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MACROECONOMICS, INCOME  
DISTRIBUTION, AND POVERTY

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Macroeconomics, Income  
Distribution, and Poverty

ABSTRACT

This paper investigates the impacts of macroeconomic activity and policy on the poverty population. It is shown that both the poverty count and the income share of the lowest quintile of income recipients move significantly with the business cycle. The differential impact of inflation versus unemployment on low income groups is analyzed at length. The evidence indicates that unemployment has very large and negative effects on the poor, while inflation appears to have few effects at all. In addition, changes in tax policy since 1950 have led to decreasing progressivity in the overall tax structure. Special attention is given to changes in the poverty rate over the past decade and to prospective changes in the remainder of the 1980s.

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I. INTRODUCTION  
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The plight of the poor is often invoked in discussions of national economic policy. Those who take a hard line against inflation frequently claim that inflation, "the cruelest tax," victimizes the poor more than other groups, so that an anti-inflation policy can be construed as beneficial to the poor. Similarly, those who are more concerned about unemployment assert that the poor bear a disproportionate share of the burden when high unemployment is used to wring inflation out of the system. It is unlikely that both groups can be right.

This paper summarizes the existing evidence on how macroeconomic activity affects the poor, adds new evidence where appropriate, and examines some of the channels through which these effects work.

Section II is a brief overview of the issue and a selective survey of the literature. Sections III and IV comprise the heart of the paper. In Section III, we study how unemployment and inflation affect the income distribution and poverty, starting at a rather aggregate level and proceeding down to more detailed mechanisms linking macroeconomic events to the incomes of specific demographic groups. Section IV looks at how changes in tax policy since 1950 have affected the poor. Section V uses some equations estimated in Section III to analyze the macroeconomic

factors responsible for changes in income distribution and poverty over the last decade, and Section VI uses these same equations (in conjunction with macroeconomic forecasts) to project income shares and poverty rates to 1989. Section VII is a brief summary of our principal conclusions.

## II. THE BUSINESS CYCLE AND THE DISTRIBUTION OF INCOME

### A. MACROECONOMIC ACTIVITY AND POVERTY

In this paper we present a variety of evidence to support the contention that cyclical fluctuations have a profound effect on poverty. But before burying our noses in econometric results, it may be useful to begin with a naive look at the historical data. After all, a strong empirical regularity ought not to require sophisticated statistical methods to ferret it out. In fact, nothing more than a quick perusal of the official poverty data is needed to see that the poverty rate falls in good times and rises in bad.

Figure 1 shows how the poverty rate among individuals has changed over the last two and a half decades and also indicates periods of recession. During the long expansion of the 1960s, the percentage of people living below the poverty line fell rapidly and continuously -- from about 22% in 1961 to about 12% in 1969. Poverty declined particularly rapidly during the boom years of 1965, 1966 and 1968 (which, of course, were also the years in which the Great Society programs were getting started.) Then the poverty count rose slightly when the economy experienced a mild recession in 1969-1970. When expansion resumed in 1971-1973 the poverty rate ratcheted down another notch -- to 11.1%, its historic low. But then the deep recession of 1973-1975 pushed poverty back to 12.3%. The 1976-1978 expansion trimmed the poverty rate once again. But then back-to-back recessions in 1980 and 1981-1982 raised poverty from 11.7% in 1979 to 15% in 1982. In 1982 and 1983 real GNP fell and then rose. The average unemployment rate was the same in both years, and the poverty count crept upward to 15.2%.

# Individual Poverty Rate: 1959-1983

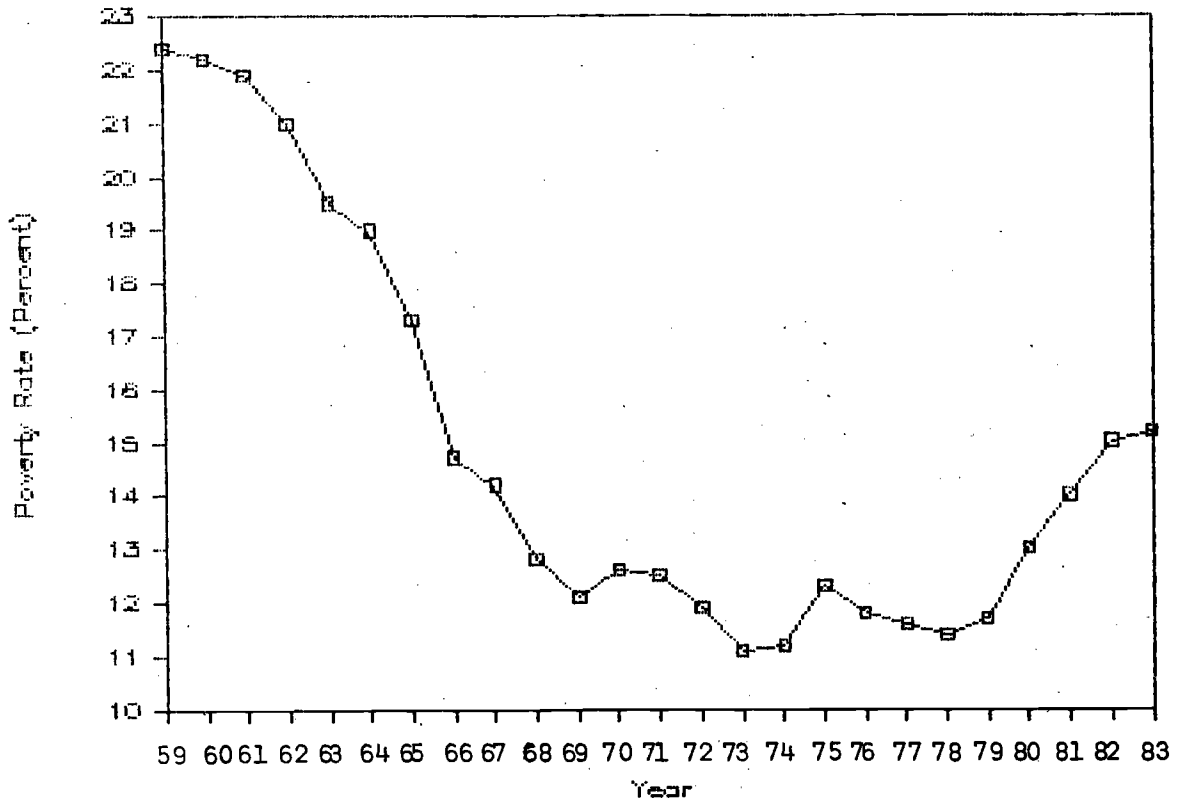


FIGURE 1

All in all, there seems to be a consistently negative correlation between real economic growth and poverty. In fact, Murray (1983) has noted that between 1950 and 1980 the simple correlation between changes in real GNP per household and changes in the percentage of the population below the poverty line was  $-.69$ . Events since 1980 seem to reinforce this correlation.

However, the poor are not a homogeneous population. Poverty rates differ significantly by race and sex and age of household head. Focussing on the change in aggregate poverty numbers over the business cycle may disguise quite different cyclical experiences among various demographic subgroups.

A number of researchers have attempted to measure the extent to which poverty rates among different groups respond to changes in overall economic growth. (Anderson (1964); Perl and Solnick (1971); Thornton, Agnello and Link (1978); Hirsch (1980).) Much of this work has involved simple regressions of changes in annual poverty rates by demographic group against changes in GNP, in government transfers, and in a few additional cyclical indicators (such as unemployment rates). These articles uniformly show that certain households are less affected by economic cycles than others. In particular, households headed by elderly people and by women seem largely unaffected by accelerations and decelerations in economic growth. The results for other types of households appear quite sensitive to the equation specification.<sup>1</sup> Only among white male-headed households do clear effects emerge in every study.

However, these studies provide only a very aggregate answer to the question "How do business fluctuations affect poverty?" Economic growth

raises mean income and decreases the percentage of people below any absolute poverty line.<sup>2</sup> But changes in the shape of the distribution may also influence the poverty count in ways that mean income does not capture. For instance, if the distribution of income spreads out during boom times, there might be as many or more people below the poverty line even though the poverty line falls to a lower point in the distribution.

Recognizing these complications, Gottschalk and Danziger (1984) have recently implemented a more sophisticated approach to relating poverty to general macroeconomic conditions. They estimate the extent to which aggregate changes in poverty are due to changes in government transfer benefits, changes in mean real income, and a catchall "all other factors" affecting the shape rather than the position of the income distribution. The net change in poverty depends on the relative strength of these three effects, which vary by time periods and among demographic groups.

Their findings are potentially disturbing for proponents of "trickle down." They find that changes in mean transfers have consistently had negative effects on the poverty percentage since 1967 (although the effect diminishes in recent years). As expected, increases in mean income have on average pulled more people above the poverty line -- an effect which reverses in years when real incomes fall. But they find that changes in the shape of the distribution have largely served to increase the number of poor people. Between 1967 and 1982, Gottschalk and Danziger calculate that widening of the distribution, holding transfers and mean incomes constant, increased the poverty rate by 2.9 percentage points. Only the growth of the mean of the distribution, combined with the growth of transfer programs aimed at



the lower-income households, offset this change in shape and led to generally lower poverty rates.

## B. MACROECONOMIC ACTIVITY AND INCOME DISTRIBUTION

While the focus of this conference is on poverty, it is well known that any official poverty line is arbitrary. There is really little economic difference between a family with an annual income \$100 below the poverty line and another with income \$100 above. In addition, the percentage of people below the poverty line in any given year depends heavily on how the poverty line is defined.

Part of the negative relationship between GNP growth and poverty follows arithmetically from the way in which poverty is defined in this country. The poverty line was set in 1965, based on a calculation of need levels among various types of families. Since that time, it has been automatically increased each year by the percent change in the Consumer Price Index. If the shape of the distribution of income remains unchanged and no real growth in income occurs, the percentage of the population defined as "below the poverty line" will remain constant from year to year. However, if real incomes grow, shifting the distribution of income to the right without changing its shape, the percentage of people below the poverty line must shrink. Figure 2 shows the ratio of the poverty line for a family of four to mean family income over the last 24 years. Because of increases in real incomes in the late 1960s and early 1970s, the poverty line fell from 50% to 33% of mean income from 1959 to 1973. However, the slowdown in economic growth

