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The Consequences of Welfare Reform and Economic Change for the Food Stamp Program—Illustrations from Microsimulation

Final Report

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Abstract

This report summarizes the results of a longitudinal microsimulation model known as MATH STEWARD (Micro Analysis of Transfers to Households/Simulation of Trends in Employment, Welfare, and Related Dynamics). The simulation was used to explore how state welfare reform and economic changes between 1992 and 1998 might have affected the Food Stamp Program (FSP) and how an economic recession might affect food stamp outcomes. Slightly over half of the reductions in FSP caseloads and costs between December 1992 and December 1998 were simulated. About one-third of the simulated reductions in caseloads and costs could be attributed to changes in state welfare and child care policies; about two-thirds could be attributed to changes in state unemployment rates. In a future recession similar to the 1990-92 recession, food stamp caseloads could increase about 11 percent and food stamp costs could increase about 13 percent.

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INTRODUCTION

In this report, we use a longitudinal microsimulation model known as MATH STEWARD (Micro Analysis of Transfers to Households/Simulation of Trends in Employment, Welfare, and Related Dynamics)¹ to explore how state welfare reform and economic changes between 1992 and 1998 might have affected the Food Stamp Program (FSP). We also simulate how an economic recession might affect food stamp outcomes in the near future.

Our major conclusions are the following:

- For the nation as a whole, our preferred model of program participation and labor supply was able to simulate slightly over half of the reductions in FSP caseloads and costs between December 1992 and December 1998.
- Of the simulated reductions in food stamp caseloads and costs, about one-third could be attributed to changes in state welfare and child care policies, and about two-thirds could be attributed to changes in state unemployment rates.
- Of all the welfare reform policies introduced by states, strict time limits on Temporary Assistance to Needy Families (TANF) grants were most strongly associated with simulated reductions in FSP participation and costs.
- Lower unemployment rates contributed the most to reductions in simulated food stamp participation in states with the largest declines in unemployment and in states with relatively generous TANF programs.
- In a future recession similar to the 1990-1992 recession, food stamp caseloads are simulated to increase by about 11 percent, and simulated food stamp costs are simulated to increase by about 13 percent.

The report has five chapters. In Chapter I, we summarize major developments during the 1990s, including an economic expansion and changes in welfare and food stamp policies. We also describe recent efforts to determine the underlying causes of declines in welfare and food stamp caseloads during the 1990s. In Chapter II, we justify the use of microsimulation to

investigate the effects of unemployment rate changes on food stamp caseloads, and we also describe major features of the MATH STEWARD model. In Chapter III, we describe the simulated consequences of state welfare reform on FSP participation and costs and on the characteristics of FSP recipients. In Chapter IV, we describe the extent to which changes in unemployment rates were responsible for simulated changes in food stamp outcomes between 1992 and 1998. In Chapter V, we describe the simulated consequences of a future recession on food stamp outcomes. Appendix A describes sensitivity analyses involving different versions of the MATH STEWARD model; Appendix B describes the behavioral equations used in these alternative versions of the model; and Appendix C provides some additional evidence on food stamp participation trend during the 1990s.

¹MATH is a registered name of Mathematica Policy Research, Inc.

I. BACKGROUND

The past decade has seen vast changes in both this country's economy and its social welfare policy. The 1990s began with a recession, but the economy rebounded, and since 1993 more than 10 million jobs have been created, unemployment rates have reached their lowest level in a generation, and high demand for low-wage workers has created a very tight labor market. During this same decade, public assistance caseloads rose rapidly to a historical high point and then decreased with even greater speed to their lowest level in decades. Food stamp caseloads have followed this pattern and also continue to decline. While researchers may agree on the numbers, they do not agree on what caused such dramatic drops in both welfare and food stamp caseloads.

This chapter has three main sections. In the first section, we describe the changes in unemployment rates and welfare and food stamp caseloads that occurred during the 1990s. In the second, we describe major changes in welfare, childcare, and food stamp policies during the 1990s. In the third section, we describe the efforts in the econometric literature to distinguish the effects of changing economic conditions and policy changes on levels of welfare and food stamp participation.

A. CHANGES IN UNEMPLOYMENT RATES AND WELFARE/FSP CASELOADS

The U.S. economy has experienced a prolonged expansion for most of the 1990s. Unemployment rates for the entire country rose from 5.2 percent in March 1990 to 7.4 percent in March 1992, but fell every year since then, reaching a low of 4.2 percent in March 1999. From 1992 through 1998, the average monthly unemployment rate fell by three percentage points for the country as a whole (Table I.1). Over this period, five states--Massachusetts, Michigan,

TABLE I.1
Change in State Unemployment Rates, 1992 to 1998

<i>State</i>	<i>Average Monthly Unemployment Rate</i>		<i>Difference Between 1998 and 1992</i>
	<i>in 1992 (%)</i>	<i>in 1998 %</i>	
Nation	7.5	4.5	-3.0
Massachusetts	8.6	3.3	-5.3
Michigan (Wayne County)	8.9	3.8	-5.1
West Virginia	11.4	6.5	-4.9
New Hampshire	7.5	2.7	-4.8
Rhode Island	9.0	4.7	-4.3
Connecticut	7.6	3.7	-3.9
Florida	8.3	4.5	-3.8
Indiana	6.6	3.0	-3.6
New Jersey	8.5	4.8	-3.6
Arizona	7.6	4.0	-3.6
Alabama	7.4	4.0	-3.4
California	9.3	5.9	-3.4
Vermont	6.7	3.3	-3.4
Virginia	6.4	3.1	-3.3
Alaska	9.3	6.0	-3.2
Illinois	7.6	4.4	-3.2
Pennsylvania	7.6	4.5	-3.1
Mississippi	8.2	5.2	-3.1
Ohio	7.3	4.3	-3.1
New York (NYC)	8.6	5.6	-3.0
Washington	7.6	4.6	-3.0
Georgia	7.0	4.0	-3.0
South Carolina	6.4	3.5	-2.9
Texas	7.7	4.8	-2.9
Louisiana	8.2	5.3	-2.8
Maine	7.2	4.4	-2.8
North Dakota	5.1	2.3	-2.8
Colorado	6.0	3.3	-2.7
Minnesota	5.2	2.5	-2.7
Kentucky	6.9	4.3	-2.7
North Carolina	6.0	3.4	-2.6
Nevada	6.7	4.2	-2.5
Oregon	7.6	5.4	-2.2
Maryland	6.7	4.5	-2.2
Arkansas	7.3	5.1	-2.2
Tennessee	6.4	4.2	-2.2
Iowa	4.7	2.6	-2.1
Wisconsin	5.2	3.2	-2.0
Utah	5.0	3.2	-1.8
Missouri	5.7	4.0	-1.7
Oklahoma	5.7	4.0	-1.7
Delaware	5.4	3.7	-1.7
Idaho	6.5	5.0	-1.5
Montana	6.9	5.4	-1.5
Wyoming	5.7	4.5	-1.3
Nebraska	3.0	2.1	-0.9
Kansas	4.3	3.6	-0.7
New Mexico	7.1	6.4	-0.6
South Dakota	3.2	2.6	-0.6
District of Columbia	8.5	8.6	0.0
Hawaii	4.5	5.8	1.3

SOURCE: U. S. Bureau of Labor Statistics, Local Area Unemployment Statistics
[<http://146.142.4.24/cgi-bin/surveymost?la>]

West Virginia, New Hampshire, and Rhode Island--experienced decreases of four percentage points or more in their average monthly unemployment rates. Only Hawaii and the District of Columbia did not experience a reduction in their unemployment rates from 1992 through 1998.

At the same time that the country experienced dramatic declines in unemployment rates, it also experienced dramatic declines in welfare and Food Stamp Program (FSP) participation. The number of people receiving federal cash assistance for families with children hovered around 14 million from 1993 through 1995, but declined by one-third to 9.1 million by January 1998, and by an additional 1.5 million to 7.6 million by December 1998. From December 1992 through December 1998, the average number of people receiving food stamps each month declined by 29 percent, from 27 million to 19 million. The drop in participation in both programs was most dramatic after federal welfare reform legislation was passed in 1996. We describe below the consequences of this legislation for welfare, childcare, and food stamp policies.

B. CHANGES IN WELFARE, CHILD CARE, AND FOOD STAMP POLICIES

1. Changes in Welfare Policy

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) created the Temporary Assistance for Needy Families (TANF) block grant to replace the Aid to Families with Dependent Children (AFDC) program. Under AFDC, welfare policy was defined on a national level, giving states few opportunities for innovation. States determined the generosity of benefit levels, but most other decisions were made on the national level. PRWORA gives states the flexibility to create new cash assistance programs for families with children.

While this federal welfare reform legislation signified a major change in social policy, it was not the beginning of welfare reform. During the early to mid-1990s an increasing number of

states applied for and received waivers from the U.S. Department of Health and Human Services (HHS) to pursue welfare demonstration programs. Before PRWORA was enacted, 45 states and the District of Columbia had HHS-approved waivers. Some waivers were limited to selected counties within a state, while others applied statewide. States sought waivers in a variety of areas, including proposals to expand earnings disregards, raise program asset limits, remove restrictions on eligibility for two-parent families, expand JOBS participation requirements, and impose stricter sanctions, time limits and school attendance requirements. Many of these demonstrations focused on a work-first approach to decreasing dependency on public assistance as opposed to reducing or eliminating assistance. This move toward “personal responsibility” shaped the welfare reform legislation in effect today. While the federal legislation establishes a variety of minimum requirements in some areas, there is considerable flexibility for states to exceed these minimum requirements or to use state discretion in others areas.

PRWORA made considerable changes in many areas, including public assistance funding and eligibility, time limits, and work requirements. Public assistance funding was changed from a matching grant to a block grant, ending the categorical guarantee of assistance to eligible families. Under AFDC, families could receive public assistance for as long as they remained eligible. As its name suggests, TANF is rooted in the idea that assistance should be transitional to help families through times of extreme need. For the first time, families are subject to a 60-month federal time limit on cash welfare benefits. Welfare recipients are also expected to seek and engage in work activities in an effort to achieve self-sufficiency. PRWORA requires parents receiving TANF benefits to work within 24 months of entering the program and imposes annual work participation rates that all states must meet or face financial penalties.

2. Changes in Child Care Policy

The enactment of PRWORA introduced significant changes in the funding structure and program approach of the subsidized child care system. The amended Child Care and Development Block Grant unifies a formerly fragmented child care system. It repealed the AFDC-JOBS Child Care program, the Transitional Child Care program, and the At-Risk Child Care program, and child care funding was combined under the new Child Care and Development Fund (CCDF). By consolidating these federal funding pools and relaxing regulations, CCDF offers states streamlined funding source. PRWORA gives states considerable authority and flexibility over systems for child care assistance to low-income families. For instance, states can now define eligibility and benefit levels with systems that provide child care assistance to families receiving welfare, with adults entering the workforce, or for families transitioning from cash benefits aid.

3. Changes in Food Stamp Policy

In addition to making major changes in cash assistance and child care subsidies to low-income families with children, PRWORA introduced some major changes in the Food Stamp Program that were likely to reduce levels of FSP participation. PRWORA required able-bodied adults without dependents (ABAWDs) to participate in work-related activities after three months or lose eligibility for food stamp benefits. States could apply for waivers of this requirement in counties with high unemployment rates or a shortage of low-skill jobs. By March 10, 1999, 19 states had waiver programs effective some of their counties. PRWORA also eliminated FSP eligibility for most resident aliens in the United States, with the exception of certain refugees and asylees. By July 1998, 17 states had established alternative food assistance programs for some FSP-ineligible immigrants.

Of all the changes adopted under PRWORA, the changes in FSP eligibility for ABAWDS and immigrants affect FSP participation most directly. At the same time, the shift from the old AFDC system toward new state TANF programs is likely to have dramatic consequences for the FSP, since about two-fifths of food stamp households received AFDC benefits during the early 1990s. Because a household's food stamp allotment depends directly on its level of earnings and cash welfare benefits, policies that promote higher earnings, or lower levels of welfare benefits, could affect total levels of food stamp benefits paid to households. While state childcare subsidies do not directly enter into the calculation of food stamp benefits, they could be part of a welfare-to-work strategy that affects the level and composition of income for households receiving food stamps. If household earnings increase because of more generous child care provisions, then FSP participation rates and benefit levels may be different under welfare reform, even if TANF provisions do not differ from the provisions of the old AFDC program. Even if a household retained FSP eligibility under welfare reform, reduced reliance on cash assistance, and an increased emphasis on self-sufficiency, could lead many households to forgo FSP benefits voluntarily. This voluntary non-participation in the FSP could be especially likely when expected FSP benefits are low, or when the stigma or hassle of collecting food stamps is high.

C. EFFORTS IN THE LITERATURE TO EXPLAIN CASELOAD DECLINES

1. Explaining Declines in Welfare Participation

There is contentious discussion about the cause of the dramatic decreases in the AFDC/TANF caseloads. The growth of the economy paralleled the programmatic changes in policy, making it difficult to isolate the impact of each variable on caseload decline. Some research points to the economy as the absolute driving factor in caseload decline, while other research identifies policy changes as having the ultimate impact. While there is research

supporting these two extremes, most believe a combination led to the steep 37 percent decline in the AFDC/TANF caseload in the past three years.

According to the conclusions of a 1997 technical report published by the Council of Economic Advisers (CEA), over 40 percent of the decline in the aggregate national AFDC caseload from 1993-1996 can be attributed to economic growth. In addition, almost one-third of the decline is related to waivers -- particularly those with disincentives for recipients who fulfill work requirements. Various studies including Martini and Wiseman (1997) challenged the CEA study's methodology and cautioned policy makers against using it to formulate future welfare policy at the national or state level.¹ Wallace and Blank (1999) concluded that at best, the ongoing decline in unemployment rates can explain about 8 to 19 percent of the AFDC caseload declines since 1994 and about 28 to 44 percent of the food stamp caseload declines. They also say that the impact of welfare reform explains a minimum of 8 percent of the caseload decline in AFDC/TANF and 6 percent of the decline in food stamp caseloads from 1994 through 1998, up to 75 percent of the AFDC caseload decline and up to 85 percent of the food stamp caseload decline. They account for the wide range between these minimum and maximum estimates by citing the need for further research to look at the other variables that may be driving the caseload changes, such as less-measurable factors including their own sense of the "acceptability" of utilizing public assistance.²

¹Martini, Alberto and Michael Wiseman, "Explaining the Recent Decline in Welfare Caseloads: Is the Council of Economic Advisers Right?" The Urban Institute, July 1997.

²Wallace, Geoffrey and Rebecca Blank, "What Goes Up Must Come Down? Explaining Recent Changes in Public Assistance Caseloads," Paper prepared for the conference, Welfare Reform and the Macroeconomy, sponsored by the Joint Center for Poverty Research, February 1999.

In Figlio and Ziliak's study (1998), the authors attribute about 18 percent of the caseload decline to welfare reform in monthly models in the 20 states with the largest caseload declines, and up to 27 percent at quarterly frequencies. In Wisconsin and Oregon, they were able to attribute about 65 and 45 percent of the caseload decline to welfare reform, respectively.³

A recent study by the Heritage Foundation concludes that the sharp decline is due almost entirely to tough state welfare reform policies and not to the robust economic times. The study points to statistics that show that states with the strictest sanctions for noncompliance have experienced a 41.8 percent reduction in their TANF caseloads during the past three years while states with less aggressive sanctions have cut their caseloads by averages of 17.3 and 28.3 percent.

2. Explaining Declines in Food Stamp Participation

According to the U.S. Department of Agriculture, Food and Nutrition Service, the number of people receiving food stamps fell by more than 5.9 million from the summer of 1994 through the summer of 1997, with most of the decline occurring in the year from September 1996 to September 1997. Among participants: The number of legal immigrants fell by 54 percent, accounting for 14 percent of the total decline; the number of childless unemployed adults fell by 44 percent, accounting for 8 percent of the total decline; the number of food stamp households receiving welfare benefits fell by 28 percent, representing 61 percent of the decline.⁴ The USDA

³Figlio, David and James Ziliak, "Welfare Reform, the Business Cycle, and the Decline in AFDC Caseloads." Prepared for the conference, Welfare Reform and the Macro-economy, October 1998.

⁴U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation. "Who is Leaving the Food Stamp Program? An Analysis of Caseload Changes from 1994 to 1997." USDA, March 1999.

also noted that the number of single-parent families, the group most affected by welfare reform, fell by 17 percent. Within this group, the number receiving AFDC or TANF benefits fell by 27 percent but the number of those not receiving welfare rose by 9 percent -- suggesting that welfare reform was partially responsible for decreasing welfare caseloads. Had it been solely the strong economy, the number of food stamp households, regardless of welfare eligibility, would have both fallen by similar amounts. Furthermore, it suggests that some families that no longer receive welfare continue to receive food stamps.

Although welfare caseloads declined during economic expansion and in the midst of significant welfare and FSP reform, these conditions may not have precipitated declining food stamp participation. Even though FSP has changed fundamentally, for single mothers and their children on AFDC/TANF, the program has not changed. Food stamp caseloads decreased slightly faster than AFDC caseloads in the mid-1990s, partly because the legislation that abolished AFDC prevented food stamp eligibility for numerous immigrant groups, and limited food stamp availability for families without children. Nevertheless, caseloads have continued to decline, even after the implementation of these changes. The tight historical correlation between food stamps and AFDC eligibility raises many questions about the effect of current welfare reform on food stamp usage. People may be leaving food stamps at the same time as AFDC/TANF, not realizing that they may still be eligible for food stamp benefits.

There are some efforts in the literature to explain the decline in food stamp cases. Wallace and Blank concluded that the impact of welfare reform, at minimum, explains 6 percent of the caseload decline in food stamps from 1994 through 1998 and at a maximum, 85 percent. Moreover, the ongoing decline in unemployment rates can explain about 28 to 44 percent of the food stamp caseload declines since 1994. The wide range between estimates suggests the need

for further study to distinguish the contributions of changing unemployment rates, welfare reform, and other factors to recent declines in food stamp caseloads. Knowing the extent to which declining unemployment rates are responsible for lower food stamp caseloads will guide the future development of welfare and food stamp policy and will help administrators anticipate the likely effects of a future recession on food stamp caseloads and costs.

II. INTRODUCTION TO THE MATH STEWARD MODEL

A. JUSTIFICATION FOR USING MICROSIMULATION

Microsimulation involves the use of a micro-level database on households or individuals to simulate how changes in public policies or economic conditions are likely to affect outcomes. The assumptions governing the simulation are typically included in a set of computer programs that can imitate the behavior of program caseworkers as well as the behavior of individuals applying for public assistance. By simulating program eligibility and behavior on the household level and then aggregating outcomes across households, it is possible to assess the overall consequences of changes in program parameters. By altering the values of variables capturing economic conditions, it is possible to assess how changes in the economic environment may affect program caseloads and costs. Because it can distinguish effects due to policy changes from effects due to economic changes, microsimulation is an especially valuable tool for evaluating the contributions of economic growth and of welfare reform to recent changes in food stamp caseloads and costs. Microsimulation can also be useful for anticipating caseloads and costs when welfare and food stamp policies remain the same, but economic conditions change (during a recession, for example).

MATH STEWARD is a dynamic policy microsimulation model first developed from 1996 through 1998 with funding from the Smith Richardson Foundation, the Food and Nutrition Service of the U.S. Department of Agriculture, and the Administration for Children and Families of the U.S. Department of Health and Human Services. Further model development has occurred since 1998 with funding from the Economic Research Service of the U. S. Department of Agriculture, as well as the Food and Nutrition Service. The model is designed to enable states, federal agencies, and other users to simulate responses over time to changes in welfare, food

stamp, and childcare policies. Such a policy simulation capability is especially relevant for assessing how changing unemployment rates affect the FSP caseloads and costs.

In the sections that follow, we describe several main features of the MATH STEWARD model, including the model database, the behavioral equations in the model, and the tabulation of model output. We then present our plans for using MATH STEWARD to simulate the consequences of economic change for the FSP.

B. MODEL DATABASE

The MATH STEWARD model database consists of records on households in the 1992 panel of the Survey of Income and Program Participation (SIPP). A sample of 15,469 households (and associated reference persons) was selected to represent all U.S. households during the late 1990s. The database contains information on the demographic characteristics and income of all individuals in each reference person's household at any point during a three-year period. The sample includes reported information from January 1992 through December 1994, but was reweighted to match 1996 population totals from the Current Population Survey (CPS) and the Food Stamp Program Quality Control (FSP-QC) database.

To enable MATH STEWARD to generate simulation outcomes for individual states, the developers of the model created a set of 51 state-specific weights (including the District of Columbia) for each household in the model database at the start of the three-year period. If state-specific simulations are restricted to the SIPP observations that actually resided in a particular state, the size of the sample would frequently be too small to generate useful simulation estimates. By using state-specific weights, the entire SIPP sample is included in each state-specific simulation and is assigned a weight reflecting the prevalence of that type of household in the state in question. The state-specific weights produce, for each state, a population of

households with an identical set of demographic characteristics as that state's sample in the March 1996 CPS, and a population of recent food stamp recipients with an identical set of demographic characteristics as that state's sample in the Fiscal Year 1996 FSP-QC database.

C. BEHAVIORAL EQUATIONS

MATH STEWARD contains a set of behavioral equations to simulate the following outcomes, every three months over a three-year period:

- The employment status and earnings of each household reference person and spouse
- AFDC/TANF participation for members of each reference person's household
- Participation of each female reference person or spouse in AFDC/TANF-related employment/training (E/T) programs
- Participation of eligible children in each reference person's family in state child care subsidy programs, the subsidy amounts, out-of-pocket child care costs, and choice of providers implied by such participation
- Food stamp participation for members of each reference person's household

The model assumes that each household's reference person and spouse have the choice of no work, part-time work, or full-time work. The model also assumes that the household as a whole can choose to have eligible members participate in AFDC/TANF and food stamps, food stamps only, or neither program.¹ The household's choice of a particular work or program participation option depends on implied levels of disposable income, as well as household-specific preferences for part-time work, full-time work, participation in both AFDC/TANF and food stamps, and

¹ About 90 percent of the households that receive AFDC/TANF benefits also receive food stamps. Version 1996.41 of the model, the source of the estimates in the body of this report, does not allow households to participate in AFDC/TANF only, although versions 1996.70 and 1996.80 allow this option.

participation in food stamps only. The state unemployment rate affects potential earnings, preferences for work, and preferences for participation in AFDC/TANF and food stamps. The wage, labor supply, and program participation equations differ according to the version of the model; the equations for Version 1996.41 are the same as for Version 1996.30, described in Jacobson et al. (1998), while the equations for Versions 1996.70 and 1996.80 are documented in Appendix B. The Version 1996.41 equations were used for the simulation estimates in the body of this report; Appendix A provides evidence of the validity of the simulation estimates obtained using different versions of the model.

