 358 employers.

each response is larger than was found in Table III.2 for comparison employers; however, the pattern of responses is quite similar. "Retaining valued employees" and "keeping a larger number of employees employed" were by far the most frequently cited responses, with the former being reported by half of the employers. A reduction in hiring and rehiring costs remains the third most often cited advantage, but was still cited distinctly less often than were the first two.

The disadvantages reported by STC employers, which are shown in Table III.6, show a markedly different pattern than those reported by comparison employers. By far the most frequently cited disadvantage (by 46 percent of the STC respondents) was the administrative burden of STC on the employers. An increased UI tax rate was the second most frequently cited disadvantage.

To learn more about the seriousness of these disadvantages, we followed up the general, open-ended questions with some specific questions about the often-cited disadvantages. As shown in Table III.7, 55 percent of the STC employers reported that participating in the program had increased their UI tax rates. However, only 23 percent of these employers rated the increased tax rate as a serious drawback to the program; 40 percent rated the increase as a slight drawback; and 37 percent rated the increase as no drawback at all.

When asked specifically about the administrative tasks, only 27 percent responded that the program was burdensome, a far smaller percentage than those which offered this response to the open-ended question. In addition, only 20 percent of these 27 percent rated the administrative burden as a serious drawback. Thus, while employers appeared to recognize

TABLE III.6

DISADVANTAGES WITH STC REALIZED BY STC EMPLOYERS

(Percent)

Disadvantage	All Cited
Administrative Burden	45.6
Increase in UI Tax Rate	28.6
Inefficiency in Production Process	8.2
Worker or Union Opposition	6.1
Inflexibility of Program Rules	4.1
Higher Fringe-Benefit Costs	3.4
Other	20.4

NOTE: The sample size is 147 employers.

TABLE III.7

STC EMPLOYERS' EXPERIENCES WITH SPECIFIC ASPECTS OF THE PROGRAM

(Percent)

STC Experience	Percent of Employers Responding Affirmatively	If Responding Affirmatively, How Was This Rated as a Drawback?[a]		
		Serious	Slight	None
UI Tax Rate Increased as a Result of Participation	55.3	22.7	40.2	37.1
The Administrative Tasks Associated with the Program Were Burdensome	26.8	20.4	67.0	12.7
Which Tasks?[b]				
Forms preparation	56.8			
Accounting tasks	11.7			
Scheduling	8.1			
Other	17.1			
The Program Was Too Restrictive	19.2	28.7	58.6	12.7
In What Way?[b]				
Duration too short	31.1			
Changing hours reduction in plan too difficult	28.4			
Percent reduction allowed too low	8.1			
Percent reduction required too high	8.1			
Changing employees in plan too difficult	8.1			
Other	27.0			

NOTE: The sample size for the main categories is 166 employers.

[a] This rating sums to 100 percent of those who responded affirmatively to the basic question.

[b] The figures associated with these categories are the percentage of those who responded affirmatively to the basic question. Since employers could provide more than one response, the figures may total more than 100 percent.

the additional administrative responsibilities, they did not seem to feel that they imposed an unreasonable burden. When asked specifically about the nature of the burden, those who reported a burden most often cited the necessity of preparing forms (57 percent).

Finally, only 19 percent of the respondents reported that their state's program was too restrictive, and just 29 percent of those rated the restrictiveness as a serious drawback. The most often cited STC restrictions were the short-term nature of the plan and the difficulty of changing the hours reduction stipulated in the plan.

An additional question asked STC employers how they rated the productivity of employees who were working short time relative to those who were working full time. As reported in Table III.8, 63 percent of the respondents reported no difference. However, 22 percent reported that short-time employees were less productive, most commonly because not enough work was available to be shared, and because short-time work led to poor morale. The remaining 15 percent of the respondents reported that short-time employees were more productive; half of those cited greater motivation and harder work as the reasons.

Because of the absence of direct information from workers, we were unable to learn much about either the views of employees or unions or their roles in the process of deciding whether to use STC. However, STC employers did report their own perceptions about the attitudes of employees and unions toward STC participation. (As might be expected, very few comparison employers reported having had any contact with employees or their unions about STC). As shown in Table III.9, the vast majority of employers felt that employees reacted moderately or highly favorably to

TABLE III.8

EFFECTS OF STC USE ON EMPLOYEE PRODUCTIVITY

(Percent)

Effect on Productivity	Percent of Employees Responding Affirmatively
Short-Time Employees Were Equally Productive as Full-Time Employees	63.1
Short-Time Employees Were Less Productive Than Full-Time Employees	21.7
Why?[a]	
Not enough work even for reduced hours	34.2
Poor morale	26.7
Inefficiency with set-up time	10.1
Work slowdown--employee protest	2.4
Other	34.6
Short-Time Employees Were More Productive Than Full-Time Employees	15.1
Why?[a]	
Better motivation/worked harder	49.6
Better morale	19.2
Work organized more efficiently	17.2
Less fatigue	16.6
Less down time	4.2
Other	21.5

NOTE: The sample size for the main categories is 387 employers.

[a] The figures associated with these categories are the percentage of those who reported less and more productivity, respectively. Since employers could provide more than one response, the figures may total more than 100 percent.

TABLE III.9

EMPLOYERS' PERCEPTIONS ABOUT EMPLOYEE AND UNION REACTIONS TO STC PARTICIPATION

(Percent)

Reaction to STC Experience	Employees	Unions
Highly Favorable	42.1	43.2
Moderately Favorable	39.0	21.2
Neutral	14.2	34.2
Moderately Opposed	4.1	0.0
Highly Opposed	0.6	1.3

NOTE: The sample size for the first column is 385 employers. The sample size for the second is restricted to those respondents which had unions, or 43 employers.

their STC experience, and only 5 percent reported any opposition. For employers in which unions covered employees on STC, almost two-thirds reported that the unions reacted moderately or highly favorably, and most of the rest reported that their unions held a neutral position.

C. REGRESSION ANALYSIS OF PARTICIPATION

The two previous sections tell us a great deal about why employers may or may not be attracted to STC. Much of this information pertains to the program itself, although some of it pertains to the characteristics of the employers. In this section, we turn exclusively to the employers to analyze their decisions to use STC.

Incentives for employers to participate in short-time compensation programs depend heavily on the characteristics of their workforce, the nature of their production process, their UI tax rates, and their size. For example, STC may offer an attractive alternative to layoffs[1] for employers which--

- Exhibit a strong cyclical pattern of labor demand and work availability
- Exhibit relatively high costs of hiring and firing, and high productivity costs associated with layoffs
- Maintain a sufficiently flexible production process to allow reduced hours of operation
- Exhibit relatively low UI tax costs under a shared-work strategy
- Employ an experienced and highly trained workforce that would be expensive to replace

---

[1]Although STC is an alternative to layoffs at some level of work reduction, firms may adopt a mixed strategy of layoffs and STC. This issue is explored in Chapter IV.

In this section we present our regression analysis of the variables that pertain to the decisions of employers to adopt STC during periods of slack labor demand. This analysis of program participation was undertaken in two stages. First, we examined the extent to which STC decisions depend on somewhat gross measures of industry, size, and UI tax rate. Second, we estimated the effects of a number of additional variables that pertain more directly to work-force composition, hiring and firing costs, union opposition, and the financial health of the employer. We adopted this two-part strategy because the original research design for this evaluation focused primarily on estimating with maximum statistical precision the effects of STC on the employment and layoff decisions of employers. As we explained in Section C of Chapter II, the sample of employers in each state was stratified by the variables according to which we expected STC use to differ most dramatically--industry class, size, and UI tax-rate class. Thus, within each industry, size group, and tax-rate class, approximately equal numbers of STC and comparison firms were selected for the analysis.

This sample selection strategy was optimal for the impact analysis, because it enabled us to compare equal-size groups of STC and non-STC employers, broken down by other significant employer characteristics. Unfortunately, it implied that this sample of employers was of more limited use for estimating participation in STC programs, because no variation in the number of employers which participated in the program occurred within industry, size group, and UI tax-rate class.[1]

---

[1] These were the sample design parameters. In the actual sample, some slight variation existed between STC and non-STC employers per cell.

Fortunately, in two states, Arizona and Oregon, we were able to use the entire state populations of employers to estimate the probability of participating in STC programs with respect to the sample stratification variables. Tables III.10A and III.10B present simple average STC use rates among employers by employment size, industry, and regular UI tax rate. The most striking aspect of the results in these tables is the small number of employers overall which used STC plans; fewer than one-half of one percent of the employers in either state used STC. However, considerable diversity in use rates occurs by employer characteristics. In comparing these participation rates by employment size, one observes a general positive relationship between size and STC use. Conversely, participation rates by industry and tax rates seem to depend on the state. In Arizona, participation in STC was most prevalent in durable manufacturing industries and among high UI tax-rate employers; in Oregon, nondurable manufacturing dominated, and participation and UI tax rates did not exhibit a strong relationship. This difference in participation patterns probably reflects differences in the industrial composition of these states and in their UI tax systems. In particular, in a reserve-ratio state such as Arizona, a high UI tax rate is more likely to represent a strong long-term pattern of layoff behavior. For such employers, the uncertainty of knowing how many workers will return from layoffs and the costs of hiring and replacing employees may make STC an attractive alternative. Conversely, in a benefit-ratio state such as Oregon, a high UI tax rate may represent a much more transitory work-reduction experience on average, because the benefit ratio is computed on the basis of layoff experience over a relatively short period of time (three years).

TABLE III.10A

USE OF STC IN ARIZONA
(Percent of All Employers)

Variable	Employers by Employment Size				All Sample Employers
	0-10	11-50	51-250	>250	
Industry					
Construction and Other Primary	0.0	0.0	0.4	7.2	0.1
Nondurable Manufacturing	0.6	1.4	5.6	9.5	1.6
Durable Manufacturing	1.1	5.9	13.9	18.0	4.5
Transportation, Communications, and Utilities	0.0	0.7	0.0	0.0	0.2
Wholesale Trade	0.0	0.6	2.7	18.2	0.3
Retail Trade	0.1	0.2	0.2	1.4	0.1
Finance and Services	0.0	0.4	1.2	0.6	0.0
Regular UI Tax Rates[a]					
Minimum	0.1	0.5	0.0	---	0.1
Middle	0.1	0.6	.5	4.2	0.3
High	0.1	1.1	4.7	16.7	0.7
Maximum	0.2	1.0	7.0	6.5	0.7
All Employers	0.1	0.7	2.4	5.5	0.3

NOTE: Mean participation rates are computed on the basis of charges for shared-work activity.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	0.10
Middle	0.11 - 2.69
High	2.70 - 2.89
Maximum	2.90

These ranges are based on the actual distribution of regular UI tax rates among all employers in Arizona.

TABLE III.10B

USE OF STC IN OREGON
(Percent of All Employers)

Variable	Employers by Employment Size				All Sample Employers
	0-10	11-50	51-250	>250	
Industry					
Construction and Other Primary	0.0	0.3	0.0	0.0	0.1
Nondurable Manufacturing	0.4	1.6	6.4	10.3	1.6
Durable Manufacturing	0.1	1.5	2.1	6.9	0.8
Transportation, Communications, and Utilities	0.2	0.5	6.7	10.5	0.7
Wholesale Trade	0.2	0.5	6.7	10.5	0.7
Retail Trade	0.1	0.4	1.7	0.0	0.2
Finance and Services	0.0	0.6	1.5	8.5	0.2
Regular UI Tax Rates:[a]					
Minimum	0.1	0.4	1.8	33.3[b]	0.1
Middle	0.1	0.7	2.9	6.6	0.4
High	0.0	0.8	2.5	3.67	0.3
Maximum	0.1	0.8	0.0	0.0	0.2
All Employers	0.1	0.7	2.7	6.3	0.3

NOTE: Mean participation rates are computed on the basis of charges for shared-work activity.

[a] Ranges for regular UI tax rates are defined as follows (in percent):

Minimum	2.20
Middle	2.21 - 3.60
High	3.61 - 3.90
Maximum	3.91 -

These ranges are based on the actual distribution of regular UI tax rates among all employers in Oregon.

[b] Based on fewer than 10 firms.

In the second stage of the participation analysis, we were able to consider the effects of a number of variables other than those used to stratify the analysis sample. We considered the following four categories of variables:

1. Financial and other pressures for a work reduction
2. Flexibility of the employer in terms of work reductions or reduced hours
3. Financial benefits of STC to the employer
4. Financial costs of STC to the employer

A combination of data from UI administrative records and from the MPR employer survey was used to construct variables for the detailed regression models of STC use.[1]

We specified two variables pertaining to pressures on the employer to institute work reductions: whether the employer incurred a loss in 1982, and whether the employer had recently undergone a change in production procedures. Recent financial losses might create pressures for the employer to reduce its workforce and to consider STC as an adjustment strategy. Similarly, a recent change in production procedures might represent the initiation of labor-saving technologies. Both variables were drawn from the employer survey.

---

[1] It should be pointed out that, to the extent that these variables are correlated with the industry, tax, and size stratification variables, the effect of their estimated impact on participation in our sample may be attenuated from what would be true for the population of all employers. Hence, our estimates should be considered applicable only to participation choices within our restricted sample of firms that are likely to be STC participants.

Eight other variables measured the flexibility with which employers can accommodate work reductions. First, whether an employer's labor demand is seasonal is important, because an STC program is most attractive as a vehicle for "smoothing out" cyclical variations in work. If the labor demand is fairly constant (or is constantly declining), layoffs may be the better choice. Second, whether or not a firm is privately owned may indicate the freedom with which managerial decisions can be made; for instance, the responsibility of managers in a public firm to its stockholders may constrain managerial options. Third, whether the employer uses contract workers to whom it does not have long-term obligations affects work-reduction options. If contract workers comprise a significant fraction of the workforce, regular employees may be substantially unaffected by work reductions. Fourth, whether the employer operates more than one production shift may be a useful indicator of whether the production process can easily be interrupted, since multiple shifts are common in continuous-process industries. (Conversely, adding or deleting shifts is a flexible way to vary hours for some types of employers.) Fifth, whether the employer has a collective bargaining agreement with an employee union may constrain work-reduction options, especially for more senior workers. All of these variables were drawn from the employer survey.

The remaining three flexibility variables are somewhat different in nature and pertain to the social homogeneity of the workforce. If the demographic characteristics of employees are generally similar, STC may be a more attractive strategy than layoffs, in that the majority group may be reluctant to see some of its members laid off, while legal ramifications

may be associated with laying off the minority group. If the workforce is approximately evenly divided between the groups, it is least homogeneous in this sense. The variables used were whether 40 to 60 percent of the employer's workforce consisted of females, nonwhites,[1] or persons under 25 years of age.

The next group of variables measured the potential financial benefits to the employer from using STC. A major advantage of STC relative to layoffs is that no costs are incurred from hiring new workers to replace those who fail to return from layoffs. Our estimate of the costs of hiring new employees consists of three components: recruiting costs, formal training costs, and the costs of lost productivity while new employees learn their jobs. These variables were constructed by using cost rates drawn from secondary sources, wage bases taken from UI administrative records, and estimates of training time offered by respondents to the employer survey. A second possible advantage of STC is that more experienced and productive employees can be retained. Two of the variables in our regression model measured dimensions of the experience/productivity relationship. First, according to economic theory, the average wage among production and clerical workers is an indicator of average labor productivity. Thus, the average wage should be positively related to the use of STC. Second, the percentage of employees who have less than two

---

[1] The final sample sizes for racial/ethnic groups other than white were too small to enable us to distinguish individually among them in the analysis. However, we thought it appropriate to make a white-nonwhite distinction, because it would highlight any differential effects for "minorities," as directed in the congressional mandate. It should be recognized that the results associated with nonwhites represent averages for the specific racial/ethnic composition in our sample, and are not necessarily accurate results for any individual group.

years' tenure with the employer is an indicator of less job-specific experience and productivity. Thus, this variable should be negatively associated with the choice of STC relative to layoffs.

The last group of variables were those that measured the financial costs of STC to the employer. Probably the largest potential cost of STC is an increase in the fringe-benefit rate. Not only are most fringe benefits retained by STC employees, but more experienced employees, who are likely to have larger benefit entitlements, also retain benefits. Two other regression variables measured the potential UI tax disadvantages to employers from using STC. Since the experience-rating of UI taxes is not complete for employers at the maximum tax rate, the tax cost of a marginal layoff for such firms may effectively be zero. However, all three states in our sample have adopted special provisions whereby STC claims are more fully experience-rated than are regular UI claims. Employers which have the maximum regular UI tax rate are generally required to pay an STC surtax. (These tax-liability issues are discussed more fully in Chapters V and VI.) The two tax variables are (1) whether the employer's regular UI tax rate was at or near the statutory maximum, and (2) the STC surtax rate that would be incurred by the employer if it elected to use STC. Both variables were drawn from the UI administrative records.

Table III.11 presents the results of this second stage of the participation analysis. In most instances, the indicated direction of the effects of the independent variables on STC use are as one might expect. Before discussing the effects of the variables not used for stratification, we should note that the industry and employment-size variables have a statistically significant effect on STC use, even though these variables

TABLE III.11

MAXIMUM LIKELIHOOD ESTIMATES OF THE PROBABILITY OF STC USE

Independent Variables	Mean of Variable	Effect on STC Use[a]
Industry		
Nondurable Manufacturing	0.094	0.107
Durable Manufacturing	0.382	0.139**
Transportation, Communications, and Utilities	0.014	0.007
Wholesale Trade	0.126	0.156**
Retail Trade	0.075	0.147*
Finance and Services	0.246	0.144**
Size of Firm		
11-50	0.384	0.045
51-250	0.213	0.046
$\geq$251	0.124	0.091*
Pressure for Work Reduction		
Percent with Loss in FY1982	0.268	0.167**
Recent Change in Production Process	0.242	0.057*
Flexibility of Work Reduction Options		
Seasonal Business	0.472	0.051*
Privately Owned	0.845	-0.046
Uses Contract Workers	0.475	-0.045*
More than One Shift	0.243	0.032
Union	0.144	-0.077*
40-60 Percent of Workforce Female	0.199	0.014
40-60 Percent of Workforce Nonwhite	0.121	0.049
40-60 Percent of Workforce Under Age 25	0.092	0.062
Benefits of STC		
Costs of New Hires ($1,000)	1.002	0.008
Average Wage	7.308	0.017**
Percent of Workers with Fewer Than 2 Years of Experience	0.294	-0.207**

TABLE III.11 (continued)

Independent Variables	Mean of Variable	Effect on Use of STC[a]
Costs of STC		
Fringe-Benefit Rate	0.120	0.603*
High Regular UI Tax Rate	0.117	-0.099
Shared Work UI Surtax Rate	0.253	0.039
State		
Arizona	0.315	-0.037
Oregon	0.336	-0.083**
Intercept	1.000	-0.275**
Measure of Goodness of Fit		
-2* Log Likelihood		72.90**

NOTE: Estimates are based on data for 979 employers in the analysis sample.

[a] Computed as the mean of $f(\bar{S})\ B_k$, where f(.) is the standard normal probability density function, $\bar{S}$ is the z-score of the maximum likelihood estimates and B_k is the maximum likelihood estimate of the kth coefficient. The figures are interpreted as the marginal effect on the probability of STC use for a unit change in the variables.

*Statistically significant at the 10 percent level, one-tailed test.
**Statistically significant at the 5 percent level, one-tailed test.

were used to stratify the sample. With respect to the industry variable, this result probably reflects three types of residual variation. First, the sample was stratified by STC plan approval, while the results are based on the actual use of STC as measured by UI charges. Therefore, the variation in use by industry may be different from the variation in STC plan approval. Second, a few incomplete sample matches between the STC and non-STC employer groups exist. Third, other things equal, STC use may vary within the major industry groupings, which would be reflected in these estimates. With respect to the largest employment-size class, the reported result probably reflects simply a substantial variation in STC use among employers which had a workforce of more than 250 employees. For example, large STC employers may be larger than large non-STC employers on average.

The results on the pressure-for-work-reduction variables indicate that employers which have suffered recent financial losses are 17 percentage points more likely than other employers to use STC. Employers which have undergone recent changes in the production process are 6 percentage points more likely to use STC.

The variables pertaining to the flexibility of employer options for managing work-force reductions also exhibit a fairly consistent pattern of results. Seasonal businesses show an expected tendency to use STC to accommodate seasonal variations in labor demand. Employers which rely on contract workers are less likely to use STC, because such workers can be hired and terminated as necessary. In addition, employers which must negotiate with a labor union are 8 percentage points less likely to use short-time compensation than are all other employers. This result probably reflects union seniority rules for layoffs, which can distribute a given

(modest) level of work-time reduction over the least senior employees. Conversely, the results provide no support for the hypotheses that privately owned firms, employers which operate more than one shift, or employers which have a more homogeneous workforce are more likely to use STC.

Among the measures of benefits to STC employers, both the average experience and the productivity of the workforce have the expected effects on STC use. Every one dollar increment in the average wage is associated with a 2 percentage-point increase in the likelihood of STC use. Thus, employers whose employees are relatively more experienced and productive are more likely to try to retain them by using STC. Conversely, every 10 percentage-point increase in the fraction of workers who have less than two years' tenure is associated with a 2 percentage-point lower probability of using STC. This result is just the obverse of the argument that, given a choice, employers will try to reduce work hours by laying off newer employees and by offering STC to more senior employees. Finally, our measure of the direct hiring costs of replacing an employee who fails to return from layoff shows no significant relationship to STC use. This lack of relationship may reflect the employer's uncertainty about whether such hiring costs will ever be incurred, since, according to the employer survey, an average of about 80 percent of the persons recalled from layoff actually reported back to work.