# Ratio Poverty Line/Mean Family Income

Family of Four

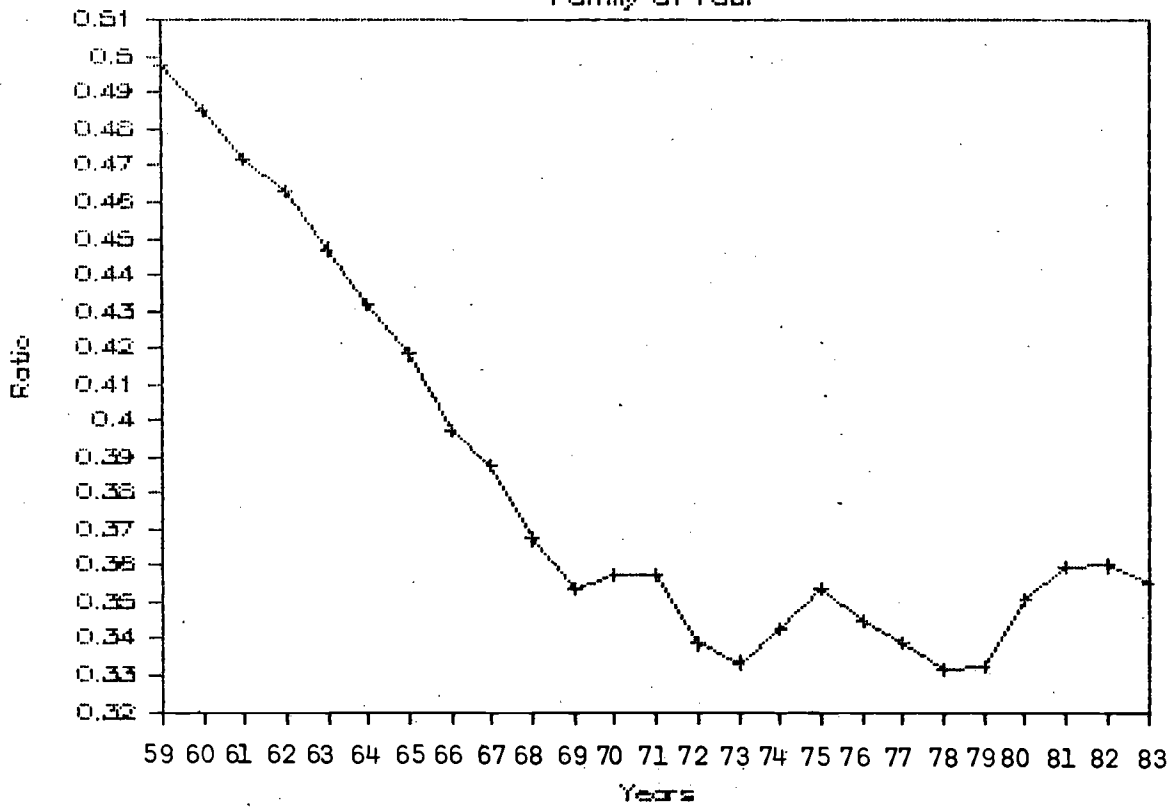


FIGURE 2

in the last decade has kept the line around 34% of mean income since 1973.

Because an absolute poverty line produces a falling poverty count in times of economic growth,<sup>3</sup> many social scientists eschew the narrow focus on poverty and look more broadly at the problem of income inequality. Even if one is interested only in poverty, a case can be made that the share of income received by the lowest 20% of families (or some similar measure) is at least as good an index of progress against poverty as the official poverty rate. (Blinder (1980, pp.455-456).) For this reason, we turn now to evidence on the effects of macroeconomic activity on income inequality rather than on poverty rates.

A series of articles published in the late 1960s and early 1970s examined the way in which the shape of the income distribution in the U.S. changed with economic cycles. Though their methods differed significantly, these studies came to similar qualitative conclusions. Metcalf (1969) described the income distribution as a displaced lognormal and found that low-income households gained ground on other groups when the economy improved. Groups less attached to the labor force (in particular, female-headed households) showed smaller responses. Thurow (1970) fit a beta distribution and found weaker but similar effects. Mirer (1973) estimated a model based on disaggregating income by source. He found that the working poor and the very rich suffer most when the economy turns down. Beach (1977) estimated the cyclical responsiveness of income decile shares in order to calculate Gini coefficients and found that the Gini increased in downturns.

In short, this research indicated that the income distribution widens when the economy shrinks and narrows when it grows, implying that

the poor gain relative to the rich during cyclical upturns. Investigating this effect at a more disaggregate level, Blank (1984) has recently compared the cyclicalities of different components of household income among various income and demographic groups. Her research indicates that there are large differences in the cyclicalities of various income components. The primary channel by which low income households "catch up" in periods of growth is through very large procyclical movements in the labor income of the household head. This occurs because real wages, hours of work, and labor force participation all increase among the poor during an expansion. The effect is so strong that it overcomes the fact that labor income is a relatively low percentage of total income (35.3%) for poor households.<sup>4</sup>

The general conclusion of all this research is that the bottom part of the income distribution loses in relative terms in a recession and gains in an upswing. Our concern is to investigate this relationship between the macroeconomy and the income distribution more closely. The next section will look in more detail at the various economic changes that take place during business cycles. We focus on fluctuations, rather than on general economic growth, for two simple reasons. The first follows from the policy-oriented nature of this conference: while a permanent increase in the growth rate of per capita income would be welcome, and would probably do wonderful things for the poor, no one has any idea how to achieve this. In contrast, at least some economists (including us) believe that policy makers have substantial influence over the business cycle. The second reason is historical/statistical: since the long-run growth rate of per capita GNP has been remarkably constant in the United States for as long as we

have data, statistical analysis can tell us little about the distributional effects of a permanent acceleration of growth. On the other hand, cyclical variations in the growth rate are frequent and sizable.

### III. INFLATION, UNEMPLOYMENT AND THE POOR

#### A. WHICH IS THE 'CRUELEST TAX'?

The postwar history of economic fluctuations in the United States can be succinctly summarized by looking at the behavior of two variables: the rate of inflation and the rate of unemployment. Despite many denunciations of inflation as "the cruelest tax," there is little doubt that unemployment, not inflation, actually bears most heavily on the poor.

We have already seen that the poverty rate increases in economic downturns. This means that there is a strong positive relationship between unemployment and poverty. Furthermore, there is a common sense story behind this correlation: when times are bad, less productive workers with lower skills are likely to be laid off first and to bear the brunt of unemployment.

But what about inflation and poverty? The poverty rate fell during the low-inflation years 1961-1965, but fell even faster from 1965 to 1969 as inflation accelerated. Inflation declined from 1970 to 1972 (assisted by price controls), and poverty fell again. But poverty also declined as inflation accelerated in 1973. The two most inflationary years of the postwar record were 1974 and 1979. In each of these years, the poverty rate crept upward. But during the disinflation of the 1980s poverty increased even faster.

Despite unending incantations about how inflation weighs most heavily on the poor, there is no evident correlation between poverty and inflation. Of course, we will never settle the issue by looking at one variable at a time. Unemployment and inflation are correlated in the data, there are time lags, and inflation displays a strong upward trend in the postwar United States. It is possible that, once time and unemployment are statistically controlled for in a multiple regression, a meaningful relationship between inflation and poverty would emerge. But we shall see below that statistical analysis confirms the apparent simple relationships: unemployment, not inflation, has the strongest bearing on the well-being of the poor.

We present this evidence next. Following that, we discuss in more detail the specific ways in which unemployment bears upon the poor, and then end this section with a detailed analysis of the channels by which inflation might differentially affect household incomes.

#### B. NEW ECONOMETRIC EVIDENCE

A simple framework for investigating the relative effects of inflation versus unemployment on the income distribution was introduced by Blinder and Esaki (1978). In this section we develop and extend that work. We find that adding nine new years of data and some new wrinkles to their specification does not overturn their basic conclusion that high unemployment is strongly and systematically regressive whereas high inflation has weak, if any, effects on the distribution of income.

The specification estimated by Blinder and Esaki was :

$$(1) S_{it} = a + bt + cU_t + dI_t + e_t,$$

where  $t$  is time,  $S_{it}$  is the income share of the  $i$ th quintile at time  $t$ ,  $U_t$  is the national civilian unemployment rate, and  $I_t$  is the inflation rate (based on the GNP deflator).<sup>5</sup> Their primary results, based on the income distribution time series published by the Census Bureau from 1947 to 1974, are summarized in the first part of Table 1.

According to these results, the lower quintiles systematically lose from unemployment and gain (relatively) from inflation. Specifically, a 1 percentage point rise in unemployment decreases the income share of the lowest quintile by .13 of a percentage point while a 1 point rise in the inflation rate increases their share by a scant .03 of a percentage point. Both effects are significant at the 5% level.

Perusing the results for other quintiles reveals a fairly consistent pattern: unemployment is a regressive tax while inflation is a progressive one. More specifically, high unemployment redistributes income away from the bottom two quintiles and toward the top quintile. Inflation redistributes away from the fourth quintile toward the lowest quintile. These findings are broadly consistent with the literature reviewed in the preceding section, which showed that the income distribution widened in economic downturns.

Recently, Asher (1983) updated Blinder and Esaki's regression for the lowest fifth and made two useful amendments. First, he estimated the equations with a correction for first-order autocorrelation. Second, he hypothesized (and found) that the relationship between the share of the lowest fifth and unemployment was nonlinear. His resulting coefficients are reported at the bottom of Table 1.

Evaluated at the sample mean, the effect of unemployment is close to that estimated by Blinder and Esaki, but Asher's quadratic

TABLE 1

THE EFFECT OF UNEMPLOYMENT AND INFLATION  
ON QUINTILE INCOME SHARES IN THE U.S.

A. RESULTS FROM BLINDER AND ESAKI<sup>1</sup> (1978)

<u>Dependent Variable Income Share Of</u>	<u>Coefficients On</u>	
	<u>Unemployment</u>	<u>Inflation</u>
Lowest fifth	-.129* (.027)	.031** (.011)
Second fifth	-.135* (.030)	.010 (.013)
Third fifth	-.031 (.034)	-.007 (.014)
Fourth fifth	.044 (.031)	-.033* (.011)
Top fifth	.272* (.074)	-.005 (.031)

B. RESULTS FROM ASHER<sup>2</sup> (1983)

<u>Income Share Of</u>	<u>Unemployment</u>	<u>Unemployment Squared</u>	<u>Inflation</u>
Lowest fifth	-.332* (.115)	.021** (.010)	.021 (.013)

Standard errors in parentheses.

<sup>1</sup> Time period 1947-1974. Not shown are coefficients on constant and time variables.

<sup>2</sup> Time period 1948 - 1981. Not shown are coefficients on constant and time variables.

\* Significant at 1% level.

\*\* Significant at 5% level.



specification makes the effect of unemployment diminish (in absolute value) as U rises. He interprets this as evidence of "last hired, first fired."<sup>6</sup> (No results are reported for other quintiles.)

We have estimated a new set of regressions, adopting Asher's quadratic specification for U, but differing in three additional respects:

(1) The economic literature on the redistributive effects of inflation points to unanticipated inflation as the primary (perhaps the only) source of income redistribution. So we separated inflation into anticipated and unanticipated components, using a simple autoregressive model to generate expectations.<sup>7</sup>

(2) We use the prime-age male unemployment rate,  $U^*$ , rather than the overall unemployment rate, U, as a better indicator of labor market conditions since it is insensitive to the substantial demographic changes that have taken place over this period.

(3) One possible explanation for Asher's finding of high positive autocorrelation is that income shares adjust to macroeconomic conditions only with a lag. While a general distributed lag model would have been preferable, the scarcity of degrees of freedom persuaded us to adopt a simple geometric distributed lag,

$$(2) \quad S_{it} - S_{it-1} = (1-g)(S^*_{it} - S_{it-1}),$$

where  $S^*$  is the equilibrium share of group i. This requires that we include a lagged dependent variable in the regression. The resulting specification is statistically very close (but not identical) to Asher's first-order autocorrelation correction.

After all these alterations, our final specification is:

$$(3) S_{it} = a + bt + c_1 U^*_t + c_2 U^{*2}_t + d_1 I^a_t + d_2 I^u_t + gS_{it-1} + e_t,$$

where  $I^a$  is anticipated and  $I^u$  is unanticipated inflation. Estimation was by ordinary least squares and the sample period was 1948-1983.<sup>8</sup> Results are presented at the top of Table 2. From the estimated coefficients, it is easy to unscramble the equilibrium effects of inflation and unemployment (evaluated at the sample mean) on income shares. These are also shown in Table 2.

