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Trends in Income Tax Inequality: The Impact of, and Implications for, Tax Policy

by

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TRENDS IN INCOME INEQUALITY: . THE IMPACT OF, AND IMPLICATIONS FOR, TAX POLICY

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1. INTRODUCTION

In the last decade, increased public attention has been drawn to evidence that the distribution of income in the United States has become more unequal. Official Census Bureau data that in the past showed a rather stable level of inequality indicate that the level of inequality in family income reached a post-war peak in 1989 (U.S. Bureau of the Census, 1989, 1992b). As a result, the 1980s have been characterized as a period where "the rich became richer, and the poor became poorer". The years between 1981 and 1990 have also been designated the "tax decade" (Steuerle, 1992). Eight months after Ronald Reagan became president in 1981, Congress passed the Economic Recovery and Tax Act (ERTA) which dramatically lowered individual and corporate taxes. Five years later, following tax increases in 1982, 1983, and 1984, the Tax Reform Act (TRA) of 1986 became the decade's second hallmark piece of tax legislation. Although total federal, state and local tax receipts remained relatively constant as a fraction of GNP during the 1980s, at about 26 to 27 percent, the changes in tax policy during the decade altered the way taxes were collected (Steuerle, 1992). Significant reductions in marginal tax rates for the federal income tax, as well as the shift away from corporate and individual income taxes toward social security and state and local taxes, exemplify the changes that occurred during the decade.

The confluence of these two trends -- the one marking changes in the distribution of income across families, the other signifying shifts in the burden of taxation across families -- has led some to suggest a link between changes in the tax code and the distribution of income. Lindsey (1990), for instance, argues that the rise in inequality during the 1980s was caused by the sharp reduction in marginal tax rates for high income taxpayers, inducing them to work more, report more income to the Internal Revenue Service, shift compensation toward taxable forms, and realize more capital gains. Even without such behavioral effects, changes in the tax structure, by changing the degree of progressivity of the tax system, would be expected to have a direct impact on inequality by altering the

shape of the post-tax income distribution. Furthermore, even if the changes in tax policy bear no relationship to the changing income distribution, the distributional changes in pre-tax incomes have implications for future tax policy.

Within this context, the goal of this paper is to examine the trends in U.S. income inequality and identify the impact, if any, of recent tax changes on the income distribution. First, in the next section, I use micro-data from the annual March Current Population Survey (CPS) to document the changes in the distribution of pre-tax money income in the United States during the past two decades. Although the rise in inequality is identified with the 1980s, it is important to establish a benchmark for comparison. Thus, the analysis of trends in inequality presented in the next section begins with data for 1970 and continues through 1990, the latest year for which CPS data are available. This analysis confirms the findings of number of recent studies that show a rise in inequality in pre-tax incomes dating back to the 1970s.[1]

In section 2, I also decompose the changes in inequality by income source to determine the relative contribution of different components of pre-tax income to the rise in inequality. The decomposition shows that the rise in inequality cannot simply be identified with one or even a few sources of income. At the same time that inequality in the labor income of the head increased, the importance of this component in total income declined. Instead, income shifted toward two other components, spouse's earnings, capital income and other income, all of which are less equally distributed. The declining importance of transfers in reducing inequality, both those targeted at low income families and those more evenly distributed, also contributed to the rise in inequality.

The third section evaluates the merit of a number of explanations for the rise in inequality, focusing primarily upon the direct and indirect impacts of tax policy. The evidence of the direct impact of the tax system on inequality in post-tax incomes during the last few decades is somewhat mixed. Most analysts conclude that progressivity in the tax

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[1]See, for example, Karoly (1993) and the studies cited therein.

system declined in the early part of the 1980s as a result of ERTA and the rise in social security payroll taxes. The 1986 TRA is generally believed to have improved the progressivity of the tax system, although evidence to this effect is far from conclusive. In part, these conclusions depend upon controversial assumptions about who bears the burden of various taxes, particular the taxation of capital income. In any case, it seems fair to conclude that the rise in pre-tax income inequality dominates any increase in post-tax inequality due to a reduction in the progressivity of the tax system during the 1980s.

The evidence in support of a causal link between tax changes and the rise in pre-tax inequality is also not uncontroversial. First, given that inequality began rising in the 1970s, and that dispersion increased in both the lower and upper tails of the distribution, the changes in tax policy cannot be the single culprit. Nevertheless, there is some empirical evidence to suggest that aggregate labor supply increased in the period following the 1981 tax cuts. However, the measured effects are not entirely consistent with the changes in marginal tax rates faced by individuals at different points in the income distribution. Instead, a number of other factors have merit as explanations for the rise in inequality, including changes in the demographic compositions of families (such as the rise in female-headed households), the increased importance of the earnings of secondary workers (i.e., the spouse), and the rise in wage inequality.

Finally, the paper concludes with a discussion of the implications for tax policy of the changes in the income distribution. In this section, I draw upon the lessons garnered from analyses of the behavioral responses to the 1980s tax changes. I also discuss the possible role for the tax system in reducing the growing disparities in pre-tax incomes.

2. TRENDS IN INCOME INEQUALITY: 1970 TO 1990

The evidence of rising income inequality in the U.S. has come from a number of fronts. Data from the Census Bureau reveal that inequality among families (defined to exclude single-person families), after reaching a post-war low in 1967-1968, began to increase during the 1970s and continued to rise through the 1980s (U.S. Bureau of the

Census, 1989, 1992b). Although the trend toward greater inequality began in the late 1960s, about two-thirds of the absolute increase in the Gini coefficient between 1968 and 1989 occurred between 1980 and 1989. The rise in inequality during this period is further evidenced by a decline in the share of income received by the bottom three quintiles of families and a corresponding increase in the share going to the top two quintiles. The trends in inequality estimated by the Census Bureau are based on data from the annual March Current Population Survey (CPS). One advantage of the CPS is the existence of a relatively long time-series of micro-data for a nationally representative cross-section of families. The annual survey of about 50,000 to 60,000 households collects information for individuals and families about total income, and income by source, in the previous calendar year. The existence of demographic and labor force data is also advantageous for distributional analyses. The primary disadvantage of the CPS is that it is difficult to construct a comprehensive measure of post-tax family income. In each survey, the income information is limited to pre-tax money income, thus excluding federal, state, and local taxes, as well as the value of in-kind benefits (e.g., food stamps, health benefits).[2] Other income items such as accrued capital gains are also excluded.

There are a number of different approaches to analyzing changes in the distribution of income. The unit of analysis, income metric, and measure of inequality are the principal methodological differences across income distribution studies. Karoly (1993) provides a recent analysis of trends in income inequality among families and individuals using several methodologies. In the discussion that follows, I update my earlier analysis of trends in inequality, relying upon the March 1971 to March 1991 CPSs which provide information

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[2]The reported cash income data in the CPS suffer from underreporting. In particular, some components of transfer income such as Aid to Families with Dependent Children (AFDC) and Supplemental Security Income (SSI) are underreported. The same is true for property income items such as rent, dividends and interest income. Using the Urban Institute's TRIM2 micro-simulation model to adjust for underreporting, Michel (1991) shows that the Gini coefficient declines from 0.444 to 0.442. Another problem with the CPS data is the topcoding of income amounts at a constant nominal top code. Top-coding will bias summary measures of inequality downwards due to the truncation of the upper tail of the income distribution (Fichtenbaum and Shahidi, 1988). However, trends in percentile points of the distribution will not be affected by the top-coding providing that the percentile points remain below the income top code in all years.

about income inequality from 1970 to 1990.[3] The unit of analysis is the family, defined to include unrelated individuals (i.e., persons living alone or with non-relatives).[4] To adjust for differences in family size at a point in time, and to control for changes in family size over time, I use a measure of adjusted family income (AFI) defined as total family income relative to the appropriate poverty line.[5] In the distribution of AFI among persons, each individual in the family receives a weight of one.

The income measure is total pre-tax money income, and income disaggregated into eight sources: the family head's wage and salary income, the head's self-employment income, the spouse's earnings (wage and salary income plus self-employment income), the earnings of other family members, means-tested cash transfers (AFDC, Supplemental Security Income, and other public assistance), other cash transfers (Social Security, unemployment benefits, veteran's benefits, and worker's compensation), capital income (interest, dividends, and rent), and other income (pension income, and other miscellaneous sources).[6]

I use two approaches to summarize the changes in the distribution of income. First, I rely upon a standard summary measure of inequality, the Gini coefficient.[7] The

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[3]Due to a significant change in the CPS processing system introduced in March 1989, which affected the way income and income by sources is measured, the March 1988 survey is available using the old and new processing system. I use both of the March 1988 files in order to adjust for the discontinuity in the time series of inequality. As discussed in Karoly (1993), the new processing system resulted in a slight rise in measured inequality. All time series plots and tables in the body of the paper adjust for this discontinuity by applying the percentage change between March 1988 and each successive year based on the new processing system to the March 1988 data using the old processing system. The tables presented in the Appendix contain the results for both March 1988 files.

[4]The income of related subfamilies are included with the income of the primary family.

[5]This adjustment implicitly uses the equivalence scales imbedded in the official poverty line to adjust for differences in family needs (Ruggles, 1990).

[6]For husband and wife families, I define the family head to be the husband, while the wife is defined as the spouse. This differs from the CPS public use files, which starting in 1980, allowed wives to be designated as the family head in married-couple families. In calculating the Gini coefficient, income items which are less than zero are set equal to zero (e.g., self-employment income, capital income). Since at most 2 percent of all families report negative earnings or capital income, the results are essentially unchanged by this adjustment.

[7]The Gini coefficient ranges from a value of 0 in the case of perfect equality, to a value of 1 in the case of perfect inequality. The Gini coefficient has a natural geometric interpretation in terms of the Lorenz curve, a plot of the cumulative percent of the population (ranked from lowest to highest income) against the cumulative share of income. The Gini coefficient is equal to two times the area between the 45 degree line (the line of perfect inequality) and the Lorenz curve. Algebraically, Lerman and Yitzhaki (1984) show that the Gini equals two times the covariance between income and the rank of income divided by the mean. The

decomposition of the Gini coefficient by income source will also be exploited in the analysis (Lerman and Yitzhaki, 1985). In addition, to further identify where in the distribution the changes are occurring, I examine the trends in the 10th, 25th, 50th, 75th, 90th, and 95th percentiles adjusted for inflation, and the trends in the various percentiles relative to the median or 50th percentile. Nominal incomes are inflated to 1990 dollars using the CPI-U-X1, the consumer price index that treats housing costs in a consistent manner over time.

Changes in pre-tax income inequality

Figure 1 shows the trend in the Gini coefficient for adjusted family income (AFI) among all persons. For purposes of comparison, the Gini coefficient is also plotted for the distribution of family income (FI) among all families (where each family receives a weight of one), and adjusted family income among families.[8] For all three distributions, the Gini coefficient shows an unambiguous rise in inequality between 1970 and 1990, with most of the increase occurring between 1980 and 1985. Furthermore, in each case, the Gini coefficient continues to rise through 1990 despite the economic recovery.[9] During the 1970s, the Gini coefficient rises until 1972, declines through 1974, and rises through the rest of the decade. The overall flatter trend throughout this period contrasts with the sharper rise during the 1980s.[10]

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method described by Lerman and Yitzhaki (1989) for calculating the Gini with weighted data is used in this analysis.

