Changes in Personal Income Inequality in the United States, 1947-1975: An Evaluation of Social Policy

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During the 1960's an important social policy was launched in the United States for the purpose of reducing poverty and discrimination. Poverty and discrimination problems have been deeply embedded in the American socio-economic system and have been regarded as major causes of economic inequality. The Economic Opportunity and Civil Rights Acts were passed in 1964 to deal with these social problems. Various anti-proverty programs were initiated, including job training and adult education.[1] At the same time, affirmative action programs were established to attack discrimination. Also, government expenditures for traditional income transfer programs have grown substantially since the mid-1960s.

The purpose of this study is to investigate the impact of the above social policies on the distribution of personal income in the United States. An income distribution approach was chosen in this paper because a primary aim of the social policy is to reduce income inequality. The conventional Gini concentration coefficient is used to measure personal income inequality for the period of 1947-1975. The aggregate change in income inequality is decomposed into cyclical variations due to macroeconomic fluctuations and long-run trends caused by social and structural changes in the

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1 See Robert D. Plotnick and Felicity Skidmore (1975) and Barry R. Chiswick and June A. O'Neill (1977) for a detailed description of the anti-poverty programs, including the traditional income transfer programs.

economy. Our study reveals that social policy had significant effects on both cyclical fluctuations and long-run trends in income inequality. Our social policy variable appears, in aggregate, to reduce tendencies toward income inequality. This is somewhat consistent with other studies. For example, other studies have assigned a major part of the improvement in black-white earnings ratios over the 1960s to the effects of government affirmative action[2]. We also find strong cyclical variations in personal income inequality throughout the whole period. This finding differs from Schultz's (1969). He could not detect any cyclical fluctuations in income inequality in aggregate analysis.

Perhaps our most striking finding is that income inequality is inversely related to the unemployment rate since the mid-1960s. It is generally agreed that the incidence of macroeconomic fluctuations is not evenly distributed among income groups in the United States. Most studies contend that the burden of inflation or unemployment is mainly concentrated among low and middle income families, especially among economically disadvantaged groups, see Thurow (1971) and Gramlich (1974). The regressive impact of unemployment led us to expect a positive effect of unemployment on income inequality. However, we found since the mid-1960s that the traditional relation between income inequality and the unemployment rate was reversed by the impact of the social policy. Despite the diminishing effect of the social policy on inequality, one should not jump to the conclusion that the poicy will significantly reduce income inequality in the future. Long-run trends in the income distribution are nonetheless revealed as moving slightly toward inequality in our estimate since the 1960s.

The next section discusses the U.S. income data and changes in income inequality for the period of 1947-1975. Section II presents an analytical model for aggregate change in income inequality which is integrated with an investigation scheme for the impact of the social policy in the 1960s. We develop a fully interactive model using dummy variable techniques to evaluate the overall effect of the social policy on the distribution of personal income. Empirical results are reported in Section III. Section IV is devoted to a disaggregate analysis to explain the impact of the social policy on distributional effects of unemployment. Reversed distributional effects of unemployment are analyzed by clarifying relations between unemployment and factors affectng income inequality.

2 See Leonard Weiss and Jeffrey G. Williamson (1972); Joan Haworth, James Gwartney, and Charles Haworth (1975); and James P. Smith and Finis R. Welch (1977).

I. Income Data and Income Inequality

The income data for all persons with income, 14 years and over, were obtained from *Current Population Survey* (CPS, Series P-60) of the U.S. Bureau of the Census. This series covers money income received before payments for personal income taxes, Social Security, union dues, etc. Money income comes from a variety of sources: wages and salaries, net income from self-employment, social security, welfare, pensions, interest, dividends, rental income, and others. Nonmoney transfers and capital gains are excluded. Gini concentration coefficients were estimated from this data to obtain a measure of income inequality.