The results are about as expected. High unemployment has significant and systematically regressive effects on the distribution of income: the poorer the group, the worse it fares when unemployment rises. Despite the larger unemployment coefficient, the estimated effect of unemployment on the share of the lowest quintile is similar to that estimated by Blinder and Esaki because these regressions use  $U^*$  rather than  $U$ , and  $U^*$  moves less than  $U$  over the cycle. In only one of the five quintiles does unemployment show the nonlinear effect discussed by Asher. In general, the additional nine years of data lead to estimates that are strikingly similar to those of Blinder and Esaki. (Compare Tables 1 and 2.)

For inflation, few significant effects were found. First, we tested the hypothesis that the coefficients of anticipated and unanticipated inflation were equal. Contrary to theoretical expectations, this hypothesis could never be rejected. So we simply combined the two variables into actual inflation, which proved to be significant only for the second (from the bottom) quintile. Although mostly insignificant, the point estimates suggest that inflation is a somewhat progressive tax.

TABLE 2

EFFECTS OF INFLATION AND UNEMPLOYMENT ON  
INCOME SHARES AND POVERTY RATES IN THE U.S.DEPENDENT VARIABLE: QUINTILE INCOME SHARE<sup>1</sup>

	Unemployment	Unemployment Squared	Inflation	Lagged Dependent Variable	R <sup>2</sup>	Durbin h-statistic <sup>2</sup>	Steady - State Effect of 1 point rise in: Unemployment	Inflation
Lowest Fifth	-.100* (.023)	3	.008 (.010)	.463* (.117)	.865	.973	-.185	.015
Second Fifth	-.238* (-.050)	.019* (.005)	.021* (.008)	.404* (.095)	.946	-.774	-.160	.035
Third Fifth	-.33** (.016)	—	.010 (.009)	—	.778	1.78 <sup>4</sup>	-.033	.010
Fourth Fifth	.030** (.016)	—	-.006 (.008)	.434* (.139)	.836	-1.33	.053	-.011
Top Fifth	.198 (.046)	—	-.016 (.023)	.314** (.131)	.818	-1.12	.289	-.023

DEPENDENT VARIABLE: POVERTY RATE<sup>5</sup>

	Unemployment	Inflation	Transfers/ GNP	Poverty Line/ Mean Income	Lagged Dependent Variable	R <sup>2</sup>	Durbin h-statistic	Steady-State Effect of 1 point rise in: Unemployment	Inflation
For All Persons	.687* (.281)	.094** (.049)	-.280 (.279)	.395** (.091)	.369* (.118)	.990	.115	1.089	.149
For All Families	.603* (.227)	.077** (.040)	-.242 (.225)	.324* (.076)	.376* (.113)	.991	.238	.966	.123

Standard errors in parentheses

\*Significant at 1% level; \*\*Significant at 5% level

Time Period 1948-1983. Not shown are coefficients for intercept and time trends. Complete regression results available from authors on request.

Presence of lagged dependent variable requires use of Durbin h-statistic rather than Durbin-Watson.

--indicates variable was omitted from final regression due to insignificance.

Durbin-Watson statistic, since the regression has no lagged dependent variable.

Time period 1959-1983. Not shown are coefficients on intercepts. Unemployment squared was insignificant in both regressions and therefore omitted from the model.

The lagged dependent variable was highly significant, except for the middle quintile. Estimated adjustment speeds for the other four quintiles ranged between 69% and 54% per year. The Durbin h-statistics gave no indication of serial correlation.

Given our interest in the poor, we might want to see if the poverty rate varies in the same way as the share of the bottom quintile. The same specification would not be appropriate for the official poverty rate because, unlike the shares data, the poverty data display a pronounced time pattern. (See Figure 1.) So, instead of just including a linear time trend, we include two economic variables that are meant to explain why this time pattern exists. The first is a measure of government transfers. The rapid expansion in transfer programs since the mid 1960s has been shown to have a significant effect on the poverty rate. (Gottschalk and Danziger (1984).) To measure this effect, we include the ratio of total government transfers to persons, divided by GNP.<sup>9</sup> The second is a measure of where the poverty line is drawn in the income distribution. As noted above, the poverty line is defined so that it falls relative to mean income in times of real growth, an effect that almost by definition will decrease poverty rates. The variable we use to measure this effect is the poverty line for a family of four, divided by mean household income. (This is the same variable we plotted in Figure 2 above.)

The bottom of Table 2 shows the resulting estimated equations, explaining poverty rates among all persons and among all families. The period of estimation starts in 1959, since that is when official poverty data begin. The inclusion of the additional variables in these regressions provides a very close fit. (The R-squared statistics

indicate we are able to fit the poverty rate equations far better than the quintile share equations.) When a time trend is added to these regressions, it is insignificant. Because the results are so similar for both regressions, we discuss only the equation for all persons.

According to these estimates, a 1 point rise in prime-age male unemployment raises the poverty rate by 0.7 points in the same year. If the rise in unemployment were sustained, the final net effect would be a 1.1 point rise in the poverty rate.<sup>10</sup>

Here, in contrast to the results for the share of the lowest quintile, inflation is found to hurt the poor. But the effect of a 1 point rise in inflation is only one-seventh as large as that of a 1 point rise in unemployment. Our contention that unemployment, not inflation, is the "cruellest tax" is supported.

As expected, increases in transfer programs decrease the poverty count, although the coefficient on this variable is not significant. According to the regression, decreases in the ratio of the poverty line to mean income have been a significant factor in reducing the poverty count.

The results of this analysis indicate that low-income households should be more concerned with rising rates of unemployment than with rising rates of inflation, while for high income households the opposite is true. This conclusion is subject to at least one qualification, however. High unemployment is, presumably, a transitory phenomenon whereas the reduction of inflation that it "buys" is presumably permanent. Hence the poor should balance the large, but temporary, losses from high unemployment against the small, but permanent, gains from lower inflation. Clearly, with a low enough discount rate, even

the poor will favor using unemployment to fight inflation. However, the economic behavior of poor people strongly suggests that the discount rates they use are extremely high.

If the poor have reason to be more averse to unemployment and less averse to inflation than the rich, this promises clear conflicts among various groups in the struggle to determine national macroeconomic policy. In fact, a recent study by Gramlich and Laren (1984) does find that low income individuals are more likely to cite unemployment than inflation as the primary economic problem. This finding echoes the earlier results of Hibbs (1976), but contradicts Fischer and Huizinga (1982).

#### C. FURTHER ANALYSIS OF THE RELATIONSHIP BETWEEN UNEMPLOYMENT AND POVERTY

Sensible explanations for the observed relationship between unemployment and poverty are not hard to find. This section investigates various aspects of that relationship in more detail. First, when the national unemployment rate rises, the unemployment rates of disadvantaged groups may rise even more. A series of simple regressions is used to estimate the differential sensitivity of the unemployment rates of different demographic groups to the business cycle. Second, many of the poor may not have access to government or private unemployment insurance arrangements which are designed to offset losses due to unemployment. We will see to what extent the poor are included in these programs. Third, some of those who retain their jobs

may still suffer lower real wages in times of high unemployment. We therefore estimate the behavior of relative wages among demographic groups over the business cycle.

#### 1. DIFFERENTIAL RESPONSES TO A GENERAL INCREASE IN UNEMPLOYMENT

We look first at the response of various labor market groups to changes in the aggregate unemployment rate. We have estimated a variety of simple regressions of the form:

$$(4) U_{it} = a + bt + c_1 I_t^a + c_2 I_t^u + d_1 U_t^* + d_2 U_t^{*2} + f(P_{it}/P_t) + gU_{it-1} + e_t,$$

where as before  $I^a$  and  $I^u$  denote anticipated and unanticipated inflation,<sup>11</sup>  $t$  represents time,  $U_{it}$  is the monthly unemployment rate of group  $i$  in time  $t$ ,  $U_t^*$  is the unemployment rate of prime-age white males (which we will refer to as "base-level" unemployment),  $P_{it}/P_t$  is the ratio of the population of group  $i$  to the total population, and  $U_{it-1}$  is the lagged dependent variable. This regression is estimated using monthly data from January 1955 to May 1984.<sup>12</sup>

This regression provides a simple way to summarize the sensitivity of unemployment for each group to base-level unemployment.<sup>13</sup> It also shows the extent to which nonlinear responses to unemployment occur (coefficient  $d_2$ ), indicates if inflation affects group-specific unemployment rates (coefficients  $c_1$  and  $c_2$ ), and accounts for general population shifts between age, race and sex groups (coefficient  $f$ ).<sup>14</sup>

Equation (4) was estimated for every race, sex, and age group. Since there are eight age categories (all ages, 16-19, 20-24, 25-34,

35-44, 45-54, 55-64, and 65+) and four race/sex categories (white males, white females, nonwhite males and nonwhite females), this results in 32 regressions. A full set of regression results is available on request from the authors, but, in order to avoid inundating the reader with regression coefficients, we report here only the unemployment and inflation effects.

Table 3 shows the sensitivity of each group's unemployment rate to a one-point rise in base-level unemployment.<sup>15</sup> Look first at the patterns by age. The "all" column (column 1) shows that the sensitivity of group-specific unemployment rates to the base-level unemployment rate decreases monotonically as age rises. Unemployment rates among teens rise almost twice as fast as the base rate, while for the elderly unemployment rates rise slightly more than half as fast. There is quite a sharp drop in sensitivity after age 65, which probably indicates that many of these workers simply drop out of the labor force when unemployment rises, rather than continuing to seek jobs.

Looking at the patterns by race and sex, there are some striking differences in the response to general unemployment. Nonwhite males are clearly the hardest hit. Unemployment rates for 20-24 year old nonwhite males rise over 3 times faster than base-level unemployment rates. The lowest sensitivity among nonwhite males (among 55-64 year old workers) is still close to 2. In contrast, white female unemployment is affected the least by changes in the general unemployment rate. This almost surely reflects the "discouraged worker" effect among women -- a high propensity to drop out of the labor market in response to increases in unemployment. White males have higher sensitivities than white females, but are quite a bit less sensitive than nonwhite males. Nonwhite



TABLE 3

SENSITIVITY OF GROUP-SPECIFIC UNEMPLOYMENT  
RATES TO A 1-POINT CHANGE IN BASE-LEVEL UNEMPLOYMENT<sup>1</sup>

<u>Age Group</u>	<u>All</u>	<u>White Males</u>	<u>White Females</u>	<u>Nonwhite Males</u>	<u>Nonwhite Females</u>
All Ages	1.096	1.096	.766	2.464	1.238
16-19 years	1.993	2.214	1.506	2.835	1.684
20-24 years	1.877	2.028	1.179	3.226	2.389
25-34 years	1.276	1.178	1.002	2.561	1.213
35-44 years	.917	.821	.708	1.914	1.176
45-54 years	.894	.871	.769	1.904	.790
55-64 years	.778	.772	.650	1.623	.671
65+ years	.569	.504	.373	1.941	.741

<sup>1</sup> Base-level unemployment is the unemployment rate for white males, aged 25-54. The coefficient shown here is the marginal effect of a change in base-level unemployment on the group-specific unemployment rate. See Footnote 14 for the exact definition. The underlying unemployment coefficients are all significant at the 1% level. Regressions use monthly data, January 1955-May 1984. See equation (4) for full regression specification.

females present a mixed picture. Among teens and older workers, nonwhite females tend to be less sensitive than men of either race. Among middle-age groups they are more sensitive than white men but quite a bit less sensitive than nonwhite men.