Finally, the costs of STC to employers show more mixed results. The fringe-benefit rate, computed as the ratio of all nontax fringe benefits to average yearly wages, shows a strong positive relationship to STC use. This result is difficult to interpret, because, to the extent

that benefits are retained for workers on STC, fringe benefits make using STC more expensive to employers. Conversely, high fringe-benefit levels may reflect workers' seniority or skill levels, or may indicate more progressive or generous employers which are attracted to STC to retain jobs for the sake of their employees. The other variables show estimated effects on STC use that are also difficult to explain, although they are not statistically significant. While the point estimate of the effect of high UI tax rates is to reduce STC use, the direct effects of the STC surtax rate on STC use is positive. One possible explanation for the surtax result is that the surtax rate depends on regular UI use and layoff experience in the past, especially in reserve-ratio states such as Arizona and California. Thus, higher surtax rates may be proxies for higher likelihoods of any work-time reduction.

These regression results suggest that, overall, STC use is determined by the level of work reduction and the ease with which the work reduction can be accomplished through layoffs. Most STC users in the sample also resorted to layoffs during the study period, which may suggest that employers generally prefer layoffs as a work-time reduction strategy, but will use STC to mitigate the more negative effects on their production operations.

IV. LABOR-MARKET EFFECTS OF SHORT-TIME COMPENSATION

In this chapter, we present our estimates of the size of the layoff reduction for STC employers, and discuss a number of related labor-market outcomes induced by program use. Section A of the chapter briefly describes a theory about how STC may affect the layoff choices of firms, and then examines some potential strategies for measuring those effects empirically. This section also critiques a few previous attempts at measuring the effects of STC. In Section B, we describe the primary data on which the chapter is based, including our reasons for basing the bulk of our analysis on data from the administrative records of state UI agencies. Section C then presents the results of our detailed analysis of FY1983 outcomes. As discussed in Chapter II, that period represents the principal focus of this study; consequently, the estimates in Section C reflect the primary labor-market outcomes for the report. In Section D, we examine the outcomes for the post-STC period, FY1984. Data for this period were only partially available to us, but those that were available do offer considerable insight into the subsequent experiences of employers which have chosen to use STC. Section E then briefly summarizes the results on workforce adjustments for both time periods. Although the absence of survey data on employees somewhat limited our ability to examine detailed questions about the nature of the layoff and STC experiences of individual workers, the available UI records data did enable us to undertake a partial analysis, which we present in Section F. The section focuses on the characteristics of workers who were affected by their employers' labor-force adjustment activities, and on whether STC appears to had have

beneficial "affirmative action" impacts on preserving jobs. Finally, Section G summarizes our findings and offers a few general conclusions about the labor-market impacts of STC.

A. THEORY AND METHODOLOGY

An employer which must curtail its production may follow three potential strategies with respect to its workforce. The first is that it may continue employment at the same level, in the belief that the downturn will be temporary, and that the costs of making any reductions in employment will outweigh the benefits (in terms of reduced labor costs) that might be obtained. The other two strategies are chosen if the employer decides instead to reduce employment--the employer may either reduce work hours and retain existing employees on short-time schedules or choose to lay off workers on either a temporary or a permanent basis. The employer may also choose to use each of these strategies in various combinations, or, in the most general case, to adopt all three at various stages of a downturn for various types of workers.

Adopting an STC program may affect how the employer perceives these adjustment options, by changing the relative costs associated with each of them. Most obviously, allowing employees to collect partial UI benefits for reduced hours may make those employees more willing to accept work-time reductions than would be the case if no compensation were available. To the extent that an employer chooses to reduce hours rather than to lay off employees, STC can be viewed as having "averted" layoffs. However, it may also be that the availability of STC will encourage the employer to opt for reduced hours when, in the absence of the program, it would have chosen simply to keep its workforce intact. In this case, STC can be viewed as

having "generated" some compensated unemployment and related claims against the UI system.[1] The effect of STC on the total level of compensated unemployment depends on the extent to which either of these alternatives is adopted. If most STC use comes from what would have otherwise been labor-force reductions through selected layoffs, total hours of compensated unemployment may be about the same as in the absence of the program.[2] Alternatively, if employees on STC would not have been laid off in the absence of the program, total hours of compensated unemployment may rise.

As an empirical measure of these impacts, we have developed what we call the STC "layoff conversion rate." The figure is defined as the ratio of the reduction in hours of regular UI collection under STC to the number of hours spent on STC itself. A layoff conversion rate of 1.0 would imply that all of the hours spent on STC were matched by a commensurate reduction in UI hours. Conversely, a conversion rate substantially below 1.0 (say, 0.5) would imply that a significant portion of the hours spent on STC (one-half) would have been spent at least nominally "employed" had the program not been available.

Most previous attempts to assess the labor-market impacts of STC have assumed layoff conversion rates of 1.0. In the (by now standard) example, a 20 percent reduction in the work week (one day) under STC is

---

[1] Workers who are retained by firms when output declines might also be regarded as "unemployed," since their productive talents will be underutilized. But this "unemployment" would be difficult to measure and would not be compensated through the UI system. Hence, we shall refer to "compensated unemployment" only as it pertains to reduced work-time hours compensated by STC or hours spent on layoff compensated by regular UI.

[2] However, as we point out in Chapter VI, benefit payments may be higher under STC because of the higher average weekly wage of the workers involved.

assumed to prevent laying off 20 percent of the workforce. Perhaps the most elaborate use of this approach appeared in the 1982 evaluation of the California STC program (State of California, 1982), and the results of that evaluation have been shown to depend importantly on this layoff conversion assumption (Kerachsky and Nicholson, 1984). In other applications, the one-for-one layoff conversion assumption has been used to estimate layoffs averted during recessions in Canada and West Germany (see Best, 1981) and to provide various reinterpretations of the California experience.

To date, the only alternative to the one-for-one layoff conversion assumption appears to have been employers' responses to hypothetical questions about the layoffs that they would have made in the absence of STC. For example, in the Canadian evaluation (Employment and Immigration Canada, 1983), employers were interviewed to determine the amount of layoffs that would have been necessary in their worksharing units had the program not been available. On the basis of that information, the authors of the study concluded that STC had a "substantial impact" on reducing layoffs. Without the program, employees would have faced a 34 percent probability of layoff; in actuality, only 9 percent were laid off.[1]

This interview-based approach has two obvious shortcomings. First, survey data that are based on responses about hypothetical situations may not provide a very accurate picture of what would actually have occurred without STC--especially since participating firms may have an incentive to

---

[1] Another way to state these Canadian results is that 74 percent of the potential layoffs were "averted." A later report on the Canadian experience (Employment and Immigration Canada, 1984) also calculated a 74 percent figure based on the layoffs that were made by employers <u>following</u> STC participation.

exaggerate the benefits of the program. Second, the Canadian data, even if they do not suffer from interview-response biases, do not satisfactorily address the issue of layoff conversion. That is, it is impossible to tell from the data whether compensated unemployment would be higher or lower under STC than it would be by relying on regular UI. Depending on the degree of work-time reduction and on the relative duration of layoffs and STC use, it is entirely possible that total compensated unemployment would be higher under the STC program. For example, if work reductions were of the same duration under both STC and layoffs (and assuming that 34 percent of the workers would indeed be laid off in the absence of STC), an average work-time reduction of greater than 27.5 percent would yield higher compensated unemployment during the STC period than under the hypothetical layoff scenario.[1] Unfortunately, the Canadian report does not provide sufficient information to determine whether this case indeed occurred in Canada.

In general, then, the extent to which STC substitutes for unemployment that is compensated by regular UI has not adequately been addressed thus far. In the present evaluation, we attempt to remedy that situation. Our approach is characterized by two principal elements that set it apart from the other analyses mentioned previously. First, as described in Chapter II, we collected data both from employers which used STC and from a comparison sample of otherwise similar employers which did not participate in the program. Using this comparison sample should thus

---

[1] This figure was calculated by dividing 25 (the percentage increment to layoffs in the absence of STC) by 91 (the fraction of the worksharing unit that did not suffer layoffs).

have enabled us (subject to some significant caveats outlined in Chapter II and discussed in detail later in this section) to identify the effects of STC on employment patterns.

Second, we used UI administrative-records data as the primary source for our outcome data. For several reasons, we believed that these data were preferable to the types of interview data that had been used in previous evaluations. First, the data are objective--they do not suffer from the potential response biases inherent in interview data. Second, because employers may have difficulty in recalling the number or duration of previous layoffs, administrative data may also be more accurate than interview data. Third, administrative data contain information both on the number of layoffs (new claims) and on their duration (weeks collected); employers might not maintain information on the latter of these concepts. Finally, the UI administrative data refer to information that is of central importance to this evaluation (such as UI or STC charges). Relying on employers for these data would probably have led to substantial, additional reporting errors.

Despite these advantages, a few shortcomings with administrative data should be recognized. To the extent that laid-off employees are ineligible for UI, some layoffs will not be reflected in our data. Similarly, if workers do not claim STC (or regular UI) benefits for which they are indeed eligible, the data will also miss such unemployment. Finally, for both types of unemployment, the records data tell us little about whether workers return to their previous employment positions or, if not, how soon they find new employment. Although these shortcomings must

be addressed if we are to obtain a complete picture of the effects of STC, most of them would not be remedied by relying more heavily on the employer interview data available to us. Detailed information on the layoff experiences of workers can come only from the workers themselves, and such data were not collected in this case. Hence, for our purposes, records data seemed to be the best option available. At points in our analysis, we will also use some of our interview data when they help provide insights that are unavailable from the basic records outcomes.

Our basic analytical strategy, then, was to compare the outcomes for STC participants with the outcomes for employers in the comparison sample. In general, that comparison was made by using a regression analysis of the simple form--

$$(1) \qquad Y = \beta_0 + \beta_1 X + \beta_2 S + U,$$

where Y is an outcome of interest, X is a vector of employer characteristics that may affect the size and types of labor-force adjustments to be made, S is a binary variable that takes the value of 1 if the employer participates in STC and 0 otherwise, U is a random disturbance term, and the β's are the parameters to be estimated. The coefficient β_2 can be taken as a measure of the difference in an outcome (e.g., UI benefits collected) between STC participants and nonparticipants when all other relevant factors that affect the outcome are held constant. That is, β_2 represents the "effect" of STC participation. In some cases, we found it appropriate to estimate this effect separately for each state to account for possible differences in specific program impacts.

A major difficulty with interpreting β_2 as an unbiased estimate of the effect of STC concerns the probability that participation in an STC program may be related to the various outcomes--that is, in formal terms, the STC treatment may be endogenous. For example, if employers which face extreme financial difficulties are more likely to participate in STC, and if the extent of those financial difficulties is not adequately measured by the other variables in the regression (the X's), then the estimated effect of STC may be biased in equations which explain employment outcomes that are also affected by the employer's financial situation. It may appear that participation in STC "causes" additional regular UI collection, when in fact that is not the case. This problem is quite common in studies (such as the present one) that must rely on a comparison group methodology rather than on a randomly imposed experimental design. Techniques for controlling for possible biases range from adopting more careful and stringent definitions of treatment and comparison groups together with relatively simple analytical procedures to adopting fairly complex econometric techniques. In Section C, we illustrate several of these procedures and describe how they affected our basic estimates of the labor-market outcomes. First, however, we discuss the data used in our analysis.

B. DESCRIPTION OF THE DATA USED FOR THE ANALYSIS

In this section, we describe both the basic employment data and the data on the characteristics of employers for our analysis.

1. Employment Data

Most of the basic employment data were drawn exclusively from UI records. For ease of analysis, the quarterly data were aggregated into three "fiscal year" periods:

Pre-STC Period:	1981.3 to 1982.2
STC Period:	1982.3 to 1983.2
Post-STC Period:	1983.3 to 1984.2

In the text, these periods are referred to as FY1982, FY1983, and FY1984, or as the "base period," the "STC period," and the "postprogram period," respectively. Because the study focused on FY1983 as the primary period in which STC was used (as we described in Chapter II), that period also provided the primary focus for our labor-market analysis.

Tables IV.1 to IV.3 record the mean values for the primary employment-related variables used in our analysis. All of these data were based on quarterly UI administrative records, and all were aggregated into the three periods specified previously. Because figures for FY1984 were available only for two quarters (1983.3 and 1983.4), the figures in Table IV.3 represent only this half-year period.

The data on the employment and payroll entries in the tables require little comment. As pointed out previously, the employers which participated in STC tend to be somewhat larger than those in the comparison group. Average employment for both groups tends to be larger in California than in the other states, and, conversely, the Oregon data tend to be dominated by smaller firms.[1] As might have been expected given the recessionary environment of 1982-1983, a slight downward trend in average employment occurred over the period, and that trend seemed more pronounced among the firms that participated in STC.[2] Whether this differential

---

[1] The average employment data in Table IV.1 are dominated by a few large employers. Within states, the size distributions of employers are much more similar than is implied by the mean employment figures.

[2] In these tables, the STC sample is defined as including only employers whose workers were actually participating in the STC program. In later sections, we will wish to modify this definition of an "STC participant" slightly.

TABLE IV.1

MEAN LABOR-MARKET OUTCOMES
FY1982

	Arizona		Oregon		California		All States		Total
	STC	Comparison	STC	Comparison	STC	Comparison	STC	Comparison	Sample
Employment	124.8	115	81	50	249	165	159	107	130
Payroll ($1000)	2,240	2,571	1,699	1,164	5,390	2,683	3,289	2,094	2,614
UI Charges ($1000)	17.6	10.4	33.1	23.6	58.1	20.4	38.0	18.4	26.9
UI Weeks	241	133	368	352	520	198	388	233	301
STC Charges ($1000)	1.8	0	0	0	0.4	0	0.7	0	0.3
STC Hours	702	2	0	0	140	8	267	3	118
Percent Hours on UI	4.2	5.6	11.3	11.0	4.0	4.0	6.3	7.1	6.7
Percent Hours on STC	0.4	0	0	0	0	0	0.1	0	0.1
Percent Total Unemployed Hours	4.5	5.6	11.3	11.1	4.0	4.0	6.4	7.1	6.8
Sample Size	131	178	133	203	166	177	430	558	988

FY1983

	Arizona		Oregon		California		All States		Total
	STC	Comparison	STC	Comparison	STC	Comparison	STC	Comparison	Sample
Employment	100	110	72	47	270	170	157	106	128
Payroll ($1,000)	1,863	2,598	1,566	1,082	6,063	4,145	3,392	2,537	2,909
UI Charges ($1,000)	36.8	20.4	43.3	38.4	147.8	48.9	81.7	36.0	55.9
UI Weeks	432	250	392	464	1238	444	731	390	538
STC Charges ($1,000)	10.6	0	8.2	0	10.1	0	9.7	0	4.2
STC Hours	3786	10	2560	6	3111	7	3146	8	1374
Percent Hours on UI	7.9	10.6	11.5	13.8	9.0	8.3	9.5	11.0	10.4
Percent Hours on STC	2.6	0	3.1	0	2.4	0	2.7	0	1.2
Percent Total Compensated Unemployed Hours	10.6	10.6	14.7	13.8	11.4	8.3	12.1	11.0	11.5
Sample Size	131	178	133	203	166	177	430	558	988

TABLE IV.3

MEAN LABOR-MARKET OUTCOMES
FY1984 (First Half)

	Arizona		Oregon		California		All States		Total
	STC	Comparison	STC	Comparison	STC	Comparison	STC	Comparison	Sample
Employment	92	111	70	48	265	180	151	109	127
Payroll ($1000)	927	1,348	825	553	3,112	2,239	1,723	1,338	1,505
UI Charges ($1000)	20.4	13.9	9.4	14.1	43.0	22.5	25.7	16.7	20.6
UI Weeks	85	106	84	177	340	183	186	156	169
STC Charges ($1000)	0.9	0	0.6	0	0.3	0	0.6	0	0.2
STC Hours	317	2	153	15	86	3	177	7	81
Percent Hours on UI	1.6	3.1	3.3	4.2	3.1	2.5	2.7	3.3	3.0
Percent Hours on STC	0.4	0	0.4	0	0.2	0	0.3	0	0.2
Percent Total Unemployed Hours	1.9	3.1	3.7	4.2	3.3	2.5	3.0	3.3	3.2
Sample Size	131	178	133	203	166	177	430	558	988

trend is significant and whether it bears any relationship to STC participation are topics that will be addressed in detail in the following section.

All of the other outcome measures in Tables IV.1 to IV.3 refer to regular UI or STC benefit collection. The first four of these (UI charges, UI weeks, STC charges, and STC hours) were derived directly from administrative data. The figures show substantial amounts of regular UI collection for both STC participants and comparison employers in all of the years covered. Hence, the data clearly disprove the possibility that STC might fully substitute for regular UI for employers which use the program. Indeed, in all of the years, regular UI charges per employee were higher among STC participants than among employers in the comparison sample. Of course, such a simple comparison indicates little about the possible tradeoffs that exist in using either of the two programs, but it does serve as a reminder that employers adopt multiple strategies in reducing their workforces during downturns.

Unfortunately, the large variation in the size of the employers in our sample makes it difficult to draw meaningful conclusions from such aggregate data on UI and STC use.[1] The mean values in the tables are overly influenced by the very large firms. To overcome this problem, we chose to focus on measures of unemployment normalized by firm size.

---

[1] The smallest firm in the sample contained one employee; the largest contained 5,389 employees. One very large employer in our sample (over 10,000 employees) was eliminated from our statistical analysis because we did not have an adequate comparison, and because, by its sheer size, it dominated many of our regressions. That employer also exhibited a very complex pattern of STC use (having filed more than 100 separate plans), further precluding its use in our analysis sample.

Specifically, for each employer, we computed the number of employee hours worked during the FY1982 base period, and measured hours of regular UI or STC use relative to that figure.[1] These measures of the fraction of base-period hours spent on unemployment are conceptually similar to measured (insured) unemployment rates and are reported as the final three entries in Tables IV.1 to IV.3. These data indicate significant unemployment during the FY1982 base period (the mean percentage unemployed for all firms was 6.7 percent), which rose dramatically (to 10.4 percent) in FY1983. STC use was inconsequential in FY1982 but, among STC participants, rose to 2.7 percent of base-period employed hours in FY1983. For these employers, STC use represented 22 percent of the total hours of compensated unemployment in FY1983. Among the states, compensated unemployment was considerably higher in Oregon than in Arizona or California in both FY1982 and FY1983. That pattern is also shown in the published insured unemployment rate (IUR) figures for the period.[2] However, because our sample focused on industries that were relatively hard hit by the recession, the percentages in the tables are somewhat higher than those published figures.[3]

---

[1] Base-period hours were computed by multiplying base-period employment times normal weekly hours (these data were from the interview) times an assumed 50 work weeks per year. UI hours were computed by multiplying weeks of regular UI collected times normal weekly hours.

[2] In FY1982, IURs averaged 3 to 4 percent in Arizona, 6 to 8 percent in Oregon, and 4 to 5 percent in California. These percentages increased in each state by 1 to 2 percentage points in FY1983.

[3] Unfortunately, we did not have information on reduced hours that were not compensated by STC. Although such reductions may have been relatively common (the average work week dropped by about 1.5 percent for the industries in our sample during the 1982-1983 recession), we could not determine their relative importance to STC participants and nonparticipants. For this reason, our results consistently refer only to the "compensated unemployment." The likelihood of reduced hours should also be recognized in our discussion of the hours that employees spend on STC. To the extent that the hours of some of these workers would have been reduced during the recession even without the STC program, the availability of STC

Although it would be inappropriate to attempt to draw a detailed comparison between STC participants and nonparticipants on the basis of the raw figures in the tables, a few general trends might be highlighted. First, in terms of the FY1982 base period, few differences emerge among the employers. Only in Arizona did a substantial gap in UI collection occur between participants and nonparticipants (measured compensated unemployment was approximately 1 percentage point higher among the nonparticipants). For FY1983, the increase in regular UI collection was somewhat less among STC participants than among nonparticipants in Arizona and Oregon. Hence, there is some evidence that, at least in these two states, STC may have been an important substitute for UI. However, once STC hours are included in the total unemployment measures, compensated unemployment among participants in the program appears to increase slightly. This finding suggests that the conversion rate of regular UI unemployment into STC unemployment may have been less than one-for-one in FY1983. However, the pattern in California is not so clear. In that state, STC did not appear to provide a substitute for regular UI use. Of course, here, these conclusions must be regarded as very tentative; definitive conclusions must await our detailed analyses in Sections C and D of this chapter.

2. Employer Characteristics

In analyzing the employment outcome measures indicated in Tables IV.1 to IV.3, we used regression methods to enable us to control for a variety of employer characteristics. Summary measures of these character-

---

benefits would represent a "windfall"--that is, such hours would be compensated under the program but would not be induced by its availability. However, the extent of such windfalls could not be estimated (for a fuller discussion, see Nemirow, 1984a).

istics are reported in Table IV.4. We divided the variables into three general categories: (1) demand and financial-health variables, (2) adjustment-cost variables, and (3) work-force size and composition variables.

Included in our set of demand and financial-health variables were (1) the percentage of time that employees spent on regular UI during FY1982 (this variable has already been described in connection with Table IV.1), (2) a set of six industry binary variables (the mining, agriculture, and construction binary variable was omitted), and (3) binary variables which indicated that the firm suffered financial losses in 1981 or 1982. Two major patterns were apparent among these variables. First, in all states, the sample of STC recipients tended to be concentrated a bit more heavily in durable manufacturing than were employers in the comparison group. Second, and more important, STC participants were significantly more likely to have suffered financial losses in FY1982 than were comparison employers. Hence, although the unemployment data tended to indicate that comparison firms were, if anything, worse off, the financial data gave the opposite picture. Since the validity of our analysis depended importantly on our ability to control for the employer's condition in the base period, the FY1982 loss data indicated the necessity for special care in this regard.

