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## ABSTRACT

The marginal tax rate implicit in the Aid to Families with Dependent Children program is the rate at which payments to families decrease as their incomes increase. The rates depend on the provisions of the states' programs regarding the deductions from income which are permitted in calculating payments and the methods which are used to limit payments. The rates estimated here are those facing AFDC families on average at various levels of income. They reflect both these provisions of the states' programs and the number of families at each income level who benefit from these provisions. The rates on earnings and on unearned income are estimated for seven states using data collected by a survey of AFDC families in 1971. The estimated rates on earnings are low, rarely higher than 50 percent. The estimated rates on unearned income are considerably higher, over 90 percent in four of the seven states.

## ESTIMATES OF TAX RATES IN THE AFDC PROGRAM

Irene Lurie

Aid to Families with Dependent Children (AFDC) is the nation's largest welfare program, paying \$6.9 billion in 1972 to an average of 11 million people. The program is operated by the states which, as a condition of Federal financial support, are required to conform to Federal legislation and regulations describing administrative procedures, conditions of eligibility, and the structure of benefits. But the states are left with complete control over the level of benefits given to families with no income and substantial control over the amount by which benefits are reduced as income increases. As a result, in 1972 benefits given to a family of four with no income ranged from \$60 per month in Mississippi to \$375 in Alaska. The variation in the amount by which a family's benefits are reduced as its income increases, or the "tax" on income, is unknown, however, due to ignorance about the rate at which income is taxed in each state.<sup>1</sup>

One of the most persistent criticisms leveled at the AFDC program is that tax rates are very high and that welfare recipients therefore have little incentive to work.<sup>2</sup> Other critics, in contrast, believe that the

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<sup>1</sup>W. Joseph Heffernan has estimated the tax rate implicit in Vermont's AFDC program in "Variation in Negative Tax Rates in Current Public Assistance Programs: An Example of Administrative Discretion," Journal of Human Resources, Vol. 8, Supplement, 1973. J. Donald Rowlett estimated the tax rate implicit in the welfare program of Alberta, Canada in "An Estimate of the Tax Rate in a Public Assistance System," The Canadian Journal of Economics, February 1972, V, no. 1. Their methodology is different from that used here, in part because of differences in the available data.

<sup>2</sup>President Nixon, in his message on welfare reform of August 1969, expressed this view.

tax rates are very low and that break-even points, or the incomes at which payments fall to zero, are too high.<sup>3</sup> Whether either of these criticisms is correct, or whether the truth lies somewhere in between, influences evaluations of the AFDC program. The equity of the program, both vertical and between recipients in the various states, depends in part upon the rate at which the state programs tax income. Any attempt to measure the effect of AFDC on the incentive to work must obviously require a measure of the tax rates on earnings. Finally, knowledge about the AFDC tax rates is important in designing reforms in or alternatives to the program.

The Federal and state statutes and regulations which establish the payment structure of the states' AFDC programs, and thereby the tax on income, are outlined in Section I. However, while these statutes and regulations describe how the tax rates are determined, they cannot be used to derive accurate estimates of the rates themselves. First, the states' procedures do not always conform to these laws and regulations. Second, some states leave a large amount of discretion to the administrators of the program, so that their laws and regulations provide an inadequate description of the programs even if they are followed. Finally, the tax rates depend on how families at each income level are affected by the various provisions of the program, and this information cannot be obtained from the statutes and regulations. Therefore, the approach taken here is to use data from a survey of AFDC recipients to estimate the tax rates. Section II describes the procedure and data used to estimate the tax rates on earned and unearned income, and

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<sup>3</sup>This belief was expressed on page 95 of "Summary of the Principal Provisions of H. R. 1 as determined by the Committee on Finance," Committee on Finance, United States Senate, June 13, 1972.

the rates estimated for seven states are presented in Section III. In these sections the tax is defined as the reduction in benefits as gross income increases. Section IV presents estimates of how work expenses vary with earnings, and suggests how the tax rates vary with net income.

The tax rates estimated here describe the way in which AFDC recipients' benefits vary with total income on average. They are not the rates confronting any given individual family, but can be interpreted as the rates facing the "typical" AFDC family with various levels of income. They are analogous in some ways to the estimates by Pechman of the average effective tax rates in the Federal individual income tax.<sup>4</sup> In the income tax, the tax rate on total income depends on the deductions, exemptions, exclusions, and other provisions which define taxable income and on the schedule of rates applied to taxable income. Pechman calculates the tax on the individual taxpayer by applying the schedule of rates to his taxable income, and obtains the average effective rate by aggregating taxpayers at each income level. This average rate depends both on the statutory provisions of the tax law and on the number of people at each income level who benefit from these provisions. The tax rate on income implicit in the structure of AFDC payments depends on a somewhat different set of parameters than the tax rate in the individual income tax. No schedule of rates is used in determining AFDC benefits. The tax rate depends on the deductions which define countable income and on the methods which the states use to limit payments. But like the individual income tax, the tax imposed by a state's AFDC program is not the same for all families with a given total income but varies according to the deductions

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<sup>4</sup>Joseph A. Pechman, Federal Tax Policy, revised edition (Washington, D. C.: The Brookings Institution, 1971), p. 68.

they obtain and the limitations placed on their payment. The AFDC tax rates estimated here depend on these provisions of the states' programs and on the number of families at each income level that benefit from them.

#### I. States' rules for computing AFDC benefits

AFDC benefits are determined by comparing a family's "countable income" to the amount of money the state decides a family requires. The "financial requirement" is the sum of (1) a standard amount for food, clothing, and other basic needs except shelter, which varies according to the size of the family and, in some states, the age and sex of its members; (2) the actual amount paid for rent up to a maximum or, in some states, a fixed amount regardless of actual rent; and (3) amounts for special needs that arise for families in unusual circumstances, such as special diets and transportation to a doctor. The financial requirements for families of the same size will tend to be uniform in states which pay a flat amount for rent and recognize few special needs, while they will vary considerably in states which account for actual rent and many special needs.

