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

	Food Stamp	*MATH STEWARD Model Estimates, Version*				
	QC Data	*1996.41*	*1996.41*	*1996.70*	*1996.80*	*1996.80*
Correlation of Work/Welfare Choices?	*N/A*	*No*	*No*	*Yes*	*Yes*	*Yes*
Correlation of Work Over Time?	*N/A*	*No*	*No*	*Yes*	*No*	*No*
Reflects 1998 ABAWD Restrictions?	*Yes*	*No*	*Yes*	*Yes*	*No*	*Yes*
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.