D. SIMULATION SOFTWARE

The MATH STEWARD model consists of several software modules that perform simulations of program eligibility and household behavior. These simulations rely on user-specified parameters governing AFDC/TANF, food stamp, childcare subsidy, and federal tax policies. A supervisor module controls the flow of individuals and households through the other modules and imputes potential earnings for the household reference person and spouse. Policy modules determine potential AFDC/TANF benefits, childcare utilization and costs, and food stamp benefits under each of the household's labor supply/program participation options. After calculating the household's disposable income under each of the alternatives, the model assigns the household to its preferred choice and keeps track of outcomes such as employment tenure or cumulative time on AFDC/TANF. An output table program tallies aggregate results and displays them for the user.

The MATH STEWARD output tables display aggregate outcomes indicating participation and costs in the AFDC/TANF, child care, and food stamp programs, as well as the work-related characteristics of AFDC/TANF recipients and the number of households hitting a TANF time

limit. The tables compare monthly outcomes under a set of “reform” conditions with the corresponding outcomes under a previously defined “baseline” simulation, which is stored on file. Because the conditions governing the baseline and reform simulations are identical *except* for the policy or economic changes specified by the user, any difference between a baseline outcome and a reform outcome is due entirely to the simulated effects of the changes.

E. USING THE MODEL TO SIMULATE THE CONSEQUENCES OF ECONOMIC CHANGE FOR THE FSP

MATH STEWARD, primarily through the state unemployment rate, captures economic change. To simulate the consequences of economic change for the FSP, we ran four sets of state-specific simulations:

The first set of simulations used state unemployment rates at their 1990 to 1992 levels, and state AFDC and child care policies at their pre-PRWORA levels (corresponding with the years 1992 to 1994 for AFDC, and 1994 for state child care subsidies). We call this simulation the “AFDC92” simulation, since it used AFDC rules and, for Year 3 of the simulation, 1992 unemployment rates.

- The second set of simulations lowered state unemployment rates to their 1996 to 1998 levels, but kept all other policies unchanged. This simulation predicted what food stamp caseloads and costs would be, if the economic boom of the 1990s had taken place, but welfare reform had not occurred. We refer to this simulation as the “AFDC98” simulation, because it used AFDC rules and 1998 unemployment rates.
- The third set of simulations lowered state unemployment rates to their 1996 to 1998 levels, and also introduced 1998 state TANF and child care policies in place of the old AFDC policies. We refer to this simulation as the “TANF98” simulation.

- The fourth set of simulations raised state unemployment rates to their 1990 to 1992 levels, but retained 1998 state TANF and child care policies in place of the old AFDC policies. We refer to this simulation as the “TANF92” simulation.

For every set of simulations, we kept FSP parameters at their 1996 to 1998 levels.²

To simulate the contribution of welfare reform to changes in FSP outcomes during the late 1990s, we created the following ratio:

$$100 * (TANF98 \text{ outcome} - AFDC98 \text{ outcome}) / (AFDC 98 \text{ outcome})$$

This ratio indicates the percentage change in outcomes arising from welfare reform, assuming the economy is held constant at its 1996 to 1998 levels.

To simulate the contribution of economic change to changes in FSP outcomes arising from both economic change and state welfare reform from the early 1990s through the late 1990s, we created the following ratio:

$$100 * (AFDC98 \text{ outcome} - AFDC92 \text{ outcome}) / [(AFDC98 \text{ outcome} - AFDC92 \text{ outcome}) + (TANF98 \text{ outcome} - AFDC98 \text{ outcome})]$$

The numerator in this ratio is the change arising from different unemployment rates, and the denominator is the sum of the changes arising from different unemployment rates and from welfare reform. The ratio may be simplified to equal:

² We did not include restrictions on FSP benefits for Able-Bodied Adults without Dependents (ABAWDs) in our simulations described in the body of this report, although they were included with state welfare reform policies in some alternative simulations described in Appendix A.

$$100 * (AFDC98 \text{ outcome} - AFDC92 \text{ outcome}) / (TANF98 \text{ outcome} - AFDC92 \text{ outcome})$$

To simulate the likely effect of an economic recession on FSP outcomes under welfare reform, we created the following ratio:

$$100 * (TANF92 \text{ outcome} - TANF98 \text{ outcome}) / (TANF 98 \text{ outcome})$$

This ratio indicates the percentage change in outcomes arising when unemployment rates return to their 1990-1992 levels from their 1996-1998 levels, assuming that welfare reform remains in place.

For more detailed information on how we simulated state TANF programs as differing from the older AFDC programs and how we simulate state child care programs as differing between the late 1990s and the early 1990s, we refer the reader to an earlier report by Jacobson and Puffer (April 1999).

III. SIMULATED CONSEQUENCES OF WELFARE REFORM FOR FOOD STAMP OUTCOMES

A. DESCRIPTION OF OUTCOMES

In this chapter, we present the results of preliminary simulations of the consequences of state welfare reform programs for FSP participation, FSP costs, and FSP characteristics. We first consider six major outcomes describing FSP participation and costs:

1. The total number of participating food stamp units per state
2. The participation rate of eligible food stamp units per state
3. The total number of individuals receiving food stamps per state
4. The total food stamp benefits paid per state
5. Average food stamp benefits paid per unit
6. Average number of individuals per participating food stamp unit

We then consider six major outcomes describing the characteristics of households receiving food stamps.¹:

1. The total number of food stamp households per state receiving AFDC/TANF
2. The total number of food stamp households per state with earnings
3. The total number of food stamp households per state receiving AFDC/TANF plus earnings
4. The percentage of food stamp households per state receiving AFDC/TANF
5. The percentage of food stamp households per state with earnings
6. The percentage of households receiving AFDC/TANF plus earnings

¹Note that, because a multi-family household can contain multiple food stamp units, a food stamp household is not always identical to a food stamp unit.

While the MATH STEWARD model simulates outcomes for three years following the implementation of a reform, we focus on comparing simulated outcomes for the *last month* of welfare reform (December 1998).

In the following section, we describe the anticipated effects of welfare reform on simulated FSP outcomes. We then describe the simulated consequences of welfare reform for the national FSP and for FSP outcomes in individual states. We also consider whether the simulated effects of a recession differ according to the type of welfare reform program in place in particular states.

B. ANTICIPATED EFFECTS

We expected that state welfare reform would have at least some simulated impact on food stamp outcomes. Policies designed to promote employment and self-sufficiency among welfare recipients are likely to lead to lower levels of FSP participation and benefits, and to higher proportions of food stamp recipients with earnings.² Because welfare reform is likely to have more dramatic effects on a state's AFDC/TANF caseload than on its entire FSP caseload, we expected to see larger changes in the number of AFDC/TANF households than in the total number of food stamp households. We also expect the effects of welfare reform on FSP outcomes to be largest in states that have departed most dramatically from the old AFDC system by adopting shorter time limits, more generous earned income disregards, and aggressive work requirements.

² Our simulations assumed that any sanctions applied to TANF households do not result in higher FSP benefits.

C. CONSEQUENCES OF WELFARE REFORM FOR FSP OUTCOMES NATIONALLY AND IN INDIVIDUAL STATES

1. FSP Caseloads and Costs

MATH STEWARD simulations suggest that the welfare reforms states adopted during the 1990s led to modest reductions in FSP caseloads and cost. Aggregating results across the 50 states and the District of Columbia, the model estimated a 5.3 percent reduction in the number of food stamp units under welfare reform (Table III.1). This reduction was accompanied by a 4.5 percent reduction in the participation rate of eligible food stamp units and by a 6.7 percent reduction in the number of individuals receiving food stamps. The simulated reduction in total food stamp benefits paid was slightly larger—9.2 percent—because of a 4.2 percent reduction in average food stamp benefits per participating unit. While average food stamp benefits decreased under welfare reform, the average size of food stamp units was basically unchanged.

Across the individual states, there was considerable variation in the simulated impact of welfare reform on FSP participation and costs. For South Carolina, simulated reductions in FSP participation and costs were substantial. That state was simulated to have a 17 percent reduction in the number of units receiving food stamps, a 15.7 percent reduction in the FSP participation rate, a 21.2 percent reduction in the number of individuals receiving food stamps, and a 25.5 percent reduction in total food stamp benefits. For Alaska, the simulation indicated an *increase* in each of these outcomes, though not by more than 5.1 percent.

2. FSP Caseload Characteristics

State welfare reform efforts during the 1990s decreased the number and proportion of food stamp households with TANF benefits but increased the number and proportion of food stamp households with earnings and with both TANF benefits and earnings, according to simulations

TABLE III.1
Food Stamp Participation and Costs: Simulated Change from Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage Change from Welfare Reform</i>						
National	-5.3	-4.5	-6.7	-9.2	-4.2	-1.54
Alabama	0.6	1.4	-0.4	-2.6	-3.2	-0.98
Alaska	4.8	5.1	5.0	3.5	-1.2	0.25
Arizona	-14.3	-13.9	-18.9	-22.8	-9.9	-5.37
Arkansas	-12.3	-11.1	-15.5	-20.7	-9.6	-3.70
California	-1.0	1.0	-1.8	-2.1	-1.1	-0.84
Colorado	-3.4	-3.4	-4.9	-5.7	-2.4	-1.46
Connecticut	-11.3	-10.8	-14.9	-20.7	-10.6	-4.04
Delaware	-0.6	-0.4	-1.0	-1.7	-1.0	-0.38
District of Columbia	-0.4	-0.3	-0.7	0.0	0.5	-0.24
Florida	-12.1	-11.3	-15.9	-20.7	-9.8	-4.30
Georgia	-2.5	-2.3	-2.5	-3.5	-1.1	0.00
Hawaii	-2.5	-2.1	-4.0	-7.3	-4.9	-1.53
Idaho	-12.5	-12.0	-16.5	-20.9	-9.6	-4.58
Illinois	-2.0	-1.5	-3.2	-8.6	-6.8	-1.25
Indiana	-9.1	-8.0	-11.8	-15.1	-6.6	-2.90
Iowa	-2.3	-1.9	-3.0	-6.0	-3.8	-0.74
Kansas	-3.1	-2.8	-4.0	-4.7	-1.7	-0.95
Kentucky	-5.1	-4.6	-5.8	-8.0	-3.0	-0.72
Louisiana	-13.4	-12.6	-16.7	-21.8	-9.7	-3.83
Maine	0.8	1.0	1.1	1.4	0.6	0.31
Maryland	-5.4	-4.3	-6.1	-7.5	-2.2	-0.76
Massachusetts	-13.2	-11.9	-16.6	-20.3	-8.2	-3.92
Michigan	-3.6	-2.5	-3.1	-3.7	-0.1	0.51
Minnesota	1.7	2.4	2.3	-0.1	-1.8	0.61
Mississippi	-4.1	-3.7	-4.8	-5.9	-1.8	-0.68
Missouri	-11.0	-10.5	-13.9	-17.7	-7.5	-3.25
Montana	1.5	1.5	2.4	1.9	0.4	0.94
Nebraska	-10.0	-9.7	-12.8	-16.8	-7.6	-3.22
Nevada	-10.2	-9.9	-13.9	-18.6	-9.4	-4.16
New Hampshire	0.2	0.1	0.2	-2.2	-2.4	0.08
New Jersey	-1.8	-1.5	-2.8	-6.5	-4.7	-0.95
New Mexico	-1.0	-1.0	-2.3	-5.4	-4.4	-1.28
New York	0.3	0.4	0.5	0.5	0.2	0.27
North Carolina	-8.7	-8.2	-11.0	-14.9	-6.8	-2.46
North Dakota	-2.1	-2.0	-3.4	-4.7	-2.6	-1.25
Ohio	-0.1	1.1	-0.9	-4.1	-3.9	-0.71
Oklahoma	-2.3	-1.8	-2.9	-3.5	-1.2	-0.66
Oregon	-11.5	-10.3	-16.3	-23.3	-13.3	-5.40
Pennsylvania	-2.0	-1.6	-2.4	-3.7	-1.7	-0.36
Rhode Island	0.1	0.2	0.1	0.0	-0.1	-0.02
South Carolina	-17.0	-15.7	-21.2	-25.5	-10.3	-5.08
South Dakota	-0.4	-0.2	-1.5	-6.8	-6.4	-1.08
Tennessee	-8.4	-7.7	-11.3	-18.3	-10.8	-3.19
Texas	-10.4	-9.6	-12.7	-15.5	-5.7	-2.56
Utah	-0.4	-0.4	-0.9	-3.5	-3.0	-0.47
Vermont	-4.0	-3.1	-4.8	-2.7	1.4	-0.82
Virginia	-9.1	-8.7	-10.9	-14.6	-6.1	-2.00
Washington	0.7	1.2	0.7	-2.9	-3.6	0.01
West Virginia	-3.9	-3.7	-4.5	-5.7	-1.8	-0.56
Wisconsin	-5.9	-5.1	-5.9	-6.9	-1.0	0.04
Wyoming	-4.5	-4.0	-6.5	-8.1	-3.8	-2.13

run by the MATH STEWARD model. Aggregating results across the 50 states and the District of Columbia, the model estimates nearly a 12.8 percent reduction in the number of food stamp households with TANF (Table III.2). Because the number of food stamp households declined by 4.9 percent in response to these policies, the simulated reduction in the proportion of food stamp households with TANF was smaller (7.8 percent). The model also simulated a 6.2 percent increase in the proportion of food stamp households with earnings, and a 3.6 percent increase in the proportion of food stamp households with both TANF and earnings.

Across the individual states, there was considerable variation in the simulated impact of welfare reform on FSP caseload characteristics. For South Carolina, simulated reductions in TANF participation were substantial: a 44.5 percent reduction in the number of food stamp households with TANF and a 32.1 percent reduction in the proportion of food stamp households with TANF. In contrast, for Alaska, the model simulated a 9.7 percent *increase* in the number of food stamp households with TANF and a 4 percent increase in the proportion of food stamp households with TANF.

Of all the states, New Mexico had the greatest simulated increase in the number of food stamp households with earnings (a 16.4 percent increase). Alabama had the greatest simulated increase in the number of food stamp households with both TANF and earnings (a 33 percent increase in the number). South Carolina and Arizona had the greatest simulated *decrease* in the number of food stamp households with earnings (12.1 percent), but because the number of food stamp households in these states decreased even more, the percentage of households with earnings actually increased in both instances.

TABLE III.2
Food Stamp Program Characteristics: Simulated Change from Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage Change from Welfare Reform</i>						
National	-12.8	0.4	-2.1	-7.8	6.2	3.6
Alabama	6.6	11.6	40.9	6.0	11.1	40.2
Alaska	9.7	5.8	10.1	4.0	0.4	4.4
Arizona	-37.6	-12.1	-34.8	-25.7	4.6	-22.4
Arkansas	-33.7	-0.9	-9.0	-24.1	13.3	4.1
California	0.2	3.4	7.7	1.1	4.4	8.7
Colorado	-13.8	-2.4	-14.2	-10.4	1.5	-10.9
Connecticut	-30.2	-1.1	-13.2	-21.0	11.9	-1.8
Delaware	-3.4	5.8	13.4	-2.6	6.6	14.2
District of Columbia	-2.4	-0.2	-4.1	-2.0	0.3	-3.6
Florida	-35.5	-4.1	-23.3	-25.8	10.3	-11.8
Georgia	-5.7	-1.2	-6.0	-3.1	1.5	-3.4
Hawaii	-4.4	8.2	13.8	-1.8	11.2	16.9
Idaho	-37.2	-4.9	-21.2	-27.4	10.0	-8.9
Illinois	-4.0	12.2	26.4	-1.6	15.0	29.7
Indiana	-23.2	-1.6	-4.7	-15.3	8.5	5.0
Iowa	-7.7	3.1	3.8	-5.2	5.9	6.6
Kansas	-10.3	-3.2	-13.7	-7.3	0.0	-10.9
Kentucky	-14.8	-1.5	-10.5	-10.3	3.7	-5.8
Louisiana	-34.0	-0.8	-10.1	-22.8	15.9	5.1
Maine	2.5	0.0	0.0	1.6	-0.9	-0.9
Maryland	-11.5	-4.4	-11.3	-6.2	1.3	-6.0
Massachusetts	-31.4	-9.3	-27.0	-20.7	4.9	-15.6
Michigan	-8.7	-2.5	-12.0	-6.0	0.4	-9.4
Minnesota	7.0	10.8	31.7	5.0	8.8	29.3
Mississippi	-11.4	-3.0	-12.1	-7.2	1.7	-7.9
Missouri	-28.2	-6.2	-17.0	-18.9	6.0	-6.3
Montana	3.8	8.3	19.4	2.1	6.5	17.4
Nebraska	-29.2	-2.9	-14.3	-21.2	8.2	-4.5
Nevada	-28.4	-3.6	-11.8	-19.4	8.5	-0.8
New Hampshire	0.9	5.2	14.2	0.8	5.0	14.0
New Jersey	-5.8	9.0	16.1	-3.9	11.1	18.4
New Mexico	-8.6	16.4	33.0	-6.9	18.5	35.4
New York	1.0	-0.8	-1.0	0.7	-1.1	-1.2
North Carolina	-19.5	-2.9	-6.8	-11.4	6.8	2.5
North Dakota	-9.6	2.9	1.0	-7.6	5.2	3.2
Ohio	2.5	10.0	22.8	2.6	10.1	23.0
Oklahoma	-8.9	1.8	-0.7	-6.8	4.2	1.6
Oregon	-30.4	-3.6	-12.5	-20.4	10.3	0.2
Pennsylvania	-8.0	0.3	-5.6	-6.0	2.5	-3.6
Rhode Island	0.3	0.0	0.0	0.2	-0.1	-0.1
South Carolina	-44.5	-12.1	-41.6	-32.1	7.5	-28.6
South Dakota	-3.6	10.1	19.8	-2.8	11.0	20.8
Tennessee	-18.6	9.8	25.1	-11.0	20.1	36.9
Texas	-25.7	-6.0	-18.0	-16.5	5.7	-7.8
Utah	-6.1	7.4	14.5	-5.2	8.4	15.5
Vermont	-11.7	-5.3	-16.8	-8.5	-1.8	-13.8
Virginia	-24.7	-2.7	-14.4	-16.4	8.1	-4.9
Washington	2.1	7.4	14.8	1.1	6.4	13.7
West Virginia	-11.8	-3.4	-16.8	-8.5	0.3	-13.6
Wisconsin	-15.9	-8.0	-24.7	-11.5	-3.1	-20.7
Wyoming	-15.2	-1.1	-11.3	-10.9	4.0	-6.8

D. CONSEQUENCES OF WELFARE REFORM FOR OUTCOMES, BY TYPE OF STATE WELFARE REFORM

1. Types of State Welfare Reforms

To help interpret the relationship between various types of welfare reform policies and simulated changes in FSP participation and costs, we identified eight groups of states (Table III.3). We distinguished differences in welfare reform policies across three dimensions:

1. **TANF Time Limits.** We identified *short time limits* as being under 36 months and *long time limits* as being 36 months or higher.³
2. **TANF Earned Income Disregards.** We identified generous earned income disregards as exceeding 33 percent of earnings and less-generous earned income disregards as 33 percent of earnings or less.
3. **TANF Work Requirements.** We identified *aggressive work requirements* as applying to families with infants under 6 months and *less-aggressive work requirements* as exempting families with infants under 6 months of age.⁴

Of the 50 states and the District of Columbia, one-third (17) have strict time limits included in their welfare reform programs, while two-thirds (34) have long time limits. The states are more evenly divided in their earned income disregards under welfare reform: 27 have generous earned income disregards, while 24 have less-generous earned income disregards. About one-third (18) of the states have aggressive work requirements for families with young children, while two-thirds (33) have less-aggressive work requirements. The most common combination of policies

³Note that, because the MATH STEWARD database only covers a 36-month period, the model cannot simulate households exhausting TANF benefits after this length of time.

⁴Note that, because the MATH STEWARD database does not distinguish the age of children in months, we assumed that states exempting all families with children under the age of 6 months exempt all families with children under the age of 1 year, and that states requiring work for *some* families with children under the age of 6 months offer *no* exemptions from work requirements for families with young children.

TABLE III.3
State Groupings According to TANF Policies

		Earned Income Disregards		
		Less Generous	Generous	
Time Limits	Short	Indiana, Tennessee	Arkansas, Florida, Idaho, Oregon	Aggressive
	Short	Arizona, Louisiana, Nebraska, North Carolina, South Carolina, Texas	Connecticut, Illinois, Massachusetts, Nevada, Virginia	Less Aggressive
	Long	Colorado, Delaware, Michigan, Montana, North Dakota, South Dakota, Wisconsin, Wyoming	Iowa, New Jersey, Oklahoma, Utah	Aggressive
	Long	Alaska, District of Columbia, Georgia, Kentucky, Maine, Maryland, Missouri, Vermont	Alabama, California, Hawaii, Kansas, Minnesota, Mississippi, New Hampshire, New Mexico, New York, Ohio, Pennsylvania, Rhode Island, Washington, West Virginia	Less Aggressive

Work Requirements

Time Limits:

Short = Less than 36 months, ignoring exemptions

Long = Greater than or equal to 36 months, ignoring exemptions

Earned Income Disregards:

Generous = Percentage of disregarded income is greater than 33%

Less Generous = Percentage of disregarded income is less than or equal to 33%

Work Requirements:

Aggressive = Requires parents of infants under 6 months of age to engage in work activities

Less Aggressive = Exempts parents of infants under 6 months from work requirements

across these three dimensions consists of long time limits, generous earned income disregards, and less-aggressive work requirements; 14 states follow this combination of policies.

2. Changes in FSP Caseloads and Costs Under Different Types of Welfare Reform

Of the eight possible combinations of state welfare reform policies, the four combinations that led to the greatest simulated reductions in FSP participation and benefits all included shorter TANF time limits (Table III.4). Of all the possible combinations of state welfare reform policies, the one associated most strongly with reductions in food stamp participation consisted of shorter time limits, less generous earned income disregards, and less aggressive work requirements. This combination, followed by six states, led to average reductions of about 12.3 percent in the number of participating food stamp units and 11.6 percent in the FSP participation rate. This combination also led to reductions of about 15.5 percent in the number of individuals receiving food stamps, 19.5 percent in total FSP benefits paid, and 8.3 percent in average FSP benefits per unit.