The patterns in these regression coefficients confirm that the burden of unemployment is distributed unequally across labor market groups defined by age, race, and sex. To the extent that these demographic characteristics are consistently correlated with wage levels -- younger and older workers earn less, as do nonwhites and females -- these regressions show that certain low income groups are more likely to experience greater increases in unemployment during recessions. In particular, nonwhite workers and young workers are severely affected by weak labor markets. On the other hand, female workers and older workers (especially those over 65) -- who are also typically low wage workers -- are not as sensitive to changes in general unemployment levels. This probably reflects the availability of other income sources for these workers -- either transfers or earnings of other family members -- that make job search less mandatory, allowing them to drop out of the labor market more easily in times of high unemployment. In addition, it might also reflect the comparative cyclicalities of the occupations and industries in which women tend to work, relative to men.

These results are quite similar to those of Gramlich and Laren's (1984) recent research, which studies the burden of unemployment losses both across and within income classes. They demonstrate that the probability of unemployment decreases monotonically as income rises, with nonwhite male-headed households bearing the largest unemployment burden, female-headed households being least affected, and white males falling somewhere in between.

We turn next to the effect of inflation in these regressions. Table 4 shows the sensitivity of each group's unemployment rate to a one-point rise in the anticipated inflation rate,<sup>16</sup> since the coefficient on unanticipated inflation was insignificant in almost every case and was always small. While the effect of anticipated inflation is typically quite a bit smaller than that of base-level unemployment, it nevertheless does have a significant effect on the unemployment rates of many of these groups.

The general pattern of inflation effects across ages can be seen in column 1, which combines all race and sex groups. Inflation appears to have a negative effect on teen unemployment, a positive effect on the unemployment rate of younger workers and a negative effect on the unemployment rate for older workers. But only for the middle years (ages 20-44) is the effect significant. This pattern generally repeats itself in most of the race and sex-specific results. White males follow the pattern exactly (except for a positive and insignificant coefficient for teenagers). White females show somewhat mixed results, though their significant coefficients follow the general pattern. Nonwhite male unemployment is generally unaffected by anticipated inflation. (None of the coefficients for this group are significant, although the general pattern of signs is consistent with that discussed above.) Finally, nonwhite females appear to differ from the general pattern; at almost all ages their unemployment rates tend to fall with increases in anticipated inflation -- an effect that is significant and quite large in a few categories.

It is not easy to understand why anticipated inflation should affect group-specific unemployment rates, given the national

TABLE 4

SENSITIVITY OF GROUP-SPECIFIC UNEMPLOYMENT RATES  
TO A 1-POINT CHANGE IN ANTICIPATED INFLATION<sup>1</sup>

<u>Age Group</u>	<u>All</u>	<u>White Males</u>	<u>White Females</u>	<u>Nonwhite Males</u>	<u>Nonwhite Females</u>
All Ages	.520*	.418*	.664	.698	- .563
16-19 years	-.786	.096	-1.461	-2.062	-6.944*
20-24 years	.513**	1.629*	- .258	1.294	.134
25-34 years	.532*	.538*	1.155*	.382	-1.898*
35-44 years	-.270*	-.154**	- .684*	.304	-1.131
45-54 years	-.023	-.064	.383	- .074	-1.504*
55-64 years	-.304	-.421	- .047	- .902	.561
65+ years	.085	-.877	.137	.264	- .080

<sup>1</sup> The coefficient shown here is the marginal effect of a change in anticipated inflation. In terms of equation (4) this is  $c_1/(1-g)$ ,

\* Indicates significance of the anticipated inflation coefficient (g) at the 1% level, and \*\* indicates significance at the 5% level. Regressions are monthly, January 1955 - May 1984.

unemployment rate. It appears that workers in their 20s and 30s either respond differently to high expected inflation rates (perhaps they are more willing to quit and look for a better job when demand is expected to be high) or they are employed in a mix of occupations and industries that have been negatively affected by high inflation rates over this time period.

However, the main conclusion of this section is clear: the business cycle is not neutral in spreading the burden of unemployment. Certain workers experience much larger increases in unemployment when the general economy turns down than others.

## 2. HOW WELL ARE THE POOR PROTECTED AGAINST INCOME LOSSES FROM UNEMPLOYMENT?

The fact that certain groups experience higher unemployment than others does not in itself mean that those groups are disproportionately harmed. A variety of government and private programs are explicitly designed to cushion the impact of unemployment on incomes. The primary program is Unemployment Insurance (UI), which is available to all workers in covered industries who have worked a certain length of time on their job and who are involuntarily terminated. The percentage of jobs covered by UI expanded steadily from 58% in 1950 to 93% in 1980, as illustrated in column 1 of Table 5.

However, many of the unemployed are new entrants or re-entrants who do not receive UI. Others do not draw benefits because they quit rather than being fired, because they have not worked long enough to be eligible for benefits, or because their unemployment spell lasts

TABLE 5

CHANGES IN THE COVERAGE  
OF UNEMPLOYMENT INSURANCE<sup>1</sup>

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	<u>Covered Employment</u> Total Employment	<u>Unemployed UI Recipients</u> Total Unemployed
1950	58.2	48.8
1955	64.4	49.1
1960	70.4	53.8
1965	72.6	43.1
1970	75.7	50.6
1975	82.7	78.0
1980	93.3	50.2
1981	92.9	41.2
1982	92.1	43.0

---

<sup>1</sup> Includes state UI programs, as well as UCFE, RRB, and UCX programs. (See Source.) Column 2 also includes supplemental benefit programs.

Source: Column 1 -- Economic Report of the President, Washington, DC; G.P.O. February 1984 (Tables B-30 and B-36).  
Column 2 -- Economic Indicators, various issues and 1980 Supplement to Economic Indicators, Washington, DC: G.P.O. 1980 (p.41).

longer than their eligibility for benefits. Column 2 of Table 5 shows the ratio of unemployed people receiving UI to the total number of unemployed. This ratio has fluctuated greatly, reaching a peak of 78% in 1975, but falling to 43% by 1982. Smeeding (1984) and Burtless (1983) note that the recent decrease in UI reciprocity appears to be due to legislative changes in both the eligibility rules for extended benefits in times of high unemployment, and the length of time extended benefits are available. For example, the maximum duration of UI in 1976 was 65 weeks, but in 1983 it was only 34-55 weeks (depending on the state.)

However, while unemployment compensation provides help to many of the unemployed, it is less likely to be available to the poor or low-income workers with whom we are most concerned. Because of the eligibility requirements, low-wage workers with unstable employment records -- those who are most likely to experience unemployment -- are least likely to receive UI. The distribution of unemployment benefits in 1979 by race, sex, and age is presented in Table 6 and compared to the distribution of total unemployment.<sup>17</sup> It is clear that unemployment benefits were disproportionately received by whites, males, and prime-aged workers.<sup>18</sup> (The chi-squared statistics in Table 6 reject the hypothesis that these numbers were chosen from the same distribution at a 95% level for all three categories.)

Private forms of unemployment protection are also available, primarily to unionized workers. Many union contracts either contain provisions for supplemental unemployment benefit funds, available to workers when they are laid off as a supplement to UI, or provide for severance pay on the part of the employer. In 1980, 47.7% of union

TABLE 6

DISTRIBUTION OF THE INSURED  
UNEMPLOYED AND THE TOTAL UNEMPLOYED BY  
RACE, SEX AND AGE IN MARCH 1979

Percent Distribution Of

	<u>Insured Unemployed</u>	<u>Total Unemployed</u>	<u>Chi-squared Statistic</u>
BY RACE:			
White	85.9%	77.7%	3.88
Non-white	14.1	22.3	
BY SEX:			
Male	64.4%	54.1%	4.27
Female	35.6	45.9	
BY AGE:			
Under 25 years	20.8%	46.8%	29.08
25 - 54 years	63.0	44.8	
Over 54 years	16.2	8.4	

Source: U.S. Department of Labor, BLS. Employment & Earnings, various issues; and U.S. Department of Labor, Education & Training Administration, Unemployment Insurance Statistics, 1979. (Tables 32C and 33C). A similar table showing data for the mid-1970's is found in Hamermesh (1977), p.22.



contracts had some such provision, covering 65.2% of unionized workers. (U.S. Department of Labor (January 1980).) Unfortunately, this protection is also less likely to help lower wage workers, primarily because low-wage jobs are less likely to be unionized. In 1980, while 37% of the workforce earned less than \$200/week on their primary job (approximately \$10,000/year for a full-time worker), only 15.2% of all unionized workers were in this earnings category. (U.S. Department of Labor (May 1980).) The bulk of unionized workers who can benefit from these programs are solidly in the middle-income earning brackets.

However, while many poor or near-poor workers are not helped by explicit unemployment protection schemes, there are a variety of transfer programs available to help low-income households, including Food Stamps and AFDC. The eligibility requirements for these programs guarantee that only very low income households qualify. For example, to be eligible for Food Stamps, a household can have no more than \$1500 in assets (other than a house and car), and its gross income must be no more than 130% of the poverty line. In addition, some programs are simply unavailable to certain households. For example, only half the states allowed AFDC payments to intact two-parent families in 1983.

Gramlich and Laren (1984) investigate the extent to which tax and transfer systems cushion income loss due to unemployment. They find, not surprisingly, that income changes resulting from a 1% increase in unemployment are significantly smaller after taxes and transfers than before. For poor white male-headed households, a 1 percentage point rise in the unemployment rate produces a 6% income loss, 56% of which is replaced by tax and transfer changes. For poor nonwhite male-headed households, the loss is slightly larger (6.2%) and the replacement rate

is smaller (40%). For poor female-headed households, the loss is much smaller (only 2.3% -- as before this group is less affected by unemployment changes), but the replacement rate is also much lower (just 27%).

### 3. THE EFFECT OF UNEMPLOYMENT ON THOSE REMAINING EMPLOYED

There is one final avenue by which unemployment can differentially affect poor and non-poor workers. Beyond the loss experienced by those who are directly unemployed, changes in unemployment rates may also affect the relative earnings of those workers who remain employed. Are there some groups who gain or lose relative wages during business cycles?

To answer this question, we have collected annual data on median earnings of full-time, full-year workers, by race and sex. We regress earnings ratios between these groups on the same set of cyclical economic variables that were used above. The equation is

$$(5) \quad E_{it}/E_{jt} = a + bt + c_1 I_t^a + c_2 I_t^u + d_1 U_t^* + d_2 U_t^{*2} + f(U_{it}/U_{jt}) + g(E_{it-1}/E_{jt-1}) + e_t,$$

where  $E_{it}$  is the earnings of group  $i$  (a lower income group) in time  $t$ ,  $E_{jt}$  is the earnings of a comparison (higher income) group  $j$ ,  $U_{it}/U_{jt}$  is the relevant unemployment ratio for groups  $i$  and  $j$ , and the other variables are defined as before. The results from estimating this equation by ordinary least squares using annual data from 1955 to 1983 are shown in Table 7.

