

EDWARD M. GRAMLICH

Brookings Institution

The Distributional Effects of Higher Unemployment

THE RECENT BURST of inflation in the American economy has made the problem of reconciling full employment with price stability all the more difficult. While few doubt that a sufficiently long period of high unemployment will eventually dampen inflation, many fear the social consequences of this unemployment. Not only would the losses in national income be large, but also they could be concentrated among the low- and middle-income families who can least afford them.

Whether or not macroeconomic policy can permanently alter the rate of unemployment, it is important to understand how its losses are distributed. If there is a stable long-run tradeoff between reducing inflation and reducing involuntary unemployment, macroeconomic decisions on the direction of the economy will in large part depend on the relative costs and benefits of achieving each objective. Any impact that inflation or unemployment has on the distribution of income should be a major factor

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in these calculations. But even if a stable long-run tradeoff does not exist, policymakers must remain aware of the distributional effects of unemployment so that those income groups who generally bear these costs might be compensated for the sacrifices they make for the good of the nation.

Previous attempts to measure the costs of high unemployment have focused on the direct loss of output resulting from a slack economy, estimated by Arthur Okun and others as approximately 3 percent for every percentage-point reduction in employment.¹ Robert Gordon finds this estimate to be greatly overstated for the long run if temporary cyclical advances in labor productivity are not sustainable, and even more so if allowance is made for the increased social value of time devoted to non-market activity.² Whether or not Gordon's adjustments are appropriate, both sets of calculations ignore the fact that the burden of unemployment is not evenly shared. If the burden were borne proportionately by all workers, or if it could easily be offset, equity considerations might be ignored in policymaking. But if the burden falls mainly on low-income workers, who have enough labor market difficulties even in prosperous times, the true cost of unemployment could be much greater than is suggested by calculations based on the loss of aggregate output and the value of leisure time.

Higher overall unemployment imposes two types of distributional costs. The first is the "direct" loss in earned income due to the unemployment of family heads, losses in hours worked by those who remain employed, and losses in the earnings of secondary workers. Even if these losses were concentrated among certain groups of workers, they could be offset by increases in government transfer benefits; but the present transfer system appears to fall well short of this objective. And apart from any actual shortcomings of the present transfer system, there is also an intrinsic limit to the degree to which the nation can rely on transfers for protection against

1. See Arthur M. Okun, "Potential GNP: Its Measurement and Significance," in American Statistical Association, *Proceedings of the Business and Economics Statistics Section* (1962), pp. 98-104, reprinted in Okun, *The Political Economy of Prosperity* (Brookings Institution, 1970), Appendix; and George L. Perry, "Labor Force Structure, Potential Output, and Productivity," *Brookings Papers on Economic Activity* (3:1971), pp. 533-65 (hereafter this document is referred to as *BPEA*, followed by the date); and Benjamin M. Friedman and Michael L. Wachter, "Unemployment: Okun's Law, Labor Force and Productivity," *Review of Economics and Statistics*, Vol. 56 (May 1974), pp. 167-76.

2. See Robert J. Gordon, "The Welfare Cost of Higher Unemployment," *BPEA* (1:1973), pp. 133-95.

cyclical losses in income. As benefit schedules under transfer programs become more and more generous, workers have a growing incentive to rely on the transfer system, thus leading to further reductions in earned income. Feldstein has recently raised this issue in his criticism of the present unemployment insurance system,³ and the very same argument has been the great stumbling block thus far preventing passage of a comprehensive income-support program for low-income families with male heads. A movement toward higher overall unemployment might make the adoption of such a program even less likely if the decline in labor demand hinders low-income workers in getting steady jobs, raises the cost of a given transfer program, and poses greater problems in administering the work requirements or inducements that such a plan may contain.

The second distributional cost of high unemployment involves the quality of the jobs that are available to workers who may also suffer from racial, sexual, or ethnic discrimination. Beginning with Doeringer and Piore, many writers have suggested that labor markets may contain a certain amount of segmentation, with "internal" jobs featuring high pay and good opportunities for long-run advancement and "external" jobs featuring neither and hence characterized by rapid turnover and little accumulation of on-the-job human capital.⁴ An extension of these segmentation theories suggests that changes in the quantity of employment in the economy could be accompanied by other changes in the labor market that alter the quality of the employment opportunities available to poor and underprivileged workers. Many more of these good jobs should be available when total employment opportunities are greater and when employers have more difficulty in filling vacancies. If this is the case, the reduction in good job oppor-

3. See Martin S. Feldstein, *Lowering the Permanent Rate of Unemployment*, A Study for the Joint Economic Committee, 93 Cong. 1 sess. (1973), and Feldstein, "The Economics of the New Unemployment," *Public Interest*, No. 33 (Fall 1973), pp. 3-42.

4. Several bookshelves have now been written on this topic. Probably the most widely read statement of the hypothesis is Peter B. Doeringer and Michael J. Piore, *Internal Labor Markets and Manpower Analysis* (Heath, 1971). Other references are David M. Gordon, *Theories of Poverty and Underemployment: Orthodox, Radical, and Dual Labor Market Perspectives* (Heath, 1972); Robert E. Hall, "Why Is the Unemployment Rate So High at Full Employment?" *BPEA* (3:1970), pp. 369-402; Bennett Harrison, "Education and Underemployment in the Urban Ghetto," *American Economic Review*, Vol. 62 (December 1972), pp. 796-812; and Howard M. Wachtel and Charles Betsey, "Employment at Low Wages," *Review of Economics and Statistics*, Vol. 54 (May 1972), pp. 121-29.

tunities is a second distributional cost of higher unemployment—possibly very significant in the long run.⁵

This paper focuses on the direct costs, in particular on their incidence by income class. It first attempts to measure the earnings losses of family heads caused by higher cyclical unemployment, arrayed according to family type, race, and a proxy for permanent income. The paper then investigates the indirect changes in earnings associated with higher overall unemployment through changes in hours worked of family heads and the earnings of wives, children, and others in the family. Finally, it assesses the income protection afforded by various types of transfer payments—unemployment insurance, welfare, food stamps, the portion of social security not going to the aged, and some other, mainly private, transfers—again distinguishing among income groups and family types. In concentrating on the changes in family income arising from these sources, the paper ignores the distributional effects of depressed wage rates in an economic climate that does not offer as many good jobs, of changes in property income associated with shifts in economic activity, and of unanticipated inflation. These are important topics, but each raises a different set of substantive issues and is best left to another paper.

Investigating the Distributional Impacts of Business Cycles

Despite the intrinsic microeconomic character of the income-distribution question, most previous studies of the impact of higher unemployment on lower-income people have used aggregations of individual household data. One approach, employed first by the Council of Economic Advisers and later by Gallaway, Aaron, Hollister and Palmer, and Thurow, is to regress the overall size of the “poverty population” or components of it on various measures of economic growth, cyclical indicators, and other independent variables that differ according to the purposes of the investigator.⁶ A

5. The most systematic discussion of this issue can be found in Arthur M. Okun, “Upward Mobility in a High-pressure Economy,” *BPEA* (1:1973), pp. 207–52.

6. See *Economic Report of the President Together with the Annual Report of the Council of Economic Advisers, January 1964*, p. 60; Lowell E. Gallaway, “The Foundations of the ‘War on Poverty,’” *American Economic Review*, Vol. 55 (March 1965), pp. 122–31; Henry Aaron, “The Foundations of the ‘War on Poverty’ Reexamined,” *American Economic Review*, Vol. 57 (December 1967), pp. 1229–40; Robinson G. Hollister and John L. Palmer, “The Impact of Inflation on the Poor,” in Kenneth E. Boulding and Martin Pfaff (eds.), *Redistribution to the Rich and the Poor: The Grants Economics of*

second approach, used first by Schultz and then by Thurow, Metcalf, and Mirer, is to relate factor shares or parameters reflecting the entire distribution of income to a similar set of variables, and from that to determine how outside forces affect incomes at various levels.⁷ Such studies usually find an adverse impact of the business cycle on the distribution of income, with a permanently higher unemployment rate worsening the situation of the poor, at least as compared with middle-income groups. According to their results, a reduction of 1 percentage point in the unemployment rate lifts nearly as many people out of poverty (defined in terms of absolute needs) as would one year of economic growth.

While these studies are useful, they still leave much to be desired. First, the poverty regressions describe only one small part of the income distribution, that area just below and just above the government's poverty standard. Any change in status, no matter how small, is considered desirable if it moves people across the magic line; while even large changes in status that do not move people across the line are ignored. Second, while "reduced form" descriptions of the income distribution sometimes fit very well, they do not always give internally consistent results and they never tell much about the underlying process—why a recession increases the number of poor people, whether transfer programs are effective in protecting against cyclical losses, whether the poverty program was effective in reducing the number of low-income people. Finally, all studies based on income aggregations necessarily suffer from the fact that the data measure only the income reported by a certain group in a certain calendar year, and from their inability to follow the movements—if any—of given families among

Income Distribution (Wadsworth, 1972); and Lester C. Thurow, *Poverty and Discrimination* (Brookings Institution, 1969). In these studies the poverty population is measured according to the government's "absolute needs" standard, described in Mollie Orshansky, "Counting the Poor: Another Look at the Poverty Profile," *Social Security Bulletin*, Vol. 28 (January 1965), pp. 3–29. Up-to-date poverty thresholds adjusted for inflation are given in the Census Bureau's *Current Population Reports*, "Characteristics of the Low-Income Population," Series P-60.

7. T. Paul Schultz, "Secular Trends and Cyclical Behavior of Income Distribution in the United States: 1944–1965," in Lee Soltow (ed.), *Six Papers on the Size Distribution of Wealth and Income* (Columbia University Press for the National Bureau of Economic Research, 1969); Lester C. Thurow, "Analyzing the American Income Distribution," in American Economic Association, *Papers and Proceedings of the Eighty-second Annual Meeting, 1969* (*American Economic Review*, Vol. 60, May 1970), pp. 261–69; Charles E. Metcalf, *An Econometric Model of the Income Distribution* (Markham, 1972); and Thad W. Mirer, "The Effects of Macroeconomic Fluctuations on the Distribution of Income," *Review of Income and Wealth*, Series 19, No. 4 (December 1973), pp. 385–405.

income classes from one year to the next.⁸ Two questions arise: Is a year long enough to measure economic status appropriately if there is a large transitory component to family income? And, more generally, is it appropriate to predict what will happen to people over time on the basis of cross-section data?

In this paper I try to improve on past work through the use of longitudinal data. These data come from the Panel Study of Income Dynamics, a study of 4,800 families and unrelated individuals under the auspices first of the Office of Economic Opportunity and now of the Department of Health, Education, and Welfare, conducted by the Survey Research Center of the University of Michigan. The larger portion of the sample, 2,930 family units, was selected from a representative national cross-section; the rest, 1,870 units, came from a sample of low-income households identified for the 1966 Survey of Economic Opportunity. All family heads have been interviewed every spring since 1968 (the data for 1974 were not yet available at this writing). They were asked a wide variety of questions about their labor market experience, income, demographic characteristics, and attitudes. While the survey did include questions about the income and employment patterns of others in the family unit, information on this score is much less complete. The first five interviews were conducted personally with the family head, but subsequent interviews have been by telephone with an abbreviated questionnaire. Most of the questions in the survey involve recall: that is, in the spring of year t the family head is asked about income, hours worked, hours unemployed, and so on, for year $t - 1$.⁹ This is very similar to the way the Current Population Survey

8. To be more precise, the Current Population Survey (CPS) of the U.S. Bureau of the Census samples households for four months in a row, then drops them for eight months, and then resamples for another four. The income questions from which distributional statistics are compiled are asked once each year, in the March CPS, which means that every rotation group represented in March of any year will also be represented in March a year previously or subsequently. The published tabulations do not give this longitudinal information, however; it is available only on census tapes and is extremely costly to obtain. One person who managed to do so is Terence F. Kelly; see his "Factors Affecting Poverty: A Gross Flow Analysis," in *The President's Commission on Income Maintenance Programs: Technical Studies* (1970), pp. 1-81.

9. General descriptions of the study can be found in James N. Morgan and others, *Five Thousand American Families—Patterns of Economic Progress*, Vol. 1: *An Analysis of the First Five Years of the Panel Study of Income Dynamics*, and Vol. 2 (edited by James N. Morgan): *Special Studies of the First Five Years of the Panel Study of Income Dynamics* (University of Michigan, Institute for Social Research, 1974); and U.S. Department of Health, Education, and Welfare, "The Changing Economic Status of 5000 American Families: Highlights from the Panel Study of Income Dynamics" (1974; processed).