The combination of state welfare reform policies least associated with reductions in food stamp participation and benefits consists of long time limits, generous earned income disregards, and less-aggressive work requirements. This combination was followed by 14 states and led to average reductions of only around 1 percent each in the number of participating food stamp units, the FSP participation rate, and the number of individuals receiving food stamps (Table III.4). The same combination led to average reductions of 3.3 percent in total FSP benefits paid, and of 2.3 percent in average FSP benefits per unit.

TABLE III.4
Food Stamp Participation and Costs: Simulated Change from Welfare Reform
By Type of Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage Change from Welfare Reform</i>						
National	-5.3	-4.5	-6.7	-9.2	-4.2	-1.54
Shorter Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Arkansas	-12.3	-11.1	-15.5	-20.7	-9.6	-3.70
Florida	-12.1	-11.3	-15.9	-20.7	-9.8	-4.30
Idaho	-12.5	-12.0	-16.5	-20.9	-9.6	-4.58
Oregon	-11.5	-10.3	-16.3	-23.3	-13.3	-5.40
Average	-12.1	-11.2	-16.1	-21.4	-10.6	-4.5
Longer Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Iowa	-2.3	-1.9	-3.0	-6.0	-3.8	-0.74
New Jersey	-1.8	-1.5	-2.8	-6.5	-4.7	-0.95
Oklahoma	-2.3	-1.8	-2.9	-3.5	-1.2	-0.66
Utah	-0.4	-0.4	-0.9	-3.5	-3.0	-0.47
Average	-1.7	-1.4	-2.4	-4.8	-3.2	-0.7
Shorter Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Indiana	-9.1	-8.0	-11.8	-15.1	-6.6	-2.90
Tennessee	-8.4	-7.7	-11.3	-18.3	-10.8	-3.19
Average	-8.8	-7.9	-11.5	-16.7	-8.7	-3.0
Longer Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Colorado	-3.4	-3.4	-4.9	-5.7	-2.4	-1.46
Delaware	-0.6	-0.4	-1.0	-1.7	-1.0	-0.38
Michigan	-3.6	-2.5	-3.1	-3.7	-0.1	0.51
Montana	1.5	1.5	2.4	1.9	0.4	0.94
North Dakota	-2.1	-2.0	-3.4	-4.7	-2.6	-1.25
South Dakota	-0.4	-0.2	-1.5	-6.8	-6.4	-1.08
Wisconsin	-5.9	-5.1	-5.9	-6.9	-1.0	0.04
Wyoming	-4.5	-4.0	-6.5	-8.1	-3.8	-2.13
Average	-2.4	-2.0	-3.0	-4.4	-2.1	-0.6
Shorter Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Connecticut	-11.3	-10.8	-14.9	-20.7	-10.6	-4.04
Illinois	-2.0	-1.5	-3.2	-8.6	-6.8	-1.25
Massachusetts	-13.2	-11.9	-16.6	-20.3	-8.2	-3.92
Nevada	-10.2	-9.9	-13.9	-18.6	-9.4	-4.16
Virginia	-9.1	-8.7	-10.9	-14.6	-6.1	-2.00
Average	-9.1	-8.6	-11.9	-16.6	-8.2	-3.1

TABLE III.4
Food Stamp Participation and Costs: Simulated Change from Welfare Reform
By Type of Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage Change from Welfare Reform</i>						
	-5.3	-4.5	-6.7	-9.2	-4.2	-1.54
Longer Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alabama	0.6	1.4	-0.4	-2.6	-3.2	-0.98
California	-1.0	1.0	-1.8	-2.1	-1.1	-0.84
Hawaii	-2.5	-2.1	-4.0	-7.3	-4.9	-1.53
Kansas	-3.1	-2.8	-4.0	-4.7	-1.7	-0.95
Minnesota	1.7	2.4	2.3	-0.1	-1.8	0.61
Mississippi	-4.1	-3.7	-4.8	-5.9	-1.8	-0.68
New Hampshire	0.2	0.1	0.2	-2.2	-2.4	0.08
New Mexico	-1.0	-1.0	-2.3	-5.4	-4.4	-1.28
New York	0.3	0.4	0.5	0.5	0.2	0.27
Ohio	-0.1	1.1	-0.9	-4.1	-3.9	-0.71
Pennsylvania	-2.0	-1.6	-2.4	-3.7	-1.7	-0.36
Rhode Island	0.1	0.2	0.1	0.0	-0.1	-0.02
Washington	0.7	1.2	0.7	-2.9	-3.6	0.01
West Virginia	-3.9	-3.7	-4.5	-5.7	-1.8	-0.56
Average	-1.0	-0.5	-1.5	-3.3	-2.3	-0.5
Shorter Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Arizona	-14.3	-13.9	-18.9	-22.8	-9.9	-5.37
Louisiana	-13.4	-12.6	-16.7	-21.8	-9.7	-3.83
Nebraska	-10.0	-9.7	-12.8	-16.8	-7.6	-3.22
North Carolina	-8.7	-8.2	-11.0	-14.9	-6.8	-2.46
South Carolina	-17.0	-15.7	-21.2	-25.5	-10.3	-5.08
Texas	-10.4	-9.6	-12.7	-15.5	-5.7	-2.56
Average	-12.3	-11.6	-15.5	-19.5	-8.3	-3.8
Longer Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alaska	4.8	5.1	5.0	3.5	-1.2	0.25
District of Columbia	-0.4	-0.3	-0.7	0.0	0.5	-0.24
Georgia	-2.5	-2.3	-2.5	-3.5	-1.1	0.00
Kentucky	-5.1	-4.6	-5.8	-8.0	-3.0	-0.72
Maine	0.8	1.0	1.1	1.4	0.6	0.31
Maryland	-5.4	-4.3	-6.1	-7.5	-2.2	-0.76
Missouri	-11.0	-10.5	-13.9	-17.7	-7.5	-3.25
Vermont	-4.0	-3.1	-4.8	-2.7	1.4	-0.82
Average	-2.9	-2.4	-3.5	-4.3	-1.6	-0.7

3. Changes in FSP Characteristics Under Different Types of Welfare Reform

Of the eight possible combinations of state welfare reform policies, the four that led to the greatest simulated reductions in TANF participation all included shorter time limits (Table III.5). Of all the possible combinations of state welfare reform policies, the one associated most strongly with reductions in the number of food stamp households with TANF benefits consists of short time limits, generous earned income disregards, and aggressive work requirements. This combination, followed by four states, led to an average reduction of about 34 percent in the number of food stamp households with TANF.

The combination of state welfare reform policies least associated with reductions in the number of food stamp households with TANF benefits consisted of long time limits, generous earned income disregards, and less aggressive work requirements. This combination, followed by 14 states, led to an average reduction of only 2.4 percent in the number of food stamp households with TANF.

Of the eight possible combinations of state welfare reform policies, the two that led to the greatest increases (5.3 and 4.5 percent) in the number of food stamp households with earnings both include longer time limits and generous earned income disregards.

The combination of state welfare reform policies least associated with increases in the number of food stamp households with earnings consisted of shorter time limits, less generous earned income disregards, and less aggressive work requirements. This combination, followed by six states, led to a 6.1 percent *reduction* in the number of food stamp households with earnings. For these states, the lack of generous work incentives and strict work requirements, and the presence of shorter time limits, do not promote high levels of employment among food stamp recipients.

TABLE III.5
Food Stamp Program Characteristics: Simulated Change from Welfare Reform
By Type of Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage Change from Welfare Reform</i>						
National	-12.8	0.4	-2.1	-7.8	6.2	3.6
Shorter time limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Arkansas	-33.7	-0.9	-9.0	-24.1	13.3	4.1
Florida	-35.5	-4.1	-23.3	-25.8	10.3	-11.8
Idaho	-37.2	-4.9	-21.2	-27.4	10.0	-8.9
Oregon	-30.4	-3.6	-12.5	-20.4	10.3	0.2
Average	-34.2	-3.4	-16.5	-24.4	11.0	-4.1
Longer Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Iowa	-7.7	3.1	3.8	-5.2	5.9	6.6
New Jersey	-5.8	9.0	16.1	-3.9	11.1	18.4
Oklahoma	-8.9	1.8	-0.7	-6.8	4.2	1.6
Utah	-6.1	7.4	14.5	-5.2	8.4	15.5
Average	-7.1	5.3	8.4	-5.3	7.4	10.5
Shorter Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Tennessee	-18.6	9.8	25.1	-11.0	20.1	36.9
Indiana	-23.2	-1.6	-4.7	-15.3	8.5	5.0
Average	-20.9	4.1	10.2	-13.1	14.3	21.0
Longer Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Colorado	-13.8	-2.4	-14.2	-10.4	1.5	-10.9
Delaware	-3.4	5.8	13.4	-2.6	6.6	14.2
Michigan	-8.7	-2.5	-12.0	-6.0	0.4	-9.4
Montana	3.8	8.3	19.4	2.1	6.5	17.4
North Dakota	-9.6	2.9	1.0	-7.6	5.2	3.2
South Dakota	-3.6	10.1	19.8	-2.8	11.0	20.8
Wisconsin	-15.9	-8.0	-24.7	-11.5	-3.1	-20.7
Wyoming	-15.2	-1.1	-11.3	-10.9	4.0	-6.8
Average	-8.3	1.6	-1.1	-6.2	4.0	1.0
Shorter Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Connecticut	-30.2	-1.1	-13.2	-21.0	11.9	-1.8
Illinois	-4.0	12.2	26.4	-1.6	15.0	29.7
Massachusetts	-31.4	-9.3	-27.0	-20.7	4.9	-15.6
Nevada	-28.4	-3.6	-11.8	-19.4	8.5	-0.8
Virginia	-24.7	-2.7	-14.4	-16.4	8.1	-4.9
Average	-23.7	-0.9	-8.0	-15.8	9.7	1.3

TABLE III.5
Food Stamp Program Characteristics: Simulated Change from Welfare Reform
By Type of Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage Change from Welfare Reform</i>						
National	-12.8	0.4	-2.1	-7.8	6.2	3.6
Longer Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alabama	6.6	11.6	40.9	6.0	11.1	40.2
California	0.2	3.4	7.7	1.1	4.4	8.7
Hawaii	-4.4	8.2	13.8	-1.8	11.2	16.9
Kansas	-10.3	-3.2	-13.7	-7.3	0.0	-10.9
Minnesota	7.0	10.8	31.7	5.0	8.8	29.3
Mississippi	-11.4	-3.0	-12.1	-7.2	1.7	-7.9
New Hampshire	0.9	5.2	14.2	0.8	5.0	14.0
New Mexico	-8.6	16.4	33.0	-6.9	18.5	35.4
New York	1.0	-0.8	-1.0	0.7	-1.1	-1.2
Ohio	2.5	10.0	22.8	2.6	10.1	23.0
Pennsylvania	-8.0	0.3	-5.6	-6.0	2.5	-3.6
Rhode Island	0.3	0.0	0.0	0.2	-0.1	-0.1
Washington	2.1	7.4	14.8	1.1	6.4	13.7
West Virginia	-11.8	-3.4	-16.8	-8.5	0.3	-13.6
Average	-2.4	4.5	9.3	-1.4	5.6	10.3
Shorter Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Arizona	-37.6	-12.1	-34.8	-25.7	4.6	-22.4
Louisiana	-34.0	-0.8	-10.1	-22.8	15.9	5.1
Nebraska	-29.2	-2.9	-14.3	-21.2	8.2	-4.5
North Carolina	-19.5	-2.9	-6.8	-11.4	6.8	2.5
South Carolina	-44.5	-12.1	-41.6	-32.1	7.5	-28.6
Texas	-25.7	-6.0	-18.0	-16.5	5.7	-7.8
Average	-31.7	-6.1	-20.9	-21.6	8.1	-9.3
Longer Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alaska	9.7	5.8	10.1	4.0	0.4	4.4
District of Columbia	-2.4	-0.2	-4.1	-2.0	0.3	-3.6
Georgia	-5.7	-1.2	-6.0	-3.1	1.5	-3.4
Kentucky	-14.8	-1.5	-10.5	-10.3	3.7	-5.8
Maine	2.5	0.0	0.0	1.6	-0.9	-0.9
Maryland	-11.5	-4.4	-11.3	-6.2	1.3	-6.0
Missouri	-28.2	-6.2	-17.0	-18.9	6.0	-6.3
Vermont	-11.7	-5.3	-16.8	-8.5	-1.8	-13.8
Average	-7.8	-1.6	-6.9	-5.4	1.3	-4.4

Of the eight possible combinations of state welfare reform policies, the combination leading to the greatest increases in the number of food stamp households with both TANF and earnings included shorter time limits, less generous earned income disregards, and aggressive work requirements. This combination, followed by two states, led to a 10.2 percent increase in the number of food stamp households with both TANF and earnings. It appears that the aggressive work requirement for families with young children are an important factor in promoting higher number of households with both TANF and earnings.

The combination of welfare reform policies least associated with increases in the number of food stamp households with both TANF benefits and earnings consisted of shorter time limits, less-generous earned income disregards, and less aggressive work requirements. This combination, followed by six states, led to a 20.9 percent *decrease* in the number of food stamp households with both TANF and earnings. For these states, the lack of strong measures to promote employment among welfare recipients means that a smaller proportion of the food stamp caseload combines TANF with earnings than would be the case in the absence of welfare reform.

IV. THE CONTRIBUTION OF ECONOMIC CHANGE TO RECENT TRENDS IN FOOD STAMP PROGRAM OUTCOMES

A. DESCRIPTION OF OUTCOMES

In this chapter, we present the results of preliminary simulations of the contribution of changes in state unemployment rates to recent trends in FSP caseloads, costs, and characteristics.

We first consider six major outcomes describing FSP participation and costs:

1. The total number of participating food stamp units per state
2. The participation rate of eligible food stamp units per state
3. The total number of individuals receiving food stamps per state
4. The total food stamp benefits paid per state
5. Average food stamp benefits paid per unit
6. Average number of individuals per participating food stamp unit

We then consider six major outcomes describing the characteristics of households receiving food stamps:

1. The total number of food stamp households per state receiving AFDC/TANF
2. The total number of food stamp households per state with earnings
3. The total number of food stamp households per state receiving AFDC/TANF plus earnings
4. The percentage of food stamp households per state receiving AFDC/TANF
5. The percentage of food stamp households per state with earnings
6. The percentage of households receiving AFDC/TANF plus earnings

As noted in Chapter II, our focus in these simulations is to see how much of the simulated change in FSP outcomes can be accounted for by changes in unemployment from 1992 through 1998, as opposed to welfare reform. We focus once again on comparing simulated outcomes for the *last month* of a three-year simulation.

In the following section, we describe the anticipated effects of economic change on simulated changes in FSP outcomes during the 1990s. We then describe the contribution of economic change to simulated trends in the national FSP and to recent trends in FSP outcomes for individual states. We also consider whether the simulated contribution of economic change differs according to the type of welfare reform program in place in particular states and according to the magnitude of economic change in the state in question.

B. ANTICIPATED EFFECTS

We expected that economic change would be responsible for some, but not all, of the changes in simulated FSP outcomes between 1992 and 1998. While declining unemployment rates in most states were likely to lead to lower FSP participation and benefits, welfare reform efforts were also likely to lead to lower FSP participation and benefits as some households left both AFDC/TANF and the FSP. Because welfare reform is likely to have more dramatic effects on a state's AFDC/TANF caseload than on its entire FSP caseload, we expected economic change to contribute more to changes in the number of FSP households than to changes in the number of AFDC/TANF households. We also expected the proportionate contribution of economic change to declines in FSP caseload and costs to be greater in states with relatively generous TANF programs and in states with relatively larger decreases in unemployment from 1992 through 1998. (By "generous" TANF programs, we refer to programs with longer time limits and less aggressive work requirements.)

C. THE ECONOMY'S CONTRIBUTION TO FSP CHANGES NATIONALLY AND IN INDIVIDUAL STATES

1. FSP Caseloads and Costs

MATH STEWARD simulations suggest that changes in unemployment rates have had a larger effect than welfare reform on national outcomes for the Food Stamp Program. Of the

simulated reduction in FSP participation from 1992 through 1998, two-thirds could be attributed to economic change, while one-third was attributable to welfare reform, that is, to changes in AFDC/TANF and related child-care policies (Table IV.1). Changes in unemployment rates were responsible for 66.7 percent of the simulated reduction in the number of FSP units, 72.6 percent of the simulated reduction in the FSP participation rate, and 63 percent of the simulated reduction in the number of individuals receiving food stamps.

The contribution of economic change to reduced food stamp costs was somewhat smaller than the contribution of economic change to reduced food stamp participation (Table IV.1). Of the simulated reduction in total FSP costs from 1992 through 1998, about three-fifths (57.5 percent) was due to changes in unemployment rates, and the other two-fifths due to welfare reform. While economic growth reduced FSP caseloads, it was responsible for only 29.7 percent of simulated changes in average FSP benefits per unit. Welfare reform, in contrast, reduced both FSP caseloads and average FSP benefits and was hence responsible for a greater share of benefit reductions than caseload reductions.

When interpreting the respective contributions of welfare reform and economic change to reductions in national FSP caseloads and costs, it is important to emphasize that the MATH STEWARD simulations do not capture all of the actual reductions in FSP caseloads and costs between 1992 and 1998 (Appendix A). From December 1992 to December 1998, national FSP caseloads fell by 26 percent, the number of individuals receiving food stamps fell by 29 percent, and total FSP benefits fell by 28 percent. Over this same period, the number of FSP units with AFDC/TANF income fell by 44 percent, and the proportion of FSP units with AFDC/TANF income fell by 24 percent (see Table A.1 in the Appendix). MATH STEWARD simulated 53 percent, 55 percent, 68 percent, 63 percent, and 66 percent of these reductions, respectively. In

TABLE IV.1
Food Stamp Participation and Costs: Simulated Role of the Economy

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
National	66.7	72.6	63.0	57.5	29.7	35.0
Alabama	107.7	115.3	96.1	82.1	49.0	36.9
Alaska	231.6	193.1	237.1	179.1	-47.7	907.8
Arizona	54.1	56.8	46.5	45.4	15.2	-7.8
Arkansas	32.5	37.5	30.9	29.9	22.4	21.0
California	94.1	106.0	88.8	86.9	562.0	428.7
Colorado	74.5	77.7	67.7	67.8	43.7	7.1
Connecticut	51.8	56.1	45.6	35.1	-8.8	6.5
Delaware	89.8	94.7	87.6	82.3	65.8	79.0
District of Columbia	-24.7	45.0	-244.9	95.9	65.5	260.6
Florida	51.3	55.2	47.9	44.8	26.7	27.4
Georgia	70.0	75.2	74.4	70.4	69.8	100.1
Hawaii	138.0	128.7	162.0	222.5	-2050.0	44884.2
Idaho	20.8	23.8	20.0	21.0	18.7	15.2
Illinois	84.2	89.2	80.1	63.4	36.4	62.4
Indiana	56.7	63.6	54.5	54.2	44.6	39.9
Iowa	77.8	82.5	75.4	62.9	33.8	60.1
Kansas	55.1	60.5	52.1	51.1	39.6	36.7
Kentucky	60.3	66.5	61.2	58.8	52.7	63.9
Louisiana	25.7	30.9	22.5	23.8	17.7	5.3
Maine	113.1	112.4	116.8	116.8	129.5	169.1
Maryland	56.5	66.2	58.2	55.4	49.2	64.8
Massachusetts	65.3	69.7	61.8	57.2	18.4	28.7
Michigan	85.2	90.0	89.2	88.9	99.0	114.2
Minnesota	116.8	123.1	121.9	99.1	46.8	252.3
Mississippi	66.4	71.1	64.3	65.3	59.4	37.9
Missouri	43.3	48.3	41.5	40.5	31.0	29.6
Montana	169.9	157.3	206.8	156.1	134.4	759.1
Nebraska	8.3	10.3	5.5	7.7	6.1	-4.7
Nevada	59.8	63.3	54.3	50.6	26.6	22.8
New Hampshire	100.7	100.5	101.0	91.9	55.3	102.7
New Jersey	87.0	90.3	83.2	69.1	27.8	56.4
New Mexico	80.5	82.8	68.2	46.4	10.0	35.1
New York	102.6	103.5	105.0	104.4	139.0	144.7
North Carolina	46.3	51.5	42.4	38.8	21.1	17.2
North Dakota	82.7	85.0	77.1	71.7	35.9	43.1
Ohio	98.7	109.3	93.8	78.9	49.5	72.0
Oklahoma	79.4	83.2	77.6	77.4	69.9	65.4
Oregon	39.6	46.0	31.9	26.9	6.6	1.0
Pennsylvania	79.8	85.3	76.8	69.2	15.9	-33.7
Rhode Island	100.7	100.9	100.5	100.2	92.1	98.1
South Carolina	31.2	37.3	27.0	27.2	14.2	2.5
South Dakota	76.4	87.4	54.7	23.8	9.9	27.6
Tennessee	39.4	45.0	35.3	27.7	11.9	17.6
Texas	45.6	49.8	40.8	36.7	4.5	1.9
Utah	95.4	96.1	92.1	78.0	48.0	72.2
Vermont	68.9	76.7	66.2	74.6	38.5	37.7
Virginia	51.8	56.1	50.2	46.1	29.4	36.0
Washington	106.6	110.3	107.2	78.6	0.3	99.0
West Virginia	80.4	82.9	79.8	80.2	76.5	69.6
Wisconsin	55.7	60.4	58.5	55.9	53.5	104.6
Wyoming	44.6	51.2	37.8	35.7	18.4	14.1

other words, MATH STEWARD simulated about one-half to two-thirds of recent reductions in national FSP caseloads and costs, and about three-fifths of recent reductions in national AFDC/TANF caseloads.

Across the individual states, there was considerable variation in the contribution of economic change to simulated changes in FSP outcomes from 1992 through 1998 (Table IV.1). For most states, the ratio between the change due to the economy and the total change fell between zero and 100 percent. For some states, however, this ratio exceeded 100 percent because changes in unemployment rates were simulated to lead to a larger reduction in FSP caseloads and costs than was simulated as actually occurring. For a few states, the corresponding ratio was negative because economic change alone was simulated as having an opposite effect on FSP caseloads as the combination of economic change and welfare reform. Because of the difficulty in interpreting these ratios for individual states, we focus on describing, for different groups of states, the average portion of the trend explained by economic change.

