Jodie T. Allen and Raymond J. Uhalde, Mathematica Policy Research

The rapid growth in expenditures on transfer programs witnessed during the last 20 years has raised serious questions concerning the inevitability that income assistance spending will consume an increasing proportion of this nation's productive output. The Washington office of Mathematica Policy Research contracted to provide assistance to the Congressional Budget Office (CBO) in developing estimates of the costs and caseloads of the major income assistance programs in the year 2000. As stipulated by CBO, the procedure employed takes explicit account of the design of existing transfer programs; and the interactions among them; makes no ancillary assumptions, other than those noted below, with regard to changes in program design or the introduction of new programs; and is consistent with mid-range census projections of population size, demographic composition and household structure.

The findings of the study are summarized in a report prepared by the Congressional Budget Office for the Senate Committee on the Budget.<sup>1</sup> That report also provides a comparison of these findings with those produced by a trend-line extrapolation methodology.

This report presents a summary of the major findings and a brief description of the methodology employed in (1) demographically ageing the 1973 Current Population Survey to conform to the mid-range Census projections of population size and distribution and trends in household formation rates; (2) projecting non-transfer income according to stipulated assumptions with regard to real income growth and price inflation; (3) imputing certain transfer income sources; and (4) simulating program costs and caseloads for income-tested transfer programs including Supplemental Security Income, Aid to Families with Dependent Children, Food Stamps, and Medicaid.<sup>2</sup>

# CREATING A YEAR 2000 DATA BASE

A necessary step in the production of long-range estimates of the costs and caseloads of transfer programs is the development of a data base that is representative of the demographic and economic characteristics of the population in the future year of interest. A comparative static ageing procedure is used to project the March 1973 Current Population Survey to the year 2000. The ageing procedure is described as comparative static because population data are provided at two points in time without following the movement from one point to another. Data for the first point in time (the base year) are obtained from the data source being used. Data for the year in which we are interested (the simulation year) are derived by statically ageing the base year data. Thus, particular families or persons are not followed through time from the base year to the simulation year, as they would be in dynamic simulation. Rather, a family observed in the base year is aged to represent a family of similar characteristics in the simulation year. What does change is the number of families or persons with a particular set of characteristics and the income they receive. The goal is to produce an aged sample which is as similar as possible to the sample that would be drawn by a survey taken in the simulation year.

Operationally, the ageing is accomplished in two computational steps using a set of multipliers for each step. The first step, demographic ageing, consists of adjusting the sample weights attached to each family and person so that a given sample observation represents a new number of persons or families consistent with the projected population in that class. This is done by applying a set of demographic multipliers to the sample weights. The control totals, from which the demographic multipliers are derived, are in turn developed from Census Bureau population and household projections. The demographic multipliers are designed to account for projected changes in the age, sex, and household type composition of the population. To the extent these variables are correlated with other demographic and behavioral characteristics of the population, the reweighting procedure will alter the related population characteristics in a manner which, in some areas, may not accord with independent predictions. Of particular importance to policy analysis of tax and transfer programs is the labor supply behavior and earnings capabilities of the population. Given the historical and projected downward trend in birthrates, sole reliance on a reweighting procedure to achieve the average family size implied by the census projections would mean a relatively large inflation of the weights of small, base-year sample families. These families exhibit, among other characteristics, relatively high female labor force participation and earnings levels. Whether the increase in female labor force participation, generated indirectly by reweighting according to the number of children, would reconcile with independent projections is unclear. Consequently, the population of children was created through stochastic selection. The number of CPS children in each age-race-sex group were adjusted to consistency with census projections by randomly selecting children to be eliminated from the sample households, subject to the constraint that the proportion of childless families be held constant between the base year and the simulation year. This constraint appears to coincide with the historical aversion to childlessness, even as birthrates have declined.