"Countable income" is the total income reported by the family less specified types of deductions. All of a family's earnings and property income must be reported. Families must also report transfer income in cash or kind from private sources and cash payments from governments. In-kind transfers from governments such as the benefits from Food Stamps, public housing, and Medicaid are not reported as income. States are required by the Social Security Act to deduct certain amounts from earnings and are given the option of deducting other amounts from either earnings or unearned income (property and transfer income). They must

deduct the first \$30 of monthly earnings and one-third of the remainder so as to provide recipients with an incentive to work. They must also deduct work expenses, day care expenses, and the earnings of children in school. They have the option of deducting from earnings or unearned income the income set aside for the future identifiable needs of a child, income allocated to expenses not included as a financial requirement, income assigned to the support of dependents outside the assistance unit, and \$5 per month of additional income.

The amount of deducted income varies considerably from one state to another. Although the states must deduct work expenses, they are free to define what can be counted as a work expense. Most states include the cost of transportation to work and income and Social Security taxes, but others also include outlays for special clothing, tools, union dues, lunches, group life and medical insurance premiums, licenses, and other items. In 1971, AFDC families with work expenses claimed an average of \$65 per month; the amount varied among states from less than \$25 to over \$100.<sup>5</sup> The variation among states in the other deductions is also considerable.

In July 1972, thirteen states<sup>6</sup> paid recipients the entire difference between their financial requirement and their countable income:

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<sup>5</sup>Findings of the 1971 AFDC Study, Part II, Financial Circumstances, National Center for Social Statistics Report AFDC-2(71), Department of Health, Education, and Welfare, Table 72.

<sup>6</sup>"State Maximums, Other Limitations, and Effect of Federal Matching Provisions on Public Assistance Money Payments, July 1972," National Center for Social Statistics Report D-3 (7/72), Department of Health, Education, and Welfare.



$$\text{payment} = \text{financial requirement} - [(Y_e - D_e) + Y_u - D] \quad (1)$$

where  $Y_e$  = earnings

$Y_u$  = unearned income (property income plus transfer income)

$D_e$  = deductions which must be made from earnings<sup>7</sup>

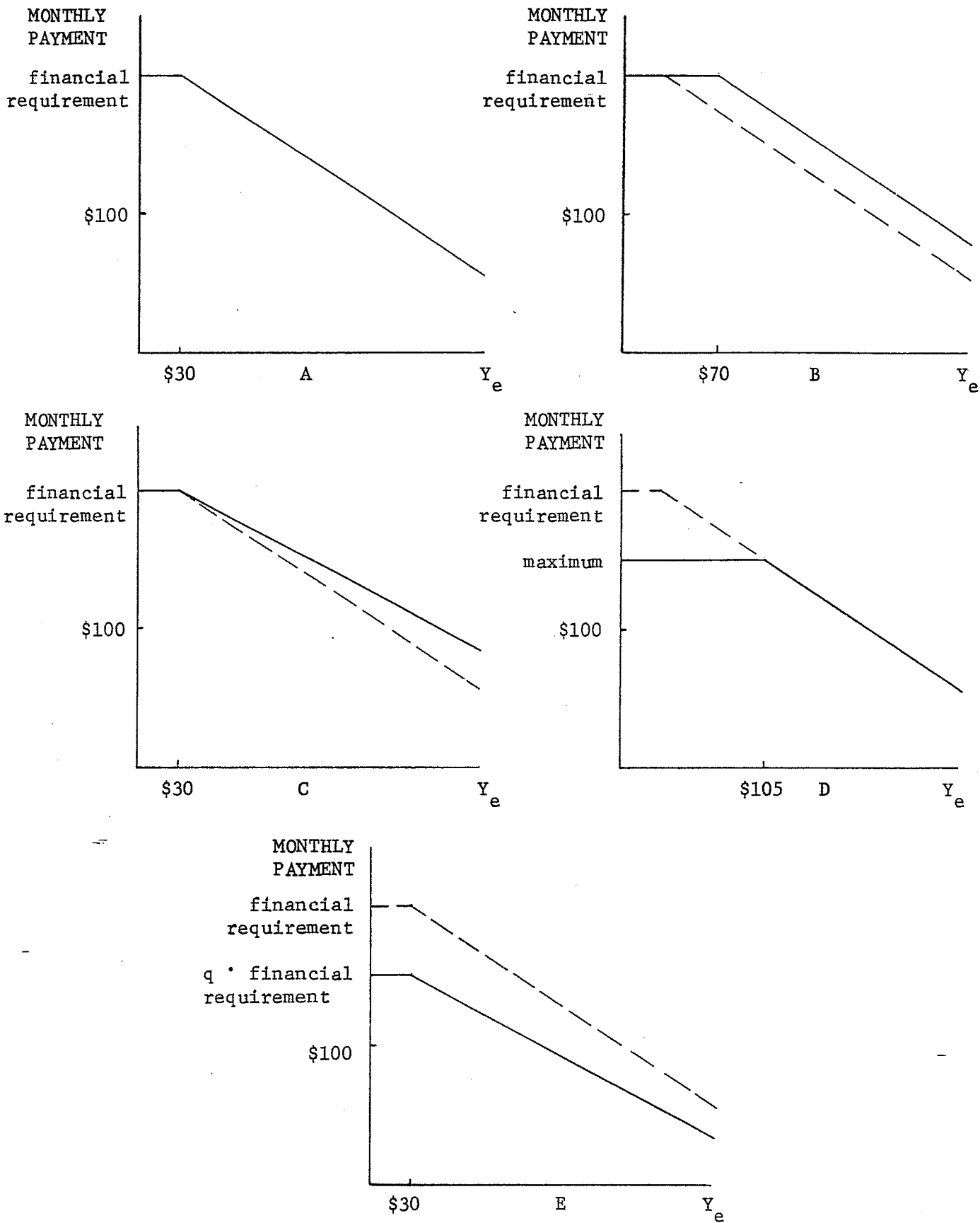
$D$  = other deductions which may be made from earnings or unearned income.