2. FSP Caseload Characteristics

While economic change was responsible for 66.7 percent of the simulated reduction in the number of FSP households from 1992 through 1998, it was responsible for only 61.2 percent of the simulated reduction in the number of AFDC/TANF households over the same period (Table IV.2). This finding implies that, as we would expect, welfare reform played a greater role in reducing the total number of AFDC/TANF households than in reducing the total number of FSP households. Of the simulated reduction in the proportion of FSP households with AFDC/TANF benefits, only one-half (54.4 percent) was due to economic change and the rest to welfare reform.

TABLE IV.2
Food Stamp Program Characteristics: Simulated Role of the Economy

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
National	61.2	104.6	91.4	54.4	15.3	150.8
Alabama	141.4	-80.2	-140.7	191.4	22.9	-53.2
Alaska	201.7	362.8	175.0	173.9	68.5	148.9
Arizona	39.6	57.3	44.5	25.1	-38.6	33.8
Arkansas	32.5	85.3	69.3	29.1	2.2	142.2
California	100.9	131.9	143.1	118.7	5.2	888.6
Colorado	57.8	76.5	60.3	45.4	51.5	50.7
Connecticut	40.2	91.4	66.6	27.6	-0.9	88.0
Delaware	80.0	-88.8	-157.3	71.8	33.8	-13.7
District of Columbia	-6.6	96.6	54.5	4.3	104.1	58.6
Florida	43.2	75.5	57.7	33.3	-0.3	59.1
Georgia	70.4	74.0	63.1	69.2	63.1	53.2
Hawaii	137.8	34.2	41.8	131.0	-94.1	4.1
Idaho	15.9	10.1	16.4	13.7	16.7	14.7
Illinois	84.2	-302.9	-505.8	86.0	8.7	-52.6
Indiana	56.4	78.5	84.8	51.8	38.0	160.8
Iowa	69.8	185.9	126.1	65.7	6.2	267.3
Kansas	44.5	44.5	31.6	39.2	94.5	20.8
Kentucky	53.5	75.1	58.2	45.3	46.0	52.0
Louisiana	25.1	80.1	60.4	22.9	5.8	192.2
Maine	120.7	99.8	99.7	132.2	129.3	-100.1
Maryland	55.6	62.9	59.1	50.9	4.9	57.7
Massachusetts	61.9	68.8	66.3	51.5	34.9	60.3
Michigan	83.8	85.7	77.1	76.9	92.8	63.4
Minnesota	138.2	-385.6	-343.8	158.5	14.5	-79.7
Mississippi	59.2	64.1	50.6	51.8	61.7	33.0
Missouri	37.2	43.4	39.2	30.1	33.2	31.2
Montana	167.7	-65.4	-131.4	164.1	8.7	-64.7
Nebraska	11.7	8.9	18.6	11.9	8.0	33.3
Nevada	50.8	82.0	76.6	41.2	-38.6	96.7
New Hampshire	101.9	136.9	139.0	103.3	26.9	242.8
New Jersey	80.1	485.5	235.8	72.2	4.4	-354.4
New Mexico	42.1	-18.6	-15.6	27.1	4.9	-2.5
New York	106.2	91.6	94.6	111.8	468.4	83.6
North Carolina	43.8	54.1	59.2	38.5	35.8	-629.7
North Dakota	72.2	149.6	103.5	65.6	6.0	122.5
Ohio	112.9	-2589.5	7945.5	137.2	11.4	-90.0
Oklahoma	70.7	119.3	98.0	62.5	-82.7	108.1
Oregon	31.3	61.1	43.2	22.0	14.8	110.8
Pennsylvania	64.3	106.7	74.1	52.3	40.3	69.5
Rhode Island	100.9	100.0	100.0	101.2	78.0	99.3
South Carolina	27.2	34.3	32.7	20.5	14.8	28.9
South Dakota	57.1	-9.4	-21.1	53.9	5.2	-10.2
Tennessee	39.0	-48.1	-70.4	36.2	9.3	-14.9
Texas	38.8	59.0	56.6	31.7	-9.6	64.7
Utah	75.8	1006.0	271.9	64.1	6.7	-480.6
Vermont	63.7	65.3	60.2	54.7	21.8	51.6
Virginia	46.5	72.0	57.7	38.7	26.1	64.0
Washington	114.5	451.4	547.7	124.0	9.1	-108.1
West Virginia	73.7	78.6	72.0	67.3	73.1	65.9
Wisconsin	49.2	39.2	35.4	41.6	-84.0	23.6
Wyoming	33.2	69.4	39.4	25.7	22.5	34.5

D. THE ECONOMY'S CONTRIBUTION TO FSP CHANGES, BY TYPE OF STATE WELFARE REFORM

1. FSP Caseloads and Costs

To help interpret the relationship between various types of welfare reform policies and the contribution of economic change to state-level trends in FSP participation and costs, we identified the eight groups of states described in Chapter III. Of the eight possible combinations of state welfare reform policies, the combinations under which economic change made the greatest contribution to recent declines in FSP caseloads and costs included longer time limits, generous earned income disregards, and less aggressive work requirements (Table IV.3). For the 14 states with these provisions, economic change was responsible for 94.9 percent of the simulated reduction in FSP participation, and 89.8 percent of the simulated reduction in FSP costs.

2. FSP Caseload Characteristics

Welfare reform is more likely to lead to reductions in both FSP and TANF participation when time limits are short and work requirements are more aggressive. It is significant that, of the eight groups of states, the four featuring shorter time limits were the ones for which economic change was responsible for the smallest portions of the simulated reductions in the number of TANF households (Table IV.4).

E. THE ECONOMY'S CONTRIBUTION TO FSP CHANGES, BY MAGNITUDE OF ECONOMIC CHANGE

1. FSP Caseloads and Costs

In addition to differences in state welfare reform programs, differences in the magnitude of economic change between 1992 and 1998 are responsible for the portion of recent FSP trends explained by the economy. States with larger decreases in unemployment over this period were

TABLE IV.3
Food Stamp Participation and Costs: Simulated Role of the Economy
By Type of Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
National	66.7	72.6	63.0	57.5	29.7	35.0
Shorter Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Arkansas	32.5	37.5	30.9	29.9	22.4	21.0
Florida	51.3	55.2	47.9	44.8	26.7	27.4
Idaho	20.8	23.8	20.0	21.0	18.7	15.2
Oregon	39.6	46.0	31.9	26.9	6.6	1.0
Average	36.0	40.6	32.7	30.7	18.6	16.2
Longer Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Iowa	77.8	82.5	75.4	62.9	33.8	60.1
New Jersey	87.0	90.3	83.2	69.1	27.8	56.4
Oklahoma	79.4	83.2	77.6	77.4	69.9	65.4
Utah	95.4	96.1	92.1	78.0	48.0	72.2
Average	84.9	88.0	82.1	71.8	44.9	63.5
Shorter Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Indiana	56.7	63.6	54.5	54.2	44.6	39.9
Tennessee	39.4	45.0	35.3	27.7	11.9	17.6
Average	48.1	54.3	44.9	41.0	28.3	28.8
Longer Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Colorado	74.5	77.7	67.7	67.8	43.7	7.1
Delaware	89.8	94.7	87.6	82.3	65.8	79.0
Michigan	85.2	90.0	89.2	88.9	99.0	114.2
Montana	169.9	157.3	206.8	156.1	134.4	759.1
North Dakota	82.7	85.0	77.1	71.7	35.9	43.1
South Dakota	76.4	87.4	54.7	23.8	9.9	27.6
Wisconsin	55.7	60.4	58.5	55.9	53.5	104.6
Wyoming	44.6	51.2	37.8	35.7	18.4	14.1
Average	84.9	88.0	84.9	72.8	57.6	143.6
Shorter Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Connecticut	51.8	56.1	45.6	35.1	-8.8	6.5
Illinois	84.2	89.2	80.1	63.4	36.4	62.4
Massachusetts	65.3	69.7	61.8	57.2	18.4	28.7
Nevada	59.8	63.3	54.3	50.6	26.6	22.8
Virginia	51.8	56.1	50.2	46.1	29.4	36.0
Average	62.6	66.9	58.4	50.5	20.4	31.3

TABLE IV.3
Food Stamp Participation and Costs: Simulated Role of the Economy
By Type of Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
Longer Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alabama	107.7	115.3	96.1	82.1	49.0	36.9
California	94.1	106.0	88.8	86.9	562.0	428.7
Hawaii	138.0	128.7	162.0	222.5	-2050.0	44884.2
Kansas	55.1	60.5	52.1	51.1	39.6	36.7
Minnesota	116.8	123.1	121.9	99.1	46.8	252.3
Mississippi	66.4	71.1	64.3	65.3	59.4	37.9
New Hampshire	100.7	100.5	101.0	91.9	55.3	102.7
New Mexico	80.5	82.8	68.2	46.4	10.0	35.1
New York	102.6	103.5	105.0	104.4	139.0	144.7
Ohio	98.7	109.3	93.8	78.9	49.5	72.0
Pennsylvania	79.8	85.3	76.8	69.2	15.9	-33.7
Rhode Island	100.7	100.9	100.5	100.2	92.1	98.1
Washington	106.6	110.3	107.2	78.6	0.3	99.0
West Virginia	80.4	82.9	79.8	80.2	76.5	69.6
Average	94.9	98.6	94.1	89.8	-61.0	3304.6
Shorter Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Arizona	54.1	56.8	46.5	45.4	15.2	-7.8
Louisiana	25.7	30.9	22.5	23.8	17.7	5.3
Nebraska	8.3	10.3	5.5	7.7	6.1	-4.7
North Carolina	46.3	51.5	42.4	38.8	21.1	17.2
South Carolina	31.2	37.3	27.0	27.2	14.2	2.5
Texas	45.6	49.8	40.8	36.7	4.5	1.9
Average	35.2	39.4	30.8	29.9	13.1	2.4
Longer Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alaska	231.6	193.1	237.1	179.1	-47.7	907.8
District of Columbia	-24.7	45.0	-244.9	95.9	65.5	260.6
Georgia	70.0	75.2	74.4	70.4	69.8	100.1
Kentucky	60.3	66.5	61.2	58.8	52.7	63.9
Maine	113.1	112.4	116.8	116.8	129.5	169.1
Maryland	56.5	66.2	58.2	55.4	49.2	64.8
Missouri	43.3	48.3	41.5	40.5	31.0	29.6
Vermont	68.9	76.7	66.2	74.6	38.5	37.7
Average	77.4	85.4	51.3	86.5	48.6	204.2

TABLE IV.4
Food Stamp Program Characteristics: Simulated Role of the Economy
By Type of Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
National	61.2	104.6	91.4	54.4	15.3	150.8
Shorter time limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Arkansas	32.5	85.3	69.3	29.1	2.2	142.2
Florida	43.2	75.5	57.7	33.3	-0.3	59.1
Idaho	15.9	10.1	16.4	13.7	16.7	14.7
Oregon	31.3	61.1	43.2	22.0	14.8	110.8
Average	30.7	58.0	46.6	24.5	8.3	81.7
Longer Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Iowa	69.8	185.9	126.1	65.7	6.2	267.3
New Jersey	80.1	485.5	235.8	72.2	4.4	-354.4
Oklahoma	70.7	119.3	98.0	62.5	-82.7	108.1
Utah	75.8	1006.0	271.9	64.1	6.7	-480.6
Average	74.1	449.2	183.0	66.1	-16.4	-114.9
Shorter Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Tennessee	39.0	-48.1	-70.4	36.2	9.3	-14.9
Indiana	56.4	78.5	84.8	51.8	38.0	160.8
Average	47.7	15.2	7.2	44.0	23.6	73.0
Longer Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Colorado	57.8	76.5	60.3	45.4	51.5	50.7
Delaware	80.0	-88.8	-157.3	71.8	33.8	-13.7
Michigan	83.8	85.7	77.1	76.9	92.8	63.4
Montana	167.7	-65.4	-131.4	164.1	8.7	-64.7
North Dakota	72.2	149.6	103.5	65.6	6.0	122.5
South Dakota	57.1	-9.4	-21.1	53.9	5.2	-10.2
Wisconsin	49.2	39.2	35.4	41.6	-84.0	23.6
Wyoming	33.2	69.4	39.4	25.7	22.5	34.5
Average	75.1	32.1	0.7	68.1	17.1	25.8
Shorter Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Connecticut	40.2	91.4	66.6	27.6	-0.9	88.0
Illinois	84.2	-302.9	-505.8	86.0	8.7	-52.6
Massachusetts	61.9	68.8	66.3	51.5	34.9	60.3
Nevada	50.8	82.0	76.6	41.2	-38.6	96.7
Virginia	46.5	72.0	57.7	38.7	26.1	64.0
Average	56.7	2.2	-47.7	49.0	6.0	51.3

TABLE IV.4
Food Stamp Program Characteristics: Simulated Role of the Economy
By Type of Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
Longer Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alabama	141.4	-80.2	-140.7	191.4	22.9	-53.2
California	100.9	131.9	143.1	118.7	5.2	888.6
Hawaii	137.8	34.2	41.8	131.0	-94.1	4.1
Kansas	44.5	44.5	31.6	39.2	94.5	20.8
Minnesota	138.2	-385.6	-343.8	158.5	14.5	-79.7
Mississippi	59.2	64.1	50.6	51.8	61.7	33.0
New Hampshire	101.9	136.9	139.0	103.3	26.9	242.8
New Mexico	42.1	-18.6	-15.6	27.1	4.9	-2.5
New York	106.2	91.6	94.6	111.8	468.4	83.6
Ohio	112.9	-2589.5	7945.5	137.2	11.4	-90.0
Pennsylvania	64.3	106.7	74.1	52.3	40.3	69.5
Rhode Island	100.9	100.0	100.0	101.2	78.0	99.3
Washington	114.5	451.4	547.7	124.0	9.1	-108.1
West Virginia	73.7	78.6	72.0	67.3	73.1	65.9
Average	95.6	-131.0	624.3	101.1	58.3	83.9
Shorter Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Arizona	39.6	57.3	44.5	25.1	-38.6	33.8
Louisiana	25.1	80.1	60.4	22.9	5.8	192.2
Nebraska	11.7	8.9	18.6	11.9	8.0	33.3
North Carolina	43.8	54.1	59.2	38.5	35.8	-629.7
South Carolina	27.2	34.3	32.7	20.5	14.8	28.9
Texas	38.8	59.0	56.6	31.7	-9.6	64.7
Average	31.1	48.9	45.3	25.1	2.7	-46.1
Longer Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alaska	201.7	362.8	175.0	173.9	68.5	148.9
District of Columbia	-6.6	96.6	54.5	4.3	104.1	58.6
Georgia	70.4	74.0	63.1	69.2	63.1	53.2
Kentucky	53.5	75.1	58.2	45.3	46.0	52.0
Maine	120.7	99.8	99.7	132.2	129.3	-100.1
Maryland	55.6	62.9	59.1	50.9	4.9	57.7
Missouri	37.2	43.4	39.2	30.1	33.2	31.2
Vermont	63.7	65.3	60.2	54.7	21.8	51.6
Average	74.5	110.0	76.1	70.1	58.8	44.1

likely to experience larger simulated reductions in FSP caseloads and costs and therefore have a larger portion of these reductions explained by economic changes. For the five states experiencing a drop in unemployment of at least four percentage points between 1992 and 1998, economic change was responsible for 86.5 percent of the simulated reduction in FSP caseloads and 83.7 percent of the simulated reduction in FSP costs (Table IV.5). In contrast, for the 16 states experiencing a more modest reduction in unemployment of between two and three percentage points, economic change was responsible for only 59.8 percent of the simulated reduction in FSP caseloads and 53.1 percent of the simulated reduction in FSP costs. Not surprisingly, the greater the decrease in the unemployment rate, the greater the reduction in FSP caseloads and costs and the larger the portion of recent trends attributable to changes in the state economy.

2. FSP Caseload Characteristics

The contribution of the economy to reductions in the number of TANF households followed a similar pattern as the contribution of the economy to reduction in the number of FSP households. For the five states experiencing a drop in unemployment of at least four percentage points between 1992 and 1998, economic change was responsible for 84.4 percent of the simulated reduction in the number of TANF households (Table IV.6). In contrast, for the 16 states experiencing a more modest reduction in unemployment of between two and three percentage points, economic change was responsible for only 56.6 percent of the simulated reduction in the number of TANF households.

TABLE IV.5
 Food Stamp Participation and Costs: Simulated Role of the Economy
 By Magnitude of Change in Unemployment Between 1992 and 1998

<i>State</i>	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
National	66.7	72.6	63.0	57.5	29.7	35.0
4 or more %-point decrease						
Massachusetts	65.3	69.7	61.8	57.2	18.4	28.7
Michigan	85.2	90.0	89.2	88.9	99.0	114.2
West Virginia	80.4	82.9	79.8	80.2	76.5	69.6
New Hampshire	100.7	100.5	101.0	91.9	55.3	102.7
Rhode Island	100.7	100.9	100.5	100.2	92.1	98.1
Average	86.5	88.8	86.4	83.7	68.3	82.6
3 to 3.9 %-point decrease						
Connecticut	51.8	56.1	45.6	35.1	-8.8	6.5
Florida	51.3	55.2	47.9	44.8	26.7	27.4
Indiana	56.7	63.6	54.5	54.2	44.6	39.9
New Jersey	87.0	90.3	83.2	69.1	27.8	56.4
Arizona	54.1	56.8	46.5	45.4	15.2	-7.8
Alabama	107.7	115.3	96.1	82.1	49.0	36.9
California	94.1	106.0	88.8	86.9	562.0	428.7
Vermont	68.9	76.7	66.2	74.6	38.5	37.7
Virginia	51.8	56.1	50.2	46.1	29.4	36.0
Alaska	231.6	193.1	237.1	179.1	-47.7	907.8
Illinois	84.2	89.2	80.1	63.4	36.4	62.4
Pennsylvania	79.8	85.3	76.8	69.2	15.9	-33.7
Mississippi	66.4	71.1	64.3	65.3	59.4	37.9
Ohio	98.7	109.3	93.8	78.9	49.5	72.0
New York	102.6	103.5	105.0	104.4	139.0	144.7
Washington	106.6	110.3	107.2	78.6	0.3	99.0
Georgia	70.0	75.2	74.4	70.4	69.8	100.1
Average	86.1	89.0	83.4	73.4	65.1	120.7

TABLE IV.5
 Food Stamp Participation and Costs: Simulated Role of the Economy
 By Magnitude of Change in Unemployment Between 1992 and 1998

<i>State</i>	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
2 to 2.9 %-point decrease						
South Carolina	31.2	37.3	27.0	27.2	14.2	2.5
Texas	45.6	49.8	40.8	36.7	4.5	1.9
Louisiana	25.7	30.9	22.5	23.8	17.7	5.3
Maine	113.1	112.4	116.8	116.8	129.5	169.1
North Dakota	82.7	85.0	77.1	71.7	35.9	43.1
Colorado	74.5	77.7	67.7	67.8	43.7	7.1
Minnesota	116.8	123.1	121.9	99.1	46.8	252.3
Kentucky	60.3	66.5	61.2	58.8	52.7	63.9
North Carolina	46.3	51.5	42.4	38.8	21.1	17.2
Nevada	59.8	63.3	54.3	50.6	26.6	22.8
Oregon	39.6	46.0	31.9	26.9	6.6	1.0
Maryland	56.5	66.2	58.2	55.4	49.2	64.8
Arkansas	32.5	37.5	30.9	29.9	22.4	21.0
Tennessee	39.4	45.0	35.3	27.7	11.9	17.6
Iowa	77.8	82.5	75.4	62.9	33.8	60.1
Wisconsin	55.7	60.4	58.5	55.9	53.5	104.6
Average	59.8	64.7	57.6	53.1	35.6	53.4
1 to 1.9 %-point decrease						
Utah	95.4	96.1	92.1	78.0	48.0	72.2
Missouri	43.3	48.3	41.5	40.5	31.0	29.6
Oklahoma	79.4	83.2	77.6	77.4	69.9	65.4
Delaware	89.8	94.7	87.6	82.3	65.8	79.0
Idaho	20.8	23.8	20.0	21.0	18.7	15.2
Montana	169.9	157.3	206.8	156.1	134.4	759.1
Wyoming	44.6	51.2	37.8	35.7	18.4	14.1
Average	77.6	79.2	80.5	70.1	55.2	147.8
Less than a 1 %-point decrease						
Nebraska	8.3	10.3	5.5	7.7	6.1	-4.7
Kansas	55.1	60.5	52.1	51.1	39.6	36.7
New Mexico	80.5	82.8	68.2	46.4	10.0	35.1
South Dakota	76.4	87.4	54.7	23.8	9.9	27.6
District of Columbia	-24.7	45.0	-244.9	95.9	65.5	260.6
Hawaii	138.0	128.7	162.0	222.5	-2050.0	44884.2
Average	55.6	69.1	16.3	74.6	-319.8	7539.9

TABLE IV.6
 Food Stamp Program Characteristics: Simulated Role of the Economy
 By Magnitude of Change in Unemployment Between 1992 and 1998

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
National	61.2	104.6	91.4	54.4	15.3	150.8
4 or more %-point decrease						
Massachusetts	61.9	68.8	66.3	51.5	34.9	60.3
Michigan	83.8	85.7	77.1	76.9	92.8	63.4
West Virginia	73.7	78.6	72.0	67.3	73.1	65.9
New Hampshire	101.9	136.9	139.0	103.3	26.9	242.8
Rhode Island	100.9	100.0	100.0	101.2	78.0	99.3
Average	84.4	94.0	90.9	80.0	61.1	106.4
3 to 3.9 %-point decrease						
Connecticut	40.2	91.4	66.6	27.6	-0.9	88.0
Florida	43.2	75.5	57.7	33.3	-0.3	59.1
Indiana	56.4	78.5	84.8	51.8	38.0	160.8
New Jersey	80.1	485.5	235.8	72.2	4.4	-354.4
Arizona	39.6	57.3	44.5	25.1	-38.6	33.8
Alabama	141.4	-80.2	-140.7	191.4	22.9	-53.2
California	100.9	131.9	143.1	118.7	5.2	888.6
Vermont	63.7	65.3	60.2	54.7	21.8	51.6
Virginia	46.5	72.0	57.7	38.7	26.1	64.0
Alaska	201.7	362.8	175.0	173.9	68.5	148.9
Illinois	84.2	-302.9	-505.8	86.0	8.7	-52.6
Pennsylvania	64.3	106.7	74.1	52.3	40.3	69.5
Mississippi	59.2	64.1	50.6	51.8	61.7	33.0
Ohio	112.9	-2589.5	7945.5	137.2	11.4	-90.0
New York	106.2	91.6	94.6	111.8	468.4	83.6
Washington	114.5	451.4	547.7	124.0	9.1	-108.1
Georgia	70.4	74.0	63.1	69.2	63.1	53.2
Average	83.9	-45.0	532.6	83.5	47.6	63.3