In the economic ageing, income multipliers consistent with CBO's productivity and price increase assumptions were used to inflate nontransfer income. Certain transfer income sources (Social Security, civil service and military pensions, veterans benefits, and Medicare) were imputed to households on the basis of agency estimates as to program costs and caseloads and the distribution of reporters evidenced in the base year file. The imputation technique is briefly described as follows. The probability of a family with given characteristics being selected for imputation is determined by a prior comparison of tabulations of reporters and non-reporters in the relevant dimensions to determine a sampling ratio for each class of beneficiaries. "Imputees" are then randomly selected from among the non-reporters and, employing the Bureau of the Census "hot deck" imputation procedure, they are assigned the amount for the imputed benefit recorded in the last encountered reporter record with the same controlling characteristics (typically age, income from other sources and for family composition). Aggregated household benefits are then summed, compared with the exogenous controls, and benefits are then inflated across the board to meet the control.

# THE SIMULATION RESULTS

Program costs and caseloads were simulated on the basis of three different methods for indexing benefit levels and eligibility schedules: Current law, indexing of all programs for price inflation, and indexing of all programs for changes in productivity as well as in the price level. In addition, current law indexing features for social security and military and civil service retirement were varied among the three cases. Table I provides a summary of adjustments made to benefit levels for each program for each of the three cases simulated. Simulation of federal income and payroll taxes and the costs and caseloads for income-tested programs (including Supplemental Security Income, Aid to Families with Dependent Children and Food Stamps) were conducted using the Micro-Analysis of Transfers to Households (MATH) model, a modified version of the Transfer Income Model (TRIM). MATH was also employed to simulate the eligible population for Medicaid, to which the average insurance value of Medicaid benefits was imputed.

The major findings of the study are easily summarized. As shown in Table II, federal transfer program costs, measured in current dollars, are projected to increase substantially by the year 2000. Total costs, compared to their 1975 level increased by 142% under case 1 and 167% under case 3. By comparison over this period, population is projected to increase by 21% and aggregate real non-transfer income by 156%. The projected increase is, however, far lower than that which would be produced by a continuation of the trend experienced between 1955 and 1975. The significant dampening of this trend is unsurprising since the previous period witnessed several phenomena which are not anticipated in the year 2000 projections - several major new programs were introduced (including Medicare, Medicaid, Food Stamps and Supplemental Security Income); benefits in other programs including Social Security and Aid to Families with Dependent Children, were significantly liberalized; and participation rates among eligible populations, previously at relatively low levels in income-tested programs, rose sharply. In addition, the dependent population including children and the retired aged is not projected to grow as rapidly in the next quarter century as in the last 20 years.

Since the absolute cost of transfer programs is not directly meaningful in abstraction from the productive capacity available to support it, aggregate program costs are also presented as a percent of Gross National Product (GNP) in the base year 1975 and the projected year 2000 on the assumption of a 5 percent unemployment rate in both years. Fiscal year 1975 GNP with 5 percent unemployment was estimated by CBO by assuming that a one percentage point change in the unemployment rate would lead to a 3 percent change in GNP. The year 2000 GNP was computed by assuming that GNP in the year 2000 will bear the same relationship to pre-tax/pre-transfer income which obtained in the data base year. The average annual GNP growth rate in constant dollars implied by this procedure is about 3.5%. On this assumption, it is shown in Table II that transfer program expenditures under cases 1 and 2 remain virtually constant as a percent of GNP over the projected period at a level of about 9.4% while under the more generous assumptions of case 3 they rise only modestly to a level of 10.4%.

Table III provides further detail of base year costs and year 2000 projected costs and caseloads for each of the cases simulated. As shown in the table, while aggregate costs do not change dramatically across the three cases, substantial shifts occur in the distribution of benefits and caseloads among programs. For example, between cases 1 and 2, a \$19 billion reduction in retirement program costs caused by eliminating the over-compensatory indexing features of social security and government retirement programs is offset by rises in unemployment insurance and by the additional assumptions of automatic cost-of-living increases in all transfer programs.

Several important shifts in the distribution of benefits are noted in the Congressional Budget Office report from which the following three paragraphs are excerpted.<sup>3</sup>

# Changes in the Relative Size of Contributory and Noncontributory Programs

In fiscal year 1975, contributory programs - social security and railroad retirement, civil service and military retirement, unemployment insurance and medicare - represented 73 percent of the total cost of Federal income assistance programs. When contributory program costs are estimated using the detailed demographic and economic projections, they represent between 78 and 89 percent of total income assistance expenditures in the year 2000. Generally, the share of the total devoted to programs aimed primarily for the low-income population diminishes.