TABLE 7

CYCLICAL EFFECTS ON THE RELATIVE EARNINGS  
OF RACE AND SEX GROUPS<sup>1</sup>

Independent Variables <sup>2</sup>	Dependent Variable: Median Earnings of			
	<u>White Women</u> White Men	<u>Nonwhite Women</u> Nonwhite Men	<u>Nonwhite Men</u> White Men	<u>Nonwhite Women</u> White Women
Anticipated Inflation	.0001 (.0008)	-.0002 (.0028)	.003 (.002)	.003** (.002)
Unanticipated Inflation	.0003 (.0015)	.001 (.005)	.005 (.004)	-.0006 (.0035)
Base-Level Unemployment	.007** (.004)	-.009 (.014)	.007 (.005)	-.012* (.004)
Unemployment Ratio	.026 (.024)	-.046 (.072)	-.025 (.030)	-.185* (.035)
Lagged Dependent Variable	.721* (.168)	.387** (.214)	-.055 (.241)	.520* (.120)
Time	-.0004 (.0006)	.005** (.003)	.005* (.001)	.008* (.002)
Constant	.107 (.119)	.490* (.203)	.741* (.173)	.752* (.138)
R <sup>2</sup>	.794	.839	.863	.984
Durbin h-statistic	-2.23	1.92 <sup>3</sup>	1.98 <sup>3</sup>	-1.28

Standard errors in parentheses

\* Significant at 1% level.

\*\* Significant at 5% level.

<sup>1</sup> Regressions use annual data, 1955-1983. Median earnings are for full-time, full-year workers.

<sup>2</sup> See text and equation (5) for description of variables.

<sup>3</sup> These are Durbin-Watson statistics. Durbin h-statistics could not be computed.

The time trends show that there have been significant shifts in relative median earnings among groups: nonwhites have improved relative to whites and nonwhite women have improved relative to all other groups. But the business cycle seems to have had little effect on the relative earnings of most of the groups examined here.

The relative earnings of nonwhite women versus nonwhite men are unaffected by inflation or unemployment over this time period. The same is true for nonwhite versus white men. Increases in base-level unemployment do appear to raise the earnings of white women relative to white men, but the magnitude of the effect is small. In contrast, the cyclical variables have a significant effect on the earnings of nonwhite versus white women. Nonwhite women lose wages relative to white women when base-level unemployment rises and they gain a (small) amount relative to white women when anticipated inflation rises. This is also the only regression in which the group-specific unemployment ratio matters. Its negative coefficient and the significance of other economic variables perhaps indicate that these two groups are closer substitutes in the labor market than men versus women or black men versus white men.

Thus, while the business cycle has clear distributional effects via unemployment, it appears to have less significant distributional effects on the relative earnings of many workers who remain employed.

In conclusion, it should be clear that unemployment places a disproportionately heavy burden on low-income households, an impact that is particularly severe in nonwhite households and among younger workers. Not only do these lower-income groups show a higher propensity to experience unemployment, but they are also less likely to receive payments from Unemployment Insurance and other sources.

#### D. FURTHER ANALYSIS OF THE NONRELATIONSHIP BETWEEN INFLATION AND POVERTY

Why have so many people believed that inflation hurts the poor? Perhaps the simplest response is just to state that there never was much solid reasoning behind this belief. For inflation to have negative effects on the relative position of the poor, either the incomes of the poor must rise more slowly than other incomes in inflationary times or the prices of commodities bought by the poor must rise faster than other prices. Let us examine each of these issues in turn.

##### 1. INFLATION AND THE INCOMES OF THE POOR

A significant component of income among the poor is government transfers. While money wages rise more or less proportionately with prices in the long run, inflation can hurt the poor (relatively) if transfers do not rise with inflation as quickly as average wages do. To some extent, this probably occurs -- which may account for the positive coefficients of inflation in the poverty regressions.

The clearest example of this has occurred in AFDC payments. Table 8 indicates the extent to which the real value of AFDC benefits (which are determined largely at the state level) have declined in the last 14 years. Between 1970 and 1983, the median state's maximum payment fell 27% in real terms. For more generous states, it fell only 17%, but for less generous states, it fell 29%. As Smeeding (1984) notes in looking at similar numbers through 1981, much of this fall came during the high-inflation years of the mid-1970s, when states neglected to raise their benefit levels. The decrease has slowed in recent years.<sup>19</sup>

TABLE 8

CHANGES IN INFLATION-ADJUSTED AFDC  
BENEFIT MAXIMUMS<sup>1</sup>

(All numbers in 1983 dollars, PCE deflator)

Year (July)	Median State	Average 10 Highest States <sup>2</sup>	Average 10 Lowest States <sup>3</sup>
1970	530	688	276
1972	516	702	255
1974	514	699	246
1976	467	635	223
1978	475	662	232
1980	426	636	218
1981	386	572	204
1982	384	581	207
1983	387	569	195
%Change 1970-1983	-27.0%	-17.3%	-29.3%

<sup>1</sup> Based on similar table (through 1981) by Smeeding (1984). The PCE deflator is used in place of the CPI because the CPI exaggerated inflation in the late 1970s. Additional data from U. S. Department of Health & Human Services, Characteristics of State Plans for AFDC, 1982 (Table B); and Congressional Budget Office.

<sup>2</sup> 10 Highest States in 1975.

<sup>3</sup> 10 Lowest States in 1975.

In contrast to AFDC, most other transfer programs are indexed and therefore have not experienced serious benefit erosion from inflation. (However, legislative changes in structure and eligibility rules have produced real changes in participation and benefit levels in some programs.) SSI's federal minimum required benefit has been fully indexed, although state supplements have fallen in real value in many states. Similarly, Food Stamps were fully indexed to inflation up until 1981, when the Budget Reconciliation Act reduced their indexing provisions, primarily by delaying the indexing procedures. Social Security has also been fully indexed (and in some ways over-indexed) during this period. Thus, AFDC seems to be an exception to the indexing rule.

Another way the poor could lose is if inflation tilts the relative wage structure, raising high wages faster than low wages. This is especially likely if unanticipated inflation occurs and high wages are indexed while low wages are not. We have no direct evidence on the relative indexation of high versus low wages. However, we do know that union wages (about half of which are indexed) rose relative to non-union wages in the inflationary 1970s. (Johnson (1983).) As noted above, low-wage workers are less likely to be union members, implying that they were probably on the losing side of this relative wage change.

However, for those workers who are unionized, union contracts are typically indexed so that wages rise by a set number of "pennies per point" as inflation rises, rather than rising by the same percentage as inflation. The effect of these contracts is to raise the wages of lower-paid union members by a higher relative percentage than their better-paid fellow members. (Card (1983).)

A recent study by Hamermesh (1983) found that higher unanticipated inflation leads to a lower variance of wages across industrial sectors. Of course, the variance across industrial sectors accounts for only a small portion of the variance of wages across individuals. But, if this finding also holds true for the variance of individual wages, it is one reason to expect the poor to gain (relatively) from unanticipated inflation.

Among race and sex subgroups, the regressions reported in Table 7 do not suggest that inflation, whether anticipated or unanticipated, tilts the relative wage structure very much. As noted above, the only group for whom inflation effects mattered were nonwhite versus white women. And in this case, high anticipated inflation increased relative earnings for nonwhite females. But the magnitude of the effect was small.

In sum, the evidence does not suggest that inflation has seriously lowered the relative income levels of the poor. The relative earnings of low wage workers do not seem to have fallen with inflation. And while a few types of transfer income have lost real value, most programs have been adequately indexed.



## 2. RELATIVE PRICE CHANGES AND THE POOR

The other avenue by which the poor could lose from inflation is if the prices of the things they buy systematically rise faster than prices in general. This effect would not show up in our share regressions, which tacitly deflate the nominal incomes of every group by the same price index.<sup>20</sup> However, there does not seem to be any evidence that this is the case.

Years ago, Hollister and Palmer (1972) constructed a price index specific to poor people by reweighting components of the CPI and found that the poor persons' price index actually grew a bit slower during the years 1947-1967 than the CPI. Mirer (1975) used the same technique for the period of the Nixon price controls (August 1971 to April 1974), and concluded that inflation for poor people was a bit higher than average. Minarik (1980) constructed a necessities index for the period 1970-1979 which showed that prices of necessities rose slightly less than the overall CPI. In a far more detailed study, Michael (1979) calculated household-specific CPIs for each of several thousand consumer units in the 1960-1961 Consumer Expenditure Survey (CES), and found no systematic relationship between inflation and income class during the 1967-1974 period. When Hagemann (1982) performed a similar analysis of the 1972-1982 period using data from the 1972-1973 CES, he found some tendency for poorer households to experience higher inflation. But the differences

among income classes were small, and not persistent over different subperiods.

All in all, these studies suggest that, if there is any systematic difference between inflation in prices paid by poor people and overall inflation, it is miniscule.

### 3. INFLATION AND THE RICH

Finally, it is worth noting that what may be the largest redistributive effect of inflation does not even show up in the CPS data -- and this effect suggests that it is the rich, not the poor, who are robbed by inflation.

Specifically, under conventional accounting procedures inflation distorts the measurement of property income (interest, capital gains, etc.). With unindexed tax laws, this leads to high effective tax rates on real property income (Feldstein (1982)). Census income includes transfers, but does not deduct income taxes. Hence, the high tax burden on property income does not show up in the data we use. The exaggerated interest income does show up, at least in principle. In practice, however, interest income is grossly underreported in the CPS; <sup>21</sup> so this is probably not a major problem. Inflation is also bad for the stock market, whether it is anticipated or unanticipated (Bodie (1976)). And unanticipated inflation obviously devastates the bond market. But capital gains are not included in Census income, so none of this affects our data.

On balance, then, inflation probably has serious deleterious effects on recipients of property income. But, of course, most of these recipients live in the upper reaches of the income distribution. The poor have little to lose.

A detailed simulation study by Minarik (1979) accounted for the aforementioned effects of inflation on (more accurately measured) property income, and concluded that inflation was a decidedly progressive tax -- even though it appeared to be regressive relative to Census money income.

This suggests that the slight equalization of the income distribution attributed to inflation by our regressions probably understates the true equalization. No wonder it was upper-income people who branded inflation "the cruelest tax."

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#### IV. TAX POLICY AND THE POOR

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Macroeconomic policy decisions affect the poor in many ways. Our analysis in the previous section focussed on general cyclical effects. We concluded that any expansionary policy that temporarily reduces unemployment at the expense of greater inflation transitorily raises the income share of the poor and probably reduces the poverty count.<sup>22</sup> Contractionary policies have the opposite effects.

But cyclical effects are not the only way in which macro

policy decisions affect the poor. In this section of the paper, we abstract from any effects of policy variables on inflation and unemployment, which depend mainly on the levels of taxation and spending, and focus instead on how changes in the structure of taxation over the past 30 years have affected the poor. We restrict our attention to taxes, rather than to spending programs, because the latter are covered in detail by other papers at this conference.

Naturally, complicated and controversial questions of tax incidence quickly arise. We cannot hope to resolve these issues here. All we can do is reveal our assumptions. Our discussion of the distributional impact of changes in the tax structure is guided by the following basic incidence assumptions:

- a. Personal taxes (income and payroll) are not shifted much.
- b. Corporate income taxes are borne by capital as a whole;
- c. Excise taxes are shared, but most of the burden is borne by consumers because long-run supply curves for most commodities are highly elastic.

#### A. The Changing Structure of Federal Taxation

Despite much oratory to the contrary, the overall burden of federal taxes has risen little over recent decades -- from 17.3% of GNP in 1950 to 18.7% of GNP in 1983. But the structure of

federal taxation has changed dramatically. (See Table 9.) Several developments are noteworthy.