TABLE IV.6
 Food Stamp Program Characteristics: Simulated Role of the Economy
 By Magnitude of Change in Unemployment Between 1992 and 1998

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage of Change Due to the Economy Rather than Welfare Reform</i>						
2 to 2.9 %-point decrease						
South Carolina	27.2	34.3	32.7	20.5	14.8	28.9
Texas	38.8	59.0	56.6	31.7	-9.6	64.7
Louisiana	25.1	80.1	60.4	22.9	5.8	192.2
Maine	120.7	99.8	99.7	132.2	129.3	-100.1
North Dakota	72.2	149.6	103.5	65.6	6.0	122.5
Colorado	57.8	76.5	60.3	45.4	51.5	50.7
Minnesota	138.2	-385.6	-343.8	158.5	14.5	-79.7
Kentucky	53.5	75.1	58.2	45.3	46.0	52.0
North Carolina	43.8	54.1	59.2	38.5	35.8	-629.7
Nevada	50.8	82.0	76.6	41.2	-38.6	96.7
Oregon	31.3	61.1	43.2	22.0	14.8	110.8
Maryland	55.6	62.9	59.1	50.9	4.9	57.7
Arkansas	32.5	85.3	69.3	29.1	2.2	142.2
Tennessee	39.0	-48.1	-70.4	36.2	9.3	-14.9
Iowa	69.8	185.9	126.1	65.7	6.2	267.3
Wisconsin	49.2	39.2	35.4	41.6	-84.0	23.6
Average	56.6	44.5	32.9	53.0	13.0	24.1
1 to 1.9 %-point decrease						
Utah	75.8	1006.0	271.9	64.1	6.7	-480.6
Missouri	37.2	43.4	39.2	30.1	33.2	31.2
Oklahoma	70.7	119.3	98.0	62.5	-82.7	108.1
Delaware	80.0	-88.8	-157.3	71.8	33.8	-13.7
Idaho	15.9	10.1	16.4	13.7	16.7	14.7
Montana	167.7	-65.4	-131.4	164.1	8.7	-64.7
Wyoming	33.2	69.4	39.4	25.7	22.5	34.5
Average	68.7	156.3	25.2	61.7	5.5	-52.9
Less than a 1 %-point decrease						
Nebraska	11.7	8.9	18.6	11.9	8.0	33.3
Kansas	44.5	44.5	31.6	39.2	94.5	20.8
New Mexico	42.1	-18.6	-15.6	27.1	4.9	-2.5
South Dakota	57.1	-9.4	-21.1	53.9	5.2	-10.2
District of Columbia	-6.6	96.6	54.5	4.3	104.1	58.6
Hawaii	137.8	34.2	41.8	131.0	-94.1	4.1
Average	47.8	26.0	18.3	44.6	20.4	17.4

V. SIMULATED CONSEQUENCES OF A RECESSION FOR FOOD STAMP PROGRAM OUTCOMES UNDER WELFARE REFORM

A. DESCRIPTION OF OUTCOMES

In this chapter, we present the results of simulations of the consequences of an economic recession for FSP caseloads, costs, and characteristics, assuming recently introduced welfare reform policies remain in effect. We first consider six major outcomes describing FSP participation and costs:

1. The total number of participating food stamp units per state
2. The participation rate of eligible food stamp units per state
3. The total number of individuals receiving food stamps per state
4. The total food stamp benefits paid per state
5. Average food stamp benefits paid per unit
6. Average number of individuals per participating food stamp unit

We then consider six major outcomes describing the characteristics of households receiving food stamps:

1. The total number of food stamp households per state receiving AFDC/TANF
2. The total number of food stamp households per state with earnings
3. The total number of food stamp households per state receiving AFDC/TANF plus earnings
4. The percentage of food stamp households per state receiving AFDC/TANF
5. The percentage of food stamp households per state with earnings
6. The percentage of households receiving AFDC/TANF plus earnings

As noted in Chapter II, our focus in these simulations is to see the percentage change, by state, in the above outcomes arising from state unemployment rates reverting to their 1990-1992 levels

from their 1996-1998 levels. We focus once again on comparing simulated outcomes for the *last month* of a three-year simulation. Consequently, the results we discuss below indicate the consequences of unemployment rates rising from their December 1998 levels to their December 1992 levels.

In the following section, we describe the anticipated effects of a recession on simulated FSP outcomes. We then describe the simulated consequences of a recession for the national FSP and for FSP outcomes in individual states. We also consider whether the simulated effects of a recession differ according to the type of welfare reform program in place in particular states.

B. ANTICIPATED EFFECTS

We expected that a recession would lead to higher simulated levels of FSP participation and benefits because MATH STEWARD assumes that a higher unemployment rate reduces the “stigma” for both food stamps-only participation and AFDC/TANF plus food stamps participation (Jacobson et al 1998). Because MATH STEWARD assumes that this reduction in “stigma” is greater for AFDC/TANF than for food stamps only, we expected that a recession would increase the number of AFDC/TANF households by a larger percentage than it would increase the number of FSP households. We also expected the increases in FSP caseloads and costs, and in AFDC/TANF participation, would be greater in states simulated to experience a more severe recession, as indicated by a larger gap between the 1998 and 1992 unemployment rates, but would not necessarily vary according to the type of welfare reform in a particular state.

C. CONSEQUENCES OF A RECESSION FOR FSP OUTCOMES NATIONALLY AND IN INDIVIDUAL STATES

1. FSP Caseloads and Costs

MATH STEWARD simulations suggest that a recession will lead to modest increases in FSP caseloads and cost. Aggregating results across the 50 states and the District of Columbia, the model estimated a 10.7 percent increase in the number of food stamp units under welfare reform, a 12.2 percent increase in the participation rate of eligible food stamp units, a 12.1 percent increase in the number of individuals receiving food stamps, and a 13.3 percent increase in the total food stamp benefits paid (Table V.1).¹ Average food stamp benefits per unit, and the average size of a food stamp unit, were simulated to have little change by a recession.

Across the individual states, there was considerable variation in the simulated impact of a recession on FSP participation and costs (Table V.1). For Massachusetts, simulated increases in FSP participation and costs were substantial: a 27 percent increase in the number of units receiving food stamps, a 30 percent increase in the FSP participation rate, 30 percent increase in the number of individuals receiving food stamps, and a 31 percent increase in total food stamp benefits. For Hawaii, the simulation indicated a reduction in each of these outcomes by 9 to 13 percent. A major factor distinguishing these two states is the percentage-point change in each

¹The reason that the percentage increase in the FSP participation rate exceeds the percentage increase in the number of participating FSP units is that the model simulates the number of eligible FSP units as *declining* slightly during the recession. This counter-intuitive and unreasonable result arises because the Version 1996.41 wage equations impute *higher* earnings for workers in states with higher unemployment rates, all else held equal. We believe that the underlying coefficients in the wage equations are the result of a spurious correlation between high-wage states and states with high unemployment rates between 1992 and 1994. We reestimated the wage equations for Versions 1996.70 and 1996.80 of MATH STEWARD, but found the results obtained using these later versions of the model to be inferior to the Version 1996.41 results on other grounds. See Appendix A for details.

TABLE V.1
Food Stamp Participation and Costs: Simulated Change from a Recession

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage Change from Returning from 1998 to 1992 Unemployment Rates</i>						
National	10.7	12.2	12.1	13.3	2.4	1.32
Alabama	9.2	11.0	10.9	12.4	2.9	1.62
Alaska	8.4	10.7	8.8	7.4	-0.8	0.41
Arizona	18.3	19.8	19.2	23.0	4.0	0.82
Arkansas	6.7	7.9	8.7	11.2	4.2	1.85
California	15.9	18.3	16.8	16.8	0.8	0.80
Colorado	9.4	11.2	9.9	11.8	2.2	0.40
Connecticut	15.4	17.3	17.0	16.2	0.7	1.39
Delaware	5.1	5.9	6.5	7.4	2.2	1.26
District of Columbia	0.0	0.3	-0.3	-0.7	-0.7	-0.29
Florida	12.5	13.9	14.5	17.0	4.0	1.84
Georgia	6.0	7.0	7.1	8.2	2.1	1.11
Hawaii	-9.0	-9.8	-10.6	-12.6	-4.0	-1.81
Idaho	3.1	3.7	3.9	5.6	2.5	0.78
Illinois	10.3	11.5	12.6	14.5	3.8	2.10
Indiana	11.8	14.2	14.4	19.3	6.7	2.26
Iowa	8.1	9.2	10.0	11.4	3.0	1.73
Kansas	2.9	3.7	3.7	4.4	1.5	0.81
Kentucky	7.9	9.2	9.5	11.7	3.5	1.51
Louisiana	5.6	6.8	6.6	8.8	3.1	0.93
Maine	7.5	9.4	8.5	10.3	2.5	0.87
Maryland	7.1	8.6	8.8	9.6	2.3	1.56
Massachusetts	27.0	29.8	30.0	31.1	3.3	2.39
Michigan	19.8	22.0	23.8	27.0	6.0	3.30
Minnesota	11.2	12.8	12.2	13.3	1.9	0.88
Mississippi	7.6	8.5	7.9	10.0	2.3	0.31
Missouri	9.3	10.9	11.9	15.0	5.2	2.43
Montana	2.5	3.1	3.0	3.6	1.1	0.49
Nebraska	2.1	2.3	1.7	2.8	0.7	-0.41
Nevada	16.9	19.0	20.0	24.1	6.1	2.62
New Hampshire	23.3	26.2	26.5	26.8	2.8	2.63
New Jersey	12.4	14.6	13.7	14.8	2.1	1.19
New Mexico	4.3	5.2	4.7	4.7	0.4	0.38
New York	9.8	11.2	10.5	10.4	0.5	0.62
North Carolina	8.8	10.0	9.6	11.3	2.4	0.78
North Dakota	9.8	10.8	11.2	12.0	2.0	1.33
Ohio	11.0	12.7	14.2	16.0	4.5	2.85
Oklahoma	5.9	6.8	7.6	8.3	2.3	1.65
Oregon	8.6	9.9	9.8	11.6	2.7	1.03
Pennsylvania	8.6	10.2	9.3	10.7	1.9	0.65
Rhode Island	18.3	19.7	19.9	19.4	1.0	1.33
South Carolina	9.1	11.0	10.9	13.9	4.5	1.73
South Dakota	2.3	2.7	3.1	3.6	1.3	0.82
Tennessee	6.8	7.7	8.1	9.3	2.4	1.22
Texas	9.0	10.0	9.3	9.6	0.6	0.27
Utah	8.7	9.2	10.3	12.0	3.0	1.47
Vermont	8.1	9.7	8.7	8.5	0.4	0.53
Virginia	9.2	10.8	10.3	11.8	2.4	1.05
Washington	11.5	13.3	10.8	11.8	0.2	-0.69
West Virginia	15.4	17.2	16.0	20.9	4.8	0.54
Wisconsin	6.7	7.4	8.4	8.6	1.7	1.54
Wyoming	3.2	3.9	3.5	4.3	1.1	0.37

state's unemployment rate from 1998 to 1992 levels. Massachusetts' unemployment rate was simulated as increasing by more than four percentage points during the recession, while Hawaii's unemployment rate was simulated as *decreasing* by about one percentage point.

2. FSP Caseload Characteristics

If state unemployment rates rise from their 1998 levels to their 1992 levels with welfare reform policies remaining in place, the proportionate increase in national TANF participation would be higher than the proportionate increase in national FSP participation. Aggregating results across the 50 states and the District of Columbia, the model estimated nearly a 22.6 percent increase in the number of food stamp households with TANF (Table V.2). Because the number of food stamp households increased by 10.7 percent in response to the recession, the simulated change in the proportion of food stamp households with TANF was smaller (11 percent).

Across the individual states, there was also considerable variation in the simulated impact of a recession under welfare reform on TANF participation. For Massachusetts, simulated increases in TANF participation were substantial: there was a 66.7 percent increase in the number of food stamp households with TANF and a 32.6 percent increase in the proportion of food stamp households with TANF. In contrast, for Hawaii, the model simulated a 16.3 percent *reduction* in the number of food stamp households with TANF and a 7.8 percent reduction in the proportion of food stamp households with TANF. As noted above, a major factor distinguishing these two states is their unemployment rates during the simulated recession.

TABLE V.2
Food Stamp Program Characteristics: Simulated Change from a Recession

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage Change from Returning from 1998 to 1992 Unemployment Rates</i>						
National	22.6	9.4	23.8	11.0	-0.9	12.1
Alabama	20.8	10.6	27.8	10.5	1.1	16.8
Alaska	18.2	6.5	19.7	8.6	-2.1	10.0
Arizona	38.3	17.1	41.7	18.7	0.5	21.6
Arkansas	21.9	8.1	25.1	14.5	1.5	17.5
California	24.3	13.0	23.1	7.5	-2.2	6.5
Colorado	19.7	6.7	21.1	10.0	-2.0	11.3
Connecticut	34.6	14.4	38.9	17.5	-0.1	21.2
Delaware	13.4	3.6	14.8	7.5	-1.8	8.8
District of Columbia	0.0	5.3	3.2	0.2	5.4	3.4
Florida	34.3	12.5	38.7	19.6	0.2	23.5
Georgia	13.7	4.3	12.0	6.9	-1.9	5.3
Hawaii	-16.3	-7.2	-13.9	-7.8	2.2	-5.2
Idaho	9.0	1.3	9.0	6.7	-0.8	6.7
Illinois	23.3	11.9	27.7	11.2	1.0	15.2
Indiana	35.8	5.7	27.5	21.7	-5.3	14.3
Iowa	19.7	7.2	19.1	11.2	-0.4	10.7
Kansas	7.7	2.2	6.1	4.8	-0.6	3.2
Kentucky	19.4	5.1	18.0	10.6	-2.7	9.3
Louisiana	14.4	4.6	14.4	8.4	-0.9	8.4
Maine	15.1	4.4	10.2	6.8	-3.1	2.3
Maryland	14.5	7.4	15.5	6.4	-0.2	7.3
Massachusetts	66.7	22.4	69.2	32.6	-2.6	34.6
Michigan	42.6	15.7	40.5	19.6	-3.0	17.9
Minnesota	24.6	9.6	23.1	13.3	-0.4	11.9
Mississippi	16.6	5.8	14.1	8.2	-1.8	5.9
Missouri	23.3	6.9	18.1	13.1	-1.9	8.3
Montana	6.9	1.5	6.8	4.1	-1.1	4.0
Nebraska	6.8	1.1	6.1	5.0	-0.6	4.3
Nevada	42.1	18.0	46.9	22.6	1.8	26.8
New Hampshire	53.2	20.6	49.7	24.7	-1.8	21.9
New Jersey	24.3	10.6	26.8	11.3	-0.9	13.5
New Mexico	7.5	1.9	3.8	3.6	-1.8	0.0
New York	17.3	8.5	18.5	7.1	-0.9	8.2
North Carolina	21.8	6.2	19.3	11.7	-2.6	9.4
North Dakota	25.5	7.7	25.4	15.5	-0.9	15.5
Ohio	21.5	12.4	26.9	9.4	1.3	14.3
Oklahoma	15.1	5.3	16.1	8.7	-0.5	9.6
Oregon	19.8	8.7	16.4	9.9	-0.3	6.7
Pennsylvania	17.9	4.7	14.2	8.9	-3.4	5.4
Rhode Island	32.9	17.7	40.5	13.3	0.3	19.8
South Carolina	28.8	5.5	30.2	18.1	-3.3	19.4
South Dakota	7.5	1.6	5.2	4.9	-0.8	2.7
Tennessee	16.1	6.5	15.6	8.9	-0.1	8.4
Texas	20.2	8.9	27.8	11.0	0.6	18.0
Utah	18.6	6.9	18.0	9.4	-1.4	8.8
Vermont	17.3	7.3	19.6	8.7	-0.5	10.9
Virginia	24.9	5.9	21.1	13.6	-3.7	10.1
Washington	18.4	11.9	22.0	6.7	0.9	9.9
West Virginia	33.0	12.6	49.9	18.4	0.2	33.4
Wisconsin	17.6	5.3	17.1	10.1	-1.4	9.6
Wyoming	7.7	2.0	7.7	4.3	-1.2	4.4

D. CONSEQUENCES OF A RECESSION FOR FSP OUTCOMES, BY TYPE OF STATE WELFARE REFORM

1. FSP Caseloads and Costs

To help interpret the relationship between various types of welfare reform policies and simulated changes in FSP outcomes under a recession, we relied on the same groups of states identified in Chapter III (see Table III.3). With eight possible combinations of state welfare reform policies, we might expect a pattern to emerge. The increases in FSP participation and costs during a recession appear to be somewhat larger in states with shorter TANF time limits (Table V.3). The impact of a recession on state FSP caseloads averaged 7.7 to 15.8 percent in states with shorter time limits, and 6.8 to 10 percent in states with longer time limits. The impact of a recession on state FSP costs averaged 11.4 to 19.5 percent in states with shorter time limits, and 8.7 to 11.8 percent in states with longer time limits.

2. FSP Caseload Characteristics

Likewise, the increase during a recession in the number of food stamp households with TANF benefits was simulated to be larger in states with shorter TANF time limits (see Table V.4). The impact of a recession on the number of TANF households per state averaged 21.3 to 38.3 percent in states with shorter time limits, and 15.2 to 20 percent in states with longer time limits. Note that the MATH STEWARD model discounts the value of time-limited TANF benefits when calculating disposable income, making TANF less appealing to households when time limits are shorter. These simulations suggest that, during a recession, households are less likely to opt out participation in time-limited TANF programs, because high unemployment rates leave them fewer economic alternatives.

TABLE V.3
Food Stamp Participation and Costs: Simulated Change from a Recession
By Type of Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage Change from Returning from 1998 to 1992 Unemployment Rates</i>						
National	10.7	12.2	12.1	13.3	2.4	1.32
Shorter Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Arkansas	6.7	7.9	8.7	11.2	4.2	1.85
Florida	12.5	13.9	14.5	17.0	4.0	1.84
Idaho	3.1	3.7	3.9	5.6	2.5	0.78
Oregon	8.6	9.9	9.8	11.6	2.7	1.03
Average	7.7	8.9	9.2	11.4	3.4	1.4
Longer Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Iowa	8.1	9.2	10.0	11.4	3.0	1.73
New Jersey	12.4	14.6	13.7	14.8	2.1	1.19
Oklahoma	5.9	6.8	7.6	8.3	2.3	1.65
Utah	8.7	9.2	10.3	12.0	3.0	1.47
Average	8.8	10.0	10.4	11.6	2.6	1.5
Shorter Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Indiana	11.8	14.2	14.4	19.3	6.7	2.26
Tennessee	6.8	7.7	8.1	9.3	2.4	1.22
Average	9.3	10.9	11.2	14.3	4.5	1.7
Longer Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Colorado	9.4	11.2	9.9	11.8	2.2	0.40
Delaware	5.1	5.9	6.5	7.4	2.2	1.26
Michigan	19.8	22.0	23.8	27.0	6.0	3.30
Montana	2.5	3.1	3.0	3.6	1.1	0.49
North Dakota	9.8	10.8	11.2	12.0	2.0	1.33
South Dakota	2.3	2.7	3.1	3.6	1.3	0.82
Wisconsin	6.7	7.4	8.4	8.6	1.7	1.54
Wyoming	3.2	3.9	3.5	4.3	1.1	0.37
Average	7.4	8.4	8.7	9.8	2.2	1.2
Shorter Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Connecticut	15.4	17.3	17.0	16.2	0.7	1.39
Illinois	10.3	11.5	12.6	14.5	3.8	2.10
Massachusetts	27.0	29.8	30.0	31.1	3.3	2.39
Nevada	16.9	19.0	20.0	24.1	6.1	2.62
Virginia	9.2	10.8	10.3	11.8	2.4	1.05
Average	15.8	17.7	18.0	19.5	3.3	1.9

TABLE V.3
 Food Stamp Participation and Costs: Simulated Change from a Recession
 By Type of Welfare Reform

	<i>Units Receiving Food Stamps</i>	<i>Participation Rate of Eligible Units</i>	<i>Individuals Receiving Food Stamps</i>	<i>Total Food Stamp Benefits Paid</i>	<i>Average Food Stamp Benefits per Unit</i>	<i>Average Size of Food Stamp Unit</i>
<i>Percentage Change from Returning from 1998 to 1992 Unemployment Rates</i>						
Longer Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alabama	9.2	11.0	10.9	12.4	2.9	1.62
California	15.9	18.3	16.8	16.8	0.8	0.80
Hawaii	-9.0	-9.8	-10.6	-12.6	-4.0	-1.81
Kansas	2.9	3.7	3.7	4.4	1.5	0.81
Minnesota	11.2	12.8	12.2	13.3	1.9	0.88
Mississippi	7.6	8.5	7.9	10.0	2.3	0.31
New Hampshire	23.3	26.2	26.5	26.8	2.8	2.63
New Mexico	4.3	5.2	4.7	4.7	0.4	0.38
New York	9.8	11.2	10.5	10.4	0.5	0.62
Ohio	11.0	12.7	14.2	16.0	4.5	2.85
Pennsylvania	8.6	10.2	9.3	10.7	1.9	0.65
Rhode Island	18.3	19.7	19.9	19.4	1.0	1.33
Washington	11.5	13.3	10.8	11.8	0.2	-0.69
West Virginia	15.4	17.2	16.0	20.9	4.8	0.54
Average	10.0	11.4	10.9	11.8	1.5	0.8
Shorter Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Arizona	18.3	19.8	19.2	23.0	4.0	0.82
Louisiana	5.6	6.8	6.6	8.8	3.1	0.93
Nebraska	2.1	2.3	1.7	2.8	0.7	-0.41
North Carolina	8.8	10.0	9.6	11.3	2.4	0.78
South Carolina	9.1	11.0	10.9	13.9	4.5	1.73
Texas	9.0	10.0	9.3	9.6	0.6	0.27
Average	8.8	10.0	9.6	11.6	2.5	0.7
Longer Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alaska	8.4	10.7	8.8	7.4	-0.8	0.41
District of Columbia	0.0	0.3	-0.3	-0.7	-0.7	-0.29
Georgia	6.0	7.0	7.1	8.2	2.1	1.11
Kentucky	7.9	9.2	9.5	11.7	3.5	1.51
Maine	7.5	9.4	8.5	10.3	2.5	0.87
Maryland	7.1	8.6	8.8	9.6	2.3	1.56
Missouri	9.3	10.9	11.9	15.0	5.2	2.43
Vermont	8.1	9.7	8.7	8.5	0.4	0.53
Average	6.8	8.2	7.9	8.7	1.8	1.0

