

Actual Experience, Potential Experience or Age, and Labor Force Participation by Married Women

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In this paper, the limitations of potential experience and age as proxies for market experience are discussed. Results from a conditional logit model estimating the probability of participation by married women are sensitive to the measure of experience used in the empirical specification. Married women usually have noncontinuous labor market histories so age and potential experience will fall short of actual experience. Direct information about a woman's labor market history is necessary in empirical studies of the market behavior of married women. (JEL J22)

I. Introduction

Labor force participation by married women, especially married women with children, has increased over time. This has stimulated research addressing the labor market behavior of married women. Theoretical advances suggest that labor market decisions are made within a life cycle context. Econometric models employed in empirical studies of labor supply have become more sophisticated, especially the wider use of fixed and random effects models to statistically control for latent characteristics. Despite the advances, findings may suffer from data limitations. One common problem encountered in empirical work on labor supply is determining an appropriate variable to represent an individual's accumulation of human capital gained through market activities. Many studies have relied on potential experience [Mincer, 1974], measured as age minus education minus five. Others employ an individual's age. Proxies for time spent in the market may suffer from measurement error and bias coefficient estimates when continuous participation is not evident. Not only might the coefficient on the experience variable be biased, but the coefficient on education might also be affected if education and experience are related.

The limitations of potential experience and age as proxies for human capital obtained by market participation are discussed. Results from a fixed effects model of labor force participation, including the number of years a married woman has worked since age 18 up to 1980, are compared with the results using potential experience and age as regressors. The findings suggest that empirical work addressing the market efforts of married women requires access to a data set that includes direct information about labor market histories.

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II. Labor Force Participation and Experience

Estimating the probability of participation within a life cycle context¹ requires a threshold established by a woman's tastes for leisure or reservation wage. Participation is observed when the offered wage crosses the threshold. Offered wages are unmeasured and observed only if a woman is employed, but related to the amount of human capital acquired through participation and schooling, hence the experience variable is important in studies of labor supply.

Market experience is important to labor force participation decisions for a number of reasons. A common association advanced in the literature is a direct relationship between experience, productivity, and wages. However, internal labor markets and policies that encourage promotions from within the firm recognize longevity. Women who have withdrawn from the labor force may find that employment search is more efficient if they possess skills acquired through prior market experience. Women who have not worked in the market have not obtained market experience and consequently obtaining employment may be difficult or market options limited.

A measure of potential experience assigns the same amount of market experience to women of the same age and educational status even though their labor market histories might differ. The dubious assumption that all time spent out of the labor market can enhance skills is restrictive. Further, rather than capturing experience, age serves as a crude proxy for cohort effects such as educational quality, mores regarding women working outside of the home or reflects fewer market opportunities available to individuals over time due to age discrimination. Potential experience and age will not aptly reflect a woman's desires for labor market association, her commitment to the labor force nor the effect of time spent in market activities on wages when continuous participation is not evident. Reliance on potential experience or age in empirical studies may suggest inappropriate conclusions about women's labor market behavior.

III. A Fixed Effects Model²

Important factors unavailable to an investigator such as tastes for market work, quality of education, motivation, and views regarding child care influence labor supply decisions. These factors explain a good deal of the decision to work in the market. A fixed effects model can be relied on to statistically control for latent characteristics that are constant or stable over time.

Since many latent characteristics that influence labor supply are correlated with measured variables (tastes for market work and views about child rearing determine the amount of time a woman spends in market activities), accounting for their effects in the error term of the estimating equation is inappropriate. An omitted variables bias will affect coefficient estimates.

Chamberlain [1982, 1984] suggests maximizing a likelihood function that is conditional on a sufficient statistic summarizing the latent characteristics. He recommends the sum

¹ See for example MaCurdy [1981], Killingsworth [1983] or Chamberlain [1984] for a full presentation of the life cycle model.