(CPS) measures annual income, but the resulting information would probably be less precise than the labor force-employment statistics developed from that survey, which are based on answers regarding the previous week or month.¹⁰

The panel data will be used, generally by pooling time-series data for each family, to estimate equations explaining four aspects of cyclical income losses: (1) the direct loss from increases in the hours unemployed of family heads; (2) any additional losses of hours worked by family heads; (3) any losses in labor income of secondary workers in the family unit;¹¹ and (4) any increase in benefits from transfer programs that follows the loss in earned income.

This decomposition of the overall responses provides a means of seeing why the overall reduced-form relationships come out the way they do, of making more precise tests of the impact of policy changes on the various reactions, and of checking the responses for consistency with other work at various stages.

The advantage of using this body of data in such a way is obvious. If someone were to ask a scientist to estimate the effects of cyclical unemployment, he would no doubt recommend selecting a sample weighted according to the interests of the investigator, and observing these people first in good times and then in bad. This is essentially what the Michigan longitudinal survey did (though there is no suggestion that the real reason for the period of higher unemployment beginning in 1970 was to increase the richness of ongoing longitudinal surveys).

But this longitudinal technique also has disadvantages. First, it is simply impossible to follow all people in a carefully designed sample over time. Some cannot be followed because they do not return questionnaires, a phenomenon known as sample attrition; others experience so many com-

10. The one set of labor force statistics not based on answers regarding the previous week or month is the annual BLS work experience survey, which counts those who worked or were unemployed at any time during the previous year and is inevitably retrospective. See Anne M. Young, "Work Experience of the Population in 1972," *Monthly Labor Review*, Vol. 97 (February 1974), pp. 48-55; or *Manpower Report of the President, April 1974*, Table B-18, p. 310. Arthur Okun calculates that any understatement due to the retrospective nature of the survey is less than might be supposed; he arrived at this conclusion by blowing up the frequency distribution on the basis of class midpoints and arriving at numbers that are very close to the total amount of unemployment experienced in a year. The retrospective survey does, however, report fewer spells of unemployment and longer average durations than do the monthly statistics.

11. Women in male-female families will be called secondary earners, not out of chauvinism, but because on average they work less than the male.

plicated changes in family structure that one is in effect observing the behavior of different people every year. In the panel study, for example, overall attrition rates were 11 percent in the first year and 3 percent or less in all succeeding years. These numbers seem fairly small—particularly in view of the fact that interviewers were trying to follow divorced husbands and wives and even children who split off to form their own families; but even such small rates of attrition whittled the sample for which there were six years of continuous data from the 4,800 initial households to 3,800.¹² Eliminating those households where the head's identity changed (say, because of a divorce or remarriage), or where the head was not usually in the labor force, lowers the number further to just over 2,600. If attrition or change in family structure were uncorrelated with the propensity to undergo unemployment, the 2,600 households could be viewed as a random sample of the 4,800 and any results based on the survey would be unbiased. But it is probably more realistic to expect that both types of attrition will eliminate from the sample proportionately more workers who are highly prone to unemployment, and thus lead to some understatement of the cyclical sensitivity of unemployment of certain types of families.¹³

A second disadvantage with these panel data is that they cover only one period of low unemployment, 1967–69, and one period of high unemployment, 1970–72. This span may differ from others of low and high unemployment for many reasons: the Vietnam war may have distorted the labor market behavior of teenagers; the 1970 recession may have hit highly educated scientists unusually hard; major policy changes were made in many important transfer programs over this period. These influences suggest caution in interpreting the results of one particular six-year period. But I have tried to guard against the most egregious difficulties by fitting certain basic unemployment relationships over a longer, fifteen-year, span to eliminate any atypical effects of the 1967–72 period, and by fitting the

12. The numbers given in the panel study reports cited above are misleading for these purposes because whenever they trace a split-off, they add the family to the sample. Thus while their sample seems to expand with time, the sample for which six years of continuous data exist has shrunk.

13. An indication that attrition may not lead to serious biases comes from the response rates in the first year. Almost one-quarter of those initially selected for the sample did not respond to or were not located for the first interview. Remarkably, however, these non-response proportions were almost exactly the same in the national portion of the sample and in the low-income (and presumably high-unemployment) portion. Whatever leads to nonresponse, then, may not be regularly related to income or the propensity to undergo unemployment.

transfer relationships only for 1971, after most of the policy changes were made, so as to describe the way these programs operate at the present time.

The Incidence of Cyclical Unemployment

The first question regarding the distributional impact of swings in business activity involves the incidence of cyclical unemployment. In this section I investigate this question through regressions relating the cyclical incidence to the personal and geographical attributes of family heads.

Previous studies of unemployment have been based either on time-series or cross-section data. The time-series studies have used aggregate labor force data to explain participation and unemployment rates for different demographic classes of workers.¹⁴ In terms of percentage-point changes, they have found great cyclical volatility in unemployment rates for youths and blacks, much less in rates for mature men, and some in the employment rate, but not in the unemployment rate, for adult women (because labor force participation rates also change). Analysis of time-series data also indicates that the unemployment rates of those with little education and in low- or middle-class occupations show greater cyclical sensitivity than do the rates for workers who have the responsibility of supporting a family.¹⁵

Hall has made an attempt to use cross-section household data to explain amounts of unemployment undergone by urban workers of various types.¹⁶ He found that after he controlled for family position, age, and city of residence, which studies based on time-series data cannot easily do, unemploy-

14. See, for example, George L. Perry, "Unemployment Flows in the U.S. Labor Market," *BPEA* (2:1972), p. 259; and Paul M. Ryscavage, "Impact of Higher Unemployment on Major Labor Force Groups," *Monthly Labor Review*, Vol. 93 (March 1970), pp. 21-25.

15. This evidence is reviewed in Robert Aaron Gordon, *The Goal of Full Employment* (Wiley, 1967), Chap. 6; and Robert M. Solow, *The Nature and Sources of Unemployment in the United States* (Uppsala, Sweden: Almqvist & Wiksell, 1964).

16. See Robert E. Hall, "Why Is the Unemployment Rate So High?" Appendix, pp. 397-402. A much more elaborate simulation model describing monthly transition probabilities between employment, unemployment, and lack of participation in the labor force using CPS data is now under construction at the Urban Institute. A preliminary write-up of this model and its simulation results can be found in Ralph E. Smith, "A Simulation Model of the Demographic Composition of Employment, Unemployment, and Labor Force Participation: Status Report," Working Paper 350-65 (Urban Institute, 1974; processed).

ment was negatively related to family income. Since his results pertained to the single boom year of 1966, however, there is a question whether the family's income was low because its unemployment was high, and also whether the results would hold in periods of higher overall unemployment.

Here I try to gain the advantages of both ways of looking at unemployment, by using mixed time-series and cross-section estimation. I have first estimated very simple time-series relationships using aggregate Bureau of Labor Statistics data for close proxies of the unemployment rates for the major types of family heads—adult white males; adult nonwhite males; and widowed, divorced, and separated females. These relationships determine how group unemployment rates are related to the overall rate. Then I have used the panel study data from the Michigan Survey Research Center to determine how the unemployment of individual family heads is related to—or, really, allocated within—the unemployment of their respective groups according to variables such as education, occupation, wage rates, and location. The latter equations also average out any special influences of periods of abnormally low or high demand for labor on this within-group allocation because they are based on pooled time-series–cross-section data over the entire six-year period of the panel study.

GROUP UNEMPLOYMENT RATES

The first step is to relate the unemployment rates for the three major categories of family heads to the overall national aggregate rate by very simple “bridge” equations. The equations are fitted to annual time-series observations over the 1959–73 period, with a time trend to capture the influence of secular changes in the composition of the population and in the desire to participate in the labor force.

The coefficients, presented in Table 1, reach standard conclusions. As contrasted with the overall aggregate rate, which depends to an increasing degree on rates for teenagers and women who are not family heads, all the unemployment rates for family heads decline over time—by about 1 percentage point over the fifteen-year period for adult white males, one-third of a point for females, and 5 points for blacks. The last coefficient reflects the sharp reduction in the unemployment rates for black males in the prime-age groups over the period—from 9.7 percent in 1959 when the national rate was 5.5 percent to 5.1 percent in 1972 when the national rate was 5.6 percent. It is undoubtedly related to declines in labor force partici-

Table 1. Coefficients and Statistics for Unemployment Rates (U_g) for Groups by Characteristics of Family Head, Annual Observations, 1959–73^a

Independent variable and summary statistic	Dependent variable: group unemployment rate (U_g) ^b		
	White males, 25–54	Black males, 25–54	Adult females, widowed, divorced, separated
<i>Independent variable</i>			
Constant	-0.6291 (3.2)	0.3796 (0.5)	1.0805 (2.3)
Time ^c	-0.0609 (8.4)	-0.3531 (13.5)	-0.0199 (1.2)
Aggregate unemployment rate (U) ^b	0.7781 (22.9)	1.7330 (14.1)	0.9581 (12.1)
<i>Summary statistic</i>			
R^2	0.986	0.980	0.937
Standard error	0.114	0.412	0.264
Durbin-Watson statistic	1.540	1.420	0.775

Sources: Regression results using data from *Manpower Report of the President, April 1974*. Unemployment rates for males are averages for age groups 25–34, 35–44, and 45–54, from Table A-16, and for females, from Table A-19.

a. The numbers in parentheses are *t*-ratios.

b. All unemployment rates are expressed in percentage terms.

c. 1959 = 1, 1960 = 2, . . . , 1973 = 15.

pation rates for prime-age black males of about the same magnitude. White male heads continually experience a larger share of cyclical unemployment than they do of the frictional unemployment existing at full employment, as reflected in the negative intercept. Black males did not exhibit such a relationship at the outset of the period, but do now, as the trend term makes the intercept negative in recent years. The relationship for female heads has always had a positive intercept, however, indicating that their share of cyclical unemployment is less than their share of frictional unemployment.¹⁷ Finally, the important coefficients here, $\partial U_g / \partial U$ (U_g is the group unemployment rate, U the aggregate rate) are 0.78 for white male heads, 1.73 for black male heads, and 0.96 for female heads.

INDIVIDUAL UNEMPLOYMENT RATES

The next step is to allocate this group unemployment among individuals on the basis of the Michigan panel study data. These equations are pooled

17. Perry, "Unemployment Flows," p. 259, presents results for overall male and female rates that are very close to those implied in my Table 1.

time-series-cross-section relationships for six years—1967 through 1972—for those family heads for whom there were six years of continuous data and who were in the labor force (whether employed or unemployed) in four of the six years. The gross sample size is still quite large after these exclusions—1,503 white male working family heads (or 9,018 pooled observations), 658 nonwhite male working family heads (3,948 observations), and 471 female working family heads (2,826 observations). However, as mentioned above, the exclusions raise the possibility that the total amount of unemployment suffered by family heads will be understated if those omitted from the regression because of their less stable behavior undergo disproportionate amounts of unemployment. This understatement is noticeable but small (as explored further below).

The dependent variable in these regressions is the proportion of hours spent unemployed by an individual deflated by the group unemployment rate for that year—call it U_i/U_g for the i th family head in the group. Hours unemployed came from the survey: Respondents were asked to give the number of days they spent unemployed and looking for work, temporarily laid off, or in involuntary part-time employment in the previous year. These answers were then divided by 260 to convert them to a fraction of total working days—or equivalently, of available working hours, per year. Deflating by the group rate implies that all variables have linear homogeneous effects on individual unemployment: their impact is doubled if the group unemployment rate is doubled.¹⁸ Using total hours of unemployment also means that these estimates cannot distinguish unemployment resulting from many short spells from that resulting from one long spell, a topic that has been the focus of so much recent work.

As contrasted with the official BLS unemployment statistic represented in the denominator, the sample values of hours of unemployment would be inaccurate for two offsetting reasons. On the one hand, the definition of unemployment is less strict than that in the CPS sample of households because the respondent did not have to indicate the methods he used in looking for work. On the other hand, the respondent was being asked to recall how many days he was unemployed in the preceding calendar year, a period that ended at least five months earlier. If he were not unemployed at all, he would presumably remember that pretty well. But if he were

18. I have tested this assumption by estimating alternative nonhomogeneous forms of the equations. The homogeneous equations both fit slightly better and have slightly more reasonable properties.

unemployed, he might understate the time spent in this status, and thus contribute to an overall underestimate. Since the average unemployment rates computed from this sample are approximately the same as the relevant group rates, and since they might be expected to be larger because of the disproportionate representation of low-income families here, the second bias appears to win out, resulting in a second source of understatement of total unemployment—one that also appears to be small.

