

The labor supply model for retirees may be summarized as follows:

$$L_r = f(Y_r, W_r, U_r, Z_r)$$

Where L_r = the labor force participation rate of a group of retirees,
 Y_r = the average family income of the retirees,
 W_r = the average wage and salary income of the retirees,
 U_r = the unemployment rate, and
 Z_r = other factors affecting L_r .

Since Y_r may be written as:

$$Y_r = W_r + X_r$$

where X_r = average family income other than wages and salaries of the retirees, then the equation can be rewritten so that:

$$L_r = g(X_r, W_r, U_r, Z_r).$$

Two exponential functions, one explaining the labor force participation rate and one explaining a transformation of that rate, were estimated by using least-squares-multiple-regression techniques applied to the logarithms of the variables.¹⁹ It is possible to produce estimated participation rates greater than one from the equation using labor-force participation rates as the dependent variable. Since one is the upper bound of participation rates and many of our observations were close to one, the participation rate was transformed to a ratio of the number in the labor force to the number in the population who are not in the labor force.²⁰ The transformation assumes that the responsiveness of labor force participation rates to a given absolute change in any of the independent variables would increase rapidly when participation within the population is small, taper off in the middle ranges, and diminish as the rate approached one.

Initially, it was assumed that the determinants of labor force behavior have uniform effects on retirees in each of the 24 age-level-of-school cells. The cells were then independent observations in the analysis and parameters were estimated from weighted regressions.²¹ Both measures of labor force participation—the ratio of retirees who had worked any amount of time in 1965 to total retirees (L_1), and the ratio of employed retirees and unemployed retirees who were looking for work to total retirees (L_2)—were used as the dependent variables. The independent variables were weekly wage and salary incomes of retirees (W), family income other than the wage and salary income of the retirees (X), and the unemployment rates of military retirees (U).

¹⁹ Other empirical studies of labor force participation rates have used either linear or exponential functions in which the participation rate was the dependent variable.

²⁰ The mathematical transformation to the labor force participation rate is $\frac{L}{1-L}$ where L is the labor force participation rate.

²¹ Unweighted regressions were also run and produced results quite similar to those obtained from the weighted regressions. Weighted regressions are more appropriate for analyzing the labor force behavior of all military retirees in which each cell represents a different fraction of the population under analysis. Unweighted regressions would be appropriate if we wished to analyze the average behavior of the cells.