Over time, the number of money income classes of the data has increased: ten for 1947-1950, eleven for 1951, and twelve for the rest of the period. Gini coefficients like other measures of inequality are sensitive to change in data grouping. As the number of income classes increases over time, the observed Gini coefficient tends to increase in general because of a straight line approximation in the traditional method of calculation. Therefore, the change in data grouping results in an upward bias in the long-run trends of inequality to some extent. Money income classes have been fixed with twelve income classes since 1952. Unlike with quantile income data, fixed classes would cause another bias, as income units move to higher brackets over time with the growth of income. This upward shift of income units causes a downward bias in the observed Gini coefficient because the upward shift tends to move the distribution function to the right. Therefore, care must be exercised in using such time-series data, especially when trends in the distribution of income are relatively stable. However, the bias in the observed income inequality would be fairly small when the number of income classes are eight or more[3].

Table I shows the observed Gini concentration coefficients[4] derived from the CPS personal income data. The Gini coefficient for all persons increased over time with a year-to-year fluctuation until the mid-1960s, and thereafter was relatively stable. The observed change in income inequality is interpreted as a long-run trend, perhaps combined with cyclical variations associated with

3 See J. N. Morgan (1962).

4 Morton Paglin (1975) proposes a modified Gini concentration ratio for income inequality, which attempts to take life cycle income aspects into account. Yet we adopt conventional Gini coefficient in our study, simply because age aspect of income recipients is well reflected with other factors in the long-run trends.

Table 1

PERSONAL INCOME GINI COEFFICIENTS AND UNEMPLOYMENT RATES, 1947-75

Year	All Persons	Male	Female	White	Black	Unemployment Rate (%)
1947	.47098	.41212	.48195	—	—	3.9
1948	.44741	.40409	.45116	—	—	3.8
1949	.47440	.43390	.47114	—	—	5.9
1950	.48690	.44012	.48509	—	—	5.3
1951	.45948	.39835	.46739	—	—	3.3
1952	.45196	.39500	.47296	—	—	3.0
1953	.46456	.41186	.47828	.45386	.45959	2.9
1954	.47141	.42027	.47802	.45991	.49149	5.5
1955	.49051	.42697	.49988	.47838	.48696	4.4
1956	.48900	.41932	.48913	.47724	.48390	4.1
1957	.48967	.42237	.49477	.47772	.49016	4.3
1958	.48610	.42447	.50456	.48229	.49812	6.8
1959	.48389	.42762	.50858	.49008	.51202	5.5
1960	.50350	.43708	.49683	.49156	.50878	5.5
1961	.51243	.44819	.51780	.50870	.50798	6.7
1962	.50077	.43514	.51122	.49653	.49142	5.5
1963	.50202	.43546	.50817	.49387	.49743	5.7
1964	.50057	.43598	.51009	.49696	.49814	5.2
1965	.49896	.43269	.50344	.49590	.48730	4.5
1966	.49968	.43555	.50174	.49778	.48176	3.8
1967	.50039	.43405	.49993	.49761	.47972	3.8
1968	.49852	.43044	.49228	.49562	.47681	3.6
1969	.50203	.43396	.49323	.49951	.47562	3.5
1970	.50400	.43923	.49989	.50290	.47440	4.9
1971	.49876	.43761	.49057	.49811	.47836	5.9
1972	.50293	.44000	.48748	.50309	.47120	5.6
1973	.49974	.43509	.48260	.49834	.47251	4.9
1974	.50199	.43780	.48652	.49976	.48297	5.6
1975	.49392	.43413	.47967	.49280	.47014	8.5

Note: Gini coefficients are estimated using the personal income distribution data reported in Bureau of the Census, Current Population Report, *Consumer Income, Money Income in 1975 of Families and Persons in the United States*, Series P-60, No. 101, Table 61. Unemployment rates are taken from U.S. Department of Labor, *Employment and Earnings*, Vol. 24, No. 4, April 1977.

macroeconomic fluctuations, e.g., the unemployment rate. The breakdown of the overall Gini coefficients reveals that those for men changed in a fashion similar to those for all persons, but were consistently smaller. Income inequality for women changed more notably during the period. Women's Gini coefficient had also increased until the mid-1960s and then declined significantly. The distribution of income among women was more uneven than that for men. A similar pattern emerges from the Gini coefficients for personal income distribution broken down by race. The concentration ratio increased steadily for both white and black until the early 1960s, then stabilized for white and declined for black.

