

Selection, Investment, and Women's Relative Wages over Time (Mulligan & Rubinstein, 2008)

During 1970s through 1990s period, gender wage gap diminished substantially, at the same time, however, within gender wage gap grew rapidly. Previous literatures have concluded this event is coincidental. Nonetheless, This paper proposes one possible explanation that this was the result from the change in women labor force. Growing relative wage (women to men) increased the opportunity cost of women with higher human capital, and growing within gender inequality lowered the return for women with low human capital. As a consequent, women with high human capital entered the labor market and those with low human capital drop out. The paper examine this selection effect with three empirical approaches: 1) exploring nonwage evidence 2) Heckman's two step estimator and 3) identification at infinity method.

For the first approach, the paper tries to investigate women unobserved skills through two different proxies, husbands' wage and IQ. Using the data from U.S. census bureau Current Population Survey (CPS), the study compares the employment rate for 4 groups of wives whose husbands are in different wage quartile. The result shows an increase in employment rate for wives with high husband's wage and an decrease in the group with low husband's wage. Another proxy used is the IQ data from National Longitudinal Survey. Applying linear probability and probit model to data in different decade, the study found that the correlation between IQ and employment probability has turned from negative in 1970s to positive in 1990s. Assuming both of the proxies can reflect women human capital, these are evidences for changing labor force composition.

The two later approaches are built on the Gronau-Heckman-Roy (GHR) model, which provides an analytical framework to explain how selection bias can result in both closing between and widening within-gender gap. These two estimators, nonetheless, relies on different identification. Heckman's two-step estimator depends on exclusion restriction that some demographic variable must affect only labor supply but not affect wage. This allows inverse Mills ratio to be calculated in step 1 and act as the control for selection bias in step 2. On the other hand, identification at infinity approach relies on selecting samples based on observed variables such that almost the selected sub sample have no selection bias. In this particular case, it selects samples based on demographic variables and try to make the sample as close to 100% employment keep the selection bias small. Thus, the identification at infinity approach can correct for selection bias on unobservable characteristics, but this advantage comes with the expense for sample size. Noted that the size of selection effect is obtained by subtracting the estimated relative wage before and after controlling for selection bias.

In conclusion, All of the three approaches yield similar dynamic for the selection bias; it had grown significantly from 1970s through 1990s. This supports the claim that changing composition of female labor force is a major factor for the closing between-gender but widening within-gender gap.