The payment is reduced by a dollar for every dollar increase in countable income, but the deductions prevent countable income from increasing dollar for dollar with total reported income. If states deduct the first \$30 of earnings and one-third of the remainder, as Federal law requires, the marginal tax rate will be zero on the first \$30 of earned income and .67 on the remainder. Additional deductions from earnings will reduce the marginal rate on earnings below .67. Deductions which may be taken from unearned income will reduce the tax on unearned income below 100 percent. If disregards vary with earnings or unearned income, the marginal tax rate will be a function of income.

Figure 1 illustrates how the payment made to a family varies with earnings. It is assumed that the family's financial requirement is \$200 and, for the sake of simplicity, that its unearned income is zero. The absolute value of the slope of these payment schedules is the marginal tax rate on earnings. If the only deduction from income were the \$30 and one-third earnings deduction, the thirteen states which pay the full need of recipients would have the payment schedule shown in Figure 1-A. The absolute value of the slope of that schedule is .67 beyond \$30 of earnings.

<sup>7</sup>The deduction of the first \$30 of monthly earnings and one-third of the remainder falls into this category. Although Federal law requires this deduction, states are occasionally out of compliance with various provisions of the Federal law. The procedure for estimating tax rates used here is therefore not dependent on an assumption that states permit this deduction.

Figure 1. Schedule of AFDC Payments under Alternative Methods of Limiting Payments



If, in addition, a flat amount, say \$40, could be deducted regardless of the level of earnings, the payment would vary according to Figure 1-B. (The schedule in 1-A is shown by the dashed line for comparison.) If the additional amount deducted were a linear function of earnings, say work expenses equal to one-quarter of earnings, the payment would decline according to Figure 1-C. The absolute value of the slope of that schedule is .5. A family might also obtain both flat and variable deductions.

The other thirty-seven states and the District of Columbia, in contrast, did not pay recipients their full need. Three methods were used to limit payments, all of which are acceptable to the Department of Health, Education, and Welfare and the U.S. Supreme Court. Some states used two of these methods to limit payments.

Eighteen states paid recipients the difference between countable income and a percent (p) of the financial requirement:

$$\text{payment} = p \cdot (\text{financial requirement}) - [(Y_e - D_e) + Y_u - D]. \quad (2)$$

Reducing the financial requirement in this way reduces the payment made to families at each income level, but does not change the marginal tax rates from those in states which pay the difference between countable income and the full financial requirement. As in these states, the marginal rate will be a maximum of zero on the first \$30 of earnings and two-thirds on remaining earnings and will be lower for recipients who obtain additional disregards. The payment schedule is essentially that described by Figures 1-A, 1-B, or 1-C, except that the vertical intercept is  $p \cdot (\text{financial requirement})$ .

Eighteen states impose a maximum on the payment which can be made to a family of a given size regardless of its actual need:

$$\begin{aligned} \text{payment} &= \text{financial requirement} - [(Y_e - D_e) + Y_u - D] \text{ when} & (3) \\ &\quad \{ \text{financial requirement} - [(Y_e - D_e) + Y_u - D] \} \leq \text{maximum} \\ &= \text{maximum otherwise.} \end{aligned}$$

Families receive the maximum payment if their countable income is zero and continue to receive the maximum until their countable income equals the difference between the financial requirement and the maximum. The maximum therefore has the effect of reducing the marginal tax rate to zero on countable income up to the difference between the financial requirement and the maximum. Beyond this point, the marginal tax rate on income depends on deductions as in the two above cases. The effect of a maximum of \$150 on the payment schedule facing a family whose only deductions are the \$30 and one-third earnings deduction is illustrated by the solid line in Figure 1-D. The family receives the maximum until its countable earnings equal \$50, the difference between the financial requirement and the maximum. Countable earnings equal \$50 when its total reported earnings are \$105. If other deductions were permitted, such as those shown in Figures 1-B and 1-C, the maximum would truncate the upper portion of the payment schedules of Figures 1-B and 1-C in the same manner as in Figure 1-D.

Ten states pay a percent (q) of the difference between the financial requirement and countable income:

$$\text{payment} = q\{\text{financial requirement} - [(Y_e - D_e) + Y_u - D]\}. \quad (4)$$

Paying a percent of recipients' need has the effect of reducing the marginal tax rate to q percent of what it would be if recipients were paid the full difference between financial requirements and countable income. The effect of paying 75 percent of the need of a family whose only deductions are the \$30 and one-third earnings deduction is illustrated

in Figure 1-E. Paying 75 percent of need results in no tax on the first \$30 of reported earnings and a 50 percent tax rate on the remainder.

## II. A procedure for estimating AFDC tax rates

The average effect of these provisions on the payments made to families at each income level is estimated here using data on the actual incomes, financial requirements, and payments of individual families. These data were collected by a survey of AFDC families made by the Department of Health, Education, and Welfare in January 1971.<sup>8</sup> Information was collected on the monthly amounts of earnings of the mother, father, children, and other persons in the family, earnings or incentive payments from the Work Incentive Program, benefits from OASDI and Unemployment Insurance, contributions from absent fathers, income in kind to which a money value is given, and contributions from other persons in the home combined with other cash income. The family's monthly financial requirement and AFDC payment were also reported. The survey was completed by the caseworker on the basis of the welfare agencies' records, not by the recipients themselves. To the extent that recipients do not report all their income to the caseworker, the tax rates estimated here will be greater than the actual tax rates they face.

The sample is restricted to families who were receiving payments in the survey month. Hence, the survey includes families who were successful in staying in the program as their income increased and excludes families who were terminated from the program as their income increased. The tax rates facing recipient families may be lower, by virtue of the fact that they stayed in the program, than the rates

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<sup>8</sup> Families were excluded from the sample if the responses were inconsistent, e.g., if components of income did not sum to total income or if a woman was reported to be unemployed and had earnings.

facing families who were terminated. The tax rates estimated here, therefore, may be somewhat biased downward.

