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DEMOGRAPHIC DIFFERENCES IN CYCLICAL EMPLOYMENT VARIATION

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ABSTRACT

This paper examines the demographic patterns of cyclical swings in the labor market by decomposing movements in employment into changes in unemployment and participation. Differences in labor market experience by age, sex, race, and enrollment in school are considered, and implications for aggregate demand policy are assessed. The results confirm the importance of the participation rate in affecting the cyclical behavior of both employment and unemployment. A key finding is that young workers bear a disproportionate share of cyclical fluctuations. Moreover, the evidence suggests that the employment experience of high unemployment demographic groups appears to be insensitive to aggregate demand conditions because of the surge in participation which accompanies increased employment opportunities. Without participation fluctuation, expansionary aggregate demand could reduce the unemployment rate of almost every demographic group to a very low level.

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The cyclical behavior of employment and unemployment is a dominant feature of labor markets. Cyclical fluctuations in economic activity affect the labor market experience of all demographic groups. While the unemployment rates of different demographic groups move together, the levels about which they fluctuate and the amplitude of cyclical fluctuations differ greatly. These differences suggest that understanding the cyclical character of labor markets requires explicit examination of the experience of individual groups.[1] Moreover, an assessment of the welfare implications of alternative policies requires consideration of the incidence of costs and benefits.

The cyclical sensitivity of unemployment is a reflection of two quite different phenomena. Unemployment can increase either because fewer jobs are available or because more workers decide to seek the available jobs. These two sources of unemployment have different welfare implications. While the former is almost certainly indicative of a worsening labor market performance, the latter may reflect an improvement in conditions. Focus only on unemployment rates is thus very likely to be misleading.[2] Recent experience illustrates the point. During 1977 the unemployment rate fell by about one percentage point. If participation had remained constant, the large gains in employment during that year would have caused more than a two point decline in the unemployment rate. Similarly, a constant participation rate over the last two years would have led to an unemployment rate below five percent today.

The ambiguous character of fluctuations in unemployment suggests that analysis of cyclical behavior will be improved by simultaneous examination of movements in employment and participation. In this paper we analyze the demographic patterns of cyclical swings in the labor market by decomposing

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movements in employment into changes in unemployment and participation. The paper focuses on the interrelations among participation, employment and unemployment, with particular emphasis on the participation rate as a prime determinant of the labor market experience of various demographic groups.

The first section briefly reviews the evidence indicating the importance of participation fluctuations. The empirical model is described and several variants are discussed. The second section of the paper discusses the empirical results for various groups. Differences in labor market experience by age, sex, race, and enrollment in school are considered. The results confirm the importance of the participation rate in affecting the cyclical behavior of both employment and unemployment. A key finding is that young workers bear a disproportionate share of cyclical fluctuations. For example, teenagers, who comprise only 9 percent of the population, account for more than a quarter of employment fluctuations. The third section of the paper analyzes in greater detail the impact of aggregate demand policy on high unemployment demographic groups. It is sometimes suggested that these groups have structural problems upon which expansionary policy has a small impact. We show that this conclusion results from ignoring movements in the participation rate. These groups have high unemployment rates in times of very strong macroeconomic performance only because of the surge in participation which accompanies increased employment opportunities. Without participation fluctuations, expansionary aggregate demand could reduce the unemployment rate of almost every demographic group to a very low level. The fourth and final section of the paper summarizes our conclusions and discusses some of their implications.

Section I: Labor Force Participation and the Cyclical Behavior of Labor Markets

The rate of labor force participation is a fundamental measure of labor market activity. As a measure of the supply of labor, participation has been widely studied using aggregate time series and cross-section data. Mincer's well-known studies (Mincer (1962), (1966)) demonstrated the importance of participation fluctuations in understanding employment fluctuations, especially among women. It is now widely recognized that structural changes in the labor market (e.g. the minimum wage) must be understood in terms of their impact on participation and employment, as well as unemployment. These insights have generally not been applied to the analysis of cyclical behavior. While many recent studies have examined fluctuations in participation (e.g., Wachter (1972, 1977), Perry (1977)), and demographic unemployment rates (e.g., Feldstein (1973), Feldstein and Wright (1976)), relatively little effort has been directed at linking participation and unemployment dynamics together to explain employment fluctuations.

