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ABSTRACT

Welfare benefits in the U.S. have experienced a much-studied secular decline since the mid-1970s. We explore a new hypothesis for this decline related to the increase in wage inequality in the labor market and the decline of real wages at the bottom of the distribution: we posit that voters prefer benefits which are tied to low-skilled wages. We test the hypothesis using a 1969-1992 panel of state-level data. An additional contribution of our analysis is the use of General Social Survey data on voter preferences for welfare which we combine with Current Population Survey data to determine the voter in each state who has the median preferred welfare benefit level. Our analysis reveals considerable evidence in support of a role for declining real wages in the decline of welfare benefits.

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Welfare benefits in the United States paid to persons through the Aid to Families with Dependent Children (AFDC) program, the main cash assistance program for the poor, have declined in real terms since the late 1960s. State legislatures, which set nominal benefit levels, have failed to raise them sufficiently to keep up with inflation and in recent years have sometimes even reduced nominal benefit levels. Other major welfare programs--most notably the Food Stamp and Medicaid programs--grew in the early 1970s, causing the sum of all three benefits to rise, but even this benefit sum declined in real terms after the mid-1970s. While the rate of benefit decline slowed in the 1980s, and may even have flattened out, real benefits in the welfare system today are not much above what they were in 1970.

Considerable scholarly attention has been focused on the causes of this decline. The "demand" for welfare benefits has been treated with a public good model at least since Orr (1976), which, in its simplest variant, implies that income and price effects should determine demand. But real income in the aggregate and in all states has risen over the last 25 years, albeit slower than in earlier periods; and none of the variables affecting the tax price of state welfare benefits (federal matching rates, the AFDC caseload itself, etc.) have changed enough, or in a consistent fashion throughout the period, to provide a satisfactory explanation. The hypothesis that the federally-funded Food Stamp program may have "displaced" the AFDC program has also been studied (Orr,1979; Gramlich,1982; and Moffitt, 1990) with contradictory results across studies. Another hypothesis is that non-AFDC welfare expenditures--especially Medicaid--have risen rapidly and have crowded out AFDC expenditures. The results in the

literature to date indicate, at best, weak evidence for this hypothesis as well (Moffitt, 1990; Ribar and Wilhelm, 1994).

The hypothesis that we explore in this paper is related to the increase in wage inequality in the U.S. which has been the subject of much attention in recent years (Levy and Murnane, 1992). An important characteristic of that trend has been a decline in real wage rates in the lower tail of the distribution. It is important to note that real wages in that tail have declined in absolute terms, not just relative to wages of higher-skilled groups. If voters wish to maintain a target benefit-wage ratio, either for reasons of equity with the non-welfare working poor or to control work disincentives, a fall in the low-skill wage could result in a reduction in benefit levels. This stands in contrast to the standard view that a reduction in wages, by raising poverty rates, will lead voters to increase benefit levels.

We test this hypothesis with a panel of U.S. state-level data over the period 1969-1992 with information on both benefits and low-skilled wages. Our preferred test is based on conventional state fixed effects estimation, in which estimates are based on the correlation between changes over time in welfare benefits, on the one hand, and changes over time in low-skill wages, on the other, across different states. We find considerable evidence that the drift in wages has played a contributory role. At the state level, year-to-year changes in benefits and low-skill wages are positively correlated across states, both unconditionally and conditional on a set of other regressors including controls for income and price effects. In addition, long-term trends in benefits and wages (after smoothing out fluctuations) are also positively related.

We provide an additional test of the hypothesis by using individual, micro-level data on voter preferences for welfare spending

and by incorporating those data into a conventional median voter model. In that model, it is presumed that the public good is determined by the demand function of the voter with the median preference level. However, rather than simply assume that the median voter in a state is the individual with median income and use an aggregate state income variable to proxy that income level, as is common practice in the literature, we use questions on welfare preferences from a U.S. survey (the General Social Survey) to define an index of welfare preferences as a function of individual and household characteristics, including income but other variables as well. We are able to examine whether welfare preferences are monotonic in income, an important issue for the model, as well as whether income alone is a sufficient statistic for preferences. We then apply our estimated preference function to individual data from the Current Population Survey to estimate who the median voter is in each state and in each year. That individual's characteristics are then entered into state-level equations for the determination of welfare benefits. We are thus able to apply the median voter model more precisely than in past studies. We again estimate wage effects in this model, which also provide some evidence for a role for declining wages in benefit declines.

The next section of the paper briefly describes trends in welfare benefits and related variables. Following that, we discuss conceptual aspects of the hypothesis in more detail. After a discussion of modeling and data considerations, we present our results both for the conventional aggregate model and our new micro-based median voter model. A summary concludes the paper.

I. Trends in Welfare Benefits in the U.S.

That welfare benefits have declined markedly over the last twenty years is well-known. Figure 1 shows the trend in the sum of the real AFDC and Food Stamp guarantees--the maximum payments for a family of four with no other income--over the period 1970-1993. The essentially monotonic downward trend reflects a more or less constant real Food Stamp benefit (Food Stamps are indexed to inflation) and a nominal AFDC benefit which has been rising slower than the rate of inflation. In the early 1990s, some states also reduced their nominal AFDC benefits. Figure 2 shows the time trend in the real weekly wage (1987 dollars) measured at the 25th percentile of the distribution.[1] The figure shows that this measure of the unskilled wage declined for most of the period, although with fluctuations around trend, until the late 1980s, after which it has risen slightly. Other figures (not shown) show similar declines for the wages of high school graduates and at the 10th percentile of the wage distribution.[2]

Figure 3 shows the trend in the ratio of AFDC and Food Stamp benefits to the 25th-percentile wage over the period. While it has some fluctuations, the ratio has fallen fairly steady over time. However, the rate of decline is considerably reduced from that of the benefit alone in Figure 1. We take this observation as the starting point for our analysis.

II. Modeling the Influence of Wages on Benefits

Models of redistribution from nonpoor to poor typically assume that the existence of a group of poor persons imposes an externality on the utility of the nonpoor; optimal redistribution then involves a balance between the marginal utility of redistribution and the income

and efficiency losses attendant upon it (Atkinson, 1987a). The most well-known model of benefit determination in particular is the public-good model of Orr (1976). In the Orr model, the disposable incomes of the poor enter the utility function of the nonpoor; as a consequence, a reduction in unskilled wages, and therefore in the income of the poor, results in a increase in the desired welfare benefit. This is the standard result in the redistribution literature: unskilled wages are *negatively* related to benefit levels.

We hypothesize that a positive correlation could arise from three sources. First, a fall in the unskilled wage will cause an increase in the number of welfare recipients (i.e., the welfare caseload). This raises the effective price of benefits to the nonpoor (see below) and results in a reduction in the benefit level. Second, a fall in the unskilled wage induces additional work disincentives that are associated with the rise in the caseload. Nonpoor voters may dislike work disincentives per se, leading to a reduction in the benefit level. This is a logically separate motivation from the financial cost that would be imposed by the growth in the caseload itself which could occur even if there were no work disincentives. Third, what may appear in the nonpoor utility function is not the disposable income of the poor per se but rather the relative income of recipients, on the one hand, and working poor nonrecipients, on the other. Nonpoor voters may have a target ratio of the benefit to the unskilled wage which arises not from work disincentives or caseload effects, but purely for horizontal equity reasons--that welfare recipients should not have higher incomes than individuals of similar characteristics who are off welfare and working. In the case of the U.S. AFDC program, for example, married couples have historically been essentially ineligible for benefits; nonpoor voters may wish to keep

the welfare benefit paid to unmarried mothers from getting out of line with the wage of workers in married couples.

These notions can be captured in a variety of types of models. One approach is to model the preferences of the nonpoor for redistribution using the poverty-based measures of Atkinson (1987b) and to make modifications in that model to account for the considerations we have just outlined. To that end, let us specify a model in which the preferences of nonpoor voters are additively separable in their own consumption, c, the amount of poverty, P, and a term, H, which captures disapproval of the aggregate amount of leisure consumed by the welfare recipients, L. If b is the welfare benefit, then

$$U(c,b) = G(c-\gamma) + P(b,\tau) + H(L(b)) \qquad \textbf{(1)}$$

where both $P(\cdot,\cdot)$ and $H(\cdot)$ are nonpositive numbers (to register the disutility of poverty and work disincentives), τ is the subjective poverty-line income level as perceived by the voter, and γ represents a minimum consumption standard the voter seeks for himself before considering the provision of welfare.

For simplicity, assume that poor individuals (i) have identical preferences defined over their own consumption and leisure, (ii) have no other sources of income than earnings or welfare, and (iii) face a 100 percent benefit reduction rate if they receive welfare. Given (iii), a poor individual either works or goes on welfare and does not work; work and welfare are mutually exclusive. The decision to go onto welfare can be characterized by a reservation wage $w_R(b)$, with $w_R'(b) > 0$--individuals with wages below this level go onto welfare--and hours of work can be described by a labor supply function $h(w)$ with "reservation hours" $h(w_R(b))$. The income of the poor therefore

equals either b or earnings, $wh(w)$.