Income inequality increased significantly for all income groups until the mid-1960s, as was noted by Schultz. However, it either remained stable for men and whites or slightly moved toward equality for women and blacks since then. These changes may be attributable to social policies of the 1960s, as well as changes in demographic and social structure in the United States during the latter period. It appears that both women and nonwhites improved their economic status by increasing labor participation. Their income differentials relative to men and whites narrowed by reduced discrimination in education and the job market. The reduced inequality among women and blacks since the 1960s abates the increasing trends of the overall income inequality. Another cause for change in inequality may be the anti-poverty programs initiated under the Economic Opportunity Act of 1964 to assist economically disadvantaged groups.

II. The Analytical Model

In this section we develop an aggregate model to analyze change in income inequality, by relating Gini coefficients to a set of variables reflecting macroeconomic fluctuations and a time trend. We assume that cyclical variations of income inequality, considered as deviations from the long-run trends, are related to the unemployment rate. The model abstracts from changes in the level of real aggregate output and from changes in the rate of inflation that may be associated with the unemployment rate. Our distributional effects could be viewed, for instance, as a consequence of a change in the unemployment rate at a given level of the rate of inflation, associated with an upward shift of the Phillips curve. There may, of course, be an increase in the rate of inflation accompanying an increase in aggregate demand, which could be represented by a movement along a given Phillips curve to a

lower-rate of unemployment. The consequent increase in real output would itself have distributional effects, e.g., an increased share of profits and possibly some narrowing of wage differentials, as well as the increased share of wage income of those previously unemployed. The effect of changes in the unemployment rate can therefore be viewed as a combination of both the effects of a loss in income to those unemployed and to a reduction in aggregate real output. The long-run trends are assumed to take linear form in time.

The basic model is

$$(1) \quad G = a_0 + a_1 U + a_2 T$$

The dependent variable G is the Gini concentration coefficient of personal income. The a's represent a constant term and parameters. The independent variables U and T are the unemployment rate in the civilian labor force and time variable, respectively. Using a catch-all variable T, the long-run trends represent the net effect of change in all socio-economic factors. Those factors include secular changes in relative factor scarcity, demographic changes in the income group, human capital, technical changes, other inherent tendencies towards increasing concentration in the economy, as well as social policies and other regressive stabilizing tendencies. The long-run trends may change over time according to the net effect of such social/structural changes.

To investigate the impact of the social policy, we introduced dummy variable techniques into the basic model. The dummy variable representing social policy is hypothesized to be interactive with both the long-run trends and cyclical variations. We assume that social policy has changed the distributional effects of unemployment which, in turn, has affected income inequality in the short-run. It also assumed that social policy helps create an economic and social structure conducive to income equality. Various anti-poverty programs have emphasized education and job training in an attempt to increase productivity and earnings of the poor. Further, affirmative action might encourage blacks and women to invest more on human capital, stimulated by improved rate of returns thanks to less discrimination. Demographic change and changes in components of the income group have probably been affected by social policy, resulting in the expansion of labor participation by blacks and women. Therefore, we may formulate an aggregate model to accommodate the overall impact of social

policy in the 1960s by developing a fully interactive model:

$$(2)\quad G = a_0 + a_1 U + a_2 T + a_3 D + a_4 UD + a_5 TD$$

where D = 0 for 1947-1963
1 for 1964-1975

The year 1964 was taken as a turning point for the whole period, because in that year both the Economic Opportunity and Civil Rights Acts were passed. The interactive varables, UD and TD, are respectively product terms of U and T with the dummy variable D. According to the above discussion, a_0 and a_1 were anticipated to be positive; and the coefficients associated with interactive terms were all expected to be negative. The long-run trend coefficient, a_2, could be positive, negative or zero according to the dominant tendencies of income distribution in the economy.[5] In fact, equation (2) can be partitioned into two basic equations along the time path,

$$(3)\quad G = a_0 + a_1 U + a_2 T \qquad \text{for 1947-1963, and}$$
$$G = (a_0 + a_3) + (a_1 + a_4)U + (a_2 + a_5)T \quad \text{for 1964-1975.}$$

The two basic equations may have different slopes and intercept terms.