² See Chamberlain [1982 or 1984] or Maddala [1987] for a complete presentation of the conditional logit model. The conditional logit estimator is available in LIMDEP 6.0.

over time of a binary variable for an individual's past participation status as the sufficient statistic. Conditioning on the sufficient statistic purges the regressors of the effects of latent characteristics. This is a useful approach since many unmeasured determinants of labor supply correlated with the measured variables are reflected in an individual's past labor market choices.³

IV. The Data and Variables

The data are drawn from the Panel Study of Income Dynamics [Survey Research Center, 1989]. To reduce the factors that influence labor supply, the sample is restricted to women continuously married to the same spouse, between 20 and 60 years in 1980, who have completed their educations and report no health limitations. The pooled data from the random national sample are drawn from the 1980, 1983, and 1986 survey years. The sample of 1129 individuals who satisfy the selection criteria increases to 3387 observations when the data are pooled for estimation over the three years.⁴

The dependent variable indicating labor force status is a binary equal to one if a wife was working at the time of the survey, temporarily laid off, or unemployed and looking for work; zero otherwise. The variables influencing market offered wages include education (highest grade completed) and experience. In one version of the model, experience is measured as the number of years a woman has worked since age 18 up to 1980. Actual experience is replaced by potential experience (age in 1980 minus education minus five) in a second version and the individual's age in 1980 is used in a third specification.⁵ Tastes for leisure are influenced by the number and ages of children, husband's usual hourly wage rate, and non-labor income.⁶ The presence of children under the age of 18 and the added effect of the presence of preschool children are included since child care will influence labor force participation.⁷

³Nakamura and Nakamura [1985] have found that an individual's past labor market status reflects her long standing preferences for home oriented versus market production.

⁴Observations used in estimation exclude individuals whose participation status does not change over time. Continuous market participants or nonmarket participants do not contribute any information to the likelihood function.

⁵Acquiring an additional year of market experience requires that the individual participate in the labor force. To avoid the interdependence of the experience regressor and the dependent variable, the experience variable is not allowed to increment over time.

⁶Non-labor income and husband's wage affect labor supply through the marginal utility of initial wealth in a life cycle model of certainty with perfect credit markets. If households face a credit constraint, the amount of household income will influence tastes for leisure and these variables should appear as regressors. Results from the specification that excludes husband's wage and non-labor income as regressors, but accounts for their influences in the fixed effect, are available upon request from the author. They are not remarkably different from those reported in Table 1.

⁷Results from a version of the fixed effects model which includes the number of children under the age of six separately from the number of children between the ages of six and 17 years are available upon request from the author. They are not remarkably different from the results reported in Table 1.

V. Empirical Results

The fixed effects results in Table 1 are obtained from a conditional logit model and describe the behavior of a sample of married women who sometimes work in the market. Each version of the model differs in one respect; the measure of the experience variable.

TABLE 1
Fixed Effects: Conditional Logit Results

Variable	Coefficients 1980-6		
Education	0.026 (0.47)	0.157* (2.58)	0.096 (1.65)
Actual Experience 1980	0.114* (2.12)		
Actual Experience Squared 1980	0.004 (0.23)		
Potential Experience 1980		-0.087 (1.61)	
Potential Experience Squared 1980		0.003* (3.00)	
Age 1980			-0.174 (1.77)
Age Squared 1980			0.003* (2.53)
Number of Children Under Six Years	-0.726* (5.17)	-0.658* (4.61)	-0.667* (4.65)
Number of Children Under Eighteen Years	-0.069 (0.55)	-0.061 (0.42)	-0.101 (0.71)
Husband's Usual Hourly Wage Rate	-0.006 (0.45)	-0.007 (0.58)	-0.009 (0.71)
Non-labor Income	0.001 (0.55)	0.001 (0.34)	0.001 (0.32)
1980 Dummy	-1.946* (2.64)	-2.634* (2.75)	0.063 (0.03)
1983 Dummy	-1.808* (2.43)	-2.490* (2.59)	0.214 (0.11)
Log Likelihood	-357.07	-358.64	-360.25
Sample size 1129			

*Indicates statistical significance of at least the 5 percent level.