We assume that voter dislike of poverty can be captured by a poverty measure which is additively separable in the incomes of the poor (Atkinson, 1987b):

$$P(b,\tau) = \int_0^{w_\tau} p\big(wh(w),\tau\big) f(w)\,dw$$
$$= p(b,\tau)\; F\Big[w_R(b)\Big] + \int_{w_R(b)}^{w_\tau} p\big(wh(w),\tau\big) f(w)\,dw \qquad (2)$$

where f and F are the density and distribution function, respectively, for wages and w_τ is the poverty-line wage defined by $w_\tau h(w_\tau) = \tau$. The function $p(y,\tau) \le 0$ is the poverty weight assigned by the voter to a poor person with income y. We also assume that the poverty weight increases (towards zero) as income approaches the poverty line, $p_y(y,\tau) > 0$, and at a nonincreasing rate, $p_{yy}(y,\tau) \le 0$. If the second derivative is strictly less than zero then lower incomes of the poor exert an increasingly negative effect on voter utility.

Work disincentives are described by an excess leisure function:

$$L(b) = \int_0^{w_R(b)} \Big[\bar{h} - h(w)\Big] f(w)\,dw = \bar{h}\,F\Big[w_R(b)\Big] \qquad (3)$$

where the amount of excess leisure is defined relative to the number of hours, $\bar{h}$, that voters feel recipients should work. The associated disutility is $H(L(b))$ where, for $L(b) \ge 0$, $H'(\cdot) < 0$ and $H''(\cdot) \le 0$.

The voter faces the budget constraint:

$$y = \pi F\left[w_R(b)\right] b + c$$
$$= q\, b + c \qquad (4)$$

where y is the income of the nonpoor voter, $q=\pi F$ is the tax price of the benefit--equal to the product of the per capita welfare caseload, F, and the individual price component, π. If taxes are lump sum then all voters have $\pi = (1 - m)$, where m is the federal matching rate for welfare expenditures.[3] If taxes are proportional to income, the individual component of tax price is $\pi = (y/\bar{y})\,(1 - m)$, where $\bar{y}$ is the mean income of taxpayers in the state. Equation (4) shows that the welfare caseload is a component of the effective price of welfare benefits, for an increase in the fraction of the population participating (F) raises the per capita price of an increment in the benefit.

Maximizing (1) subject to (4) yields the first-order condition:

$$\begin{aligned} p_y(b,\tau)\, F\left[w_R(b)\right] = {} & G'\left(y - \pi F\left[w_R(b)\right] b - \gamma\right) \times \\ & \left\{F\left[w_R(b)\right] + f\left[w_R(b)\right] w_R'(b)\, b\right\} \pi \\ & + H'\left(F\left[w_R(b)\right]\right) f\left[w_R(b)\right] w_R'(b) \\ & + \left\{p(y_R,\tau) - p(b,\tau)\right\} f\left[w_R(b)\right] w_R'(b) \end{aligned} \qquad (5)$$

where $y_R = w_R h(w_R)$ is income at the reservation wage. The left-hand-side term is the voter's marginal benefit of welfare. A one dollar increase in (per recipient) benefits reduces poverty by reducing the magnitude of the poverty weight associated with welfare receipt for

the proportion of the population receiving benefits. The first term on the right-hand-side is the opportunity cost of foregone consumption. Some of this cost arises because higher benefits are paid to existing recipients and part is incurred because the voter realizes that the caseload will increase. The second right-hand-side term is the marginal cost to the voter resulting from the reduced work effort and increased leisure which comes from the higher benefit and the increased caseload. The last term is the marginal cost which occurs because the new recipients settle for income b which is lower than what their income would be at the reservation wage, which increases poverty.[4]

A downward shift in the low-income wage distribution--or just that portion of it below the poverty line, which is all that is relevant here--would affect several terms. It would raise the marginal utility of a benefit increase, since poverty would be higher; this is the conventional negative effect. But it would also lead to an increase in recipiency, which would raise all three of the marginal cost terms--more recipients would lead to a rise in welfare expenditures and hence a reduction in taxpayer consumption; it would increase work disincentives; and it would have additional deleterious effects on the incomes of some poor individuals. These changes in cost factors would tend to push benefits down. Hence benefits could fall instead of rise, leading to a positive correlation between wages and benefits. The only factor we mentioned previously which is not present in this model is the horizontal-equity notion that voters may compare the benefit to the wage of nonwelfare recipients or eligibles of similar incomes. This could be captured by introducing a term for the wage of a horizontal comparison group, w^*, into the poverty-weight function p with a positive sign. A reduction in the comparison

group's wage would then lead to a reduction in the disutility of a given amount of poverty among the target group and hence to a reduction in the benefit level.

Aggregation of preferences. Now consider a model in which different voters $i=1,\ldots,N_s$ in different states $s=1,\ldots,S$ have preferences of the type we have just described. We can write a reduced-form benefit-demand function for individual i in state s as:

$$b^*_{is} = g\left(q_{is},\ y_i;\ X_i,\ W_s\right) \tag{6}$$

where b^*_{is} is the desired benefit level, q_{is} is the price of benefits, X_i is a set of socioeconomic characteristics of the individual (age, race, education, etc.), and W_s is the level of the unskilled wage in the state. We expect price effects to be negative and income effects to be positive, and we wish to test whether unskilled wages positively affect the benefit.

We take the median voter model as a maintained hypothesis for our analysis. In a single-issue election, single-peaked preferences in the population are sufficient to provide stable public choice under majority rule. However, welfare benefits are implicitly chosen in statewide gubernatorial and legislative elections in which many issues other than welfare are under consideration. Benefits are thus chosen in an explicit multiple issue election. Unfortunately, without some consideration of additional political structure to induce equilibria, equilibria in multiple issue elections are difficult to obtain except under very simple preference assumptions (e.g., that all voters have the same preference function up to some unobservable scale factor). Even with additional structure, unique equilibria are often difficult to obtain, given the possibility of voter coalitions across groups of issues. Therefore we ignore the multiple issue problem and proceed as

if benefits were chosen in a single-issue vote.[5]

Denoting the individual with median b^*_{is} in a state by $i = m$, the actual welfare benefit in state s is:

$$b_s = g\left(q_{ms},\ y_m;\ X_m,\ W_s\right). \tag{7}$$

In most of the literature on public good choice, versions of (7) are estimated on aggregate data--that is, at the level of the jurisdiction (states in our case). To do so requires extra assumptions on top of those of the simple median voter model. First, it requires that the individual benefit demand function be monotonic in income; otherwise, the median income in the state is not the income of the voter with median preferences.[6] Second, however, and more serious, it requires that the individual characteristics X_i be perfectly correlated with individual income. Otherwise, the median value of benefit preferences, b^*_{is}, will not map uniquely into the median income in the state, even on average. The median voter may, on the contrary, not have median income but may have other characteristics which move his/her preferences to the median.

While we will begin our empirical work by estimating the conventional aggregate-level model, we will also subsequently address these issues by using a micro-level data set on welfare preferences to obtain the actual income and characteristics of the voter with median preferences. Welfare preference information is available from a survey--the General Social Survey (GSS)-- which asks direct questions about preferences for welfare spending. In principle we could use these questions to determine the person in each state and in each year who had the median demand for welfare; unfortunately, the GSS sample size is too small to accomplish reliable state- and year-specific determination of the median voter. Instead, we use the GSS

information on income, state of residence, and other characteristics (the X_i variables) to estimate equation (6). We then apply these estimates of the preference function $g(\cdot)$ to data from the March files of the Current Population Survey (CPS) and determine which individual in the CPS has the median predicted welfare preference in each state in each year. Unlike the GSS, the CPS has sufficiently large annual sample sizes to obtain reasonable estimates of state- and year-specific distributions of demands (generally no fewer than 300 or 400 observations, and up to 6000). Finally, we then enter the income and other characteristics of the median-preference person in the CPS into the equation for the state-level benefit and estimate equation (7) using this individual's variables instead of state-level averages. We provide more details on our procedure in the empirical section below.

III. Results: Conventional Aggregate Model

For the aggregate analysis we assembled a data set consisting of all U.S. states in each year from 1969 to 1992. Definitions and descriptive statistics for these variables are presented in Table 1. The dependent variable in our work is the log of the real monthly AFDC benefit per recipient. We also test the AFDC guarantee (maximum amount payable to a family of four), which has been used in a fair number of previous studies. We prefer benefits per recipient because they more accurately reflect the influence of deductions and other benefit-formula factors not easily captured in the guarantee; on the other hand, the benefit captures some income and family-size variation as well. Fortunately, the two variables are highly positively correlated and our results, for the most part, do not depend on which measure is used.