These unemployment figures pose one other problem. Over the first five years of the survey, when questionnaires were administered in person and asked for rather detailed information on income and employment, the gross unweighted unemployment rate computed from the sample was approximately equal to the weighted average unemployment rate of male and female heads. In the sixth year, however, when the survey was conducted by telephone with a much briefer income and employment questionnaire, the sample unemployment rate was only two-thirds of the rate for family heads. This indicates that the telephone may itself have been responsible for additional measurement error and that the 1972 figures must be used cautiously.

The equation estimates are reported in Table 2. All three equations have the low R^2 characteristic of relationships estimated with microdata, but the samples are large enough that most independent variables are statistically significant.¹⁹ As predicted, a dummy variable for 1972 was responsible for a decline in all three relative unemployment rates in that year.

The coefficients of variables indicating educational attainment and occupational status, and that for race among females, in most cases have the expected signs and are statistically significant. The one surprise is that the middle-class occupations—craftsmen, operatives, and the like—often show an even greater cyclical incidence of unemployment than do the lower-class occupations—laborers, service workers, and farm workers.²⁰ This fact becomes important in analyzing the cyclical incidence of unemployment by permanent income status.

19. Since unemployment is a variable that cannot go below zero, and since it is zero for most observations in the sample, these equations should really be estimated by the "Tobit" procedure suggested by James Tobin, "Estimation of Relationships for Limited Dependent Variables," *Econometrica*, Vol. 26 (January 1958), pp. 24–36. There are programs for estimating relationships in this way, but I was unable to get one operating in time for the conference.

20. See also Ryscavage, "Impact of Higher Unemployment."

Table 2. Coefficients and Statistics for Individual Unemployment Rates, Working Family Heads (U_i/U_g),^a Pooled Cross-section Observations, 1967-72^b

Independent variable and summary statistic	Family head		
	White male	Black male	Female
<i>Independent variable</i>			
Constant	-1.0197 (4.2)	0.0849 (0.3)	-0.4656 (1.6)
No high school ^c	0.8931 (9.5)	0.2443 (2.0)	0.2698 (2.3)
College degree ^c	-0.0859 (0.7)	-0.3355 (1.0)	-0.2433 (1.0)
Nonwhite ^c	...	...	0.1795 (1.5)
High-paying occupation ^{c,d}	-0.3496 (2.5)	-0.8884 (3.9)	-0.0205 (0.1)
Medium-paying occupation ^{c,e}	0.1449 (1.2)	-0.4162 (3.8)	0.2755 (2.2)
Less than 25 years old ^c	f	0.1759 (0.7)	0.0592 (0.3)
Average hourly earnings (1967 dollars)	0.0376 (2.1)	0.0358 (1.2)	0.0225 (0.6)
Asset income-needs ratio ^g	f	f	f
State unemployment insurance coverage ^h	1.6556 (5.2)	0.9772 (2.5)	0.5836 (1.6)
State welfare program for male-headed families ^c	0.2484 (2.8)	f	...
State monthly public assistance benefits (1970 dollars)	...	...	f
History of frequent job change ^c	1.4655 (14.7)	1.4074 (12.7)	1.1412 (10.5)
Criminal record ^c	2.5167 (8.8)	f	0.7087 (1.4)
Child needing care ^c	...	...	0.2225 (1.5)
Not married ^c	0.2765 (1.7)	0.2317 (1.4)	...
1972 ^c	-0.5216 (4.8)	-0.2610 (2.0)	-0.1861 (1.4)
<i>Summary statistic</i>			
R^2	0.068	0.058	0.058
Standard error	3.858	3.109	2.701
Number of observations	9,017	3,945	2,825
Number of observations with some unemployment	1,074	785	396

Source: Regression results using data from University of Michigan, Survey Research Center, Panel Study of Income Dynamics.

a. U_i/U_g = ratio of the proportion of hours spent unemployed by an individual to the group unemployment rate for that year.

b. The numbers in parentheses are *t*-ratios.

c. The value of this variable is 1 if the respondent has the specified characteristic and 0 otherwise.

d. Includes professional, technical, and kindred workers; and managers, officials, and proprietors.

e. Includes clerical and sales workers; craftsmen, foremen, and kindred workers; and operatives.

f. Tried and rejected because of statistical insignificance or inappropriate sign.

g. Includes all monetary income of head and wife from assets and imputed rent on homeowner's equity, deflated by the poverty threshold for the family.

h. Ratio of covered to total unemployment rate in the state.

The coefficient of age in these regressions is much less than would be observed in aggregate statistics. Most studies indicate that unemployment rates for workers aged 18 to 25 are several times those for older workers of the same sex and race, but these estimates indicate that among family heads their rates are barely higher for black males and females and not at all different for white males. Coefficients for age cannot be estimated very precisely in this sample because so few family heads are under 25 (none were under 18 in 1968 and, for the most part, they have aged at the usual rate).²¹ Nonetheless, they do indicate that young workers who are family heads do not have nearly the vulnerability to unemployment of young workers without family responsibilities.

The equations also contain two variables from the labor-supply literature. Higher asset income relative to needs, a proxy for nonlabor wealth, did not, as might have been expected, allow people to sustain longer periods of search unemployment. But those with higher real-wage rates did display slightly higher relative unemployment rates. This association could arise because, other things equal, higher-wage workers take longer to find new jobs, or because, as Hall has theorized, higher wages compensate workers for higher probabilities of unemployment in certain industries (like construction) and certain cities (like San Francisco).²²

21. Unfortunately, a stronger statement cannot be made. One of the great problems of microdata is response or coding errors, and these are present in the Michigan panel study data. The youngest household head in the sample, for example, was 18 in 1968, 19 in 1969, 20 in 1970, and then he found the fountain of youth, becoming 9 in 1971. The fact that none of the observation totals in Table 2 is divisible by 6 indicates that at least one family head changed sexes and another one changed races during the six-year period. I also noticed that one person was unemployed 2,700 hours in 1967 (term it moonlighting unemployment), another worked an average of 100 hours a week on his *second* job, and still another was even more successful at burning the candle, or the calendar, at both ends—he worked 99 weeks a year on his second job. By checking for outliers, I was able to constrain most of these responses to more realistic values, but there is no possible way of eliminating all such errors.

22. See Hall, “Why Is the Unemployment Rate So High?” and also, Robert E. Hall, “Turnover in the Labor Force,” *BPEA* (3:1972), pp. 709–56. The unemployment regressions in the appendix to the first paper do not support Hall’s positive relationship between wages and unemployment, probably because he includes a series of city dummies.

When the wage was replaced with a detrended version (average hourly earnings deflated by overall wages instead of prices), the equation was virtually identical. This means that variations in wage rates, and not the trend growth, are responsible for the significant coefficient.

The next variable refers to the unemployment insurance program of a worker's state. Even though the programs should be quite similar from state to state—all states provide at least 50 percent of previous earnings up to a maximum and the definitions of covered and uncovered industries are standard—there is a surprisingly large variation in coverage. In Massachusetts and California the ratio of the covered jobless rate to the total unemployment rate is 85 percent; in Virginia it is only 35 percent.²³ The variation can be explained partly by industrial differences among states; partly by varying interpretations of eligibility (minimum base earnings, minimum number of weeks and quarters worked, initial waiting periods, and maximum duration of benefits); and no doubt partly by the fact that state policy itself may be influenced by the incidence of unemployment. If differences in unemployment insurance coverage are due to the first two causes, the positive coefficients in Table 2 confirm a hypothesis, recently advanced by Feldstein, that unemployment insurance does affect unemployment rates.²⁴ Under this interpretation the average unemployment rate in Massachusetts should be higher than that in Virginia by about 40 percent of the national rate, other things equal. If, on the other hand, state policy is influenced by the existence or character of unemployment in that state, the coefficients are biased upwards.

Whatever the case, the impact of welfare programs on unemployment rates is not nearly so strong. For male heads, a categorical dummy variable was included to indicate the twenty-three states now having the unemployed-parent segment of the Aid to Families with Dependent Children program (known as AFDC-UP), which pays benefits to families with male heads only if the husband works less than 100 hours a month (thus remaining unemployed some part of the time). In these states the unemployment rates for white male heads are higher than the national rate by only about 15 percent, while those for black male heads are not at all higher. Moreover, for female heads the level of public assistance benefits, a proxy for the

23. See Nancy H. Teeters, "Built-in Flexibility of Federal Expenditures," *BPEA* (3:1971), pp. 621ff., for a discussion.

24. See Feldstein, "Economics of the New Unemployment." Some empirical work on this topic reaching similar conclusions can be found in Arlene Holen and Stanley A. Horowitz, "The Effect of Unemployment Insurance Laws and Administration on Unemployment Rates," Department of Labor Technical Analysis Paper 7 (U.S. Department of Labor, Office of Evaluation, 1973; processed).

generosity of the state's AFDC program, seems to have no impact at all on unemployment.

The final set of variables corrects for various personal characteristics that might influence an individual's unemployment. The most important of these was the degree of job- or occupation-switching during the individual's lifetime. The strong effect of this variable is not surprising since it would be expected to be closely related to abnormal amounts of unemployment and may not be a true causal variable.²⁵ The only other noteworthy finding is that a criminal record makes it harder for white males to find employment, but not for black males. Maybe blacks are already treated as if they had criminal records.

IMPLICATIONS OF THE REGRESSION RESULTS

These two sets of results can be combined to relate individual unemployment to the aggregate rate. For each category of age, race, education, and occupation, I have simply used the equations reported in Table 2 to compute the appropriate U_i/U_o , holding all other variables at their mean. Multiplying by the relevant estimate of $\partial U_o/\partial U$, from Table 1, gives an estimate for $\partial U_i/\partial U$.

The weighted average cyclical sensitivity of unemployment for all groups in this sample is about 0.9—indicating that in terms of percentage-point changes, the unemployment of family heads is less responsive to changes in the overall rate than the unemployment of nonheads. Although this result is consistent with—indeed, controlled by—the time-series relationships of Table 1, it may be somewhat below the expected level in this sample with its disproportionate representation of low-income families. The precise degree of understatement cannot be estimated without some information about the response of unemployment of secondary workers to cyclical movements. However, I have estimated below that there is about a 20 percent understatement of cyclical losses in earnings.

Even though the overall response of unemployment may be slightly understated, the distributional patterns should still be fairly accurate. Being

25. The variable was unity whenever the person had changed jobs more than twice during the previous five years (as about 30 percent of the regression sample had done). Since there was a risk of simultaneous-equations bias, I tried alternative equations with this variable omitted. The important coefficients do not differ much.

black makes a male family head much more cyclically sensitive to unemployment than his white counterpart—more than doubly so in most categories—but has a much smaller effect for female heads. Age makes little difference for family heads of any category. Invariably, the more education, the less the incidence of unemployment; but higher occupational status does not necessarily mean greater immunity to joblessness—at least as between low- and middle-class occupations.

CYCLICAL UNEMPLOYMENT AND PERMANENT ECONOMIC WELL-BEING

These results have identified the incidence of cyclical unemployment by race, education, and occupation, but not by family income. To do this requires applying the results to average values of these categories for families at different points in the income distribution. In this section I perform these manipulations, arraying families not by annual income but by a superior measure, which I will term their permanent economic well-being.

The usual standard for measuring distributional influences is the annual personal income of families. While this standard may be adequate for some purposes, it has a number of theoretical and practical deficiencies as a measure of economic well-being—at least some of which are correctable. One of the more obvious is adjustment for different levels of necessary consumption when family sizes differ. Since family size has a slight negative correlation with family personal income, distributional statistics based on gross personal income somewhat overstate the equality of distribution of economic well-being.²⁶ This deficiency can be corrected by dividing each family's income by the federal government's poverty standard for a family of that size and location, hence expressing income in terms of "needs" units.

A second problem is that family income is defined on an annual basis. Partly because of the well-known transitory component of income and partly because of an even greater variation in the family's needs standard, the membership of various economic classes is very fluid. In an average year covered by this panel survey, almost one-third of those in the poverty population left it and almost as many entered it. Over the course of six

26. This result comes from tabulations of the panel survey data. Average need falls from about \$4,400 (in 1970 dollars) at the poverty line to about \$2,950 when income is five times the poverty line.

years roughly 60 percent of those initially listed as poor became nonpoor, with their places taken by others who initially were not poor.²⁷ Though the notion of chronic poverty is not as overstated as the notion of chronic unemployment, surprisingly widespread changes in status do take place at the bottom end of the income distribution.