From equations (2) or (3), the effect of macroeconomic fluctuations on income inequality is given by the partial derivatives:

$$(4)\quad \frac{\partial G}{\partial U} = a_1 + a_4 D \qquad \text{or}$$

$$\frac{\partial G}{\partial U} = a_1 > 0 \qquad \text{for 1947-1963}$$

$$= a_1 + a_4 \qquad \text{for 1964-1975}$$

Given signs of a_1 and a_4, $(a_1 + a_4) \gtrless 0$, depending upon the magnitudes of the two coefficients. The effect of unemployment on income inequality is further discussed in the later sections. Similarly, the effect of the long-run trend is

$$(5)\quad \frac{\partial G}{\partial T} = a_2 + a_5 D \qquad \text{or}$$

5 Kuznets (1955) shows that in developed countries income inequality among persons and families has reduced during the twentieth century. Yet he has no determinate answer as to whether the trend is upward, downward, or constant.

$$\frac{\partial G}{\partial T} = a_2 \gtrless 0 \qquad \text{for 1947-1963}$$

$$= a_2 + a_5 \gtrless 0 \qquad \text{for 1964-1975.}$$

The overall effect of social policy may be represented by the first difference of G for the two subperiods:

$$(6)\quad \frac{\Delta G}{\Delta D} = \Delta G = a_3 + a_4 U + a_5 T$$

since D is taken to be a discrete variable and $\Delta D = 1$. We expect that social policy affects the distributional effects of macroeconomic fluctuations and the long-run trend in such a way as to reduce income inequality, that is, $a_3 + a_4U + a_5T < 0$. Similarly, changes in distributional effects of unemployment and the long-run trend associated with the social policy may be evaluated as

$$(7)\quad \frac{\Delta G_U}{\Delta D} = \Delta G_U = a_4 < 0 \quad \text{and}$$

$$\frac{\Delta G_T}{\Delta D} = \Delta G_T = a_5 < 0$$

where G_U and G_T, respectively, partial derivatives of G with respect to U and T. In the next two sections, we estimate empirical relationships and interpret the effect of social policy and changes in income inequality for the period within the above analytical framework.

III. Empirical Results

We estimated coefficients of equation (1) with annual data for 1947-1975 using ordinary least squares. The results are shown in Table II, Column I. The long-run trend is positive on income inequality for the whole period, but cyclical variation is not statistically significant. The Durbin-Watson statistic indicates the presence of positive autocorrelation in the residuals as the hypothesis of zero-autocorrelation is rejected at the 5% level of significance. We suspect the misspecification and possible omission of variables in

equation (1). We added a dummy variable to the equation (1) to see any change in the degree of inequality before and after 1964, the year in which important social policies were begun. The estimates of coefficients were not improved, although signs of the estimated coefficients were consistent with our earlier discussion (see Table II, Column II). A test of non-autocorrelation is inconclusive at the 5% level.

Table 2

ESTIMATES OF INCOME INEQUALITY EQUATIONS
ALL PERSONS, 1947-1975

Independent Variables	Estimates of Coefficients I	II	III
Constant	.45657*	.45750*	.43391*
	(54.64)	(54.56)	(51.77)
Unemployment Rate	.00238	.00137	.00578*
	(1.36)	(.68)	(2.89)
Time	.00140*	.00193*	.00218*
	(5.36)	(3.39)	(4.53)
Dummy		-.00955	.06753*
		(-1.05)	(3.68)
UD			-.00712*
			(-2.32)
TD			-.00195**
			(-1.93)
$\bar{R}^2$	.579	.580	.770
SEE	.01103	.01101	.00814
DW	1.064	1.146	2.004
Degrees of freedom	26	25	23

Notes: Numbers in parentheses are t-values.
* significant at the 1% level.
** significant at the 5% level.