First, the corporate income tax has fallen in importance from 34% of federal tax receipts in 1950 to only 7% in 1983, a process that was accelerated by the Reagan tax cuts of 1981.<sup>23</sup> Roughly counterbalancing this decline has been a rise in the share of payroll taxes from 12% in 1950 to 38% in 1983. Replacing corporate income taxes (which are widely believed to be highly progressive with respect to total income) by payroll taxes has certainly shifted the tax burden toward the poor -- particularly the working poor, for whom the payroll tax is often the most important tax.<sup>24</sup>

Less significantly, the share of excise taxes and customs duties has tumbled from 18% in 1950 to only 7% in 1983. This development probably increased the progressivity of the federal tax structure somewhat -- but not by as much as might be thought because the particular items taxed by the federal government are not a random sample of all consumption goods.<sup>25</sup>

Finally, the share of personal income taxes in total federal taxes increased substantially from 1950 to 1970, but has declined slightly in recent years as a result of the Reagan tax cuts. The net increase in this share since 1960 is only 2.5 percentage points.

A rough-and-ready way to summarize all this is to group personal income, corporate income, and estate and gift taxes together as "progressive taxes" and group excise, customs, and

TABLE 9

## THE STRUCTURE OF FEDERAL TAXATION

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Distribution of Federal Tax Receipts (in percent)

	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
Personal income tax	35.1	44.1	47.5	47.8	46.6
Corporate income tax	34.1	21.7	14.5	11.2	7.4
Payroll taxes	11.9	18.6	26.4	33.2	37.7
Excises and duties	17.6	13.8	9.7	6.5	7.3
Estate and gift taxes	1.3	1.9	2.0	1.3	1.0

Addendum items

Federal taxes/GNP	.17	.19	.19	.20	.19
Corporate tax/ personal taxes	.97	.49	.31	.23	.16
Payroll taxes/ personal taxes	.34	.42	.56	.69	.81

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Source: Survey of Current Business, various issues.

payroll taxes together as "regressive taxes." If we do this, the share of progressive taxes in total federal tax receipts is as follows:

<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
70.5%	67.7%	64.0%	60.3%	55.0%

There is a pronounced trend toward less reliance on progressive taxation.

#### B. Changes in Tax Provisions Affecting the Poor<sup>26</sup>

The numerous changes in the corporate income tax since 1950 are basically irrelevant to the poor (except for general equilibrium reverberations). Likewise, the numerous changes in the nature of federal excise taxes and customs duties are too disparate to permit any useful generalizations. If we want to discuss the impact of detailed federal tax provisions on the poor, there are only two places to look: payroll taxes and personal income taxes.

##### The Payroll Tax

The payroll tax is viewed as highly regressive because it taxes only earnings, not property income, and because the marginal tax rate drops to zero once the maximum covered earnings base is reached. Table 10 shows that maximum taxable earnings have grown much faster than average earnings since 1950. While the working poor have always paid payroll taxes on every dollar

TABLE 10

EVOLUTION OF THE FEDERAL PAYROLL TAX

	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
Payroll tax rate <sup>a</sup>	3%	6%	9.6%	12.26%	13.4%
Ratio of maximum taxable earnings <sub>b</sub> to average earnings <sub>b</sub>	1.13	1.19	1.30	2.20	2.54

NOTES: (a) Sum of employee's and employer's shares.

(b) Average earnings are average gross weekly earnings in the private nonagricultural economy times 50.



of earnings, over the years a larger and larger fraction of nonpoor workers have done so as well. In this sense, the payroll tax is becoming less regressive.<sup>27</sup> However, this is little solace to the poor, since Table 10 also shows that the payroll tax rate has more than quadrupled since 1950. There is little doubt that the burden of the payroll tax on the poor has increased dramatically during the past 35 years.

#### The Personal Income Tax

There is much more to be said about the federal personal income tax. The provisions of the tax that are most relevant to the poor are the personal exemption, the standard deduction, the lowest bracket rates, and (since 1975) the earned income credit. Table 11 contains data pertinent to these provisions.<sup>28</sup>

The personal exemption remained at \$600 from 1948 through 1969, and thus was steadily eroded by inflation. During the early 1970s, it was raised in stages to \$750, where it remained until 1979. Since 1979, it has been fixed at \$1000. Thus, except for a few "blips", the real value of the exemption has fallen steadily for decades. Table 11 indicates that the real value of the exemption is now about half what it was in 1955, and has fallen from 13.6% of median family income to only 4.1%. Since a falling real exemption reduces the progressivity of the tax at the low end, this has been bad news for the poor and near poor.

Instead of raising the exemption, Presidents Ford and Carter used a per capita tax credit to ease the tax burden on the poor.

TABLE 11

## ASPECTS OF THE FEDERAL PERSONAL INCOME TAX

	<u>1955</u>	<u>1965</u>	<u>1975</u>	<u>1980</u>	<u>1983</u>
<u>Personal exemption</u>					
Nominal	\$600	\$600	\$750 <sup>a</sup>	\$1000	\$1000
Real (in 1972 dollars)	932	777	599	559	468
As percent of median family income	13.6%	8.6%	5.5%	4.8%	4.1%
Lowest bracket rate	20%	14%	14% <sup>b</sup>	14% <sup>b</sup>	11%
Standard deduction	10% of AGI <sup>c</sup>	10% of AGI	16% of AGI	\$3400	\$3400

NOTES: (a) Plus \$30 per capita tax credit.

(b) Reduced further by earned income credit.

(c) Adjusted gross income.

The credit was \$30 per person in 1975 and the greater of \$35 per person or 2% of taxable income (to a maximum of \$180) for 1976-1978; then Congress eliminated it. Notice that a \$35 tax credit is equivalent to a \$250 rise in the exemption for someone in the 14% tax bracket, but only to a \$70 rise in the exemption for someone in the 50% bracket. So substituting a tax credit for an exemption is one way to increase the progressivity of the tax structure. But the experiment was short-lived.

The lowest bracket rate was 17.4% in 1950 and rose to 22.2% by 1952; since then it has mostly fallen, and is now only 11%. This decline in the lowest bracket rate has helped reduce the burden of personal income taxation on poor families.

The standard deduction stood at 10% of adjusted gross income until 1969; then was gradually increased to \$2300 for an individual or \$3400 for a married couple in 1979, where it has remained. Inflation, of course, has reduced the real value of the standard deduction substantially since 1979. But this is a minor setback when set against the fact that the introduction of a large flat standard deduction in 1977 (called the "zero bracket amount") completely removed many poor and near-poor people from the income tax rolls.

One meaningful way to amalgamate all these factors is to construct hypothetical, but representative, low-income families, and look at their income tax burdens under different tax structures. Table 12 considers three such cases.

The first case is one of abject poverty: a family of four

Table 12  
Average Federal Tax Rates on Earned Income

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<u>Income Level:</u>	<u>1955</u>	<u>1965</u>	<u>1975</u>	<u>1980</u>	<u>1983</u>
<u>At 5000 1983 dollars</u>					
Personal income <sup>1</sup>	0	0	-10%	-10%	-10%
Personal income plus payroll	4.5%	7.3%	1.7%	2.3%	3.4%
<u>At poverty line</u>					
Personal income <sup>1</sup>	0.4% <sup>2</sup>	2.2%	-0.9%	-0.7%	3.1%
Personal income plus payroll	4.9% <sup>2</sup>	9.4%	10.8%	11.6%	16.5%
<u>At 1/2 median income</u>					
Personal income <sup>1</sup>	0	2.9%	3.9%	4.3%	4.9%
Personal income plus payroll	4.5%	10.2%	15.6%	16.6%	18.3%

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<sup>1</sup>For a family of four filing jointly and claiming the standard deduction.

<sup>2</sup>A 1955 "poverty line" was constructed by adjusting the 1959 poverty line for the change in the CPI. We thank Gordon Fischer for the suggestion.

whose 1983 income is \$5000 (about half the 1983 poverty line), and whose income in earlier years is the same in real terms. Such a family would never have been subject to income taxation; but starting in 1975 it would have received a 10% negative tax rate owing to the earned income credit. Over the entire 1955-1983 period, this family's total (income plus payroll) tax burden changed little. The burden rose from 1955 to 1965, fell from 1965 to 1975, and has risen slightly since then.

The second case is a family of four whose earnings are exactly equal to the poverty line. The income tax burden on this family was negligible in 1955, became negative thanks to the earned income credit (EIC), but has lately risen to 3.1%. When coupled with the rising burden of the payroll tax, this family has paid an increasing share of its earnings in taxes since 1955 and the rate of increase has been extremely rapid in recent years. Currently, such a family pays 16.5% of its earnings in federal taxes.

The third case is a family that earns half the median income -- an amount suggested by some observers as a good definition of relative poverty (Fuchs (1967)). This income level ranges from \$12,290 in 1983 down to \$2,209 in 1955 (all in nominal dollars) -- which places the hypothetical family 20-25% above the official poverty line in recent years. At this income level, the average income tax rate has crept steadily upward. Specifically, it was zero under the 1955 tax law, rose to 3% by 1965 as the real value of the personal exemption declined, and rose further to about 4%

in 1975-1980 despite the earned income credit and the flat \$3400 standard deduction. In 1983 it was 5%.<sup>29</sup> When the payroll tax is included, the overall tax burden on this hypothetical family has risen astronomically since 1955.

Overall, we conclude from these examples that the poor and the near poor have never paid much in the way of personal income taxes. Taking the 1955-1983 period as a whole, income tax reductions for the very poor have amounted to about 10% of earnings, thanks to the earned income credit. This tax cut roughly balanced the increase in their payroll taxes. For a near-poor family earning half the median income, however, personal income tax reductions (such as the minimum standard deduction) were not large enough to counteract the effects of inflation. From 1955 until 1980, the burden of both income and payroll taxation on such a family has grown.

### C. The Changing Structure of State and Local Taxation

Between 1950 and 1970, state and local taxes grew much faster than GNP and much faster than federal taxes. (See Table 13; addendum items.<sup>30</sup>) The structure of taxation at the state and local level was also transformed, as Table 13 indicates. Personal income and payroll taxes are now much more important sources of revenue than they were in 1950. Sales taxes are slightly more important. The big shrinkage came in property taxes and miscellaneous "other taxes." A (very) rough summary of Table 13

TABLE 13

## THE STRUCTURE OF STATE AND LOCAL TAXATION

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Distribution of State and Local Tax Receipts (in percent)

	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
Personal income tax	4.3	6.3	11.0	16.4	17.3
Corporate income tax	4.3	3.1	3.5	5.6	4.7
Payroll taxes	6.4	8.5	9.1	11.4	11.5
Sales taxes	27.1	30.0	31.3	31.8	31.7
Estate and gift taxes	1.0	1.2	1.1	0.9	0.8
Property taxes	41.6	41.4	37.1	26.7	27.4
Other taxes	15.2	9.5	6.8	7.2	6.7
<u>Addendum items</u>					
State-local taxes/GNP	.06	.08	.10	.10	.10
State-local taxes/ federal taxes	.36	.43	.54	.50	.55

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would say that the share of personal income taxes increased by about as much as the share of property taxes decreased.