These rapid changes in annual income mean that computing the income distribution and counting the numbers of poor people on the basis of one year's income would understate the equality of the distribution of economic well-being, because the lower-income groups in any one year would contain many who suffered transitory declines. A better measure therefore is the average ratio of income to needs for the entire six-year period. When this is computed the size of the "permanent" poverty population is about 12 percent smaller than average levels prevailing in recent years.²⁸

To return to cyclical unemployment, the regressions described in Tables 1 and 2 provide estimates of the sensitivity of hours unemployed for groups of different ages, educational levels, occupations, and so forth, to movements in the overall unemployment rate. I then constructed six-year averages of the family's ratio of income to needs, of the age, occupation, and wage rate of head, and of other variables, for all families with continuous data in the panel longitudinal survey. These values were then averaged for all families of different types and classes of income-needs ratios (white families with male heads and six-year average income-needs ratios between 0 and 0.5, 0.5 and 1.0, 1.0 and 1.5, and so on). Applying the unemployment-sensitivity coefficients of the upper panels of Table 3 to the average age, education, and occupation of members of various classes of income-needs ratios gives the cyclical sensitivity of unemployment by these classes. These sensitivity coefficients are presented for average income-needs ratios of 1.0, 3.0, and 5.0 in the bottom three lines of Table 3.²⁹

27. See HEW, "The Changing Economic Status of 5000 American Families," p. 11; and Kelly, "Factors Affecting Poverty," p. 24.

28. The weighted annual poverty counts for the Panel Study of Income Dynamics are always about 30 percent below those based on the Current Population Survey. This discrepancy could be due to the fact that the panel's income reporting is better, or it could be because the sample is smaller and may have been biased by attrition to a degree that even weighting cannot correct. The average poverty population is then another 12 percent below that measured on an annual basis in the panel survey, or 40 percent below the CPS total. See HEW, "Changing Economic Status," pp. 12-15.

29. Since many are accustomed to unemployment rates expressed in terms of male-female, black-white breakdowns, for Table 3 I used the racial dummy on females of

Table 3. Response of Unemployment Rate of Family Head to Movements in Overall Rate ($\partial U_i/\partial U$), by Selected Characteristics of Head

<i>Characteristic</i>	<i>Male family head</i>		<i>Female family head</i>	
	<i>White</i>	<i>Black</i>	<i>White</i>	<i>Black</i>
Total	0.818	1.927	0.714	0.886
<i>Age of head</i>				
Under 25	0.818	2.217	0.767	0.939
Over 25	0.818	1.911	0.711	0.883
<i>Education of head</i>				
No high school degree	1.276	2.062	0.853	1.025
High school degree but no college degree	0.581	1.639	0.594	0.766
College degree	0.514	1.057	0.361	0.533
<i>Occupation of head</i>				
Low-paying	0.861	2.433	0.620	0.792
Medium-paying	0.974	1.712	0.884	1.056
High-paying	0.590	0.892	0.601	0.777
<i>Average family income</i>				
At poverty line	1.311	2.140	0.704	0.948
Three times poverty line	0.877	1.635	0.635	0.879
Five times poverty line	0.652	1.307	0.538	0.782

Sources: Derived from regressions in Tables 1 and 2. $\partial U_i/\partial U$ is calculated by multiplying $\partial U_i/\partial U_o$ from Table 2 by $\partial U_o/\partial U$ from Table 1. The former responses are evaluated for 1967-71.

For all groups, sensitivity to movements in the unemployment rate declines with economic well-being, implying that high-income people are less susceptible to cyclical unemployment. They are not totally immune, however. The unemployment rate for poor white male heads is estimated to rise by 1.31 percentage points for a 1 percentage point change in the national rate—twice the rise in the unemployment rate experienced by white males with an average income of five times the needs standard (about \$22,500 in 1973 for a family of four). For black males the sensitivity at low income is about 1.6 times that at high income; for females it is even less than that. One force that holds down all ratios, as intimated above, is that medium-paying occupations generally display relatively large swings in unemployment, and these occupations are heavily represented in upper-

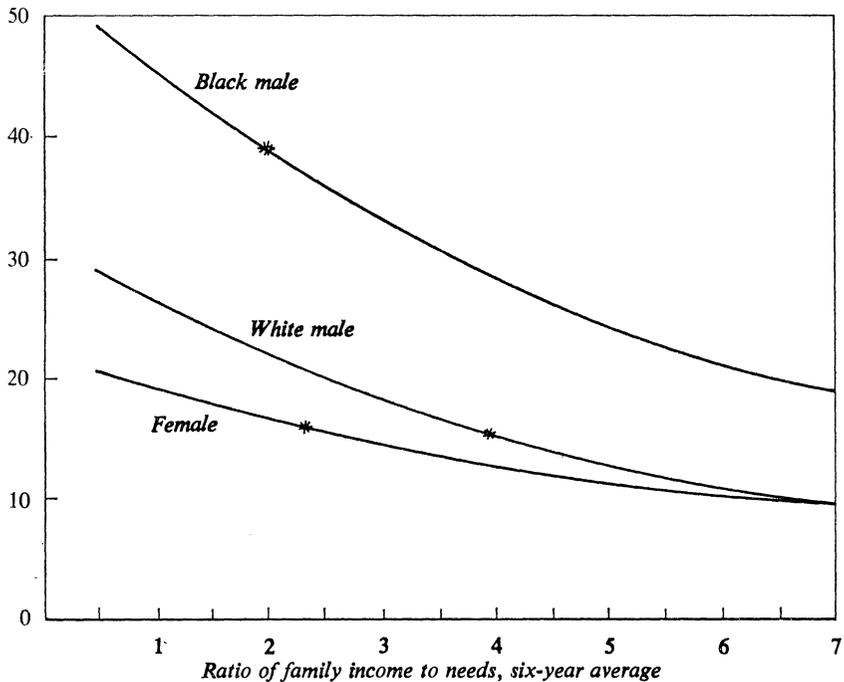
Table 2 to present the results in terms of these four family types. All subsequent calculations treat families headed by females as a group.

income classes. Further, for white males, a college degree seems to influence the sensitivity to unemployment only modestly.

These results are also presented graphically in Figure 1. The figure, which standardizes the cyclical impact by putting it in terms of annual loss of working hours due to a 1 percentage point increase in the unemployment rate (everybody starts with 2,080 hours a year), indicates that (1) the percentage losses of working time decline with economic well-being for all three groups; and (2) at any level of well-being, families with male heads fare worse than those with female heads and families with black male heads worse than those with white male heads. The greater cyclical sensitivity of blacks to unemployment, relative to whites, is then due partly to the fact

Figure 1. Annual Loss in Working Hours of Family Head, by Color and Sex, Due to a 1 Percentage Point Increase in the Unemployment Rate, by Six-Year Average of Family Income-Needs Ratio

Annual loss in head's working hours



Sources: Tables 1 and 2, and tabulations from the Panel Study of Income Dynamics, University of Michigan, Survey Research Center.

Note: Asterisk denotes mean income-needs ratio of the sample.

that the whole schedule is higher, and partly to the fact that mean black income (denoted on the figure by an asterisk) is lower.

Other Earned Income

The direct unemployment of family heads discussed above accounts for only one portion of the loss in total work hours accompanying any change in the overall unemployment rate. In addition, changes occur in the hours worked by family heads who remain employed, and also in the labor force participation and hours worked by family members other than the head. In this section I consider these effects.

WORK HOURS OF FAMILY HEADS

Up to now little work has been done on the distributional impact of cyclical losses in hours worked of workers who remain employed. Time-series studies have focused on the aggregate decline in average hours worked, while cross-section studies of labor supply have covered only one year and have not decomposed the labor-supply response into changes in hours and participation rates. But Schweitzer and Smith have recently completed one paper which indirectly addresses this question.³⁰ Using data from the same University of Michigan panel survey of households, they fitted a cross-section equation explaining hours worked for family heads of various demographic types. One independent variable was the proportion of the head's hours spent unemployed, used as a proxy for induced cyclical declines in hours. They find some negative impact of unemployment in the current year on hours worked and an even stronger impact of unemployment lagged two years (unemployment lagged one year had insignificant effects). The Schweitzer-Smith results imply that hours employed (hours in labor force less hours unemployed) decrease by 1.51 times the increase in hours unemployed for white male family heads; by 1.33 times the hours unemployed for black male heads, and by 1.25 times the hours unemployed for females. The weighted average estimate of 1.40—a reduction in employed manhours of 40 percent more than the

30. Stuart O. Schweitzer and Ralph E. Smith, "The Persistence of the Discouraged Worker Effect," *Industrial and Labor Relations Review*, Vol. 27 (January 1974), pp. 249-60.

direct reduction due to unemployment—is close to the aggregate calculation of Perry.³¹ Although the percentage response is larger for white male family heads, the absolute change in hours worked is roughly the same as for blacks because their cyclical movement in hours unemployed is larger.

SECONDARY EARNINGS

Two long-established empirical findings bear on the response of secondary earners to swings in the head's labor income, and they suggest different results. On the one hand, studies of household behavior based on micro data have indicated that wives and other secondary earners respond to declines in the labor income of family heads by increasing their own participation and hours.³² At the same time, aggregate time-series studies have reported convincingly that overall labor force participation and employment rates of youths and females respond procyclically to movements in labor demand.³³ The apparent inconsistency can be resolved only if the participation of members of families whose head does not become unemployed decreases enough to offset the increased participation in families whose head has become unemployed.

I have tried to deal with these and related questions through another set of pooled cross-section–time-series regressions. For simplicity, these regres-

31. Perry, "Labor Force Structure," p. 542. See also Gordon, "Welfare Cost," p. 163. The specific equations used in these comparisons came from Schweitzer and Smith, "Discouraged Worker," Table 5, p. 259.

32. See Glen G. Cain and Harold W. Watts (eds.), *Income Maintenance and Labor Supply: Econometric Studies* (Markham Press, 1973), Chap. 9, for a convenient summary of labor supply results for wives. A more thorough discussion of the question of wives' participation can be found in Jacob Mincer, "Labor Force Participation of Married Women," in *Aspects of Labor Economics*, A Conference of the Universities-National Bureau Committee for Economic Research (Princeton University Press for the National Bureau of Economic Research, 1962); and Glen G. Cain, *Married Women in the Labor Force: An Economic Analysis* (University of Chicago Press, 1966).

33. Perry, "Labor Force Structure," Appendix. Smith, using CPS gross-flow data, advances a very simple explanation for this discouraged-worker phenomenon: unemployed people are more likely to drop out of the labor force, and there are more of them in a recession. See Ralph E. Smith, "The Discouraged Worker in a Full Employment Economy," in American Statistical Association, *Proceedings of the Business and Economic Statistics Section, 1973* (1974), pp. 210–25. A contrary view, which explains cycles in labor force participation of females in terms of real and relative wage rates instead of unemployment, is given by Michael L. Wachter, "A Labor Supply Model for Secondary Workers," *Review of Economics and Statistics*, Vol. 54 (May 1972), pp. 141–51.

sions directly explain the total secondary earnings of the family, without going into the complex interactions between participation and hours decisions of various family members. Another, and much more practical, reason for explaining earnings is that good longitudinal data on the behavior of secondary earners are unavailable; the panel study contains a complete time series only for the taxable income (labor and asset income combined) of earners other than the wife, an incomplete time series for the hours worked by these other earners, and no information at all on their average hourly earnings.

The form of the equations is basically that of a labor-supply function, modified to include macroeconomic influences and to account for the fact that the dependent variable is earnings and not hours. The dependent variable is scaled by the family's poverty threshold to adjust for the time-series effect of increasing price levels and the cross-section effect of different family sizes. The expected negative influence of economic conditions on these secondary earnings for both wives and teenagers is represented by the overall unemployment rate, and the expected positive influence of individual unemployment by the head's loss of wage income due to unemployment, again deflated by needs. The latter term is entered quadratically to see if the response to the head's unemployment is nonlinear. The sum of the asset income of the family and the husband's labor income, deflated by needs, is used as another variable to capture both the income effect of demand for leisure time and any other positive correlation between husbands' and wives' incomes. A time trend accounts for the secular increase in the propensity of women to work over the period. A dummy variable for 1972 is designed to measure any greater underreporting of secondary income in 1972, when the survey was conducted by telephone. And finally, there is a set of family variables, both demographic (age, presence of earners besides the wife, presence of children under age 6) and economic (wage rates, state unemployment insurance coverage).