[8]The data plotted in Figure 1 are tabulated in Table A1.

[9]Michel (1991) also confirms a continued rise in income inequality since the 1982 recession in both the pre-tax and post-tax distribution of income.

[10]Due to the use of a constant dollar nominal top code of $50,000 in the CPS surveys between 1968 and 1981, it is possible that the flat trend during the 1970s is attributable to an increased truncation of the upper tail of the income distribution. Likewise, the discrete jump in the Gini coefficient between 1980 and 1981, and 1983 and 1984 may result from the increase in the nominal top code for most income items to $75,000 in March 1982 and to $99,000 in March 1985. One adjustment for the income top-coding is to consistently truncate the upper tail of the distribution over time. In Table A1, the Gini coefficient is shown for the same three samples when the upper tail is trimmed at the 98th and 95th percentile in each year. The lower tail of the distribution is also trimmed at the 2nd and 5th percentiles, respectively. The trends in the 2% and 5% trimmed distributions are similar to the overall trends for the untrimmed Gini coefficients, but they do not show as sharp an increase in inequality between 1980 and 1981, and 1983 and 1984. In each case, the increase in the Gini coefficient between 1970 and 1980 is higher, by about 0.007 and 0.011 for the 2% and 5% trimmed distributions, respectively. The overall rise in inequality is similar

A given increase in the Gini coefficient is difficult to interpret. One approach for quantifying the impact of a rise in the Gini coefficient is to perform the following experiment. If the Gini coefficient in year 1, G_1, is larger than in year 0, G_0, is there a tax/transfer scheme that can be applied to the base year distribution to bring about the same rise in inequality? Blackburn (1989) shows that, if an equal-sized lump-sum tax from every income unit below the median is transferred to every income unit above the median, the size of the tax/transfer that would cause G_0 to increase to G_1 is equal to $2\mu_0(G_1 - G_0)$, where μ_0 is mean income in the base year. In other words, expressed as a fraction of base year mean income, the size of the tax levied on the poor and given to the rich would equal two times to increase in the Gini coefficient between the first and second years.

In the case of inequality in FI among families, this hypothetical redistribution scenario implies that the rise in the Gini coefficient between 1970 and 1990 (from 0.401 to 0.435) could have been achieved by transferring 6.8% of 1970 mean income (about $2,070 in 1990 dollars) from every family below the median in 1970 (equal to $26,266 in 1990 dollars) to every family above the median. Over the two decades, the increase in the Gini coefficient, equal to an average of 0.002 per year,[11] implies a redistributive transfer equal to 0.4 percent of mean income per year. Given that mean income grew an average of 0.5 percent per year, the redistribution of income among families between 1970 and 1990 is almost equal in magnitude to the shift in the location of the distribution. Since family size declined steadily over the last two decades, however, the relative magnitude of the rise in inequality is smaller when income adjusted for family size is the metric. Real mean AFI among families grew about 1.1 percent per year as average family size decreased from 3.0 persons to 2.4 persons. In contrast, the rise in the Gini coefficient of 0.002 per year for AFI also implies a 0.4 percent redistribution of average AFI per year.

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for the 2% and 5% trimmed distributions, although the time series is smoother for the later as one would expect.

[11]Based on the slope coefficient in a regression of the Gini coefficient on a time trend.

As a summary measure of inequality, the Gini coefficient obscures the location of changes in the distribution. Furthermore, the implicit weighting in the Gini coefficient makes it less sensitive to changes at the tails of the distribution compared to some other measures of inequality.[12] For the distribution of AFI among persons, Figure 2a plots the trends in the real absolute percentiles of the distribution at 6 points, namely the 10th, 25th, 50th, 75th, 90th and 95th percentiles.[13] All percentiles are indexed to equal 100 in 1970 to allow relative comparisons in the real trends over time. Changes in the shape of the distribution are more readily seen in Figure 2b which plots the trend in each percentile relative to the median, where each relative percentile is again indexed to equal 100 in 1970.

Figure 2a shows that the median individual benefited from an approximate 25 percent growth in real adjusted family income between 1970 and 1989.[14] Although business cycle downturns produced declines in real median AFI between 1973 and 1975, and again between 1979 and 1982, the long-run pattern is one of growth. The steady growth in real income through the end of the 1980s has been interrupted by the recent recession which has once again produced a drop in real median income in 1990. While the overall picture is one of growth, the gains at the median were not mirrored at other points in the distribution. Real AFI at the 25th percentile grow barely 10 percent over the entire period, while the 10th percentile showed no real gains between 1970 and 1990. In contrast, incomes grew even faster at the 75th, 90th and 95th percentiles.

The rise in inequality, summarized in the Gini coefficient, is also evident in Figure 2b which shows gains and losses at the top and bottom of the distribution relative to the

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[12]The Gini coefficient violates the transfer principle, i.e. it does not give greater weight to transfers at the lower end of the distribution (Kakwani, 1980). In fact, Kakwani (1980) shows that the Gini coefficient is most sensitive to transfers at the mode of the distribution.

[13]The percentiles shown in Figure 2 are tabulated in Table A2 in the appendix. The trends in the various percentiles through 1989 for the distribution of family income or adjusted family income among families are presented in Karoly (1993).

[14]If no adjustment is made for changes in family size, the trend in real median family income is strikingly different (Karoly, 1993). Most notably, there was no real growth over the entire 20 year period in median family income. Thus, all of the gains in real income per equivalent person during the 1970s and 1980s came through declines in average family size which may or may not imply gains in economic well-being.

median. During the 1970s, the distribution of AFI became more disperse as incomes failed to grow as fast at the lower segments of the distribution (e.g., the 10th and 25th percentiles) compared to the median or upper portions of the distribution. The relative losses at the bottom of the distribution begin about 1974 and accelerate between 1979 and 1983. Despite the economic recovery during the 1980s, the 25th percentile failed to gain relative to the median, while the relative losses continued at the 10th percentile through 1987. In contrast, in the upper segments of the distribution, there is evidence of small relative gains at the 75th and 90th percentiles beginning in 1973, and the gains at the top accelerated between 1980 and 1985.[15]

It is worth noting that the Gini coefficient, due to its relative insensitivity to changes at the tails of the distribution, does not reflect the rise in dispersion evident in Figure 2b until about 1980. It is also not apparent from the trend in the Gini coefficient that the rise in inequality during the 1980s, especially from 1980 to 1985, is the result of growing dispersion in both the upper and lower tails of the income distribution. In addition, the relative losses at the bottom, ranging from 10 to 20 percent between 1970 and 1990, are larger than the relative gains at the upper income brackets, which barely reach 10 percent.

Other studies using CPS data, as well as data from other sources, report similar increases in pre-tax income inequality during the 1970s and 1980s. For example, tabulations by the Congressional Budget Office (CBO) show that the share of AFI going to the lowest quintile declined between 1973 and 1979 (from 5.5 percent to 5.1 percent), and then more sharply between 1979 and 1989 (to 4.3 percent) (Committee on Ways and Means, 1991). In contrast, the share of income received by the top quintile remained stable between 1973 and 1979 at 41.7 percent, and increased to 44.6 percent by 1989.

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[15]As shown in Karoly (1993), the trends in the relative percentiles shown in Figure 2b are very similar for the distribution of AFI among families (instead of persons). However, when no adjustment is made for family size, the changes in the shape of the distribution are somewhat different. When family income is the income measure, only the 10th percentile shows a sharp relative decline starting in 1974. At the same time, the relative gains at the top of the distribution begin in 1970, and accelerate at the 90th and 95th percentiles beginning in 1977.

Other recent studies using panel data to study changes in inequality in more permanent measures of income have generally reached similar conclusions to those based on cross-sectional data. For example, using data from a panel of taxpayers, Slemrod (1992b) shows that the rise in inequality evident in repeated cross-sections is also apparent for income measured over multiple years. Similarly, Sawhill and Condon (1992), in an analysis of data from the Panel Study of Income Dynamics (PSID), find evidence of a rise in inequality when income is measured over a 10-year period.

A decomposition of inequality by income source

Family income is derived from a number of sources, any one of which may be responsible for the rise in income inequality. Has family income become less equally distributed due to a rise in inequality of labor incomes or of other sources of income? Or is the increase in inequality the result of a shift toward less equally distributed sources of income? One property of the Gini coefficient is that it is additively decomposable by income source (Lerman and Yitzhaki, 1985). This property is useful for determining the relative contribution at a point in time of a particular income source to overall inequality, as well as determining shifts in the relative importance of various income sources over time. If total income is divided into K components, then the Gini coefficient, G, can be decomposed as:

$$G = \sum_{k=1}^{K} S_k G_k R_k \tag{1}$$

where S_k is the income component's share of total income, G_k is the component's Gini coefficient, and R_k is a measure of the "Gini correlation" between the income component and total income (Lerman and Yitzhaki, 1985).[16] The share of inequality attributable to any one source is measured as:

$$I_k = \frac{S_k G_k R_k}{G} \tag{2}$$

[16]The Gini correlation is calculated as the covariance between income source k and the cumulative distribution of total income, divided by the covariance between income source k and the cumulative distribution of income source k.

where the I_k's sum to one. If an income source serves to reduce inequality, the component's I_k will be negative.

Table 1 presents the results for the decomposition of AFI among persons for selected years. Figure 3 plots the full time-series for the Gini coefficients, G_k, and Figure 4 plots the full time-series for the relative shares of overall inequality, I_k.[17] The decomposition is conducted for the eight income components listed above: head's wage and salary income, head's self-employment income, spouse's earnings, other family member earnings, means-tested transfers, other transfers, capital income and other income. The later category is composed mostly of pension income.

By far the largest component of income and the component showing the largest absolute change in its contribution to total inequality is the wage and salary income of the family head. In 1970, about 61 percent of family income came from the wages of the head of the family. That fraction had fallen to 56 percent by 1980, and further to 52 percent in 1990. At the same time, there was a dramatic rise in the Gini coefficient for this component of income (Figure 3). Inequality in head's wage and salary income rose steadily through the 1970s and sharply accelerated between 1980 and 1983. In the later part of the 1980s the Gini coefficient for this component continued to rise, although to a smaller degree. Despite the sharp rise in inequality for this component, its share of overall inequality steadily declined from 60 percent in 1970, to 58 percent in 1970, to 52 percent in 1990. The contribution of head's wage and salary income declined in absolute terms as well, from 0.215 (out of 0.361) in 1970 to 0.206 (out of 0.399) in 1990.

The earnings of the family spouse (defined to be the wife) served to counteract the declining contribution of head's wages. As a share of income, the spouse's earnings increased slightly between 1970 and 1980. After that time it increased steadily, reaching 17 percent in 1990. At the same time, inequality in this component of income steadily declined (Figure 3). The combined effect of the three factors in the decomposition -- a rising income

[17]The results of the decomposition are very similar for the distribution of FI or AFI among families.

share and correlation with income, but a falling Gini coefficient -- resulted in a steady rise between the mid-1970s and 1990 in the share of overall inequality attributable to this component (Figure 4). By 1990, spouse's earnings, about 17 percent of total income, contributed 20 percent to total income inequality.