TABLE V.4
Food Stamp Program Characteristics: Simulated Change from a Recession
By Type of Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage Change from Returning from 1998 to 1992 Unemployment Rates</i>						
National	22.6	9.4	23.8	11.0	-0.9	12.1
Shorter time limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Arkansas	21.9	8.1	25.1	14.5	1.5	17.5
Florida	34.3	12.5	38.7	19.6	0.2	23.5
Idaho	9.0	1.3	9.0	6.7	-0.8	6.7
Oregon	19.8	8.7	16.4	9.9	-0.3	6.7
Average	21.3	7.7	22.3	12.7	0.1	13.6
Longer Time Limits, Generous Earned Income Disregards, Aggressive Work Requirements						
Iowa	19.7	7.2	19.1	11.2	-0.4	10.7
New Jersey	24.3	10.6	26.8	11.3	-0.9	13.5
Oklahoma	15.1	5.3	16.1	8.7	-0.5	9.6
Utah	18.6	6.9	18.0	9.4	-1.4	8.8
Average	19.4	7.5	20.0	10.1	-0.8	10.7
Shorter Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Tennessee	16.1	6.5	15.6	8.9	-0.1	8.4
Indiana	35.8	5.7	27.5	21.7	-5.3	14.3
Average	25.9	6.1	21.6	15.3	-2.7	11.4
Longer Time Limits, Less Generous Earned Income Disregards, Aggressive Work Requirements						
Colorado	19.7	6.7	21.1	10.0	-2.0	11.3
Delaware	13.4	3.6	14.8	7.5	-1.8	8.8
Michigan	42.6	15.7	40.5	19.6	-3.0	17.9
Montana	6.9	1.5	6.8	4.1	-1.1	4.0
North Dakota	25.5	7.7	25.4	15.5	-0.9	15.5
South Dakota	7.5	1.6	5.2	4.9	-0.8	2.7
Wisconsin	17.6	5.3	17.1	10.1	-1.4	9.6
Wyoming	7.7	2.0	7.7	4.3	-1.2	4.4
Average	17.6	5.5	17.3	9.5	-1.5	9.3
Shorter Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Connecticut	34.6	14.4	38.9	17.5	-0.1	21.2
Illinois	23.3	11.9	27.7	11.2	1.0	15.2
Massachusetts	66.7	22.4	69.2	32.6	-2.6	34.6
Nevada	42.1	18.0	46.9	22.6	1.8	26.8
Virginia	24.9	5.9	21.1	13.6	-3.7	10.1
Average	38.3	14.5	40.7	19.5	-0.7	21.6

TABLE V.4
 Food Stamp Program Characteristics: Simulated Change from a Recession
 By Type of Welfare Reform

	<i>Number of FS Households with TANF</i>	<i>Number of FS Households with Earnings</i>	<i>Number of FS Households with TANF and Earnings</i>	<i>% of FS Households with TANF</i>	<i>% of FS Households with Earnings</i>	<i>% of FS Households with TANF and Earnings</i>
<i>Percentage Change from Returning from 1998 to 1992 Unemployment Rates</i>						
Longer Time Limits, Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alabama	20.8	10.6	27.8	10.5	1.1	16.8
California	24.3	13.0	23.1	7.5	-2.2	6.5
Hawaii	-16.3	-7.2	-13.9	-7.8	2.2	-5.2
Kansas	7.7	2.2	6.1	4.8	-0.6	3.2
Minnesota	24.6	9.6	23.1	13.3	-0.4	11.9
Mississippi	16.6	5.8	14.1	8.2	-1.8	5.9
New Hampshire	53.2	20.6	49.7	24.7	-1.8	21.9
New Mexico	7.5	1.9	3.8	3.6	-1.8	0.0
New York	17.3	8.5	18.5	7.1	-0.9	8.2
Ohio	21.5	12.4	26.9	9.4	1.3	14.3
Pennsylvania	17.9	4.7	14.2	8.9	-3.4	5.4
Rhode Island	32.9	17.7	40.5	13.3	0.3	19.8
Washington	18.4	11.9	22.0	6.7	0.9	9.9
West Virginia	33.0	12.6	49.9	18.4	0.2	33.4
Average	20.0	8.9	21.8	9.2	-0.5	10.9
Shorter Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Arizona	38.3	17.1	41.7	18.7	0.5	21.6
Louisiana	14.4	4.6	14.4	8.4	-0.9	8.4
Nebraska	6.8	1.1	6.1	5.0	-0.6	4.3
North Carolina	21.8	6.2	19.3	11.7	-2.6	9.4
South Carolina	28.8	5.5	30.2	18.1	-3.3	19.4
Texas	20.2	8.9	27.8	11.0	0.6	18.0
Average	21.7	7.2	23.3	12.1	-1.0	13.5
Longer Time Limits, Less Generous Earned Income Disregards, Less Aggressive Work Requirements						
Alaska	18.2	6.5	19.7	8.6	-2.1	10.0
District of Columbia	0.0	5.3	3.2	0.2	5.4	3.4
Georgia	13.7	4.3	12.0	6.9	-1.9	5.3
Kentucky	19.4	5.1	18.0	10.6	-2.7	9.3
Maine	15.1	4.4	10.2	6.8	-3.1	2.3
Maryland	14.5	7.4	15.5	6.4	-0.2	7.3
Missouri	23.3	6.9	18.1	13.1	-1.9	8.3
Vermont	17.3	7.3	19.6	8.7	-0.5	10.9
Average	15.2	5.9	14.5	7.7	-0.9	7.1

These illustrations notwithstanding, there is a wide range of simulated increases in FSP and TANF participation during a recession, even for states with similar policies regarding TANF time limits. It appears that for the Food Stamp Program as a whole, the severity of a recession, rather than the nature of a state's welfare program, is the primary determinant of how much a state's FSP outcomes are likely to change during an economic downturn.

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APPENDIX A:

VALIDATION OF MATH STEWARD SIMULATION RESULTS

To see the sensitivity of our simulation results to various modeling assumptions, we ran simulations of welfare reform and economic change using the following versions of the MATH STEWARD model:

1. *Version 1996.41* was the same as Version 1996.30 (documented by Jacobson et al. 1998, and used in two reports by Jacobson and Puffer 1999), except dollar amounts were adjusted to account for inflation, and a few other minor changes were made in the simulation software (to, for example, prevent TANF sanctions from increasing FSP benefits).
2. *Version 1996.70* used new behavioral equations, described in Appendix B, and assumed that labor supply and program participation choices are made based on correlated residuals, and labor supply residuals were the same for an individual across months.
3. *Version 1996.80* was identical to Version 1996.70, except it assumed that labor supply residuals were not the same for an individual across months. Like Version 1996.70, it assumed that labor supply and program participation decisions each month are made based on correlated residuals.

For Versions 1996.41 and 1996.80, we also simulated welfare reform with and without restrictions on FSP benefits for Able Bodied Adults Without Dependents (ABAWDs). While including these policies with state welfare reforms might confuse the effects of different types of welfare reform, the policies might have a dramatic effect on simulated FSP caseloads and costs, and need to be considered.

To see how well the various simulations performed, we compared simulated outcomes under the pre-welfare reform scenario with 1992 unemployment rates to FSP Quality Control (QC) data for December 1992. We also compared simulated outcomes under the welfare reform scenario with 1998 unemployment rates to the FSP QC data for December 1998. Thirdly, we

compared the simulated change in outcomes between these two scenarios to the change reported in FSP QC data.

In general, the inclusion of the ABAWD restrictions had only a small effect on simulated reductions in FSP caseloads and costs (Table A.1). As a result of excluding some ABAWDs from receiving FSP benefits, simulated FSP caseloads and costs were slightly lower in 1998, and average FSP benefits were slightly higher (arguably because units with ABAWDs are smaller, lower-benefit units). This pattern is evident in both the Version 1996.41 and 1996.80 simulation estimates. The small effects of ABAWD restrictions are arguably a result of our assumption that most states are exempting the majority of their ABAWDs from FSP work requirements and time limits, and are placing a majority of the non-exempt ABAWDs in employment and training programs.

While the inclusion of ABAWD restrictions made little difference for the final simulation results, the use of Version 1996.41 of the model instead of Version 1996.70 or 1996.80 made a considerable difference (Table A.1). In general, the Version 1996.41 estimates for food stamp caseloads and costs, compared with the Version 1996.70/1996.80 estimates, were much closer to the corresponding levels reported in the FSP QC data. Version 1996.41 of MATH STEWARD also simulated over half of the reported decline in FSP caseloads and costs between 1992 and 1998. Versions 1996.70 and 1996.80 of the model, in contrast, simulated less than one-tenth of this decline. It is possible that the later versions of the model, by using correlated error terms for labor supply and program participation decisions in any given month, overstate the tendency of TANF leavers to remain on food stamps, and understate the tendency of these leavers to gain employment. Under work-oriented welfare reform and a booming economy, the positive

TABLE A.1
Comparison of Outcomes in FSP QC Data with Simulated Outcomes Using Different Versions of MATH STEWARD

	<i>Food Stamp QC Data</i>	<i>MATH STEWARD Model Estimates, Version</i>				
		<i>1996.41</i>	<i>1996.41</i>	<i>1996.70</i>	<i>1996.80</i>	<i>1996.80</i>
<i>Correlation of Work/Welfare Choices?</i>	<i>N/A</i>	<i>No</i>	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Correlation of Work Over Time?</i>	<i>N/A</i>	<i>No</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>No</i>
<i>Reflects 1998 ABAWD Restrictions?</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
December 1992 Levels						
Households (000)	10,627.4	8,974.3	8,974.3	16,119.2	15,340.6	15,340.6
Food Stamp Units (000)	10,627.4	10,055.2	10,055.2	18,243.8	17,513.6	17,513.6
Individuals on FS (000)	26,889.5	27,635.5	27,635.5	45,990.9	44,603.2	44,603.2
FSP Benefits (thousands of \$)	1,811,274.3	2,184,745.8	2,184,745.8	4,105,268.6	3,982,016.6	3,982,016.6
Average Benefit/Unit (\$)	170.4	217.3	217.3	225.0	227.4	227.4
Average Persons/Unit	2.53	2.75	2.75	2.52	2.55	2.55
FS + TANF Households (000)	4,143.0	4,567.9	4,567.9	5,609.5	5,722.0	5,722.0
FS Households with earnings (000)	2,199.9	4,217.9	4,217.9	2,498.5	2,454.5	2,454.5
FS + TANF HHs with earnings (000)	474.1	1,959.6	1,959.6	1,004.1	984.2	984.2
% of FS HHs with TANF	39.0	50.9	50.9	34.8	37.3	37.3
% of FS HHs with earnings	20.7	47.0	47.0	15.5	16.0	16.0
% of FS HHs with TANF + earnings	4.5	21.8	21.8	6.2	6.4	6.4
% of TANF HHs with earnings	11.4	42.9	42.9	17.9	17.2	17.2
December 1998 Levels						
Households (000)	7,821.2	7,723.5	7,710.4	15,803.3	15,157.0	15,055.2
Food Stamp Units (000)	7,821.2	8,651.5	8,621.5	17,843.5	17,308.9	17,131.1
Individuals on FS (000)	19,048.6	23,198.3	23,139.0	45,263.7	44,117.0	43,859.8
FSP Benefits (thousands of \$)	1,306,375.5	1,768,598.1	1,763,937.1	4,044,754.6	3,943,917.1	3,920,197.3
Average Benefit/Unit (\$)	167.0	204.4	204.6	226.7	227.9	228.8
Average Persons/Unit	2.44	2.68	2.68	2.54	2.55	2.56
FS + TANF Households (000)	2,317.9	3,305.7	3,315.5	4,772.6	4,895.7	4,892.9
FS Households with earnings (000)	2,187.4	3,892.7	3,893.7	2,433.7	2,425.1	2,393.8
FS + TANF HHs with earnings (000)	584.0	1,570.2	1,574.8	911.6	910.6	910.1
% of FS HHs with TANF	29.6	42.8	43.0	30.2	32.3	32.5
% of FS HHs with earnings	28.0	50.4	50.5	15.4	16.0	15.9
% of FS HHs with TANF + earnings	7.5	20.3	20.4	5.8	6.0	6.0
% of TANF HHs with earnings	25.2	47.5	47.5	19.1	18.6	18.6
% Change 1992-1998						
Households (000)	-26.4	-13.9	-14.1	-2.0	-1.2	-1.9
Food Stamp Units (000)	-26.4	-14.0	-14.3	-2.2	-1.2	-2.2
Individuals on FS (000)	-29.2	-16.1	-16.3	-1.6	-1.1	-1.7
FSP Benefits (thousands of \$)	-27.9	-19.0	-19.3	-1.5	-1.0	-1.6
Average Benefit/Unit (\$)	-2.0	-5.9	-5.8	0.7	0.2	0.6
Average Persons/Unit	-3.7	-2.4	-2.3	0.6	0.1	0.5
FS + TANF Households (000)	-44.1	-27.6	-27.4	-14.9	-14.4	-14.5
FS Households with earnings (000)	-0.6	-7.7	-7.7	-2.6	-1.2	-2.5
FS + TANF HHs with earnings (000)	23.2	-19.9	-19.6	-9.2	-7.5	-7.5
% of FS HHs with TANF	-24.0	-15.9	-15.5	-13.2	-13.4	-12.9
% of FS HHs with earnings	35.1	7.2	7.4	-0.6	0.0	-0.6
% of FS HHs with TANF + earnings	67.4	-6.9	-6.5	-7.4	-6.4	-5.8
% of TANF HHs with earnings	120.2	10.7	10.7	6.7	8.1	8.1

SOURCE: FY 1993 and FY 1999 FSP QC data; MATH STEWARD model simulations, versions 1996.41, 1996.70, and 1996.80

correlation between welfare/FSP participation and non-employment status may have been much weaker during the late 1990s than during the early 1990s. Depending on how food stamp benefits are administered by states under PRWORA, the correlation between AFDC/TANF participation and FSP participation may also have been much weaker during the late 1990s than during the early 1990s.

In addition to doing a superior job capturing changes in national FSP caseloads and costs during the 1990s, the Version 1996.41 equations also performed better than the Version 1996.70/1996.80 equations in capturing state-level changes in FSP outcomes during the 1990s. For example, the correlation between the QC-reported change in the number of participating food stamp units, and the state-level change simulated by Version 1996.41 of the model, was 0.45. The correlation between the QC-reported change in the number of participating food stamp units, and the state-level change simulated by Version 1996.70 of the model, was only 0.24.

Because the Version 1996.41 equations appeared generally superior to the Version 1996.70/1996.80 equations in simulating FSP changes during the 1990s, we decided to base the findings of this revised draft report on simulations performed using Version 1996.41 of the model. For the sake of interest and econometric comparison with the equations described by Jacobson et al (1998), Appendix B describes the Version 1996.70/1996.80 equations in greater detail.

APPENDIX B:

ESTIMATION OF NEW BEHAVIORAL EQUATIONS IN THE MATH STEWARD MODEL

This appendix describes how new behavioral equations were estimated for the MATH STEWARD model, Version 1996.70.¹ The equations differ in several ways from the corresponding equations in Version 1996.30 as applied in an earlier version of this study (Jacobson and Puffer April 1999, Jacobson and Puffer June 1999) and documented by Jacobson et al. (1998). We first discuss the new wage equations for the model and then consider the new labor supply and program participation equations.

A. WAGE EQUATION ESTIMATES

1. Differences from Earlier Approach

Because the MATH STEWARD model allows each household's reference person and spouse to change his or her labor supply, it is necessary to estimate the potential earnings of such individuals. Both the old and new versions of MATH STEWARD rely on wage equations from the 1992 Survey of Income and Program Participation (SIPP) panel for 1992 through 1994. Given limitations in computer memory at the time, we used only every third month of data (March, June, September, and December) and assumed that outcomes were the same for the previous two months as for the month ending each quarter. Whereas the Version 1996.30 wage equations relied on a 10 percent subsample of the model database, the Version 1996.70 equations rely on nearly the entire model database, thereby improving the precision of our estimates. For Version 1996.30, we excluded from the estimation sample those households for which we do not

¹ These same equations are used in Version 1996.80, which has a slightly different error structure, described below.

know the state of residence; for Version 1996.70, we included those individuals and dummies indicating a state group for individuals for whom the specific state was unknown.²

Previously, we had estimated separate equations to predict the natural log of monthly part-time earnings and the natural log of monthly full-time earnings. The decision to estimate two equations was based on the assumption that the error terms for the equations were not correlated with each other. One disadvantage of the two-equation approach was that the model would occasionally simulate higher earnings for a part-time versus full-time worker. Therefore, for Version 1996.70, we decided to predict the natural log of the hourly wage for each person. Under the assumption that part-time workers work 20 hours per week (87 hours per month) and full-time workers 40 hours per week (173 hours per month), use of the hourly wage would permit us to predict part- and full-time earning.

2. Estimation of Wage Equations

Like the Version 1996.30 wage equations, the Version 1996.70 wage equations include separate estimates for single women, married women, single men, and married men. We defined the outcome variable as the natural log of average real hourly earnings per month, where earnings includes self-employment as well as wage earnings.³ We excluded from the estimation sample individuals under age 16 or over age 64 or those who reported hourly wages outside the range \$1 to \$100 (in real 1992 dollars measured by using the CPI-U).

² This uncertainty was present because the SIPP combined residents of certain smaller states into groups (Maine + Vermont, Iowa + North Dakota + South Dakota, and Alaska + Idaho + Montana + Wyoming).

³ We experimented with alternative earnings definitions—such as the reported hourly wage on the primary job—but found that the wage equation estimates were similar regardless of definition.

We relied on a two-step Heckman estimation procedure to account for the fact that not all individuals report earnings for a given month. In the first-stage equation, which predicts the probability of having earnings, we included several variables assumed to have no direct effect on wages but likely to affect employment: the characteristics of children in a household, previous AFDC and Food Stamp Program participation, and the amount a state spends on administrative expenses per welfare recipient.

Both the first and second-stage (wage) equations included the following variables:

- the state unemployment rate;
- initial work tenure (in months, at the start of the SIPP panel) and initial work tenure squared;
- net work tenure (cumulative months worked since the start of the panel) and net work tenure squared;
- indicators for black, Hispanic, and other nonwhite persons;
- age (in years) and age squared;
- years of schooling completed;
- a disability indicator;
- year and quarter indicators; and
- single-state indicators (except for the states grouped together by the SIPP).

Because work tenure was measured incompletely for some spouses of reference (“key”) persons (for example, spouses who entered the sample after the start of the panel), we set all work tenure variables for these persons to zero. To approximate the tenure of non-key persons, we included in the regressions an indicator for non-key persons as well as the interaction of this indicator with age, age squared, and schooling.

Table B.1 indicates the estimated coefficients of the wage equations but does not report the quarter and state variables. While a higher state unemployment rate was associated with

significantly lower wages for single women (evidence perhaps of lower demand for workers), its relationship with the wages of other categories of individuals was not statistically significant. The estimated coefficient was actually slightly positive for married individuals, an outcome that we considered spurious; we thus constrained the coefficient to be zero for simulation purposes.

In the estimated wage equations, several variables frequently had statistically significant relationships to hourly earnings. Initial work tenure and net work tenure were both associated with higher earnings as was the individual's age (albeit at a decreasing rate) and years of schooling. A disability was generally associated with significantly lower earnings. In the case of men, black and Hispanic individuals earned significantly less per hour than whites, whereas women of different races evidenced no statistically significant wage differentials.

B. LABOR SUPPLY AND PROGRAM PARTICIPATION EQUATIONS

1. Differences from Earlier Approach

As with the wage equations, the labor supply and program participation equations for the MATH STEWARD model were estimated from the 1992 SIPP panel, including 12 months of data spaced at three-month intervals between March 1992 and December 1994. While the 1996.30 equations were estimated by using a 10 percent sub-sample from the model database, the 1996.70 equations used the full database for the months following March 1992. In both instances, however, we excluded from the estimation households for which the precise state of residence was unknown, since we wanted to minimize the measurement error in potential welfare benefits. Initial levels of program participation were set based on reported participation in eligible programs in March 1992 .