The equations come out sensibly in many, but not in all, respects (see Table 4). That for black males works best, with every relevant independent variable working well and a surprisingly high (for micro data) R^2 of 0.52. The equation for white males works well except that the direct measures of the wife's real wage rate and proxies for it (occupational dummies) led to incorrect signs for the overall unemployment rate and hence were dropped from the equation. No wage-rate measures are available for secondary earners (mainly teenagers) in families with female heads, but there the overall unemployment rate did not have the anticipated sign anyhow.

Table 4. Coefficients and Statistics for Secondary Earnings-Needs Ratio in Families with Working Head, Pooled Cross-section Observations, 1967-72^a

<i>Independent variable and summary statistic</i>	<i>Family head</i>		
	<i>White male</i>	<i>Black male</i>	<i>Female</i>
<i>Independent variable</i>			
Constant	1.5260 (10.0)	0.8860 (7.0)	-0.1559 (1.2)
Aggregate unemployment rate ^b 1972 ^d	-1.2080 (0.6)	-1.1408 (0.7)	°
Time ^e	0.0234 (1.7)	0.0230 (2.1)	°
Ratio of asset plus labor income to needs ^f	0.0204 (5.5)	0.1248 (19.8)	0.1058 (17.9)
Ratio of loss in wages of head to needs ^g	0.0717 (1.6)	0.1415 (3.3)	0.2449 (4.6)
Square of ratio of loss in wages of head to needs	-0.0020 (1.8)	-0.0108 (2.7)	-0.0388 (4.4)
Head's age	-0.0420 (7.0)	-0.0412 (7.9)	-0.0054 (0.9)
Square of head's age	0.0004 (6.3)	0.0005 (8.4)	0.0007 (1.2)
Family saving equivalent to 2 months' income ^d	0.1843 (8.4)	0.0199 (1.2)	°
Secondary earners other than wife ^d	0.3486 (15.1)	0.2857 (16.1)	0.6591 (31.8)
Child needing care ^d	-0.4125 (16.4)	-0.1211 (7.2)	°
Wife with high-paying occupation ^d	°	0.4184 (9.6)	...
Wife with medium-paying occupation ^d	°	0.2027 (9.2)	...
Nonwhite ^d	...	...	0.1367 (5.7)
Wife's average hourly earnings (1967 dollars)	°	0.2557 (31.0)	...
State unemployment insurance coverage ^h	-0.1334 (1.9)	-0.3333 (5.7)	-0.1171 (1.7)
<i>Summary statistic</i>			
R ²	0.089	0.519	0.339
Standard error	0.875	0.444	0.507
Number of observations ⁱ	8,408	3,509	2,825
Number of observations with some secondary earnings	5,255	2,319	814

Source: Basic data are from the source cited in Table 2.

a. The numbers in parentheses are *t*-ratios.

b. Expressed as a decimal.

c. Tried and rejected because of statistical insignificance, inappropriate sign, or inappropriate sign on some other variable.

d. The value of this variable is 1 if the observation has the specified characteristic and 0 otherwise.

e. 1967 = 1, 1968 = 2, . . . , 1972 = 6.

f. Asset income is defined as in Table 2, note *g*.

g. Hours unemployed times money wage rate, deflated by poverty threshold.

h. Ratio of state covered to total unemployment rate.

i. The number for families with male heads is less than that in Table 2 because all nonmarried families are excluded.

Beginning with the head's unemployment, the equations indicate that secondary earners do work somewhat more when the head becomes unemployed, but not very much: for families with male heads, extra efforts by secondary workers recover less than 3 percent of the drop in the head's earned income; for families with female heads, the figure is 11 percent. The quadratic terms indicate statistically significant, but very slight, reductions in even this small response as the variable increases, probably because upper-income families (whose wages are larger relative to their needs) feel less urgency about recovering the income loss. The coefficients for state unemployment insurance programs again have surprisingly strong effects on reducing secondary earnings. The influence of the business cycle is perceptible but relatively weak: a rise of 1 percentage point in the aggregate unemployment rate lowers secondary earnings in families with white male heads by 2 percent, in families with black male heads by 3 percent, and in families with female heads not at all. The weighted average of responses of secondary earnings of all three groups is about 70 percent of the income loss due to the direct unemployment of the family head, roughly the same as would be implied by Perry's aggregative calculations.³⁴

Those who are familiar with the labor-supply literature will notice many "unexpected" signs, each of which can be rationalized in terms of the peculiar nature of the dependent variable: First, the age quadratic shows that the response of secondary earnings to age rises with the age of the family head—because as the head ages, the children do, and thus the wife is freer to go to work and the children become able to do so. Second, saving is associated with higher secondary earnings—because it may be some sort of a proxy for the wage rate of the wife, and because the asset income of other earners unfortunately cannot be expunged from the dependent variable. Third, secondary earnings are positively related to husband's labor income and asset income—because the income elasticity of demand for leisure time is swamped by the fact that asset income may also be a proxy

34. The judgment that this response is roughly correct arises from the following reasoning: Perry's calculations, conveniently summarized in Gordon's Table 3 in "Welfare Cost" (p. 163), indicate that the loss of income due to lack of participation is about half that due to direct unemployment. Although this is less than I find here, because I treat the direct unemployment of secondary workers as a secondary earnings loss, my greater impact is reasonable. My results also imply that certain groups, such as low-income families headed by males, suffer very large proportionate declines in secondary earnings, a fact that becomes important in the section on transfers below.

for the wife's wage rate, for past secondary earnings, and even for the impact of the business cycle.

LOSSES IN EARNED INCOME DUE TO HIGHER UNEMPLOYMENT

These influences can now be summarized by examining the impact of overall unemployment conditions on the earnings for families at different points in the distribution of permanent income. This impact can be determined for each family type and each class of average income-needs ratios through the following model.

(1) Unemployment of head:

$$\Delta \frac{HU}{2080} = a_1 \Delta U,$$

where HU is the head's hours unemployed, and U is the overall unemployment rate. Estimates of a_1 for three values of the income-needs ratio are given in the last three lines of Table 3.

(2) Labor income of head:

$$\Delta HY = a_2 \Delta (W \cdot HU),$$

where HY is the head's labor income and W is the six-year average of hourly earnings in the appropriate income-needs class. The scale factor a_2 adjusts for the fact that hours unemployed lead to even greater percentage changes in hours worked. The Schweitzer-Smith estimates listed above are used for this coefficient.

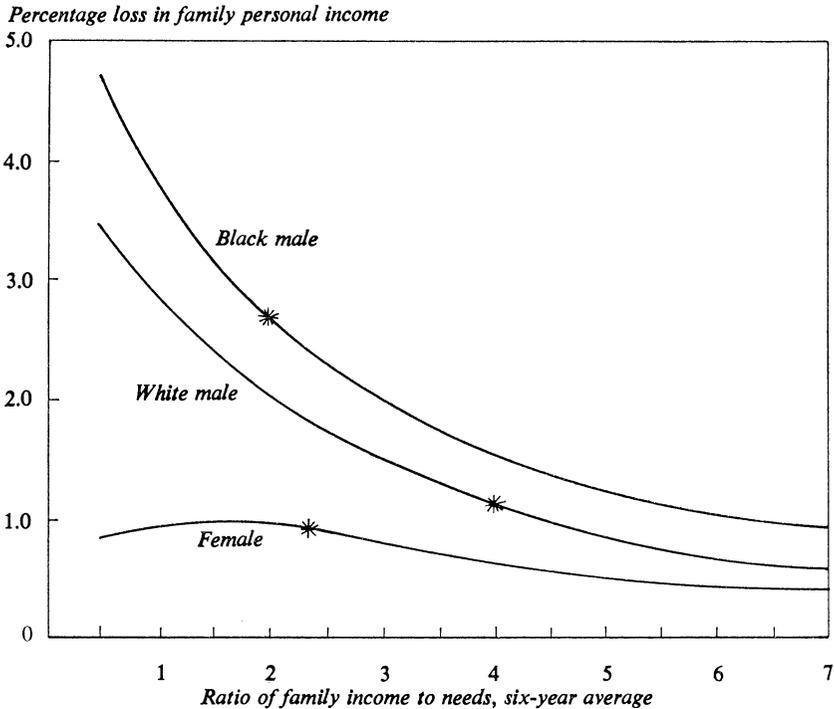
(3) Secondary earnings:

$$\Delta \frac{SE}{N} = b_1 \Delta \frac{HY}{N} + b_2 \Delta \frac{(W \cdot HU)}{N} - b_3 \Delta U,$$

where SE is total secondary earnings, and N is family needs. The b_i coefficients for the three family types are those listed in Table 4: b_1 is the coefficient for asset plus labor income relative to needs (since asset income is constant, the only relevant change is that in head's labor income); b_2 is the coefficient for loss in wages relative to needs, with the quadratic effect included; and b_3 is the coefficient for the aggregate unemployment rate.

The results of these calculations are presented in Figure 2, in terms of the percentage loss of family income due to an increase of 1 percentage

Figure 2. Percentage Loss in Family Personal Income, Excluding Changes in Transfer Payments, Due to a 1 Percentage Point Increase in the Unemployment Rate, by Color and Sex of Head, and by Six-Year Average of Family Income-Needs Ratio



Sources: Tables 1, 2, and 4, and tabulations from the Panel Study of Income Dynamics.
 Note: Asterisk denotes mean income-needs ratio of the sample.

point in the unemployment rate. Notice first that the overall average loss is 1.2 percent, which is below most estimates of the cyclical impact of rising unemployment on aggregate incomes. The comparison is not valid for two reasons, however. First, the cyclical estimate of a 2.7 percent decline in income accompanying every 1 point increase in the unemployment rate includes 0.9 point due to higher productivity, which goes either into corporate profits and dividends or higher wages for employed workers and is therefore above and beyond the relationships I deal with. Once this component is deducted, the cyclical decrease due to losses in manhours alone is 1.8 percent. Second, my calculations are based on total family personal income, roughly 15 percent of which is made up of nonlabor

income (transfer payments and income from assets). If the labor earnings of all working families were to decline by 1.8 percent due to losses in man-hours, in line with the aggregate calculations above, their family personal income would decline by 1.5 percent. Thus the numbers presented in Figure 2 account for about 80 percent (1.2/1.5) of the cyclical loss in income, with the understatement being attributable to the various statistical problems mentioned earlier—explicit and implicit attrition in the sample, measurement error in recalling unemployment, and the fact that the responses of secondary earnings estimated in Table 4 may be weaker than they should be.

The distributional conclusions are much the same as those arising from Figure 1, where only the absolute loss in head's hours was measured. One important difference is that the curve for families with female heads is now much flatter, because the labor income of poor families of this type is a small enough part of personal income that even sizable declines in hours worked induce only relatively small percentage declines in income. Increases in overall unemployment are now seen to result in slightly larger percentage losses of income for middle-income families with female heads than for either poor or rich ones. A second difference is that the disparity between the curves for white and black families at any income level has narrowed, partly because the percentage response in the head's work hours is greater at all income levels for whites, partly because the responses of secondary earners are quite similar. However, the labor income of families with black male heads still declines more than twice as much, in percentage terms, as that of families with white male heads because mean income is much lower for blacks.³⁵

Transfer Payments

Many have argued that business cycles are much less damaging to people now than in the past because of the rapid growth in governmental transfer programs. Others have argued that despite their growth, most transfer programs are still not fully comprehensive and that many do not even serve all who are eligible. Thus a systematic examination of whether trans-

35. This finding is borne out by the curves in Figure 1 and also by Richard B. Freeman, "Changes in the Labor Market for Black Americans, 1948-72," *BPEA* (1:1973), pp. 76-77.

fer programs do in fact protect households against the damages of business cycles is in order.

This section discusses the protection afforded by five different types of programs covered in the Panel Study of Income Dynamics: (1) unemployment benefits; (2) AFDC benefits; (3) the bonus value of food stamps; (4) the portion of social security that benefits the nonaged, primarily payments to the disabled; (5) all other public and private transfer payments, including private pension benefits, help from relatives, alimony, and child support.³⁶ Using the Michigan data in regression analysis, I have estimated the aggregate responsiveness of the various transfers to changes in economic conditions. Since public transfers of all kinds have expanded markedly over the six-year period 1967–72, all the relationships are estimated only for 1971, the latest year in which complete data taken by personal interview are available. Furthermore, because the results pertain to the nonaged population, all families whose head was older than 65 were dropped from the sample.