T-ratios appear in parentheses.

The estimated coefficient of the experience variable is sensitive to the method of measurement. The coefficient on actual experience is positive and significant supporting the human capital explanation that market experience, enhancing an individual's skills rewarded with increased wages, will increase the probability of participation.

When actual experience is replaced with potential experience or age, the coefficient changes sign. The coefficients of potential experience and age are significant at the ten and seven percent levels respectively. Rather than reflecting skill enhancement or seniority benefits, the negative effect of potential experience or age on the probability of participation captures reduced productivity over time, fewer market options available to older individuals, or the obsolescence of knowledge and skills in a technologically advancing economy. The coefficient on the squared term of age and potential experience is positive and significant, reflecting the greater difficulty mature women encounter in the labor market due to age discrimination, increased competition with younger cohorts for jobs, or an employer's perception that older workers are less capable.

Moreover, the coefficient on education is significant and positive in the presence of potential experience reflecting the interdependence between education and experience. As complements, women who have more schooling are likely to obtain jobs that provide training. An employer perceives less risk of an educated individual dropping out of the labor force, providing some protection for an investment in training. As substitutes, specific training provides a worker with skills replacing textbook knowledge. When potential experience is unable to reflect the positive human capital attributes of prior market association, the influence is captured by education. The magnitude, sign, and significance of the remaining coefficients are basically unchanged across the three versions of the model. Some results, however, differ from the findings reported in other cross-section studies. A lack of significance of the coefficients on husband's wage and non-labor income is obtained with the conditional logit estimator. These results do not support the added or discouraged worker models.

Although married women disproportionately cycle between home and market work due to family responsibilities, the probability of participation is unresponsive to increases in household financial status. Maintaining expensive lifestyles requires two incomes and marital sorting pairs couples together with high income earning potentials. Rather than income from sources other than a wife's market activities buying her time, many women wish to maintain their market ties.

Married women, similar to single women and men have the capacity and desire to develop labor market careers. Wider opportunities for women and affirmative action policies in hiring encourage women to prepare for careers by investing in themselves. An opportunity for rewarding work and the anticipation of recouping the costs of education through participation reduces the incentive to drop out of the labor force when household income increases.

VI. Summary

A measure of potential experience falls short of the actual time an individual has spent in market activities when participation is noncontinuous. Married women with home responsibilities that restrict participation are not uncommon, therefore, direct information about labor market histories is necessary in studies of female labor supply. Potential experience will not reflect an investment in human capital gained through market

participation, but rather captures the negative effect of aging when participation is noncontinuous.

APPENDIX

Descriptive Statistics

Variable	Means and Standard Deviations		
	1980	1983	1986
Education	12.48 (2.30)	12.48 (2.30)	12.48 (2.30)
Actual Experience 1980	10.04 (8.23)	10.04 (8.23)	10.04 (8.23)
Actual Experience Squared 1980	168.54 (269.95)	168.54 (269.95)	168.54 (269.95)
Potential Experience 1980	20.33 (12.04)	20.33 (12.04)	20.33 (12.04)
Potential Experience Squared 1980	558.32 (563.84)	558.32 (563.84)	558.32 (563.84)
Age 1980	37.81 (11.46)	37.81 (11.46)	37.81 (11.46)
Age Squared 1980	1561.26 (920.92)	1561.26 (920.92)	1561.26 (920.92)
Number of Children Under Six Years	0.48 (0.74)	0.45 (0.73)	0.33 (0.66)
Number of Children Under Eighteen Years	1.27 (1.20)	1.27 (1.21)	1.21 (1.24)
Husband's Usual Hourly Wage Rate	9.62 (6.22)	11.19 (8.79)	12.23 (11.74)
Non-labor Income	2292.12 (7975.16)	3742.69 (13729.54)	4658.36 (14691.17)
Labor Force Participation	0.54 (0.49)	0.55 (0.49)	0.61 (0.48)
Sample Size 1129			

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