We also estimate some models using welfare expenditures as dependent variables--total annual AFDC expenditures per capita (equal to the product of recipiency times the average benefit per recipient), total public welfare spending per capita in the state (which includes monies spent on programs other than AFDC), and total public welfare spending as a fraction of all state spending. Using public welfare expenditures as the dependent variable allows us to gauge whether substitution between AFDC and non-AFDC programs occurs in state expenditure allocations. Using AFDC expenditures as the dependent variable is equivalent to multiplying equation (7) through by recipiency (or adding its log in a double-log specification). Because our price variable also includes (lagged) recipiency and because we are interested in whether some of our regressors--the unskilled wage in particular--have effects on the recipiency rate, we report results from expenditure regressions which exclude this component from the RHS price variable in order to estimate the reduced-form effect of the unskilled wage, and the other regressors, on expenditures.[7]

The regressors in the equations include total personal income per capita in the state, the benefit price assuming uniform taxation, an unskilled wage variable in the state, and a set of demographic and political characteristics (percent black, percent aged, etc.). The wage variable is computed from the March files of the CPS from 1969 to 1992. In each year, we compute the real average weekly wage (1987 dollars) of all workers in each state aged 16-64 and then select the wage at the 25th percentile of the distribution to proxy the wage for unskilled workers. We also compute other percentile points--the 10th percentile, for example--and test them in our models. We use weekly wages rather than hourly wages because the CPS does not have a good measure of hours worked per week over the years prior to 1976. Past

work has indicated, however, that hourly and weekly wages are highly correlated.[8]

Table 2 shows the results of our initial estimations, using the log of real AFDC benefits per recipient as the dependent variable. Column (1) includes only the income and price variables, as well as year dummies, and reveals significant positive and negative effects of each, respectively. Column (2) shows the effect of adding the unskilled wage, which has a significantly negative coefficient. However, when state-level fixed effects are added, as in column (3), the coefficient reverses in sign and becomes significantly positive. Once again, as in many other analyses of this type, the state fixed effects are jointly significant, and their substantive importance is demonstrated. The contrast in the results likely arises from the fact that many high-benefit states in the U.S. also have greater levels of inequality (more on this below). Consequently, controlling for average income in the state, high-benefit states have lower unskilled wages. The fixed-effects model instead is based on the relationship between year-to-year changes in wages, on the one hand, and year-to-year changes in benefits, on the other, and the results reveal that this relationship is positive (see below for a more specific examination of geographic trends in benefits and wages.)[9]

While price effects are not much affected by the introduction of state fixed effects, income effects fall markedly. Errors-in-variables in the income variable is one explanation for this reduction, but cross-sectional bias (high income states have high benefits) may also be at work. We will return to this issue when we use micro-level data on incomes. The fourth column in the table adds the demographic variables in the state. The coefficients on these variables are jointly significant. Their introduction further reduces

the estimated income effect but has no effect on the wage coefficient.

In columns (5) and (6) we test whether our results are robust to the presence of differential growth rates of benefits in different states by adding interaction variables between the state dummies and a time trend. With these variables included, the coefficients on the other regressors in the equation reflect their relationship with year-to-year benefit movements apart from, or on top of, linear trends. The interactions are jointly significant. While adding these variables reduces the magnitude of the wage effect somewhat, the coefficient remains significantly positive. In column (6) the wage effect that works through the trend is added back into the equation by decomposing the wage variable into two components, one equal to the value predicted from a first-stage regression of the wage on year, state, and state×trend dummies, and the other equal to the residual from this regression. This procedure is equivalent to an instrumental variables procedure in which the state×trend dummies are used as instruments for the wage, and could be justified if the year-to-year wage fluctuations contained some measurement error.[10] The results show a much larger positive effect of the predicted wage on benefits than for the actual wage--and, consistent with this, a smaller effect of the residual wage, which is picking up an effect similar to that in column (5)--implying that, indeed, states with larger trend growth rates of unskilled wages--or, more accurately, slower declines--have also had slower trend declines in welfare benefit levels.

This effect is strong enough that it can be seen from a simple examination of the relationship between unconditional growth rates of benefits and wages by region, as shown in Table 3.[11] The table shows the change in average log benefits and log wages between two 11-year periods, 1969-1980 and 1981-1992 (our time period split in half). Log

wages are measured relative to the median, to control for differences in the growth rate of the whole wage distribution and not just its lower portion. As the table indicates, benefits fell the most between the 1970s and 1980s in the mid-Atlantic region (New Jersey, New York, and Pennsylvania), and fell the least in the Pacific region (California, Alaska, Hawaii, and northwestern states). At the same time, inequality in the lower-tail of the wage distribution increased the most in the first group and increased less (in fact, decreased) for the latter group of states. Other groups fit this pattern as well: the industrial states of the Midwest (Michigan and Ohio, for example), experienced large increases in inequality and also reduced AFDC benefits by sizable amounts. The southeastern states in the U.S., which reduced benefits by very little compared to the rest of the country, also experienced little growth in inequality.[12]

Table 4 shows estimates of equations using the public-welfare share of expenditures and AFDC expenditures as dependent variables, as discussed previously. The results differ markedly from those for AFDC benefits. Income effects are negative, for example, and price effects are sometimes positive--although they are negative when the caseload component of the price variable is omitted. The unskilled wage also has a negative effect on the public welfare share and an insignificant effect on AFDC expenditures. The sensitivity of the price coefficient is explained by the highly inelastic demand function, and separate regression analyses (not shown) indicate that the other coefficients reflect effects on the AFDC recipiency rate. These results imply that unskilled wages, for example, are negatively related to the rate of recipiency, which is not surprising and is implied by the model in Section II. The negative income effects also arise from a residual negative effect of income growth on recipiency, even holding the

unskilled wage fixed. The results from Table 4 serve to emphasize that voters have less control over caseloads than they do over benefit levels, at least for programs that are entitlement in nature, and therefore less control over expenditures than over benefit levels.

IV. Results: Micro-Based Median Voter Model

As we discussed in Section II, the conventional aggregate-level model suffers from the need to assume that the state-level mean income and distribution of characteristics are the same as those of the voter with the median benefit preference. In this section we report results using a micro-level survey on welfare preferences together with the CPS to determine the characteristics of the individual with median preferences.

General Social Survey. The GSS is a nationally-representative, repeated cross-section survey which has been conducted every year since 1972 (except 1979, 1981, and 1992) and interviews approximately 1500 individuals each year (Davis and Smith, 1992). Questions are asked about opinions and beliefs on a wide range of topics, and the question wording is intentionally kept fixed over time to be able to conduct meaningful time-series analyses. One of the questions asked concerns welfare spending. Respondents are asked whether they believe "too much," "too little," or the "right amount" is being spent on welfare.[13] Figure 4 shows how the answers to these questions have changed over the period 1973-1993. There was a pronounced shift against welfare in the mid-1970s, just after the welfare caseload explosion of the late 1960s and early 1970s. Attitudes liberalized gradually over the latter half of the 1970s and early 1980s, leveled off in the mid-1980s, and have recently taken another turn against

welfare. The means of these questions over the period are shown in Table 1, which indicates that about 53 percent of the population believed spending was too high, 18 percent believed spending was too low, and the residual 29 percent believed spending was at the right level.

While the question refers to spending and not benefit levels *per se*, we nevertheless interpret respondents' answers as proxies for b^*_{is} in equation (6). Specifically, we estimate an ordered probit model, classifying the answer "too much" as the lowest category on the scale and "too little" as the highest category so that the coefficients will represent effects on increasing spending.[14,15] As regressors we include annual family income, the price of benefits (assuming proportional taxation), and a variety of individual characteristics shown in Table 1. We pool the GSS survey over all years 1973-1990, giving us 15,162 observations.

As we noted previously, an important question for our analysis and for public choice in general is whether preferences for a single good like welfare are monotonic in income. Figure 5 shows the relationship between income and the percentages of respondents during the 1986-1990 period who believe that either "too much" or "too little" is being spent on welfare. Interestingly, the plot shows clear and strong monotonicity, with preferences for welfare spending falling monotonically with income (apart from normal sampling variance). At first blush this appears to violate the notion of welfare preferences as altruistic but instead suggests that they are based on self-interest, leading to negative rather than positive income effects; we will return to this issue below. In addition, it appears that preferences for welfare fall rapidly with income up to approximately $20,000, after which point they fall at a much slower

pace. This pattern can be easily captured by a two-segment spline in income, which we adopt below.

Table 5 shows several estimates of equation (6). The specification in first column contains the simple income spline as well as the log of the tax price (year dummies are also included in all specifications). The coefficients on the income splines are negative, as expected from Figure 5, and confirm that preferences fall at a slower rate above the spline knot. While the coefficient on log price also has a negative sign, its magnitude is essentially zero. The second column shows the effect of adding the value of the 25th percentile of the log weekly wage distribution in the state of residence (calculated as described in the last section). While our GSS equations are intended to generate within-state estimates of the distribution of preferences, we can also test state-level variables as well. The wage variable has a positive and significant effect on preferences for welfare, consistent with the state-level results discussed previously.

The third column adds dummy variables for the region of residence; these area-specific fixed effects are motivated by the same factors discussed previously for the state-level analysis (namely, that preferences vary across areas in a way that may confound wage effects). As the results indicate, the coefficients are mostly unchanged save that on the low-skill wage, whose coefficient is now much larger. This strengthening of the wage effect when area fixed effects are added mirrors a similar result reported in the last section for state-level models. Mechanically, this implies that although the pure cross-sectional, cross-state relationship between welfare preferences and the low-skill wage is modest, states in regions with greater year-to-year reductions in the low-skill wage are

more likely to experience benefit reductions in those pairs of years.

In the fourth column, we control for a number of additional socioeconomic characteristics. Preferences for welfare spending are greater for those with larger households, who are unmarried, who have higher levels of education, who are black, and so on. For the purposes of our paper, we should note that the significance of these variables (which are correlated with income) imply that the individual with the median welfare preference will not be the individual with median income.

In the final column we replace the region fixed effects with state dummies. The majority of the coefficient estimates change very little; however, the coefficient on the low-skill wage switches sign and becomes insignificant. There is evidence that this is a result of an errors-in-variables problem. When we tabulate the standard deviation of the wage variable over all years 1973-1990, but separately by state, we find it to be highly negatively correlated with state size (proxied by the number of workers in the state). This, combined with relatively small samples of observations in some states in the GSS, could be responsible for a weakened link between year-to-year changes in state means of preferences and state wage rates.[16] The sign on the log wage variable does not affect our choice of the median preference person--since that is a within-state calculation and the wage variable does not vary within states (in a given year)--and hence the use of state or region fixed effects will not affect that choice unless the coefficients on the within-state varying variables are affected. From Table 5 it does not appear that they are much affected, but we will calculate median preference individuals for both specifications as a sensitivity test.[17]

The negative income effects in the GSS contradict those from the

state-level analysis reported previously, and with those reported in the next section.[18] They also contradict the bulk of the literature on AFDC benefits, which shows that state-level income is highly positively related to those benefits (our regressions here have, instead, state fixed effects, but these also have positive income effects). Interestingly, in addition, adding state-level aggregate income to the GSS equations yields a positive coefficient as well, implying that cross-state and over-time variation in GSS preferences behave similarly to those in the state-level benefit regressions.[19] Thus the negative income effect occurs only within-state, within-year.