Our second set of employer characteristics pertained to the potential costs associated with various types of work-force adjustments made by firms. Four variables were included in this group: (1) a measure of per-employee fringe benefits as a percentage of average wages in the firm; (2) estimated hiring costs, also as a percentage of average wages; (3) whether the employer reported a seasonal pattern to the business; and

TABLE IV.4

EMPLOYER CHARACTERISTICS

	Arizona		Oregon		California		All States		Total
	STC	Comparison	STC	Comparison	STC	Comparison	STC	Comparison	Sample
Demand and Financial Health									
FY1982 Percent of Hours on UI	4.2	5.6	11.3	11.0	3.9	4.0	6.3	7.1	6.7
Industry (Percent)									
Nondurable manufacturing	10.7	8.4	8.3	11.3	8.4	9.0	9.1	9.7	9.4
Durable manufacturing	48.9	44.4	32.3	31.0	41.6	33.9	40.9	36.2	38.3
Transportation, communications, and utilities	1.5	1.1	0	0	1.8	4.0	1.2	1.6	1.4
Wholesale trade	9.2	10.1	20.3	17.7	10.2	7.3	13.0	12.0	12.5
Retail trade	7.6	10.1	6.8	5.4	6.0	9.0	6.7	8.1	7.5
Finance and services	19.1	19.1	27.8	29.1	25.3	26.6	24.2	25.1	24.7
Percent with Loss in FY1982	29.0	23.0	41.4	25.6	27.1	19.2	32.1	22.8	26.8
Percent with Loss in FY1981	19.1	19.1	23.3	18.7	15.7	13.0	19.1	17.0	17.9
Adjustment Costs									
Fringe Benefit Cost Rate	12.4	11.7	12.7	11.9	12.5	11.3	12.5	11.6	12.0
Hiring Cost Rate	6.2	7.1	6.3	6.5	6.2	7.6	6.2	7.1	6.7
Seasonal Business (Percent)	45.0	41.6	56.4	51.2	41.0	49.2	47.0	47.5	47.3
Unionization (Percent)	6.2	6.7	16.5	11.3	22.3	22.0	15.6	13.3	14.3
Workforce Size and Composition									
(Percent of Employees)									
Less than 2 Years' Experience	30.0	37.0	24.0	29.0	26.0	30.0	26.0	32.0	29.0
Production Workers	53.8	45.7	04.2	37.8	49.2	38.6	47.8	40.6	43.7
Female	34.4	35.2	30.5	29.9	34.1	33.9	33.1	32.9	32.9
White	75.7	74.4	94.4	93.8	66.9	63.1	78.1	77.9	78.0
Less than Age 25	23.6	24.7	14.8	18.3	20.3	23.2	19.6	21.9	20.9
Total Base Period Employment	115.0	111.0	77.0	51.0	312.0	166.0	179.0	138.0	
Sample Size	131	178	133	203	166	177	430	558	988

(4) whether the employees were represented by a collective bargaining agreement. Although some cross-state differences existed in the mean values for these measures, STC and comparison employers within states appeared to be quite similar.

Finally, the third set of employer-related variables pertained to the characteristics of the workforce. In addition to total base-period employment,[1] the set also included measures of the fraction of workers who had little (less than two years of) experience and who were production workers, and measures of the sex, race,[2] and age distribution of the workforce. In addition to the fact that STC participants tended to have higher levels of unemployment than did comparison employers (as we noted earlier), two other aspects of these data should be highlighted. First, the STC group contained somewhat fewer inexperienced (and younger) employees. This finding was consistent with the participation analysis results reported in Chapter III. Second, the workforces of STC participants also tended to consist of a higher fraction of production workers than was true of the workforces of employers in the comparison

---

[1] For most of our analysis, total base-period employment was defined as employment recorded by UI administrative records in 1982.2. However, for our analysis of employment in FY1983 and FY1984, base-period employment was defined as an average over the four quarters of FY1982, so that it could be measured in a way similar to how the dependent variables were measured.

[2] As we described in Chapter III, we were unable to develop different estimates for various minority groups. Hence, employees were divided into two categories, "white" and "nonwhite." The variable actually used was "percent white." If the variable "percent nonwhite" had been used, the coefficients (which were generally not statistically significant) would have had the opposite sign from what was actually reported.

group. This tendency may have been due to the differences in the industrial composition of the two groups.

The nineteen "control" variables in Table IV.4 are included in all of our analysis reported in Sections C and D of this chapter. Occasionally, we also examine other factors (such as UI tax rates) on an ad hoc basis. The results for these other variables are briefly mentioned where relevant.

C. ANALYSIS OF STC-PERIOD (FY1983) OUTCOMES

The most important component of the analysis focuses on the STC period, which is defined as FY1983. We initially defined and conducted a basic analysis which yielded a first approximation of the effects of STC use. The results of our basic analysis raised several analytical issues, which we addressed when we refined our basic approach.

We present these results in three subsections. In subsection IV.C.1, we present a basic regression analysis of the general form represented by equation (1). Our conclusion from that analysis was that STC use did reduce UI collections, but that the estimated layoff conversion rate was considerably less than one. In subsection IV.C.2, we analyze several different samples of the data to examine the degree to which our basic results are robust to alternative specifications. Finally, subsection IV.C.3 briefly discusses some more sophisticated econometric analyses of our data, which generally supported the basic results of the previous investigations. An important set of labor-market outcomes not reported in this Section C pertain to FY1984. These outcomes are analyzed in Section D, which shows that the effects of STC tended to persist into the "postprogram" year.

1. Basic Analysis

For FY1983, we examined three primary outcomes: (1) the percentage of base-period hours spent on regular UI during the period, (2) the percentage of base-period hours spent on STC, and (3) total FY1983 employment.[1] The results of a preliminary analysis of these variables are presented in Table IV.5. Each of the outcome measures was regressed on the variables listed in Table IV.4 and on a binary variable that represented participation in the STC program[2] (STCPART2). Additional binary variables for Arizona and Oregon employers were also included. Our primary interest in these equations focused on the coefficient of STCPART2 as a possible measure of the impact of the program. In the UI equation, this coefficient was negative and statistically different from zero at the .05 level. Its value implied that workers who were employed by STC participants spent 1.45 percent fewer base-period hours on UI than did employees of comparison firms. Hence, STC did appear to reduce unemployment that was compensated by regular UI. But, according to the second regression in Table IV.5, employees from participating employers spent 2.65 percent of their base-

---

[1] Other analyses examined initial claims under regular UI, as well as employers' own reports of layoffs. Because the results for these other measures tended to support our basic results, they are not explicitly presented herein.

[2] Here, we defined a firm as "participating" in STC if the firm applied for STC during the study period and either (1) had any charges under the program or (2) had no STC or regular UI charges during the period. This second group of 15 firms which applied for STC but had no STC or UI charges during the period was included as participants to avoid biasing the comparison group by including them there. Hence, the participation definition used for the regressions differed slightly from the definition used in Tables IV.1 through IV.4, which included only firms that actually incurred STC charges. However, the results of using both definitions of STC participation were in fact quite similar.

TABLE IV.5

BASIC REGRESSIONS ON FY1983 OUTCOMES

Independent Variables	Dependent Variables: Percent of Hours on UI	Percent of Hours on STC	Employment
Demand and Financial Health			
Percent of Hours on UI FY1982	1.191**	0.006	-0.495
Industry			
Nondurable manufacturing	3.611**	-0.554*	37.70
Durable manufacturing	1.275	-0.708**	33.91
Transportation, communications, and utilities	-0.662	-1.193*	16.07
Wholesale trade	2.726*	-0.659**	-10.37
Retail trade	1.881	-0.539	31.98
Finance and services	3.580**	-0.093	25.20
Percent with Loss in FY1982	2.920**	-0.270	-24.88
Percent with Loss in FY1981	-2.471**	0.075	6.62
Adjustment Costs			
Fringe-Benefit Cost Rate	-0.178*	-0.065**	2.465**
Hiring Cost Rate	-0.127*	-0.003	0.152
Seasonal Business	-1.140*	0.171	8.01
Union	1.265	0.086	40.23**
Workforce Size and Composition			
Less than 2 Years of Experience	1.677	-0.231	-45.79*
Production Workers	3.875**	0.218	14.12
Female	-0.353	-0.078	18.63
White	1.400	0.663**	20.08
Less than Age 25	-0.123	-1.100**	58.70*
Total Base Period Employment	-0.000	-0.001**	0.717**
STCPART2	-1.450**	2.654**	4.95
State			
Arizona	-0.669	0.060	-46.16**
Oregon	-4.881**	-0.082	-50.85**
Intercept	2.565	0.977**	-20.13
Measures of Goodness of Fit			
R^2	0.630	0.257	0.676
Standard Error	12.35	2.46	221.6
F	74.82**	15.15**	91.4**
(degrees of freedom)	(22, 965)	(22, 965)	(22, 965)

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

period hours on STC. These figures then implied a layoff conversion rate of 0.55 (1.45 ÷ 2.65), a number considerably below the 1.0 figure often hypothesized. Further support for the possibility that the layoff conversion may have been less than unity in our sample was provided by the employment equation. Although the STCPART2 variable had the expected positive effect on employment, the coefficient was quite small and not significantly different from zero. Hence, at least by this measure, no substantial evidence existed that STC "saved jobs" in FY1983. However, before accepting such a conclusion, we wished to ascertain that it was not simply a statistical artifact that reflected the basic methodological error of failing to consider the endogeneity of STC participation (see Section A of this chapter). Therefore, we proceeded to conduct a variety of additional statistical tests which addressed this issue.[1] Before reporting those tests, we should briefly mention some of the other principal results in Table IV.5 (which largely held up throughout our subsequent analysis).

Employers' previous work-force unemployment was by far the most important variable in terms of explaining compensated unemployment in FY1983. The coefficient of the lagged unemployment variable (which was

---

[1] One test that was based on the interview data and that used the econometric formulation of Table IV.5 should be mentioned here. In the belief that STC may have affected only temporary layoffs (as opposed to permanent layoffs--a distinction that cannot be made by using the records data), we constructed a measure of hours spent on temporary layoff from information in the survey. In all, temporary layoff hours accounted for about one-third of the total layoff hours that were recorded in the survey, although there are several reasons for believing that this fraction substantially understated the extent of temporary work reductions (primarily because only workers who actually returned to the firm were counted in this strict definition of temporary layoffs). In any case, measuring this concept in the survey suffered from substantial problems, and in none of our estimates did STCPART2 have a significant effect on our computed temporary layoff measures.

nearly 40 times its standard error) implied that, other things equal, UI collection rose by 19 percent between the two periods. Recorded unemployment was significantly higher in nondurable manufacturing, in the finance and services, and in the wholesale-trade industries than in the other industries. Financial losses in 1982 also had a significant positive impact.[1] As might have been expected, hiring costs had a negative effect on employers' willingness to incur layoffs. Less expected was the similar negative effect of fringe-benefit costs. A possible explanation for that finding is that high fringe-benefit levels reflect workers' seniority and skill levels. The variable may thus reflect losses of job-specific human capital to the firm under layoffs. Another possibility is that the variable may reflect a portion of labor costs that might remain relatively fixed even when workers are temporarily laid off (if, for example, health insurance coverage is continued during the layoff). However, our interview data on fringe benefits were not sufficiently detailed to enable us to investigate these possibilities. Among employee characteristics, only the percentage of workers in production had a significant (positive) influence on layoffs. This finding probably further reflected the economic difficulties that faced manufacturing-type industries during the recession. Finally, the large negative coefficient for the Oregon binary variable in the UI regression should be mentioned. The coefficient implied

---

[1] The negative coefficient for financial losses in FY1981 may have indicated that firms which suffered such losses had completed major work-force adjustments by FY1983, which were reflected in the lagged UI variable in the regression. Attempts to include an interaction term for FY1981 and FY1982 losses and to account for the relatively larger amount of missing data in the interview data on these variables were statistically insignificant. The inclusion of data on losses in FY1983 also did not affect the basic results.

that, other things equal, layoffs were less severe in Oregon than in the other states--a finding which seemed at odds with the generally poor labor-market conditions in that state. A further examination of the result indicated that it reflected a significant interaction between the state variables and STC status. It appeared that the effects of STC on UI collection were larger (more negative) in Oregon than in the other two states. A formal test of possible structural differences among the states yielded somewhat ambiguous results ($F = 1.51$, which was just barely significant at the .05 level), but the observed differences in the estimated effects of STC were large enough to be potentially important. For that reason, we decided to run most of our results both in a pooled form and separately by state. Some of these separate estimates by state are reported later in this subsection.

Coefficients for the independent variables in the STC and employment equations were in some ways similar to those in the UI equation, although often not as statistically significant. Three major differences should explicitly be mentioned. First, the lagged measure of UI collection in FY1982 had little effect in either the STC or the employment equations. Whereas the variable was a good predictor of the adjustments made by employers when measured by regular UI use, it was not a good predictor of other types of work-force adjustments. Second, as with the hours of regular UI measure, financial losses in FY1982 did have a significant negative impact on employment, but such losses did not seem to affect the amount of time spent on STC. This latter finding differs from the results presented in Chapter III, which suggested a strong impact of FY1982 losses

on the probability of STC participation. Finally, the coefficient of base-period employment was significant in both the STC and employment equations, despite the insignificance of the variable in the regular UI equation. The negative coefficient in the STC equation probably arose from larger employers' using STC only for small segments of their workforces, even though, overall, such employers were somewhat more likely to use the program. The strong positive effect of base-period employment on FY1983 employment simply indicated the general tendency of firms to maintain their employment levels from one year to the next.

Because the regressions in Table IV.5 gave significant indications of differential responses to STC, we decided to disaggregate our analysis by state. The results of that disaggregation are presented in Tables IV.6 to IV.8. Perhaps the most striking difference among the states pertains to the estimated impact of STC participation on regular UI collection. Point estimates of that impact (the percentage of base-period hours spent on regular UI in FY1983) ranged from a high of -2.74 in Oregon to a low estimated effect of essentially zero in California. In terms of what we have called "layoff conversions," the estimated value was approximately one in Oregon (2.74 ÷ 2.89 = .95), about one-half in Arizona (1.34 ÷ 2.57 = .52), and near zero in California (.03 ÷ 2.57 = .01). The regressions on FY1983 employment also suggested that differential impacts of STC occurred by state, since the significant negative coefficient estimated for STCPART2 in Arizona was not found in Oregon or California. Because of the large variation in the size of the firms in our sample, these differences in outcomes in the employment regressions by state were significantly affected

TABLE IV.6

REGRESSIONS ON FY1983 OUTCOMES:
ARIZONA

Independent Variables	Dependent Variables: Percent of Hours on UI	Percent of Hours on STC	Employment
Demand and Financial Health			
Percent of Hours on UI FY1982	1.455**	0.002	0.433**
Industry			
Nondurable manufacturing	1.266	1.144**	17.04
Durable manufacturing	0.727	-0.002	28.99**
Transportation, communications, and utilities	-0.167	-0.832	23.83
Wholesale trade	1.378	-0.436	15.35
Retail trade	2.541	-0.022	20.72
Finance and services	5.084*	0.834*	22.32*
Percent with Loss in FY1982	3.468**	-0.171	-11.67
Percent with Loss in FY1981	-4.560**	0.153	0.37
Adjustment Costs			
Fringe-Benefit Cost Rate	-0.053	-0.026	0.878*
Hiring Cost Rate	0.075	-0.040*	0.162
Seasonal Business	-0.834	-0.122	11.96*
Union	-1.300	1.399**	-15.17
Workforce Size and Composition			
Less than 2 Years of Experience	3.729	0.869**	11.49
Production Workers	4.813	-0.315	-3.61
Female	-2.073	0.076	-5.28
White	3.045	0.899*	-4.04
Less than Age 25	-5.180*	-0.793	-6.02
Total Base Period Employment	0.000	-0.000	0.888**
STCPART2	-1.336	2.565**	-18.57**
Intercept	-2.428	-0.315	-22.37
Measures of Goodness of Fit			
R^2	0.807	0.347	0.974
Standard Error	12.48	2.02	57.30
F	60.33**	7.64**	539**
(degrees of freedom)	(20, 288)	(20, 288)	(20, 288)

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

TABLE IV.7

REGRESSIONS ON FY1983 OUTCOMES:
OREGON

Independent Variables	Dependent Variables: Percent of Hours on UI	Percent of Hours on STC	Employment
Demand and Financial Health			
Percent of Hours on UI FY1982	0.641**	0.012	-14.62
Industry			
Nondurable manufacturing	1.139	-0.674	-6.99
Durable manufacturing	4.243*	-0.275	-8.36
Transportation, communications, and utilities	0.000	0.000	0.000
Wholesale trade	0.679	0.179	-4.84
Retail trade	-1.342	0.021	-5.89
Finance and services	1.258	0.277	-0.46
Percent with Loss in FY1982	1.854	-0.106	-6.936
Percent with Loss in FY1981	-1.566	0.505	5.015
Adjustment Costs			
Fringe-Benefit Cost Rate	-0.359**	-0.038	-0.406
Hiring Cost Rate	0.071	-0.031	-0.312
Seasonal Business	-1.870*	-0.067	-4.034
Union	7.361**	-0.289	-4.080
Workforce Size and Composition			
Less than 2 Years of Experience	6.046**	-1.591**	-0.52
Production Workers	1.233	-0.089	13.74*
Female	-3.564	0.843*	-7.40
White	3.844	1.322	-10.01
Less than Age 25	-2.636	-0.689	4.32
Total Base Period Employment	-0.000	-0.001*	0.872**
STCPART2	-2.735**	2.888**	0.698
Intercept	4.524	-0.242	25.16
Measures of Goodness of Fit			
R^2	0.503	0.328	0.930
Standard Error	10.64	2.35	39.59
F	16.81**	8.10**	222**
(degrees of freedom)	(19, 316)	(19, 316)	(19, 316)

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

TABLE IV.8

REGRESSIONS ON FY1983 OUTCOMES:
CALIFORNIA

Independent Variables	Dependent Variables: Percent of Hours on UI	Percent of Hours on STC	Employment
Demand and Financial Health			
Percent of Hours on UI FY1982	1.618**	0.012	-1.821
Industry			
Nondurable manufacturing	2.655	-1.687**	112.4
Durable manufacturing	0.003	-1.506**	51.97
Transportation, communications, and utilities	-0.282	-1.730**	37.6
Wholesale trade	1.042	-1.493**	-77.25
Retail trade	1.882	-0.917	55.3
Finance and services	1.618	-0.491	35.65
Percent with Loss in FY1982	5.096**	-0.561	-37.89
Percent with Loss in FY1981	-2.118	-0.287	-9.82
Adjustment Costs			
Fringe-Benefit Cost Rate	-0.146	-0.148**	6.241**
Hiring Cost Rate	-0.284**	0.002**	1.779
Seasonal Business	0.292	0.364	-2.52
Union	-0.932	-0.049	82.75*
Workforce Size and Composition			
Less than 2 Years of Experience	-3.125	0.063	-130.2*
Production Workers	3.702*	1.247**	25.28
Female	2.366	-0.523	59.44
White	-0.133	0.359	74.26
Less than Age 25	4.133	-1.611**	170.3*
Total Base Period Employment	-0.000	-0.000*	0.643**
STCPART2	-0.027	2.569**	32.22
Intercept	1.937	2.522**	-139.2
Measures of Goodness of Fit			
R^2	0.604	0.262	0.567
Standard Error	10.53	2.80	363.4
F	24.55**	5.72**	21.1**
(degrees of freedom)	(20, 322)	(20, 322)	(20, 322)

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

by the values of the employment variables for the largest firms.[1] Consequently, we decided that the UI and STC regressions (which were normalized by firm size) better reflected the true differences by state. Although the limitations imposed on our study by the small number of states that offered STC precludes any attempt to offer a precise explanation of these state-by-state differences, we offer elsewhere in this report (in Chapters V and VII) some tentative suggestions about how various state administrative practices may have contributed to this result. Other possible reasons for the result include undetected problems with data from some of the states or potential methodological shortcomings with the basic approach used here. We could not, however, differentiate among these possibilities.

As a way of summarizing the results from Tables IV.6 to IV.8, we use these results in Table IV.9 to compute "regression-adjusted" measures of compensated unemployment in participating and nonparticipating firms in the three study states. As noted previously, total compensated unemployment was higher for STC firms than for comparison firms in all three of the study states; however, the extent of this difference varied substantially among the states. Similarly, large state-by-state differences occurred in most of the subsequent analysis of compensated unemployment to be reported herein. To simplify our presentation, however, we will focus primarily on the results aggregated by state.

---

[1] As part of our analysis, we also used the ratio of employment in FY1983 to base-period employment as a dependent variable to indicate the size of employment adjustments, but STCPART2 was not statistically significant in either a pooled regression or a regression run separately by state for that dependent variable.

TABLE IV.9

SUMMARY ESTIMATES OF BASE PERIOD HOURS SPENT
ON REGULAR UI OR STC IN FY1983, BY STATE
(In Percent)

	State		
	Arizona	Oregon	California
STC Employers			
Percent of Hours on Regular UI	8.75	11.32	8.58
Percent of Hours on STC	2.57	2.89	2.57
Percent of Hours on UI Plus STC	11.32	14.21	11.15
Comparison Employers			
Percent of Hours on Regular UI	10.09	14.05	8.61
STC-Comparison Difference			
Percent of Hours on Regular UI[a]	-1.34	-2.73**	-0.03
Percent of Hours on STC	2.57**	2.89**	2.57**
Percent of Hours on UI Plus STC	1.23*	0.16	2.54**
Percent Change in STC Employers' Average Compensated Hours (UI Plus STC) from Comparison Employers' Average Compensated Hours	**12**	**1**	**29**

NOTE: Estimates have been adjusted by regression, using results from Tables IV.6 through IV.8.

[a] The standard errors associated with these adjusted differences in the percent of hours spent on UI were 1.49, 1.22, and 1.20 percentage points for, respectively, the Arizona, Oregon, and California estimates.

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

2. Estimates on Alternative Samples

In order to explore possible biases in our examination of compensated unemployment that may have been introduced by our comparison group methodology, we adopted two approaches for testing the robustness of our results: (1) using alternative samples for the analysis and (2) using more sophisticated econometric methods. In this subsection, we report the results of the first of these approaches.