The reduction in inequality in the spouse's earnings may result from changes in inequality among persons in families with a working wife, or changes in the fraction of persons in families with a working wife.[18] Decomposing G_k for spouse's earnings shows that inequality also decreased among the subset of individuals in families with a working wife, falling from 0.507 in 1970 to 0.466 in 1990. Over the same period, the proportion of families with no wife's earnings fell from 62 to 56 percent due to two countervailing effects. At the same time that the proportion of persons in families without a wife rose from 19 percent to 32 percent, the fraction of persons in families where the wife had no earnings fell from 43 to 24 percent. Thus, even though married-couple families become a smaller share of family units, the higher labor force participation rate among wives increased the proportion of persons in families with a working wife.

Other sources of labor income declined in importance over the period. The share of both head's self-employment income and earnings from other family members fell, the former mostly during the 1970s, while the latter decreased more in the 1980s. At the same time, inequality in the two components among all persons increased, with most of the rise in inequality in head's self-employment income occurring in the 1970s, while the rise in dispersion in earnings from other family members is evident only in the 1980s. However, the increase in inequality results from a rise in the fraction of individuals with zero incomes in these two categories. Among persons in families with self-employment income from the head, inequality exhibited a U-shaped pattern, first decreasing between 1970 and 1980, and then increasing through 1990. Over the two decades, the level of inequality remained

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[18] If p is the proportion of persons in families with no earnings from the spouse (or wife), the Gini coefficient, G_k, for spouse's earnings among all persons is equal to $p + (1-p)\, G_{k0}$, where G_{k0} is the Gini coefficient for spouse's earnings among persons in families with working spouses.

unchanged. Inequality among persons in families with earnings from other family members decreased during the 1970s, and remained stable in the next decade. Overall, the contribution to total inequality declined for both components, so that they each equaled about 6 percent in 1990 (Figure 4).

During the 1970 to 1990 period, the inequality-reducing effect of transfers declined, for both means-tested transfer payments (e.g., AFDC, SSI) and non-means-tested transfers (e.g., Social Security, unemployment, worker's compensation). Both types of transfers reduce inequality as evidenced by the negative I_k terms, but the impact is rather modest. Despite the fact that means-tested transfers are barely a drop in the family income bucket (about 1 percent), the strong negative correlation of this component with total income means that its inequality-reducing effect exceeds the effect of non-means-tested transfers. The other transfer component comprises about 6 to 7 percent of total income but the negative correlation with total income is very small.

The weakening of the inequality-educing effect of transfers occurred primarily during the 1980s.[19] Both types of transfers had a larger negative impact on inequality in 1980 than they had in 1970. However, by 1990, the inequality-reducing effect of means-tested transfers was less than it had been in 1970, while the other transfer component actually had a slight positive impact on inequality in 1990. In both cases, the share of income received from transfers declined during the 1980s, after remaining steady or increasing in the previous decade.

The remaining two income components, capital income and other income, show a similar pattern of change as spouse's earnings. As a share of total income the two sources combined increased rather dramatically, from about 5 percent in 1970, to nearly 13 percent in 1990. Although both components are very unequally distributed, the degree of

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[19]Estimates by the Census Bureau, based on the Gini coefficient, also show that cash transfers had a smaller impact on reducing inequality in 1989 compared to 1979, although the decline is small (U. S. Bureau of the Census, 1992a). Combined with a slight increase in the inequality-reducing impact of noncash transfers, the Census Bureau estimates show no change in the ability of transfers to reduce inequality between 1979 and 1989.

inequality in each source declined throughout the period. However, since inequality among recipients increased for both types of income, this decline was due to the increase in the fraction of people with nonzero capital income and other income. For example, the fraction reporting no capital income fell from 62 percent in 1970 to 36 percent in 1980, and remained at that level through 1990. While 91 percent of individuals reported no income in the "other" category in 1970, that fraction was only 79 percent in 1980, and 71 percent in 1990. The net effect is that the contribution to overall inequality increased from 6 to 11 percent for capital income, and 1 percent to 5 percent for other income, with most of the increasing taking place by the mid 1980s (Figure 4).

Table 2 shows the results of decomposing the change in the Gini coefficient between 1970 and 1990 and various subperiods. The change in inequality between year 1 and year 0 is decomposed by income source and the three factors in the Gini decomposition: income shares, S_k , correlation with income, R_k, and Gini coefficient, G_k, as follows:

$$\Delta G = G1 - G0 = \sum_{k=1}^{K} (Sk1 - Sk0) Gk1 Rk1 + \sum_{k=1}^{K} (Rk1 - Rk0) Sk1 Gk1 + \sum_{k=1}^{K} (Gk1 - Gk0) Sk1 Rk1 + residual \quad (3)$$

Thus, the total change in inequality can be decomposed along two dimensions: the contribution of each income source due to changes in S_k, R_k, and G_k, and the contribution of changes in S_k, R_k, and G_k across income sources.

Between 1970 and 1990, the Gini coefficient increased by 0.038. Table 2 shows that half of this increase was due to changes in inequality by source. By source, the inequality reducing effect of declines in the share of income from head's earnings (wages and salaries and self-employment) were more than offset by increases in the share of earnings from the spouse and the rise in the share of capital income and other income. Consistent with Figure 3, the rise in inequality in head's wage and salary income is the dominant effect among income sources in contributing to a rise in inequality.

The decomposition of the change in the Gini coefficient, separately for 1970 to 1980, 1980 to 1985 and 1985 to 1990 reveals that many of the same trends were at work in all three subperiods. For instance, the positive impact on inequality of the shift toward earnings from the spouse is evident in the 1970s as well as the 1980s, but the magnitude of the effect is much larger in the second decade. One exception is that head's wage and salary income contributed to a rise in inequality between 1980 and 1985 in contrast to the earlier and later periods. This is a period when wage inequality was increasing for both men and women (Karoly, 1993). Another difference is that both types of transfers (especially non-means-tested transfers) contributed to a decline in inequality during the 1970s, but added to the rise in inequality during the 1980s. Finally, the contribution of capital income to the rise in inequality was largest during the 1970s and the first half of the 1980s, while other income had the largest impact during the 1970s.

Overall, despite the large rise in inequality in head's wage and salary income, this component served to decrease inequality due to the decline in its share of total income. Self-employment income of the head and earnings from other family members had a similar overall negative impact. As a result of the shift towards spouse's earnings, capital income and other income, these components made the largest contribution to the increase in inequality in the last two decades. Transfer income also contributed to the rise in pre-tax income inequality during the 1980s but the magnitude of the effect is considerably smaller compared to spouse's earnings, capital income and other income.

3. EXPLAINING CHANGES IN INCOME INEQUALITY

The rise in inequality in the last two decades raises questions about the factors leading to this divergence from a historical pattern of a more stable income distribution. In this section, I review a number of the explanations that have been offered, beginning with the impact of tax policy. The impact of the business cycle, family composition changes and the labor market are also discussed.

The Impact of Tax Policy

Although the rise in pre-tax income inequality identified in the previous section pre-dates the 1980s "tax decade," it is relevant to consider the impact of tax policy on the income distribution. Two major pieces of tax legislation were enacted during the 1980s: The Economic Recovery Tax Act (ERTA) of 1981 and the Tax Reform Act (TRA) of 1986. Tax changes in other years include the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), the Social Security Amendments of 1983, the Deficit Reduction Act of 1984, and the Omnibus Budget Reconciliation Act (OBRA) of 1990 (see Steuerle, 1992 for a discussion of these various tax measures).

Changes in the tax system could have two effects on income inequality. The first is the direct redistributive effect of taxes on the distribution of income through the progressivity of the tax system. To what extent did changes in tax policy, especially during the 1980s, impact the post-tax distribution of income? Did the major pieces of tax legislation enacted during the "tax decade" counteract the rise in the pre-tax income inequality or did it further contribute to the trend? Second, changes in tax policy can have dynamic or indirect effects on the income distribution by altering the pre-tax distribution of income. Changes in labor supply, savings, and portfolio decisions as a result of revisions in the tax code may have contributed to the rise in pre-tax inequality evident in the previous section. In addition, the overall growth rate of the economy and hence the distribution of pre-tax income may be altered by changes in tax regimes. These two effects of tax policy, the direct and indirect effects, are discussed in turn.

The Direct Effect of Tax Policy on the Post-Tax Income Distribution

The changes in the individual income tax structure enacted with ERTA and TRA could be expected to have a direct impact on the distribution of post-tax income. ERTA, for example, reduced the top marginal tax rate from 70 percent to 50 percent and phased in a 23 percent reduction in the marginal tax rates in other income brackets. No adjustment was made, however, to the Earned Income Tax Credit, (EITC) a benefit targeted to lower

income families. In contrast, TRA specifically targeted changes in the tax code to benefit those at the bottom of the income ladder through expansion of the personal exemption, standard deduction, and EITC. As a result, an estimated 6 million low-income households were removed from the tax roles (Hausman and Poterba, 1987). At the same time, a four-bracket tax structure, with rates of 15, 28, 33 and 28 percent, replaced the existing fourteen-bracketed system with a top marginal tax rate of 50 percent. The net effect was a reduction in average federal tax liability for the bottom nine deciles, and an increase in the tax liability of the top decile (Pechman, 1987). Other changes in the 1980s include reductions and subsequent increases in corporate taxes, increases in excise taxes, and a 25 percent increase in social security payroll taxes (Gramlich, Kasten and Sammartino, 1993).

Unfortunately, there is no ideal data source for examining the impact of taxes on the post-tax distribution of income. As noted earlier, the CPS does not collect data on taxes paid. Even if individual income tax payments were recorded, it would still be necessary to allocate the incidence of these taxes as well as corporate income taxes, excise taxes, and so on. Instead, researchers have developed methods for allocating tax burdens, including individual income and payroll taxes, consumption taxes, and corporate taxes, to CPS families and imputing other income items, such as capital gains, not recorded in the CPS. Examples of these CPS databases, typically augmented with data from tax returns, include the Urban Institute's TRIM2 model (Webb, Michel and Bergsman, 1990), and the Congressional Budget Office (CBO) tax model data (CBO, 1987; Gramlich, Kasten and Sammartino, 1993). The alternative to the CPS is data from tax filings such as those maintained by the IRS Statistics of Income Division.