The most likely statistical explanation for this relationship is that preferences are correlated with income--that is, that higher-income individuals within states have lower preferences for benefits. This can be represented by an individual fixed-effects model where the effects are negatively correlated with income. That state-fixed effects models give positive income effects implies that changes in benefits are instead positively correlated with changes in income; by standard fixed effects arguments, this is the 'true' income effect (i.e., for an individual).[20] In addition, reconciling this with a positive income effect across states in a single cross-section requires the extra assumption that individuals are sorted across states by preferences, but in an opposite way--individuals in higher-benefit states have both higher income and higher welfare preferences than individuals in lower-benefit states. A model which can rationalize these results is the following:

$$b_{ist} = \alpha + \beta y_{ist} + f_i + g_s + \epsilon_{ist} \qquad \textbf{(8)}$$

where f_i is an individual fixed effect negatively correlated with y_{ist} and g_s is a state-level effect positively correlated with y_{ist} (to pick

up sorting).

The existence of biased income effects nevertheless does not affect the legitimacy of the preference ranking given in the GSS data. The median of that distribution is still the correct median, even if the individuals above it have lower income than the individuals below it.

State-Level Regressions Using Median Characteristics. We apply the estimates from column (4) in Table 5 to the March files of the CPS from 1969 to 1992 and order the individuals in the CPS in each state in each year by their predicted index from the ordered probit.[21] We then select the individual in the median of this distribution. Initial inspection of the data revealed that there was considerable fluctuation of individual characteristics in the neighborhood of the median-preference individual; that this could cause difficulties was confirmed by initial testing of these variables in the state-level regressions, which showed all coefficients to be insignificant. Therefore, we instead selected the central 10 percent of the preference distribution (i.e., all individuals 5 percent above and below the median) and averaged their characteristics. These are the variables we then use in the state-level regressions. For comparison purposes, we also calculate the simple median income in each state in each year, without using information on predicted preferences.

Table 6 shows estimates of state-level models identical in all respects to those in Table 2 except that the income, and sometimes the other individual characteristics, are no longer state-level averages but are taken from the CPS calculations (year and state fixed effects are used in all specifications). Column (1) replaces state-level mean income by the simple median income taken from the CPS. Apart from sampling error and apart from differences in the mean and median,

these results are similar to those in Table 2. The income effect remains positive and significant but is only about half the size of the corresponding estimate from Table 2 (.247, shown in column (3) of that table). In the second column we replace this income variable by the income of the 10-percent-band median preference individual and also add the associated individual-level socioeconomic characteristics. Interestingly, the income and price coefficients are, for the most part, not much different than those in the first column. In part this result arises because we found benefit preferences to be monotonic in income and in part it arises because the other individual characteristics are fairly highly correlated with income. The coefficients on the other characteristics, shown in the rest of the column, are quite often significant but not always (for the race variable, almost no median voters are black) but are also quite often different than corresponding coefficients in Table 2. This suggests that the coefficients in Table 2 are not picking up the characteristics of median voters per se but of other parts of the population.

Finally, in the third column we make an attempt to adjust for the fact that not all individuals vote. Since voting probabilities are correlated with income and other characteristics, the person with median preferences is not exactly the same as the voter with median preferences. We use a question in the GSS asking respondents whether they voted in the most recent Presidential election to estimate probit equations for the probability of voting, as a function of the same variables in our welfare preference equation; we then apply that equation to the individuals in the CPS to obtain predicted voting probabilities, which we then use with the individual-specific predicted welfare preferences to calculate a weighted median

preference person. The income of that person, shown in column (3), has a slightly smaller effect but is still positive and significant. Thus our results are robust to the incorporation of voter selectivity.

For the purposes of the main question of our paper, these exercises do not alter the positive effect of unskilled wages on benefits. The magnitudes are quite similar to those in comparable regressions from Table 2, and thus our wage effects appear robust also to the more accurate application of the median voter model we have been able to estimate.[22]

V. Conclusions

In this paper we have tested whether the decline in welfare benefits in the U.S. over the last twenty-five years can be partly attributed to reductions in the wage rates of unskilled workers at the bottom of the wage distribution. Our results, based on conventional state fixed effects models, provide considerable support for the hypothesis. The result is strong enough that it can be seen from unconditional relationships between changes in unskilled wages and ADFC benefits across states from the 1970s to the 1980s, and it is robust to the inclusion of a number of other variables.

In addition, our analysis illustrated a new method of implementing median voter models when direct individual-level information on preferences is available. We used those data to determine who the median-preference individual in the jurisdiction actually is, and thereby avoid some of the difficulties attendant upon using aggregate-level income and other characteristics to proxy those of the median person. Our wage effects on benefits remain positive in this exercise as well.

An area in which further work would be fruitful would be the relationship of AFDC benefit effects to effects on expenditures both on AFDC and other programs. Some of our evidence suggests that caseloads are less under the control of voters and hence that expenditures may rise when unskilled wages fall. This bears further investigation.

Notes

1. We employ the March Current Population Survey (CPS) in each year to obtain these figures. We use all workers, regardless of age, sex, race, or household headship status, and we divide annual earnings by annual weeks of work. The series is deflated with the personal consumption expenditure deflator from the National Income and Product Accounts (base 1987).

2. The wage of those with high school degrees (but no more education) fell more than those at the 25th and 10th percentiles and fell continuously for all years. They differ because a steadily smaller fraction of the population has stopped at high school, and so the percentile point at which high-school graduates is located in the wage distribution has also been falling.

3. We take the effect of b on federal expenditures, and hence individual federal taxes, to be negligible.

4. This effect arises because we have assumed that all eligibles participate and therefore that the increase in the caseload comes entirely from individuals who drop below breakeven to go onto welfare. An alternative model would be one in which there are eligible nonparticipants who, because of welfare stigma or some other cost factor, choose not to go onto welfare. An increase in the benefit would pull some of these families onto the rolls, and their incomes would rise, not fall, as a result. Adding this component to the model would not change any of our qualitative conclusions.

5. Some researchers have rationalized this approach by modeling public choice with an incumbent politician who maximizes his or her expected political support (see, e.g., Holtz-Eakin 1992). Also note that we do not employ alternative models, such as the bureaucratic model, which have been mainly applied to school spending and other situations where referenda are a major mechanism for public choice. For other recent empirical work examining the impact of demographic characteristics other than those of the median voter, see Cutler et al. (1993) and Poterba (forthcoming).

6. In fact, most analyses in the literature do not even have data on state median income but use state mean income instead.

7. A more ambitious approach would be to estimate actual recipiency equations. However, this would lead us too far afield from the main subject of interest; our expenditure equations are

an indirect and simple way to gauge the recipiency effect.

8. In our data, the 25th percentile hourly wage and the 25th percentile weekly wage have a correlation coefficient of .61. The correlation coefficient between the hourly and weekly wages of high school graduates is .96.

9. We should note that the coefficients on the year dummies in the model remain significant and imply declining benefits. Thus the wage and other variables in the equation are still not a complete explanation for declining benefits.

10. It also addresses a common criticism of the fixed effects model in some contexts, for it is often implausible that there is an essentially immediate response to a transitory annual change in any variable, especially the unskilled wage. The fact that the relationship appears between slowly-moving trends may be more plausible behaviorally.

11. It is easier to demonstrate the effect with regions than with states but it holds for the latter as well.

12. This regional pattern of inequality trends is very close to that analyzed by Topel (1994). He also found that the industrial states of the Midwest and Mid-Atlantic have experienced the largest increases in wage inequality.

13. The exact question is given in Appendix A. The welfare question is known for the wording experiments in which responses shift dramatically if "welfare" is replaced by "assistance to" or "caring for" the poor (Hugh Heclo 1986); we do not use either of these latter two questions. A question order experiment in 1976 placed a tax question before the battery of spending questions for half the respondents. This had no effect on average responses to the welfare question in the two groups of respondents, and therefore we use both groups in our analysis.

14. Bergstrom et al. (1982) had exactly the same type of question, but on educational spending, and applied the exact same technique. Ordered probit allows the answer "right amount" to occupy a band in the middle of the preference distribution and permits the cutoff points of that band to be estimated as part of the procedure.

15. Husted (1989) analyzed a similar welfare preference model using a question from the 1982 American National Election Study. However, neither his paper nor the Bergstrom et al. (1982) education study attempted to use such models to determine the median voter.

16. Although the state-level analysis we reported previously used the same wage variable in a state fixed effects analysis, the

dependent variable was the state-level benefit and hence did not have the same amount of year-to-year error as in the GSS. We applied the trend-based instrumental variable procedure described in the last section but this did not change the result.

17. We also tested a number of other specifications to test other hypotheses. Some of these are shown in Appendix Table B-1. Both AFDC benefits and public welfare benefits in the state affect individual welfare preferences negatively, suggesting that the answers to the GSS questions are partly based on the level of welfare spending in the state of residence of the respondent.