The connections among participation, unemployment and employment can be seen in the following identity:

$$\left(\frac{E}{N}\right)_i = \left(\frac{E}{L}\right)_i \left(\frac{L}{N}\right)_i \qquad (1)$$

where E is employment, N is population, L is labor force and i indexes demographic groups. The employment ratio (proportion of the population employed) is the product of the participation rate, and the employment rate (one minus the unemployment rate). Fluctuations in the fraction of the population employed thus can be decomposed into the change in the rate of unemployment and the growth of participation. Expressing (1) in logs

and differentiating yields the basic decomposition:

$$d\ln \left(\frac{E}{N}\right)_i = d\ln \left(\frac{E}{L}\right)_i + d\ln \left(\frac{L}{N}\right)_i \qquad (2)$$

Since persons in the labor force are either employed or unemployed it is clear that:

$$d\ln \left(\frac{E}{N}\right)_i = d\ln (1-UR)_i + d\ln \left(\frac{L}{N}\right)_i \qquad (3)$$

where UR is the unemployment rate.[3]

The results of this decomposition for 1972-1977, presented in Table 1, clearly indicate the importance of fluctuations in participation during the past few years. For women, changes in participation are generally much larger than changes in the rate of unemployment. On average, variation in the rate of participation accounts for 70 percent of the variation in the female employment ratio. While a much smaller variation in participation has been observed in the total population, the fluctuations are still substantial relative to movements in the unemployment rate. Table 1 thus underscores the need to examine the interrelations among employment, unemployment and participation in analyzing cyclical fluctuations in labor markts. Below our method of doing this is outlined.

The Empirical Model

For each demographic group we postulate that unemployment and participation rates are functions of aggregate demand and time. The time trends are included to reflect the impact of slowly changing social factors, and other gradually moving variables omitted from the equation. The basic equations to be estimated are:

Table 1

Decomposition of Changes in the Employment Ratio

(numbers are in percent)

Total Population Year	change in log of employment ratio (1)	change in log of participation rate (2)	change in log of employment rate (3)
1972-73	1.48	0.69	0.78
1973-74	-0.02	0.78	-0.80
1974-75	-3.14	-0.04	-3.10
1975-76	1.43	0.53	0.85
1976-77	2.06	1.34	0.72
Women (16 and over)			
Year			
1972-73	2.60	1.91	0.69
1973-74	1.26	2.06	-0.81
1974-75	-1.33	1.48	-2.81
1975-76	2.86	2.11	0.75
1976-77	3.36	3.15	0.22

Source: BLS Employment and Earnings.

$$\ln(PR)_{it} = \beta_o + \sum_{k=0}^{n} \delta_k \; UP_{t-k} + \beta_2 T + \beta_3 T67 + v_{it} \qquad (4)$$

$$\ln(1-UR)_{it} = \alpha_o + \sum_{k=0}^{n} \lambda_k \; UP_{t-k} + \alpha_2 T + \alpha_3 T67 + u_{it} \qquad (5)$$

Where UP is the unemployment rate of men between the ages of 35 and 44, T is the time trend, T67 is a second time trend which begins in 1967, and i indexes demographic groups.

Equations like (4) are traditional in analyses of labor forece participation. They have provided the basis for estimates of "hidden unemployment" (Tella (1965), Dernberg and Strand (1966), and estimates of the full employment potential labor force (Perry (1977)). The unemployment rate of middle-aged (ages 35-44) males is used as a measure of aggregate demand. It is expected to influence the level of participation since the costs of search are affected by job availability. Moreover, apart from any changes in the real wage, the quality of available jobs varies over the cycle. In order to avoid simultaneity problems we use this variable rather than a demographically adjusted unemployment rate as a measure of cyclical conditions. The results using Perry's weighted unemployment rate are very similar to those presented here.[4] We include lagged unemployment rates to take account of recognition and action lags in the response to fluctuations. The estimates of the total impact of unemployment are extremely insensitive to the form of the lag structure. The broken time trend beginning in 1967 (T67) is intended to allow for recent changes in secular trends. While the choice of T67 is somewhat arbitrary, the results reported below are very insensitive to its omission or to its replacement with trends beginning earlier or later. Estimation of (4) and (5) with a quadratic term in time had no

significant effect on the results.