Although we investigated many alternative sample definitions, here we will discuss just two specific cases which tended to span the set of options examined. In the first of these, we excluded from the sample any comparison employer which reported that it had "considered using STC" but had rejected the idea. The primary reason for this exclusion was to test the possibility that firms which consciously rejected STC use may not have faced the necessity of adjusting their labor force, and, hence that their inclusion in the comparison group may have tended to show too little compensated unemployment for that group. Of course, as we reported in Chapter III, employers had many reasons for opting not to use STC, but we felt that this rather gross sample exclusion might provide a rough check on the biases involved. In all, 94 firms that, to any degree, considered using STC were omitted from this analysis. Summary results for their exclusion are reported in column 1 of Table IV.10. For purposes of comparison, the second column of the table repeats our primary results, aggregated across states, from the previous subsection (Table IV.5). Overall, the results in columns 1 and 2 are fairly similar. Indeed, the exclusion of firms which considered using STC actually reduced (in absolute value) the estimated size of the UI reduction due to STC use.

TABLE IV.10

SUMMARY ESTIMATES OF BASE PERIOD HOURS SPENT ON REGULAR UI OR STC IN FY1984, USING ALTERNATIVE SAMPLES
(In Percent)

	Alternative 1[a]	Three-State Aggregate of Main Results[b]	Alternative 2[c]
STC Employers			
Percent of Hours on Regular UI	9.60	9.60	9.60
Percent of Hours on on STC	2.66	2.65	2.72
Percent of Hours on UI plus STC	12.26	12.25	12.32
Comparison Employers			
Percent of Hours on Regular UI	10.58	11.05	11.52
STC-Comparison Difference			
Percent of Hours on Regular UI	-0.98	-1.45**	-1.92**
Percent of Hours on STC	2.66**	2.65**	2.72**
Percent of Hours on UI plus STC	1.68**	1.20*	0.80*
Percent Change in STC Employers' Average Compensated Hours (UI plus STC) from Comparison Employers' Average Compensated Hours	**16**	**11**	**7**

NOTE: Estimates have been adjusted by regression to hold constant those factors listed in Table IV.4.

[a] Alternative 1 differs from the "Three-State Aggregate" because it omits from the comparison group 94 firms which reported that, to any degree, they considered using STC.

[b] Estimates were derived from Table IV.5.

[c] Alternative 2 differs from the "Three-State Aggregate" because it omits from the analysis all firms (a total of 90) that did not use either UI or STC during FY1983.

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

Consequently, the percent of hours spent on all forms of compensated unemployment was actually higher for STC users under this alternative. Hence, no evidence was available to suggest that the inclusion of firms which rejected STC use in our original comparison sample was leading us to attribute inappropriately low levels of compensated unemployment to that group.

As we described in Section B, one explanation for finding layoff conversion rates that are significantly below unity is the possibility that some employers may refrain from making any work-force adjustments in the absence of STC. Some evidence on that possibility was provided in our interview, in which more than 20 percent of the STC participants reported that they would not have found it necessary to make any layoffs in the absence of STC.[1] In order to investigate this issue further, we identified a subsample of employers in our sample which apparently made no compensated labor-force adjustments in FY1983 (as defined by the absence of any regular UI or STC charges). This group of 90 employers was then eliminated from our analysis sample so as to focus only on those employers which did adjust their workforces by using either regular UI or STC. Summary results of running our basic regressions on this restricted data set are presented in the third column of Table IV.10. As expected, the estimated effect of STC on UI hours became larger for this restricted sample. Our estimated layoff conversion rate increased to about .70 (1.92 ÷ 2.72 = .71). However, most of the other coefficients in the regression remained fairly close to those

---

[1] STC use among this group averaged 1.9 percent of base-period hours, compared with 2.8 percent for those employers which reported that layoffs would have been necessary.

reported for the entire sample. In general, then, these findings suggested that at least part of our failure to find layoff conversion rates close to 1.0 was due to our including in the comparison sample a significant number of firms which did not find it necessary to make labor-force adjustments, but which might have done so by using STC had they been program participants. For that reason, excluding from the comparison group all firms which made no apparent work-force adjustments (as in column 3 of Table IV.10) probably biases the overall layoff conversion ratio upward.

In our research, we experimented with several other sample exclusion rules, but none produced results outside the range reported in Table IV.10. Hence, our basic aggregated results appeared to be fairly robust to alternative specifications. Although, as might be expected, alternative sample specifications did have some effect on the point estimates obtained, the qualitative conclusions did not change very much.

3. Econometric Techniques

A number of econometric techniques have been proposed to control for potential biases arising from the endogeneity of "treatment" variables in regressions.[1] All of these techniques are based on the notion that if participation in the treatment (here, participation in STC) can adequately be modeled the results of that modeling can be used in outcome regressions to improve their statistical properties. In our research, we used two such techniques to investigate their impact on our basic UI collection regressions. In the first of these techniques (developed by Maddala and

---

[1] For a summary of these techniques, see Barnow, Cain, and Goldberger (1980).

Lee, 1976), predicted values for the STC treatment variables were estimated from a probit regression similar to the one described in Chapter III, and were substituted for the STCPART variables. The second technique also used the probit participation regressions to estimate the "Mill's ratio," to be used in a procedure that was first developed by Heckman (1976). Qualitatively, the results of both of these techniques were quite similar--the estimated treatment effects in the regular UI collection equations were reduced from approximately -1.4 percent of base-period hours to about -1.1 percent of base-period hours. This direction is opposite from what would have been expected--if the endogeneity of STC reduced the estimated impact of the program on unemployment, the coefficient of the STCPART2 variable should have become more negative when the special techniques were used. Hence, as was the case with the alternative sample specifications, we concluded from our econometric investigations that the basic results for UI collection were fairly robust in terms of the endogeneity issue.

D. ANALYSIS OF FY1984 OUTCOMES

Although our research design focused on employers which used STC in FY1983, the effects of their using the program may have extended into FY1984 as well. In this section, we analyze that possibility. Again, our discussion is based primarily on UI administrative-records data. Since these data were generally available only for two quarters (1983.3 and 1983.4), our results might not be representative of what could be shown by a full year of information. However, rather than our attempting to extrapolate to the full year, we will generally limit our discussion to the six months of data that were available.

The effect of STC participation in FY1983 on such outcomes as either regular UI benefits collected or employment in the subsequent year is theoretically ambiguous. If STC alters the way that employers choose to adjust their workforces, then those effects (say, a reduction in regular UI benefits collected) may persist into FY1984--an event that is especially likely given the possibility that the use of STC by some of the employers in our sample may have extended into 1983.3. Similarly, since STC allows employers to retain their skilled employees, participation in the program may enable the employers to return more quickly to fully employed production once demand again increases, and that too might show up as a reduction in regular UI benefits collected in FY1984. An alternative possibility, however, is that participation in STC only postpones the ultimate layoff adjustments of employers, so that, in FY1984, participating employers would have made the types of adjustments that comparison employers made in FY1983. That outcome was explicitly targeted for examination in the congressional mandate for the present study, and it is the first topic that we examine in this section.

The data presented in Table IV.3 suggested that the postponement of layoffs by STC employers was not particularly important. The table showed that only slight differences in regular UI collection in FY1984 occurred between STC and comparison firms. Those differences which did occur tended to suggest that, if anything, employees of STC participants collected slightly less regular UI in FY1984. Further corroborating evidence from our survey showed that only 13.5 percent of the STC users reported having made layoffs after STC ended, and that the mean number of layoffs (2.3) was far fewer than the number that the firms reportedly would have made in the

absence of STC (11.5). Hence, the data seemed relatively consistent in supporting the notion that STC was used as a form of temporary work reduction, and not as a way to postpone an inevitable contraction in the number of employees.

To examine whether the effects of STC work adjustments persisted into FY1984, we first ran a set of regressions similar to those developed for FY1983. A representative sample of results for those regressions is reported in Table IV.11. Perhaps the most important conclusion to be drawn from the table is that STC participation had a small but significant (at the .10 level) effect on reducing regular UI collection in FY1984--about 0.5 percent of base-period hours. Further evidence that STC may have had some impact on regular UI collection in FY1984 was provided by regression results (not reported here) on new UI claims, which showed that employees of STC participants filed significantly fewer new UI claims in FY1984 than did employees of comparison firms.[1] Hence, there is clear evidence that the effects of STC adjustments tended to persist slightly beyond the original program period.

Because the impact of STC tended to extend beyond FY1983, it is important to reconsider the layoff conversion effects computed in Section C to take this dynamic response into account. A variety of ways can be used to do so, depending on how STC use in FY1984 is treated and on which of the specific results from Section C are used. For example, if STC use in FY1984 is assumed to be independent of its use in FY1983 and if the results

---

[1] Specifically, the regressions suggested that an average of 1.7 fewer new claims (of an overall total of about 7 new claims) were filed in the first half of FY1984 by employees of STC participants than were filed by employees of otherwise similar employers in the comparison sample.

TABLE IV.11

BASIC REGRESSIONS ON FY1984 OUTCOMES

Independent Variables	Dependent Variables: Percent of Hours on UI	Percent of Hours on STC	Employment
Demand and Financial Health			
Percent of Hours on UI FY1982	0.156**	-0.001	-0.569
Industry			
Nondurable manufacturing	-0.453	0.093	53.87*
Durable manufacturing	-1.245*	0.019	51.09*
Transportation, communications, and utilities	-1.663	-0.054	35.36
Wholesale trade	-1.118	-0.019	-3.42
Retail trade	-1.550*	-0.028	43.34
Finance and services	0.175	0.154*	42.90
Percent with Loss in FY1982	0.902**	0.086	-35.81**
Percent with Loss in FY1981	-0.996**	0.056	12.62
Adjustment Costs			
Fringe-Benefit Cost Rate	-0.073*	-0.020**	2.987**
Hiring Cost Rate	0.029	-0.007*	0.342
Seasonal Business	-0.094	0.043	9.44
Union	1.222**	0.158**	43.69**
Workforce Size and Composition			
Less than 2 Years of Experience	2.429**	-0.367**	-35.98
Production Workers	2.110**	-0.177**	8.37
Female	-0.075	0.018	17.33
White	-0.273	0.066	19.90
Less than Age 25	0.075	0.303**	82.
Total Base Period Employment	0.000	-0.000	0.686**
STCPART2	-0.543*	0.305**	-3.14
State			
Arizona	-0.371	0.122**	-50.52**
Oregon	0.210	0.108*	-51.51**
Intercept	2.066*	0.181	-38.60
Measures of Goodness of Fit			
R^2	0.170	0.082	0.622
Standard Error	5.65	0.78	240.1
F	8.95**	3.93**	72.3**
(degrees of freedom)	(22, 965)	(22, 965)	(22, 965)

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

from the total sample (Table IV.10) are used, then the total reduction in hours on regular UI is -1.99 percent (-1.45 - .54) of base-period hours. Dividing this figure by estimated STC use (2.65 percent of base-period hours) yields a conversion rate of 0.75. Conversely, if some portion of STC use in FY1984 is attributed to STC participation in FY1983 (Table IV.11 provides an estimate of 0.31 percent for this effect), the estimated conversion rate becomes a bit lower (0.67). Possible explanations for this persistence in STC use are that (1) some FY1983 claims may have indeed persisted into 1983.3, that (2) some employers in Arizona and California were able to renew their FY1983 plans, and that (3) familiarity with the program may have encouraged some STC users to file new plans for a different work group in FY1984. Although the first of these explanations represented a good reason for including induced FY1984 STC hours in the conversion calculations, the others did not offer a convincing rationale. Since we were unable to differentiate among the possibilities analytically, we present both estimates in Table IV.12. Both support the conclusion that including the FY1984 results tended to reduce somewhat the "extra" compensated unemployment experienced by STC firms in FY1983.

E. SUMMARY OF QUANTITATIVE RESULTS FOR COMPENSATED UNEMPLOYMENT

Tables IV.9, IV.10, and IV.12 summarize our basic findings for the effects of STC on compensated unemployment. Although the sizes of some of the estimates varied, a few qualitative conclusions did appear to be well supported by the data. All of the results show that STC employers exhibited lower regular UI levels during the study period than did otherwise similar employers in the comparison group. Although the size of these reductions varied significantly by state, they were usually

TABLE IV.12

SUMMARY OF ESTIMATES OF THE EFFECT OF STC ON THE PERCENTAGE OF BASE-PERIOD HOURS SPENT ON COMPENSATED UNEMPLOYMENT

	Three-State Aggregate of Main Results[a]	Including FY1984 UI[b]	Including FY1984 UI and STC[b]
STC Employers			
Percent of Hours on Regular UI	9.60	12.31	12.31
Percent of Hours on on STC	2.65	2.65	2.96
Percent of Hours on UI plus STC	12.25	14.96	15.27
Comparison Employers			
Percent of Hours on Regular UI	11.05	14.30	14.30
STC-Comparison Difference			
Percent of Hours on Regular UI	-1.45**	-1.99**	-1.99**
Percent of Hours on STC	2.65**	2.65**	2.96**
Percent of Hours on UI plus STC	1.20*	0.66*	0.97*
Percent Change in STC Employers' Average Compensated Hours (UI plus STC) from Comparison Employers' Average Compensated Hours	**11**	**5**	**7**

NOTE: Estimates have been adjusted by regression to hold constant those factors listed in Table IV.4.

[a] Estimates are derived from Table IV.5.

[b] Estimates are derived from Tables IV.5 and IV.11.

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

statistically significant in the aggregated samples. Expressed as a percentage of UI collections by comparison employers, regular UI benefits were about 12 percent lower for STC participants.[1] However, once hours spent on STC were included, the estimates indicated that STC employers experienced more total hours of compensated unemployment than did comparison employers. The estimated magnitude of this "extra" unemployment varied considerably according to the methods and data used to measure it; in the aggregated results, its quantitative magnitude was between 5 and 16 percent of the compensated unemployment exhibited by the comparison group. Similarly, estimated "layoff conversion rates," which can be computed as the ratio of reduced regular UI hours to additional STC hours, ranged from much less than one-half (0.37) to about 0.75, depending on the methods of measurement used.

Given this variation in the aggregated estimates (and even more so in the state-by-state results), it would be misleading to highlight one set of calculations as representing "the" effect of STC. Nevertheless, in summarizing our results, we choose to highlight the aggregated figures in Column 1 of Table IV.12 and the state results in Table IV.9 as representing our best estimates of the effects of STC on compensated unemployment during the FY1983 study period. For longer-run purposes (such as the cost computations in Chapter VIII), we use a layoff conversion rate of 0.75--a figure calculated from Column 2 of Table IV.12. At times, we also use a hypothesized layoff conversion rate of 1.0 to allow for the possibility

---

[1]Regressions on initial claims for regular UI suggested that such claims were also about 10 to 12 percent lower for STC participants than for otherwise similar comparison employers. Hence, it seems likely that the reduced hours of UI collection represented a reduction in layoffs.

that the effects on the reduction of subsequent regular UI benefits collected may have persisted beyond the second quarter of FY1984 and, more generally, to provide a comparison for other research which has often used this hypothesized value.

In Chapter VII, we will place these findings within a broader policy context, particularly as they respond to the congressional mandate for the present study.

F. DEMOGRAPHIC COMPOSITION OF LAYOFFS

In addition to questions about the effect of STC participation on the total amount of compensated unemployment during economic downturns, considerable policy interest has also been expressed in various issues about the unemployment that does occur both under reduced hours and under layoffs. Many of these involve such issues as job-search activities, secondary job-holding, or the family income characteristics of unemployed workers that cannot be answered without detailed survey data on individuals. However, a set of concerns about the characteristics of laid-off workers can be addressed by using the UI records data that were available to us. Specifically, the congressional mandate for the present study and many other groups which have expressed interest in the STC concept ask whether the program offers the promise of "preserving" jobs for newly hired workers--who are believed to consist disproportionately of minority, female, and younger workers. In other words, the policy issue is whether the widespread adoption of the STC concept would help foster affirmative-action goals. Since the UI records contained information on the sex, race, and age of new UI and STC claimants and because our survey collected information on the composition of the overall workforces of

employers, this issue could readily be addressed. The basic data for such an examination are reported in Table IV.13, which shows the composition of both regular UI and STC initial claims charged against STC and comparison employers in our sample. The regular UI new claims data show few differences in terms of the demographic composition of the STC and comparison firms.[1] Similarly, relative to the composition of the overall workforces of employers (see Table IV.4), only minor differences exist between the figures in Table IV.13 and these overall work-force averages. Hence, with respect to actual layoffs (as reflected in the new UI claims data), our results support those found previously in the California evaluation (State of California, 1982) under a different, more hypothetical, methodology. Layoffs by comparison firms did not seem disproportionately to affect female or minority workers; thus, by that measure, the potential affirmative-action advantages of STC do not appear to be significant.[2]

However, a somewhat different picture is provided by the STC claims data, which show that employees who filed such claims were significantly more likely to be female and significantly less likely to be in the

---

[1] This absence of significant differences also occurred in regressions on the composition of UI claims that controlled for the variables listed in Table IV.4.

[2] We also investigated the sex, race, and age patterns of layoffs in FY1982 to determine whether there were affirmative-action implications to layoffs in the year prior to STC use. This investigation revealed no differences in the patterns of layoffs between employers which subsequently used STC (our STC sample) and those which did not (our comparison sample); it also revealed no differences between the sex, race, and age distribution of those who were laid off in FY1982 and the distribution of all employees in the sample firms. This further strengthened the conclusion that the advantages of STC use in terms of affirmative-action outcomes did not appear to be significant.

TABLE IV.13

EFFECTS OF STC ON AFFIRMATIVE-ACTION OUTCOMES
(In Percent)

	Percent of New Regular UI Claims (FY1983)					
	STC Employers				Comparis	
	Arizona	Oregon	California	Total	Arizona	Oregon
Percent Female	30.1	31.3	32.3	31.3	30.9	30.0
Percent Nonwhite	25.7	6.1	39.9	24.5	24.8	6.3
Percent Less Than 25 Years Old	21.8	15.9	20.8	19.5	23.6	15.1

	Percent of New STC Claims (FY1983)			
	Arizona	Oregon	California	Total
Percent Female	41.6	34.2	35.9	37.0
Percent Nonwhite	31.2	5.7	36.9	24.6
Percent Less Than 25 Years Old	17.6	11.5	12.8	13.8

youngest age category than were those who filed regular UI claims from the STC firms. Similarly, when compared with the overall employment statistics, STC claimants were also more likely to be female and less likely to be very young. The latter of these findings is the most easily explained. As was shown in Chapter III, employers reported that the primary benefit of STC was to enable them to retain their most valued employees. Similarly, the presence of a high fraction of experienced workers made employers more likely to participate in the program. Hence, it is not surprising that younger employees were less likely to be placed on reduced hours.

Providing an explanation of the relatively large number of female STC claimants is more difficult, primarily because we have no other information on these employees. It may be that many female STC claimants had recently been hired and, hence, might have been laid off in the absence of the program. Or it may be the case that female STC claimants were relatively experienced workers who, although they faced only a modest probability of layoff, were nevertheless willing to participate in STC for other reasons (for example, better potential uses for their reduced hours). In the absence of data on the job experience of female employees and on how they used their shorter work weeks, it is not possible to choose among these explanations.

PART THREE

POLICY ANALYSIS

V. THE IMPLICATIONS OF ADMINISTRATIVE DESIGN AND METHODS

The congressional mandate for this study posed two issues that are also of specific interest to state policymakers whose concern lies with the administrative design of and the procedures to be followed in operating an STC program.

1. The effect of varying methods of program administration
2. The effect of various state laws and practices on the retirement and health benefits of employees who are in STC programs

We addressed these issues of administrative design and practice in several ways. First, we were interested in how program administration affects the manner in which the program is used: whether the program is used for the purposes originally envisioned by policymakers, and how administrative controls may affect the volume of STC claims. Second, we were interested in whether the administrative framework for operating the program constitutes a burden for those employers who use it, and whether the ease with which it can be used may affect the extent to which it is used. Third, we were interested in how the administrative rules and procedures of STC may affect participating employees.

Unfortunately, our ability to draw conclusions about the effects of administrative methods and rules on program outcomes was severely constrained by several factors inherent in the evaluation. First, because only three states could be included in the survey and records data collection for this evaluation, we could examine and compare the administrative features of only those three states--Arizona, Oregon, and

California. Furthermore, the variation in the administrative procedures of these three states is subtle and relatively minor, compared with the marked departure of STC from the regular UI program of each state. With limited variation in the administrative practices of only three states, attributing differences in program outcomes to differences in administrative methods or rules would have been unwise. Nevertheless, because the administrative analysis undertaken for this evaluation has yielded a wealth of information on STC administrative methods and has suggested ways that the program outcomes could be affected by them, such information is worth reviewing.

This chapter examines how the administrative features of the STC programs in Arizona, Oregon, and California may have affected the extent to which the program was used, the burden on employers, and the interests of employees.[1] Section A describes the major administrative features of the three programs, focusing on the administrative rules that govern employer and employee participation, the tax rules that govern STC financing, and the procedures used to file and process STC claims. In Section B, we weigh the available evidence to determine whether the variations among the administrative features in the state programs can explain any of the differences in program outcomes.

A. ADMINISTRATIVE DESIGN AND METHODS

The administrative design and rules of STC programs have been affected markedly by four issues surrounding the policy intent and the practical problems inherent in program operations. First, administrative

---

[1] A full description and analysis of STC administration can be found in our earlier report on STC administration (Hershey, 1985).

rules have generally reflected the concern of policymakers that STC be used only in situations for which it is intended and only for its intended purposes--that is, when employers face especially difficult economic situations, and as an alternative to layoffs. Second, the rules have tended to reflect the concern that STC benefits be paid for only by the employers which use the program, and that the availability of STC not aggravate any pressures on UI trust funds. Third, program rules have been shaped by concerns that employees not be made economically worse off by the program. Fourth, the states have attempted to define program administration in a manner whereby the burden on employers and employees associated with establishing plans and filing claims is minimized. Each of these concerns and the range of administrative rules and procedures adopted as solutions by the three states are examined in the remainder of this section.