# Program Interactions

In the case of some Federal income assistance programs, the income received from other programs is considered when determining benefits. Such interaction occurs in eligibility and benefit determination for such programs as SSI, AFDC, and food stamps. These program interactions explain part of the cost difference among the various cases presented. In other words, the differences in program costs under the three assumptions cannot be accounted for by price and income adjustments alone.

The food stamp program provides an example of how such interactions work. Between case

1 and 2, food stamp caseloads increased slightly, but total costs actually declined by 21 percent. Since the assumptions regarding the food stamp program were identical for these two cases. another factor - specifically the treatment of other forms of assistance - caused this decline. In case 1, AFDC eligibility and benefit schedules were not adjusted for cost-of-living increases. In case 2, where they were adjusted, AFDC caseloads and benefit levels rose substantially. The net effect of this change in the AFDC program was to reduce food stamp benefits while increasing participation only slightly. That is, because AFDC income is considered in determining food stamp eligibility and benefit levels, an increase in AFDC benefits will decrease food stamp benefits for AFDC recipients. On the other hand, from case 1 to case 2, the removal of social security "coupling" and the retirement "add-on" tended to reduce income for beneficiaries of those programs so that their food stamp benefits rose. On balance, however, the AFDC changes outweighed the effects of the retirement programs, and produced an overall decline in food stamp costs.

### Other Outcomes

The detailed nature of the method using demographic and economic projections allowed the effects of many basic assumptions to be isolated. Some of the more important are:

- If participation in all programs increases from the assumed levels to 100 percent, then total income assistance costs in the year 2000 would rise by roughly 1 to 2.5 percent.
- Social security and railroad retirement costs in the year 2000 declined by 7 percent when the "coupling" provision was eliminated.
- Civil service and military retirement costs declined by ll percent when the l percent "add-on" was removed.
- Supplemental Security Income increased dramatically when eligibility and benefit levels were adjusted for increases in percapita income (case 3), because a high proportion of the aged have relatively low incomes.
- AFDC costs would more than triple if a cost-of-living adjustment, not present under current law, were added. However, much of this increase is likely to occur in any case if states continue to raise benefit levels to compensate, at least partially, for inflation induced benefit erosion.
- Because the projected rates of inflation for hospital costs are higher than those assumed for either the general price level or wage increases, Medicare costs were projected to rise rapidly from 1975 to the year 2000.

- Medicaid costs were projected to increase rapidly for the same reason as Medicare costs but, in addition, program interaction raised caseloads, increasing costs in all three cases.
- Increases in real income and in benefit levels from other assistance programs tend to dampen the increase in food stamp costs.

#### CONCLUSION

Given the very limited time available for the study, it is not difficult to suggest possible improvements and extensions. While the precision obtained in such projections is obviously limited by our ability to foresee the future, it would be desirable to test the sensitivity of the results to certain basic assumptions, most notably, the assumed real income growth rate of 2.6 percent which affects both estimates of eligibility and of GNP. The assumed rate of inflation, 5 percent, is of less concern except in case 1, since it produces offsetting increases in nontransfer income and benefits for each assistance program. However, the Medicaid and Medicare projections are obviously highly sensitive to the assumptions made with regard to all components of the medical price index. It may also be interesting to test the sensitivity of the findings to the implicit assumption of constant age/sex/race labor force participation rates. Assumptions with regard to the age distribution of social security and military and civil service retirement benefits and their concomitant receipt by individuals and households also warrant further inspection and a more adequate treatment of private and state and local government pensions would be desirable. However, given the magnitude of the benefits accounted for, the offsetting nature of the interactions among government transfer programs, and the conservative assumptions employed in accounting for these factors whenever the direction of bias was determinable, it does not seem likely that the overall impact of these latter improvements on the summary results would be significant.

#### FOOTNOTES

- U.S. Congress, Senate, Committee on the Budget, Growth of Government Spending for Income <u>Assistance: A Matter of Choice</u>, Prepared by the Congressional Budget Office, 94th Congress, 1st session, 1975.
- For a detailed technical description of the procedures employed in this study see Jodie T. Allen and Raymond J. Uhalde, Long-Range Estimates of the Costs and Caseloads of the Major Income Assistance Programs, Project Report Series, no. 76-04 (Washington, D. C.: Mathematica Policy Research, October 1975).
- Senate Committee on the Budget, <u>Growth of</u> <u>Government Spending for Income Assistance</u>, pp. 10-12.