Equations like (5) have not been extensively used in studying group unemployment rates. Feldstein (1973), and Feldstein and Wright (1976) have estimated similar relations in order to study the potential of aggregate demand to reduce demographic unemployment rates. Equation (5) can be justified in much the same way as the participation equation. Aggregate demand will have different effects on the unemployment rates of different groups, because of employers' rules in laying off workers, and because of quit patterns. Certain groups are more prone to be laid off, others are more prone to leave jobs and so their unemployment experience is likely to respond quite differently to aggregate demand.

The equations to be estimated are not designed to provide the best or most detailed explanation of the participation (unemployment) rate of each group. Our purpose is to estimate a common model for each group which captures the response of participation (unemployment) to cyclical fluctuations in aggregate demand. Thus, some potential explanatory variables, such as real wages and inflation, have been excluded precisely because of their cyclical variation. That is, our equation is intended as a reduced form for the individual cyclical effects. Other variables have been omitted because they are essentially orthogonal to the variables included. We have in work available on request reestimated the equations reported here including variables reflecting demographic factors, inflationary expectations, and household wealth and liquidity. While these variables are sometimes significant, their inclusion has little impact on the estimated cyclical effects.

The interpretation of the coefficients in equations (4) and (5) is quite straightforward. For example, the cyclical responsiveness of the participation rate of the i^{th} group may be measured by:

$$\gamma^i_{PR} = -\sum_{k=0}^{n} \delta_k \tag{6}$$

A value of $\gamma^i_{PR} = 1.0$ indicates that a 1 percentage point increase in the unemployment rate of mature men (e.g., UP declines from .06 to .05) leads to a 1 percent increase in the participation rate of the i^{th} group (e.g., .430 to .434).

Equations (4) and (5) have been estimated using quarterly data for the period 1950-1976 for various demographic groups. The coefficients on lagged unemployment have been constrained to follow a first order polynomial constrained at the far end to pass through the origin, with a length of eight quarters. The identity (1) ensures that the relationship between the employment ratio and aggregate demand and time is given by:

$$\ln(EN)_{it} = \beta_o + \alpha_o + \sum_{k=0}^{n} (\delta_k + \lambda_k)\, UP_{t-k} + (\beta_2 + \alpha_2)T + (\beta_3 + \alpha_3)\, T67 + e_{it} \tag{7}$$

It follows immediately that the equations presented here can be used to decompose the cyclical movements of the employment ratio into its unemployment and participation components since:

$$\gamma^i_{EN} = \gamma^i_{PR} + \gamma^i_{(1-UR)} \tag{8}$$

We have estimated equations (4) and (5) using a maximum likelihood technique to correct for serial correlation. The change in the employment ratio arising from movements in the unemployment rate and the rate of participation is calculated using the identity (8).[5] Its approximate standard error is found by assuming that there is no covariance between γ^i_{PR} and γ^i_{UR}. The regression equations for various age-sex groups are reported in the Appendix. In the next section the estimates of cyclical responsiveness are analyzed.

Section II: Demographic Demand Sensitivities

Table 2 presents estimates of the elasticity of cyclical response of employment, unemployment and participation for several demographic groups.[6] Beneath the estimates in parentheses are the estimated standard errors. As noted above, the numbers in column 1, which give the cyclical responsiveness of employment, are the sum of the estimates of the responsiveness of participation and unemployment (i.e., the employment rate) found in columns 2 and 3.

A clear implication of the results for men is that teenagers are particularly sensitive to cyclical developments. The estimates imply that a decline in the prime age male unemployment rate from six to five percent will produce a 4.5 percent increase in the proportion of male teenagers employed. Over 35 percent of this change comes from movements in participation. Among adult males 25-64, participation is very cyclical, with an elasticity close to zero. The employment rate, however, has an elasticity close to unity, so that on average a 1 point reduction in unemployment of mature men is associated with a 1 percent increase in the employment of this group.