As late as 1960 only a few states had personal income taxes, now 40 states plus the District of Columbia and a number of other large cities have them. With so many different taxes, we cannot profitably examine changes in tax provisions over time, as we did for the federal personal income tax. However, most state income taxes have a progressive rate structure; top marginal rates go as high as 17.6% (the top rate in Minnesota). Most also have a substantial zero bracket amount which effectively removes the very poor from the tax rolls. Thus, although the incidence of the property tax is highly controversial, it seems unlikely that the shift from property taxation to income taxation has increased the overall regressivity of the state and local tax structure, and may perhaps have decreased it.<sup>31</sup>

Where the very poor are concerned, however, income taxes are pretty much irrelevant; it is sales and payroll (and perhaps property) taxes that matter. Over the 1950-1983 period, the poor have paid higher state and local sales taxes and higher state (and in some cases local) payroll taxes. Thus it seems likely that the state and local tax burden on the poor has increased.

#### D. Conclusion on Taxes

In sum, where the poor are concerned, the main "event" in



postwar tax history seems to have been the rapid and continuing growth of the payroll tax. Changes in personal income taxation have been minor for the very poor, as the earned income credit and the flat standard deduction more or less cancelled out the effects of a declining real personal exemption. But the not-so-poor have paid higher income taxes as well.

One crude way to summarize all this is to amalgamate all state, local, and federal taxes (omitting "other" state and local taxes), and classify them into "progressive" and "regressive" groups as we did for federal taxes. The uncertainty concerning the correct classification of the property tax leads us to calculate these numbers two ways. Specifically, the fraction of all taxes categorized as progressive is:

	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
If property tax is progressive	68.2%	64.8%	61.5%	58.1%	53.2%
If property tax is regressive	56.8%	52.0%	48.1%	49.0%	43.6%

Although the levels differ consistently by 9-13 percentage points, each calculation displays a roughly equivalent trend away from reliance on progressive taxes since 1950. These numbers reinforce the conclusion of this entire section that the tax burden on the poor has become greater in recent years.

## V. THE LAST DECADE

The distribution of income has undeniably widened in the last decade. The shares of the bottom three quintiles have declined while the shares of the top two have risen. (See columns 1 and 2 of Table 14.) A number of detailed studies have attempted to understand how cuts in social programs, changes in tax rates, and other factors have affected the incomes of various groups. Levy and Michel (1983) have investigated the changes in income distribution between 1979 and 1983, noting the skewness of the tax and benefit cuts. A series of studies by the Congressional Budget Office (1983, 1984a) has produced similar numbers, as has analysis by Danziger and Smolensky (1983).

In contrast to these detailed studies, this section will estimate the influence of the business cycle on poverty rates and income shares in the last decade without focussing on the particular structural routes through which these effects might have occurred. We will compare these estimated effects with the actual changes that occurred to see if other factors have offset the purely cyclical impacts.

Using the regression results reported in Table 2, we can estimate the effects of inflation and unemployment on income shares and poverty rates between 1973 and 1983 as follows. We first calculate a "noncyclical" income share (or poverty rate) for 1983 by holding inflation and unemployment constant at their 1973 levels. (For the poverty equation, we also remove cyclical effects from Transfers/GNP and from Poverty Line/Mean Income by trend-lining these variables between 1973 and 1983.) We then compare this noncyclical share to the observed income share to isolate the effects of cyclical conditions. Finally, we

decompose this difference into the portions due to changes in unemployment and to changes in inflation over the decade.<sup>32</sup> The results are displayed in Table 14. Comparison of columns 1 and 3 indicates how the income distribution would have changed if no cyclical effects had occurred. The difference between columns 2 and 3 (shown in column 4) indicates the magnitude of the cyclical effects.

Before looking at these results, we need to comment on the size of the effects we are discussing. A change of less than 1% in the income share of any group may appear to be a rather small change. But in a historical context, even changes of this magnitude are unusual. For example, the postwar high and low for the share of the lowest quintile are respectively 5.6% in 1968 and 4.7% in 1983. Viewed against this background, the .8 percentage point drop that has occurred within the last 10 years is quite a dramatic change.

The upper part of Table 14 shows the change in actual income share for each quintile over the last decade and indicates the estimated effect of unemployment and inflation on that share. The basic story told by these numbers is this. Between 1973 and 1983 the impact of inflation and unemployment (particularly unemployment) widened the income distribution. But these cyclical effects were partially offset by structural changes that our equations do not capture (except by a time trend.) Thus, if no cyclical effects had occurred the income distribution would have narrowed slightly.

The lowest quintile, in which we are most interested, would have experienced a rising income share if no cyclical effects had occurred -- its 1973 share would have risen to 5.7% in 1983. However, the combined effects of unemployment and inflation lowered this by .96 points, which

TABLE 14

ESTIMATED EFFECT OF THE BUSINESS CYCLE ON QUINTILE  
INCOME SHARES AND THE POVERTY RATE  
1973-1983

Income Share Of	1973	1983	1983	1983	Amount Due	Amount Due
	Actual	Actual	Predicted <sup>1</sup> Noncyclical	Actual - Noncyclical	To Changes In Unemployment	To Changes In Inflation
Lowest Quintile	5.5	4.7	5.66	-.96	-.91	-.05
Second Quintile	11.9	11.1	12.32	-1.22	-1.08	-.14
Third Quintile	17.5	17.1	17.34	-.24	-.19	-.05
Fourth Quintile	24.0	24.4	24.07	.33	.29	.04
Fifth Quintile	41.1	42.7	41.06	1.64	1.54	.10

Poverty Rate for Individuals	1973	1983	1983	1983	Amount Due	Amount Due	Amount Due To
	Actual	Actual	Predicted <sup>2</sup> Noncyclical	Actual - Noncyclical	To Changes In Unemployment	To Changes In Inflation	Cyclical Effects In Other Variables <sup>3</sup>
	11.1	15.2	10.70	4.50	5.01	-.61	.10

<sup>1</sup> Holds inflation and unemployment at their 1973 levels. Allows for effects of the time trend and the model's error structure over the decade. See text for more information on how this is constructed.

<sup>2</sup> Holds inflation and unemployment at their 1973 levels. Also removes cyclical effects from Poverty Line/Mean Income and Transfers/GNP. Allows for effects of trend line growth in Poverty Line/Mean Income, in Transfers/GNP and for the model's error structure over the decade.

<sup>3</sup> Includes cyclical effects in Transfers/GNP and Poverty Line/Mean Income.

resulted in an observed income share of 4.7% in 1983. This same pattern occurred even more strongly in the second quintile. The cyclical variables lowered the income share by 1.22 points, which was somewhat offset by a gain of .42 points due to other factors. This same pattern prevails for the third quintile, but is reversed in the fourth and fifth quintiles. For the upper income groups, the net effect of inflation and unemployment is to raise the income share. Without these effects, almost no change would have occurred (the fourth quintile would have gained .07 points and the fifth quintile would have lost .04 points). Note that unemployment consistently has a larger effect than inflation on all of these income share changes.

Finally, turn to the bottom of Table 14, in which the effects of economic variables on the poverty rate are presented. The story for the poverty count is somewhat different. Had no cyclical effects occurred over the decade, the poor would have fallen from 11.1% to 10.7% of the population. However, unemployment during this decade had a large effect on the poverty count, raising it by 5.01 percentage points. On the other hand, the decrease in inflation rates over the decade would have lowered the poverty rate by .61 points. Cyclical effects in the other variables had almost no effect on the poverty count. As the studies cited above have shown, the poverty population appears to have been particularly hard hit by the high unemployment rates during this last decade.

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VI. Looking Ahead  
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Examining the future can be more fun than examining the past; you are less constrained by the facts. This section uses the equations estimated in Section III, in conjunction with macroeconomic forecasts for the balance of the decade, to project the poverty rate and the quintile shares of the income distribution into the future.

Since no one knows what the future will bring and, in particular, no one can foresee the timing of recessions well in advance, it is prudent to consider a range of possibilities. We therefore project the evolution of poverty and income distribution under three different scenarios. (See Table 15.)

\* Our "Noncyclical" scenario is the August 1984 projection of the Congressional Budget Office (CBO). The CBO is careful to say that their numbers represent genuine forecasts for (the balance of) 1984 and for 1985, but only projections assuming "moderate noncyclical growth at rates approximating average postwar economic performance" for subsequent years.

\* Past history suggests that it is most unlikely for the economy to grow steadily for seven years without a recession. Hence our second scenario ("Recession/ Recovery") reaches the same level of unemployment by 1989 as the CBO projection, but has

TABLE 15

## ALTERNATIVE MACROECONOMIC FORECASTS, 1984-1989

	1984	1985	1986	1987	1988	1989
<b>Noncyclical</b>						
Unemployment Rate	7.3	6.7	6.6	6.4	6.3	6.3
Inflation Rate	4.4	5.0	4.9	4.8	4.8	4.8
<b>Recession/Recovery</b>						
Unemployment Rate	7.3	6.7	8.6	8.4	7.5	6.3
Inflation Rate	4.4	5.0	4.8	3.8	2.8	2.2
<b>Pessimistic</b>						
Unemployment Rate	7.3	7.0	7.0	7.0	7.0	7.0
Inflation Rate	4.4	5.0	4.9	4.5	3.8	3.4

the economy experience a moderate recession (in 1986-1987) along the way. As a consequence, inflation runs substantially lower in the later years of the projection.<sup>33</sup>

\* Our third scenario is "Pessimistic." It has the unemployment rate stall out at 7% in 1985 and remain there through 1989.

Table 16 shows the projected poverty rate for all persons and the shares of each quintile under the three alternative macroeconomic scenarios.<sup>34</sup> The projections say that the share of the bottom quintile (which is now near its historic low) will rise and the share of the top quintile (which is near its historic high) will fall. The magnitudes depend somewhat on macroeconomic conditions, being slightly larger under the CBOs "noncyclical" forecast than under either of the less sanguine alternatives. Under the CBO forecast, the poor gain 0.6 of a percentage point and the rich lose 0.8. As noted previously, this would constitute a sizable redistribution by historical standards.

Projected movements in the poverty rate over the balance of the 1980s are also quite optimistic, and not terribly sensitive to macroeconomic conditions (within the range considered). Under the "noncyclical" forecast, the poverty rate falls to 11.1% (roughly its historic low) as the recovery continues. But, if the "pessimistic" scenario is more accurate, the decline will be only to 11.5%. This difference is minor compared to the projected decline in poverty.<sup>35</sup>



TABLE 16

## FORECAST CHANGES IN POVERTY AND INCOME SHARES

	<u>Actual 1983</u>	<u>Regression Predictions for 1983</u>	<u>Forecast 1989</u>		
			<u>Non- Cyclical</u>	<u>Recession- Recovery</u>	<u>Pessimistic</u>
Shares of:					
Lowest Fifth	4.7	4.5	5.3	5.1	5.1
Second Fifth	11.1	11.1	10.9	10.7	10.8
Third Fifth	17.1	17.2	17.2	17.1	17.1
Fourth Fifth	24.4	24.5	24.4	24.5	24.4
Highest Fifth	42.7	42.9	41.9	42.1	42.1
Poverty Rate (persons)	15.2	15.2	11.1	11.3	11.5

Note: In all simulations, the poverty line for a family of four is assumed to remain at 34%. In the noncyclical simulation, transfers are assumed to remain at 12% of GNP even though the economy recovers. In the other simulations, transfers are adjusted to reflect the historical relationship between transfers and unemployment.