Finally, we estimated the fully interactive model, equation (2) as described in the previous section. Table II, Column III reports the regression results. All coefficients are statistically significant at

least at the 5% level with correct signs. The $\bar{R}^2$ is relatively high. The D-W statistic is almost two, indicating non-autocorrelation. In the completely interactive model, however, the coefficient estimates for each sub period are identical to those that would have been obtained from separate regressions performed within each sub period. That is,

$$(8)\quad G = .43391 + .6753D + (.00578 - .00712D)U + (.00218 - .00195D)T$$

where D = 0 for 1947-1963
1 for 1964-1975

or

$$(8')\quad G = .43391 + .00578U + .00218T \qquad \text{for 1947-1963 and}$$
$$G = .50144 - .00134U + .00023T \qquad \text{for 1964-1975.}$$

The F-test for homogeneity of the complete relation (intercepts and slopes) over the two sub-periods rejects the hypothesis of $a_3 = a_4 = a_5 \doteq 0$.[6] We see from (8) and (8') that a significant *structural change* occurred in the size distribution of income since the 1960s due primarily to affirmative action and anti-poverty programs. We also find strong cyclical changes in inequality through the whole period. Our results differ from Schultz (1969). He included three cyclical variables ad *independent* variables in his aggregate model, i.e., the growth rate of aggregate output, the rate of inflation, and the unemployment rate, none of which was statistically significant.[7] Others have indicated cyclical changes in inequality in a disaggregated analysis, Kuznets (1953), Metcalf (1969), and Mirer (1973).

We obtained from our estimates the overall effect of the social policy on income inequality:

$$(9)\quad \Delta G = .06753 - .00712U - .00195T$$

The value of T for 1964 is 18 and increases by one subsequently,

6 The observed value of the F statistic is 8.17 and the critical value of a F random variable with 3 and 26 degrees of freedom is 4.76 at the 1% level.

7 We suspect that Schultz's regression results might suffer from multicollinearity problem. The data do not show any serious pair-wise collinearity among those variables, but there still exists some possibility of multicollinearity due to near singularity among all three variables plus the time variable. At the conceptual level, those three macroeconomic variables can hardly be considered as "independent" variables one another, apart from the Phillips curve.

and the unemployment rates are between 3.5 to 8.5 in the period. Given the unemployment rate and the value of the T, the effect of social policy tends to be negative on income inequality for the period of 1964-1975. It appears that social policy has significant effects on reducing the long-run trend toward concentration and in changing cyclical fluctuations in inequality. The long-run trend still remains positive in our estimates, although strong tendencies toward increasing concentration have been largely neutralized by social policy. It should be noted that the long-run trend coefficient declined from .00218 to .00023 since 1964.

One of the most surprising findings in our investigation is the change in cyclical variations of income inequality since the 1960s. Year-to-year change in inequality was originally countercyclical (i.e., income inequality decreases as economic activities expand), but the cyclical changes reversed since 1964. It is of interest to note that the coefficient estimate for the unemployment rate is .00578 in equation (8′) for 1947-1963, but reversed to -.00134 for 1964-1975. The effect of the social policy on cyclical changes in inequality is represented by the coefficient for UD in (8), $a_4 = -.00712$, which dominates the countercyclical movement ($\frac{\partial G}{\partial U} = .00578$ in the earlier period). Gramlich (1974) found that the distributional effect of unemployment was regressive with the burden of unemployment concentrated on low income classes, especially blacks. Our result concerning the distributional effect of unemployment is consistent with the traditional view in the earlier period. But the effect of unemployment on inequality reversed since 1964, contrary to other studies. In fact, there exists a strong negative correlation between the income inequality measure and the unemployment rate in our aggregate data for 1964-1975. (Correlation coefficient is -.51). By contrast, the correlation coefficients for 1947-1963 and for the whole period are positive. (Correlation coefficients are, respectively, .70 and .42.) This apparent contradiction between the traditional view and our finding deserves further investigation to clarify the effect of social policy, and is partially resolved in the following section by a disaggregated analysis of income inequality.