The main problem in using household data to describe transfer programs is underreporting of income. There are no statistics on the degree of underreporting from the Panel Study of Income Dynamics, but the Current Population Survey, which asks similar questions, finds these reporting percentages:³⁷

Unemployment benefits	66
Public assistance benefits (including AFDC)	70
Food stamp benefits	80
Social security benefits	90

The panel study percentages should be higher because the longitudinal nature of the survey should improve the quality of the information in the later years. Moreover, as is mentioned in note 28 above, standard definitions of income and family needs lead to somewhat higher incomes, and

36. Private transfers are simply exchanges of money within the household sector and would not normally be considered transfers. However, the Michigan panel data are recorded in such a way that it is impossible to distinguish these payments from other governmental and business transfer payments.

37. See *Current Population Reports*, "Money Income in 1972 of Families and Persons in the United States," Series P-60, No. 90 (1973), p. 25. For food stamps see *The Social and Economic Status of the Black Population in the United States, 1973*, Series P-23, No. 48 (1974), p. 22.

fewer numbers of poor people, at the bottom of the distribution. Nevertheless, there undoubtedly remains some underestimate of transfer responses due to underreporting.

UNEMPLOYMENT INSURANCE

According to Feldstein, workers who are covered by unemployment insurance are covered very well indeed—some with benefits that exceed their income from their work.³⁸ To the extent that this is true, the unemployment insurance system is so responsive to declines in labor income that workers may have little incentive to find jobs. At the same time unemployment insurance does not benefit those who work in uncovered occupations, those who have not worked long enough to qualify for benefits, or those who have been unemployed for more than the maximum covered twenty-six weeks (thirty-nine in a recession). Moreover, unemployment insurance could be expected to provide little protection against income declines resulting from losses in overtime hours and secondary earnings, which as noted above are responsible for much of the loss in labor income for families with male heads.

To know how unemployment benefits respond to losses in earned income requires knowing how they respond to losses in wages due to unemployment, and then how lost wages are related to losses in total earned income. The first relationship is evaluated through a regression of the form:

$$(4) \quad \frac{T_1}{N} = c_0 + c_1 \left(\frac{W \cdot HU}{N} \right) (SUIC) + c_2 \left(\frac{W \cdot HU}{N} \right) (SUIC) \left(\frac{Y}{N} \right),$$

where T_1 stands for unemployment benefits, $SUIC$ is the ratio of covered to total unemployment rates in the state, and Y is family income excluding transfers ($HY + SE +$ asset income), or pretransfer income. The equation allows benefits to respond to lost wages more, the more comprehensive is the state program, and also in a nonlinear way as income changes. The coefficient estimates in Table 5 indicate that for families with male heads responsiveness declines as family income rises, while for families with female heads it increases with family income. The response of benefits to

38. The most complete statement of this position can be found in Martin S. Feldstein, "Unemployment Compensation: Adverse Incentives and Distributional Anomalies," *National Tax Journal*, Vol. 27 (June 1974), pp. 231-44.

wages lost due to unemployment can be computed from this equation, evaluated at the mean of *SUIC*. To insure homogeneity, the relationship is transformed as follows:³⁹

$$(5) \quad \frac{\partial T_1}{\partial(W \cdot HU)} = \frac{T_1}{(W \cdot HU)} = \frac{c_0 N}{(W \cdot HU)} + c_1(SUIC) + c_2(SUIC) \frac{Y}{N}.$$

Values for benefits relative to wages lost due to unemployment given by this technique are also shown in Table 5. They indicate that even though some people may be covered very well, the ratios of benefits to lost wages are only in the range from 24 percent to 13 percent (depending on the income-needs ratio) for families with male heads and from 23 percent to 18 percent for families with female heads. These low percentages are attributable both to the fact that many unemployed persons are not covered and to the fact that the ratios of benefits to lost wages are low even for those who are covered (see the last two lines of Table 5).⁴⁰

The second reason for incomplete protection by unemployment insurance is that it deals only with losses in labor income resulting from direct unemployment. The aggregate degree of cushioning can be obtained by multiplying the above relationship involving wages lost due to unemployment by a factor indicating that direct unemployment is only one source of income loss, as is implicit in equations (2) and (3):

$$(6) \quad \frac{\partial T_1}{\partial Y} = \left(\frac{\partial T_1}{\partial(W \cdot HU)} \right) \left(\frac{\partial(W \cdot HU)}{\partial Y} \right).$$

The numbers resulting from these operations are even lower than those in Table 5. They are given in the first three rows of Table 10, which sum-

39. A neater way to insure homogeneity would have been to estimate equation (4) without an intercept. Whenever I tried, however, using forms where the equation was multiplied through by N (with $c_0 = 0$) and another form where it was divided through by $(W \cdot HU)/N$, the coefficients implied predicted benefits below averages for the sample by unreasonable amounts. My technique basically reproduces sample averages (see note c to Table 5), with slight differential effects due to income and family size.

40. All numbers are understated because of the underreporting of transfer income. By way of illustration, sample surveys of unemployment insurance recipients indicate that in 1969, 77 percent of unemployed adult men and 57 percent of unemployed adult women (nonheads as well as heads) drew benefits. See Gloria P. Green, "Measuring Total and State Insured Unemployment," *Monthly Labor Review*, Vol. 94 (June 1971), p. 40. The coverage figures in Table 5 thus seem about 30 percent low for male family heads, roughly consistent with the underreporting percentages listed above. However, even if $T_1/(W \cdot HU)$ were increased proportionately to eliminate underreporting bias, the basic conclusions regarding unemployment insurance would remain true.

Table 5. Coefficients and Statistics Showing Impact of Unemployment Insurance Benefits in Relation to Needs, by Sex of Family Head, 1971^a

Description ^b	Family head	
	Male	Female
<i>Independent variable</i>		
Constant	0.0121 (7.8)	0.0096 (2.6)
(<i>SUIC</i>) ($W \cdot HU/N$)	0.1901 (14.1)	0.0032 (0.1)
(<i>SUIC</i>) ($W \cdot HU/N$) (Y/N)	-0.0438 (12.1)	0.0366 (2.3)
<i>Summary statistic</i>		
R^2	0.146	0.019
Standard error	0.073	0.098
<i>Implied value of ratio of unemployment benefits to ($W \cdot HU$),^c by ratio of pretransfer family income to needs, Y/N</i>		
1.0	0.240	0.231
3.0	0.206	0.179
5.0	0.127	0.204
<i>Beneficiaries as a percent of unemployed heads</i>		
For $Y/N \leq 1.5$	0.342	0.183
For $Y/N > 1.5$	0.612	0.300
<i>Benefits per recipient as a proportion of wages lost due to unemployment</i>		
For $Y/N \leq 1.5$	0.649	0.650
For $Y/N > 1.5$	0.317	0.352

Source: Derived from data in the Panel Study of Income Dynamics for 1971.

a. The numbers in parentheses are *t*-ratios.

b. *SUIC* = ratio of covered to total unemployment rates in state

W = average hourly earnings in the appropriate income-needs class

HU = head's hours unemployed

N = family needs

Y = pretransfer family income.

c. In the text I describe a procedure for replacing the marginal coefficient $\partial T_1 / \partial (W \cdot HU)$ with the average $T_1 / (W \cdot HU)$ in computing the cushioning effect, where T_1 is unemployment benefits. If this procedure had not been followed and only the marginal coefficients had been used, the cyclical cushioning impact of unemployment insurance would have been much smaller: the marginal coefficients would have been between 0.10 and -0.02 for male-headed families and between 0.03 and 0.13 for female-headed families. The values shown here are much closer to the product of beneficiaries as a percent of the unemployed and benefits per recipient, as a proportion of wages lost for the appropriate income class, shown in the lower two panels of the table.

marizes the results for the various transfer programs discussed in this section. Now unemployment insurance is seen to provide only relatively minor protection against cyclical income losses—between 6 and 8 percent of dollar losses in earned income for families with male heads, and between

14 and 18 percent for losses in families with female heads. Families headed by females fare better, proportionately, because direct unemployment is a much larger component of losses in earnings.

AID TO FAMILIES WITH DEPENDENT CHILDREN

The welfare system, formally known as Aid to Families with Dependent Children, has been the subject of so much criticism in the past decade that its defects are by now familiar.⁴¹ One of the most commonly mentioned is the fact that, transfer benefits generally decline by \$2 for every \$3 increase in earnings—in effect a “tax” rate of 67 percent on the change in earnings. This high tax rate has been strongly criticized because it reduces incentives for families to raise their incomes by working more hours; at the same time, however, it does protect families against losses in earned income that would otherwise result from cyclical swings in labor demand.

A second difficulty—this time working to decrease protection—is the system’s incomplete coverage: some families headed by females with fairly low incomes are not covered if they reside in certain less generous states; families headed by males are not covered at all in twenty-seven states; and in the twenty-three states that have the program for families with male heads (AFDC-UP), benefits are paid only when the husband works less than 100 hours a month, has been unemployed for 30 days, and is not eligible for unemployment insurance. Even then, AFDC-UP shares the characteristic of unemployment insurance in cushioning income declines resulting from direct unemployment but not from other sources.

The larger program, for families with female heads, works much like a negative income tax in the sense that benefits are paid whenever income is low. I have thus estimated cyclical cushioning by expressing the ratio of benefit payments to needs as a linear function of (a) the ratio of pretransfer income to needs, and (b) state public assistance benefits, with the sample limited to those with pretransfer income less than 1.5 times the poverty line. The results, presented in Table 6, reveal the cushioning effect to be -0.196 .

41. A good survey of these problems can be found in Michael C. Barth, George J. Carcagno, and John L. Palmer, *Toward an Effective Income Support System: Problems, Prospects, and Choices* (University of Wisconsin, Institute for Research on Poverty, 1974).

Table 6. Coefficients and Statistics Showing Impact of AFDC Benefits in Relation to Needs, Families with Female Heads and Income Less than 1.5 Times the Poverty Line, 1971^a

<i>Independent variable and summary statistic</i>	<i>Coefficient</i>
<i>Independent variable</i>	
Constant	0.0641 (1.6)
State public assistance benefits	0.0050 (6.5)
Ratio of pretransfer family income to needs, Y/N	-0.1962 (7.2)
<i>Summary statistic</i>	
R ²	0.193
Standard error	0.274
Proportion of families receiving benefits (percent)	36.4
Average benefit per recipient (dollars per year)	2,479

Source: Same as Table 5.

a. The numbers in parentheses are *t*-ratios.

Since the marginal tax rate on earnings is 67 percent, it may seem surprising that benefits increase by only 20 percent of the decline in earned income. Several factors reconcile these two numbers, however. First, even though marginal tax rates are 67 percent, the existence of an earnings set-aside (the first \$30 of monthly earnings are untaxed) and the deduction of work-related expenses in computing benefit levels mean that actual average tax rates are much lower, possibly as low as 30 percent.⁴² Second, although the AFDC coverage, which rose rapidly in the sixties, is much more complete than that of unemployment insurance, perhaps 20 percent of the families with female heads whose income is near the poverty line still receive no payments because of very low guarantee levels and other administrative vagaries in some states.⁴³ A final factor leading to a relatively in-

42. See Barry M. Blechman, Edward M. Gramlich, and Robert W. Hartman, *Setting National Priorities: The 1975 Budget* (Brookings Institution, 1974), p. 183; and Robert I. Lerman, "Incentive Effects in Public Income Transfer Programs," in *Studies in Public Welfare*, Paper 4, *Income Transfer Programs: How They Tax the Poor*, Prepared for the Use of the Subcommittee on Fiscal Policy of the Joint Economic Committee, 93 Cong. 1 sess. (1974), pp. 1-77. A convenient graphical summary of how these tax rates work can be found in Irwin Garfinkel and Larry L. Orr, "Welfare Policy and the Employment Rate of AFDC Mothers," *National Tax Journal*, Vol. 27 (June 1974), p. 278.

43. See Blechman and others, *Setting National Priorities*, Table 7-6, p. 174.

sensitive response of AFDC payments to losses in earned income is that benefits are reduced if unearned income increases. Thus if unemployment insurance benefits were to rise in response to a fall in labor income, AFDC benefits would increase less than they otherwise would.

The welfare program for families headed by males operates more like unemployment insurance than AFDC does for female heads, because benefits are paid only when the man becomes unemployed. I attempted to estimate cushioning by fitting an equation similar to (4). The sample was limited to those living in the twenty-three AFDC-UP states and having pretransfer income less than 1.5 times the poverty line, thus allowing the nonlinear term in income to be eliminated. Even this simple form did not give the correct sign for the wage-loss term, however, and I was obliged to compare mean AFDC benefits with mean wages lost due to unemployment for those families with male heads whose pretransfer income was less than 1.5 times the poverty line. The resulting ratio was 0.424. That in turn is multiplied by the estimate of $[\partial(W \cdot HU)]/\partial Y$, which is -0.292 , used in equation (6) for low-income males. The final value of $\partial T_2/\partial Y$, which is -0.125 (see Table 10), is greater than the comparable number for unemployment insurance, indicating that for low-income families, AFDC-UP provides a bigger cushion against lost wages than does unemployment insurance.