Table 2

Cyclical Response of Participation, Unemployment and Employment By Demographic Groups[a]

Demographic Groups	Employment Ratio (1)	Participation Rate (2)	Employment Rate (3)
MEN			
16-19	4.52 (.68)	1.91 (.45)	2.61 (.51)
20-24	1.85 (.66)	-.41 (.30)	2.26 (.59)
25-34	1.30 (.28)	.04 (.09)	1.26 (.26)
35-44	1.06 (.19)	.005 (.05)	1.05 (.18)
45-54	1.01 (.19)	.002 (.07)	1.01 (.18)
55-64	1.07 (.27)	-.04 (.24)	1.11 (.12)
65+	2.70 (.71)	1.68 (.71)	1.02 (.08)
Total Men[b]	1.70	.38	1.32
WOMEN			
16-19	4.41 (.68)	2.53 (.62)	1.88 (.29)
20-24	2.22 (.68)	.71 (.65)	1.51 (.19)
25-34	2.44 (.49)	1.31 (.46)	1.13 (.18)
35-44	1.50 (.30)	.55 (.26)	.95 (.14)
45-54	.96 (.57)	.13 (.56)	.83 (.13)
55-64	-.06 (.59)	-.79 (.58)	.73 (.09)
65+	-.91 (1.25)	-1.50 (1.25)	.59 (.10)
Total Women	1.39	.36	1.03
Total Population	1.54	.37	1.17

[a]Cyclical response is defined as the sum of the coefficients on the lagged values of UP.

[b]Elasticities for total men, women and total population, are population weighted averages of the age specific estimates.

Source: See Appendix for basic regressions; (estimates are based on quarterly data over the period 1950-1976.

Among elderly men over 65, the employment rate elasticity is 1.02, close to that for other adult groups. However, for this group participation is almost as responsive as that of teenagers. The net effect is an employment ratio elasticity of 2.70, suggesting that older men are among the prime beneficiaries of an expanding economy. This no doubt reflects the tendency of firms to induce early retirements in times of business cycle slack.

The results for women reveal substantial cyclical sensitivity among the younger age groups. As in the case of men, female teenagers are very sensitive to cyclical developments. We estimate that a 1 point decline in the prime age male unemployment rate will lead to a 2.5 percent increase in the participation rate of very young women. Combined with a large drop in unemployment, the employment ratio of this group is consequently increased by over 4 percent for each percentage point change in the prime age male unemployment rate. Similarly large gains in employment are estimated for women ages 20-24 and 25-34. In each case the elasticity of employment exceeds two, with much of the gain coming in increased participation. Women 16-34 thus display a greater degree of cyclical sensitivity than their male counterparts.

Women 35-54 are less responsive to cyclical changes than younger women, but on average, the employment ratio elasticity is still greater than that estimated for men. The negative coefficients on participation for older women sharply reduces the estimated sensitivity of the group employment ratio to changes in unemployment, even to the point of producing a negative relationship. For example, the participation coefficient for women over 65 is -1.5, a value which swamps the unemployment effect, leading to an estimate of -.91 for employment. It should be noted, however, that these estimates are not statistically significant.

Demographic Contribution to Cyclical Variation

The estimates in table 2 give evidence of wide variations in cyclical sensitivity across demographic groups. The relative importance of the various age groups in accounting for cyclical movements in aggregate employment is examined in Table 3. In columns 2 and 3 we have used the population shares s_i together with estimated values of γ^i_{EN} to create a measure of each group's contribution to the change in the overall employment ratio. If $\Sigma s_i \gamma^i_{EN}$ is the predicted change in the overall employment ratio, the contribution of the i^{th} group is:

$$\Theta_i = \frac{s_i \gamma^i_{EN}}{\Sigma s_i \gamma^i_{EN}} \qquad (9)$$

The values of s_i, $s_i \gamma^i_{EN}$ and Θ_i are presented in columns 1, 2, and 3, respectively.

The calculations indicate that in aggregate employment is pro-cyclical. A 1 percent decline in the prime age male unemployment rate leads to a 1.5 percent increase in employment. A key result of the calculations is that young workers account for the larger part of the cyclical variations in employment. While teenagers comprise less than a tenth of the population, they account for more than a fourth of cyclical fluctuations. Teenagers and young women 20-34 represent only 25 percent of the adult population, yet they experience close to 50 percent of the cyclical variation in employment. Prime age males 25-64 are a large fraction of the population (32.6 percent) but account for less cyclical employment variation than teenagers who represent only 9 percent of the population.