IV. Social Policy and Distributional Effects of Unemployment

When we disaggregate the total income distribution into mutually exclusive income groups, the overall income inequality measure can be partitioned into intra- and inter-group ine-

qualities. The overall inequality measure may in turn relate to three factors: inequality within each income group; proportion of a group in the total income recipients; and average income differential between the sub-group and the total income population.[8] In a simple case of disaggregation by sex, the overall Gini coefficient depends on the Gini coefficients for women and men, the average income ratio between women and all persons, and the proportion of women income recipients among the total income population (henceforth called women's participation rate). The overall inequality increases, *ceteris paribus,* as women's Gini or men's Gini increases. An increase in the ratio between mean income of women and all persons (i.e., a decrease in income differential between the sub-groups considering women's income being less than men's income) reduces the overall Gini. The effect of an increase in the women's participation rate is either positive or negative depending on other factors such as the income differential, income inequality in each sub-group, and the participation rate itself. For example, all other conditions being equal, an increase in women's labor force participation rate means an increasing share for the more unequal of the two component distributions. And the relative difference in per capita income between men and women does not necessarily decrease in the course of increasing women's participation; indeed, there is some evidence to suggest that it would be even widening. If this is so, inequality in the total income distribution should increase.

Table III shows the income ratios and the women's participation rates along with the mean income of women and all persons. The women all persons income ratio had decreased until the mid-1960s, indicating that the inter-group inequality had increased. The early decline in the income ratio, accompanied by the steady increase in women's participation rate, reflects that the additional women workers joining the labor market usually clustered around the lower income levels.

Since 1970 most of the significant developments in the affirmative action programs affecting women have taken place. The 1972 Equal Employment Opportunity Amendments, or the EEOC guidelines on discrimination because of sex under Title VII of the Civil Rights Act are examples. The relative income ratio increased since then, narrowing the income differential between the two

8 Kuznets (1955) advanced three sets of factors which affect the overall distribution of income; inter-sector differences in per capita income, intrasector distributions, and sector weights.

Table 3

INCOME RATIOS AND THE PARTICIPATION RATES

Years	Mean Income for Women (μ_1) (in dollars)	Mean Income for All Persons (μ) (in dollars)	Income Ratio ($\frac{\mu_1}{\mu}$)	Women's Participation Ratio (λ_1)
1947	1,262	2,174	.580	.315
1948	1,268	2,244	.565	.324
1949	1,250	2,187	.572	.327
1950	1,296	2,376	.545	.342
1951	1,397	2,587	.540	.347
1952	1,506	2,699	.558	.356
1953	1,568	2,811	.558	.356
1954	1,575	2,813	.560	.358
1955	1,618	2,916	.555	.367
1956	1,659	3,062	.542	.379
1957	1,701	3,110	.547	.382
1958	1,730	3,186	.543	.384
1959	1,814	3,403	.533	.388
1960	1,861	3,496	.532	.398
1961	1,968	3,676	.535	.406
1962	1,993	3,733	.534	.408
1963	2,046	3,837	.533	.412
1964	2,177	3,996	.545	.416
1965	2,265	4,232	.535	.417
1966	2,389	4,447	.537	.423
1967	2,483	4,509	.551	.432
1968	2,732	4,923	.555	.437
1969	2,945	5,328	.553	.440
1970	3,138	5,589	.561	.442
1971	3,333	5,878	.567	.442
1972	3,577	6,375	.561	.447
1973	3,799	6,812	.558	.451
1974	4,161	7,255	.574	.457
1975	4,513	7,704	.586	.461

Sources: Bureau of the Census, Current Population Report, *Consumer Income, Money Income in 1975 of Families and Persons in the United States,* series P-60, No. 105, pp. 255-9, Table 61.

groups. Women's participation rate has uninterruptedly increased from 31.5% in 1947 to 46.1% of all income recipients in 1975.