The basic reason is clear. Most macro forecasters expect the unemployment rate in 1989 to be well below the 1983 rate. If this proves to be true, then, according to our regressions, the income distribution should become more equal and the poverty count should fall substantially. However, if bad luck (or bad policy) leads to much worse macroeconomic conditions, the poverty rate will not fall this much.

In addition to these cyclical effects, it seems likely that there will be increases in federal taxes, perhaps large ones, between now and 1989. The form these increases will take is highly uncertain. So we can do no more than speculate on how these future tax increases will bear on the poor.

To date, most of the tax increases enacted since the 1981 tax-cutting binge have been aimed at corporate taxes or at tax loopholes that mainly benefit the rich. If we get more of the same, then the coming tax increases will be mostly irrelevant to the poor.

Indexing the personal income tax, which begins in 1985, will help the poor by halting the inflationary erosion of the real value of the personal exemption and the zero bracket amount (standard deduction).

Another widely-discussed proposal is to replace our present personal income tax with an "almost flat" tax with very little rate graduation. At the top end of the income distribution, such a change would almost certainly reduce progressivity. At the bottom, however, things are less certain -- everything depends on

how large the personal exemption would be. A per capita exemption of \$2500 to \$3000 (in 1983 dollars) would keep most of the poor and near-poor off the income tax rolls. Any smaller exemption would make the "flat tax" bear much more heavily on the poor than the present income tax does.

Finally, the social security payroll tax, the nemesis of the working poor for decades, is scheduled to rise in stages from its 14% current (1984) rate to 15.3% in 1990. Thus rising payroll taxes will continue to burden the working poor, just as they have in the past.

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## VII. SUMMARY OF MAJOR CONCLUSIONS

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According to an old cliché now enjoying a revival, a rising tide raises all boats. Our paper confirms this view, and points out that the smallest boats get raised the most (relatively). Conversely, however, they also fall the most when the tide ebbs -- a point to be kept in mind when the unemployed are drafted to fight the war on inflation.

\* The findings reported here, plus a considerable volume of past research by many economists, support the idea that both the poverty count and the share of the lowest quintile of income recipients move significantly over the business cycle.

For example, according to our estimates in Table 2, a

2-point rise in prime-age male unemployment maintained for two years (a fairly typical recession) would subtract almost 0.3 of a percentage point from the share of the lowest quintile and add about 0.9 percentage points to the poverty rate for all persons. Our estimates in Table 14 suggest that the substandard economic performance of the 1973-1983 decade reduced the share of the lowest fifth by almost 1 percentage point and raised the poverty count by 4.5 percentage points. These are very large effects.

\* The effects of the business cycle are not borne evenly across demographic groups. Although the relative wage structure seems to be affected little by the cycle, group-specific unemployment rates are affected differentially. Specifically, unemployment among the old and among women appears less sensitive to overall economic conditions; unemployment among the young and nonwhites appears more sensitive. On top of this, low-wage workers are less well protected by unemployment compensation than high-wage workers, and so lose more when unemployment strikes.

\* In contrast, there is little or no evidence that inflation is the "cruellest tax" (that is, bears most heavily on the poor). And the few effects of inflation that we found were the results of anticipated, not unanticipated, inflation.

According to our estimates in Table 2, a rise in inflation has trivial (and statistically insignificant) effects on income shares, but does increase the poverty count somewhat. We do not find effects of inflation on either the relative wages received or the relative prices paid by low-income people, though our

regressions in Table 7 indicate some puzzling effects of inflation on group-specific unemployment rates. While inflation has eroded the real value of AFDC benefits, other major transfer programs have been protected by indexing.

\* Over the postwar period, the overall tax structure seems to have grown less progressive. The main reason for this has been the increasing reliance on payroll taxes. While the federal personal income tax has changed significantly, the increased tax burden imposed on the poor by falling real exemptions was more or less offset by the earned income credit and the flat standard deduction.

What the future will bring in the way of tax changes and cyclical developments is, of course, anyone's guess. On the tax side, it is clear that payroll taxes will increase, but other policy changes are less predictable.

All in all, there is no strong reason to think that the future will look very different from the past. There is also no reason to think that poverty will be any less procyclical in the future than it has been in the past. In addition, if recent cuts in social welfare and unemployment programs are maintained, the income-cushioning role of government transfer programs will be reduced. The poor thus have good reason to fear the recessions that lie ahead.

## FOOTNOTES

1. An article entitled "Trickle Down Peters Out" was quickly followed by an article entitled "Has Trickle Down Petered Out?"
2. The U.S. poverty line is indexed each year to the Consumer Price Index and is thus an absolute poverty standard in real terms.
3. We will not enmesh ourselves here in the argument over whether an absolute or relative poverty line is a "better" definition.
4. Blank finds that women's wages -- both for female heads and for working wives of heads -- are far less procyclical than men's wages. In addition, the evidence indicates that wives show strong countercyclicality in both their labor force participation rates and in the weeks and hours that they work. This effect is strongest among wives of upper income households, but appears among low income wives also. The net effect among working wives is a strong countercyclical response to economic growth, somewhat offsetting the procyclicality of the head's (the husband's) earnings. However, this effect has less impact for poor households, since only about a third of the poor households contain married couples.
5. In most of their equations, dummy variables allow for a shift in the constant and the time trend in 1958. One possible reason is that post-1957 shares are computed from micro data while pre-1958 shares are estimated from grouped data.
6. This result is consistent with the recent finding by Gramlich and Laren (1984) that as unemployment rates rise an increasing share of the population experiences large losses.
7. Specifically, the annual inflation rate was explained by 5 lags of itself, supplemented by variables for price controls. We also use the Consumer Price Index, rather than the GNP deflator, to be consistent with some monthly regressions reported later in this paper.
8. Dummy variables for the pre-1958 years, not shown in the table or in equation (3), were also used.
9. Of course, a large amount of these government transfers do not go to the poor but to lower- or middle-income households. However, total government transfers divided by GNP still provides a measure of the extent to which our country has decided to devote resources to redistributive programs, most of which have at least some effect on poor households.
10. Of course, the rise in unemployment should not be sustained indefinitely. In the long run, the economy should return to its natural rate of unemployment.

11. The equation that estimates monthly anticipated inflation includes 11 monthly dummy variables, 12 lags, and a series of variables allowing for price control effects. Its general form is similar to that used in Blinder and Newton (1981).
12. This sort of regression is very similar to those run earlier by Gramlich (1974).
13. Some workers leave the labor market entirely in response to higher aggregate unemployment rates, thus lowering the reported unemployment in their race/sex/age group. The change in group-specific unemployment is therefore the difference between the total employment change and this labor supply effect. The regressions we report do not distinguish between participation rate changes and employment changes.
14. Population ratios are omitted in aggregate equations since male/female and nonwhite/white ratios have changed little during this period. However, significant changes in the age composition of the population have occurred. Population ratios are included in all age-specific regressions to control for this "cohort size" effect.
15. The sensitivity effect reported here is the marginal effect of base-level  $U^*$  on  $U_i$ . This is often referred to as the "steady state effect." Using the coefficients defined in equation (4), the reported sensitivities in Table 3 are  $(d_1 + 2d_2U^*(\text{mean})) / (1-g)$ . There is no simple way to calculate standard errors for this sensitivity. The underlying coefficients on unemployment ( $d_1$ ) are significant in all regressions, and the coefficients on  $U^{*2}$  and the lagged dependent variable ( $d_2$  and  $g$ ) are significant in almost all the equations.
16. As in Table 3, this is the marginal effect of anticipated inflation on  $U_i$ . Using the coefficients defined in equation (4), the reported sensitivities in Table 4 are  $c_1 / (1-g)$ . There is no simple way to calculate the standard error for this term. Significance levels on the coefficient  $c_1$  are indicated in Table 4.
17. These data, in contrast to those reported in Table 5, show only the distribution of state-run UI programs and do not include the additional special programs footnoted in Table 5.
18. No clear trends in these age, race, or sex differentials between the insured and uninsured unemployed were visible in the 1970s. Unfortunately, the Employment and Training Administration of the BLS stopped publishing age, race or sex breakdowns for UI recipients in 1979, so more recent data are not available.
19. The slowdown in inflation, combined with a levelling off of caseload growth, seems to have led many states finally to enact increases in benefit levels.

20. Quintile shares are essentially relative mean nominal incomes. They are also relative mean real incomes if the proper deflators are the same for all groups. If the true deflator for the incomes of the poor rises faster than the CPI, then the share of the poor in real income is below their share in nominal income.
21. The Bureau of the Census estimates that only 44% of dividend and interest income is reported in the CPS. See Current Population Reports, Series P-60, No. 145, August 1984.
22. Recall that according to our poverty regressions higher inflation raises poverty (a little). If the Phillips curve is steep enough, riding up the Phillips curve might, according to these regressions, raise poverty. But short-run Phillips curves are generally quite flat.
23. These calculations deduct payments by the Federal Reserve System to the Treasury from corporate tax receipts. In recent years, these payments have constituted a nontrivial share of total corporate tax receipts, as measured in the national income accounts.
24. A possible opposing view is that most of the payroll tax is used to finance retirement annuities which are then distributed according to a progressive formula. In this case, the payroll tax is not a tax.
25. According to Pechman (1983, p. 192), federal excise taxes are regressive, but not as regressive as a general sales tax of equal yield.
26. Most of the information on changes in the tax code found in this subsection and the next comes from the appendixes to Pechman (1983).
27. In the limit, as the ratio of maximum covered earnings to average earnings approaches infinity, the payroll tax becomes a proportional tax on earnings.
28. The years selected differ from those used in other tables because these years represent significant landmarks in tax history: there was a major tax overhaul of the tax code in 1954; 1965 marked the full effect of the Kennedy-Johnson tax cuts; the personal exemption was gradually increased in the 1970s and the earned income credit was instituted in 1975; 1980 is the last year before the Reagan tax cuts; and 1983 is the most recent available year.
29. Moon and Sawhill (1984, p. 326) observe that the lowest quintile of families gained essentially nothing from the Reagan income tax cuts.



30. Data in the table include only tax receipts. Grants from the federal government and nontax receipts, both of which are substantial sources of revenue, are excluded.
31. We cannot easily classify state and local taxes into "progressive" and "regressive" groups as we did for federal taxes, because everything depends on how we treat the property tax. If the property tax is viewed as progressive, then the overall state-local tax structure is only slightly less progressive than the federal tax structure and also displays a trend toward diminishing progressivity. But, if the property tax is regressive, then the state-local tax structure is very regressive and displays a trend toward diminishing regressivity.
32. These calculations are complicated by the presence of the lagged dependent variable in the equation. To calculate the components of the 1983 share due to unemployment or inflation, we calculated the cumulative effect of these variables from 1973-1983.
33. Inflation projections are adjusted to correspond to unemployment projections according to a rule of thumb by which 1 percentage point of additional unemployment for a year lowers inflation by 1/2 point.
34. The unemployment projections in Table 14 are for total civilian unemployment, whereas our regressions require the unemployment rates for prime-age males and prime-age white males. To bridge the gap, we estimated annual regressions relating these specific unemployment rates to the overall civilian unemployment rate. The unemployment rate of prime-age males is projected to run about 2 percentage points below the civilian unemployment rates shown in Table 14. The unemployment rate of prime-age white males is projected to run a few tenths of a point lower.
35. The forecast for 1984 is that the poverty rate will fall to 13.5%--a very large drop.

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