Table 3

Population Shares and the Shares of Demographic Groups
In Short Run Variations in the Employment Ratio

Demographic Group	Population Share (s_i)	Weighted Elasticity ($s_i \gamma^i_{EN}$)	Employment Ratio Share ($s_i \gamma^i_{EN} / \Sigma_i s_i \gamma^i_{EN}$)
MEN	.474	.806	.524
16-19	.045	.203	.132
20-24	.045	.083	.054
25-34	.093	.120	.078
35-44	.089	.094	.061
45-54	.081	.082	.053
55-64	.063	.067	.044
65+	.058	.157	.102
WOMEN	.526	.731	.476
16-19	.047	.207	.135
20-24	.055	.122	.079
25-34	.100	.244	.159
35-44	.096	.144	.094
45-54	.087	.084	.055
55-64	.068	-.004	-.003
65+	.073	-.066	-.042
TEENAGERS	.092	.410	.267
WOMEN 20-34	.155	.366	.238
ADULT MEN 25-64	.326	.363	.236
TOTAL	1.000	1.537	1.000

Note: γ^i_{EN} are taken from Table 2, column 1; the population shares are means for the sample period.

The analysis presented in Tables 2 and 3 demonstrates the importance of examining changes in participation in connection with related movements in employment and unemployment. The results suggest that teenagers and young women are particularly sensitive to short run movements in aggregate economic activity. These patterns are consistent with a significant discouraged worker effect. However, with negative coefficients among older women, and virtually no responsiveness among prime age men, the aggregate participation rate displays relatively little cyclical sensitivity. While aggregate movements in employment reflect primarily movements in unemployment, substantial variations in the composition of the labor force do occur over the business cycle.

Race and Enrollment Status

Variations in cyclical employment experience may be expected to depend on factors other than age and sex. Two such factors, race and school enrollment are examined in Tables 4 and 5, where the decompositions discussed above are presented for white and non-white workers, and separately for enrolled and non-enrolled young people. The results suggest that these factors make a considerable difference. The employment experience of non-whites is much more responsive to cyclical conditions than the experience of whites. A 1 percent reduction in the mature male unemployment rate raises the proportion of non-white youth who are employed by about 7 percent, compared to a little over 4 percent for white youths. The employment of older non-whites is not as responsive to cyclical conditions, but still exhibits substantially more sensitivity than employment among the white population. For non-white men over 20, the employment ratio rises by 2.5 percent for each 1 point decline in the prime age male unemployment rate. This is almost three times as large as the response for white men.

The results in Table 5 display dramatic differences in the labor market behavior of enrolled and out of school youth. For young men and women enrolled in school, almost all of the response of employment is due to movements in participation rather than unemployment. The opposite pattern characterizes youth who are out of school. Increases in employment

Table 4

Cyclical Response of Participation, Unemployment and Employment by Race

Demographic Groups	Employment Ratio (1)	Participation Rate (2)	Employment Rate (3)
Non-Whites			
Women			
16-19	6.97	3.48	3.49
	(1.79)	(1.66)	(.66)
20+	1.37	-.10	1.47
	(.29)	(.20)	(.21)
Men			
16-19	6.18	2.03	4.15
	(1.12)	(.76)	(.82)
20+	2.51	.14	2.37
	(.41)	(.16)	(.38)
Whites			
Women			
16-19	4.25	2.78	1.47
	(.81)	(.71)	(.38)
20+	1.17	.45	.72
	(.35)	(.29)	(.19)
Men			
16-19	4.44	2.38	2.06
	(.73)	(.53)	(.50)
20+	.87	-.10	.97
	(.21)	(.04)	(.21)

Note: Based on regressions as described in the text. The data are quarterly, and cover the period 1954-1976.

Table 5

Cyclical Response of Teenagers by

Enrollment Status

Enrollment Groups	Employment Ratio	Participation Rate	Employment Rate
In School			
Men 16-19	6.97 (1.12)	6.00 (1.05)	.97 (.40)
Women 16-19	6.78 (1.47)	6.39 (1.38)	.39 (.51)
Out of School			
Men 16-19	2.80 (.91)	-.79 (.36)	3.59 (.84)
Women 16-19	3.38 (.85)	1.00 (.72)	2.38 (.45)

Source: These estimates are based on data taken from tables B6 and B7 of the Employment and Training Report of the President, 1978. The data are based on the October supplement of the CPS, and cover the period 1954-1977.

for this group come almost entirely at the expense of unemployment. However employment of out of school youth appears to be only about half as sensitive to demand as that of enrolled young people.