To analyze the role of unemployment on the overall Gini, it is useful to determine how the unemployment rate is related to the above factors affecting the total Gini. In general, the factors can be considered functionally related to the unemployment rate and time trends which are in turn related to the overall Gini. That is,

$$(9)\quad G_i = G_i\ (U, T) \qquad i = 1, 2;$$

$$\frac{\mu_1}{\mu} = h\ \ (U, T)$$

$$\lambda_1 = k\ \ (U, T) \qquad \text{and}$$

$$G = G\left(G_1, G_2, \frac{\mu_1}{\mu}, \lambda_1\right) = g\ (U, T)$$

where G_1 is women's Gini and G_2 is men's Gini; $\frac{\mu_1}{\mu}$ is the ratio of women's mean income to that of all persons; λ_1 is women's participation rate.

Then, the distributional effects of unemployment can be seen from

$$(10)\quad \frac{\partial G}{\partial U} = \frac{\partial G}{\partial G_i} \cdot \frac{\partial G_i}{\partial U} \qquad i = 1, 2$$

It is positive or negative depending on whether $\frac{\partial G_i}{\partial U}$ is positive of negative since $\frac{\partial G}{\partial G_i}$ is positive. Similarly,

$$(11)\quad \frac{\partial G}{\partial U} = \frac{\partial G}{\partial h} \cdot \frac{\partial h}{\partial U}$$

It is positive or negative depending on whether $\frac{\partial h}{\partial U}$ is negative or positive since $\frac{\partial G}{\partial h}$ is negative. Also,

$$(12)\quad \frac{\partial G}{\partial U} = \frac{\partial G}{\partial \lambda_1} \cdot \frac{\partial \lambda_1}{\partial U}$$

The sign of $\frac{\partial G}{\partial \lambda_1}$ is indeterminable.

In order to qualitatively assess these distributional effects, partial correlation coefficients between unemployment rate and the factors affecting the overall Gini, holding the time variable constant, have been calculated and reported in Table IV.

Table 4

PARTIAL CORRELATION COEFFICIENTS WITH THE UNEMPLOYMENT RATE HOLDING TIME

Variables Period	G_1	G_2	$\frac{\mu_1}{\mu}$	λ_1
1947-63	.3998	.7455*	.1128	-.4462**
1964-75	.2502	.1202	.5586**	-.4434

Note: G_1 is women's Gini coefficient
G_2 is men's Gini coefficient
$\frac{\mu_1}{\mu}$ is the ratio of the women's mean income to the all person's
λ_1 is women's participation rate
* significant at the 1% level
** significant at the 5% level

Partial correlations between the individual Gini coefficients and the unemployment rate were larger in the early period, but small and statistically insignificant in the latter period. Correlation coefficients between unemployment rate and women's inequality, G_1 were all low and insignificant over the periods. On the other hand, there was a high and positive correlation between UR and G_2 in the early period. This could be consistant with Gramlich's finding that male workers are more susceptible to changing unemployment then female workers. The lower labor force activity of female tends probably to make their incomes less susceptible to changes resulting from employment fluctuations. Correlations between G_2 and the unemployment rate were considerably different between the two periods. The high correlations with a positive sign for 1947-63 is attributable to an increasing income inequality under high unemployment in that period. In the latter period, however, the unemployment rate doesn't appear to affect G_2 significantly.

The variation in partial correlations between the unemployment rate and the income ratio is also substantial between the two

periods. The partial correlation shows that unemployment had no substantial relation with the income ratio in the earlier period. However, the correlation became significant and positive in the latter period, indicating that high unemployment actually reduces the income differential between men and women. The significant and positive correlation in the latter period explains the *negative* effect of unemployment on overall Gini coefficient.

These changes in partial correlations may be explained by the impact of social policy. The burden of unemployment on the low income classes, primarily racial minorities and women which was regressive in the early period may be somewhat reduced by anti-discrimination and anti-poverty programs, in combination or in dividual form. Particularly, "affirmative action" programs have institutionalized in the later 1960s after which unemployment rates remained relatively high. This may have helped poor minorities and women maintain (or marginally improve) their relative shares even under high unemployment.