Using the data in the survey, the schedule showing how payments vary with income can be estimated. The payment schedule is, as shown in the preceding section, determined by the fraction of the financial requirement which is paid to families with no income and the deductions and limitations on payments which determine how payments vary with income. The estimated payment schedule depends on the average effect of these provisions at each income level.

The tax rates on earnings and on unearned income, which are likely to be different,<sup>9</sup> can easily be derived from this payment schedule. The payment schedule can be written in general form as:

$$\text{payment} = r \cdot (\text{financial requirement}) - \left[ T_e(Y_e) \right] - \left[ T_u(Y_u) \right]. \quad (5)$$

The expected value of the payment given to a family with no income is  $r \cdot (\text{financial requirement})$ , where  $r$  equals 1 in equation (1),  $p$  in equation (2),  $q$  in equation (4) and the average ratio of the maximum payment to the financial requirement in equation (3).  $T_e$ , the average tax paid as a function of earnings, is the difference between the expected value of the payment a family would receive if its earnings were zero and the expected value of the family's actual payment. Similarly,  $T_u$ , the average tax paid as a function of unearned income, is the difference between the expected value of the payment a family would receive if its

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<sup>9</sup>Federal statutes require that \$30 of earnings, one-third of remaining earnings, work expenses, and all of children's earnings be deducted from earnings in computing the payment. It is therefore reasonable to expect that the tax on earnings will be lower than the tax on unearned income.

unearned income were zero and the expected value of its actual payment. The functions  $T_e$  and  $T_u$  express all the factors which cause payments to vary with income. They are general enough to describe the taxes paid in all states regardless of which of the four procedures are used to compute the payment. Variations in the procedures of the individual states will be reflected in the form of the functions  $T_e$  and  $T_u$ .

The marginal tax rate on earnings derived from the payment schedule is the rate of decrease in the average payment as earnings increase,

$$\frac{dT_e(Y_e)}{dY_e} = - \frac{d \text{ payment}}{dY_e}.$$

The average tax rate on earnings is the average

tax paid as a fraction of earnings,  $\frac{T_e(Y_e)}{Y_e}$ . The tax rates on unearned

income are defined similarly.

### III. Estimates of AFDC tax rates

The AFDC tax rates were estimated for seven states. States were chosen so as to provide examples of each of the four procedures for computing benefits and to include the three states with the largest caseloads (California, New York, and Pennsylvania). In order to obtain an accurate estimate of the tax rate facing female headed families, the major component of the AFDC population, families headed by men were excluded from the sample.<sup>10</sup>

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<sup>10</sup>About 18.5 percent of AFDC families were headed by a man, either by a father who was incapacitated (9.8 percent) or unemployed or employed part-time (6.1 percent), or by a stepfather (2.6 percent). There are several reasons for expecting that the tax rate facing these families will be different from the tax rate facing female headed families. First, caseworkers may administer the rules differently for male and female headed families. Secondly, in some families in the sample headed by a stepfather, his earnings were reported and then deducted entirely as "income assigned to the support of dependents outside the assistance group." This suggests that, in at least some of these cases, the stepfather was not legally responsible for the support of his wife's children and had children of his own who were not receiving assistance. He and his own children were not on welfare and his income should not have been included in the survey.

Two functional forms were used to estimate the AFDC payment schedule.

The first is the linear equation

$$\begin{aligned} \text{payment} = r \cdot (\text{financial requirement}) - & \left[ c_e X_e + t_o^e Y_e \right] \\ & - \left[ c_u X_u + t_o^u Y_u \right] \end{aligned} \quad (6)$$

where  $X_e = -1$  if the family has earnings

$= 0$  otherwise

$X_u = -1$  if the family has unearned income

$= 0$  otherwise.

The inclusion of the dummy variables permits estimation of the kinked payment schedules illustrated in Figure 1. From this estimation, the marginal and average tax rates on earnings are inferred to be zero for

earnings up to  $\frac{c_e}{t_o^e}$ , and no relevance is attached to the fact that a

negative "tax" is predicted from the regression for this range of earnings.<sup>11</sup>

For earnings above the level  $\frac{c_e}{t_o^e}$ , the average tax rate on earnings is

$$\frac{T_e(Y_e)}{Y_e} = \frac{c_e X_e + t_o^e Y_e}{Y_e} \quad \text{and the marginal tax rate on earnings is}$$

$$\frac{dT_e(Y_e)}{dY_e} = t_o^e. \quad \text{The average and marginal tax rates on unearned income}$$

are defined analogously.

The second functional form used to estimate the payment schedule is the quadratic equation

$$\begin{aligned} \text{payment} = r \cdot (\text{financial requirement}) - & \left[ c_e X_e + t_1^e Y_e + t_2^e Y_e^2 \right] \\ & - \left[ c_u X_u + t_1^u Y_u + t_2^u Y_u^2 \right]. \end{aligned} \quad (7)$$

The quadratic form permits the marginal tax rates to vary

<sup>11</sup> If  $c_e$  is estimated to be negative, there is no range of earnings for which the marginal and average rates are zero.



continuously with income. In interpreting the estimations, the average and marginal tax rates on earnings are inferred to equal zero for the range of low earnings where the predicted "tax" is negative. This range is between zero and the value of  $Y_e$  where  $d_e X_e + t_1^e Y_e + t_2^e Y_e^2 = 0$ . Above this range of earnings, the average

tax rate on earnings is  $\frac{T_e(Y_e)}{Y_e} = \frac{c_e X_e + t_1^e Y_e + t_2^e Y_e^2}{Y_e}$ , and the marginal

tax rate on earnings is  $\frac{dT_e(Y_e)}{dY_e} = t_1^e + 2t_2^e Y_e$ . The average and marginal

tax rates on unearned income are defined analogously.