Gramlich, Kasten and Sammartino (1993), using the CBO tax model data, provide one of the most recent analyses of the post-tax distribution of income using CPS data for 1980, 1985 and 1990.[20] They conclude that, while taxes continued to reduce inequality

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[20]The later year is based on projections from 1987 CPS data. Their measure of pre-tax post-transfer income does not include the value of inkind benefits such as Food Stamps, Medicare or Medicaid. They also do not include state and local taxes in their post-transfer post-tax measure of income. As with

compared to the pre-tax income distribution, the net impact of tax changes in the 1980s was a lessening of the redistributive impact of taxes. In particular, the reduction in inequality (measured by the Gini coefficient) due to the tax system fell from 6.8 percent in 1980 to 3.2 percent in 1985. The redistributive impact of taxes was partially restored in the next half of the decade, however, with a 3.9 percent reduction in inequality due to taxes in 1990. They conclude that, holding the transfer benefits and tax laws at their 1980 level, the post-tax post-transfer distribution would have been somewhat more equal. About 16 percent of the rise in post-tax post-transfer inequality is attributable to tax and transfer policy changes, with most of the effect occurring in the 1980 to 1985 period. Nevertheless, this means that more than four fifths of the increase in post-tax post-transfer income inequality is due to changes in incomes before taxes and transfers.

Estimates by the Census Bureau of the impact of taxes on the distribution of income since 1979 confirm an overall decline in progressivity of the tax system during the 1980s (U. S. Bureau of the Census, 1992a). Measured by the percentage reduction in the Gini coefficient, the Census Bureau data show that federal and state income taxes and social security payroll taxes were most progressive in 1980 and 1981, and least progressive in 1986. The conclusion that the tax system became less progressive during the 1980s is also echoed by Slemrod (1992b) and Pechman (1990). Slemrod's analysis, based on data from tax returns maintained by the IRS, shows a decline in the inequality-reducing effectiveness of federal income taxes between 1980 and 1988. Based on results from the Brookings MERGE files, Pechman (1990) estimates that effective tax rates from federal, state and local states declined between 1980 and 1985 for individuals in the top decile and above, while rates rose or remained stable for most other deciles. The reductions in the effective tax rates at the top 10, 5 and 1 percent of the distribution represent the continuation of a trend evident since 1970. As a result of TRA, Pechman estimates that the tax system became somewhat more progressive through a reduction in the effective tax rate faced by

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the analysis in section 2, they also adjust for differences in family size using the implicit equivalence scales in the official poverty lines and weight the distribution by persons.

the bottom three deciles and increases in the rates faced by all other deciles. Nevertheless, the effective tax rates of the top decile and above in 1988 remain significantly below the 1966 level.

The conclusion that TRA improved the degree of progressivity in the tax system has not been universal. Michel (1991), using the Urban Institute's TRIM2 model, estimates that the inequality-educing effect of both federal taxes and payroll taxes declined slightly between 1983 and 1987. The differences in his findings compared to Pechman (1990) and Gramlich, Kasten and Sammartino (1993) may be due to the choice of years for comparison or the fact that the incidence of corporate income taxes, which increased with TRA, is not included in Michel's analysis.[21] But, Gravelle (1992) also suggests that the long run impact of TRA may be more favorable to higher-income individuals. She concludes that many of the provisions affecting corporate taxes, while increasing progressivity in the early years, are likely to have a smaller permanent redistributive impact. In addition, the shift toward equalization in the taxation of different assets could be expected to benefit high income individuals through a reduction in the risk they bear in equilibrium (Galper, Lucke, and Toder, 1988), a factor not accounted for by most studies. Assumptions about the incidence of corporate taxes, typically assigned to owners of capital, can also affect conclusions about the redistributive effect of TRA.

Indirect Effects of Tax Policy

As noted above, the dramatic changes in tax rates as a result of ERTA and TRA may have also indirectly altered the distribution of income by inducing changes in pre-tax incomes. The tax changes enacted during the 1980s differentially altered the effective tax rates faced by individuals at different points in the income distribution. For example, Gramlich, Kasten and Sammartino (1993) estimate that between 1980 and 1990, marginal tax rates on earnings (including federal income tax and payroll taxes) increased for the

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[21]Pechman (1990) assumes that the corporate income tax is borne by capital, while Gramlich, Kasten and Sammartino (1993) divide the burden between labor and capital.

lowest deciles, and declined for individuals in the upper half of the distribution, with the largest reductions in marginal rates occurring for individuals in the top decile. Hausman and Poterba (1987) provide a similar estimate, showing that about 40 percent of tax payers would experience the same or higher marginal tax rates after TRA, while only 10 percent would benefit from a reduction of more than 10 percent. In contrast, the marginal tax rate on capital gains increased throughout the distribution between 1980 and 1990 (Gramlich, Kasten and Sammartino, 1993).

The argument for an indirect effect of tax policy on the income distribution is made most strongly by Lindsey (1990). Lindsey contends that inequality in pre-tax incomes rose as a result of the tax cuts of the 1980s, especially ERTA, as higher income families increased their work effort, converted compensation from nonmonetary to monetary forms, and shifted their portfolios toward taxable assets. Lindsey's conclusions are based on simulations, using the National Bureau of Economic Research (NBER) TAXSIM model, of the revenue effects of ERTA accounting for demand, supply, and pecuniary responses to the 1981 tax cuts. For example, he finds that revenues following the 1981 tax cuts exceeded the predictions of the tax simulation model, with most of the excess revenue derived from upper income tax payers suggesting a large supply response.[22]

Evidence in support of Lindsey's hypothesis is mixed. First consider the *prima facia* case on the basis of the timing of the trends in income inequality. The reduction in tax rates passed with ERTA did not fully become effective in 1981, as the rate reduction was phased in over a three-year period. However, as discussed in the previous section, inequality in total family incomes began to increase in the 1970s, first as a result of relative gains at the top of the distribution, and then as a consequence of relative declines in the bottom of the distribution. When an adjustment is made for family size, the relative gains

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[22]One problem with Lindsey's simulations, as noted by Bosworth and Burtless (1992), is that he assumes a common growth rate across the income distribution in all income items, including earnings. However, during this period, there was a substantial increase in earnings dispersion, with lower-skilled workers experiencing real wage declines (see the review by Levy and Murnane, forthcoming). Thus, the disproportionate rise in earnings of higher-income taxpayers, rather than a supply response, may be attributable to the rise in wage dispersion, a phenomenon identified with factors other than tax changes.

at the top of the distribution begin in the mid-1970s and accelerate in the early 1980s (Figure 2b). Furthermore, the accelerated rise in inequality during the 1980s resulted from increasing dispersion in both tails of the distribution, with absolute declines in incomes at the bottom percentiles. Thus, the supply-side response to changes in tax policy cannot explain the rise in inequality prior to 1981, nor the real declines in incomes at the lower segments of the income distribution.

The decomposition analysis in the previous section shows that the rise in inequality between 1980 and 1985 can be attributed to rising inequality in the wage and salary income of the family head, and an increase in the share of income derived from the spouse's labor earnings and capital income. However, with the exception of the positive contribution of the wage and salary income of the head, these same factors also contributed to a rise in inequality in the previous decade. There is no apparent shift in the underlying factors affecting the rise in inequality beginning with the 1981 tax changes.

The evidence for a labor supply response to the tax changes in the 1980s is far from conclusive. Predictions of the effect of the 1980s tax changes, based on econometric models of male and female labor supply, suggest a larger labor supply response as a result of ERTA compared to TRA, and a larger response for secondary workers (Hausman, 1981, 1983; Hausman and Poterba, 1987). Bosworth and Burtless (1992), using CPS-based time-series data on annual hours of work by men and women from 1967 to 1989, compare actual labor supply trends before and after the 1980s tax reforms. Their econometric estimates indicate that the average work effort of men in 1989 was about 6 percent above the level it would have been if the pre-1981 trend in labor supply had continued. The effect for women was estimated at 5.4 percent.

However, although marginal tax rates fell more for higher-income individuals, Bosworth and Burtless (1992) did not find a consistent pattern of a higher labor supply response for individuals in higher-income quintiles. In fact, the largest estimated supply responses occurred for men in the lowest income quintile, a group that experienced no change or an increase in marginal tax rates. As expected, the labor supply responses were

generally larger for women than for men in the high-income categories. Due to the decline in real hourly wages, the increased labor supply was not accompanied by an increase in earnings per person, especially at the lower tail of the income distribution.

Another hypothesized supply side response to the tax changes is the shift in compensation from nonmonetary forms (i.e., fringe benefits such as employer-provided health insurance and pension contributions) to wages. Evidence of this effect is difficult to assemble since the CPS data only began recording the receipt of such benefits in 1980 (and then with no valuation attached to the benefits), while data from tax filings do not include this information. Data from the National Income and Products Accounts (NIPA) show that supplements to wages and salaries peaked at 17 percent of total compensation in 1983 after steadily increasing throughout the prior two decades.[23] Since 1983, the share has stabilized at about 16 to 17 percent. The timing of the slowdown in the growth of fringe benefits is consistent with an effect of the 1981 tax cuts, although with a delayed response. However, the NIPA data do not allow a distributional analysis to measure whether the slowdown in fringe benefits occurred for higher-paid workers who would have had the most incentive to alter the form of their compensation.

In an analysis of the decline in private pension coverage during the 1980s, Bloom and Freeman (1992) do not find evidence in support for a tax-induced substitution away from this fringe benefit. In particular, based on CPS data, they find that the drop-off in pension coverage was smallest for higher income workers, the group that faced the largest declines in marginal tax rates. They also do not find evidence of gains in real wages that offset the declines in pensions coverage, as low-skilled workers experienced the largest reductions in real wages and pension coverage rates. Instead, they attribute the decline in this form of compensation to the overall reduction in real wage growth, the decline in union density, and other factors. Thus, the aggregate trend in nonmonetary compensation may be

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[23]The data come from the *Economic Report of the President*, February 1992, Table B-22.

attributable to factors such as changes in the distribution of employment by industry, declines in unionization rates, or an increased used of part-time workers.

The changes in marginal tax rates could also be expected to affect portfolio decisions, such as the timing of capital gains realizations. One effort to measure the total effect of labor supply and portfolio changes is provided by Gramlich, Kasten and Sammartino (1993). They calculate the impact of tax-induced labor supply changes to tax rates between 1980 and 1990 on the 1990 distribution of income. Assuming a post-tax wage elasticity of 0.2 for the labor supply of primary earners, and 1.0 for secondary earners, they estimate that about 14 percent of the increase in pre-transfer pre-tax income inequality (measured by the Gini coefficient) between 1980 and 1990 is attributable to increased labor supply on the part of high income individuals. However, they also find an equal and opposite effect on inequality as a result of the rise in marginal tax rates on capital gains. They conclude that the net effect of behavioral responses to changes in marginal tax rates on the distribution of pre-tax pre-transfer income is zero.

The Role of Other Factors

There are a number of other potential explanations for the rise in inequality among families and individuals including the effect of the business cycle, demographic shifts, and the rise in inequality in wages. While to my knowledge, no systematic analysis of the contribution of various factors has yet been undertaken, there is evidence that changes in household composition and labor supply, and the changing wage structure have contributed to the trend toward greater inequality.

The Effect of the Business Cycle

The conventional wisdom is that inequality is countercyclical (Blank and Blinder, 1986). During economic downturns, inequality rises as individuals and families in the lower tail of the distribution are more likely to experience reductions in income compared to those with higher incomes. Periods of economic expansion, in turn, tend to be accompanied by declines in poverty rates and a compression of the income distribution.