The partial correlations between unemployment rate and λ_1 are of similar magnitudes between the two periods (-.4462 and -.4434, respectively). As the unemployment rate increases, the women's participation rate has declined. However, an increase in the unemployment rate accompained by decreasing λ_1 does not appear to reverse the trend of the aggregate inequality over the periods as far as women's participation rate is related. This does not imply that the changing λ_1 would not affect the overall Gini; it simply says that the effects of unemployment on the overall Gini are not likely different between the two periods on account of λ_1.

Aside from women's participation rate because of its stable correlation with unemployment, we may explain a reversal in the distributional effects of unemployment in terms of the partial correlations we observed. The right hand side of equation (10) is expected to be positive particularly in the early periods. That is, the effect of unemployment on the overall Gini was regressive because an increase in the unemployment rate made workers' income distribution more uneven. The regressive role of unemployment became negligible in the latter period as shown by insignificant partial correlation between unemployment and individual Gini's. The right hand side of equation (11) is expected to be negative particularly in the latter period. But this effect is not significant in the early period. In the latter period, therefore, the effect of unemployment was reversed on the income distribution. In summary, the social policy comprising anti-discrimination and anti-

poverty programs neutralized the regressive effect of unemployment on intra-group inequalities and at the same time reduced the income differential among groups despite high unemployment. These effects would then produce a negative impact of unemployment on the overall inequality when they are evaluate in terms of our decomposition of the overall inequality. Alternatively, it may be noted from Table IV that the correlation between the unemployment rate and G_2 was positive and strong in the earlier period while the one between UR and $\frac{\mu_1}{\mu}$ was so for the latter period. This explains partially why the distributional effects of unemployment was regressive in the earlier period but reversed in the latter period. A decomposition of income distribution by race reveals very similar results to those by sex, although not reported here.

V. Concluding Remarks

In our estimates, social policy in the 1960s, affirmative action and anti-poverty programs together, has changed short-run distributional effects of unemployment. Contrary to other studies, we find that the distribution of income has moved toward inequality as an economic expansion reduces the unemployment rate, and vice versa, since the mid-1960s. Decreasing tendencies in women's income inequality and a narrowing of the income differential between men and women, under the impact of the social policy, have played an important role in the shift of distributional effects of unemployment. On the other hand, the long-run tendencies toward income inequality have remained, but have been reduced to a large extent due to the social policy.

Although there has certainly been a measure of improvement in the distribution of income, the social policy has not been able to reverse long-run tendencies toward income inequality. Moreover, the prospects for further improvement toward equality in the distribution of income are not good. Affirmative action is being challenged as reverse discrimination in some areas, such as in professional education and the job market.[9] Anti-poverty programs and other social programs are being phased out due to growing fiscal constraints and inefficiency. The somewhat dim prospects

9 A case in point is so called the "Bakke case." Allan Bakke filed a lawsuit against a medical school, contending that his admission was rejected illegally because of affirmative action program.

may reflect changes in the view of American society on the long-term utility of wide income inequalities. Changes in the view constitute a re-evaluation of inequalities in relation to efficiencies of the economy. Another aspect to be noted is that social policy is, in a way, self-defeating. Social policy encourages more women, blacks, and teenagers, many of whom were formerly excluded from the job market, to join the labor market and, hence, enter the income group. This new factor tends to intensify income inequality because of their heavy representation in low-paying jobs. The economic, political and social consequences of discriminatory barriers will become more important because their impacts will be more widespread, and the differentials in earnings between advantaged and disadvantaged groups will remain (and in some instances even widen). Therefore, the more equality or equal opportunity social policy pursues, the more difficult is it to improve income distribution. A good deal of social policy is justified on the ground that it would make the distribution of income more equal. However, it is very difficult to evaluate social policy in terms of the observed inequality alone since the measure of income inequality is not necessarily consistent with social values behind social policy. Another technical problems is that there exist some limitation in analyzing distributional inequality by simply using aggregate inequality measures without taking socio-demographic aspects separately into account.

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