TABLE B.1
Estimates of Log Hourly Wage Equations for the MATH STEWARD Model, Versions 1996.70/1996.80

Variable	Women						Men					
	Single			Married			Single			Married		
	Coefficient		S. E.	Coefficient		S. E.	Coefficient		S. E.	Coefficient		S. E.
Constant term	2.99E-01	**	1.24E-01	1.84E-01		2.18E-01	6.05E-01	**	1.73E-01	8.32E-01	**	1.22E-01
State unemployment rate (%)	-1.32E-02	**	5.19E-03	---		---	-5.14E-03		8.37E-03	---		---
Initial work tenure	3.42E-03	**	1.03E-03	6.65E-03	**	1.63E-03	3.91E-03	**	1.21E-03	1.38E-03		7.51E-04
Initial tenure squared	1.96E-07		7.77E-06	-2.90E-05	**	1.33E-05	-6.67E-06		9.72E-06	6.67E-06		5.81E-06
Net work tenure	2.73E-03	**	8.31E-04	2.57E-03	**	8.72E-04	1.91E-03	**	8.30E-04	1.22E-03	**	4.94E-04
Net tenure squared	8.51E-06		9.12E-06	1.99E-05		1.30E-05	6.10E-06		1.13E-05	6.10E-06		5.69E-06
Key person is black	-4.21E-02		2.40E-02	2.43E-02		2.95E-02	-1.13E-01	**	4.55E-02	-1.54E-01	**	2.45E-02
Key person is Hispanic	-1.62E-02		3.25E-02	-3.88E-02		2.77E-02	-1.60E-01	**	4.79E-02	-1.86E-01	**	2.50E-02
Key person is other race	-4.76E-02		6.47E-02	-3.70E-02		4.95E-02	-1.37E-01		9.98E-02	-1.53E-01	**	4.68E-02
Age	4.40E-02	**	4.90E-03	2.82E-02	**	1.01E-02	5.78E-02	**	8.16E-03	4.75E-02	**	5.61E-03
Age squared	-4.90E-04	**	5.92E-05	-3.10E-04	**	1.29E-04	-6.30E-04	**	1.09E-04	-5.20E-04	**	6.66E-05
Years of schooling	7.75E-02	**	5.18E-03	8.77E-02	**	8.89E-03	3.65E-02	**	6.88E-03	4.91E-02	**	3.60E-03
Person is disabled	-1.06E-01	**	2.72E-02	-8.97E-02	**	2.43E-02	-1.43E-01	**	5.08E-02	-9.64E-02	**	2.26E-02
Person is not key person	--		--	1.92E-01		2.41E-01	--		--	-2.00E-01		2.44E-01
Not key person * age	--		--	1.03E-02		1.14E-02	--		--	1.96E-02		1.20E-02
Not key person * age squared	--		--	-8.80E-05		1.45E-04	--		--	-1.80E-04		1.47E-04
Not key person * schooling	--		--	-1.74E-02		9.41E-03	--		--	-1.25E-02		7.54E-03
Sample size – second stage	35,781			84,126			23,136			84,126		
Sample size – first stage	15,294			34,066			11,488			40,755		

SOURCE: MATH STEWARD model database, 1992-1994 data from 1992 SIPP panel. Sample restricted to individuals ages 16 to 64, and excludes persons with reported hourly wages under \$1 or over \$100 (in 1992 dollars). Estimates obtained through two-stage Heckman procedure (first stage estimates not shown). Fixed effects for individual months and individual states not shown. Standard errors adjusted for clustering.

** = significantly different from zero (.05 level), two-tailed test

The older version of MATH STEWARD relied on a multinomial logit model to predict household labor supply and program participation. Households were allowed three labor supply choices per worker: no work (0 hours per month), part-time work (reported as 1 to 129 hours per month), and full-time work (reported as 130 or more hours per month). In addition, a household could elect to participate in AFDC/TANF⁴ plus food stamps (if eligible units could be formed in the household), in food stamps only, or in neither program. Given the assumption inherent in the multinomial logit model, the simulation assumed that the unobserved factors—the residuals—determining work and program participation choices are uncorrelated with each other. Relaxing this assumption was a major goal of the reestimation of the labor supply and program participation equations.

To enable the estimation of correlations of different residuals, we estimated a series of bivariate probit models in which separate equations determined female work status, male work status, food stamp participation, and AFDC/TANF participation. We assumed that part- and full-time work by the same person was determined by the same underlying residual. For Version 1996.70 of the model, we assumed that the residual determining work did not vary for the same individual across the three-year period but that the residual determining program participation differed from month to month. (The earlier equations assumed that both types of residuals varied across months, with no correlation between months.) This assumption was motivated by the

⁴ During the period 1992-1994, Aid to Families with Dependent Children (AFDC) was the principal welfare program for families with children. The Temporary Assistance to Needy Families (TANF) program was not enacted until 1996, and is assumed to be the equivalent to AFDC within the model of program participation.

belief that the unobserved factors determining program participation by these households are more volatile over a three-year period than the unobserved factors determining labor supply.⁵

The Version 1996.30 labor supply equations varied with the sex and marital status of each potential worker but assumed that the same parameters governing the program participation of single individuals governed the program participation of married-couple households. The Version 1996.70 equations, in contrast, allow both labor supply and program participation to vary with different sets of parameters, depending on whether the household's reference person is a single male, single female, or a married couple.

2. Estimation of Labor Supply Equations

The dependent variables included in the labor supply equations were the following:

- the state unemployment rate;
- the gain in disposable income from part- or full-time work (as applicable) which was calculated in terms of the program participation choice, and the spouse's employment choice in the previous month;
- initial work tenure (in months, at the start of the SIPP panel) and initial work tenure squared;
- net work tenure (cumulative months worked since the start of the panel) and net work tenure squared;
- indicators for black, Hispanic, and other nonwhite persons;
- counts of the number of own children under the age of 18 and under the age of five;
- indicators that one (and one's spouse, if applicable) is under the age of 25, age 35 to 44, age 45 to 54, age 55 to 64, and age 65 and over;
- years of schooling completed by oneself and one's spouse (if applicable);
- a disability indicator for oneself and one's spouse; and

⁵ For Version 1996.80 of the model, we assumed that both the labor supply residuals and the program participation residuals were uncorrelated across months, though correlated with each other in a single month. The results obtained using this version of the model were generally similar to those obtained using Version 1996.70.

- year and quarter indicators.

As we did for the wage equations, we set all work tenure variables for non-key persons to zero. To approximate the tenure of non-key persons, we included in the regressions an indicator for non-key persons as well as the interaction of this indicator with age, age squared, and schooling.

Tables B.2 and B.3 display the estimated parameters of labor supply equations for men and women, respectively. In general, higher unemployment rates are associated with a greater likelihood that someone will be without work or without full-time work. Individuals with young children, or who are over age 54, or who are disabled, or who are married with an elderly and disabled spouse, are also less likely to be employed at all or full-time. As expected, increases in work tenure, or gains in disposable income from work, are generally associated with higher probabilities of being employed and of being employed full-time (that is, with lower probabilities of being without work or without full-time work). There is a degree of concavity to these relationships, however, as would be predicted by economic theory. While one's own years of schooling is always associated with significantly higher rates of employment, the schooling of one's spouse is associated with lower levels of employment for married women.

3. Estimation of Program Participation Equations

The dependent variables included in the program participation equations were the following:

- the state unemployment rate;
- the gain in disposable income from Food Stamp Program (FSP) participation and from AFDC/TANF participation, calculated in terms of the employment and other program participation choices of the previous month;
- initial food stamp (or AFDC/TANF) status as of the first month (March 1992);
- net food stamp (or AFDC/TANF) tenure (cumulative months of participation since the start of the panel) and net tenure squared;

TABLE B.2
 Probit Estimates of Female Labor Supply Equations for the Math STEWARD Model, Versions 1996.70/1996.80

Variable	Single Women						Married Women						
	Work Zero Hours			Work Less Than Full-Time			Work Zero Hours			Work Less Than Full-Time			
	Coefficient	S. E.		Coefficient	S. E.		Coefficient	S. E.		Coefficient	S. E.		
Constant term	1.78E-01			1.40E-01	6.12E-01	**	1.61E-01	5.00E-01	**	1.05E-01	7.88E-02		2.09E-01
State unemployment rate (%)	3.39E-02	**		1.23E-02	1.83E-02		1.40E-02	5.93E-02	**	3.71E-03	4.37E-02	**	9.04E-03
Gain in income from work	-7.08E-04	**		7.51E-05	-8.72E-04	**	1.12E-04	-5.05E-03	**	3.11E-04	-1.38E-03	**	1.77E-04
Gain in income^2 from work	5.03E-09	**		1.33E-09	8.20E-08	**	1.15E-08	2.76E-07	**	2.69E-08	1.64E-07	**	3.60E-08
Initial work tenure	-6.89E-03	**		1.97E-03	-7.17E-03	**	2.17E-03	-1.94E-02	**	1.86E-03	-2.03E-02	**	3.28E-03
Initial work tenure^2	3.36E-05	**		1.61E-05	1.42E-05		1.71E-05	1.05E-04	**	1.57E-05	1.03E-04	**	2.74E-05
Net work tenure	-2.84E-01	**		6.36E-03	-2.32E-01	**	8.12E-03	-2.07E-01	**	5.74E-03	-1.21E-01	**	7.48E-03
Net work tenure^2	5.14E-03	**		1.83E-04	3.97E-03	**	1.89E-04	4.93E-03	**	1.83E-04	2.78E-03	**	2.10E-04
Key person is black	7.78E-02			4.72E-02	8.23E-02		5.60E-02	-1.64E-01	**	2.23E-02	-3.16E-01	**	5.60E-02
Key person is Hispanic	-1.20E-03			6.55E-02	-1.39E-01		8.43E-02	2.79E-02		2.05E-02	-7.65E-02		5.28E-02
Key person is other race	1.50E-01			1.18E-01	2.11E-01		1.35E-01	3.75E-02		2.83E-02	-2.62E-01	**	7.71E-02
No. of own children under 18	6.32E-02	**		2.22E-02	1.05E-01	**	2.76E-02	1.68E-01	**	6.06E-03	2.09E-01	**	1.51E-02
No. of own children under 5	1.44E-01	**		4.61E-02	9.27E-02		5.29E-02	3.01E-01	**	1.06E-02	2.65E-01	**	2.60E-02
Woman is under age 25	1.73E-02			6.12E-02	3.32E-01	**	6.64E-02	7.74E-02		7.78E-02	-5.09E-02		1.18E-01
Woman is age 35 to 44	3.77E-02			5.74E-02	2.68E-02		5.61E-02	-1.91E-02		4.56E-02	3.02E-02		8.54E-02
Woman is age 45 to 54	-3.85E-01	**		6.22E-02	-4.54E-01	**	6.92E-02	-5.20E-01	**	6.36E-02	-5.48E-01	**	1.32E-01
Woman is age 55 to 64	5.35E-01	**		6.61E-02	6.22E-01	**	7.42E-02	3.81E-01	**	6.38E-02	7.27E-01	**	1.34E-01
Woman is age 65+	1.11E+00	**		6.30E-02	1.45E+00	**	8.80E-02	6.51E-01	**	6.64E-02	1.28E+00	**	2.10E-01
Woman's years of schooling	-2.34E-02	**		7.22E-03	-3.59E-02	**	8.82E-03	-2.99E-02	**	6.91E-03	-2.94E-02	**	1.39E-02
Woman is disabled	4.77E-01	**		4.53E-02	5.03E-01	**	5.72E-02	6.11E-01	**	1.52E-02	5.97E-01	**	4.19E-02
Woman is not key person	---			---	---		---	-5.26E-01	**	1.02E-01	-1.57E-01		2.09E-01
Not key person * schooling	---			---	---		---	-6.47E-02	**	7.10E-03	-5.52E-02	**	1.46E-02
Not key person * age < 25	---			---	---		---	1.11E-01		8.03E-02	2.74E-01	**	1.30E-01
Not key person * age 35 to 44	---			---	---		---	-1.14E-01	**	4.61E-02	-1.35E-01		8.85E-02
Not key person * age 45 to 54	---			---	---		---	9.32E-02		6.41E-02	1.68E-01		1.37E-01
Not key person * age 55 to 64	---			---	---		---	8.96E-02		5.97E-02	-2.62E-01	**	1.27E-01
Not key person * age 65+	---			---	---		---	8.89E-01	**	6.06E-02	4.85E-01	**	2.07E-01
Husband is under age 25	---			---	---		---	2.81E-02		4.12E-02	1.75E-01	**	7.36E-02
Husband is age 35 to 44	---			---	---		---	7.34E-02	**	1.86E-02	8.28E-02	**	4.20E-02
Husband is age 45 to 54	---			---	---		---	-1.85E-01	**	2.10E-02	-1.41E-01	**	5.13E-02
Husband is age 55 to 64	---			---	---		---	3.36E-01	**	3.02E-02	2.46E-01	**	7.13E-02
Husband is age 65+	---			---	---		---	6.80E-01	**	3.62E-02	5.55E-01	**	9.12E-02
Husband's years of schooling	---			---	---		---	1.55E-02	**	2.11E-03	3.17E-02	**	5.58E-03
Husband is disabled	---			---	---		---	4.21E-02	**	1.45E-02	6.23E-04		3.91E-02
Sample size	47,433			47,433			92,440			92,440			

SOURCE: MATH STEWARD model database, 1992–1994 data from 1992 SIPP panel. Fixed effects for individual months not shown. Standard errors adjusted for clustering.
 ** = significantly different from zero (.05 level), two-tailed test.

TABLE B.3
 Probit Estimates of Male Labor Supply Equations for the Math STEWARD Model, Versions 1996.70/1996.80

Variable	Single Men						Married Men					
	Work Zero Hours			Work Less Than Full-Time			Work Zero Hours			Work Less Than Full-Time		
	Coefficient		S. E.	Coefficient		S. E.	Coefficient		S. E.	Coefficient		S. E.
Constant term	-2.12E-01		1.65E-01	1.93E-02		1.84E-01	-2.44E-01	**	6.99E-02	2.23E-01		1.21E-01
State unemployment rate (%)	5.56E-02	**	1.54E-02	3.46E-02	**	1.53E-02	3.94E-02	**	5.33E-03	3.78E-02	**	9.20E-03
Gain in income from work	-2.35E-04	**	4.60E-05	-4.95E-04	**	9.23E-05	4.77E-04	**	5.06E-05	-2.75E-03	**	1.72E-04
Gain in income^2 from work	5.91E-09	**	1.27E-09	3.64E-08	**	7.26E-09	-2.11E-07	**	1.79E-08	3.08E-07	**	3.02E-08
Initial work tenure	-3.48E-03		2.41E-03	-5.52E-03	**	2.47E-03	-1.19E-02	**	9.58E-04	-1.07E-02	**	1.50E-03
Initial work tenure^2	8.17E-06		1.95E-05	1.39E-05		1.97E-05	7.12E-05	**	7.54E-06	5.84E-05	**	1.17E-05
Net work tenure	-2.76E-01	**	8.71E-03	-2.35E-01	**	9.97E-03	-2.44E-01	**	3.73E-03	-1.80E-01	**	5.20E-03
Net work tenure^2	4.80E-03	**	2.47E-04	3.88E-03	**	2.49E-04	4.53E-03	**	1.12E-04	3.31E-03	**	1.44E-04
Key person is black	1.51E-01	**	6.84E-02	-8.23E-03		7.80E-02	1.91E-01	**	3.24E-02	1.44E-01	**	5.47E-02
Key person is Hispanic	-6.19E-02		8.77E-02	1.00E-02		1.04E-01	8.38E-02	**	3.01E-02	9.23E-02		5.10E-02
Key person is other race	1.30E-02		1.43E-01	1.23E-01		1.54E-01	1.40E-01	**	4.22E-02	1.31E-01		7.22E-02
No. of own children under 18	-3.70E-02		5.87E-02	-9.31E-02		5.48E-02	1.52E-02		9.87E-03	7.15E-02		6.20E-02
No. of own children under 5	-5.34E-02		1.33E-01	-1.41E-01		1.45E-01	4.36E-02	**	1.82E-02	-5.21E-03		4.47E-02
Man is under age 25	-4.80E-03		6.52E-02	3.04E-01	**	6.99E-02	-5.63E-02		7.82E-02	-1.76E-01	**	5.46E-02
Man is age 35 to 44	4.73E-02		6.41E-02	2.24E-02		6.51E-02	-4.67E-02		3.62E-02	1.80E-01	**	7.80E-02
Man is age 45 to 54	-3.83E-01	**	8.29E-02	-3.26E-01	**	8.75E-02	-3.60E-01	**	3.11E-02	6.42E-01	**	1.02E-01
Man is age 55 to 64	4.88E-01	**	7.77E-02	4.47E-01	**	8.26E-02	3.71E-01	**	4.84E-02	1.52E-02		1.53E-02
Man is age 65+	1.05E+00	**	8.60E-02	1.45E+00	**	1.26E-01	7.28E-01	**	5.59E-02	-2.19E-02		2.70E-02
Man's years of schooling	-3.42E-02	**	7.84E-03	-1.42E-02		9.04E-03	-2.98E-02	**	3.21E-03	4.51E-02		9.88E-02
Man is disabled	4.57E-01	**	5.87E-02	5.09E-01	**	7.00E-02	6.40E-01	**	1.87E-02	-3.03E-02		4.77E-02
Man is not key person	---		---	---		---	-1.89E+00	**	9.55E-02	-3.47E-01	**	5.44E-02
Not key person * schooling	---		---	---		---	-3.79E-02	**	6.51E-03	3.32E-01	**	7.65E-02
Not key person * age < 25	---		---	---		---	1.38E-01		1.17E-01	1.00E+00	**	9.69E-02
Not key person * age 35 to 44	---		---	---		---	1.66E-01	**	5.82E-02	-2.96E-02	**	5.89E-03
Not key person * age 45 to 54	---		---	---		---	-9.26E-02		6.14E-02	5.91E-01	**	3.51E-02
Not key person * age 55 to 64	---		---	---		---	2.82E-01	**	6.11E-02	-1.77E+00	**	1.66E-01
Not key person * age 65+	---		---	---		---	1.67E+00	**	6.95E-02	-2.96E-02	**	1.20E-02
Wife is under age 25	---		---	---		---	6.45E-02		4.73E-02	3.13E-01	**	1.59E-01
Wife is age 35 to 44	---		---	---		---	1.10E-02		3.19E-02	4.62E-02		9.82E-02
Wife is age 45 to 54	---		---	---		---	-2.10E-01	**	2.91E-02	-1.70E-01		1.25E-01
Wife is age 55 to 64	---		---	---		---	3.20E-01	**	4.64E-02	2.43E-01	**	1.18E-01
Wife is age 65+	---		---	---		---	6.08E-01	**	5.30E-02	1.26E+00	**	1.54E-01
Wife's years of schooling	---		---	---		---	-1.27E-02	**	3.58E-03	-1.87E-03		6.32E-03
Wife is disabled	---		---	---		---	7.06E-02	**	2.10E-02	5.80E-02		3.88E-02
Sample size	24,183			24,183			92,440			92,440		

SOURCE: MATH STEWARD model database, 1992–1994 data from 1992 SIPP panel. Fixed effects for individual months not shown. Standard errors adjusted for clustering.
 ** = significantly different from zero (.05 level), two-tailed test.

- indicators for black, Hispanic, and other nonwhite persons;
- counts of the number of own children under the age of 18, the number of other children in the household, and the total size of the household;
- indicators that one (and one's spouse, if applicable) is under the age of 25, age 35 to 44, age 45 to 54, age 55 to 64, and age 65 and over;
- years of schooling completed by oneself and one's spouse (if applicable);
- a disability indicator for oneself and one's spouse; and
- year and quarter indicators.

Tables B.4 and B.5 display the estimated parameters of the food stamp participation and AFDC/TANF participation equations, respectively. In general, rates of program participation tend to be higher when unemployment rates are higher and when gains in disposable income from participation are higher, although the latter relationship was not clearly concave in the case of AFDC/TANF participation within single female or single male households. In the case of single male households, the estimated relationship between unemployment rates and food stamp participation was slightly negative but statistically insignificant, so this equation was re-estimated with the coefficient constrained to be zero for simulation purposes. Rates of program participation tend to be higher when there has been initial participation in the program and a longer cumulative tenure in the program. Households with black or Hispanic key persons, with several children in the household, or with elderly/disabled key persons and spouses are generally more likely to participate in food stamps and AFDC/TANF. The only variable consistently associated with lower rates of FSP and AFDC/TANF participation is the years of schooling completed by the key person and spouse, if applicable.

TABLE B.4
 Probit Estimates of FSP Participation Equations for the MATH STEWARD Model, Versions 1996.70/1996.80

Variable	Single Female Households			Single Male Households			Married-Couple Households		
	Coefficient		S. E.	Coefficient		S. E.	Coefficient		S. E.
Constant term	-1.41E+00	**	1.17E-01	-1.49E+00	**	1.45E-01	-2.18E+00	**	1.34E-01
State unemployment rate (%)	6.48E-03		1.04E-02	0.00E+00	(coef. set to zero)		3.89E-03		9.96E-03
Gain in income from FSP	4.89E-03	**	1.99E-04	4.34E-03	**	3.55E-04	2.80E-03	**	1.84E-04
Gain in income^2 from FSP	-4.87E-07	**	5.50E-08	-7.69E-08		9.92E-08	-4.24E-07	**	6.51E-08
Initial FSP status	3.27E-01	**	4.18E-02	3.67E-01	**	7.82E-02	1.76E-01	**	4.69E-02
Net FSP tenure	2.70E-01	**	6.37E-03	2.66E-01	**	1.24E-02	2.96E-01	**	6.88E-03
Net FSP tenure^2	-5.84E-03	**	1.96E-04	-5.49E-03	**	3.91E-04	-6.84E-03	**	2.32E-04
Key person is black	1.96E-01	**	3.51E-02	2.82E-01	**	6.92E-02	2.55E-01	**	4.76E-02
Key person is Hispanic	1.75E-01	**	4.61E-02	-9.22E-02		9.63E-02	1.07E-01	**	4.44E-02
Key person is other race	-4.81E-02		1.02E-01	3.47E-01	**	9.49E-02	6.77E-02		6.33E-02
No. of own children under 18	3.62E-02		2.91E-02	-7.96E-02		5.44E-02	-2.52E-01	**	2.94E-02
No. of other children under 18	5.41E-02		4.58E-02	-6.11E-02		5.85E-02	-1.02E-01	**	4.51E-02
Household size	-2.30E-02		2.28E-02	5.99E-03		3.25E-02	2.20E-01	**	2.31E-02
Woman is under age 25	3.40E-01	**	5.63E-02	---		---	1.32E-02		7.19E-02
Woman is age 35 to 44	-2.02E-01	**	4.88E-02	---		---	-2.43E-01	**	4.45E-02
Woman is age 45 to 54	-1.06E-01		5.56E-02	---		---	1.30E-01		7.02E-02
Woman is age 55 to 64	-4.25E-02		5.94E-02	---		---	-2.77E-01	**	9.42E-02
Woman is age 65+	1.61E-01	**	5.00E-02	---		---	-1.26E-01		1.09E-01
Woman's years of schooling	-4.10E-02	**	4.71E-03	---		---	-4.17E-02	**	5.85E-03
Woman is disabled	3.74E-01	**	3.25E-02	---		---	2.73E-01	**	3.66E-02
Husband is under age 25	---		---	1.05E-01		9.37E-02	2.80E-01	**	9.31E-02
Husband is age 35 to 44	---		---	-4.55E-02		8.06E-02	5.31E-02		4.41E-02
Husband is age 45 to 54	---		---	8.97E-03		9.52E-02	-1.50E-01	**	6.57E-02
Husband is age 55 to 64	---		---	6.59E-02		9.19E-02	1.48E-01		8.51E-02
Husband is age 65+	---		---	2.31E-01	**	7.90E-02	2.45E-01	**	1.07E-01
Husband's years of schooling	---		---	-5.94E-02	**	7.80E-03	-3.48E-02	**	5.17E-03
Husband is disabled	---		---	2.50E-01	**	5.82E-02	3.13E-01	**	3.43E-02
Sample size	43,721			22,261			86,535		

SOURCE: MATH STEWARD model database, 1992–1994 data from 1992 SIPP panel. Fixed effects for individual months not shown. Standard errors adjusted for clustering.
 ** = significantly different from zero (.05 level), two-tailed test.