How much of the rise in inequality in pre-tax incomes can be explained by the series of business cycle downturns in the mid-1970s through the early 1980s?

The time-series evidence suggests that a pure business-cycle hypothesis is not sufficient to explain the rise in inequality. In particular, inequality increased in the 1970s between 1973 and 1979, two comparable business cycle peaks. The continued rise in inequality through the 1989, despite the sustained economic recovery that began in 1983, also runs counter to the conventional wisdom, as well as the predictions of econometric models of the relationship between macroeconomic activity and the income distribution (Cutler and Katz, 1991; Ruggles and Stone, 1992). The acceleration in inequality in the early 1980s and the absolute decline in incomes at the lower tail of the distribution may be partially attributable to the back-to-back recessions in 1980 and 1981-1982. Nevertheless, the absence of a reversal of these trends as the economy expanded suggests more fundamental factors were at work.

The Importance of Family Composition Changes

The period of rising inequality is also marked by a number of significant shifts in the age and headship composition of families (Karoly, 1993). For example, in the two decades between 1970 and 1990, the share of families with a head aged less than 44 and over age 65 increased, with a corresponding decline in families in the 45 to 64 year-old bracket. Compositional shifts are also evidenced by the increased representation of unrelated individuals and female-headed families in the count of all family units (including unrelated individuals). Married couple families with both spouses working, once in the minority, grew to represent more than 70 percent of husband-and-wife families (Cancian, Danziger and Gottschalk, 1993).

The effects of these demographic and compositional changes are evaluated in a number of studies. Karoly (1993), using a shift-share analysis, finds that the changing age composition of families played no role in the rise in inequality between 1967 and 1987. This follows from the rise in inequality within all groups of families defined by the age of

the head, a finding confirmed by Michel (1991). In contrast, Karoly (1993) concludes that about one-third of the rise in inequality can be explained by shifts in household composition toward single-parent families, and single individuals.

Analyses of the effect of an increase in the number of working wives have produced mixed results. Cancian, Danziger and Gottschalk (1993) confirm the findings of a number of previous studies showing that wives' earnings tend to equalize the distribution of income among married couple families. Using CPS data over time, they also conclude that the equalizing impact has remained stable or increased over time. Ryscavage (1992) reaches a similar conclusion, although he finds that the equalizing impact of wives' earnings among all families (not just married-couple families) declined during the 1980s. Rather than focusing on wives' labor income in married couple families, Blackburn and Bloom (1987) examine the impact of nonprincipal earners (secondary earners with lower annual earnings than the principal earner) on the distribution of income among all families. They conclude that the earnings from other family members had a positive impact on inequality between 1967 and 1984. Cutler and Katz (1991) also find a positive, but small, contribution of the earnings of secondary earners to the rise in inequality between the 1960s and the 1980s for the sample of all non-elderly families.

The decomposition analysis presented above also suggests a positive effect of the increase in the share of family income derived from secondary earners, measured as the wife's earnings. Between 1970 and 1990, and in each of the subperiods examined, the earnings of the wife contributed to the rise in inequality due to an increase in the share of income from this source. The causes of the increased participation of wives may be a supply-side response to the tax changes that occurred in the 1980s (as discussed above). However, given that this trend dates back to the 1970s, it may be the result of more fundamental changes, such as the increase in the real wages of women, the declining real wages of men, or changes in women's preferences for work.

The Role of Changes in the Wage Structure

Given that about 80 percent of family income is derived from the labor market, changes in the wage structure are likely to impact the overall distribution of income. Since the 1970s, there has been an increase in dispersion in the wage distribution for men, with an acceleration of the trend during the 1980s (see Karoly, 1993, and the review of recent studies by Levy and Murnane, forthcoming). The increased inequality in wages has been accompanied by stagnation in real median wages and falling real wages for workers in the bottom half of the distribution. Another feature of the changing wage structure has been the rising returns to skill evidenced by an increase in the returns to a college education (Levy and Murnane, forthcoming). At the same time, wage inequality among women, after declining through the 1970s, also began to rise during the 1980s. However, among women, the changing shape of the wage distribution was accompanied by real wage growth throughout the distribution (Karoly, 1993). The explanations for the significant changes in the wage structure include shifts in product demand as a result of increased globalization of the economy, the declining role of unions, increased immigration, and technological change.

The decomposition analysis presented in Table 2 can help identify the impact of the rise in wage inequality on overall income inequality. Between 1970 and 1990, the rise in the Gini coefficient for the head's wage and salary income contributed a 0.027 increase in the Gini coefficient (out of an actual increase of 0.038). However, due to the declining share of income and the reduced correlation with income, this component had an overall negative impact. Thus, although inequality in the head's wage and salary income was increasing, the shift away from this source of income contributed to a net decline in inequality. One exception is the 1980 to 1985 period when the rise in inequality dominated and the overall contribution was to increase inequality. This was a period when inequality was increasing for both men and women. If the level of inequality in the head's wage and salary income was held constant at the 1980 level (while all other components of inequality changed as they did between 1980 and 1985), the increase in inequality would have been

about 38 percent lower. Over the entire 1970 to 1990 time period, the rise in inequality would have been approximately 65 percent lower with no increase in wage inequality among family heads.[24]

4. IMPLICATIONS FOR TAX POLICY

The rise in income inequality in the last two decades raises two questions regarding the role of tax policy. First, what implications do the recent changes in the income distribution and our understanding of the causes of these increases imply for future tax policy? Second, is there a redistributive role for tax policy to counteract the rise in pre-tax inequality?

Motivated by efficiency and equity considerations, the economics literature offers theoretical guidance regarding the structure of the optimal income tax (Slemrod, 1983, 1990b). This literature models the optimal tax rate through the tradeoff between the increased social welfare of a more equitable distribution versus the efficiency losses associated with achieving the redistribution. The optimal degree of tax progressivity is dictated by a number of parameters including the form of the social welfare function, the distribution of endowments, and the wage elasticity of labor supply. For example, all else equal, a more egalitarian social welfare function or a less equal distribution of endowments or returns to endowments imply a more progressive tax system. If labor supply is less responsive to changes in the after-tax wage rate, it implies a lower efficiency cost and hence a more highly progressive tax system.

One consequence of the "tax decade" has been the opportunity to reevaluate the impact of changes in marginal tax rates on individual behavior. Studies on the impact of ERTA and TRA have filled a number of edited volumes and special journal symposia .[25] It

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[24]Cutler and Katz (1991) also conclude that increased inequality among principle earners contributed to the increase in family income inequality.

[25]See for example, Aaron (1988), Slemrod (1990a), and *The Journal of Economic Perspectives*, Summer 1987 and Winter 1982 issues.

appears that an emerging consensus of this research is that the behavioral effects of taxes, in fact, are smaller than previously estimated (Aaron, 1990; Slemrod, 1992). In his review of the lessons from the tax changes of the 1980s, Slemrod (1992) marshals evidence against a strong responsiveness of savings, steady-state capital gains realizations, or investment to changes in the tax structure.[26] As noted above, the evidence of a significant labor supply effect is also far from conclusive. If this is the case, the efficiency costs of the tax system may not be as large as some have claimed, thereby providing a rationale for placing greater weight on the redistributive role of tax policy. Assuming that the current degree of tax progressivity is at or below the optimum, an argument in favor of a more progressive tax system can also be justified by the increased disparities in the returns to skill in the labor market, which in turn have contributed to the increased inequality in family incomes. The rise in dispersion in returns to endowments implies a greater social welfare gain from increasing the progressivity of the tax system.

If there is an increased redistributive role for the tax system, to what extent can changes in the degree of progressivity affect the distribution of income? As noted earlier, the rise in pre-tax inequality is substantial and dominates the effect of reductions in the progressivity of the tax system in the last decade. Nevertheless, can the tax system serve to counteract the trend in pre-tax inequality? One answer is provided by Gramlich, Kasten and Sammartino (1993). They report the results of simulating a set of progressive changes in the tax system, including a rise in the top marginal tax rate from 28 to 50 percent and a doubling of the EITC, among other changes. However, the combined set of changes, equivalent to a $50 billion reduction in the 1991 deficit, is estimated to have a modest impact on post-tax post-transfer inequality. The reduction in the Gini coefficient accounts for about 15 percent of the rise in the post-tax Gini since 1980. Their estimates of the impact of tax changes introduced in the 1990 Omnibus Reconciliation Act (OBRA) show an

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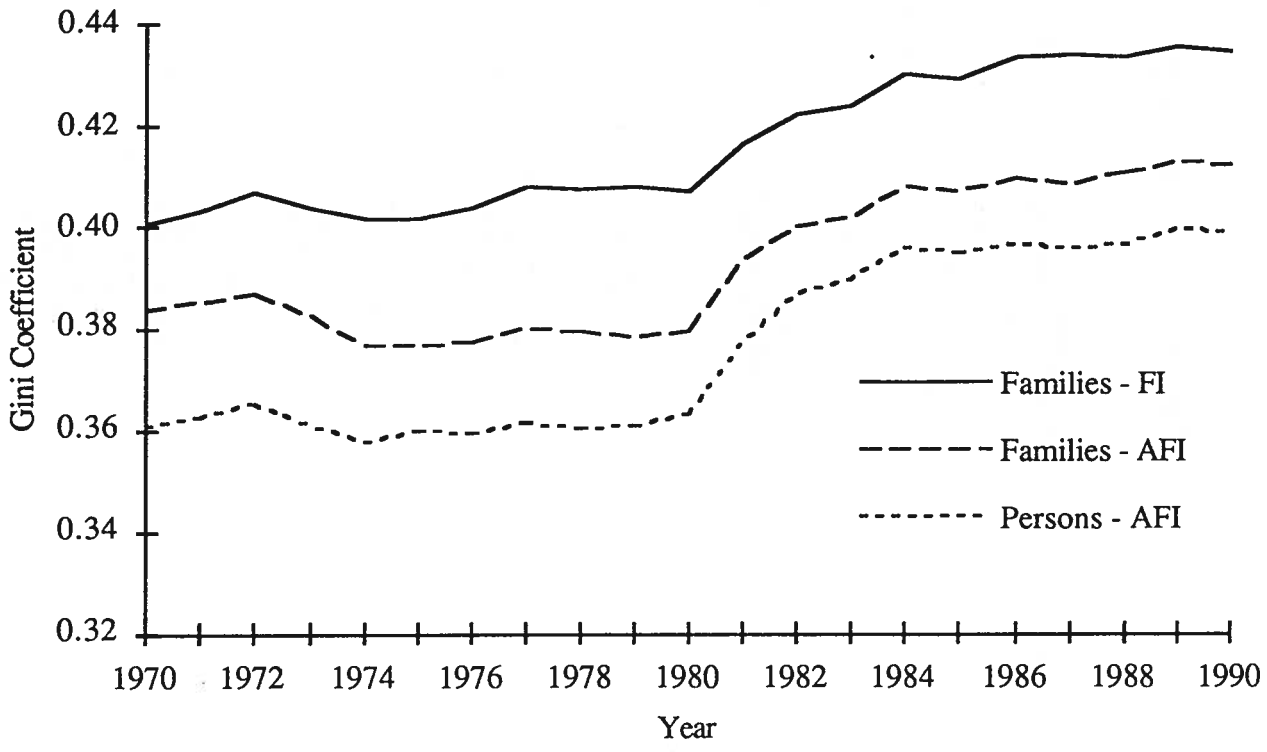
[26]Slemrod's (1992) caveats include the possibility that time-series studies of the effect of tax changes will not reveal an impact if the combined changes in the tax system had offsetting effects on individual behavior. In addition, individuals may be slow to respond to the new tax environment so that the long run impact is not yet fully evident in the data available to date.

extremely small effect, estimated to be less than a 1 percent reduction in the Gini coefficient.