The reasons for these disparities are not clear. One possible explanation is that youth who are in school tend to passively await job offers. When offered an attractive job, they accept and join the labor force. Otherwise, they remain out of the labor force. This would explain the observed pattern of participation and unemployment dynamics.

Section III: The Role of Aggregate Demand

The results in Section II indicate that aggregate demand as measured by the prime age male unemployment rate has a significant effect on the unemployment and participation rates of most demographic groups. The effect is especially pronounced in those groups which traditionally have the highest unemployment and lowest participation rates. For example, black teenagers, whose unemployment rate averaged over 40 percent during 1976, benefit most from increased aggregate demand. Their employment ratio rises by over 6 percent for each 1 point decline in the prime age male unemployment rate. Yet, many observers judge that the problems of high unemployment demographic groups, such as black teenagers, are largely the result of structural factors and are quite insensitive to aggregate demand. Perhaps the most widely cited statement of this view is found in Feldstein (1973). In this section we analyze the extent to which aggregate demand can reduce the unemployment of disadvantaged demographic groups.

Pessimism with respect to the efficacy of aggregate demand policy is buttressed by the observation that the unemployment rate of certain disadvantaged groups has remained high even during periods when the overall rate was reduced to quite low levels. In 1969, for example, the unemployment rate for male teenagers was 11.4 percent while the unemployment rate of balck teenagers was over 23 percent. The analysis in this paper makes it clear that this may not reflect the impotence of aggregate demand. It may be that the participation rate of high unemployment groups expands rapidly during periods of economic expansion, causing the group unemployment rate to remain at a fairly high level. On this view, the apparent sluggishness in unemployment arises because the hidden unemployment which is not measured during times when jobs are unavailable, simply becomes measurable. In order to examine the role of aggregate demand, we have used the equations described in the preceding section to estimate the unemployment rate which would have arisen in 1976 if the unemployment rate of men 35-44 had been driven to its 1969 level (1.3 percent).

The results confirm the widespread view that unemployment rates would remain high, even in an expanding economy. For example, the estimates indicate that male teenagers would have had an unemployment rate of 11.5 percent at the end of 1976 even if the prime age male unemployment rate had been driven well below 2 percent. Likewise, black male teenagers would have had an unemployment rate of over 23 percent. Similar patterns hold for young women. It is significant that the predicted 1976 rates for male teenagers (both black and total) are virtually identical to the rates which actually prevailed in 1969. This result suggests that the empirical model provides a relatively consistent characterization of the cyclical experience of these groups.

Table 5

Simulated Unemployment Rates for 1976: 4
Assuming 1969 Levels of Aggregate Demand

Demographic Group	Actual Unemployment Rate 1976: 4 (1)	Estimated Unemployment Rates with 1969 Conditions: Full Participation Response (2)	Estimated Unemployment Rates with 1969 Conditions: No Participation Response (3)
MEN			
16-19	19.5	11.5	5.6
20-24	12.8	5.9	7.1
25-34	6.6	2.7	2.6
35-44	4.3	1.1	1.0
45-54	4.5	1.4	1.4
55-64	4.1	.7	.8
65+	4.7	1.6	-3.6
WOMEN			
16-19	18.6	12.8	5.1
20-24	12.4	7.8	5.6
25-34	8.6	5.1	1.1
35-44	6.2	3.3	1.6
45-54	5.2	2.7	2.3
55-64	5.0	2.8	5.2
65+	4.7	2.9	7.5
BLACKS			
MEN			
16-19	35.9	23.2	16.9
20+	11.3	4.0	4.5
WOMEN			
16-19	37.1	26.4	15.7
20+	11.3	6.8	6.5

Note: The estimated unemployment rates were calculated as follows:
Column 2: Actual unemployment rate in 1976: 4 - $\gamma^{i}_{(1-UR)}$ when ∇= change in the prime age male unemployment rate had 1969 conditions prevailed in the previous 2 years.
Column 3: Same as column 2, except that γ^{1}_{EN} was substituted for $\gamma^{i}_{(1-UR)}$

In order to examine the extent to which the resilience of high unemployment rates reflects surges in participation, we have recalculated the unemployment rates under the assumption that participation rates remain constant as aggregate demand expands. Unemployment rates calculated on this basis are shown in column 3 of Table 5. They indicate that with constant participation, increased aggregate demand could reduce unemployment rates of most demographic groups to very low levels.[7] For example, increased employment would lead to a male teenage unemployment rate of 5.6 percent, comparable to the average unemployment rate of the entire population over the postwar period. The unemployment rate of young women would be driven down to similarly low levels. However, the unemployment rate of black teenagers would still remain at levels approaching 17 percent for young men, and 16 percent for young women. While clearly indicative of an important social problem, these calculations indicate that considering participation increases significantly the apparent power of cyclical expansion in reducing unemployment.