To elaborate on this finding, the panel data indicate that average benefits per recipient are higher for AFDC than for unemployment insurance while the proportion of recipients is about the same—about 35 percent of poor families with an unemployed male head receive benefits under each program.⁴⁴ But whereas for unemployment insurance these benefits make up for only 65 percent of wages lost by recipients, for AFDC they represent 123 percent of the loss—obviously a large incentive not to leave the welfare rolls by taking a job. The implied work disincentive becomes even greater once allowance is made for the fact that payroll and income tax payments must be made from wages but not from transfer payments; then net income during periods of unemployment may average as much as 40 percent more than previous wage income for AFDC-UP recipients. Whether or not Feldstein is right about the implied disincentives in the unemployment insurance program, his basic complaint seems highly justified

44. Since no AFDC recipient can claim unemployment insurance, this means that 70 percent of unemployed male heads of low income receive some transfer benefits, which is to say that 30 percent receive none at all.

in the case of AFDC-UP. An obvious way to improve the program would be to broaden its coverage and cut its average benefits.

FOOD STAMPS

Under the food stamp program, low-income families can buy coupons whose bonus value (over the cost to them) depends on their pretransfer income. Since benefits are based on income and since families are eligible to participate regardless of the sex of their head, this program is probably the nearest thing to a negative income tax in the United States today. In the past the program has existed only in certain counties (about 60 percent of the total) but recent legislation has expanded it to all counties in the United States. Even then, participation rates are very low: only 26 percent of low-income families with male heads and 51 percent of low-income families with female heads claimed benefits in 1971 according to the responses in the Michigan sample. Apparently, many people do not apply if they expect to be eligible for only a few months, or if the bonus value of their stamps is small; others do not apply because they are unaware of their eligibility.

The equations showing the responsiveness of the food stamp program to income losses are given in Table 7. Again the function is a simple linear relation between the ratios of benefits, and income, to needs, with both a constant and a slope dummy indicating the proportion of participating counties in the state of the sample member. Even when this proportion is set at one, as it should be under current law (and as it is in Table 10), the low participation rates hold the implied cushioning of food stamps well below the implicit program tax rate of 30 percent.

OTHER TRANSFERS

There are two other transfer programs, neither of which is confined to poor people but both of which show some response to declines in earned income. Six percent of the families in this sample headed by a male under age 65, and 17 percent of those headed by a female under age 65, receive social security transfers under programs that aid early retirees, the disabled, and (for female heads) survivors. According to the coefficients reported in Table 8, these benefits are sensitive, if only very slightly, to declines in labor income.

Table 7. Coefficients and Statistics Showing Impact of Food Stamp Bonus in Relation to Needs, Families with Income Less than 1.5 Times the Poverty Line, by Sex of Head, 1971^a

<i>Independent variable and summary statistic</i>	<i>Family head</i>	
	<i>Male</i>	<i>Female</i>
<i>Independent variable</i>		
Constant	0.0144 (2.1)	0.0413 (5.3)
Proportion of participating counties in state	0.1017 (8.5)	0.0835 (6.9)
Proportion of participating counties times ratio of pretransfer family income to needs, Y/N	-0.0768 (8.5)	-0.0823 (7.3)
<i>Summary statistic</i>		
R^2	0.151	0.138
Standard error	0.070	0.079
Proportion of families receiving benefits (percent)	25.8	50.6
Average benefit per recipient (dollars per year)	866	600

Source: Same as Table 5.

a. The numbers in parentheses are *t*-ratios.

Table 8. Coefficients and Statistics Showing Impact of Social Security Benefits in Relation to Needs, by Sex of Family Head, 1971^a

<i>Independent variable and summary statistic</i>	<i>Family head</i>	
	<i>Male</i>	<i>Female</i>
<i>Independent variable</i>		
Constant	0.0601 (8.9)	0.1038 (7.3)
Head disabled ^b	0.2458 (13.8)	0.0559 (2.0)
Ratio of pretransfer family income to needs, Y/N	-0.0139 (6.3)	-0.0138 (1.3)
$(Y/N)^2$	0.0005 (3.9)	0.0001 (0.1)
<i>Summary statistic</i>		
R^2	0.117	0.020
Standard error	0.155	0.233
Proportion of families receiving benefits (percent)	5.5	16.8
Average benefit per recipient (dollars per year)	1,957	1,862

Source: Same as Table 5.

a. The numbers in parentheses are *t*-ratios.

b. The value of this variable is 1 when the respondent is disabled and 0 otherwise.

Table 9. Coefficients and Statistics Showing Impact of Other Transfers^a in Relation to Needs, by Sex of Family Head, 1971^b

<i>Independent variable and summary statistic</i>	<i>Family head</i>	
	<i>Male</i>	<i>Female</i>
<i>Independent variable</i>		
Constant	0.1530 (11.7)	0.3333 (13.8)
Ratio of pretransfer family income to needs, <i>Y/N</i>	-0.0271 (6.2)	-0.0795 (4.2)
$(Y/N)^2$	0.0009 (3.8)	0.0007 (2.8)
<i>Summary statistic</i>		
R^2	0.019	0.029
Standard error	0.316	0.435
Proportion of families receiving other transfers (percent)	18.2	49.0
Average benefit per recipient (dollars per year)	1,818	1,777

Source: Same as Table 5.

a. Transfer programs other than unemployment insurance, AFDC, food stamps, and social security.

b. The numbers in parentheses are *t*-ratios.

A much larger number of families—18 percent of those with male heads and 49 percent of those with female heads—receive some miscellaneous transfers either from some other governmental source, a private pension plan, or (mainly for female heads) alimony and child support. In addition to being fairly large—they average \$1,800 a year for those who receive them—these transfers are somewhat responsive to losses in earned income, particularly for families with female heads, as the coefficients reported in Table 9 suggest.

SUMMARY

Table 10 provides a summary of the results for the various transfer programs that are given in detail in Tables 5 through 9. For each program it shows the sensitivity of benefits to declines in earned income evaluated at pretransfer incomes of one, three, and five times the poverty line for the two family types. It also gives the overall response of transfer payments, the sum of the five individual responses. For low-income families headed by females, transfers rise by 56 cents for every dollar that earned income de-

Table 10. Sensitivity of Various Transfer Programs to Loss in Earned Income ($\partial T_j/\partial Y$), by Income-Needs Class and Sex of Family Head, 1971

<i>Program and ratio of average family income to poverty line</i>	<i>Family head</i>	
	<i>Male</i>	<i>Female</i>
<i>Unemployment insurance</i>		
At poverty line	-0.070	-0.185
Three times	-0.084	-0.143
Five times	-0.059	-0.163
<i>Aid to Families with Dependent Children</i>		
At poverty line	-0.125	-0.196
Three times	...	...
Five times	...	...
<i>Food stamp bonuses</i>		
At poverty line	-0.077	-0.082
Three times	...	...
Five times	...	...
<i>Social security benefits</i>		
At poverty line	-0.013	-0.014
Three times	-0.013	-0.014
Five times	-0.012	-0.013
<i>Other transfer payments</i>		
At poverty line	-0.026	-0.078
Three times	-0.024	-0.077
Five times	-0.023	-0.076
<i>All transfer payments shown</i>		
At poverty line	-0.311	-0.555
Three times	-0.121	-0.234
Five times	-0.094	-0.252

Sources: Tables 5-9 and tabulations from University of Michigan, Survey Research Center, Panel Study of Income Dynamics for 1971.

clines, thus providing a substantial cushion. Indeed, since these figures are based on transfer income, which may be underreported, and follow the usual convention of being expressed in terms of personal income—which is to say, they do not allow for the fact that federal and state personal income taxes are assessed on earned income but not on transfers—the cushion might be as large as 80 percent. This degree of cushioning for poor families whose head is female may be about as great as is feasible, given the need to provide within the transfer system some incentive for working. Even the highest income group of families headed by females gets a 25

percent cushion. But families with male heads do not do as well; their cushions range from 31 percent to 9 percent for the income groups considered here. For one thing, programs other than AFDC, which benefit all kinds of families, have less complete coverage than does AFDC, which mostly benefits families headed by females. For another, the important transfer programs are based only on unemployment and not on total losses in income from all sources. This perhaps is one good, if less familiar, rationale for replacing present income-support programs (AFDC-UP and food stamps) with a universal negative income tax.

CYCLICAL INCOME LOSSES

The impact of transfer payments on the distribution of cyclical income losses can be derived by combining equation (4), as estimated for various transfers in Table 10, with the magnitudes depicted in Figure 2. The results, which would then pertain to 1971, are given in Figure 3. Obviously, the curves have shifted down relative to Figure 2, reflecting the fact that, through its savings on transfer programs, the government is one beneficiary of the cyclical increase in income.

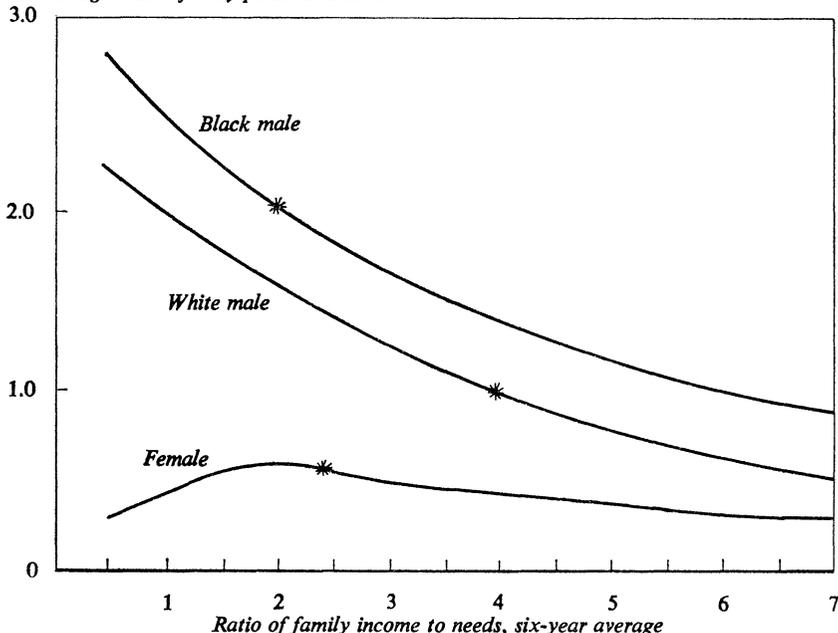
Of special note among the features of Figure 3 is the greater progressivity of the incidence line for families headed by females because of the greater responsiveness of transfer programs at low incomes. Now poor families headed by females suffer losses in personal income of less than one-half of 1 percent for each percentage point increase in the unemployment rate—a lower percentage decline than is suffered by all but the highest income families with female heads.

Families headed by males are not as fortunate. While transfer programs do respond to income losses more at low than at high incomes even for these families, this differential has not eliminated the regressivity of cyclical movements. Percentage declines in income are still two and one-half times as great at the poverty line as at five times the line, and four times as great as at the highest income level shown in the figure. At least for these families, the unpleasant distributional ramifications of business cycles are not much ameliorated by transfers.

Finally, the weighted average income decline of 1.6 percent in Figure 3 translates to an increase in the poverty population on the order of 600,000 people, or about 2 percent, for every percentage-point increase in the un-

Figure 3. Percentage Loss in Family Personal Income Due to a 1 Percentage Point Increase in the Unemployment Rate, by Color and Sex of Head and by Six-Year Average of Family Income-Needs Ratio, 1971

Percentage loss in family personal income



Sources: Tables 1, 2, 4, and 10, and tabulations from the Panel Study of Income Dynamics for 1971.

Note: Asterisk denotes mean income of the sample.

employment rate. This conclusion is similar to results that might be expected from the reduced-form studies, described above, if they were extended using later data.⁴⁵ On the basis of data on income and family needs

45. The only updated version of these studies I am aware of is by Jonathan P. Lane, "The Relationship Between Poverty Incidence and Economic Growth—with Projections of Poverty Incidence to 1980" (U.S. Office of Economic Opportunity, January 1972; processed).