If these estimates are correct, they suggest that there may be little opportunity to use the tax system to redress the rise in pre-tax income inequality that has taken place since the 1970s. While changes in the degree of progressivity in the tax system may be justified on other grounds, it is not clear that they can be used to significantly counteract the other factors, such as family composition changes and the changing wage structure, that have contributed to the increased disparities in the distribution of income.

Figure 1

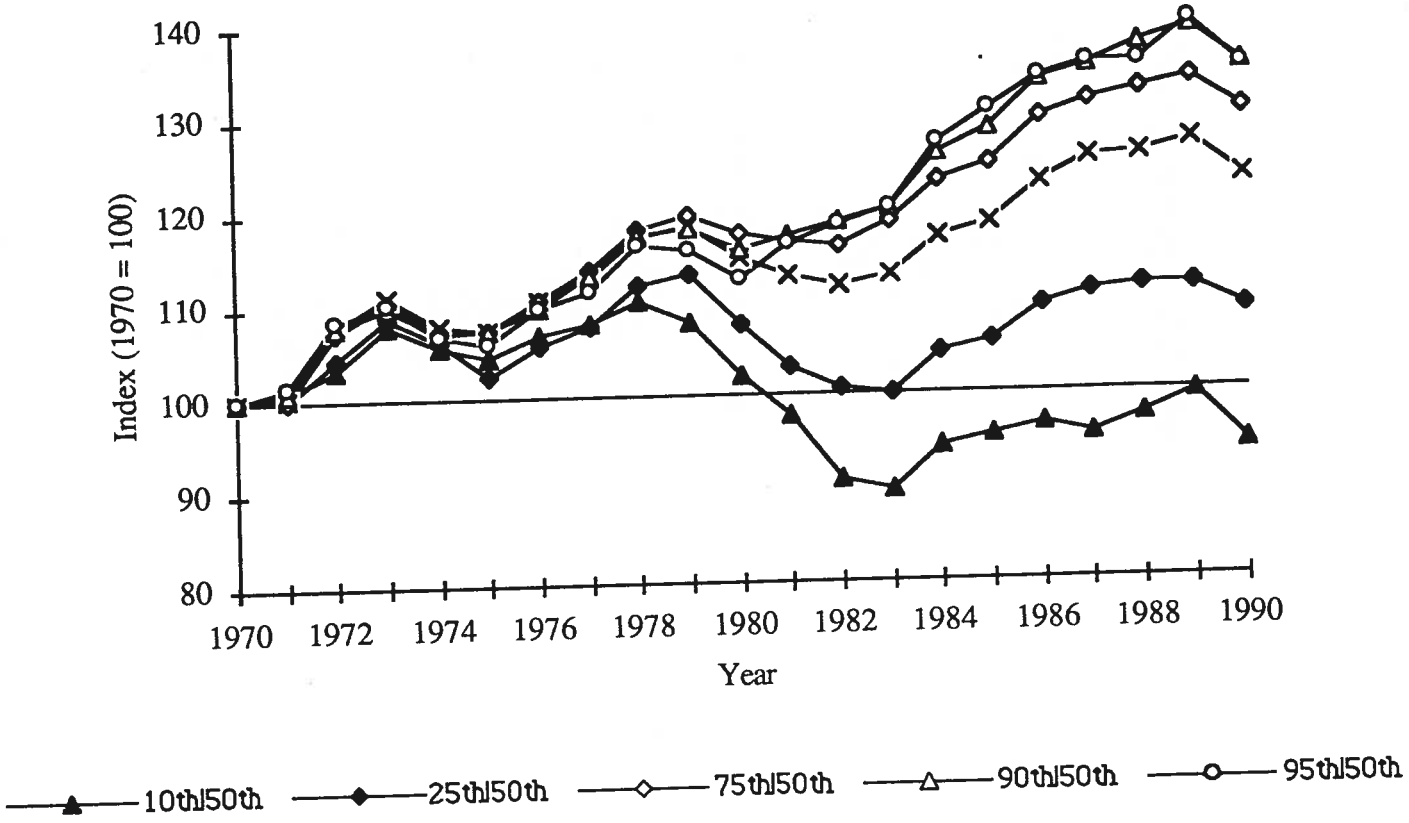
Gini Coefficient: 1970-1990



SOURCE: Author's calculations from March 1971 to March 1991 CPS.

Figure 2a

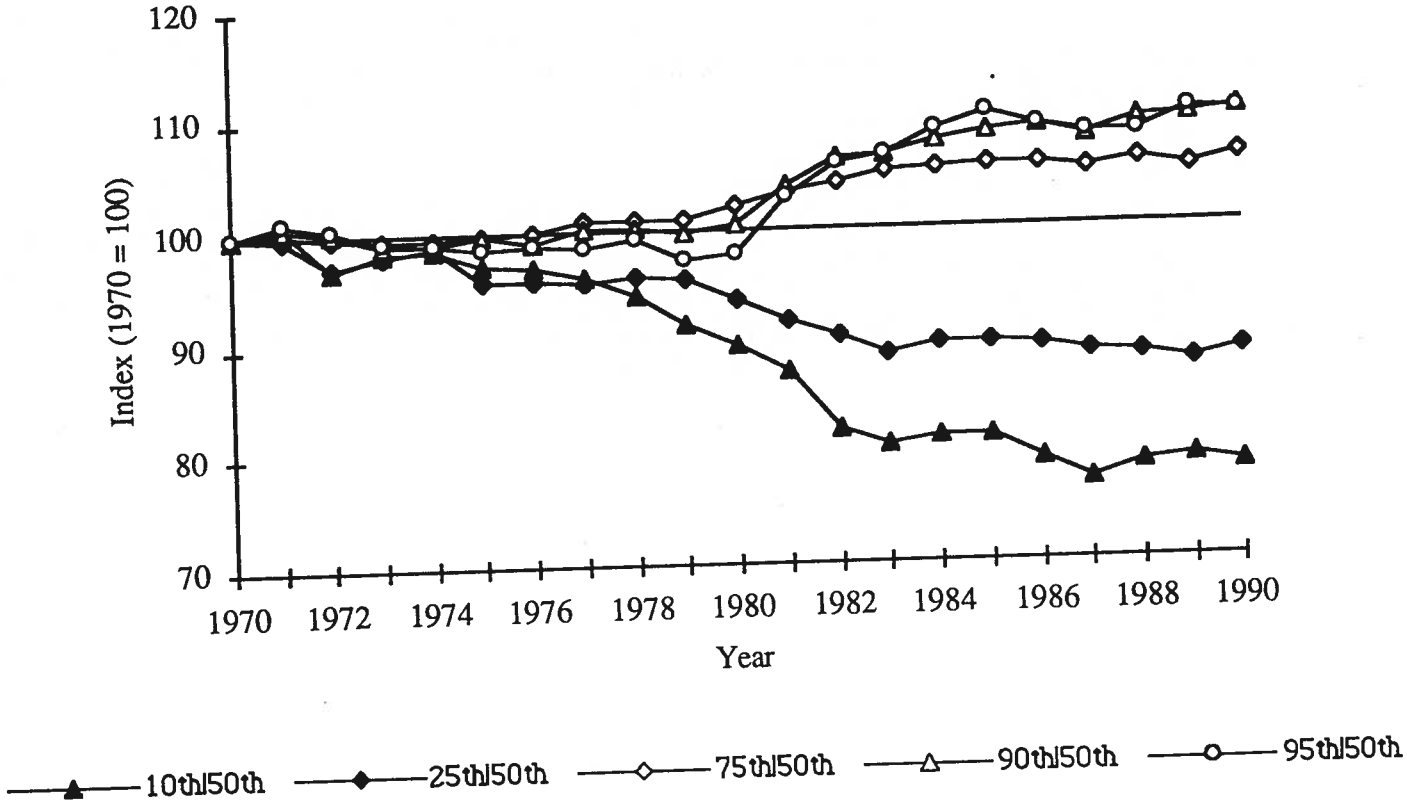
Absolute Percentiles of Adjusted Family Income (AFI) Among Persons: 1970-1990



SOURCE: Author's calculations from March 1971 to March 1991 CPS.

Figure 2b

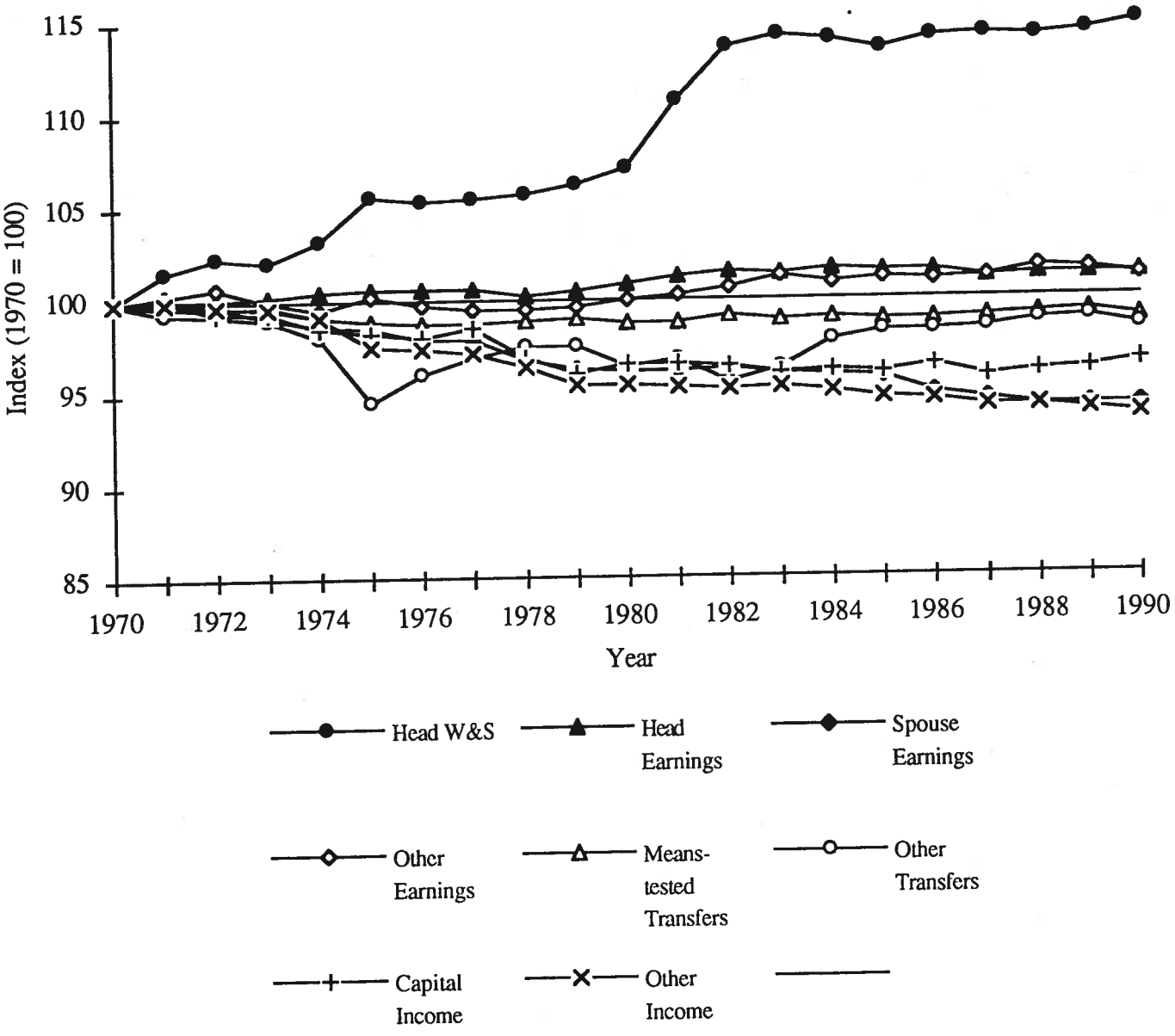
Relative Percentiles of Adjusted Family Income (AFI) Among Persons: 1970-1990



SOURCE: Author's calculations from March 1971 to March 1991 CPS.

