The Earned Income Tax Credit and Occupational Skill Mismatch

Sarah Akyena, Ph.D. Candidate
Department of Economics, Andrew Young School of Policy Studies, Georgia State University

Abstract

By exploring several expansions of the Earned Income tax Credit (EITC), this paper provides an intent-to-treat estimate of job match quality response to wage subsidies. As a conceptual framework, I develop a simple job search model with wage subsidies which assumes that wages are a positive function of the quality of job match, firm, and worker characteristics. The model predicts that increases in the subsidy benefit increase the marginal opportunity cost of search, therefore increasing the search cost. The increase in the cost of search reduces the net-of-cost benefit of holding out or waiting for better job opportunities, creating incentives for job seekers to lower their reservation wages, hence reducing the potential of forming a better job match. The underlying hypothesis of this study based on the predictions of this search model is that the EITC may have an unintended consequence of creating worse job matches in an initial job taken after reentering the labor market. Using data from the 1979 National Longitudinal Survey of Youth and the Occupational Information Network, results suggest that the EITC increases skill mismatch in an initial job, with the effect concentrated among single women with some level of college education. Evidence also shows that mismatch lowers the starting wage of workers. These findings suggest that the effort of policymakers to reduce welfare dependency by using wage subsidies to promote employment may lead to unintended consequences such as lower starting wages and poor match quality.

Match Quality

I follow the emerging literature on multidimensional match quality to define the quality of a job match as the difference between the set of skills required by an occupation and the set of abilities a worker possesses for learning those skills (Guvenen et al., 2020; Lise & Postel-Vinay, 2020; Addison et al., 2020).

In my analysis, I focus on mismatch along four types of skills: cognitive math, verbal, science/technology/mechanics (STM), and non-cognitive attitudinal social skills. I also construct an aggregate measure of mismatch, which is a weighted average of the mismatch along the four skill dimensions.

I calculate skill mismatch for individual i with skill endowment along dimension j; math; verbal; science/technology/mechanics, attitudinal social and employed in occupation c as the absolute value of the difference between the worker's skill and that required in his occupation. Algebraically, this is specified as follows:

$$m_{ijc} = |A_{ij} - R_{cj}|$$

Research Questions

This paper investigates

1) The impact of the Earned Income Tax Credit on Occupation skill mismatch and starting wage.
2) Whether skill mismatch affects the starting wage of workers.

Data and Empirical Strategy

The main dataset for the empirical analysis is the National Longitudinal Survey of Youth 1979 cohort (NLSY79), which I supplement with the Department of Labor's O*NET (Occupational Information Network) database. I obtain the skill endowment of workers from the NLSY79's Armed Services Vocational Aptitude Battery (ASVAB), attitudinal scales and sociability measures, and skill requirements from the O*NET.

Relying on these two sets of information, I am able to measure the quality of the match for each occupation-worker pair in my analysis sample.

I examine the impact of the EITC on mismatch by estimating models of the following form:

$$m_{i,c,k,s,t} = \beta_0 + \beta_1 AverageEITC_{k,s,t} + \beta_2 X_{i,k,s,t} + \beta_3 \Gamma_{s,t} + \beta_4 \bar{A}_i + \beta_5 \bar{R}_c + \delta_s$$
$$+ \tau_t + \epsilon_{i,c,k,s,t}$$

where $m_{i,c,k,s,t}$ represents outcomes of interests. $X_{i,k,s,t}$ is a vector of controls that include labor market experience, indicators for the number of children, and education. $\Gamma_{s,t}$ are controls for state-year-level characteristics such as the state unemployment rate and welfare generosity. $\bar{A}_i$ measures the average ability of a worker, and $\bar{R}_c$ is the average skill requirement in an occupation. δ_s and τ_t are state and year-fixed effects, respectively. Standard errors are clustered at the state level.

Results

1) Increases in the EITC generosity increase skill mismatch and reduce the starting wage of single non-college-educated women.
2) Mismatch is mainly through workers being overqualified in their jobs
3) Much of the mismatch effects are concentrated among single women with some college education.
4) Mismatch reduces the starting wage of workers, which is consistent with Bowlus (1995).

Table 1. Relationship between the EITC Benefit and Skill Mismatch in an Initial Job.