1. Ensuring Adherence to STC Purposes

In all three of the study states (as well as in other states that also operate STC programs), administrative rules have been shaped by concerns that the program be used only as a temporary substitute for layoffs when an employer faces difficult economic conditions. Specifically, rules have been written to attempt to prevent--

- The use of STC for long periods
- The use of STC at times when layoffs are not really being considered or are not imminent
- The use of STC by employers which would normally reduce hours even in the absence of the program
- The use of STC for seasonal or part-time employees for whom working less than full time is a normal

aspect of working conditions, rather than a result of a work-force reduction due to a business downturn

- The use of STC as a routine managerial method for controlling labor costs, rather than as a way to deal with the particular problems of a business downturn

To ensure that STC is used only for its intended purposes, and to prevent the misuses described above, Arizona, Oregon, and California have adopted a set of administrative rules (usually defined in STC legislation) that constrain the participation of employers and employees in the program. Their rules include the following:

- Limits on how long an employer's plan may run (usually 26 or 52 weeks), with the possibility in some of the states that plans may be renewed or extended when they expire, under specified conditions
- Limits on how long individuals may receive STC benefits (usually 26 weeks in a benefit year)
- Minimum participation requirements, stating that at least two employees be included, and that their hours be reduced by a minimum percentage (10 or 20 percent)
- Requirements that employers certify that they are using STC only as an alternative to layoffs
- Ceilings on the percentage by which hours are reduced (40 or 50 percent)
- Requirements that limit participation to employees who have some minimum employment tenure with the employer, ranging from as little as one pay period to as much as six months

Although the three states have dealt with a common set of concerns and have defined rules in similar terms, it is nevertheless possible to distinguish different degrees of restrictiveness in their rules. Oregon

places the tightest limits on STC plans. For instance, an employer's plan, which can run for up to 52 weeks, may not be renewed or extended, and the employer may not initiate a new STC plan, until another year has elapsed after the expiration of the first plan. In contrast, Arizona allows 52-week plans that can be extended another year upon application by the employer. In California, the present STC law limits plans to 26 weeks, but allows them to be extended if the state's seasonally adjusted civilian unemployment rate has exceeded 7.5 percent in the first three of the previous four months preceding the quarter of the expiration of the plan. However, during the period covered by the survey and records data collection for this evaluation, California had placed no limit on the duration of the plan.

During the survey and records data collection period of this study, Arizona, Oregon, and California had placed comparable restrictions on the period of individual participation in STC; however, Arizona and California have since relaxed their restrictions, whereas Oregon has retained its original rules. In Oregon, individuals are limited to 26 weeks of STC benefits in any benefit year. In California, individuals had been limited to 20 weeks in any 52-week period, but, in July 1983, this restriction was removed to allow individuals to collect STC benefits as long as they had any UI entitlement and their employer had a valid plan. In Arizona, STC legislation had limited individuals to 26 weeks of benefits in a benefit year but, under 1983 amendments, does not now count any week in which the insured unemployment rate exceeds 4 percent. Thus, Arizona allows longer periods of individual participation when unemployment is high.

All three of the states covered in the evaluation require that employers certify in their STC plan applications that they wish to use the program to avoid layoffs. Although state officials have clearly acknowledged that it is impossible to verify whether layoffs would have occurred had STC not been available, they also regard this certification as a useful way to remind employers about the purpose of the program. Clearly, all of the states would like to prevent employers from using STC to make marginal reductions in labor costs in situations in which no threat of layoffs exists.

Some distinctions among Arizona, Oregon, and California can also be drawn in terms of the limits they place on the allowable reduction in work hours under STC. The narrowest allowable range is set in Oregon, where work hours must be reduced by at least 20 percent and by no more than 40 percent. Arizona also sets an upper limit of 40 percent, but allows reductions of as little as 10 percent; California sets a 10 percent minimum, but has not established any formal ceiling on the percentage of reduced hours.

Arizona, Oregon, and California set quite different tenure standards that individuals must satisfy to participate in an STC plan. Here, again, Oregon sets the most stringent requirement: employees must have worked full time for six months or part time for a full year with the STC employer before becoming eligible. During the period covered by the survey and records data collection, this rule was even more stringent: employees must have worked the required period before the employer submitted the plan, so that, in effect, some recently hired employees might in some instances have never become eligible for STC, or might have become

eligible only if a later plan were submitted. In Arizona, employees must have earned at least $1,000 from the STC employer in the six months prior to the submission of the STC plan. In California, an employee must simply work one full pay period and be considered a permanent employee in order to become eligible.

Finally, the restrictions imposed by the three states on STC use can be distinguished in terms of the rules that govern multiple STC plans. In Arizona and California, employers may define and operate concurrent plans, and thus can set up separate plans for employees in different company units, shifts, or locations, and start and terminate reduced hours at different times under the different plans. However, in Oregon, only a single plan is allowed at one time, although individual employees may be added to or deleted from a plan at different times. Nonetheless, the fact remains that, in Oregon, large firms which face different work-force problems in different locations or units would probably find it more cumbersome to use STC for a wide range of work units than would be true in California or Arizona.

2. Financing Rules: Special STC Surtaxes

The rules that define the STC programs have been determined in part by concerns about the impact of STC on UI trust funds and the allocation of the costs of STC benefits among employers. Two specific issues have been widely discussed. First, policymakers have been concerned that UI claims under STC might be greater than claims filed in the absence of the program. This concern reflects several hypotheses about the possible behavior of employers. Because employers might be more likely to choose to reduce hours than to lay off employees, STC could increase the likelihood

of a total work-force reduction or hasten its onset. Given the option of using STC, employers might make total work-hours reductions that are greater than the equivalent number of layoffs, thus creating deeper work-force reductions than would occur in the absence of the program. Although under normal UI financing rules any resulting increase in benefits would lead to increased tax charges, such effects could still place short-term pressure on the UI trust fund. Because employers which already pay maximum tax rates would not experience any increase in short-term rates, the cost of the additional benefits would place a short-term drain on the trust fund. Even for employers which pay less than maximum tax rates, an increase in claims would still represent a short-term drain until it is offset by subsequent-year tax-rate increases. These issues are discussed more fully in Chapters VI and VII.

The second concern voiced by policymakers is that, even if STC does not lead to increases in UI claims, it does represent an advantage to the employers which use it, and should not be "free" to them. For instance, some state officials have been concerned about the possibility that maximum tax-rate employers would use STC heavily, gain a competitive advantage by using the program, and continue to shift a portion of the cost of claims to other employers.

Concerns about these possible effects have led Arizona, Oregon, and California to adopt special financing provisions that affect STC employers. Regular methods for charging benefits and computing tax rates have been applied to STC employers whose UI tax rates are in the range at which experience-rating is effective--that is, below maximum tax rates in the reserve-ratio states (California and Arizona) and below the "neutral"

tax rate above which tax rates fall short of true benefit ratios in the benefit-ratio state (Oregon). However, all three states have adopted special STC surtaxes for employers with a historically high volume of claims (that is, those for whom experience-rating is less effective). During the period studied in this evaluation, employers which used STC and which had negative reserve balances or high benefit ratios were required to pay a surtax on top of the regular UI tax rate.

In California, a reserve-ratio state, STC employers which had a negative reserve balance at the end of a fiscal year were obligated to pay a surtax that ranged from 0.5 percent to 3.0 percent, depending on the ratio of the negative reserve to the average base payroll. This surtax applied to the employer's entire payroll, regardless of how large or small a portion of the workforce was included in the STC plan. As California has since found, this surtax imposed additional taxes on some employers far beyond the cost of the STC benefits paid to their employees; thus, the state has revised its surtax for negative-balance employers, limiting it to a one-time surcharge of the amount of STC benefits. However, during the 1982-1983 period covered by the survey and records data collection for this evaluation, California was still using the original percentage surtax described above.

From its inception, the STC program in Arizona, also a reserve-ratio state, has imposed a percentage surtax on all STC employers which finished a rate year with a negative reserve balance. Three surtax rates were used during the 1982-1983 study year, depending on the severity of the employer's negative reserve ratio: 0.25 percent, 1.0 percent, and 3.0 percent. As under California's original law, surtaxes applied to the

employer's entire payroll. In 1984, Arizona softened its STC surtax provisions, reducing tax rates and broadening conditions under which employers could be exempted from the surtax even if they had a negative reserve balance.

Oregon, a benefit-ratio state, defines its STC surtax differently. STC employers which have high-benefit ratios and which, under normal tax schedules, would pay a tax rate lower than their actual benefit ratio are required to pay taxes at a rate equal to their true benefit ratio, up to a maximum of 3 percentage points above their normal rate schedule. Thus, employers which use STC and which normally would be "subsidized" by other employers under the normal tax schedule lose the subsidy inherent in the regular tax schedule. Despite some instances in which STC employers ended up with tax increases far in excess of the STC benefits paid to their employees, Oregon has left this surtax provision unchanged.[1]

3. Rules to Protect Employees

When first proposed, STC appeared to pose several risks to employees and organized labor. First, representatives of labor interests expressed concern that STC could increase unemployment by prompting employers to reduce hours in situations when they might not have otherwise chosen layoffs. Second, concerns were raised about whether employees with seniority rights under labor contracts might face reduced hours, and thus income reductions, if employers were allowed to introduce STC entirely at

---

[1] For a full description of the surtaxes for all STC states and the changes they have undergone, see Hershey (1985), Chapter III.

their own initiative. Third, employee advocates and policymakers voiced their concern about the potentially damaging effects of STC on fringe benefits, particularly medical coverage. Finally, some state UI officials pointed out that employers might abuse STC--in particular, attempting to reduce labor costs by trying to substitute UI benefits for wages while still maintaining normal work hours.

Arizona, Oregon, and California have relied on two devices to protect employees: the requirement of an STC employer plan, and the requirement of union consent. In all three states, employers must submit an STC plan and obtain state approval before they can reduce hours and before their employees can receive UI benefits under the program. Under the original program definitions in all three states, employers were required to identify the individual employees included in their plans, and subsequent additions to or deletions from the plan were to have been approved as modifications by the state UI agency. Although Oregon retains this practice, Arizona and California have since relaxed these controls somewhat, allowing additions to and deletions from STC plans as a routine part of claims processing.

If the employees are covered by a collective bargaining agreement, union consent must be obtained before an STC program can be used in all three states. The states require that the employer obtain the signature of each relevant union shop steward on the plan, indicating the union's agreement to STC. However, no mechanism is defined for obtaining the consent of employees in firms that are not unionized.

None of the three primary states included in the study has adopted any explicit requirement that employers retain fringe benefits for

employees on reduced hours. However, all three do require that employers state in their plans what effect, if any, STC will have on fringe benefits. This requirement serves two purposes. First, it provides information to the UI agency on the effect of STC on fringe benefits, and thus can provide information for further policy decisions. Second, requiring the employer to state the effect of STC on fringe benefits serves as a "disclosure" for employees; if individual employees or their union representatives examine the plan, any negative effect on fringe benefits would be called to their attention.

4. Administrative Ease: Employer Plans and Claims Processing

All of the states examined in this evaluation have defined and performed four major administrative functions in implementing and operating their short-time compensation programs: (1) developing policies and procedures, (2) generating publicity and public information to inform employers, employees, and the general public about the availability of the program, (3) reviewing and approving employer plans, and (4) processing initial and ongoing STC claims. In general, the states have assigned responsibility for developing policy and procedures to UI agency staff units that are responsible for regular UI program policy and procedures. All of the states covered in our study have created central staff units within their benefit-operations units to process initial and ongoing claims once they are filed by STC employees either through their employer or at their local office. The central staff created for STC also reviews and approves employer plans.

All three states have centralized the processing of STC claims at one location in the entire state, because of the special rules applying to

STC claims and the necessity of concentrating this function in a staff whose STC volume is adequate enough to acquire and maintain the necessary expertise. However, it is worth noting that, during the study period for this evaluation, California was still using its original administrative plan under which initial and ongoing claims were processed in the local offices where they were taken. (This arrangement was since dropped in favor of central processing late in 1983.)

Although the STC states have adopted very similar approaches to program administration, three distinctions among their program operations are worth noting: (1) the simplicity of employer plan applications, (2) the manner in which employees file initial claims, and (3) the paperwork process required for filing ongoing claims.

The amount of information required on employers' STC plan applications and the extent to which the information contained in these applications becomes a constraint against subsequent flexibility in carrying out the plan vary to some extent among the STC states. The major area of variation pertains to whether or not employers must list all employees who will be placed on reduced hours, and whether such a list becomes a "roster" which, when the employer wishes to add or delete employees in subsequent weeks, can be amended only through a formal application to the UI agency. In their original STC programs, Arizona, Oregon, and California required that employers submit a list of participating employees and their Social Security numbers as part of their plan applications, and that they submit a formal application for amendment if they wished to change the roster of participants. During the study period for this evaluation, these rules were in effect for all three

states. However, since then, both California and Arizona have simplified the process of establishing or changing the roster of STC participants. Since 1983, California employers are no longer required to list participating employees in their applications; the employees simply identify themselves when they appear at the local offices to file their initial STC claims, using special STC forms sent by the UI agency to the employer and distributed by the employer to the individuals. Although in Arizona a list of participants is still required in the plan application, employers can modify the roster of participants simply by notifying the Department of Economic Security.

However, Oregon retains somewhat tighter control over the roster of STC participants. Plans must include a list of employees, as well as the proposed percentage of reduced hours for each. Employers must submit plan amendments to change the roster of participants or the percentage of the reduction in hours. This somewhat more cumbersome process appears to stem primarily from Oregon's system for computing ongoing benefits rather than from any concern that employers will in some way violate the boundaries of appropriate program use. Oregon computes ongoing benefits based on the percentage of reduced hours contained in the STC plan (rather than on hours-worked data that are submitted with ongoing claims), and must thus ensure that initial plans contain hours-reduction information, and that reduction changes take the form of plan amendments.

The ease with which employees can file initial STC claims also varies among the states. The major difference is whether employees can file from their workplace or must go to UI local offices. In Oregon, employers give employees the initial claims forms, and the employees

complete them and return them to the employer, which then forwards them to the UI agency. Employees need not go to the UI office. In California, however, employees are normally expected to go to the local UI office to file the initial claim, although for large employer plans the UI agency sometimes arranges to send a representative to the workplace to take the claims. In Arizona, the majority of STC claims are taken by UI agency representatives who are sent to the employer's location, and the UI agency even allows and trains the staff of employers to take initial claims and to forward them to the agency with affidavits attesting to their accuracy.

Some noteworthy variation exists among the methods used by the states to collect the necessary information for ongoing claims; the method used in Arizona is markedly different from the methods used in Oregon and California. In Oregon and California, employees complete ongoing claims forms, employers complete additional questions on the forms, and the forms are then mailed to the STC processing unit. Because each employee completes a separate form, the employer must distribute and collect forms and monitor their completion. Conversely, in Arizona, a streamlined claims-processing approach has been designed to minimize paper flow and the number of questions that must be answered by employers and employees. The UI agency generates a biweekly computer list of participants in each plan as of the last filing, and sends this list to the employer. Spaces are provided next to each employee's name for entering the hours of compensated work for each of the last two weeks and a "yes/no" response to a question on the refusal of work. The employee signs his/her name to confirm the accuracy of the information, and the employer signs at the bottom of the list. The completed certification list serves as a single transaction for

the claims of all participants. It is sent to the STC processing unit and can be entered into the agency's computer system by using a specially designed input screen that reduces the amount of entry time relative to what would be required for entering claims cards separately for each employee. Under the approach adopted by Arizona, the UI agency has dispensed with questions on availability for work (in the belief that they are superfluous within the STC context), and has placed greater emphasis on the efficiency of the ongoing claims process and on minimizing the logistical and paperwork burden on employers that is associated with collecting information for ongoing claims.

B. THE EFFECTS OF ALTERNATIVE ADMINISTRATIVE METHODS

The administrative analysis performed for this evaluation has uncovered considerable details on the methods and rules used by the STC states in their respective programs, and thus can contribute a great deal to the future consideration of alternative approaches to program administration in the states. The variations observed in program rules and administration also raise important questions about their possible effects on important program outcomes. However, answering these questions is extremely difficult, because no systematic method is available for associating the variation in administrative practices with program outcomes. Nevertheless, it is useful to review the questions that seem important, as well as to provide some general observations about the possible effects of administrative features on program outcomes. Three potential relationships between the administrative features of STC programs and program outcomes merit attention: (1) their effect on program

participation, (2) their effect on UI claims, and (3) their effect on the satisfaction of employers and employees with the program.

1. The Effects on Participation

The administrative features of STC programs could conceivably affect the likelihood that employers will choose to participate in the program. Most obviously, the efforts and success of the UI agency in publicizing the program and explaining its potential value can affect the level of awareness about the program among employers, and their reactions to the idea. Participation decisions could be affected by employers' perceptions about the potential administrative burden--in particular, the extent to which the paperwork imposes a burden on employers for STC claims filing. Finally, the concern that STC participation could seriously increase tax liabilities might discourage employers from participating. Based on our administrative analysis and on the employer survey, it is clear that awareness about STC programs is not widespread; for example, as cited in Chapter III, approximately 50 percent of the employers which did not participate in the program had never heard about it. The administrative burden of using STC was also somewhat of a factor in the decisions of employers not to use the program; over 62 percent of the survey comparison sample which had heard about STC thought that participating in the program would add to their paperwork burden. However, concerns about special STC surtaxes did not seem to play a substantial role in decisions not to use the program.

2. The Effects on Claims

A second important question about the effects of administrative features is whether the ease, convenience, or flexibility of program participation has an effect on the level of claims under STC, as compared with the level of claims that would have occurred otherwise in the absence of the program. As described earlier in this chapter, an administrative analysis of the three states has suggested that Oregon now operates a program with a narrower range of options for using the program than is true in either Arizona or California. At the same time, as we noted in Chapter IV, some evidence exists that STC employers in California and Arizona experienced higher total claims (UI plus STC) than did the comparison sample of non-STC employers; conversely, in Oregon, total claims were about the same for both STC and non-STC employers.

Any attempt to explain this pattern must consider at least the possibility that tighter constraints on the extent to which employers use STC could affect the "conversion rate" at which reduced hours under STC substitute for work hours that would have been lost due to layoffs in the absence of the program. Several features of the Oregon program could conceivably lead to lower STC claims in response to a given downturn than would occur under the other state programs: the prohibition on multiple plans, the enforced waiting period following the expiration of a plan, and the necessity of amending plans to change the roster of the percentage of reduced hours allowed. Among STC programs as presently defined, Oregon also retains the most severe surtax provisions for employers with poor experience-ratings.

However, extreme caution must be exercised in any attempt to draw a connection between the administrative differences among the STC programs and the level of UI claims in the three states, or the rate at which STC claims substitute for layoff-related claims. For one thing, although the California and Arizona programs are now defined more flexibly than is the Oregon program, the programs were more similar during the period for which the survey and records data were collected than they are today. During the 1982-1983 period, surtax provisions in California and Arizona were comparable to those in Oregon, and could have been expected to create as much discouragement to STC use by high-tax-rate employers as in Oregon. Because the initial employer application in California and the roster amendment process in Arizona were simplified after the study period, the administrative burden involved in establishing and modifying plans should have been comparable in all three states. The combination of limits on employee participation and plan duration were as restrictive or more restrictive in California than in Oregon during the study period. Both the survey data and the reports from agency officials suggest that the percentage of reduced hours chosen by employers in all states almost always fell within the narrower ranges allowed in Oregon; thus, even this limit was unlikely to have created a disincentive to any program use or less extensive program use in Oregon than in the other states. Therefore, despite clear differences in administrative design and methods, we cannot clearly conclude that more restrictive rules have had any effect on the rate at which STC benefits are claimed.

3. The Effects on the Satisfaction of Employers and Employees

No rigorous connection can be drawn between the variants of the administrative approaches in the three states and the extent to which employers and employees are satisfied with STC. In general, STC employers which responded to the evaluation survey had highly favorable reactions toward the program, and reported that their employees and unions also had highly favorable reactions toward STC. However, no clear differences in the level of satisfaction emerged across states that might be related to the relatively subtle differences in the administrative arrangements of the programs.

However, it is worth pointing out several instances in which the administrative features of STC programs caused specific complaints and, in some instances, program changes, as well as the anticipated problems that did not seem to materialize. First, when the use of STC in California reached high levels during the depths of the last recession, STC employers complained that limiting individual employees to 20 weeks of benefits reflected a serious underestimate of the period during which STC would be necessary in an extended slump. California responded to this complaint by removing the time limits on individual participation, and by substituting a 26-week limit on plan duration, with the possibility of extending the plan during periods of high unemployment.

Complaints about surtaxes that could impose additional taxes beyond the cost of STC benefits also prompted dissatisfaction in California and Oregon. Although surtaxes did not emerge in our survey as a major factor in decisions not to participate in STC, several state agency respondents specifically expressed the view that surtaxes and their somewhat unclear

potential effect on future taxes discouraged some employers from participating. Certainly for those employers which received unexpectedly large tax-bill increments that exceeded their STC benefit charges, this provision affected their satisfaction with the program.

Early in the history of the Oregon STC program, concerns were voiced about the lengthy employee tenure requirement as a qualification for participating in an STC plan. Prompted by one employer's personnel representative, the Oregon legislature amended its STC law, allowing recently hired employees to become eligible for STC once they have been with the employer for the required period, even if they have built up the required tenure after the plan has begun for other participating employees. No similar protests were reported in Arizona, which also requires a minimum tenure (expressed as minimum earnings) prior to the submission of the plan, but we might expect that, in isolated cases, employers in Arizona could also run into the same situation that prompted the complaint in Oregon.

Finally, it is worth noting one area in which early concerns about STC have noticeably <u>not</u> led to serious problems or complaints from employers or employees--specifically, the effects on fringe benefits. State agency respondents commonly expressed the view that STC employers tended to leave employees' fringe benefits intact despite their reduction in hours, even in the absence of any requirement to do so. As reported in Chapter VIII, survey results tend to support this perception. Over 92 percent of the STC employers which were providing benefits left them completely intact despite reducing the hours of employees. Of the specific benefits of interest to Congress, health benefits were maintained in full

by 99 percent of the employers which offered such benefits, and retirement benefits were maintained in full by 93 percent of those which offered such benefits. Furthermore, when benefits were reduced, they were almost always reduced only in proportion to the work reduction.