Figure 3

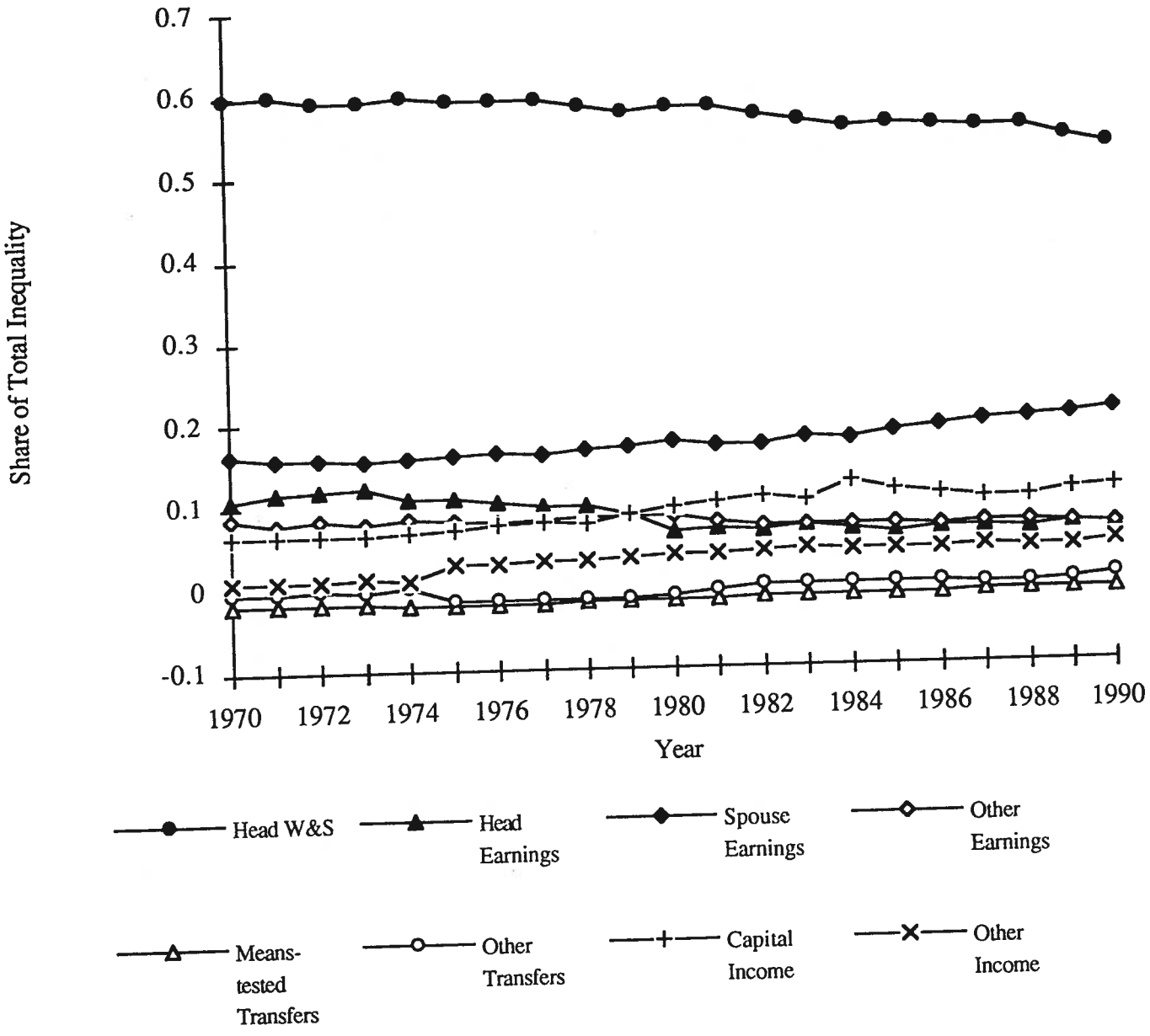
Gini Coefficients by Income Source: 1970-1990
(Adjusted Family Income Among Persons)



SOURCE: Author's calculations from March 1971 to March 1991 CPS.

Figure 4

Share of Income Inequality by Income Source: 1970-1990 (Adjusted Family Income Among Persons)



SOURCE: Author's calculations from March 1971 to March 1991 CPS.

Table 1

Decomposition of Gini Coefficient by Income Source (Adjusted Family Income Among Persons)

Income Source	Share of Income (S_k)	Gini (G_k)	Gini Correlation (R_k)	Share of Inequality (I_k)
Head's Wage and Salary				
1970	0.606	0.492	0.721	0.595
1980	0.556	0.527	0.717	0.579
1990	0.515	0.563	0.713	0.517
Head's Self-Employment				
1970	0.080	0.947	0.521	0.109
1980	0.055	0.954	0.445	0.064
1990	0.054	0.957	0.506	0.065
Spouse's Earnings				
1970	0.118	0.812	0.610	0.162
1980	0.134	0.781	0.600	0.173
1990	0.165	0.764	0.648	0.204
Other's Earnings				
1970	0.077	0.877	0.458	0.086
1980	0.075	0.877	0.456	0.082
1990	0.068	0.886	0.419	0.063
Means-Tested Transfers				
1970	0.010	0.958	-0.672	-0.017
1980	0.010	0.946	-0.706	-0.019
1990	0.008	0.947	-0.708	-0.014
Other Transfers				
1970	0.057	0.851	-0.038	-0.005
1980	0.071	0.820	-0.073	-0.012
1990	0.064	0.837	0.018	0.002
Capital Income				
1970	0.039	0.924	0.638	0.063
1980	0.057	0.891	0.676	0.095
1990	0.068	0.886	0.720	0.108
Other Income				
1970	0.015	0.962	0.203	0.008
1980	0.041	0.917	0.351	0.037
1990	0.058	0.892	0.409	0.053
Total Income				
1970	1.000	0.361	1.000	1.000
1980	1.000	0.363	1.000	1.000
1990	1.000	0.399	1.000	1.000

SOURCE: Author's calculations from March 1971 to March 1991 CPS.

Table 2

Decomposing the Change in the Gini Coefficient for Adjusted Family Income Among Persons

Change in Gini due to:	Income Source										
Factor[a]	Head's W&S	Head's SE	Spouse's Earnings	Other's Earnings	Means-Tested Transfers	Other Transfers	Capital Income	Other Income	Total	Residual	ΔG
1970 - 1980:											
S	-0.019	-0.010	0.008	-0.001	0.000	-0.001	0.011	0.008	-0.004		
G	0.014	0.000	-0.003	0.000	0.000	0.000	-0.001	-0.001	0.010		
R	-0.001	-0.004	-0.001	0.000	0.000	-0.002	0.002	0.006	-0.001		
Total	-0.006	-0.014	0.004	-0.001	-0.001	-0.003	0.012	0.013	0.005	-0.0029	0.002
1980 - 1985:											
S	-0.007	-0.003	0.007	-0.002	0.001	0.000	0.008	0.001	0.006		
G	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012		
R	0.004	0.002	0.003	-0.001	0.000	0.003	0.002	0.001	0.013		
Total	0.009	-0.000	0.009	-0.002	0.001	0.003	0.010	0.002	0.032	0.0001	0.032
1985 - 1990:											
S	-0.009	0.002	0.009	0.000	0.000	0.000	-0.002	0.002	0.001		
G	0.002	0.000	-0.001	0.000	0.000	0.000	0.000	0.000	0.001		
R	-0.004	0.000	0.003	-0.002	0.000	0.002	0.001	0.001	0.002		
Total	-0.010	0.002	0.010	-0.002	0.000	0.002	-0.000	0.003	0.004	0.0002	0.004
1970 - 1990:											
S	-0.035	-0.013	0.024	-0.003	0.001	0.000	0.019	0.012	0.005		
G	0.027	0.000	-0.005	0.000	0.000	0.000	-0.002	-0.001	0.019		
R	-0.001	-0.001	0.004	-0.002	0.000	0.003	0.005	0.009	0.016		
Total	-0.010	-0.014	0.023	-0.005	0.001	0.003	0.022	0.020	0.041	-0.0026	0.038

SOURCE: Author's calculations from March 1971 to March 1991 CPS.

[a]S=Share of income source; G=Gini coefficient of income source; R=Gini correlation of income source.