# TABLE I

## ASSUMPTIONS ABOUT COST OF LIVING AND REAL INCOME ADJUSTMENTS FOR EACH PROJECTION CASE, BY GOVERNMENT PROGRAM

Program	Current Law (1)	Adjusted for cost of living (2)	Adjusted for income (3) Benefits indexed for cost of living. Benefits formula "decoupled."		
Social Security and Railroad Retirement	Benefits doubly indexed for cost of living. Situation known as "coupling."	Benefits indexed for cost of living. Benefits formula "decoupled."			
Civil Service and Military Retirement.	Benefits indexed for cost of living plus l percent. Situa- tion known as l percent "add-on."	Benefits indexed for cost of living. One percent "add-on eliminated.	Benefits indexed for cost of living. One percent "add-on" eliminated.		
Unemployment Insurance.	In some States, indexed for cost of living and real wages (be- cause maximum benefit is a function of average State wage). In other States, benefits not indexed.	In some States, indexed for cost of living plus real in- income (because maximum bene- fit is a function of average State wage). In other States, benefits indexed for cost of living.	Benefits indexed for cost of living and real incomes in all States.		
Veterans Benefits.	Benefits not indexed in law.	Benefits indexed for cost of living.	Benefits indexed for cost of living and real income.		
Medicare.	Benefits indexed for projected increases in factor costs and services provided.	Same as case 1.	Same as case l.		
Medicaid.	Same as medicare.	Same as medicare.	Same as medicare.		
Supplemental Security Income. Participation Rate: 90 percent.	Federal benefits indexed for cost of living. State benefits assumed to disappear by year 2000.	Benefits indexed for cost of living.	Benefits indexed for cost of living and real wages.		
Aid to Families with Dependent Children Participation Rate: 90 percent.	Benefits not indexed in law.	Benefits indexed for cost of living.	Benefits indexed for cost of living and real income.		
AFDC-Unemployed Fathers. Participation Rate: 50 percent.	Same as AFDC	Same as AFDC.	Same as AFDC		
Food Stamps. Participation Rate:* Non-Public Assistance Public Assistance	Benefits indexed for cost of living. 48 percent 93 percent	Benefits indexed for cost of living. 48 percent 84 percent	Benefits indeped for cost of living and real income. 46 percent 70 percent		

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\*NOTE: Demographic changes in conjunction with participation rates which differ by benefit level and family size result in different participation rates for each of the program cases.

SOURCE: Senate Committee on the Budget, Growth of Government Spending for Income Assistance.

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# TABLE II

# EXPENDITURES ON FEDERAL INCOME ASSISTANCE PROGRAMS FOR FISCAL YEARS 1955 AND 1975, AND ALTERNATIVE PROJECTIONS $^{\rm 1}$

(Constant 1975 dollars - in billions)

			Year 2000				
	Fiscal year				Ad- iusted	Ad-	
	1955 (actual)	1975 (esti- mate)	Recent <sub>2</sub> trend	Current law	for cost of living	justed for income	
				(1)	(2)	(3)	
Total cost	25.7	142.9	1,220.1	345.1	341.8	381.6	
Contributory pro- grams	15.1	103.8	886.3	307.8	293.5	297.4	
programs	10.6	39.1	333.8	37.3	48.3	84.2	
Total cost as percent of GNP	3.4	9.3	33.4	9.4	9.4	10.4	

<sup>1</sup>Expenditure figures include State and local government portion of Medicaid and AFDC. GNP and unemployment insurance have been adjusted to the levels that would exist under a 5-percent unemployment rate.

 $^2{\rm The}$  1955 to 1975 growth rate was applied to total costs. The contributory and noncontributory shares of total costs were assumed to be the same as in 1975.

 $^{3}$  GNP figures at 5 percent unemployment for fiscal years 1955, 1975, and 2000 are \$755 billion, \$1,529 billion, and \$3,653 billion, respectively. GNP for fiscal 1975 with 7.4 percent unemployment is estimated at \$1,426 billion.