VI. THE EFFECTS ON UI TAX RATES AND TRUST FUNDS

Increasing UI benefit payments during recessions has historically posed a threat to the solvency of the states' UI trust funds. Thus, policymakers have been especially concerned that the emergence of short-time compensation as an important UI option not exacerbate these difficulties. Reflecting these concerns, the congressional mandate specifically required that the study assess the following:

1. The impact of the program upon the unemployment trust fund and a comparison with the estimated impact on the fund of layoffs that would have occurred but for the existence of the program

2. The effect of short-time compensation on employers' state unemployment tax rates, including both users and nonusers of short-time compensation

This chapter investigates these issues. Because the relationship between UI charges, tax contributions, and trust fund balances is complex, it is important first to provide an overview of how the system operates.

The long-term viability of the UI system depends on the balance between the benefits paid to claimants and the contributions made by employers. Benefit payments are "charged" against the UI accounts of specific employers, and employers must submit contributions (taxes) to the system that reflect their history of benefit charges. This "experience-rating" of employers is an important feature of the UI system: employers which use the system to a greater extent are taxed at a higher rate, and thus make larger contributions.

Each state uses a tax-rate schedule to calculate the amount of contributions owed by each employer. These rates are determined by

specific state formulas. Both Arizona and California use variations of the reserve-ratio formula, which is by far the most common type. A reserve ratio is the ratio of an employer's accumulated reserves (contributions minus benefit charges) to taxable payroll. Accordingly, this type of formula is based on the long-term trend in the flow of funds between each employer and the trust fund. Conversely, Oregon uses a benefit-ratio formula, which is the second most common type. A benefit ratio is simply the ratio of average annual benefit charges to taxable payroll. Since all states that use this formula average benefit charges only over a short time period (Oregon, like most states, averages over three years), this formula is quite sensitive to relatively short-run fluctuations in the workforce. Furthermore, it does not explicitly take into account offsetting contributions.

States also adjust the structure of the tax-rate schedule to maintain the solvency of the trust fund in response to cyclical and secular changes in the economy. In response to cyclical changes, states shift the entire tax schedule to alter the correspondence between benefit or reserve ratios and tax rates. In response to secular changes, states both shift the tax schedule and raise the maximum wage level that is considered part of taxable payroll.

Because of the imprecise nature of the balance between the inflow to and the outflow from the trust fund for particular employers, considerable interest has been expressed in how a short-time compensation program would affect the solvency of the fund. Because STC use has been very limited to date, it is impossible to extrapolate from this limited experience to a situation in which STC is used to a greater extent.

However, much can be learned from available information on current use. We present this information in three parts. In Section A, we consider UI tax rates explicitly, because of their central role in the UI system. In Section B, we review the evidence on the effects of STC on benefit charges; Section C considers the net balance of contributions and charges under STC and offers some conclusions about the overall impact of the program on the UI trust fund.

A. THE EFFECTS OF STC ON UI TAX RATES

Perhaps the greatest source of concern about the effects of STC on UI tax rates is that the experience-rating of employers is incomplete. That is, employers which are responsible for little or no benefit charges are taxed at at least some minimum rate, while those which are responsible for high benefit charges can be taxed at no more than a predetermined maximum rate. In between the minimum and maximum rates, employers tend to be more nearly experience-rated, although, even in that tax range, the correspondence between benefit or reserve ratios and tax rates incorporates some redistribution of financial burden from high- to low-charging employers.

The proper degree of experience-rating has long been an issue for the UI system in debates over tax equity and trust fund solvency. Accordingly, with the exception of Washington, all states that have implemented STC programs have attempted to increase the degree of experience-rating faced by employers which use STC. By so doing, it is hoped that the STC program will not pose any additional threat to the adequacy of the trust fund.

As we described in more detail in Chapter V, the following general approach has been adopted by the states: if an employer has positive UI reserves (in Oregon, if the benefit ratio does not exceed the tax rate), the employer is considered to be effectively experience-rated, and STC charges are treated exactly as regular UI charges are treated for purposes of adjusting the benefit or reserve ratios and calculating the tax rate. However, the remaining employers (those which are at or near the maximum tax rate) are not effectively experience-rated. Most states that operate STC programs have concluded that the privilege of using STC and, hence, the possible additional burden imposed on the trust fund require that these employers pay greater contributions to the trust fund than would be allowed under the regular maximum tax rates. The amount of the additional contributions is determined through percentage surtaxes or directly through a surcharge that reflects employee benefit charges. Arizona, Oregon, and California all implemented their programs with an STC surtax, but California has since changed to a surcharge.

STC has the following effects on UI tax rates:[1]

- If an employer is in a tax-rate range that is effectively experience-rated, both STC and UI benefit charges will affect its subsequent tax rates in the same manner.
- If an employer is at or near the maximum tax rate, it will face little or no rate increase if it incurs only regular UI benefit charges; however, it will face a rate increase if it incurs STC benefit charges (except in California, where it would face a special surcharge).

---

[1] See Chapter V for a more complete discussion of state surtax provisions.

Therefore, employers which use STC face a tax-rate change per dollar of benefit charge that is at least as great as the tax-rate change faced by employers which do not use STC, and it could be much greater.

To understand more fully the practical implications of the rules that affect tax rates, it is useful to examine the evidence available from the study states. Table VI.1 presents some comparisons of the UI tax status of all sample employers between the pre-STC period and the post-STC period. Because UI tax rates are set on a calendar-year (CY) basis (i.e., on the basis of benefit- or reserve-ratio data through the end of the preceding fiscal year), the appropriate rate comparisons are for CY1982 and CY1984. To facilitate comparisons, we aggregated the tax schedule for each study state into the following five rate classes:[1]

Rate class 5	The maximum schedule rate, plus STC surtaxes
Rate class 4	Rates within approximately 1 percentage point of the maximum rate
Rate class 3	The upper half of rates between rate class 4 and the minimum schedule rate
Rate class 2	The lower half of rates between rate class 4 and the minimum schedule rate
Rate class 1	The minimum schedule rate

[1] These rate-class definitions are the same as those used in Chapters II and III, with the exception that the broad "middle" class, or range, is divided here into two classes to facilitate drawing finer distinctions in the analysis.

TABLE VI.1

UI TAX RATE CLASSES OF STC AND COMPARISON EMPLOYERS BETWEEN CY1982 AND CY1984

	Arizona		Oregon		California	
	STC	Comparison	STC	Comparison	STC	Comparison
Percentage of Employers Which Moved into a Higher Rate Class Between CY1982 and CY1984	76.3	62.9	78.2	55.4	50.3	47.1
Percentage of Employers in Rate Class 5 in CY1984, by CY1982 Rate Class:						
CY1982 rate class 1	0.0	0.0	15.8	9.1	0.0	0.0
CY1982 rate class 2	5.8	2.6	25.0	2.9	2.9	1.0
CY1982 rate class 3	16.3	21.7	58.5	9.2	20.9	18.2
CY1982 rate class 4	28.6	20.0	69.2	61.5	60.0	66.7
Number of Employers in Rate Class 5, by Year						
CY1982	2	8	3	3	14	17
CY1984	17	27	51	21	27	28

NOTE: Rate classes were defined for each state as follows. Rate class 5 is the maximum regular UI tax rate, plus STC surtax rates. Rate class 4 consists of those rates that are less than the maximum, but that, nonetheless, are within about 1 percentage point of the maximum. Rate classes 2 and 3 are defined so that each group is of approximately equal size in terms of the number of employers. Rate class 1 is the minimum schedule tax rate.

The first fact that should be noticed in Table VI.1 is that at least one-half of the employers in each state found themselves in a higher tax-rate class in 1984 than in 1982. This fact reflects the poor performance of the economy from 1982 to 1983 as it affected UI benefit charges and subsequently changed benefit or reserve ratios and their associated tax rates. The second fact is that, in each state, STC employers were more likely to have experienced an upward movement in tax rates. This observation is consistent with our expectation that future STC employers will incur tax rates that are at least as sensitive to their current benefit charges as non-STC employers, because STC surtaxes will increase the effective degree of experience-rating for STC employers.

Also notable are differences among the states in terms of the apparent sensitivity of UI tax rates to STC charges. The middle section of Table VI.1 reports the percentage of employers which moved from a lower tax-rate class in 1982 to the highest tax-rate class in 1984. STC employers in the highest rate class in 1984 presumably incurred a surtax. The group of employers which were most likely to have moved into the highest rate class in each state are those which were in the next-to-highest rate class (class 4) in 1982. For example, in Oregon and California, roughly 60 to 70 percent of all employers in the next-to-highest rate class in 1982 moved into the highest rate group by 1984; in Arizona, only 20 to 30 percent of all employers made the corresponding transition. But, most importantly, the distributions of these tax-rate class movements are basically the same for STC and non-STC employers (with the exception of Oregon, in which the overall probabilities of a transition into the highest rate class were much greater for STC employers). Thus,

the combination of a benefit-ratio basis for computing tax liability (which is more sensitive to current charges) and the more aggressive STC surtax in Oregon evidently made the overall UI tax system much more sensitive to STC use than was the case in the other states.

Therefore, we concluded that the use of STC in one period in each state is associated with increases in UI tax rates in subsequent periods, reflecting the fact the STC surtaxes increase the effectiveness of experience-rating.[1] Moreover, Oregon provided evidence to support the hypothesis that the sensitivity of UI tax rates to the use of STC is likely to be greater in benefit-ratio states than in reserve-ratio states. However, it is important to point out two limitations with these descriptive results. First, even though the tax rates did increase to a relatively greater degree for STC users, the total tax contributions of STC users to the UI trust fund also depended on the taxable wage base, which was affected by unemployment and average wages in each firm. Thus, we could not necessarily conclude that UI tax contributions from STC users increase relative to other employers. Second, because the correspondence of current-year charges with future-year tax rates is imprecise (for the reasons mentioned earlier in this section), it was very difficult to estimate precisely by how much tax rates would increase in future years as a result of using STC. Nonetheless, these findings do demonstrate that STC employers will pay tax rates that are at least as great as they would be

---

[1] In terms of tax-rate changes, STC employers in Arizona experienced mean percentage increases that were 33.3 percent larger than those for comparison employers. In Oregon, the measures for STC employers were also about 33 percent larger on average. However, in California, the differential increase was quite small--only about 1 percent.

without STC, and suggest that possibly greater charges to the fund from STC employers may subsequently be offset by greater tax contributions.

B. THE EFFECTS OF STC ON UI BENEFIT CHARGES

As we described in the previous section, states have tended to adopt special tax treatments for STC benefit charges in the belief that the solvency of the trust fund depends upon their doing so. In this section, we first describe why benefit charges might be different for employers which use STC. We then present some simulation results that suggest the quantitative size of such differences.

A number of reasons explain why the adoption of short-time compensation by employers could lead to higher benefit claims than if they used layoffs. First, the availability of an STC option may induce employers to undertake somewhat greater overall levels of work reduction. The evidence presented in Chapters IV and VII suggests that many employers combine STC and layoff strategies perhaps to retain the most productive combination of workers and to mitigate hardship among selected workers. Thus, even if the average benefit claim per compensated unemployed hour is the same for both STC and regular UI claimants, STC employers could experience more compensated unemployment in the aggregate.

Second, the number of weeks claimed may be different under the two work-reduction strategies. On the one hand, the number of weeks claimed under STC may be greater because employees face less pressure to search for new jobs than if they had been laid off. On the other hand, the number of weeks claimed might tend to be greater for layoffs if the layoff recall period extends over several weeks. It may be argued that workers on STC can be brought up to full-time employment without any appreciable lag.

Finally, the UI weekly benefit amounts could be greater for STC employers, because the average experience and wages of claimants (and hence the average weekly benefit amounts per claimant) are likely to be greater than for employers which resort to layoffs. In general, layoffs affect the less senior and lower wage employees to a greater extent than they affect more senior employees, while STC may help employers retain their more experienced and senior workers.

To test for these effects, we calculated per-employee[1] charges for UI and STC during FY1983 and used these as dependent variables in a regression analysis of the general type developed in Chapter IV. In Table VI.2, we have used the results from that analysis to compute regression-adjusted mean benefit charges for firms in the three study states. The hypothesis that charges will be higher for STC participants was supported in all of the states. The relatively larger differentials in Arizona and California probably reflect both the greater differentials in hours of compensated unemployment in these states (see Table IV.9) and, to a lesser extent, the possibility that the Oregon sample may have been somewhat less dominated by employers with highly developed wage-seniority systems (since firms were smaller in Oregon and less concentrated in durables manufacturing). Aggregating across all the states, we found that per-employer benefit charges were approximately 25 percent higher for STC participants. Since, as we discussed in Chapter IV, hours on compensated UI were 11 percent higher on average for the STC group, we can conclude

---

[1] The results were phrased on a per-employee basis rather than on a per-employer basis, both to control for some of the variability in the size of firms and to facilitate drawing comparisons with our tax-rate data in the next section.

TABLE VI.2

TOTAL PER-EMPLOYEE UI AND STC CHARGES IN FY1983
(Dollars)

	Arizona	Oregon	California
Mean Charges			
Comparison employers	326	616	462
STC employers[a]	451	689	617
Difference	125**	73*	155**
Difference as a Percent of Comparison Charges	38	12	34

[a]Figures have been adjusted by regression to control for the factors listed in Table IV.4.

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

that slightly less than half of the extra benefit charges to STC firms were due to more hours of benefit collection. Thus, somewhat more than half of these benefit charges were probably accounted for by the relatively higher wages (and the UI-STC weekly benefit levels) of workers who collected STC.

Although the estimates in Table VI.2 are subject to many of the caveats raised in Chapter IV in terms of labor-market outcomes, they do seem to support the notion that total benefit charges per employee will be significantly higher for firms that use STC than for those that use only layoffs. States may have recognized that probability, at least implicitly, when they opted for the surtax provisions in their STC laws. An important policy issue is the extent to which these provisions are adequate enough to prevent the STC program from having a negative impact on the trust fund, or, in the extreme case, whether the provisions are so stringent that they make STC a positive contributor. In the next section, we address these issues.

C. STC AND THE TRUST FUND BALANCE

The conclusions of the previous two sections were relatively unambiguous--on average, participation in STC increases both the total UI contributions from and the total UI benefit charges to employers. However, determining the net result of these two effects (and hence determining the net effect of STC on the UI trust fund balance) is far more problematic. These difficulties arise in part from uncertainties associated with the estimates presented in the previous sections. Relatively small changes in those values could affect whether increased STC participation would pose a net benefit or cost on the trust fund. On a conceptual level, even more serious difficulties arise in making an overall assessment--for example,

whether one should take a short-term (say, one year) or long-term perspective, whether the current system of experience-rating has the capacity to recoup UI benefits paid, the extent to which the UI tax base is affected by STC participation, and how the pattern of UI tax schedules will appear in the future. Because a complete quantitative analysis of all of these issues was beyond the scope of the present evaluation, we instead present a brief qualitative discussion which, although it does not lead to a precise estimate of the impact of STC on the UI trust fund, does indicate some of the more important considerations and their likely consequences in terms of the fund. For ease of exposition, our discussion is divided into two separate sections on the short-term and long-term effects.

1. Short-Term Effects

Recessionary increases in UI benefit payments usually pose short-term problems for UI trust funds. Indeed, the primary rationale for the existence of such trust funds is the recognition that the UI system must operate at a loss during periods of economic downturn, since benefit outflows increase and tax inflows decrease during such periods. Thus, an important policy issue is whether this cyclical volatility is exacerbated through the participation of some employers in an STC program.

It is the higher benefit charges for STC employers (reported in Section VI.B) that pose particular problems for the short-term impact of the program on the UI trust fund. Over the very short term, these additional charges would have no impact on the tax rates of employers, since these rates are based on UI benefit experience in previous fiscal years. For this reason, it could take as long as 18 months for the UI tax rates to reflect additional benefits paid under STC. Over this period,

then, employers which use STC could impose a greater drain on the UI trust fund than would otherwise similar firms which do not use the program.[1] Even when the experience of those employers is reflected in tax rates, it is unlikely that extra benefits paid will quickly be recovered. We made several attempts to estimate econometrically the "next tax-year recovery rate" for incremental UI benefit charges, and concluded that for no state did this rate appear to exceed more than 20 to 30 percent under prevailing tax schedules.[2] Of course, as we illustrated in Section A of this chapter, the existence of STC surtaxes may increase the average tax rates paid by STC employers more sharply than would be the case if their employees collected benefits only under the regular UI program. However, given our estimate of the relative increases involved, it is unlikely that these additional tax contributions could compensate for the higher benefit charges in the short term.

Overall, then, although we were unable to develop a precise quantitative estimate of the issue, we concluded that increased levels of STC participation could pose significant short-term problems for the UI trust fund. To some extent, STC surtaxes would offset these effects.

---

[1] For example, in the recessionary period FY1983, actual average total charges per employee exceeded contributions per employee by $221 for comparison employers and by $374 for STC employers in Arizona. In Oregon, the comparable figures were $266 for comparison employers and $424 for STC employers; in California, the respective figures were $245 and $494.

[2] However, our investigation of this issue was hindered by the absence of tax contribution data for the full tax year following STC participation. Instead, it was necessary to simulate these data, and those simulations may in some cases have reflected rather inaccurately what actually occurred. Given more complete data on the tax contributions in the years following FY1983, it would have been possible to examine the recovery issue in more detail.

Indeed, for some employers, the total amount of these surtaxes may have exceeded the amount of STC benefits paid, but our investigation of the FY1983 data indicated that such cases were rare. Consequently, we concluded that the STC program does have the potential of increasing the short-term cyclical volatility of the UI trust fund.

2. Long-Term Effects

Because we found that STC benefit charges were at least as well experience-rated as were regular UI benefit charges, the long-term secular impact of STC on the trust fund depends primarily on how well the experience-rating formulas in each state work. Although many researchers (Brown, 1980, and Topel, 1984) have found that the experience-rating of incremental UI benefit charges are far from perfect,[1] much of this failure can be attributed to the existence of maximum tax rates in the UI tax schedules. Since STC surtaxes and surcharges have been structured in a manner whereby they apply to employers in these top rate categories, this reason for incomplete experience-rating should be mitigated with respect to STC. Similarly, the noncharging of UI benefits (which often involves issues pertaining to employee separation) should also be less important with respect to STC benefit charges (where separation does not occur). Hence, although data limitations precluded us from developing precise quantitative estimates of the long-term impacts of STC on the trust fund, our investigation indicated that, given current surtax provisions, even the far more widespread use of the STC program would be unlikely to create a

[1] That is, the present value of future tax liability created by an incremental dollar of UI charges is less than one dollar.

severe long-term impact on the solvency of the trust fund. Rather, we expect that those negative effects that do occur would be short term and cyclical in nature.

VII. THE EFFECTS ON EMPLOYMENT STABILITY

The congressional mandate for the present study specifically posed two general questions about the impact of STC on employment stability:

1. The extent to which layoffs occur in the unit subsequent to the initiation of the program, and the impact of the program on the entitlement to unemployment compensation of the employees

2. The extent to which the program has protected and preserved the jobs of workers, with special emphasis on newly hired employees, minorities, and women

We address these issues in this chapter. Most of our discussion is based on the technical analysis presented in Chapter IV; readers who are interested in the details of how we reached our conclusions are directed to that chapter. The purpose of this chapter is to provide an overview of our formal results as they pertain to the congressional issues and to other aspects of UI policy. In order to present our results in the most efficient manner, we have organized the exposition around five general questions:

1. To what extent did STC employers also use layoffs and thus UI collections as a way to adjust their workforces?

2. Did participation in STC significantly reduce layoffs and the regular UI benefits associated with them?

3. Once hours spent on STC are included, did STC employers experience more or less total compensated unemployment than did comparison firms?

4. Did STC employers make substantial numbers of layoffs following their participation in the program? How did the participation of employees in STC affect their subsequent UI entitlements?

5. Did STC generate beneficial affirmative-action outcomes by saving jobs for female, minority, and younger workers?

In answering these questions, we relied more heavily on UI records data, using the survey data only in a supplementary, confirmatory capacity. Although we encountered some difficulties with the administrative data for our purposes, we generally believed that these data were both more accurate and more directly relevant to the policy concerns of the evaluation than were the survey data. Where limitations with the records data seem especially severe, we will briefly note these limitations, and, when possible, we will estimate the extent of potential biases.

A. DID STC PARTICIPANTS ALSO MAKE LAYOFFS?

Table VII.1 shows the extent to which the employees of the STC employers in our sample used the regular UI program as a result of layoffs. These data (which were available on a quarterly basis) were aggregated into three "fiscal years":

FY1982: 1981.3 to 1982.2, the "base" period

FY1983: 1982.3 to 1983.2, the "STC" period

FY1984: 1983.3 to 1983.4, the "postprogram" period

Most of our attention focused on FY1983, the period of STC use, but in much of our analysis we controlled for base-period characteristics, and, for some questions, data from the postprogram period were especially relevant. Overall, as shown in Table VII.1, regular UI receipt by employees of STC employers was substantial during all of these periods. Indeed, during the program period, the probability of an employee's

TABLE VII.1

BASIC MEASURES OF REGULAR UI COLLECTION BY EMPLOYEES
OF STC AND COMPARISON EMPLOYERS
(Mean Per Employer)

Year	New Claims		Weeks of UI		Total Charges ($1,000)		Total Employment	
	STC	Comparison	STC	Comparison	STC	Comparison	STC	Comparison
FY1982	22.0	14.9	388	233	38.0	18.4	159	107
FY1983	28.2	17.3	731	390	81.7	36.0	157	106
FY1984 (1st half)	6.8	6.5	186	156	25.7	16.7	151	109

starting a new UI claim (presumably because of a layoff) was higher for STC employers than for employers in the comparison group. Hence, the evidence is clear that STC participants responded to the 1982-1983 downturn by adopting a variety of adjustment strategies in which layoffs continued to play a major role.