18. The income effect remains negative in numerous sensitivity tests conducted to determine whether the effect was due to omitted variables (e.g., religious affiliation, political affiliation, attitudes toward redistribution and helping the poor, and opinions about taxes) or neglected interactions between income and other characteristics (e.g., sex, race, education, and residence in urban or suburban areas).

19. See Appendix Table B-1.

20. We do not have panel data to test this at the individual level, but the panel of states can be treated as a pseudo-panel and, under certain conditions, will give the same results as those of a true panel (Moffitt, 1993).

21. We take all individuals 16-64 in each state in each year. We also test the sensitivity of the results to using the state-level estimates in column (5) of Table 5.

22. They are also robust to the use of the state fixed-effects GSS model in column (5) of Table 5. Estimates applying that equation to the CPS instead of the regional-effects model are presented in Appendix Table B-2.

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Figure 1

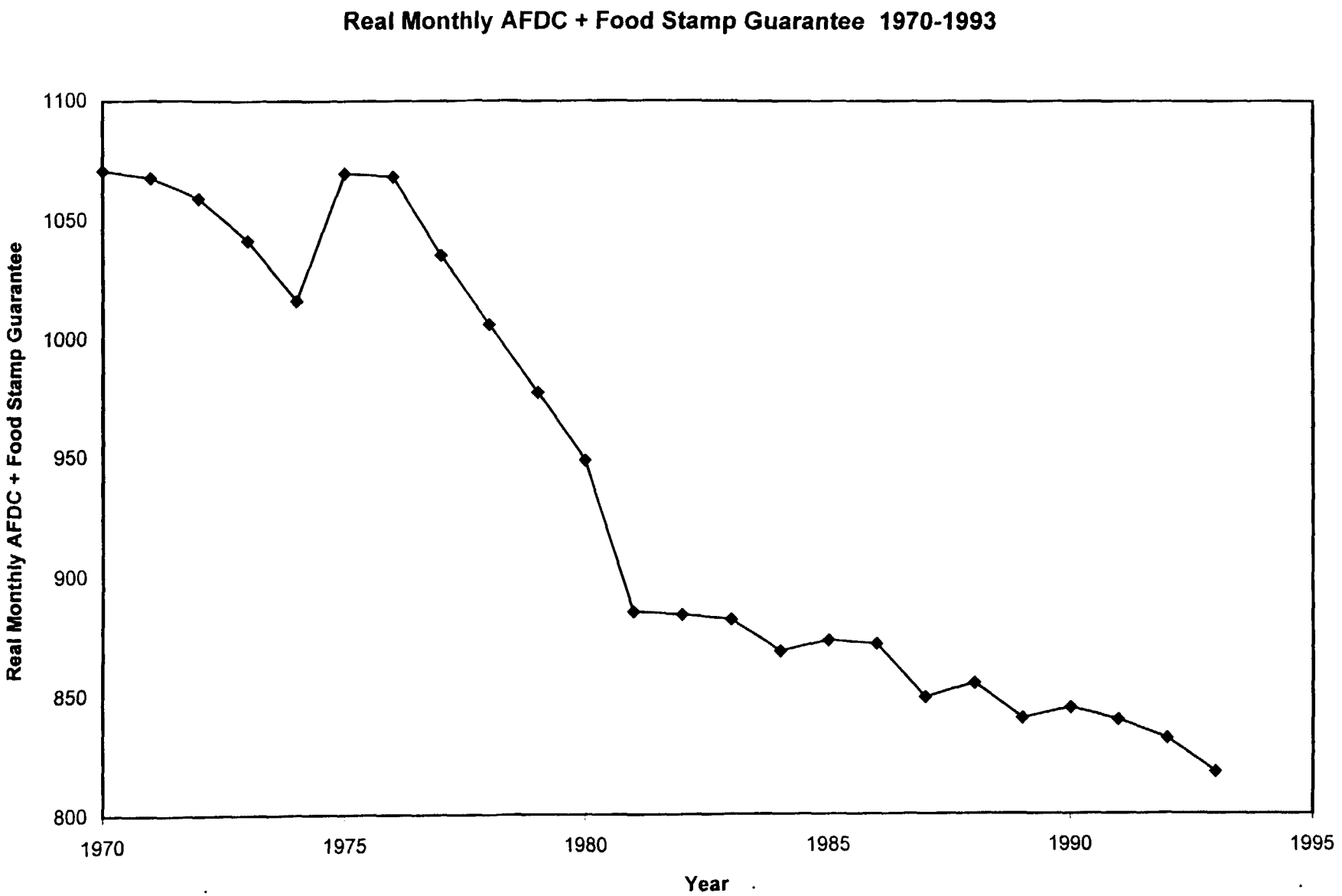
Real Monthly AFDC + Food Stamp Guarantee 1970-1993
Real Monthly AFDC + Food Stamp Guarantee
1100
1050
1000
950
900
850
800
1970
1975
1980
1985
1990
1995
Year

Figure2

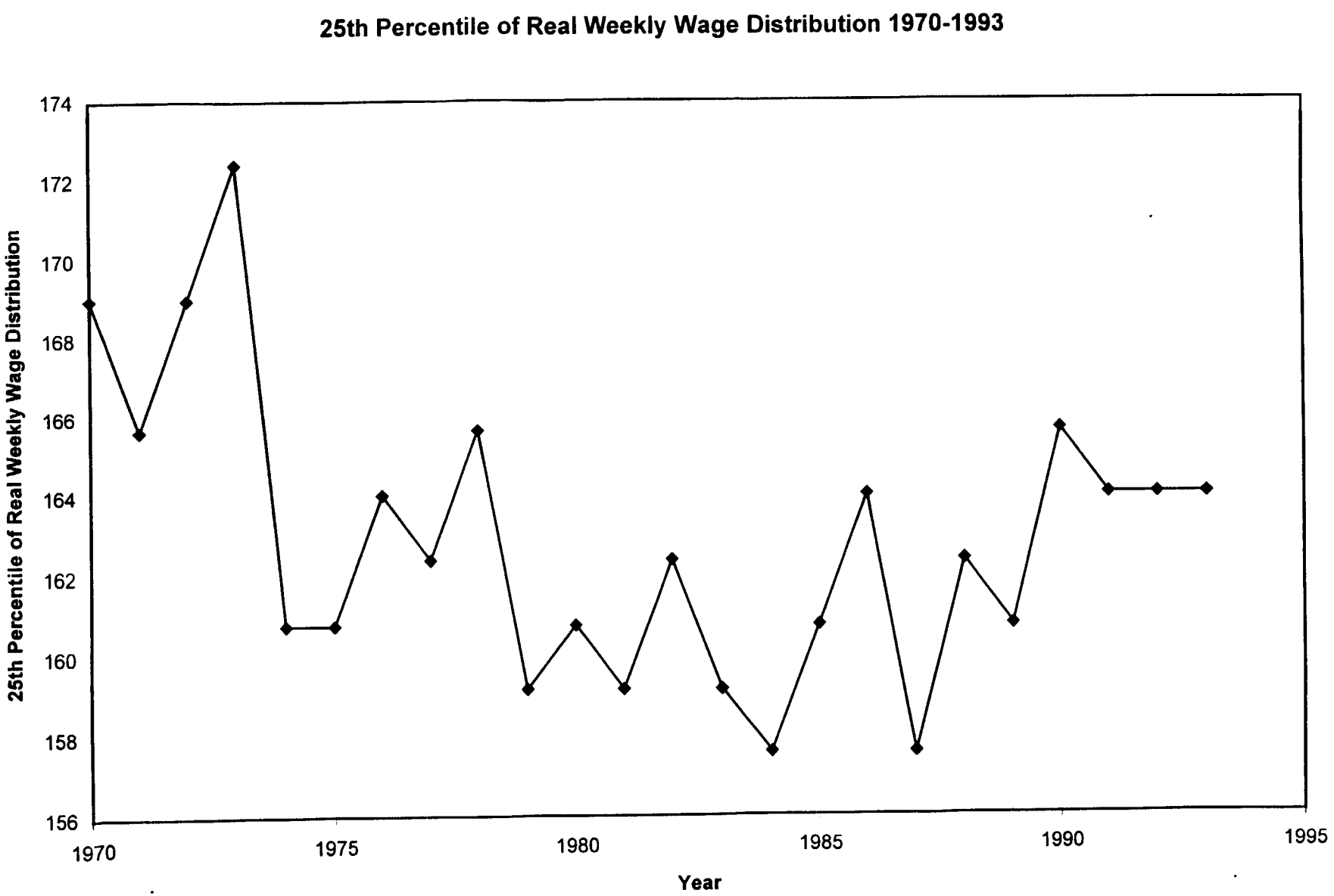
25th Percentile of Real Weekly Wage Distribution 1970-1993
25th Percentile of Real Weekly Wage Distribution
174
172
170
168
166
164
162
160
158
156
1970
1975
1980
1985
1990
1995
Year