The estimated coefficients for equations (6) and (7) are shown in Table 1 along with their standard errors. The coefficients on the financial requirement in both equations are generally close to those expected from information reported by the states on their method of limiting money payments. The coefficient on the financial requirement is very close to 1.00 in New York, Pennsylvania and Massachusetts, which do not limit payments and therefore pay families with no income their full financial requirement. The coefficient is virtually .75 in Texas, which reports a reduced standard of 75 percent of the full standard. Florida's coefficient is close to the .60 which would be expected from their reported practice of paying 60 percent of need. In the two states which report using maximums, the fraction of the financial requirement paid to families with no income depends on the size of the family, and no single fraction can be computed for the state as a whole. There is therefore no reported value with which to compare the coefficient on the financial requirement.

#### Tax rates on earnings

The estimated tax rates on earnings indicate that states deduct large amounts from earnings in determining families' AFDC payments.

Table 1.

## Estimated Coefficients for AFDC Payment Schedules

State	Method of Limiting Payment*	$c_e$	$c_u$	$r$	$t_o^e$ or $t_1^e$	$t_2^e$	$t_o^u$ or $t_1^u$	$t_2^u$	Corrected $R^2$
New York n = 2914	None	.9363 (2.6168)	-.0860 (2.0647)	.9908 (.0018)	.3079 (.0087)		.9190 (.0156)		.9471
		11.559 (3.622)	6.2944 (3.4809)	.9908 (.0018)	.4364 (.0315)	-.00024 (.00006)	1.0404 (.0545)	-.00041 (.00018)	.9497
Pennsylvania n = 1034	None	8.2877 (3.0095)	-3.0877 (1.6546)	1.0003 (.0021)	.2505 (.0127)		.9543 (.0134)		.9709
		9.6176 (4.6903)	-1.9397 (2.3798)	1.0003 (.0021)	.2700 (.0565)	-.00005 (.00013)	.9786 (.0384)	-.00009 (.00013)	.9709
Massachusetts n = 586	None	15.941 (3.366)	5.5253 (3.5702)	.9930 (.0036)	.5110 (.0152)		.9623 (.0236)		.9632
		32.419 (4.907)	10.286 (6.090)	.9930 (.0035)	.7830 (.0616)	-.00060 (.00013)	1.0314 (.0879)	-.00020 (.00027)	.9646
Texas n = 743	Reduced Standard of 75 Percent of Full Standard	20.336 (1.9279)	-1.3565 (2.0539)	.7460 (.0026)	.3260 (.0126)		.9248 (.0247)		.9527
		30.122 (3.173)	-3.293 (3.032)	.7465 (.0026)	.4846 (.0427)	-.00047 (.00012)	.8619 (.0802)	.00040 (.00047)	.9526
California n = 3157	Maximum Amount for Each Child	11.534 (2.848)	20.365 (1.987)	.7892 (.0030)	.1107 (.0084)		.6834 (.0159)		.7564
		-6.367 (4.337)	21.616 (2.760)	.7894 (.0030)	-.0509 (.0308)	.00027 (.00005)	.7080 (.0422)	-.00008 (.00012)	.7562
Missouri n = 414	Maximum Amount for Each Recipient	5.5710 (4.9801)	8.2518 (3.9141)	.4470 (.0060)	.1747 (.0168)		.1904 (.0275)		.7569
		14.199 (7.080)	-5.701 (5.719)	.4473 (.0059)	.2634 (.0559)	-.00017 (.00010)	-.0650 (.0814)	.00082 (.00024)	.7636
Florida n = 623	Payment is 60 Percent of Need	9.946 (2.395)	-2.915 (2.927)	.6124 (.0047)	.2304 (.0115)		.5872 (.0317)		.8925
		-1.451 (3.891)	-.2377 (4.4302)	.6122 (.0046)	.0667 (.0460)	.00044 (.00012)	.6541 (.0993)	-.00031 (.00046)	.8946

NOTE: Standard errors are in parentheses.

\*"State Maximums and Other Methods of Limiting Money Payments to Recipients of the Special Types of Public Assistance, October 1970," National Center for Social Statistics Report D-3 (10/70), Department of Health, Education, and Welfare. "OAA and AFDC: Standards for Basic Needs for Specified Types of Assistance Groups, March 1971," National Center for Social Statistics Report D-2 (3/71), Department of Health, Education, and Welfare.

In the three states which do not report limiting payments, New York, Pennsylvania, and Massachusetts, the tax rate would be 100 percent in the absence of deductions. According to the payment schedule of Pennsylvania estimated by the linear equation (6), deductions reduce the marginal tax rate to zero on earnings of less than \$32 per month and to .25 on earnings in excess of \$32. The average rate is also zero on earnings below \$32 and then increases asymptotically to .25. In Massachusetts, earnings of less than \$31 per month are taxed at a marginal rate of zero, while those above are taxed at a rate of .51. The average rate is therefore zero on earnings below \$31, increasing asymptotically to .51 as earnings rise above \$31. In New York, the coefficient  $c_e$  is very small and not significantly different from zero, suggesting that the marginal and average rates are nearly equal, both .31. Texas reports paying families the difference between countable income and 75 percent of their financial requirement. This procedure is expected to affect the coefficient on the financial requirement but not the tax rate, which would be 100 percent in the absence of deductions. According to the estimates of equation (6), deductions reduce the marginal rate to zero on earnings below \$62 per month and to .33 on earnings in excess of \$62. The average rate is also zero on earnings below \$62 and then increases to .33.

In Florida, California, and Missouri, the procedures for limiting payments are expected to reduce the tax rates on income, as was discussed in Section I. The tax rates on earnings in Florida therefore reflect both the deductions from earnings and the practice of paying 60 percent of the difference between countable income and the financial requirement. The marginal rate estimated by equation (6) is zero on earnings up to \$43 and .23 on earnings in excess of \$43. The average rate is zero in the same range,

and increases asymptotically to .23. California and Missouri impose a maximum on payments which, as shown in Figure 1-D, results in a payment schedule which remains flat until countable income equals the difference between the financial requirement and the maximum. The payment schedule estimated for California by equation (6) indicates that payments do not begin to decline until earnings reach \$104. The marginal tax rate is therefore zero on earnings in this range, while the marginal rate on earnings in excess of \$104 is .11. The average rate is also zero on earnings below \$104 and increases to .11 as earnings rise above \$104. In Missouri, the marginal tax rate is zero on earnings up to \$32 and .17 on additional earnings. The standard error of  $c_e$  is quite large, however, so that the estimate of the horizontal section of the payment schedule is not reliable.

