Examining the Effect of Technology on the Earning Power of Disabled People

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The Story

Social norms and expectations cause people to believe disabled people produce less quality and quantity of work in the same amount of time as time as their non-disabled counterpart. This discrimination causes these workers to get paid less and have lowered income, job mobility and job retention.

U.S. BUREAU OF LABOR STATISTICS

Current Population Survey (CPS)

Figure 1. Origin of data.

Research

This project examines if computer use in the workplace increases disabled earnings. This study uses Ordinary Least Squares (OLS), Heckman-probit, and Heckman-OLS regressions to examine if computer use in the workplace increased disabled earnings[1]. The data used is from the Bureau of Labor Statistics (CPS) and ranges from 2011 to 2015 bi-yearly.

Specific Disability Variable	Description
Deaf	The person is Deaf or has serious difficulty hearing
Blind	The person is Blind or has serious difficulty seeing when wearing glasses
Memory	The person is has serious difficulty remembering, concentrating or making decisions
Physical	The person has serious difficulty walking or climbing stairs
Selfcare	The person has serious difficulty dressing or bathing
Errands	The person has serious difficulty doing errands alone such as visiting a doctors

Figure 2. Table describing the specific disability variables.

Economic Models

$$\text{LogHourlyWage} = \beta_0 + \beta_1\text{Disabled} + \beta_{14}\text{Age} + \beta_{15}\text{Age}^2 + \beta_{16}\text{Education} + \beta_{17}\text{Race} + \beta_{18}\text{Gender} + \beta_{19}\text{Married} + \beta_{20}\text{Metro} + \beta_{21}\text{State dummies} + \beta_{22}\text{Year dummies} + \epsilon$$

$$\text{LogHourlyWage} = \beta_0 + \beta_1\text{Blind} + \beta_2\text{Deaf} + \beta_3\text{Memory} + \beta_4\text{Physical} + \beta_5\text{Self Care} + \beta_6\text{Errands} + \beta_{14}\text{Age} + \beta_{15}\text{Age}^2 + \beta_{16}\text{Education} + \beta_{17}\text{Race} + \beta_{18}\text{Gender} + \beta_{19}\text{Married} + \beta_{20}\text{Metro} + \beta_{21}\text{State dummies} + \beta_{22}\text{Year dummies} + \epsilon$$

Figure 3. Two models used to confirm the assumption that disability has a significant affect on wage.

The two models shown above were used in to confirm the assumptions the model was based on. Since the disability variable didn't have a significant affect on Log Hourly Wage in the OLS regressions the Heckman Selection model was used. The two models below were used to analyze the effect of computer use on disabled earnings. Both sets of models (above and below) use a general disability in one model and specific disability terms in the other. The set of models below also includes computer use and computer use interaction term variables.

$$\text{LogHourlyWage} = \beta_0 + \beta_1\text{Computer Use} + \beta_2\text{Disabled} + \beta_3\text{Disabled * Computer Use} + \beta_4\text{Age} + \beta_5\text{Age}^2 + \beta_6\text{Education} + \beta_7\text{Race} + \beta_8\text{Gender} + \beta_9\text{Married} + \beta_{10}\text{Metro} + \beta_{11}\text{State dummies} + \beta_{12}\text{Year dummies} + \epsilon$$

$$\text{LogHourlyWage} = \beta_0 + \beta_1\text{Blind} + \beta_2\text{Deaf} + \beta_3\text{Memory} + \beta_4\text{Physical} + \beta_5\text{Self Care} + \beta_6\text{Errands} + \beta_7\text{Computer Use} + \beta_8\text{Blind * Computer Use} + \beta_9\text{Deaf * Computer Use} + \beta_{10}\text{Memory * Computer Use} + \beta_{11}\text{Physical * Computer Use} + \beta_{12}\text{Selfcare * Computer Use} + \beta_{13}\text{Errands * Computer Use} + \beta_{14}\text{Age} + \beta_{15}\text{Age}^2 + \beta_{16}\text{Education} + \beta_{17}\text{Race} + \beta_{18}\text{Gender} + \beta_{19}\text{Married} + \beta_{20}\text{Metro} + \beta_{21}\text{State dummies} + \beta_{22}\text{Year dummies} + \epsilon$$

Figure 4. wo models used to confirm the hypothesis.

Results

Results found showed significance in one interaction term between a specific disability term. When disabled people with selfcare issues used computer in the work place they earned However, the general disability and computer use interaction term and the rest oft the specific disability interaction terms did not show any significant results.

Variables	Regression Results	Significant?
Computer Use	0.173	✓
Deaf*Computer Use	0.015	✗
Blind*Computer Use	-0.148	✗
Memory*Computer Use	0.038	✗
Physical*Computer Use	-0.067	✗
Selfcare*Computer Use	0.586	✓
Errands*Computer Use	0.022	✗

Figure 5. Table summarizing statistically significant results.

Conclusions

There is no economic or other rational theory that can explain the relationship between computer use by selfcare disabled workers and increased earnings. These results are not strong enough to support computer use in the work place as a accommodative technology to increase disabled earning power. No policy implications can be made. Further research should be done into what kind of jobs these "selfcare" disabled people have.

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References

[1] Rodgers, William M., Baldwin Marjorie, and Johnson G. William. 2006. "A critical review of studies of discrimination against workers with disabilities." Handbook on the Economics of Discrimination.

[2] Basas, Carrie Griffin. 2013. "Universally Designing the Public Sector Workplace: Technology as Disability Access." WorkingUSA 16 (1): 69–86.