Figure 3

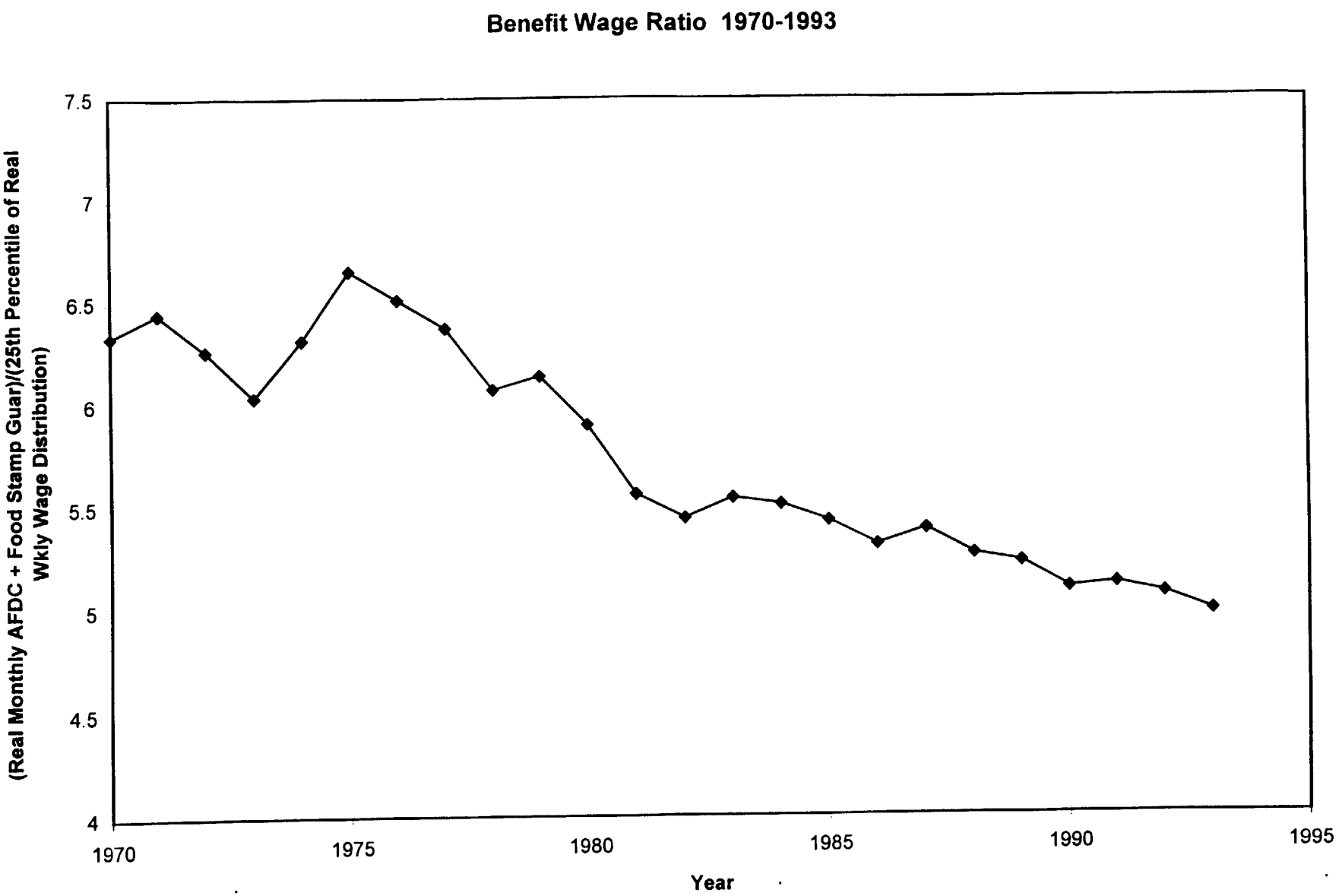
Benefit Wage Ratio 1970-1993
(Real Monthly AFDC + Food Stamp Guar)/(25th Percentile of Real Wkly Wage Distribution)
7.5
7
6.5
6
5.5
5
4.5
4
1970
1975
1980
1985
1990
1995
Year

Figure 4

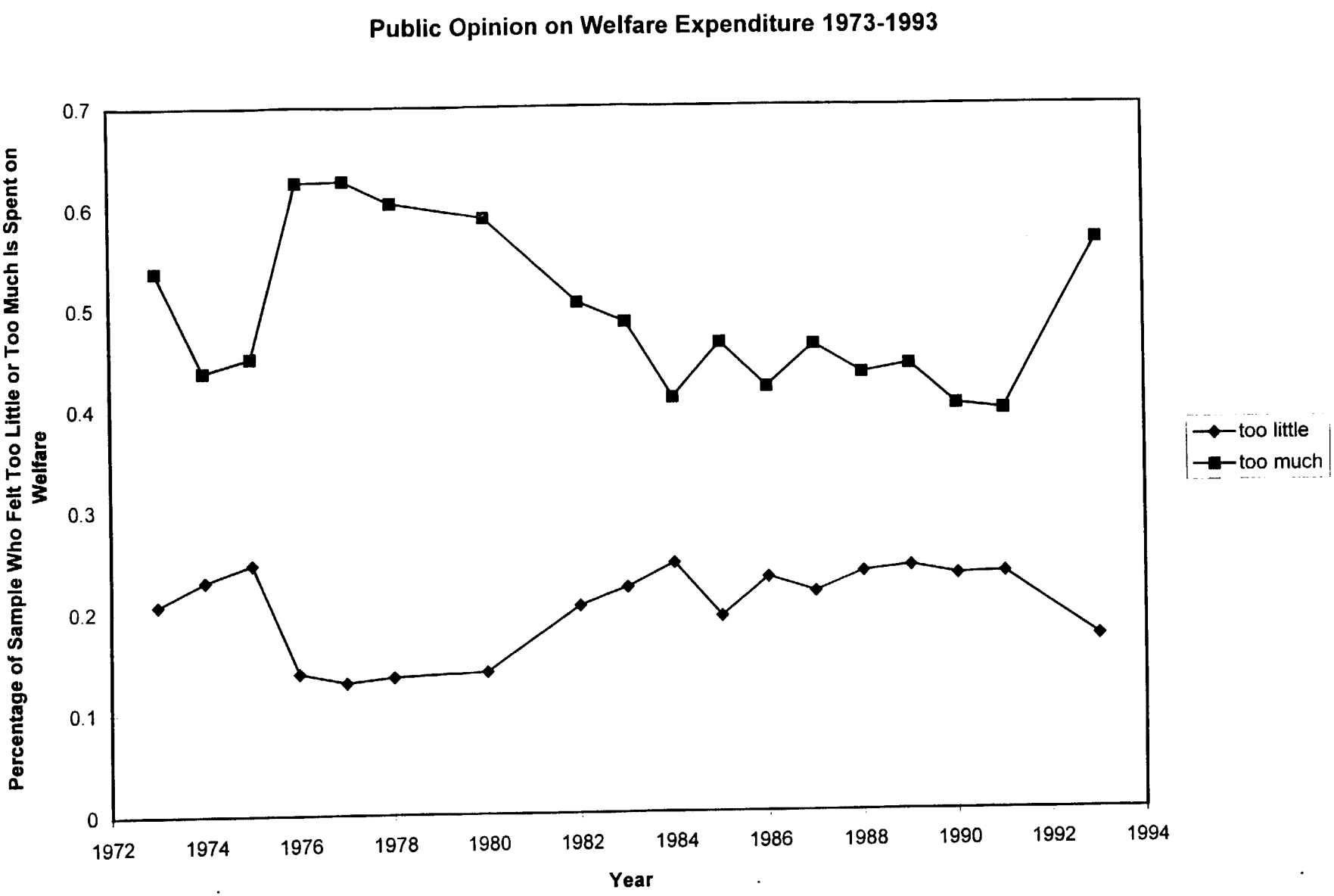
Public Opinion on Welfare Expenditure 1973-1993
Percentage of Sample Who Felt Too Little or Too Much Is Spent on Welfare
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
Year
too little
too much