The payment schedule was estimated by the quadratic equation (7) in order to permit the marginal tax rates to vary continuously with income. Although equation (7) explained about the same percent of the variance in payments as was explained by equation (6), it is interesting to examine as an alternative description of the states' payment schedules. The second degree earnings term is significantly different from zero at the 5 percent level in five states. The marginal tax rate  $t_1^e + 2t_2^e Y_e$  estimated for these five states is plotted as a function of earnings in Figure 2-A.<sup>12</sup>

What is particularly noteworthy about the estimated tax rates is the way in which they vary with earnings in New York, Massachusetts, and Texas. The coefficient  $c_e$  was positive and significant at the 5

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<sup>12</sup> In order to provide some information about the distribution of families in the sample by the amount of their earnings, Figure 2 is drawn to exclude the 5 percent of families in the sample with the highest earnings.

Figure 2-A. Estimated Marginal Tax Rates on Earnings

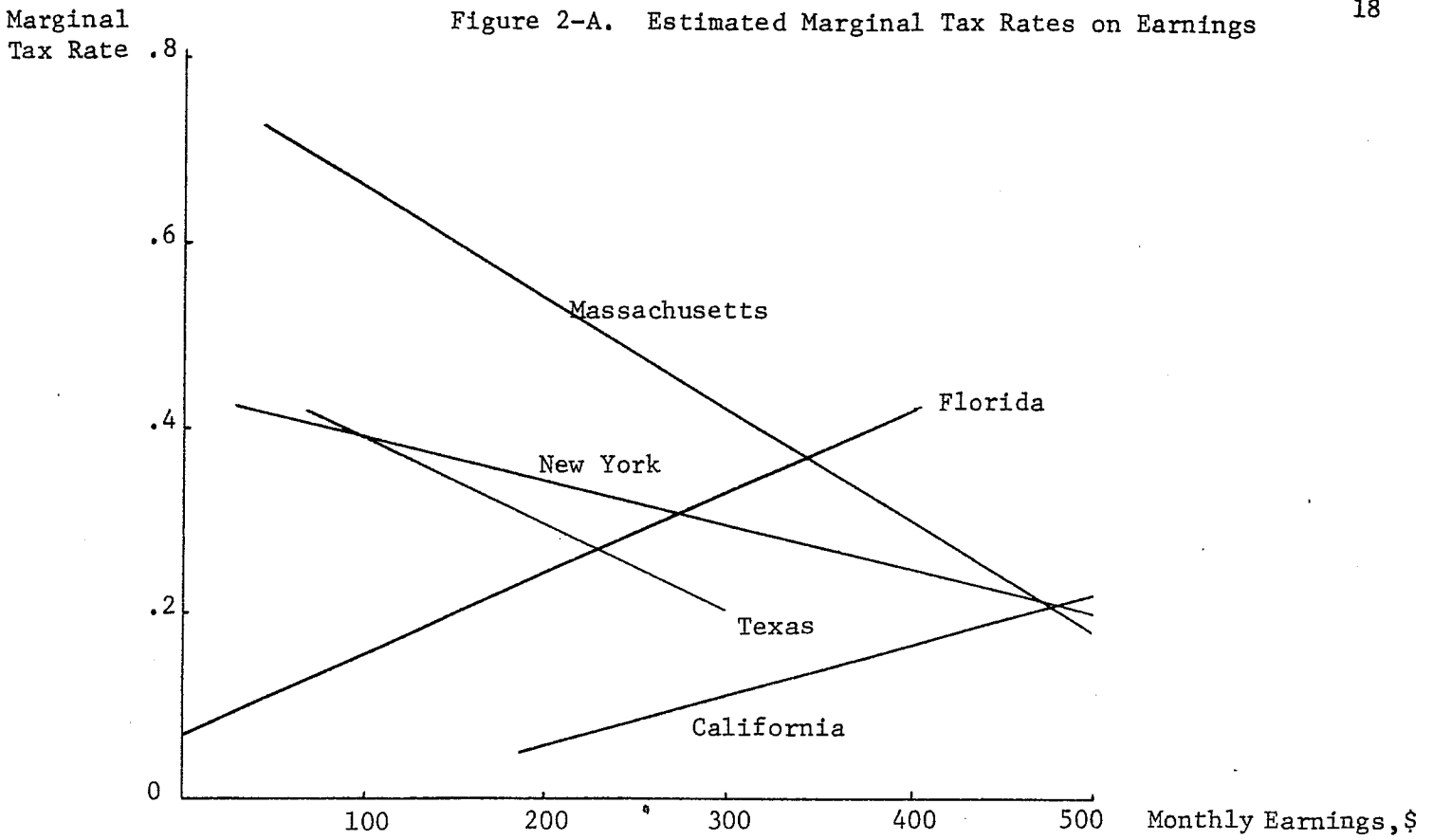
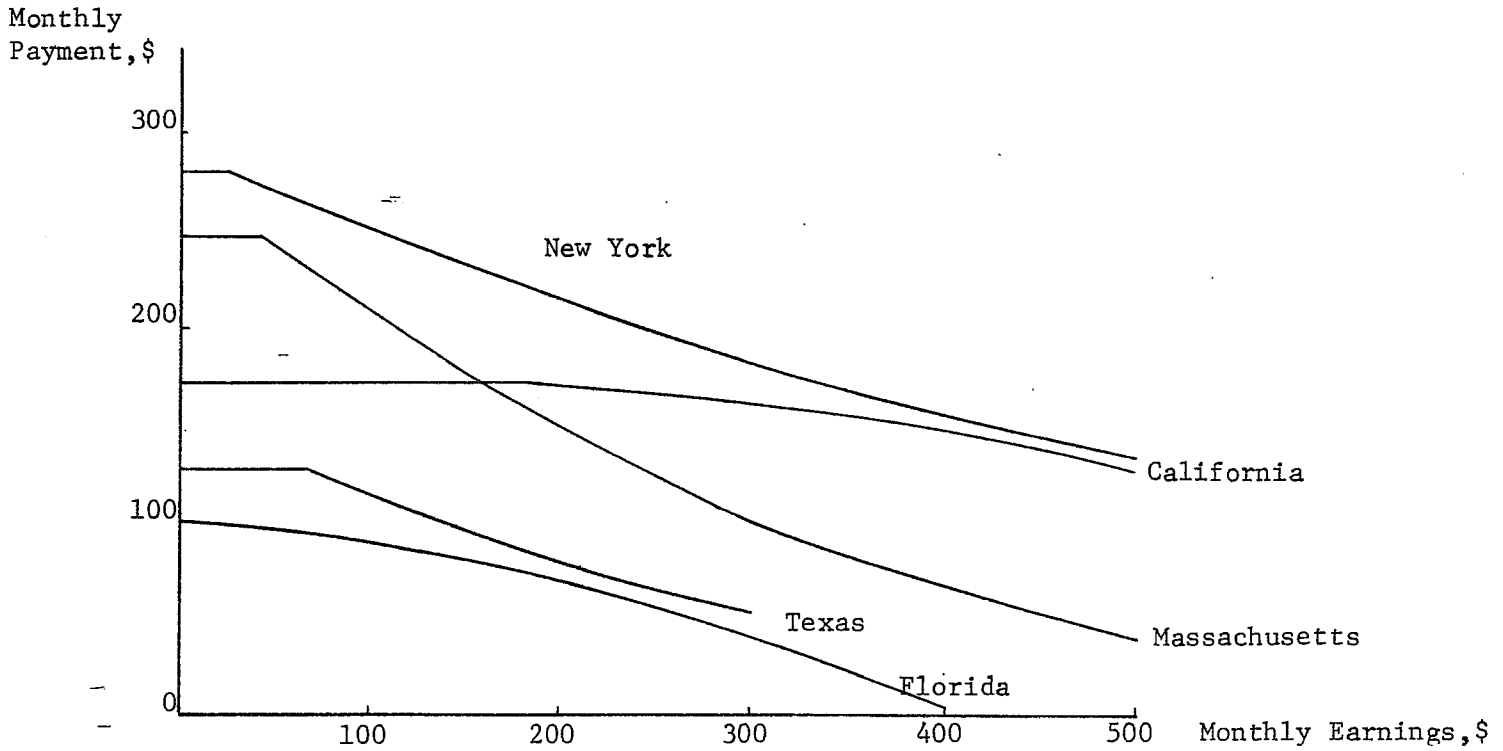


