Do Returns to Experience Diminish at Higher Wage Levels? Evidence from a Selection-Corrected Wage Equation for Married Women

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Dataset Declaration

Dataset: Mroz (1987) Female Labor Supply - Panel Study of Income Dynamics, 1975
Source: Wooldridge, J.M. (2002). Introductory Econometrics. Data distributed via R wooldridge package and mroz.csv mirrors
URL: https://vincentarelbundock.github.io/Rdatasets/csv/wooldridge/mroz.csv
N (Observations): 753 married women; 428 with observed wages (participated in labor force)
K (Variables): 22 variables covering wages, labor supply, household composition, and parental background

Variable Map

Role	Variable	Definition & Role in Model
Dependent Variable	`lwage`	Log hourly wage. Observed for 428 working women only; the selection-correction stage accounts for the missing wages of non-participants.
Key Independent Variable	`exper, expersq`	Years of labor market experience and its square. The quadratic specification directly tests for concavity (diminishing returns) in the experience-wage profile.
Control Variable 1	`educ`	Years of education. Controls for human capital accumulation independent of on-the-job experience.
Control Variable 2	`kidslt6`	Number of children under age 6. Strong suppressor of both participation and wages; must be controlled to isolate the experience effect.
Control Variable 3	`nwifeinc`	Non-wife household income ($000s). Controls for income effects on reservation wage and labor supply decision.
Selection Eq. Only (Exclusion Restrictions)	`motheduc, fatheduc`	Mother's and father's years of education. Predict labor force participation in Stage 1 but are excluded from the Stage 2 wage equation, serve as instruments that identify the selection correction.

Hypothesis Statement

This paper tests the Mincerian prediction that returns to experience are positive but concave. It will also extend it by asking whether that concavity is an artifact of sample selection bias. Because wages are only observed for women who choose to participate in the labor force, standard OLS estimates of the experience-wage profile are subject to positive selection bias: high-ability women with strong unobserved earnings potential are overrepresented in the working sample.

H$_0$: After correcting for sample selection, experience has no statistically significant effect on log wages, thus, any observed positive relationship in OLS is driven entirely by selection of high-ability women into employment.

H$_1$: Even after Heckman selection correction, experience exerts a positive and concave effect on log wages consistent with diminishing returns to on-the-job human capital accumulation as predicted by Mincer, (1974) (positive β_1 on `exper`, negative β_2 on `expersq`) and the OLS coefficient on experience will be upward biased relative to the selection-corrected estimate.

Empirical Strategy

The identification strategy follows Heckman (1979). Stage 1 estimates a probit model of labor force participation (inlf) using all 753 observations, with motheduc and fatheduc serving as exclusion restrictions, variables correlated with participation through household norms and intergenerational human capital but plausibly excludable from the wage equation. From Stage 1, the Inverse Mills Ratio (IMR) is computed for each observation. Stage 2 regresses lwage on exper, expersq, educ, kidslt6, nwifeinc, and the IMR using only the 428 working women. The coefficient on the IMR tests for the presence of selection bias; a significant IMR indicates that OLS estimates of the experience-wage profile are biased, and the corrected coefficients provide the causal estimates of interest.