Figure 5

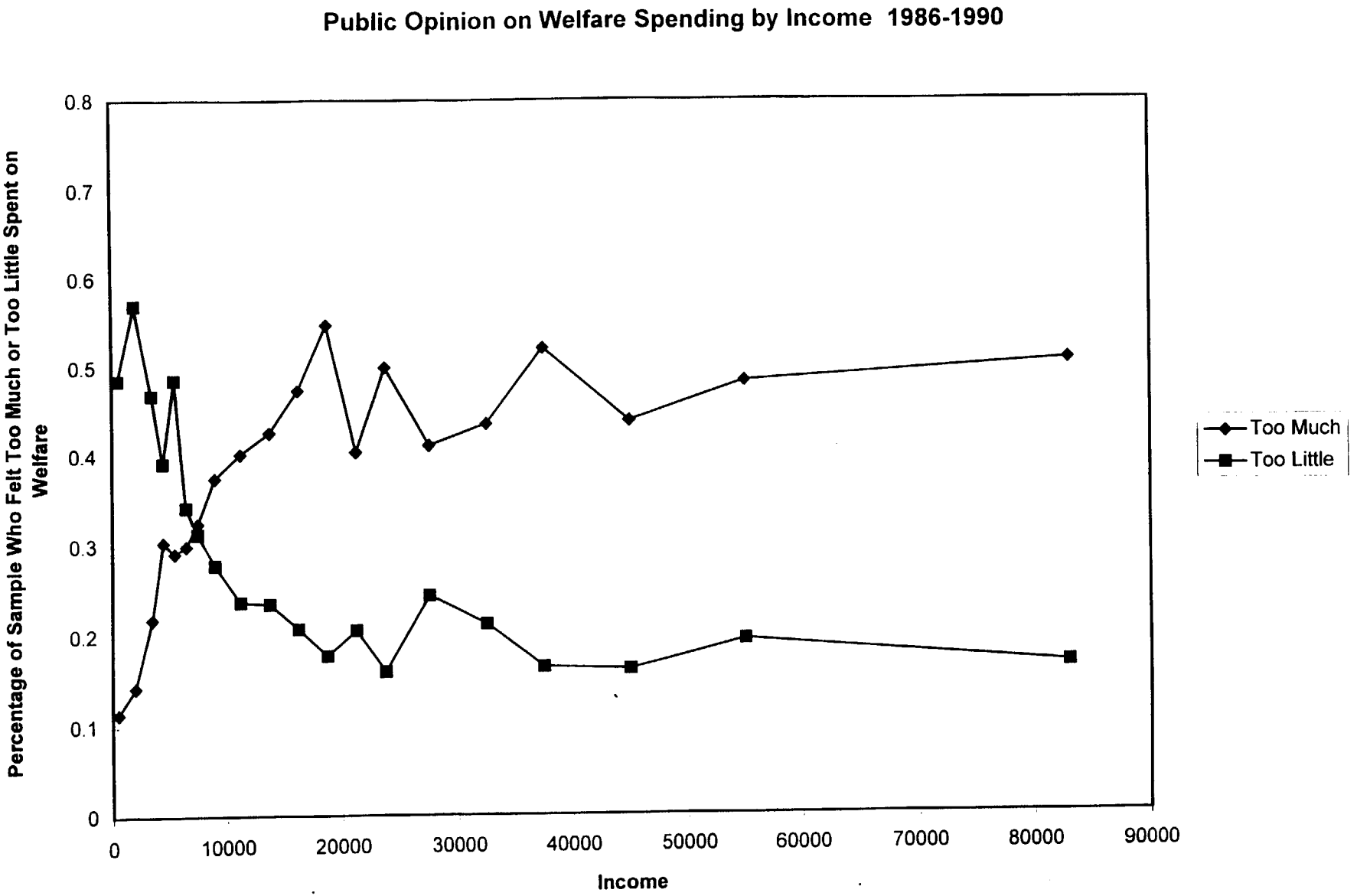
Public Opinion on Welfare Spending by Income 1986-1990
Percentage of Sample Who Felt Too Much or Too Little Spent on Welfare
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
Income
Too Much
Too Little

Table 1. Variable Definitions and Descriptive Statistics

Variable	Definition	Means	(Std. Dev.)
State Level (N = 1150)			
AFDC benefits per recipient	Total AFDC monthly benefits divided by recipients	119.22	(43.37)
AFDC guarantee for a family of four	Maximum monthly amount available to a family of four	495.13	(191.73)
AFDC expenditures per capita	Total annual AFDC benefits divided by state population	57.42	(33.41)
Total public welfare per capita	Total public welfare expenditures divided by state population	242.60	(110.76)
Total public welfare share	Total public welfare expenditures as a percentage of state general expenditures	0.161	(0.055)
Recipiency	Average monthly number of AFDC recipients divided by state population	0.040	(0.014)
State financing share	Share of AFDC expenditures paid by the state	0.448	(0.187)
Price	Tax price of AFDC benefits under uniform taxation (Recipiency × State share)	0.018	(0.010)
Income per capita	Total personal income per capita.	13227	(2556)
Percent black	Percent of population of African descent	0.092	(0.091)
Percent under age 15	Percent of the population 14 years and under	0.244	(0.032)
Percent over age 64	Percent of the population 65 years and older	0.110	(0.023)
Percent with high school	Percent of the population with high school	0.662	(0.108)
Percent with college	Percent of the population with college or more	0.157	(0.044)
A.D.A. ranking	*American for Democratic Action* liberal rating of states' House and Senate delegations	0.430	(0.219)
State Level - from the CPS (N = 1150)			
Low-income wages	Weekly wages at the 25th percentile of the state wage distribution	156.66	(23.59)
Median income	Median household income.	29322	(4360)
Average income	Average household income.	33075	(4703)

General Social Survey (N = 15162)

Welfare preferences	Spending too much (wants less)	0.527	(0.499)
	Spending about the right amount	0.290	(0.454)
	Spending too little (wants more)	0.183	(0.387)
Income - amount	Annual family income	27257	(20224)
Income - refused	Refused to answer income question	0.034	(0.180)
Price - proportional	Tax price of AFDC benefits under proportional taxation Recipiency × State share × (Own Income / State Avg. Inc.)	0.018	(0.016)
Household size	Number of persons living in respondent's household	2.912	(2.912)
Married	Respondent currently married	0.640	(0.480)
Education	High school	0.525	(0.499)
	Associate or junior college	0.033	(0.179)
	College	0.117	(0.321)
	Graduate	0.053	(0.225)
Black	Of African descent	0.102	(0.303)
Age	Years / 100	0.445	(0.170)
Sex	Female	0.514	(0.500)
City	Lives in a city of more than 50,000	0.277	(0.448)
Suburb	Lives in a suburb of a city of 50,000 or more	0.422	(0.494)
Rural	Lives in an area of less than 2,500	0.178	(0.383)
Unemployed	Current labor force status is unemployed	0.034	(0.181)
Retired	Current labor force status is retired	0.117	(0.321)
Blue collar	Craftsmen, kindred workers, operatives	0.310	(0.462)
Service	Clerical and kindred workers, service workers	0.332	(0.471)
Farm	Farmer or farm laborer	0.025	(0.155)

Note: All dollar amounts are deflated to 1987 using the personal consumption expenditure deflator. State-level data are from the 50 states over 1969-1992 (N = 1150). The GSS data are from the 1973-1990 surveys (N = 15162). Family income in the GSS is imputed from the bracketed responses by assigning within-bracket averages calculated from the CPS.

Table 2. State-level Regression Analysis of Determinants of AFDC Benefits

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Log (income per capita)	1.867***	2.202***	0.247***	0.090	0.218***	-0.016
	(0.064)	(0.077)	(0.070)	(0.087)	(0.073)	(0.100)
Log (price)	-0.075***	-0.040**	-0.055***	-0.055***	-0.051***	-0.051***
	(0.020)	(0.020)	(0.011)	(0.011)	(0.010)	(0.011)
Log (low-income wages)	-	-0.594***	0.220***	0.228***	0.146***	-
		(0.078)	(0.039)	(0.039)	(0.035)	
Predicted log (low-income wages)	-	-	-	-	-	0.365***
						(0.074)
Residual log (low-income wages)	-	-	-	-	-	0.175***
						(0.046)
A.D.A. ranking	-	-	-	-0.036	-0.001	-0.039
				(0.027)	(0.024)	(0.027)
Percent black	-	-	-	-1.469***	-1.209	-1.465**
				(0.671)	(1.582)	(0.670)
Percent over age 64	-	-	-	-3.976***	-2.449**	-3.949***
				(0.863)	(1.180)	(0.861)
Percent under age 15	-	-	-	-3.625***	0.007	-3.481***
				(0.621)	(0.703)	(0.623)
Percent with high school	-	-	-	-0.306	2.214***	-0.223
				(0.266)	(0.727)	(0.269)
Percent with college	-	-	-	-0.652	-1.076	-0.550
				(0.482)	(1.454)	(0.483)
Time effects	yes	yes	yes	yes	yes	yes
State effects	no	no	yes	yes	yes	yes
State × trend effects	no	no	no	no	yes	no
R^2	0.481	0.506	0.946	0.948	0.973	0.948

Note: Results based on 1969-1992 data from the 50 states (1,150 observations). Dependent variable is the log of AFDC benefits per recipient. All of the independent variables have been lagged one year. Standard errors appear in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

Table 3. Trends in Wage Inequality and AFDC Benefits by Region, 1969-1980 to 1981-1992

Region	Change in log real AFDC benefits per recipient	Change in log of the ratio of low-income wages to median wages
Mid-Atlantic	-0.277	-0.032
East North Central	-0.194	-0.027
West South Central	-0.187	0.000
West North Central	-0.170	0.010
East South Central	-0.170	-0.010
Mountain	-0.132	0.009
South Atlantic	-0.038	-0.000
New England	-0.034	0.022
Pacific	-0.024	0.023

Note: The entries shown are changes in the 11-year averages between the two periods, taken over all states in each grouping.

Regions:

Mid-Atlantic: New York, New Jersey, Pennsylvania
East North Central: Wisconsin, Illinois, Michigan, Indiana, Ohio
West South Central: Texas, Oklahoma, Arkansas, Louisiana
West North Central: North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri
East South Central: Kentucky, Tennessee, Mississippi, Alabama
Mountain: Montana, Idaho, Wyoming, Colorado, Utah, Arizona, New Mexico, Nevada
South Atlantic: Florida, Georgia, South Carolina, North Carolina, Virginia, West Virginia, DC, Maryland, Delaware
New England: Vermont, New Hampshire, Maine, Massachusetts, Rhode Island, Connecticut
Pacific: California, Oregon, Washington, Alaska, Hawaii

Table 4. State-level Regression Analysis of Determinants of Welfare Expenditures

	Public welfare share		AFDC expenditures per capita	
Variable	(1)	(2)	(3)	(4)
Log (income per capita)	-0.574***	-0.670***	-0.757***	-1.051***
	(0.112)	(0.110)	(0.155)	(0.158)
Log (price)	0.059***	-	0.197***	-
	(0.014)		(0.020)	
Log (state financing share)	-	-0.068***	-	-0.103***
		(0.017)		(0.024)
Log (low-income wages)	-0.084*	-0.104**	0.043	-0.030
	(0.050)	(0.050)	(0.070)	(0.072)
A.D.A. ranking	-0.076**	-0.074**	-0.073	-0.071
	(0.034)	(0.034)	(0.047)	(0.049)
Percent black	-0.271	-1.710*	3.025**	-0.237
	(0.863)	(0.877)	(1.194)	(1.257)
Percent over age 64	-2.569**	-1.943*	-9.982***	-8.731***
	(1.109)	(1.115)	(1.534)	(1.598)
Percent under age 15	-3.625***	-3.487***	-5.225***	-5.083***
	(0.798)	(0.800)	(1.104)	(1.146)
Percent with high school	1.216***	1.389***	0.195	0.668
	(0.343)	(0.342)	(0.474)	(0.490)
Percent with college	-2.836***	-1.765***	-5.120***	-2.714***
	(0.619)	(0.631)	(0.856)	(0.904)
R^2	0.893	0.893	0.912	0.905