It is somewhat difficult to interpret the results. Were participation to remain constant, it is clear that aggregate demand could eliminate serious unemployment problems for most demographic groups. Participation, however, does not in fact remain constant. This would seem, if anything, to strengthen the case for expansionary policy, since the large surge in participation which inevitably accompanies cyclical expansion must indicate a chronic shortage of jobs, or at least that many persons are outside of the labor force because they expect little gain from further employment search. Encouraging the re-entrance of these individuals would seem to be an additional benefit of expansionary policy. It is clearly fallacious to argue that the potential entry of the hidden unemployed renders aggregate demand policy relatively impotent in easing the labor market problems of specific demographic groups.

These findings have important implications for recent legislation designed to move the economy towards full employment. The Humphrey-Hawkins bill provides for mandatory unemployment targets both in aggregate and for demographic groups. Our analysis indicates that unemployment targets are misguided. Since unemployment rate movements can reflect either desirable or undesirable changes it is hardly sensible to design policy with a specific unemployment rate in mind. Rather, a much better means of serving the goal of full employment would be to phrase targets explicitly in terms of employment. Such a measure would avoid all of the ambiguities inherent in a CPS interpretation of the unemployment/nonparticipation distinction, as well as providing a sounder foundation for policy. A potential difficulty with this approach is that changes in labor supply patterns would alter the appropriate employment targets. These changes are typically gradual so that allowing for trends in the employment targets may be feasible.

Conclusions

The central conclusion of this paper is that understanding the cyclical dynamics of the labor market requires joint focus on unemployment and labor force participation. Both contribute substantially to observed variation in employment. Since their relative contributions differ substanially across demographic groups, both must be considered in making demographic comparisons. Our results suggest that young people bear a very disproportionate share of cyclical employment fluctuations. In large part, this is due to the cyclical movements in their participation. It has frequently been observed that high unemployment rates for some groups persist even in cyclical expansions. We show that the resilience of high unemployment is due to increases in participation, rather than continued lack of employment opportunities. This finding suggests that the potential contribution of macro-economic policy to alleviating the employment problems of specific demographic groups can be quite large.

APPENDIX

This appendix presents estimates of the basic empirical model for the 14 demographic groups. The equations were estimated with an eight quarter lag on UP, but only the sum of the lag coefficients is presented. The data are available monthly in Employment and Earnings published by BLS.

Table A-1

Cyclical Response of Unemployment of Demographic Groups
(Standard Errors in Parentheses)

	CONS	UP	T^2 ($\times 10^2$)	$T67^2$ ($\times 10^2$)	$\bar{R}^2$	SEE	ρ
MEN							
16-19	-.034 (.022)	2.617 (.507)	-.074 (.026)	.005 (.068)	.904	.012	.767
20-24	-.009 (.025)	2.258 (.585)	-.003 (.030)	-.091 (.073)	.883	.010	.831
25-34	.001 (.011)	1.267 (.256)	.001 (.001)	-.040 (.030)	.892	.005	.791
35-44	.002 (.008)	1.053 (.181)	-.001 (.009)	-.006 (.020)	.893	.004	.806
45-54	-.005 (.007)	1.007 (.018)	.007 (.009)	-.010 (.020)	.873	.004	.754
55-64	-.006 (.005)	1.111 (.123)	.003 (.006)	-.013 (.016)	.900	.004	.692
65+	-.007 (.003)	1.021 (.084)	-.002 (.004)	-.002 (.010)	.811	.005	.433
WOMEN							
16-19	-.031 (.012)	1.876 (.289)	-.129 (.015)	.080 (.038)	.900	.012	.620
20-24	-.010 (.008)	1.515 (.200)	-.045 (.010)	-.029 (.024)	.905	.007	.620
25-34	-.016 (.008)	1.126 (.184)	-.018 (.009)	-.022 (.023)	.867	.005	.706
35-44	-.010 (.006)	.954 (.146)	-.015 (.007)	.001 (.018)	.815	.005	.652
45-54	-.013 (.005)	.826 (.128)	.002 (.006)	.025 (.016)	.811	.004	.655
55-64	-.018 (.004)	.734 (.091)	.015 (.005)	-.046 (.011)	.756	.005	.460
65+	-.009 (.004)	.588 (.098)	-.007 (.005)	-.025 (.013)	.586	.006	.330

*Indicates rounded off to zero.