In order to determine the relative importance of STC and regular UI (that is, of short-time compensation versus layoffs) for the STC sample, we used the STC claims data in Table VII.2 in conjunction with the data in Table VII.1. The data show that, although average new STC claims per employer approximated average new regular UI claims per employer during the STC period (FY1983), regular UI was far more significant in terms of total charges and total unemployed time. For example, if a week of regular UI collection represented, say, 35 hours of unemployment, the mean STC employer experienced more than 25,000 hours of such unemployment, a figure that is nearly 8 times the mean number of hours spent on STC. Of course, these types of calculations may not be representative of the experience of the "typical" employer, because the mean values in Table VII.1 are significantly affected by the presence of some very large employers in our sample which used STC only for a small part of their workforces. In the next section, we describe some of the measures that we attempted to use to control for this large variation in size. Still, the data in Tables VII.1 and VII.2 are sufficient to indicate that layoffs, together with regular UI collection, probably continued to be the predominant method for making work-force adjustments during FY1983 for employers which participated in STC. Consequently, the notion that STC may completely replace layoffs for

TABLE VII.2

BASIC MEASURES OF STC USE
(Mean Per Participating Employer)

Year	New Claims	STC Hours	STC Charges ($1,000)
FY1982	3.4	267	0.7
FY1983	28.7	3,146	9.7
FY1984 (1st half)	1.4	177	0.6

many employers during downturns appears to be incorrect, at least under current circumstances. Instead, STC policy must be designed so as to take into account the simultaneous use of that program and the regular UI program.

B. DID PARTICIPATION IN STC REDUCE UI COLLECTION (AND LAYOFFS)?

Our analysis provided clear evidence that at least some of the workers on STC would have been laid off otherwise, and, therefore, that participation in STC did indeed reduce the regular UI benefits paid to laid-off workers. As the primary method for examining this question, we converted each employer's regular UI charges into an equivalent "hours of unemployment" measure, based on information from the survey data on the length of the employer's work week. We then expressed these hours of compensated unemployment as a fraction of the total number of hours worked in the FY1982 base period in order to control for the large variation in the size of the employers in our sample. Table VII.3 provides the results of this "percent of hours unemployed" construction[1] (which is conceptually similar to the insured unemployment rates customarily reported by the UI system). Overall, employees of STC participants spent an average of 9.75 percent of base-period hours on regular UI, whereas employees in the comparison group spent an average of 11.20 percent of base-period hours on regular UI. The difference of 1.45 percent was statistically significant

---

[1] These estimates are derived from Table IV.5 and represent an aggregate across all the study states. In Chapter IV, we show that such aggregate results mask considerable state-to-state variation, and that the estimates obtained were also rather sensitive to the analytical specification used. Hence, the figures in Table VII.3 should be regarded as representative of our findings, rather than as a single, "bottom line" estimate of them.

TABLE VII.3

ESTIMATED PERCENT OF BASE-PERIOD HOURS
SPENT ON UI OR STC IN FY1983
(Percent of Base-Period Hours)

	Hours on Regular UI	Hours on STC	Total Hours on Compensated Unemployment
STC Employers	9.75	2.65	12.40
Comparison Employers	11.20	0	11.20
STC-Comparison Difference	-1.45**	+2.65**	+1.20*

NOTE: Estimates have been adjusted by regression to hold constant those factors listed in Table IV.4. The estimates in this table are derived from Table IV.6. These figures are only representative of the variety of results obtained in Chapter IV.

*Significantly different from zero at the .10 level, one-tail test.
**Significantly different from zero at the .05 level, one-tail test.

at the .05 level. Although these estimates were taken only from one part of our analysis in Chapter IV, the general result tended to hold up throughout our investigation of the UI records data, and it was also supported by information contained in our employer survey[1] (although, in those cases, our attempts to differentiate between temporary and permanent layoffs were largely unsuccessful). Thus, the evidence that employers used STC as a substitute for regular UI (and presumably for layoffs) in FY1983 seems quite clear.

In our detailed research on the reductions in regular UI benefits collected, we found that the size of the estimated effect tended to differ among the three states in the evaluation. Reductions in regular UI were consistently larger in Oregon than in Arizona or California, and, under some formulations, were nearly twice as large in Oregon as in Arizona (the state with the next largest reductions). The estimated impact of STC on regular UI collection in California was very small. Although the small number of states in the evaluation precluded us from providing a clear explanation for these differences, both our administrative analysis (Chapter V) and our examination of UI tax effects of STC participation (Chapter VI) suggested that Oregon probably operates the "most stringent"

---

[1] However, the results based on the UI records did suggest that the responses of employers to hypothetical questions about the number of employees whom they would have laid off in the absence of STC may have been exaggerated. The mean response to these hypothetical questions indicated that new regular UI claims (and, presumably, overall charges) would have been 41 percent greater in FY1983 for STC participants had they not used the program. But the estimates in Table VII.3 (and most of the others we calculated from the UI records data) suggested that claims were only about 15 percent higher for otherwise similar comparison employers which did not use STC. Prior evaluations based on such hypothetical questions may have had a similar upward bias in estimated UI and layoff replacement, but the size of this potential bias cannot be determined.

of the STC programs under examination. Hence, Oregon employers may have been less willing to place employees on STC whom they would not have otherwise laid off. However, we could not identify which aspects of the administrative procedures of the STC program in Oregon (if any) led to the observed result.

C. WAS TOTAL COMPENSATED UNEMPLOYMENT HIGHER AMONG STC EMPLOYERS?

Even though participation in STC reduces hours spent on regular UI, the degree of substitution need not be on an hour-for-hour basis. If employers choose to use STC, but in the absence of the program would have retained their existing employment levels, then STC might increase total compensated unemployment. Some indications that is scenario may have occurred for some employers were provided by our survey, in which slightly more than 20 percent of the STC participants reported that they would have made no layoffs in the absence of the program. A more comprehensive estimate of the effect is provided in Table VII.3, which adds hours spent on STC to the regular Ui hours data already discussed to develop a total compensated unemployment measure. According to these estimates, STC employers had a 1.20 percent higher level of base-period hours spent on compensated unemployment in FY1983 than did otherwise similar employers in the comparison group. That is, according to these estimates, only about 55 percent of the hours spent on STC substituted for hours that would have beenspent on regular UI. Finally, the conclusions of Table VII.3 can be viewed in terms of the insured employment rate (IUR). To the extent that our data approximated IURs, our results suggest that if STC hours were included in the IUR calculations (contrary to current practice) the measured rates would be about 11 percent larger for STC participants than

for otherwise similar employers in the comparison group. Thus, if STC participation became more widespread, the question about whether claimants under the program should be included in IUR computations would be an important one.

Although the result that STC employers exhibited higher rates of total compensated unemployment tended to hold up throughout our analysis, several observations suggested that the differential may have been somewhat smaller than is indicated in Table VII.3. First, the UI records data may have understated total layoff unemployment (and the extent to which it was reduced by STC), because some laid-off employees may not have been eligible for UI, because some employees may have chosen not to claim UI benefits to which they were entitled,[1] and because the receipt of extended-benefits beyond regular UI was not included in our data.

Second, the results in Table VII.3 may be overstating the unemployment differential because, as evidenced by our findings (details of which were presented in Section D of Chapter IV), the effects of STC may have persisted into FY1984. How such dynamic effects should be included in our overall assessment is unclear. However, most of our attempts to do so led to slightly smaller estimates of the difference in compensated unemployment than those presented in Table VII.3.[2]

---

[1] However, some employees on reduced hours may have also chosen not to collect STC, thereby offsetting this bias.

[2] In Chapter IV (Table IV.12), we showed the following figures for the percent of base-period hours of total (UI and STC) unemployment, including both UI and STC use in FY1983 and in the first half of FY1984:

STC Employers:	15.27
Comparison Employers:	14.30
Difference:	+0.97

Third, we found that our estimates of the differences in compensated unemployment were sensitive to the sample used for the analysis. When we eliminated from our sample all employers which appeared not to have made work-force adjustments in FY1983, the differential became significantly smaller (in some cases, less than 0.5 percent of base-period employment).[1] If STC policy were to evolve in ways that would prevent or mitigate program use by employers which would not otherwise face the necessity of undertaking work-force adjustments, these lower estimates of the differential might be appropriate.

Finally, some limitations in terms of our decision to focus only on compensated unemployment should be recognized. We did not measure the full-time unemployment of employees that was not compensated by UI, nor did we measure uncompensated hours reductions undertaken by the employers in our sample. Whether the inclusion of such additional, uncompensated unemployment would substantially alter the nature of our general findings is unknown. Hence, some care must be exercised in terms of interpreting the social consequences of the tradeoffs in hours of compensated unemployment that are reported.

Despite these caveats, our research clearly demonstrates that regular UI use and STC use are not fully interchangeable. Because STC

---

[1] For example, the results from Table IV.10 implied the following figures for the percent of base-period hours of total (UI and STC) unemployment in FY1983 for employers which made any work-force adjustments:

STC Employers:	12.98
Comparison Employers:	12.23
Difference:	+0.75

Hence, a substantial portion of the difference in unemployed hours reported in Table VII.3 arose from STC use by employers which might not have made adjustments had they not participated in the program.

relaxes what was previously a constraint on the behavior of employers (e.g., workers who were placed on short-time were not able to be compensated by the UI system), it is not surprising that total compensated unemployment should be greater under the more flexible policy option. Policymakers must decide how large a differential is acceptable and what, if any, administrative mechanisms should be implemented to control STC use.

D. WHAT WERE THE POSTPROGRAM EXPERIENCES OF STC PARTICIPANTS?

A major concern about the STC program is that it may simply postpone any necessary long-term work-force adjustments, and that, once the program ends, regular layoffs of STC participants would be extensive. We found little evidence to support this fear. In our survey, only about 14 percent of the participating employers reported making layoffs once their period of STC use had been completed. Corroborating evidence was provided by the UI records data, which showed that employees of STC participants made fewer regular UI claims after the program period than did employees in the comparison group. Of course, it is still possible that, in some cases, STC merely delayed any necessary large-scale contractions by some employers, but that did not appear to be a prevalent outcome.[1]

As expressed in the congressional mandate, a related policy concern about postponed layoffs is the extent to which STC participants seriously deplete their UI entitlements. If employees do in fact deplete their entitlements and are subsequently laid off, they may face a long spell of

---

[1] We also found no evidence that STC participants rebounded from the recession more quickly than did employers in the comparison groups. The estimated speed with which employment was adjusted was virtually identical for the two groups.

unemployment without the cushion that would normally be provided by UI. Although we did not have access to data that pertained specifically to UI entitlements and exhaustions, several factors suggested that this problem was not severe. First, as described above, relatively few firms actually made layoffs following STC participation. Second, since average STC claims were quite small in dollar terms, it is doubtful that they could have seriously reduced UI entitlements for many workers.[1] Finally, for those few employees who collected sufficient benefits under STC to seriously affect their UI entitlements, it is likely that their continued employment (albeit at reduced hours) would have provided wage credits that would have been sufficient to establish new UI eligibility based on that employment. Of course, despite these arguments, some employees may still have experienced difficulties with UI entitlement reductions that increased the likelihood of UI benefit exhaustion. However, our results indicated that this group of employees was probably not very large.

E. DID STC HAVE BENEFICIAL IMPACTS ON AFFIRMATIVE ACTION GOALS?

Since our results showed that STC use tended to prevent layoffs, it was natural to ask whether the program preserved the jobs of disadvantaged groups (women, minorities, and younger workers)--groups that are believed to suffer disproportionately from recessions. Table VII.4 presents the information we used to assess this possibility. In terms of the composition of new UI claims filed in FY1983, only minor differences

---

[1] A simple calculation from the data in Table VII.2 indicated that the average STC claimant collected about 110 hours of benefits. In our sample states, that figure would amount to only about 15 percent of the UI entitlement of the typical employee.

TABLE VII.4

COMPOSITION OF UI AND STC CLAIMS FY1983
(Percent Having Characteristic)

Characteristic	New UI Claims		New STC Claims	Total Employment	
	STC Employers	Comparison Employers		STC Employers	Comparison Employers
Female	31.3	31.7	37.0	33.1	32.9
Nonwhite	24.5	20.9	24.6	21.9	22.1
Less than 25 Years Old	19.5	20.4	13.8	19.6	21.9

existed between STC participants and comparison employers. Similarly, these data were not substantially different from those on the composition of the overall workforces of employers. Thus, women, minorities, and younger employees of comparison firms did not appear to be disproportionately disadvantaged by those layoffs that did occur in FY1983.[1,2]

However, the data on the composition of new STC claims presented a slightly different picture. Although the minority composition of STC claims approximated the minority composition of the overall workforce, a significantly higher fraction of females and a lower fraction of younger workers participated in the program. The underrepresentation of younger workers in STC can probably be explained by the tendency of employers to reserve a reduced-hours adjustment strategy for their more senior, more skilled workers. The reason for the relatively greater prevalence of women among STC claimants is more difficult to explain. Such workers may indeed have faced a higher risk of layoffs (although the actual UI claims data for comparison employers tended to refute that possibility), and, in that event, STC saved jobs for them. Conversely, women may have preferred STC for other reasons (such as the existence of good alternative uses for the

---

[1] Our investigation of layoffs that occurred prior to STC use (i.e., those that occurred in FY1982) indicated that women, minorities, and younger workers also did not appear to be disproportionately disadvantaged by layoffs in that earlier period. Therefore, we found no evidence to suggest that STC employers made selective layoffs prior to their using STC which had adverse implications in terms of affirmative-action outcomes.

[2] We could not measure layoffs that were not compensated by UI. If eligibility for UI varies among the groups of employees examined in Table VII.4, the data presented therein might not provide an accurate reflection of total layoff activity.

reduced work time), and the data may reflect that preference. The information available to us did not enable us to differentiate among these possibilities.

Although our results generally suggested that STC had no disproportionate positive affirmative-action outcomes, the data also showed that the program did not affect women, minorities, or younger workers negatively. The tendency of participating employers to place their more senior workers on STC did not seem to increase layoffs for these other groups. Hence, the program appeared to have a largely neutral effect on the work-force composition of employers.

VIII. EFFECTS ON THE RELATIVE COSTS OF LAYOFFS AND REDUCED HOURS

The congressional mandate for this study stipulated an examination of two final issues that pertain to the relative costs of layoffs and STC hours reductions:

1. A comparison of the benefits and costs to employees, employers, and communities from using short-time compensation and layoffs
2. The cost of administration of the short-time compensation program

In this chapter, we address these questions of relative costs. Our discussion is divided into three sections. In Section A, we describe the general methodology used to evaluate the relative costs. The costs estimated using this methodology are reported in Section B for employers and in Section C for state UI systems. Before beginning this formal analysis, however, we should explicitly note some of the limitations we faced in addressing the congressional issues, since these limitations seriously constrained what questions we were able to address. For example, with respect to the first issue, the congressional mandate called for a very broad-based benefit-cost analysis of STC from the perspectives of employees, employers, and society at large. In our evaluation design (Kerachsky and Nicholson, 1983), we did develop a complete benefit-cost framework that could be applied to the STC concept, but we recognized from the outset that obtaining the information necessary for such a complete evaluation would be beyond the scope of the project. Most importantly, because the study design did not enable us to collect data directly from

employees, we were unable to appraise STC directly from their point of view. Information on such issues as the use of layoff time, reemployment patterns, or family income trends--information that would be necessary for such an assessment--simply was unavailable. Because the primary beneficiaries of STC may be employees (i.e., those employees who would be laid off otherwise), this shortcoming in our evaluation is potentially serious in terms of providing a balanced overall assessment.

Our ability to measure the relative cost of STC participation to employers was less constrained by problems of data availability, since the employer survey collected a substantial amount of data on aspects of employers' hiring costs, fringe-benefit policies, and patterns of STC use. In Section B, we use these data to evaluate how STC may have affected the labor costs of employers. However, a major shortcoming with that analysis is our inability to address questions pertaining to the productivity of employees. Although there are a priori reasons to believe that an employee's productivity may be different on reduced hours than on full-time hours,[1] and although data in the employer survey (see Section B of Chapter III) showed that more than one-third of STC users did notice either positive or negative productivity changes under the program, we were unable to measure such changes quantitatively. As has been the case with other evaluations of the STC programs, the concept of employee productivity proved to be too difficult to measure empirically within the allotted budget of this project. Instead, our approach was to analyze quantitatively only those aspects of labor costs that we believed could be

---

[1] For a discussion of these productivity-related issues (especially within the context of the business cycle), see Nemirow (1984b).

measured fairly accurately, and to discuss only in passing the variety of difficult productivity-related questions raised by the STC program.

Our analysis of the relative costs of STC from the government's perspective is presented in Section C of this chapter. For that analysis, we chose to focus only on the relative costs to state UI systems. Issues pertaining to the secondary effects of STC participation on more general federal and state tax collections were felt to be beyond the scope of this evaluation. Since the relative effects of STC and regular UI benefit payments on the UI trust fund were already discussed in detail (Chapter VI), we concern ourselves here primarily with administrative costs. Unfortunately, our analysis of this issue was again constrained by data availability. Of the three primary states involved in our evaluation, only Arizona was able to provide us with quantitative data on the administrative costs of STC, and even those data exhibited some shortcomings for our purposes (which we will describe in Section C). Still, since the question of administrative costs is an important one in an evaluation of STC policy, we used these limited data in the belief that they could be taken as broadly representative of the costs experienced by other states in operating STC programs.

A. METHOD FOR ASSESSING RELATIVE COSTS: A LAYOFF VERSUS REDUCED-HOURS SCENARIO

Assessing the relative costs of the reduced hours made possible by the STC program necessitated developing a set of clearly defined employment scenarios so as to compare cost outcomes under clearly defined circumstances. Specifying such scenarios for a "typical" employer was made difficult by the highly varied patterns of STC use exhibited by the

employers in our sample. For example, more than 30 percent of the employers in the sample reported gaps in their periods of STC use, and 56 percent reported that the extent of use (e.g., the number of employees involved or the size of the hours reduction) fluctuated during the course of the program. They also exhibited a similarly wide range of variation in terms of the reduction in hours and the length of time over which STC was in use.[1] Despite these variations, we found it useful to specify a "typical" pattern of STC use: a 25 percent reduction in hours for affected employees, lasting approximately 20 weeks. This period (which closely resembled the experience of the average employer in our sample) not only provided our primary illustration of STC use, but also, we assumed, reflected the reduction in employment hours desired by the employer. Hence, in the absence of STC, the employer was also assumed to desire a similar reduction in its workforce. In the simplest alternative, such a reduction would be achieved through temporary layoffs--25 percent of the work unit would be laid off for 20 weeks. This then provided our basic layoff/hours-reduction comparison for assessing the costs to employers and the UI system.

In our more complex analyses of employer and UI administrative costs, we also took into account the possibility that not all desired hours reductions (as measured by STC use) might have been reflected by layoffs in the absence of the program. In the terminology developed in Chapter IV, we allowed for the possibility that the "layoff conversion rate" may not have

---

[1] According to our survey responses, the mean number of weeks of STC use was 20, with a standard deviation of 13 weeks. The average hours reduction was 25 percent, with a standard deviation of 10 percentage points.

been precisely 1.0. As a specific alternative (which was consistent with the results in Chapter IV), we assumed that employers would have resorted to layoffs for about 75 percent of the desired hours reduction--the number of hours reduced under STC. Thus, under this alternative layoff conversion notion, we assumed that only about 18.8 percent of the work unit (.75 times the assumed 25 percent of reduced hours) would have been laid off in the absence of STC. The remaining 6.2 percent reduction in the desired number of hours employed was assumed to be achieved, in this alternative case, through a reduction in the actual level of employee utilization during nominal, fully employed work hours (what is sometimes called "labor-hoarding"). The period during which employers used this combined layoff/reduced-utilization strategy was assumed to last as long as the layoff-only or reduced-hours-only periods--20 weeks.

Consequently, our cost simulations involved three basic temporary employment-reduction scenarios: (1) a reduced-hours scenario, (2) a layoff scenario, and (3) a layoff/reduced-utilization scenario. In the following sections, we use these hypothetical patterns to assess their relative costs to employers and the UI system.

B. COSTS TO EMPLOYERS

Adopting reduced hours as an employment-adjustment strategy may affect the costs to employers in (at least) four ways. First, because fewer layoffs are made, the costs associated with hiring and training new employees are reduced. Second, to the extent that fringe-benefit schedules are not strictly proportional to the number of hours worked, reduced hours may affect the levels of those benefits that are paid. Third, reduced hours may have different impacts than do layoffs on the productivity of

employees. And, fourth, to the extent that the employees who are laid off or who are placed on reduced hours are compensated for their unemployment (through, respectively, regular UI or STC), charges for such benefits may affect the experience-ratings of employers and the UI taxes they pay. In this section, we examine the first two of these effects based on data from our employer survey, in conjunction with other, published information. The third issue, a detailed analysis of employee productivity, was, as we have stated, beyond the scope of this project, and we thus have no quantitative information on one-third of the cost effects.[1] Finally, our analysis of the fourth issue--the UI taxes of employers--has already been presented (in Chapter VI), and in Section C we present a brief summary of the conclusions of that previous discussion.

Before we begin our analysis of the hiring and fringe-benefit costs, it is important that we describe the connection between these costs and STC program participation. In general, STC participation per se should not affect these costs. Hiring costs and fringe-benefit schedules are established through various labor-market influences and, in some cases, through collective bargaining. STC participation may affect how employers

---

[1] On a conceptual level, we should point out one error related to productivity that has commonly been made in other evaluations of STC (see, for example, State of California, 1982). In these evaluations, the fact that higher-wage employees typically experienced more unemployment under reduced hours than under layoffs was counted as a "labor cost saving" for the employer. Indeed, in some cases, these "savings" represented the primary component of the finding that STC saves employers money. But such a computation implicitly assumes that an employee's productivity is unrelated to his or her wage--an assumption that is at variance with commonly held views about the determinants of wage rates. More likely, any "cost savings" from the unemployment of higher-wage employees are counterbalanced by reductions in the average skill level of the employed workforce, so that the effects on unit labor costs are small. Hence, in the absence of a detailed investigation, an appropriate assumption would seem to be that changes in labor costs induced by changes in the composition of the workforce should not be counted as a benefit of STC.

actually adjust their workforces, but it should not have much effect on the unit costs of making those adjustments. For example, because senior employees are more willing to accept reduced hours when they are partially compensated for them, the availability of STC may cause employers to adopt such reductions when they would have opted for layoffs previously. Or, alternatively, employers may simply feel that reduced hours under STC are "fairer" than layoffs. Whatever the reason for the choice, our purpose was to assess their costs to the employer in terms of the hiring and fringe-benefit costs they face under the alternative adjustment option.