TABLE B.5
 Probit Estimates of AFDC/TANF Participation Equations for the MATH STEWARD Model, Versions 1996.70/1996.80

Variable	Single Female Households			Single Male Households			Married-Couple Households		
	Coefficient		S. E.	Coefficient		S. E.	Coefficient		S. E.
Constant term	-3.84E-01	**	1.91E-01	-1.63E+00	**	4.54E-01	-2.02E+00	**	2.83E-01
State unemployment rate (%)	1.62E-02		1.59E-02	5.66E-02		3.46E-02	8.75E-02	**	1.99E-02
Gain in income from AFDC	2.05E-03	**	2.46E-04	3.69E-04		6.28E-04	3.87E-03	**	2.77E-04
Gain in income^2 from AFDC	5.19E-08		6.18E-08	5.18E-07	**	2.00E-07	-1.69E-07	**	6.42E-08
Initial AFDC status	1.23E-01	**	5.41E-02	-1.14E-01		1.86E-01	2.51E-01	**	9.70E-02
Net AFDC tenure	2.48E-01	**	8.28E-03	3.64E-01	**	2.74E-02	2.68E-01	**	1.34E-02
Net AFDC tenure^2	-4.94E-03	**	2.52E-04	-1.07E-02	**	1.03E-03	-6.18E-03	**	4.30E-04
Key person is black	2.43E-01	**	4.58E-02	-6.00E-02		2.14E-01	1.21E-01		7.73E-02
Key person is Hispanic	2.48E-01	**	5.72E-02	-7.86E-01	**	1.81E-01	-8.30E-02		8.47E-02
Key person is other race	1.20E-01		1.36E-01	5.68E-01		3.00E-01	-4.39E-01	**	1.04E-01
No. of own children under 18	8.98E-02	**	3.05E-02	1.02E-01		9.74E-02	1.16E-02		4.17E-02
No. of other children under 18	9.78E-02	**	4.20E-02	2.91E-01	**	9.92E-02	2.11E-01	**	5.79E-02
Household size	1.61E-02		2.57E-02	9.98E-02		7.08E-02	1.15E-01	**	3.75E-02
Woman is under age 25	3.61E-01	**	6.32E-02	---		---	-8.15E-02		1.13E-01
Woman is age 35 to 44	-1.60E-01	**	4.86E-02	---		---	-1.75E-01	**	8.29E-02
Woman is age 45 to 54	1.36E-01		1.12E-01	---		---	1.79E-01		1.67E-01
Woman is age 55 to 64	-2.04E-01		1.10E-01	---		---	-2.70E-01		1.91E-01
Woman is age 65+	3.01E-01	**	1.42E-01	---		---	-2.12E-01		4.31E-01
Woman's years of schooling	-5.01E-02	**	8.75E-03	---		---	-1.09E-02		1.30E-02
Woman is disabled	1.39E-01	**	5.11E-02	---		---	2.12E-01	**	6.47E-02
Husband is under age 25	---		---	2.80E-01		1.62E-01	3.55E-01	**	1.23E-01
Husband is age 35 to 44	---		---	-2.65E-01		1.58E-01	-8.67E-02		8.24E-02
Husband is age 45 to 54	---		---	7.28E-02		2.61E-01	-1.50E-01		1.21E-01
Husband is age 55 to 64	---		---	-3.02E-01		2.49E-01	2.96E-01		1.55E-01
Husband is age 65+	---		---	-3.20E-01		3.60E-01	-2.71E-01		3.28E-01
Husband's years of schooling	---		---	-2.84E-02		2.43E-02	-4.20E-02	**	1.06E-02
Husband is disabled	---		---	3.57E-01	**	1.45E-01	2.55E-01	**	6.19E-02
Sample size	9,958			1,859			39,276		

SOURCE: MATH STEWARD model database, 1992–1994 data from 1992 SIPP panel. Fixed effects for individual months not shown. Standard errors adjusted for clustering.
 ** = significantly different from zero (.05 level), two-tailed test.

4. Estimation of Correlation of Work/Welfare Choices

The use of bivariate probit procedures enabled us both to estimate the correlation of the unobserved factors that influenced work and program participation decisions and to use correlated error terms in the simulation. Table B.6 presents the estimated correlations, each of which was significantly different from zero. With correlations in excess of 0.74, the highest degrees of correlation occurred were between the residual for FSP participation and the residual for AFDC participation for households eligible for both programs. The residual for non-work (assumed to be the same as the residual for non–full-time work) was strongly correlated with the residuals for FSP and AFDC participation, especially for single females. It is possible that these correlations would be lower if the same model were estimated from SIPP data from the late 1990s, during which time welfare reform emphasized the establishment of work requirements for TANF recipients.

TABLE B.6
 Estimated Correlation of Unobserved Factors Determining Work and Program Participation Outcomes
 For the MATH STEWARD Model, Versions 1996.70/1996.80

	<i>Correlation</i>	<i>S. E.</i>	<i>No. of Obs.</i>	<i>Restrictions on Sample</i>
<i>Single-Female Households</i>				
FSP participation and female non-work	0.4498	0.0222	43,721	FS-eligible households at some work choice
AFDC participation and female non-work	0.7041	0.0258	9,958	AFDC-eligible households at some work choice
FSP participation and AFDC participation	0.7490	0.0220	9,919	FS- and AFDC-eligible households at some work choice
<i>Single-Male Households</i>				
FSP participation and male non-work	0.3538	0.0400	22,261	FS-eligible households at some work choice
AFDC participation and male non-work	0.3618	0.0793	1,859	AFDC-eligible households at some work choice
FSP participation and AFDC participation	0.8337	0.0371	1,852	FS- and AFDC-eligible households at some work choice
<i>Married-Couple Households</i>				
Female non-work and male non-work	0.1009	0.0126	92,440	None
FSP participation and female non-work	0.1904	0.0189	86,535	FS-eligible households at some work choice
FSP participation and male non-work	0.4007	0.0210	86,535	FS-eligible households at some work choice
AFDC participation and female non-work	0.1751	0.0352	39,276	AFDC-eligible households at some work choice
FSP participation and male non-work	0.3164	0.0354	39,276	AFDC-eligible households at some work choice
FSP participation and AFDC participation	0.7908	0.0235	39,140	FS- and AFDC-eligible households at some work choice

SOURCE: MATH STEWARD model database, 1992–1994 data from 1992 SIPP panel. Standard errors adjusted for clustering.
 All correlations are significantly different from zero (.05 level), two-tailed test.

APPENDIX C:

EVIDENCE OF FOOD STAMP PARTICIPATION CHANGES IN 1992-1999 DATA FROM THE SIPP

In this appendix, we use 1992-1999 data from the Survey of Income and Program Participation (SIPP) to estimate how much declines in food stamp participation during the 1990s were caused by welfare reform, as opposed to changes in the economy or other factors. These analyses supplement the simulations performed for this report using the MATH STEWARD model, which did not use post-PRWORA data from the SIPP but relied primarily on the 1992 SIPP panel, covering the years 1992 through 1994.

Using data on all households in the month before the survey month for the 1992, 1993, and 1996 SIPP panels, we estimated the proportion of households that reported receiving food stamp benefits.¹ Because food stamp participation is likely to differ according to a household's demographic structure, we estimated participation rates separately for the following groups:

1. Households with a single male reference person and no children under the age of 18
2. Households with a single male reference person and children under the age of 18
3. Households with a single female reference person and no children under the age of 18
4. Households with a single female reference person and children under the age of 18
5. Households with a married reference person and no children under the age of 18
6. Households with a married reference person and children under the age of 18

¹ Because the 1992 and 1993 panels overlap in the years 1993 and 1994, we divided the reference person's sample weight by 2 for each of these panels, thereby giving greater weight to observations from the 1996 panel.

Table C.1 indicates, by calendar year from 1992 through 1998, the reported participation rates for all households plus the six types of households described above, as well as the unweighted and weighted sample sizes for each group of households.² Note that the sample is larger in 1993 and 1994 than in 1992 and 1995 because of the two-year overlap of the 1992 and 1993 SIPP panels, and larger in 1996 than in 1992 because of the expanded size of the 1996 SIPP panel. The overall FSP participation rate in the SIPP rose from 8.2 percent in 1992 to 8.7 percent in 1993, and then fell to 6.2 percent in 1998. The 24 percent decline in the overall FSP participation rate between 1992 and 1998 is quite similar to the 26 percent decline between December 1992 and December 1998 in the number of food stamp units reported in the FSP QC database (see Appendix A).³

The decline in FSP participation rates in the SIPP from 1992 through 1998 was substantially greater for households with children than for households without children. Over this period, for households with single male reference persons, food stamp participation rates declined by 43 percent when children were present in the household, versus only 9 percent when children were absent. For households with single female reference persons, the corresponding decline was 29 percent when children were present, versus only 9 percent when children were absent. For households with married reference persons, the corresponding decline was 39 percent when children were present, versus only 4 percent when children were absent.

² Food stamp participation rates for 1999 are not indicated in the table because households were not observed throughout the entire calendar year.

³ We chose these two years because they correspond with the years simulated for this study using the MATH STEWARD microsimulation model.

TABLE C.1
Reported Rates of Food Stamp Participation, 1992 through 1998

	Total Population	Single Males		Single Females		Married Couples	
		w/o kids	w. kids	w/o kids	w. kids	w/o kids	w. kids
Reported Food Stamp Participation Rates							
During calendar year 1992	0.0819	0.0469	0.1854	0.0760	0.4003	0.0142	0.0643
During calendar year 1993	0.0874	0.0472	0.1794	0.0756	0.4292	0.0156	0.0734
During calendar year 1994	0.0846	0.0474	0.1661	0.0781	0.4272	0.0144	0.0677
During calendar year 1995	0.0839	0.0464	0.1646	0.0825	0.3914	0.0159	0.0691
During calendar year 1996	0.0778	0.0505	0.1476	0.0781	0.3553	0.0157	0.0579
During calendar year 1997	0.0701	0.0470	0.1294	0.0746	0.3124	0.0147	0.0487
During calendar year 1998	0.0620	0.0429	0.1054	0.0690	0.2834	0.0137	0.0395
Percentage Change in Participation Rate							
Between 1992 and 1993	6.7	0.6	-3.2	-0.5	7.2	9.9	14.2
Between 1992 and 1994	3.2	1.0	-10.4	2.8	6.7	1.2	5.3
Between 1992 and 1995	2.4	-1.0	-11.2	8.6	-2.2	11.4	7.5
Between 1992 and 1996	-5.0	7.7	-20.4	2.9	-11.3	10.2	-9.9
Between 1992 and 1997	-14.4	0.1	-30.2	-1.8	-22.0	3.2	-24.3
Between 1992 and 1998	-24.3	-8.5	-43.2	-9.2	-29.2	-3.6	-38.5
Sample sizes (household-months)							
1992 unweighted	50,757	6,415	890	10,337	4,296	14,596	14,223
1993 unweighted	97,748	12,260	1,738	19,756	8,139	28,238	27,617
1994 unweighted	90,146	10,738	1,467	18,578	7,188	26,125	26,050
1995 unweighted	51,720	6,438	795	10,923	4,168	14,778	14,618
1996 unweighted	102,334	14,633	2,305	21,629	10,274	26,709	26,784
1997 unweighted	92,844	13,196	2,111	19,874	9,081	24,248	24,334
1998 unweighted	86,601	12,298	1,922	18,864	8,176	22,883	22,458
1992 weighted (thousands)	137,393	17,888	2,505	28,118	12,021	38,667	38,194
1993 weighted (thousands)	270,655	34,506	5,047	55,057	23,756	76,358	75,930
1994 weighted (thousands)	262,977	32,019	4,439	53,776	22,387	74,188	76,167
1995 weighted (thousands)	157,859	19,856	2,629	31,555	13,891	44,338	45,590
1996 weighted (thousands)	296,934	43,587	6,661	60,257	26,424	81,501	78,504
1997 weighted (thousands)	300,537	44,804	7,021	61,645	26,900	80,579	79,588
1998 weighted (thousands)	304,135	46,577	7,046	62,931	26,444	80,800	80,337

DATA SOURCES: 1992, 1993, and 1996 panels of the Survey of Income and Program Participation

Our goal in this analysis was to examine the extent to which FSP/welfare policy changes and changes in economic conditions were responsible for changes in food stamp participation rates during the 1990s. To obtain this estimate, we needed to predict the probability of food stamp participation under counterfactual conditions, that is, assuming welfare reform had not been implemented or assuming that unemployment rates had not fallen during the 1990s. To predict these probabilities, we estimated probit models of food stamp participation for each of the six household types listed above. To include observations from the entire period from 1992 to 1999, we pooled data from the three SIPP panels when estimating each model. To avoid recall bias, we only used data from months before the month in which a household was surveyed during each wave. We calculated robust standard errors to account for the clustering of observations by household within each panel (that is, for the fact that the same household sampling unit may appear up to three times per year in each panel).

Table C.2 lists the explanatory variables included in models of food stamp participation. Broadly speaking, these included household demographic characteristics, state unemployment rates, measures of the characteristics of FSP units in the state, indicators for the sort of welfare reform implemented in the state, and fixed effects for state and for calendar year.

To predict the probability of food stamp participation under various economic and policy scenarios, we calculated separate probabilities for households observed during calendar year 1992, and households observed during 1998. (We selected these years because they correspond to the years simulated by the MATH STEWARD model, as described in the body of this report.) To calculate participation probabilities under counterfactual economic conditions, we calculated FSP participation probabilities for the 1992 sample using the corresponding 1998 state unemployment rates, and for the 1998 sample using the corresponding 1992 state unemployment

TABLE C.2
Variables Included in Models to Predict Probabilities of Food Stamp Participation

<i>Category</i>	<i>Variables</i>
Demographic characteristics	Age of reference person (and spouse, if present) - <25, 25-39, 40-54, 65+ Race of reference person (white, black, or other) Hispanic status of reference person High school completion of reference person (and spouse, if present) College completion of reference person (and spouse, if present) Household size # of children of reference person in the household and under age 18 # of children of reference person in the household and under age 5 # of other children in the household and under age 18
Economic conditions	State unemployment rate in prior month State unemployment rate squared State unemployment rate cubed
State FSP characteristics	Percentage of FSP units with AFDC/TANF income in the prior month Average AFDC/TANF + FSP benefit for units with both in prior month Average FSP benefits for non-AFDC/TANF units in the prior month Percentage of (AFDC/TANF, non-AFDC/TANF) FSP units with earnings Percentage of (AFDC/TANF, non-AFDC/TANF) FSP units with training participants Percentage of (AFDC/TANF, non-AFDC/TANF) FSP units with persons who fail to comply with work requirements and are not exempt Percentage of (AFDC/TANF, non-AFDC/TANF) FSP units on food stamps continuously for over 2 years
Welfare reform variables	Indicator for states with a pre-PRWORA welfare reform waiver affecting work requirements, earned income disregards, or time limits Indicator for states that have implemented a TANF program Indicator for different combinations of aggressive work requirements, generous earned income disregards, and short time limits
Other indicators	State fixed effects Calendar year fixed effects

rates. To calculate participation probabilities under counterfactual policy conditions, we used the FSP/welfare characteristics of each state as of 1992 to predict FSP participation for the 1998 sample, and the FSP/welfare characteristics of each state as of 1998 to predict FSP participation for the 1992 sample. Holding constant economic conditions and FSP/welfare characteristics, we interpreted changes between the predicted probabilities for the two samples as reflecting changes both in population characteristics and in residual factors captured by the calendar year indicators.

Table C.3 presents predicted probabilities of FSP participation for the 1992 and 1998 samples under various economic and policy scenarios. There are different ways to attribute the change in FSP participation to welfare reform, economic conditions, and other factors, as is indicated in footnote 1 at the bottom of Table C.3. Regardless of which way the contribution of welfare reform or the economy was measured, the proportion of the total change attributable to each factor was similar for the same group of households.

The predicted contribution of welfare reform to the decline in food stamp participation rates was about one-fifth (21 percent) overall, and was largest for households with single female reference persons and no children (54 percent). For households with single male reference persons and no children, the predicted contribution of welfare reform to the decline in food stamp participation was actually *negative*.⁴ The contribution of the economy (as measured by state unemployment rates) to the decline in FSP participation rates was somewhat larger: equal to about one-fifth (21 percent) of the overall decline, and a larger fraction of the decline for households without children than for households with children. About three-fifths (58 percent)

⁴A negative contribution indicates that the changes in food stamp/welfare characteristics over the period were actually predicted to *increase* food stamp participation rates. Such an increase could arise because the expansion of food stamp employment/training programs makes food stamp participation more attractive to some households.

TABLE C.3
Estimated Probabilities of Food Stamp Participation, 1992 and 1998

	Total Population	Single Males w/o kids	w. kids	Single Females w/o kids	w. kids	Married Couples w/o kids	w. kids	
Probabilities for 1992 population								
1	1992 economy, 1992 program characteristics	0.0819	0.0469	0.1854	0.0763	0.3985	0.0148	0.0637
2	1998 economy, 1992 program characteristics	0.0773	0.0422	0.1601	0.0747	0.3830	0.0139	0.0582
3	1992 economy, 1998 program characteristics	0.0774	0.0536	0.1816	0.0726	0.3745	0.0146	0.0555
4	1998 economy, 1998 program characteristics	0.0730	0.0483	0.1567	0.0711	0.3594	0.0137	0.0504
Probabilities for 1998 population								
5	1992 economy, 1992 program characteristics	0.0704	0.0413	0.1296	0.0747	0.3242	0.0150	0.0509
6	1998 economy, 1992 program characteristics	0.0662	0.0370	0.1108	0.0730	0.3093	0.0140	0.0463
7	1992 economy, 1998 program characteristics	0.0662	0.0473	0.1249	0.0708	0.2981	0.0148	0.0436
8	1998 economy, 1998 program characteristics	0.0620	0.0425	0.1067	0.0691	0.2838	0.0137	0.0395
Changes from welfare reform, economy, and other factors¹								
9	combined: % change between (1) and (8)	-24.2	-9.3	-42.5	-9.4	-28.8	-7.3	-38.0
10	reform: % change between (6) and (8)	-6.2	14.7	-3.7	-5.3	-8.2	-1.7	-14.7
11	economy: % change between (5) and (6)	-6.0	-10.4	-14.5	-2.3	-4.6	-7.0	-9.0
12	other factors: % change between (1) and (5)	-14.0	-11.8	-30.1	-2.1	-18.6	1.5	-20.2
Estimated contribution of welfare reform to total change								
13	(8) - (6) relative to (8) - (1), in %	20.9	-124.7	5.2	53.7	22.2	21.8	28.1
14	(7) - (5) relative to (8) - (1), in %	21.5	-136.9	5.9	54.5	22.8	19.8	30.1
15	(4) - (2) relative to (8) - (1), in %	21.7	-139.3	4.4	50.2	20.6	22.6	31.9
16	(3) - (1) relative to (8) - (1), in %	22.2	-153.4	4.9	50.8	21.0	20.3	34.0
Estimated contribution of economy to total change								
17	(6) - (5) relative to (8) - (1), in %	21.4	97.9	23.8	23.8	13.0	98.2	18.9
18	(8) - (7) relative to (8) - (1), in %	20.8	110.0	23.2	23.0	12.4	100.2	16.9
19	(2) - (1) relative to (8) - (1), in %	23.0	106.8	32.1	22.6	13.6	82.9	23.0
20	(4) - (3) relative to (8) - (1), in %	22.5	120.9	31.6	22.1	13.2	85.1	20.9
Estimated contribution of other factors to total change								
21	(5) - (1) relative to (8) - (1), in %	57.8	126.8	70.9	22.4	64.8	-20.1	53.0
22	(6) - (2) relative to (8) - (1), in %	56.1	118.0	62.7	23.6	64.2	-4.8	48.9
23	(7) - (3) relative to (8) - (1), in %	57.0	143.4	71.9	26.2	66.6	-20.6	49.0
24	(8) - (4) relative to (8) - (1), in %	55.3	132.5	63.5	27.1	65.9	-5.5	45.0

DATA SOURCES: 1992, 1993, and 1996 panels of the Survey of Income and Program Participation, supplemented by Bureau of Labor Statistics data on state unemployment rates between 1991 and 1999, and FSP QC data on state food stamp caseload characteristics between FY 1992 and FY 1999

¹The difference (8) - (1) may be apportioned in different ways: as [(8)-(6)] + [(6)-(5)] + [(5)-(1)]; or [(8)-(6)] + [(2)-(1)] + [(6)-(2)]; or [(7)-(5)] + [(8)-(7)] + [(5)-(1)]; or [(4)-(2)] + [(2)-(1)] + [(8)-(4)]; or [(3)-(1)] + [(4)-(3)] + [(8)-(4)]. The first option is preferred here, although the estimated contribution using the other apportionments is also displayed in italics.

of the decline in food stamp participation was associated, not with changes in welfare/food stamp characteristics or the economy, but with changes in population characteristics and residual time trends.

These analyses of SIPP data from the 1990s suggest that policy changes, as measured by changes in FSP characteristics and welfare reform indicators, are responsible for about one-fifth of the decline in FSP participation rates between 1992 and 1998. Changes in state unemployment rates are responsible for another one-fifth of the overall decline. About three-fifths of the overall decline in food stamp participation rates between 1992 and 1998 can be described neither by changes in food stamp characteristics, nor by the implementation of welfare reform policies, nor by changes in state unemployment rates. It is likely that the residual time trends are capturing some unmeasured aspects of local economic conditions, as well as effects from the implementation of additional public policies (such as Medicaid changes) in different parts of the country. Future research will need not only to make use of post-PRWORA data to analyze the effects of welfare reform; it will also need to develop richer measures of the economic and policy environments in which program participation decisions occur. Such research has the potential to help policymakers anticipate how future program participation levels will be influenced by changes in policy and in the economy.