Figure 2-B. Estimated Payments as a Function of Earnings



percent level in all three states, indicating that the estimated payment schedule is horizontal and the marginal tax rate is zero for some range of earnings: up to \$27 in New York, to \$43 in Massachusetts, and to \$67 in Texas. Above these earnings levels the marginal rates step up to their highest values, and then decrease as earnings rise further. This means that the marginal rate is lowest on families with small and large amounts of earnings and highest on families with earnings in the middle ranges. The requirement that states deduct the first \$30 earned each month contributes to the low tax rate on small amounts of earnings. The low tax rate on high earnings indicates that families with high earnings are permitted to deduct a larger share of their earnings than families with low earnings. While this is surprising in light of the frequent charges that AFDC removes the incentive to work, it is not inconsistent with the reported procedures of the states. With the exception of the \$30 and one-third earnings deduction, states are free to determine how deductions vary with income. They can, if they desire, provide a substantial incentive for recipients to seek full-time, high wage jobs by deducting an increasing portion of their earnings in calculating AFDC payments.

The payment schedules which are derived from these tax rates are shown in Figure 2-B.<sup>13</sup> In Massachusetts, Texas, and Florida, the estimated payment becomes fairly low as earnings rise to a high level. But in California and New York, families with \$500 of earnings are

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<sup>13</sup>In deriving these payment schedules from the estimated equations, the financial requirement, unearned income, and  $X_u$  were given their mean values for the individual states.

estimated to receive more than \$125. While this seems surprising, a study by the United States General Accounting Office indicates that the payment schedule estimated here is an accurate description of California's program. The GAO found that "a typical AFDC mother in Los Angeles can earn up to \$579 a month (\$6,948 a year) before any reduction is made in her welfare payments and up to \$1,074 a month (\$12,888 a year) before her welfare payments are terminated."<sup>14</sup> The payment schedule estimated here implies that payments fall to zero when earnings equal about \$900, which is quite reasonable in light of these findings. No similar study has been done for New York, but there is reason to believe that New York's AFDC program is at least as generous as California's.

#### Tax rates on unearned income

The estimated tax rates on unearned income are considerably higher than on earned income in all states except Missouri. This occurs because states are required to deduct certain items from earnings (\$30 of earnings and one-third of the remainder, work expenses, and children's earnings), while all deductions from unearned income are optional. The tax rate on earnings may also be lower because, as suggested above, the states deduct earnings with the purpose of providing recipients an incentive to work.

According to the estimates of the linear equation (6), Pennsylvania and Massachusetts tax unearned income at a marginal rate of about .95 and New York and Texas tax it at about .90. The marginal rate of .59 in Florida can be explained entirely by the state's practice of paying 60 percent

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<sup>14</sup>"Problems in Accomplishing Objectives of the Work Incentive Program (WIN)," Report to the Congress by the Comptroller General of the United States, September 24, 1971, p. 29.

of need and indicates that virtually no deductions from unearned income are permitted. The impact of imposing a maximum on the payment a family can receive is reflected in California and Missouri, which are the only states whose payment schedules are horizontal for some range, as indicated by the positive and significant coefficients  $c_u$ . It is impossible to determine how much the relatively low marginal tax rates of .68 in California and .19 in Missouri reflect the maximum and how much they reflect deductions from unearned income. The estimates of the quadratic equation (7) shed little additional light on the rate at which unearned income is taxed.