Table A.1

Gini Coefficients: Untrimmed and Trimmed Distributions

Year	Family Income Among Families			Adjusted Family Income Among Families			Adjusted Family Income Among Persons		
	No Trim	2 %	5%	No Trim	2 %	5 %	No Trim	2%	5%
1970	0.401	0.385	0.368	0.384	0.368	0.352	0.361	0.345	0.330
1971	0.403	0.387	0.371	0.385	0.369	0.354	0.363	0.346	0.332
1972	0.407	0.393	0.374	0.387	0.372	0.355	0.365	0.351	0.334
1973	0.404	0.391	0.373	0.383	0.369	0.352	0.361	0.347	0.331
1974	0.401	0.389	0.372	0.377	0.364	0.349	0.358	0.345	0.330
1975	0.402	0.390	0.372	0.377	0.366	0.349	0.360	0.348	0.332
1976	0.404	0.392	0.374	0.377	0.366	0.350	0.359	0.347	0.331
1977	0.408	0.398	0.379	0.380	0.370	0.353	0.362	0.351	0.334
1978	0.407	0.398	0.381	0.380	0.370	0.355	0.360	0.350	0.335
1979	0.408	0.398	0.383	0.378	0.369	0.355	0.361	0.351	0.338
1980	0.407	0.398	0.385	0.379	0.371	0.359	0.363	0.353	0.342
1981	0.416	0.406	0.388	0.393	0.383	0.366	0.377	0.367	0.350
1982	0.422	0.412	0.393	0.400	0.390	0.372	0.387	0.376	0.359
1983	0.424	0.414	0.396	0.402	0.393	0.376	0.390	0.379	0.362
1984	0.430	0.417	0.397	0.408	0.395	0.377	0.396	0.382	0.363
1985	0.429	0.418	0.398	0.407	0.396	0.377	0.395	0.383	0.364
1986	0.433	0.422	0.402	0.410	0.399	0.380	0.397	0.385	0.366
1987[a]	0.434	0.423	0.403	0.409	0.399	0.381	0.396	0.385	0.366
1987[b]	0.435	0.423	0.403	0.409	0.398	0.380	0.396	0.384	0.366
1988	0.434	0.424	0.405	0.411	0.400	0.382	0.397	0.386	0.368
1989	0.436	0.424	0.406	0.413	0.401	0.384	0.400	0.387	0.370
1990	0.435	0.424	0.406	0.412	0.401	0.384	0.399	0.388	0.371

SOURCE: Author's calculations from March 1971 to March 1991 CPS.

[a]Using old processing system.
[b]Using new processing system introduced in March 1989.

Table A.2

Absolute Percentiles of Adjusted Family Income[a] Among Persons

	Percentile					
Year	10th	25th	50th	75th	90th	95th
1970	0.89	1.60	2.56	3.86	5.49	6.84
1971	0.90	1.60	2.57	3.87	5.55	6.94
1972	0.92	1.67	2.76	4.14	5.93	7.41
1973	0.96	1.74	2.84	4.26	6.03	7.54
1974	0.94	1.70	2.76	4.14	5.87	7.31
1975	0.93	1.64	2.75	4.14	5.89	7.24
1976	0.95	1.69	2.83	4.26	6.02	7.49
1977	0.96	1.72	2.89	4.39	6.21	7.62
1978	0.98	1.79	3.00	4.55	6.45	7.95
1979	0.96	1.81	3.03	4.61	6.47	7.90
1980	0.91	1.72	2.94	4.53	6.35	7.70
1981	0.87	1.65	2.89	4.50	6.43	7.94
1982	0.81	1.61	2.86	4.48	6.51	8.08
1983	0.80	1.60	2.89	4.57	6.58	8.21
1984	0.84	1.67	2.99	4.74	6.90	8.68
1985	0.85	1.69	3.03	4.81	7.04	8.91
1986	0.86	1.75	3.14	4.99	7.33	9.14
1987[b]	0.85	1.77	3.20	5.06	7.40	9.25
1987[c]	0.87	1.78	3.22	5.09	7.45	9.37
1988	0.89	1.79	3.23	5.14	7.58	9.37
1989	0.91	1.79	3.27	5.18	7.68	9.67
1990	0.86	1.75	3.16	5.05	7.46	9.33

SOURCE: Author's calculations from March 1971 to March 1991 CPS.

[a]Measured as total family income divided by the poverty line, where the 1967 poverty threshold is inflated using the CPI-X to calculate the poverty lines after 1967.
[b]Using old processing system.
[c]Using new processing system introduced in March 1989.

REFERENCES

Aaron, Henry J. 1990. "Lessons for tax reform." In Joel Slemrod, ed., *Do Taxes Matter? The Impact of the Tax Reform Act of 1986.* Cambridge, Mass.: MIT Press.

Aaron, Henry J., et al., eds. 1988. *Uneasy Compromise: Problems of a Hybrid Income-Consumption Tax.* Washington, D. C.: The Brookings Institution.

Blackburn, McKinley L. 1989. "Interpreting the magnitude of changes in measures of income inequality." *Journal of Econometrics* 42: 21-25.

Blackburn, McKinley L. and David Bloom. 1987. "Earnings and income inequality in the United States." *Population and Development Review* 13: 575-609.

Blank, Rebecca, and Alan Blinder. 1986. "Macroeconomics, income distribution and poverty." In Sheldon Danziger and Daniel Weinberg, eds., *Fighting Poverty: What Works and What Doesn't.* Cambridge, Mass.: Harvard University Press.

Bloom, David E. and Richard B. Freeman. 1992. "The fall in private pension coverage in the United States." *American Economic Review* 82(2): 539-545.

Bosworth, Barry and Gary Burtless. 1992. "Effects of tax reform on labor supply, investment and saving." *The Journal of Economic Perspectives* 6(1): 3-25.

Burtless, Gary. 1991. "The supply-side legacy of the Reagan years: Effects on labor supply." In A. P. Sahu and R. L. Tracy, eds., *The Economic Legacy of the Reagan Years: Euphoria or Chaos?* New York: Praeger.

Cancian, Maria, Sheldon Danziger, and Peter Gottschalk. 1993. "Working wives and family income inequality among married couples." In Sheldon Danziger and Peter Gottschalk, eds., *Uneven Tides: Rising Inequality in America.* Russell Sage Foundation.

Committee on Ways and Means, U.S. House of Representatives. 1991. "Trends in family income and income inequality." In *Background material and data on programs within the jurisdiction of the Committee on Ways and Means.* Washington, D.C.: U.S. Government Printing Office.

Congressional Budget Office. 1987. *The Changing Distribution of Federal Taxes: 1975-1990.* October.

Cutler, David M. and Lawrence F. Katz. 1991. "Macroeconomic performance and the disadvantaged." *Brookings Papers on Economic Activity* 1991(2): 1-61.

Fichtenbaum, Rudy and Hushang Shahidi. 1988. "Truncation bias and the measurement of income inequality." *Journal of Business and Economic Statistics* 6(3): 335-337.

Galper, Harvey, Robert Lucke, and Eric Toder. 1988. "A general equilibrium analysis of tax reform." In Henry J. Aaron, et al., eds., *Uneasy Compromise: Problems of a Hybrid Income-Consumption Tax.* Washington, D. C.: The Brookings Institution.

Gramlich, Edward M., Richard Kasten, and Frank Sammartino. 1993. "Growing inequality in the 1980s: The role of federal taxes and cash transfers." In Sheldon Danziger and Peter Gottschalk, eds., *Uneven Tides: Rising Inequality in America.* New York: Russell Sage Foundation.

Gravelle, Jane G. 1990. "Equity effects of the Tax Reform Act of 1986." *The Journal of Economic Perspectives* 6(1): 27-44.

Hausman, Jerry A. 1981. "Income and payroll tax policy and labor supply." In Laurence H. Meyer, ed., *Supply-Side Effects of Economic Policy.* Boston: Kluwier-Nijhoff.

_____. 1983. "Stochastic problems in the simulation of labor supply." In Martin Feldstein, ed., *Behavioral Simulation Methods in Tax Policy Analysis.* Chicago: University of Chicago Press.

Hausman, Jerry A. and James M. Poterba. 1987. "Household behavior and the Tax Reform Act of 1986." *Journal of Economic Perspectives* 1(1): 101-119.

Kakwani, Nanak C. 1980. *Income inequality and poverty.* New York: Oxford University Press.

Karoly, Lynn A. 1993. The trend in inequality among families, individuals, and workers in the United States: A twenty-five year perspective. In Sheldon Danziger and Peter Gottschalk, eds., *Uneven Tides: Rising Inequality in America.* New York: Russell Sage Foundation.

Lerman, Robert I. and Shlomo Yitzhaki. 1984. "A note on the calculation and interpretation of the Gini index." *Economic Letters* 15: 363-368.

_____. 1985. "Income inequality effects by income source: A new approach and applications to the United States." *The Review of Economics and Statistics* 67(1): 151-156.

_____. 1989. "Improving the accuracy of estimates of Gini coefficients." *Journal of Econometrics* 42: 43-47.

Levy, Frank. 1987. *Dollars and Dreams: The Changing American Income Distribution.* New York: Russell Sage Foundation.

Levy, Frank and Richard J. Murnane. Forthcoming. Earnings levels and earnings inequality: A review of recent trends and proposed explanations. *Journal of Economic Literature.*

Lindsey, Lawrence. 1990. *The Growth Experiment.* New York: Basic Books.

Michel, Richard C. 1991. "Economic growth and income equality since the 1982 recession." *Journal of Policy Analysis and Management* 10(2): 181-203.

Pechman, Joseph A. 1985. *Who Paid the Taxes, 1966-1985?* Washington, D.C.: Brookings Institution.

_____. 1987. "Tax Reform: Theory and Practice." *Journal of Economic Perspectives* 1(1): 11-28.

_____. 1990. "The future of the income tax." *The American Economic Review* 80(1): 1-20.

Ruggles, Patricia. 1990. *Drawing the Line: Alternative Poverty Measures and Their Implications for Public Policy.* Washington, D.C.: Urban Institute Press.

Ruggles, Patricia and Charles F. Stone. 1992. "Income distribution over the business cycle: The 1980s were different." *Journal of Policy Analysis and Management* 11(4): 709-715.

Ryscavage, Paul. 1992. "Working wives and growing 'household' income inequality." Paper presented at the 1992 Western Economics Association Meetings.

Sawhill, Isabel V. and Mark Condon. 1992. "Is U.S. Income Inequality Really Growing?" *Policy Bites* , The Urban Institute, June.

Slemrod, Joel. 1983. "Do we know how progressive the income tax system should be?" *National Tax Journal* 36(3): 361-369.

_____, ed. 1990a. *Do Taxes Matter? The Impact of the Tax Reform Act of 1986.* Cambridge, Mass.: MIT Press.

_____. 1990b. "Optimal taxation and optimal tax systems." *The Journal of Economic Perspectives* 4(1): 157-178.

_____. 1992a. "Do taxes matter? Lessons from the 1980s." NBER Working Paper No. 4008.

_____. 1992b. "Taxation and inequality: A time-exposure perspective." In James M. Poterba, ed., *Tax Policy and the Economy*, Volume 6. Cambridge, Mass.: MIT Press.

Steuerle, C. Eugene. 1992. *The Tax Decade: How Taxes Came to Dominate the Public Agenda.* Washington, D.C.: The Urban Institute Press.

U.S. Bureau of the Census. 1989. *Money Income of Households, Families, and Persons in the United States: 1987.* Current Population Reports Series P-60, No. 162. Washington D.C.: U.S. Government Printing Office, February.

_____. 1992a. *Measuring the Effect of Benefits and Taxes on Income and Poverty: 1979 to 1991.* Current Population Reports, Series P-60, No. 182-RD. Washington D.C.: U.S. Government Printing Office, August.

_____. 1992b. *Money Income of Households, Families, and Persons in the United States: 1987.* Current Population Reports Series P-60, No. 180. Washington D.C.: U.S. Government Printing Office, August.

Webb, Randall L., Richard C. Michel, and Anne B. Bergsman. 1990. "The historical development of the Transfer Income Model (TRIM2)." In G.H. Lewis and R.C. Michel, eds., *Microsimulation Techniques for Tax and Transfer Analysis.* Washington, D. C.: The Urban Institute Press.

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