Note: Results based on 1969-1992 data from the 50 states (1,150 observations). Dependent variables listed at the top of the table are expressed in logarithms. Regressions include controls for time- and state-specific effects. All of the independent variables have been lagged one year. Standard errors appear in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

Table 5. Individual-level Analysis of the Determinants of Welfare Demand in the GSS

Variable	(1)	(2)	(3)	(4)	(5)
Income ≤ $20,000	-3.583***	-3.554***	-3.611***	-3.125***	-3.089***
	(0.259)	(0.259)	(0.262)	(0.291)	(0.298)
Income > $20,000	-0.336***	-0.340***	-0.348***	-0.352***	-0.357***
	(0.069)	(0.069)	(0.069)	(0.074)	(0.074)
Log (price - proportional)	-0.003	-0.005	-0.001	0.003	-0.000
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Log (low-income wages)	-	0.150*	0.495***	0.330**	-0.157
		(0.088)	(0.130)	(0.132)	(0.179)
Household size	-	-	-	0.048***	0.049***
				(0.007)	(0.007)
Married	-	-	-	-0.076***	-0.074***
				(0.023)	(0.023)
High school	-	-	-	-0.137***	-0.138***
				(0.025)	(0.026)
Associate	-	-	-	-0.153***	-0.152***
				(0.059)	(0.059)
College	-	-	-	0.040	0.036
				(0.040)	(0.041)
Graduate	-	-	-	0.297***	0.296***
				(0.052)	(0.052)
Black	-	-	-	0.657***	0.652***
				(0.032)	(0.033)
Age	-	-	-	-1.181***	-1.192***
				(0.367)	(0.368)
Age - squared	-	-	-	0.769*	0.781**
				(0.395)	(0.396)
Sex	-	-	-	0.020	0.019
				(0.022)	(0.022)
City	-	-	-	0.153***	0.145***
				(0.034)	(0.036)
Suburb	-	-	-	0.105***	0.090***
				(0.032)	(0.034)
Rural	-	-	-	-0.026	-0.019
				(0.037)	(0.037)

Unemployed	-	-	-	0.282***	0.278***
				(0.053)	(0.053)
Retired	-	-	-	0.108***	0.108***
				(0.040)	(0.041)
Blue collar	-	-	-	0.092***	0.089***
				(0.029)	(0.029)
Service	-	-	-	0.091***	0.087***
				(0.027)	(0.027)
Farm	-	-	-	-0.039	-0.024
				(0.071)	(0.071)
Income - Refused	-0.812***	-0.834***	-0.796***	-0.646***	-0.677***
	(0.096)	(0.096)	(0.099)	(0.101)	(0.104)
Upper threshold	0.875***	0.876***	0.877***	0.915***	0.918***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Constant	0.800***	0.018	-1.730***	-0.814	1.737*
	(0.097)	(0.467)	(0.680)	(0.694)	(0.900)
Region effects	No	No	Yes	Yes	No
State effects	No	No	No	No	Yes
Log-likelihood	-14751	-14750	-14732	-14294	-14261

Note: Maximum likelihood estimates of ordered probit models of welfare demand. The data are from the GSS 1973-1990. The functional form of income is a linear spline with a single knot placed at $20,000; the models are estimated with income expressed in $100,000s. The upper threshold is an estimate of the level of the latent index above which respondents answer that they want more welfare; the threshold for the latent index below which less welfare is demanded is normalized to zero. All models include controls for time-specific effects. The log-likelihood of the model with slopes restricted to zero is -15271. Asymptotic standard errors appear in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

Table 6. State-level Regression Analysis of the Determinants of AFDC Benefits: Alternative Measures of Median Voter's Income and Other Characteristics

Variable	Median income	Income of individuals with median preferences	Income of individuals with median preferences adjusted for voting
Log (income)	0.112*	0.125**	0.091*
	(0.059)	(0.055)	(0.054)
Log (price)	-0.059***	-0.054***	-0.058***
	(0.011)	(0.011)	(0.011)
Log (low-income wages)	0.223***	0.224***	0.242***
	(0.046)	(0.043)	(0.041)
Other characteristics of individuals with median preferences			
Household size	-	-0.040***	-
		(0.021)	
Married	-	-0.236***	-
		(0.086)	
High school	-	-0.051	-
		(0.078)	
Associate	-	-0.193*	-
		(0.109)	
College	-	-0.085	-
		(0.116)	
Graduate	-	0.111	-
		(0.163)	
Black	-	1.175	-
		(3.187)	
Age	-	-0.319	-
		(0.281)	
Sex	-	0.080	-
		(0.090)	
Rural	-	0.042***	-
		(0.018)	

Unemployed	-	-0.163 (0.104)	-
Retired	-	0.138 (0.138)	-
Blue collar	-	-0.103 (0.095)	-
Service	-	-0.102 (0.093)	-
R^2	0.946	0.947	0.946

Note: Results based on 1969-1992 data from the 50 states (1,150 observations). Dependent variable is the log of AFDC benefits per recipient. Regressions include controls for time- and state-specific effects. All of the independent variables have been lagged one year. Standard errors appear in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

Appendix A. General Social Survey Question on Welfare Preferences

We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. First (READ ITEM A) ... are we spending too much, too little, or about the right amount on (ITEM)?

A. Space exploration program

B. Improving and protecting the environment

C. Improving and protecting the nation's health

D. Solving the problems of the big cities

E. Halting the rising crime rate

F. Dealing with drug addiction

G. Improving the nation's education system

H. Improving the condition of blacks

I. The military, armaments, and defense

J. Foreign aid

K. Welfare

L. Highways and Bridges

M. Social Security

N. Mass transportation

O. Parks and recreation

Appendix B-1. Individual-level Analysis of the Determinants of Welfare Demand in the GSS: Including Measures of Welfare Spending and Other State-level Characteristics

Variable	(1)	(2)	(3)	(4)	(5)
Income ≤ $20,000	-3.090***	-3.071***	-3.074***	-3.094***	-3.062***
	(0.291)	(0.223)	(0.223)	(0.291)	(0.223)
Income > $20,000	-0.352***	-0.348***	-0.348***	-0.357***	-0.356***
	(0.074)	(0.072)	(0.072)	(0.074)	(0.072)
Log (price - proportional)	0.001	-	-	0.002	-
	(0.011)			(0.011)	
Log (low-income wages)	0.336***	0.294**	0.296**	0.140	0.129
	(0.132)	(0.135)	(0.135)	(0.163)	(0.163)
Log (AFDC benefits per recipient)	-0.168***	-	-	-0.213***	-0.225***
	(0.048)			(0.053)	(0.055)
Log (AFDC expends. per capita)	-	-0.030	-	-	-
		(0.029)			
Log (total public welfare per capita)	-	-	-0.064*	-	-
			(0.037)		
Log (state financing share)	-	0.052	0.049	-	0.011
		(0.040)	(0.040)		(0.042)
Log (avg. household income)	-	-	-	0.353**	0.354**
				(0.172)	(0.180)
Log (recipiency)	-	-	-	-	0.075*
					(0.040)
Log-likelihood	-14288	-14293	-14292	-14286	-14284

Notes: Maximum likelihood estimates of ordered probit models of welfare demand. The data are from the GSS 1973-1990. The functional form of income is a linear spline with a single knot placed at $20,000; the models are estimated with income expressed in $100,000s. The upper threshold is an estimate of the level of the latent index above which respondents answer that they want more welfare; the threshold for the latent index below which less welfare is demanded is normalized to zero. All models include the socio-economic variables listed in columns 4 and 5 of Table 5 (not reported) and controls for time- and region-specific effects. The log-likelihood of the model with slopes restricted to zero is -15271. Asymptotic standard errors appear in parentheses.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.

Appendix B-2. State-level Regression Analysis of the Determinants of AFDC Benefits: Alternative Measures of Median Voter's Income and Other Characteristics Using the State Fixed Effects GSS Model

Variable	Median income	Income of individuals with median preferences[†]	Income of individuals with median preferences adjusted for voting
Log (income)	0.112*	0.085	0.089
	(0.059)	(0.057)	(0.054)
Log (price)	-0.059***	-0.056***	-0.059***
	(0.011)	(0.011)	(0.011)
Log (low-income wages)	0.223***	0.233***	0.242***
	(0.046)	(0.044)	(0.041)
R^2	0.946	0.947	0.946

Note: Results based on 1969-1992 data from the 50 states (1,150 observations). Dependent variable is the log of AFDC benefits per recipient. Regressions include controls for time- and state-specific effects. All of the independent variables have been lagged one year. Standard errors appear in parentheses.

† Coefficients for the household size, marital status, age, race, schooling, employment status, rural residence, retirement status, and occupation of individuals with median preferences included but not reported.

* Significant at .10 level. ** Significant at .05 level. *** Significant at .01 level.