#### IV. Deductions for work expenses

The tax rate on earnings estimated here is defined as the reduction in benefits which occurs as gross earnings, before the deduction of work expenses, increase. Work expenses increase with income and, like the other deductions, serve to lower the estimated tax rates on gross income. If the tax rates on net earnings were estimated, they would be higher than the rates estimated from gross earnings.

The difference between the marginal tax rate on gross and net earnings depends on how work expenses vary with earnings. Table 2 shows the results of estimating work expenses, defined to include day care expenses, as a linear function of earnings. The coefficient on earnings was significantly different from zero at the 5 percent level in all states. The rules for deducting work expenses appear to vary considerably from state to state, as do most other features of welfare programs. In Missouri, work expenses increased by \$.18 for every dollar of earnings, while they increased by \$.47 for every dollar of



Deductions for Work Expenses of AFDC Families  
as a Function of Earnings

<u>State</u>	<u>Constant</u>	<u>Earnings</u>	<u>Corrected R<sup>2</sup></u>
New York	-8.2051 (6.3273)	.4513 (.0215)	.5833
Pennsylvania	-5.5500 (8.9499)	.3856 (.0384)	.5177
Massachusetts	1.9535 (6.1797)	.2193 (.0289)	.3803
Texas	8.3009 (4.3585)	.2740 (.0292)	.4170
California	-7.1067 (4.8713)	.4747 (.0148)	.6004
Missouri	47.98 (10.52)	.1831 (.0369)	.1531
Florida	-6.9939 (4.0872)	.3021 (.0206)	.4907

NOTE: Standard errors are in parentheses.

earnings in California. In Texas, Missouri, and Florida, the constant term was significant at the 5 percent level. This suggests that they also give a flat amount of work expenses, \$8 in Texas and \$48 in Missouri. The negative constant in Florida suggests that work expenses increase more than in proportion to earnings in the relevant range of earnings.

Clearly, the estimated tax rates on gross earnings are considerably lower than the tax rates on net earnings. Why was the tax on gross earnings computed in this study instead of the tax on net earnings? There are two reasons for this decision.

First, there is evidence that the states permit some items to be deducted as work expenses which in fact are forms of consumption by the recipients. Pennsylvania permits a telephone to be included as a work expense; New York, Texas, California, and Missouri count lunches as a work expense; and Missouri includes something called "personal expenses", which are in addition to extra clothing.<sup>15</sup> Heffernan, who is familiar with the administration of AFDC at the local level, argues that, "Some pro-client caseworkers take pride in generating enough expenses so that available income falls to zero."<sup>16</sup> This suggests that the information obtained in the survey may not be an accurate measure of the real cost of working. To deduct reported work expenses from earnings would understate real net earnings and overstate the tax rate on real net earnings.

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<sup>15</sup> Unpublished table prepared by the Assistance Payments Administration, Department of Health, Education, and Welfare, titled "Summary of State Agency Policy on Expenses Reasonably Attributable to the Earning of Income--AFDC," dated January 1972.

<sup>16</sup> W. Joseph Heffernan, "Variation in Negative Tax Rates in Current Public Assistance Programs", p. 64.

Second, the tax rate estimates developed here are more useful for comparing AFDC tax rates with those under the individual income tax and with those under alternative income maintenance programs. The concept of taxable earnings under these programs is closer to gross earnings under AFDC than to net earnings. The individual income tax does not permit the deduction of Social Security taxes, transportation to work, meals, or group life insurance premiums paid by the employee. Recently proposed alternatives to AFDC, such as H. R. 1 passed by the House in June 1971, a negative income tax, or a credit income tax, would permit work expenses which are more similar to those permitted under the income tax than under AFDC.

#### V. Conclusions

The tax rates estimated here appear reasonable in light of the information about AFDC available from other sources. They often reflect the rules for computing payments reported by the states and, like these rules, they vary considerably from one state to another. The rates on earned income are higher than on unearned income as would be expected. A feature of the data mentioned above, namely that families whose payments are reduced to zero are not in the sample, may bias these estimates downward. However, no data currently exist which would provide an estimate of the extent of this bias.

Increasing the rate of employment of welfare recipients has been one of the primary objectives of some of the recently proposed welfare reform plans. The assumption behind these plans is that more welfare mothers would work if their earnings were taxed at a reasonable level, and providing a lower tax rate has been a key element in these plans.

The estimates here indicate that many welfare reform plans might increase the tax rates on earnings, not lower them. Under H. R. 1,

the first \$720 of yearly countable earnings would be taxed at zero and the remainder would be taxed at 66 percent. Although one-third of child support and alimony would be disregarded in calculating countable income, upper limits would be set on deductions for child care expenses and no other work expenses could be deducted at all. On balance, the tax rate on earnings under H. R. 1 would probably be no lower than the current AFDC rates and could well be higher in many states. Negative income tax proposals are often illustrated with a 50 percent rate, while a 33 percent rate is a popular choice when describing a credit income tax.<sup>17</sup> Deductions under these proposals are generally more limited than under both AFDC and the individual income tax, and the tax rate on earnings could be higher than the AFDC rate in some states. The only proposed plan which would be certain to reduce the tax rate on earnings facing welfare recipients would be a public employment program, which would pay people in direct proportion to the amount they work. Of course, even if these plans increase the tax rate on earnings facing some AFDC recipients, they may still be preferred to AFDC on other grounds.

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<sup>17</sup> See for example Earl Rolph, "The Case for a Negative Income Tax Device," Industrial Relations, February 1967, Vol. 6, No. 2; James Tobin, "Raising the Incomes of the Poor," in Agenda for the Nation, (Washington, D.C: The Brookings Institution, 1968); James Tobin, Joseph A. Pechman, and Peter M. Mieszkowski, "Is a Negative Income Tax Practical," The Yale Law Journal, Vol. 77, No. 1, November 1967.