SOURCE: Same as Table I. Base numbers derived from subsequent chapters of this report.

#### TABLE III

#### CASELOADS AND COSTS OF FEDERAL INCOME ASSISTANCE PROGRAMS

	Year 2000										
	Fiscal year 1975		Case 1 - Current law		Case 2 - Adjusted for cost of living		Case 3 - Adjusted for income				
	Costs <sup>2</sup>	Costs as percent of GNP <sup>3</sup>	Family case- load (thou- sands)	Costs <sup>2</sup>	Costs as percent of GNP <sup>3</sup>	Family case- load (thou- sands)	Costs <sup>2</sup>	Costs as percent of GNP <sup>3</sup>	Family case load (thou- sands)	Costs <sup>2</sup>	Costs as percent of 3 GNP
Social Security and Railroad											
Retirement	66.7	4.4	31,411	178.9	4.9	31,411	166.2	4.5	31,411	166.2	4.5
Civil Service and Military											
Retirement	4 13.2	0.9	3,642	53.5	1.5	3,642	47.5	1.3	3,642	47.5	1.3
Unemployment Insurance	9.1	0.6	5,415	11.7	0.3	5,415	16.0	0.4	5,415	19.9	0.5
Medicare - Part A	10.6	0.7	533,180	48.6	1.3	533,180	48.6	1.3	533,180	48.6	1.3
Part B	4.2	0.3	33,273	15.2	0.4	- 33,273	15.2	0.4	- 33,273	15.2	0.4
Subtotal: Contributory programs	103.8	6.8	( <sup>10</sup> )	307.9	8.4	( <sup>10</sup> )	293.5	7.9	$(^{10})$	297.4	8.0
Veterans Benefits	7.6	0.5	3,604	1.6	<sup>6</sup> 0.0	3,604	5.3	0.1	3,604	9.7	0.3
Supplemental Security		0.0	1 /05	1.0	0.1	1 (1)	2.0	0.1	4 5 3 5	7 2	0.2
Income	4.8	0.3	1,405	1.9	0.1	2,014	2.0	0.1	4,555	18 7	0.2
AFDC	9.7	0.0	5 3,200	2.3	0.1	5 ., 01 )	26.0	0.2	5,2,400	10.7	1 1
	7 7 7 7	0.0	8 ( 900	24.0	0.7	8, , , , , , , , , , , , , , , , , , ,	20.3	0.7	810,914	41.5	1.1
Food Stamps	4.0	0.3	0,000	7.5	0.2	6,885	5.9	0.2	10,014	/.1	0.2
Subtotal: Noncontri- butory programs	39.1	2.6	( <sup>10</sup> )	37.3	1.1	( <sup>10</sup> )	48.3	1.3	( <sup>10</sup> )	84.2	2.3
9 Total: All programs	142.9	9.3	( <sup>10</sup> )	345.1	9.4	( <sup>10</sup> )	341.8	9.4	( <sup>10</sup> )	381.6	10.4

#### (Constant 1975 dollars - in billions)

<sup>1</sup>Caseloads not available on a comparable basis for fiscal year 1975.

<sup>2</sup>Includes administrative expenses.

<sup>3</sup>GNP for fiscal year 1975 with 5 percent unemployed is estimated to be \$1,529 billion; year 2000 GNP in 1975 dollars is estimated to be \$3,653 billion.

 $^{4}$ Adjusted to a 5 percent rate of unemployment. The actual unemployment insurance for fiscal year 1975 was estimated at \$13.5 billion with a 7.4 percent unemployment rate.

<sup>5</sup>Eligible persons.

<sup>6</sup>Zero due to rounding.

7 Includes commodity distribution.

<sup>8</sup>Caseloads are average monthly households.

<sup>9</sup> Components may not sum to total due to rounding.

<sup>10</sup>Cannot be summed because of multiple program beneficiaries.

SOURCE: Same as Table I. Derived from "Current Service Estimates for Fiscal Year 1977," OMB, November 10, 1975; "Social Security Bulletin," February 1975; and special tabulations prepared by Mathematica, Inc. (see Chapters I and II ).