N=4,287	Total Mismatch			Positive Mismatch			Negative Mismatch		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$AverageEITC_{k,t}$	0.2331***	0.1444***	0.1310**	0.2425***	0.1118***	0.1039***	0.0639	-0.0155	-0.0105
	(0.0520)	(0.0503)	(0.0519)	(0.0668)	(0.0274)	(0.0283)	(0.0823)	(0.0509)	(0.0510)
Year Fixed Effects.	X	X	X	X	X	X	X	X	X
State Fixed Effects.	X	X	X	X	X	X	X	X	X
Number of Children Fixed Effects.	X	X	X	X	X	X	X	X	X
Demographic, Human Capital and Occupation Requirements Controls.		X	X		X	X		X	X
Experience and Intermittency Controls.			X			X			X

Notes: This table shows the relationship between the EITC benefit and skill mismatch using the full analysis sample. The dependent variable in the regressions across all columns is a mismatch scaled to a unit standard deviation. The analysis sample across all columns includes single non-college-educated women aged 19 to 49 between 1980 and 2006 in the NLSY79 survey with valid test scores and non-missing attitudinal measures who reentered the labor market between 1980 and 2006 and took a job not previously held. The sample consists of 2,047 unique individuals and 4,287 observations. The average EITC benefit is adjusted for real 2007 dollars and rescaled to be in thousands of dollars for clear interpretation of estimates. Additional controls in all regressions except Columns 1, 4, and 7 include physical health rank, indicator for whether an individual resides in a Standard Metropolitan Statistical Area, Metro/Micropolitan Unemployment rate, State unemployment rate, the maximum TANF and SNAP benefit for three household family, occupation and industry dummies at the one-digit level. The full set of controls are in Columns 3, 6, and 9 and include year fixed effects, State fixed effects, number of children fixed effects, education and its square, race dummy, the average skill of a worker, average skill requirement, experience and its square, intermittency and its square, and the additional controls. Regressions are weighted using the NLYS79 initial sampling weight. Standard errors are clustered at the State level and are in brackets. ***, **, * denote significance levels at 0.01, 0.05, and 0.1, respectively.

Table 2. Relationship between the EITC Benefit and Skill Mismatch in an Initial Job, Subsample.

	Total Mismatch			Positive Mismatch			Negative Mismatch		
	High School and Less	Some College	All Mothers	High School and Less	Some College	All Mothers	High School and Less	Some College	All Mothers
$AverageEITC_{k,t}$	0.07107	0.3311***	0.1475**	0.0471	0.2308***	0.1119***	-0.0189	-0.0722	-0.0191
	(0.0487)	(0.1087)	(0.0710)	(0.0281)	(0.0507)	(0.0411)	(0.0300)	(0.0917)	(0.0392)
Full set of controls	X	X	X	X	X	X	X	X	X
Observations	2,581	1,706	1,763	2,581	1,706	1,763	2,581	1,706	1,763

Notes: This table shows the relationship between the EITC benefit and skill mismatch for different subsamples. The dependent variable in the regressions across all columns is a mismatch scaled to a unit standard deviation. Subsamples are obtained by splitting the analysis sample into different groups. The full set of controls is discussed in Table 1. Regressions are weighted using the NLYS79 initial sampling weight. Standard errors are clustered at the State level and are in the brackets. ***, **, * denote significance levels at 0.01, 0.05, and 0.1, respectively.

Table 3. Regressions for Wage Effects.

	Full Sample	High School and Less	Some College	All Mothers
Panel A				
$AverageEITC_{k,s,t}$	-0.0418	-0.0478	-0.0205	-0.1049**
	(0.0304)	(0.0327)	(0.0535)	(0.0510)
Panel B				
Mismatch	-0.0151*	-0.0036	0.0063	0.0060
	(0.0089)	(0.0166)	(0.0135)	(0.0223)
Panel C				
Positive Mismatch	-0.0877***	-0.0757**	-0.0679**	-0.0904
	(0.0158)	(0.0334)	(0.0289)	(0.0546)
Negative Mismatch	-0.0545***	-0.0589**	-0.0847***	-0.0855***
	(0.0164)	(0.0244)	(0.0237)	(0.0270)
Full set of controls	X	X	X	X
Observations	4,129	2,490	1,639	1,706

Notes: This table shows the relationship between the EITC benefit and the starting wage and mismatch outcomes and starting wage. The dependent variable in the regressions across all columns is the natural log of the starting wage. The full sample includes single non-college-educated women aged 19 to 49 between 1980 and 2006 in the NLSY79 survey with valid test scores and non-missing attitudinal measures who reentered the labor market between 1980 and 2006 and took a job not previously held. Subsamples are obtained by splitting the full sample into different groups. The starting wage is adjusted for inflation using 2007 dollars. The full set of controls is described in Table 1. Regressions are weighted using the NLYS79 initial sampling weight. Standard errors are clustered at the State level and are in brackets. ***, **, * denote significance levels at 0.01, 0.05, and 0.1, respectively.

Conclusions

1) The Earned Income Tax Credit (EITC) promotes employment among the targeted population.
2) However, it has unintended consequences, such as increasing skill mismatch and lowering the starting wages of single non-college-educated women.
3) The EITC's contribution towards skill mismatch is much stronger among single women with some level of college education.
4) The labor market internalizes mismatch through lower starting wages, which is consistent with findings from previous literature.

Contact

Sarah Akyena, Ph.D. Candidate
Department of Economics, Andrew Young School of Policy Studies, Georgia State University
Email: Sakyena1@student.gsu.edu
Website: https://www.sarahakyena.com