Note: The coefficient under UP is the sum of the coefficients from an eight quarter, first degree polynomial distributed lag on UP. The dependent variable is ln (1-UR), when UR_i is the unemployment rate of the i^{th} group.

Table A-2

Cyclical Response of Participation of Demographic Groups
(Standard Errors in Parentheses)

	CONS	UP	T^2 ($\times 10^2$)	$T67^2$ ($\times 10^2$)	$\bar{R}^2$	SEE	ρ
MEN							
16-19	-.401 (.019)	1.905 (.445)	-.271 (.024)	.661 (.061)	.898	.017	.621
20-24	-.132 (.013)	-.408 (.297)	-.064 (.016)	.053 (.041)	.756	.011	.642
25-34	-.031 (.004)	.042 (.097)	.009 (.005)	.069 (.015)	.860	.003	.747
35-44	-.021 (.002)	.005 (.051)	-.008 (.003)	-.042 (.007)	.901	.002	.496
45-54	-.037 (.003)	.002 (.074)	-.011 (.004)	-.097 (.010)	.961	.003	.584
55-64	-.132 (.012)	-.039 (.240)	-.029 (.019)	-.319 (.047)	.987	.005	.873
65+	-.696 (.034)	1.678 (.020)	-.821 (.051)	.201 (.126)	.994	.017	.830
WOMEN							
16-19	-.802 (.026)	2.530 (.620)	-.106 (.033)	.835 (.084)	.985	.015	.821
20-24	-.793 (.029)	.709 (.658)	.187 (.041)	.522 (.106)	.985	.015	.821
25-34	-1.051 (.020)	1.313 (.460)	.205 (.027)	.794 (.066)	.991	.015	.718
35-44	-.917 (.011)	.547 (.252)	.255 (.013)	.272 (.034)	.990	.011	.545
45-54	-.953 (.033)	.129 (.558)	.489 (.058)	-.407 (.144)	.990	.011	.920
55-64	-1.333 (.026)	-.793 (.583)	.706 (.035)	-.878 (.087)	.986	.018	.742
65+	-2.386 (.054)	-1.496 (1.248)	.099 (.072)	-.686 (.180)	.767	.041	.708

Note: The coefficient under UP is the sum of the coefficients from an eight quarter, first degree polynomial distributed lag on UP.

Footnotes

[1]Feldstein (1973) has demonstrated the importance of demographic distinctions in analyzing unemployment. Other analyses, notably Mincer (1962, 1966) and Bowen and Finnegan (1969) have shown the extent of differences in participation behavior across demographic groups.

[2]There are additional reasons for treating the unemployment data with caution. Clark and Summers (1979) have argued that an important part of transitions into and out of unemployment arises from inconsistent reporting of relatively consistent behavior. They cite evidence on rotation group bias, the effects on reporting of slight changes in the survey, and re-interview error rates which shows that a sizeable fraction of the flows between unemployment and not-in-labor force is an artifact of the monthly survey.

[3]Note that as long as UR < .1, it differs negligibly from ln (1-UR). Hence (3) can be interpreted as showing that the percentage change in employment is equal to the the percentage change in the participation rate minus the change in the unemployment rate.

[4]For example, the employment elasticity for women 25-34 using Perry's weighted unemployment rate in an annual version of the model was 2.03, compared to 2.44 in the quarterly version with correction for auto correlation.

[5]None of the conlcusions are significantly altered when the employment ratio equation is estimated directly. Of course, the identity (3) is no longer satisfied.

[6]In interpreting all the results in this section, it may be useful to note that a movement of 1 point in the prime-age male unemployment rate correspond to a change of 1.25 points in the overall rate.

[7]These predictions may depend on the functional form of the estimating equation. Feldstein and Wright (1976) found little difference in the response to changes in unemployment between periods of high and low unemployment.

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