A major cost to employers which use temporary layoffs is the possibility that laid-off employees will fail to return to work once recalled. In that case, the employer would lose the firm-specific training that had been invested in the worker and would face recruiting and training costs associated with hiring a replacement. Table VIII.1 uses data from our employer survey to estimate the costs of replacing workers by industry.[1] While the costs vary considerably among industries, it is clear that the costs to replace lost workers are substantial--on the order of 6 percent of average yearly wages across industries. Hence, employers may face relatively high costs in using temporary layoffs.

However, it should be recognized that such costs must be incurred only to the extent to which laid-off employees fail to return to work.[2]

---

[1] The cost rates for hiring and formal training were obtained from secondary sources (Hall, 1981, and Employment Management Association, 1981) and were applied to estimates of the wages of production workers taken from the employer survey. Learning costs were estimated by assuming a logarithmic learning curve over the employee training period (the length of which was estimated by respondents to the employer survey).

[2] Returning employees may also suffer some loss of job-related skills, but these losses are probably quite small for short-term layoffs. Hence, we assumed that they were unimportant to our analysis.

TABLE VIII.1

ESTIMATED AVERAGE COST TO REPLACE ONE
PRODUCTION WORKER WHO DOES NOT RETURN FROM LAYOFF

Industry	Cost to Employer			
	Hiring[a]	Training[b]	Learning[c]	Total[d]
Construction and Other Primary	$268.63	$671.57	$465.39	$1,374.27
Nondurable Manufacturing	198.36	495.90	225.00	915.87
Durable Manufacturing	191.96	479.91	320.60	988.40
Transportation, Communications, and Utilities	245.08	612.71	170.27	1,104.44
Wholesale Trade	224.80	562.00	440.25	1,238.61
Retail Trade	199.50	498.75	301.71	1,013.42
Finance and Other Services	211.84	529.60	246.03	955.56
All Industries	207.80	519.50	320.61	1,037.73

NOTE: These results are based on data obtained from the employer survey, and include responses from both STC and comparison employers.

[a] Hiring costs include the costs of advertising for and recruiting, interviewing, and relocating new workers.

[b] Training costs include the costs of formal training only.

[c] Learning costs include the costs of lost employee productivity until the new employee has mastered his or her job.

[d] Totals may differ slightly from the sum of hiring, training, and learning costs because of rounding.

Table VIII.2 reports the estimated costs by industry for replacing one laid-off worker, given different probabilities of that worker's failing to return to work when recalled. The column labeled "expected replacement probability" (i.e., the probability of having to replace a temporarily laid-off worker who is recalled) is based on data drawn from the employer survey, and we used it to compute the "expected replacement cost." By far, the greatest expected replacement cost ($629.53) was estimated for employers in the transportation, communications, and utilities group, the industry with the highest probability that a recalled worker will fail to return to his or her previous employer (57 percent). However, since the representation of that industry in our sample was very small (less than 2 percent), we did not attach much significance to this figure. The results are more uniform for the other industries in Table VIII.2, with replacement probabilities ranging between 17 and 26 percent. For these industries, expected replacement costs per layoff were also relatively uniform, clustering in the range of $174 to $267. Consequently, taking into account the estimated replacement probabilities tended to reduce the expected costs of layoffs to employers significantly. Our data suggested that, on average, this expected cost was a bit lower than the typical weekly wage for the employees in our sample.

The next issue was how these layoff-related costs compared with the additional fringe-benefit costs associated with reduced hours. A simple intuitive example indicates why the fringe-benefit issue may be important. Assume that laid-off employees collect no fringes, but that employees on reduced hours continue at full fringe-benefit rates. Assume also that fringe benefits represent an average of about 20 percent of

TABLE VIII.2

EXPECTED REPLACEMENT PROBABILITIES AND COSTS
FOR PRODUCTION WORKERS

Industry	Expected Replacement Probability	Expected Replacement Cost
Construction and Other Primary	0.193	$ 265.23
Nondurable Manufacturing	0.190	174.02
Durable Manufacturing	0.205	202.62
Transportation, Communications, and Utilities	0.570	629.53
Wholesale Trade	0.174	215.52
Retail Trade	0.264	267.54
Finance and Other Services	0.194	185.38
All Industries	0.203	210.76

NOTE: Expected replacement probabilities were obtained from the responses of STC firms to the employer survey. Expected replacement costs are the product of these replacement probabilities and the hiring costs reported in Table VIII.1.

weekly wages, and that the typical hours and layoff reduction is 25 percent of employment hours. In this case, the employer's labor costs will be about 5 percent (.20 x .25) higher under reduced hours than under an equivalent layoff scenario, because under reduced hours the employer is paying fringe benefits for hours not actually worked; under layoffs, it would not. Of course, this hypothetical computation depends on both the assumed treatment of fringe benefits under layoffs and reduced hours and on the assumed level of fringe benefits. Data from our employer survey provided direct empirical evidence on these crucial assumptions.

Table VIII.3 presents evidence on the incidence of particular types of fringe benefits among the employers in our sample, and, for those employers which offer each benefit, shows the estimated benefit cost per person-week.[1] Insurance and paid vacations were by far the most common benefits reported by the employers in our sample. In dollar terms, these benefits also had relatively high estimated costs per person-week, although, for employers which provided them, pension and retirement benefits were the most expensive of those included in the table. The bottom line in Table VIII.3 (labeled "Total Cost to Employer") requires explicit comment. Here, the $58 per-week figure for comparison employers and the $64 per-week figure for STC employers refer to the total fringe-benefit costs incurred by an average employer which offered <u>all</u> of the benefits listed. To the extent that some employers offered only limited

---

[1] Estimates of fringe-benefit costs were based on fringe-benefit cost rates from BLS Employee Compensation Surveys, which were then applied to estimates of the wage base drawn from UI administrative records for each benefit that the respondents to the employer survey indicated they provided.

TABLE VIII.3

PERCENTAGE DISTRIBUTION AND ESTIMATED VALUE OF FRINGE BENEFITS

	Percent of Employers Offering Benefit[a]		Estimated Cost Per Person-Week[b]	
	Comparison Employers	STC Employers	Comparison Employers	STC Employers
Medical and Other Insurance	91.9	92.6	$ 18.42	$ 19.57
Pension/Retirement	40.9	44.7	20.50	23.61
Severance	31.1	37.7	2.93	3.14
Paid Sick Leave	71.4	74.6	3.67	3.75
Paid Vacation	98.1	99.2	12.88	13.66
Total Cost to Employer[c]			58.40	63.73

NOTE: Fringe benefit costs were estimated by using benefit rates from BLS Employee Compensation Surveys and wage data from UI administrative records.

[a] The sample consists of those employers which provided any fringe benefits.

[b] Computed only for those employers which offered each benefit.

[c] Computed on the assumption that the employer offered all benefits.

benefit packages, the average costs of those packages could be computed by using only some of the entries in the table.

In order to estimate the costs to employers under various work-force adjustment methods, our employer survey asked how various fringe benefits were treated when STC was used and work time was reduced. The results of those questions are reported in the first three columns of Table VIII.4. Overall, the vast majority of employers reported that they retained full benefits during such periods. Only for pensions and paid vacation (benefits which are sometimes based on total wages paid) did as many as 5 percent of the employers in the STC sample report a proportional reduction for short-time periods, and virtually none of the employers eliminated benefits entirely during these periods. Thus, although the state's STC statutes did not explicitly require that fringe benefits be maintained, most employers seemed to have followed such a policy.

By using the results shown in Tables VIII.3 and VIII.4, we were able to estimate the fringe-benefit costs that would be incurred by employers under each of our adjustment scenarios. The results of these simulations are reported in the final two columns of Table VIII.4. The figures reported refer to the additional fringe-benefit cost per equivalent week of work reduction incurred by an average employer using reduced hours instead of either a layoff strategy or a combined layoff/reduced-employee-utilization strategy. In making these computations, we assumed that laid-off employees received no fringe benefits, and that the "average" employer reduced some benefits proportionally to the extent reported on our survey. Therefore, the "total" figure reported in the table refers to a hypothetical employer which offered all of the benefits and followed a

TABLE VIII.4

DIFFERENCE IN FRINGE-BENEFIT COSTS BETWEEN STC AND LAYOFFS

Benefit	Percent of Employers: Retaining Full Benefit	Reducing Benefit Proportionately	Eliminating Benefit Completely	Difference in Weekly Benefit Cost from Using STC per Equivalent Work Reduction[a]: 1.00 Layoff	0.75 Layoff
Medical and Other Insurance	98.7	0.8	0.5	$ 19.43	$ 14.57
Pension/Retirement	92.6	5.9	1.5	19.34	14.50
Severance	99.4	0.6	0.0	3.03	2.27
Paid Sick Leave	96.4	3.2	0.3	3.63	2.72
Paid Vacation	93.9	5.1	1.0	12.71	9.53
Total Costs to Employer[b]				58.14	43.60

NOTE: Each line in the table was computed relative to the set of STC employers which offered that benefit to at least some employees.

[a] The alternative assumptions were that either one full layoff or 75 percent of one layoff week is equivalent to one person-week of STC.

[b] The total costs to employers are computed on the assumption that the employer offers all of the fringe benefits.

policy of eliminating those benefits totally for laid-off employees. For cases in which specific benefits were not offered or in which benefits were continued for laid-off employees (as is sometimes the case with, for example, health insurance benefits), the total figure should be reduced by the amount listed for that specific benefit in the table. For example, an average employer which offered only insurance, pensions, and paid vacations but which continued insurance coverage for laid-off workers would incur additional benefit costs of $32.05 ($19.34 + $12.71) per week of unemployment by using reduced hours rather than layoffs. If the unemployment spell lasted 20 weeks (as we assumed in our scenarios), the total additional fringe-benefit costs would be $641 per layoff or layoff equivalent. The figure would be smaller under a combined layoff/reduced-utilization strategy, since both employees on reduced hours and those being utilized less fully would receive full benefits. Overall, then, the results of Table VIII.4 suggest that the tendency of employers to continue full benefits for employees on STC may have added significantly to their labor costs during the period of STC use.

By using the results of our examinations of hiring and fringe-benefit costs, we were in a position to provide a qualitative assessment of the relative cost of STC to employers. For most employers, it appears that the additional fringe-benefit costs associated with reduced hours probably exceed the expected additional hiring and training costs associated with layoffs. Only for employers which maintain very restrictive benefits policies during reduced hours or for which the expected hiring costs are unusually high do our estimates suggest that employers would actually save

on adjustment costs by using STC during periods of reduced labor demand.[1] Since STC use may also have involved some incremental UI tax costs and some additional administrative burden (see Section C below), the conclusion is further strengthened.

Of course, the employers in our sample did voluntarily choose to use STC, and it should be presumed that they must have expected to benefit from doing so. As supporting evidence for the presence of net benefits for employers, we observed a fairly high incidence of second plans and plan renewals in the two states in which they were allowed. Moreover, 88 percent of the respondents to the employer survey which had used STC reported that they would use STC again to manage a work-reduction situation. Therefore, gains in terms of the factors that we were unable to measure (such as higher overall employee productivity, an improved labor-relations climate, or simply greater perceived fairness by employers) may have in many cases outweighed the types of modest incremental labor costs which we have estimated. However, estimating these additional benefits was beyond the scope of the present project and would, in general, pose formidable obstacles to drawing precise quantitative calculations.

C. COSTS TO THE UI SYSTEM

The participation of employers in STC may affect the costs of the UI system in two general ways: (1) benefit charges (and possibly tax

---

[1] Since expected hiring and training costs were assumed to be independent of the length of the layoff, whereas our relative fringe-benefit computations did depend on the length of the layoff, employers which face very short periods of reduced labor demand probably would benefit from reduced hours relative to layoffs in terms of these two adjustment costs.

contributions) may differ under various work-reduction strategies, and (2) administrative costs associated with paying benefits may also differ among the options.[1] Although in Chapter IV we have already provided a detailed examination of the first of these costs, it seems appropriate here to provide a brief summary of our findings before turning to a more extensive examination of administrative costs.

Our previous discussion showed that, relative to layoffs, participation in STC creates additional benefit charges to the UI trust fund both because average weekly benefit amounts are higher under STC and because somewhat higher levels of compensated unemployment occur under the program. Since these additional charges are not immediately incorporated into UI tax schedules, they would pose short-term costs to the UI system. Over the longer term, UI experience-rating formulas, together with special STC surtaxes, should recoup a large portion of these differential charges, although the precise extent of that recoupment was very difficult to estimate with any precision.[2]

Estimating the relative administrative costs of UI and STC benefits was a conceptually simpler process than was estimating the impacts on the trust fund, since it was unnecessary to consider any offsetting tax

---

[1] From the perspective of society as a whole, it is important to note that regular UI and STC benefit payments and related tax collections are transfers that represent neither social benefits nor costs. Only differing administrative costs would enter into a complete social benefit-cost analysis of regular UI and STC options.

[2] From the employers' perspective, it is the tax increases induced by higher benefit charges under STC that affect the costs of adjustment options. Our analysis suggested that such additional costs may be significant, but, because of the complexities of the operational experience-rating formulas over the long run, we were unable to estimate that cost quantitatively.

collections. Unfortunately, data on such costs were provided only by one state (Arizona), and, moreover, those data were not ideal for our purposes.[1] Still, we decided to proceed with using these data, since they represented the only information available on an important aspect of the relative costs of STC.

Table VIII.5 reports the results of our analysis of administrative costs. The basic data on which the analysis was based appear in the first two columns of the table, which report the per-unit costs (in terms of minutes of labor time spent) of various regular UI and STC functions. The next three columns of the table indicate the number of units required for each of these functions under our three scenarios. Some of these entries were derived directly from the scenarios. For example, since the work-time reduction was assumed to be 25 percent, STC would require four times as many initial claims as would be required for an equivalent UI spell arising from a layoff. Weeks claimed would also be four times as great under STC, given the 25 percent work reduction. Conversely, estimates for the number of determinations made for spells of regular UI and STC collection were taken from actual counts in the time-study records, adjusted for the claims activity assumed under the scenarios. The final three columns of Table VIII.5 present the total cost estimates (reported in minutes), calculated by multiplying the assumed levels of activity by the per-unit cost figures.

---

[1] The time studies on which administrative cost rates are based are conducted only episodically, and the time studies for regular UI and for STC were conducted at different points in time. The time study for our reported STC costs was conducted in August 1982; the time study for the regular UI costs was conducted in September 1979. These figures were chosen because they were the UI administrative cost rates that were actually in effect in Arizona in FY1983.

TABLE VIII.5

DIFFERENCE IN UI ADMINISTRATIVE COSTS BETWEEN STC AND LAYOFFS

UI Cost Element	Minutes Per Unit		Units Used Per Equivalent Layoff Reduction[a]			Administrative Cost Per Equivalent Work Reduction (Minutes[b])		
	Regular UI	STC	1.00 Layoff	0.75 Layoff	STC	1.00 Layoff	1.75 Layoff	STC
Initial Claims	46.23	29.09	1.00	0.75	4.00	46.23	34.67	116.38
Weeks Claimed	7.90	5.94	20.00	15.00	80.00	158.00	118.50	475.20
Nonmonetary Determinations[c]								
Separation	80.15	n.a.	0.19	0.14	n.a.	15.23	11.22	n.a.
Nonseparation	41.32	17.00	1.61	1.21	1.30	66.52	50.00	22.10
Total Variable Costs	n.a.	n.a.	n.a.	n.a.	n.a.	285.98	214.48	613.68
Fixed Costs								
Plan inquiries	n.a.	14.60						
Plan approvals	n.a.	201.07						

[a] Assuming a work-reduction rate of 25 percent.

[b] Cost is expressed in minutes of administrative time.

[c] Based on ratios of product counts for weeks claimed, initial claims, and nonmonetary determinations in cost study month.

n.a. means not applicable.

Although the estimates derived in this way suggest that STC use may generate some savings in terms of the administrative costs associated with eligibility determinations, the overall cost comparisons were dominated by the much greater claims-processing activity under STC. For an equivalent spell of compensated unemployment, total administrative costs (again, measured in minutes) were more than twice as high under STC as under layoff-related UI collections. The estimated differential was even larger when STC was compared with the layoff/reduced-utilization scenario, since in that case only those employees who were actually laid off would impose administrative costs on the UI system.

The limitations with our administrative data must again be stressed. The most important of these limitations was that, because the STC cost data reported in Table VIII.5 reflected only early experiences with STC, they may incorporate inefficiencies due to both the newness of the operations and the small scale at which the STC program was operating. The costs may decline substantially over time as states learn how to operate the program more efficiently. Our administrative report (Hershey, 1985) outlines some of the operational efficiencies that have recently been incorporated into the claims-processing procedures of states, but quantitative information to assess the effects of these innovations on costs is not yet available. Hence, whether more efficient claims procedures might be able to compensate for the greater claims activity under STC remains an open question.

REFERENCES

Barnow, Burt, Glen Cain, and Arthur Goldberger. "Issues in the Analysis of Selectivity Bias." In Evaluation Studies Review Annual, Vol. 5, edited by Ernst Stromsdorfer and George Farkas. Beverly Hills: Sage Publications, 1980.

Best, Fred, et al. "The California Work Sharing UI Program: An Interim Evaluation Report." Sacramento: Employment Development Department, 1981.

Brown, Eleanor. "Specific Tax Formulas for Experience Rating." In National Commission on Unemployment Compensation, Unemployment Compenstaion: Studies and Research, Vol. 2, Washington, D.C., 1980, pp. 265-270.

Canada Employment and Immigration Commission. "An Evaluation of Work Sharing in Canada: Executive Summary and Selected Statistical Tables." Ottawa, Canada: Program Evaluation Branch, Strategic Policy and Planning, November 1979.

Employment and Immigration Canada. "Evaluation of the Work Sharing Program." Ottawa, Canada: Program Evaluation Branch, Strategic Policy and Planning, March 1984.

Employment and Immigration Canada. "The Work Sharing Program: The Experience of Employers and the Role of Work Sharing in Preventing Layoffs." Winnipeg, Canada: CanWest Survey Research Corp., April 1983.

Employment Management Association. "EMA/DS&E Direct Cost Per Hire Survey." Wellesley, MA, 1981.

Fisher, Paul. "Work Sharing in the Federal Republic of Germany." Unpublished paper. Washington, D.C.: U.S. Department of Labor, Employment and Training Administration, 1978.

Hall, Thomas E. "How to Estimate Employee Turnover Costs." Personnel, July-August 1981, pp. 43-52.

Heckman, James. "The Common Structure of Statistical Models of Truncation, Sample Selection, and Limited Dependent Variables and a Simple Estimator of Such Models." Annuals of Economic and Social Measurement, Fall 1976, pp. 475-492.

Henle, Peter. Work Sharing as an Alternative to Layoffs. Washington, D.C.: Congressional Research Service, Library of Congress, 1976.

Henle, Peter, Tom Joyce, Paul Fisher, and Fred Best. "European Short-Time Programs." In Short-Time Compensation: An Approach to Saving Jobs and Skills. Washington, D.C: Office of the Assistant Secretary for Policy, Evaluation, and Research, U.S. Department of Labor, April 1979.

Hershey, Alan. "Shared Work Compensation: An Administrative Analysis of State Programs." Princeton, NJ: Mathematica Policy Research, March 1985.

Kerachsky, Stuart, and Walter Nicholson. "Assessment of the California Shared Work Unemployment Insurance Evaluation." Princeton, NJ: Mathematica Policy Research, August 1984.

Kerachsky, Stuart, and Walter Nicholson. "Worksharing Evaluation Background Report." Princeton, NJ: Mathematica Policy Research, December 1983.

Levitan, Sar A., and Richard S. Belous. "Work-Sharing Initiatives at Home and Abroad." Monthly Labor Review, September 1977, pp. 16-20.

Maddala, G., and L. Lee. "Recursive Models with Qualitative Endogenous Variables." Annuals of Economic and Social Measurement, Fall 1976, pp. 525-546.

Meisel, Harry. "The Pioneers: STC in the Federal Republic of Germany." In Short-Time Compensation: A Formula for Work Sharing, edited by Ramelle MaCoy and Martin Morand. New York: Pergamon Press, 1984.

Nemirow, Martin. "Short-Time Compensation: Some Policy Considerations." In Short-Time Compensation: A Formula for Work Sharing, edited by Ramelle MaCoy and Martin Morand. New York: Pergamon Press, 1984a.

Nemirow, Martin. "Work-Sharing Approaches: Past and Present." Monthly Labor Review, September 1984b, p. 34-39.

Reid, Frank. "UI-Assisted Worksharing as an Alternative to Layoffs: The Canadian Experience." Industrial and Labor Relations Review, Vol. 35, No. 3, April 1982, pp. 319-329.

Reubens, Beatrice G. The Hard-to-Employ: European Programs. New York: Columbia University Press, 1970.

Sadlier-Brown, Peter. Work Sharing in Canada: Problems and Possibilities. HRI Observations No. 18, Montreal: C.D. Howe Research Institute, 1978.

State of Arizona. "Shared Work Unemployment Compensation Program: First Year Results." Phoenix: Department of Economic Security, Division of Employment and Rehabilitation Services, Unemployment Insurance Administration, February 1983.

State of California. "Shared Work Unemployment Insurance Evaluation Report." Sacramento: Employment Development Department, May 1982.

Topel, Robert. "Experience Rating of Unemployment Insurance and the Incidence of Unemployment." Journal of Law and Economics, April 1984, pp. 61-90.

*U. S. GOVERNMENT PRINTING OFFICE 1986; 491-543/54401