I should note, however, that the results given here disagree with those recently reported by Thad W. Mirer, "The Distributional Impact of the 1970 Recession," *Review of Economics and Statistics*, Vol. 55 (May 1973), pp. 214–24. Using the same Michigan longitudinal panel survey data, Mirer compared actual 1970 income for each family with its predicted income if there had been no recession, derived by extrapolating the family's 1967–69 income experience. He found that lower-income groups fared relatively much better in the 1970 recession, actually improving their position absolutely by fairly large

for 1969, these results imply that every percentage-point increase in the unemployment rate reduces the share of aggregate personal income received by those in the bottom quintile of the distribution of income-needs ratios (below 1.3) from 5.30 percent to 5.26 percent.

Conclusion

The calculations reported in this paper suggest that increases in unemployment are regressive in their incidence for families headed by men but not for those headed by women. If the unemployment rate were to increase by 1 percentage point, families headed by males with poverty-line income would suffer a loss in income of nearly 3 percent due to direct unemployment, declines in hours worked, and reduced secondary earnings, while those at five times the poverty line would experience income declines of approximately 1 percent. These numbers do not suggest that high-income people escape cyclical declines unscathed, even when attention is confined to earned income and transfers; but they do indicate disparities that could become quite wide in a substantial cyclical decline.

For families with female heads, on the other hand, the impact of cyclical movements is actually somewhat heavier on middle- than on lower-income families. If the unemployment rate were to rise by 1 percentage point, incomes would decline less than 0.5 percent at the poverty line, slightly more in the middle-income range, and about the same amount at the highest income level. The impact on females is smaller only partly because of their lower direct susceptibility to unemployment; the rest of the difference arises because labor income is a smaller component of total income at the lower ranges, because secondary earnings would inevitably respond less, and because both public and private transfer programs provide greater cyclical protection for women.

Race is a significant element in the impact of higher unemployment. Families headed by black males suffer income losses approximately twice

amounts. Two possible factors could underlie this surprising finding: (1) Mirer's results show a sizable growth of transfer payments which, in this period, would have been due in part to exogenous policy changes; and (2) if the low-income people in 1969 included many who were temporarily poor, their 1967-69 growth rates would be drastically understated and they would tend to look better even in a recession year like 1970.

as great as those experienced by families headed by white males. Part of this disparity is due to the fact that families with black male heads fare worse than whites of the same income level; but of greater consequence is the generally lower incomes of blacks and thus their greater vulnerability to the regressivity of cyclical movements. For families with female heads the black-white differences are much less pronounced because differences at any income level are smaller and because those with low incomes do not suffer proportionately greater income losses than those with high incomes.

For all types of families, the direct unemployment of the family head is obviously an important component of the decline in income, but it does not tell the whole story. Hours worked by family heads fall 40 percent more than can be attributed to direct unemployment, and declines in secondary earnings are responsible for losses in income of similar magnitudes. On the other side, transfer programs are effective in replacing cyclical losses in earned income for some groups but not for others. For every one-dollar decline in earned income, transfer benefits rise by 9 cents for high-income families with male heads, 31 cents for low-income families with male heads, and 56 cents for low-income families with female heads.

Thus, while unemployment does hit low-income families harder than high-income families, this finding is not true for all family types and may not be inevitable. Efforts to improve the coverage of transfer programs for low-income families with male heads, specifically by basing payments more on income losses in general and less on unemployment, would eliminate a large portion of the adverse distributional effects of high unemployment, and have the additional benefit of preventing black-white income disparities from widening when labor demand slackens.

It should be emphasized, however, that the relationships dealt with here represent only the relatively straightforward equity implications of higher unemployment. By confining the analysis to different income groups, I have ignored the serious equity implications of the fact that within any income class, some workers are consigned to involuntary unemployment and some are not. A further problem is that even those who remain employed may lose wage income and the opportunity for a better job as overall labor demand slackens. Offsetting these considerations are the distributional implications of unanticipated inflation. Any complete comparison should consider all costs and benefits for various people, which go well beyond the implications of cyclical movements discussed in this paper.

Comments and Discussion

R. A. Gordon: This paper represents a useful attempt to study in some depth the differential effect on family income of cyclical changes in the level of unemployment. The findings are interesting and important. In general they confirm what other, less intensive, studies have led us to expect. But the cross-section data used permit detailed analysis that is not possible in more aggregative time-series studies.

The author has been ingenious in developing his relationships one step at a time and in using the variables in his regression equations. A number of questions can be asked about the details of the empirical results presented here. But before posing some of them, I should like to raise a few broader issues. First, the study would benefit from more historical perspective. It emphasizes differential effects on the distribution of employment and income over the course of the business cycle. But because the data in the cross-section cover the years 1967–72, they include the last three years of the abnormally long upswing of the sixties—years in which unemployment rates were very low and very stable at about 3.5 percent. The remaining three years include one of mild downswing and two of halting recovery.

How similar, then, is this cyclical episode to other periods of comparable length spanning boom, recession, and early recovery? In what respects are the patterns of employment and unemployment different in this period from those in earlier booms and recessions? How did the Vietnam boom and its termination affect the results reported? What effects, if any, carried over from the Great Society programs of the Johnson administration? How does the period 1967–72 relate to important underlying trends, such as the decline in labor force participation rates among black males and older white males? What are the implications of the apparent reversal in the

trend toward greater equality in the distribution of income, which seemed to become apparent after about 1966? What does the large-scale move toward revenue sharing mean for manpower programs?

I want to offer a second general criticism—or perhaps raise a general issue—of a more technical nature, on which I should welcome some informed discussion. I am not altogether comfortable with the effort to merge cross-section data, covering many microeconomic observations, with time-series data that involve only six consecutive observations for each family. Do these data really provide a number of independent observations equal to six times the number of families in the sample? Or, so far as cyclical behavior is concerned, are there only six observations? I would like the views of the experts on statistical inference about these issues. The results obtained in the regression equations seem intuitively reasonable, but I have no confidence in the t -statistics presented, and I am not prepared to dismiss the low value of the R^2 s as casually as Gramlich does. Similarly, I am concerned about the appropriateness of grafting regressions for transfer payments based on a single year (1971) onto the regressions that apply to the entire 1967–72 period.

A final general question concerns the extent to which the empirical results are affected by the nature of the sample. What are the implications of the exclusion of family heads who were out of the labor force for three or more of the six years covered? For example, does it mask cyclical influences that may affect the age of retirement, insofar as those who retire early may get omitted from the sample? What is the effect of combining black and white families with female heads, even though those with male heads are disaggregated by race?

I also have a number of questions about the regression equations relating group unemployment rates to the national rate. First, I am not sure why the group selected to correspond to male family heads was limited to those aged 25 to 54. Why omit those from 55 to 64? Second, the linear time trends in these regressions must reflect chiefly trends in demography and in labor force participation, and their implications must be interpreted with care. The extremely strong negative time trend for black males is hard to believe, and it has to be viewed against the background of declining labor force participation by this group.

In Table 2, among the explanatory variables are two groups of occupations—“high paying,” and “medium paying.” The latter is a hodgepodge, including on the one hand clerical and sales workers, who have relatively low cyclical sensitivity to unemployment, and on the other semiskilled

operators with high cyclical sensitivity. This probably accounts for the positive coefficient that seems to surprise the author. Also, membership in the occupational groups must be significantly correlated with the variable for hourly earnings. Other interrelationships in these regressions also need to be investigated. For example, there may be important correlations among education, job stability, and criminal records.

In general the results in Tables 2 and 4 present few, if any, surprises. The differences among the regression coefficients for race and sex groups are about what one would expect. They confirm that the black male suffers most from cyclical unemployment.

I found quite useful the analysis of transfer payments in the final part of the paper. And, given my own views, I particularly appreciated Gramlich's careful treatment of unemployment insurance, which provides an antidote to some of the more sweeping claims regarding the disincentive effects of this form of transfer income.

Charles Holt: Gramlich has written a good straightforward paper. I was bothered by the logical incompleteness of two things, both of which the author has mentioned. One is the exclusion of cyclical changes in wages. Since the whole thrust of the paper is on the cyclical impact on earnings, that seems an unfortunate omission. Second, when the significance of transfer payments is appraised, the neglect of personal income taxes leaves the analysis incomplete. Those two things would need to be added, ideally, before one could draw final conclusions about Gramlich's central question.

Although he is trying to focus on earned income, the data he is using include nonearned income. More attention might be given to the seriousness of this bias. How serious it is depends on a quantitative issue—the relative proportion of nonearned income to earned income. The data ought to be examined with that issue in mind.

On one specific point, I would question the assumption underlying the regression equations in Table 2 that families with male heads would not be influenced by a child needing care. That is a chauvinist assumption that at the very least should be tested.

More generally, I am bothered about the way the data initially embodied in a fairly large sample were stripped away. If something happened to alter the headship of the family, like a divorce, or if the data were incomplete, such families were dropped from the samples. I suspect that the practice introduces a bias, because some of those who would be most hurt by a cyclical downturn and whose jobs would be most threatened probably

would be vulnerable to repercussions within the family structure as well. Simply dropping them out of the sample may result in underestimates of the cyclical impact on some precarious families.

Almost in passing the paper mentions a number of policy issues that seem to me to be bombshells worthy of more emphasis. First, the motivation for the paper was that some people may have to make serious sacrifices for the good of the nation in its fight against inflation. Then it turns out that those who are going to be called on to sacrifice the most are the very ones who fare the worst even in good times. The regression analyses reveal that blacks suffer from joblessness nearly as great as that of whites with criminal records. Furthermore, black households headed by males suffer especially. Aside from the racial angle, the data clearly show that the lowest-income members in the society are the ones who bear the brunt of the restriction in demand associated with fighting inflation. This is certainly a sobering conclusion.

One would have hoped—and perhaps even have believed—that unemployment compensation was one social invention that offered balancing, or social sharing, of the distress that accompanies demand restraint. But it appears to have much smaller coverage than is widely recognized, in terms of both total breadth and adequacy of the payments. Perhaps even more shocking, the occupations and jobs with high turnover have the poorest coverage by unemployment compensation. The paper reveals a sharp disparity between the groups who can and do benefit from unemployment compensation and those who, from society's point of view, need it most.

The broad policy thrust of the paper helps to spotlight a number of important questions. While many of the issues and findings are not novel, the paper certainly underscores their significance.

General Discussion

In response to some of the issues raised by R. A. Gordon and Holt, Gramlich noted that his sample seemed to miss about 20 percent of the income losses due to unemployment that would be expected on the basis of aggregate estimates. This bias presumably reflects a combination of (1) attrition in the sample through nonresponse; (2) further attrition because of Gramlich's decision to eliminate families that had changes in composition or irregular attachment to the labor force; and (3) response errors that

might arise from dependence on memory estimates of unemployment and secondary earnings in the previous year. Gramlich could not allocate the bias among these three sources, nor could he judge whether it would understate the relative burdens imposed on low-income workers.

Gramlich also sought to clarify his mixed findings on unemployment compensation. On the one hand, the responses in his sample suggested a surprisingly low coverage of family heads and a remarkably low ratio of unemployment benefits to normal earnings among males who are covered. On the other hand, his findings did suggest that those states with more comprehensive unemployment insurance programs did tend to have somewhat more unemployment.

Michael Wachter and R. A. Gordon emphasized Gramlich's finding that workers with a history of job instability are among those who suffer most from a cyclical downturn. This finding supports the labor turnover studies of Robert Hall. Considering the correlation of job instability with such factors as failure to finish high school, it indicates a clustering of adverse labor force attributes and high job turnover. R. J. Gordon, however, suspected that Gramlich's study of job instability may involve a tautology, since his measure of it is not entirely retrospective. Thus if a worker has had ten jobs in the last ten years, he is likely to have had a spell of unemployment during the past year, whether or not there is any causal relation between previous job instability and current unemployment.

Another issue of causation was raised by Arthur Okun. He questioned whether differences in the generosity of unemployment insurance coverage among states lead to differences in unemployment rates, as Gramlich interprets his result, or whether the relationship may at least in part reflect a propensity for better unemployment insurance coverage in states with more severe social problems of unemployment.

Robert Hall thought the paper would be more complete if two more areas were covered. First, he asked for an explicit estimate of the effects of higher unemployment on the size distribution of income. Second, a discussion or analysis of the changes in labor force participation would make the findings on unemployment more meaningful.

F. Thomas Juster questioned the validity of the variable that indicates a criminal record. The information was gathered voluntarily, raising the issue of whether those willing to admit their criminal records are a representative sample of those having criminal records. This is particularly important in view of the surprising failure of this variable to explain any variance in the unemployment of black males.