

# Learning with your spouse: Does the similarity of spouse's occupation affect individual's earnings?

Data/Method Section

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## Data

This paper is an empirical analysis based on The Panel Study of Income Dynamics - PSID - longitudinal household survey (Panel Study of Income Dynamics 2017).

The core PSID sample consists of two independent samples: a cross-sectional national sample, known as the SRC (Survey Research Center) sample, and a national sample of low-income families, known as the SEO (Survey of Economics Opportunities) sample. In the original 1968 PSID sample, there're 1,872 low income families from the SEO sample and 2,930 families from SRC sample. In 1990, the PSID added roughly 2,000 Latino households, including families originally from Mexico, Puerto Rico, and Cuba. But since it did not fully represent all post-1968 immigrants, the Latino sample was dropped after 1995. Due to the limitation of funding, the original core sample was reduced from roughly 8,500 families in 1996 to approximately 6,300 in 1997. And the majority of the cuts were taken from the SEO sample. My estimation sample only includes those individuals who are associated with families from the SRC.

The criteria that I use to construct the estimation sample are as follows, which is closely related to the method Gemici(2007) used. I follow heads of families from the start of their career through their last interview or until they are retired, depending on which event occurs first. There are 32916 heads in the sample (who ever been head of a family during all the waves, this includes married and single individuals). I follow the employment, occupation, wage and location histories of these heads and their wives during the course of their marriage.

The PSID collects retrospective histories of marriages for those individuals who are of marriage eligible age and who are living in a PSID family at the time of the interview in the 1985-2003

waves. The variable for the year of marriage is only available for such individuals. For those who are out of the sample by 1985, I assume that the time of marriage is the first year that I start observing them to be married. I consider an individual to be married if the marital status of the head at the time of interview is ‘Married or permanently cohabiting’. Divorce is assumed to occur when the individual is observed to be married in period  $t$  and not married in the next period.

A location is defined as a Census Division. Census divisions are groupings of states that have been defined by the U.S. Census Bureau for the purpose of data presentation. There are nine census divisions in the United States: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, Pacific. The list of states that are included in each division and a map of the census divisions are included in the Appendix. A couple is considered to have relocated if their location in period  $t$  is different from their location in the next period. During the course of the year, the couples are assumed to remain in the same location.

PSID has detailed information on employment, earnings and total labor market experience of household heads and wives. I obtain the employment status of the individuals through the number of hours they work during the year. I consider an individual to be working if their hours of work exceeds 1000 hours for a given year. The annual earnings is computed by multiplying their hourly wages by 2000 ( $50 \text{ weeks} \times 40 \text{ hrs/wk}$ ) hours so that the variation in earnings only reflects variation in the hourly wages. I construct the labor market experience variable of the household head and wife as follows. The PSID has information on the amount of time the household head and wife has worked since the age of 18 until the time of interview. The work experience variable is self-reported and the question is asked of only new heads or wives in the household. The question is asked to all heads and wives for only certain years. For each individual, I take the value of the work experience variable that is reported in the years that they are asked and work either backwards or forwards taking into account the employment status for each preceding or subsequent year. I consider the work experience of an individual to be 0 at age 18. For such individuals, I update the experience variable according to their subsequent employment status during the time that I observe them.

For occupational similarity, I obtain the 3-digit occupation code from 2000 CENSUS OF POPULATION AND HOUSING for heads and spouses from PSID. Based on the O\*Net Occupation Database, I generate a database of distance between different occupations based on all the dimensions. By merging this database with PSID, I can compute the occupation distance between heads and spouses as their occupational similarity.

## Descriptive Statistics

*I'm still dealing with the data, so the current descriptive statistics is based on the individual dataset, which lack some essential variables in my model.*

Table 1: Descriptive Statistics of Key Variables

Key Variables	Mean	Std
Age of heads	57.964	11.737
Years of Education of heads	14.098	2.161
Annual Work Hours	1744.449	844.195
Distance bw Spouses' Occupations 'Abilities' File	0.130	0.450
Distance bw Spouses' Occupations 'Activities' File	0.150	0.371
Distance bw Spouses' Occupations 'Skills' File	0.200	0.567
Distance bw Spouses' Occupations 'Knowledge' File	0.273	0.130
Years Married	11.840	20.922
Age of HEAD When Married	29.500	18.621

Table 2: Descriptive Statistics of Employment Status(2015)

Employment Status	Freq	Percentage
Nonresponse	22723	0.690
Working now	6657	0.202
Only temporarily laid off	34	0.001
Looking for work, unemployed	490	0.015
Retired	1361	0.041
Permanently disabled	355	0.011
HouseSpouse; keeping house	643	0.020
Student	533	0.016
Other	35	0.001
NA/Refused	85	0.003

(Wage and Work Experience data is still being processed.)

# Empirical Strategy

As an empirical analysis, this paper follows the classical wage model proposed by Mincer(1958). To focus on the interaction between individual and their spouse, I added several new variables into the model. The basic Mincer earnings function is:

$$\ln(W_j) = \ln(W_{j,0}) + \beta_s S_j + \beta_{e1} experience + \beta_{e2} experience^2$$

Where  $j$  is individual  $j$ ,  $W$  and  $S$  means wage and years of schooling respectively. And experience here is actually  $(t - S)$ , time after schooling. To conduct an empirical analysis focusing on occupational similarity, the equation becomes:

$$\ln(W_{j,t}) = \ln(W_{j,0}) + \beta_{s,j} S_{j,0} + \beta_{e1} experience + \beta_{e2} experience^2 + \vec{\beta}_{spouse} \vec{V}_{OccSim}$$

where  $\vec{V}_{spouse}$  is a  $4 \times 1$  vector of variables showing the four dimensions of spouses' occupation similarity.

Tentatively, this model would include several dummy variables on “whether the individual has moved into another city”, “whether the individual has changed occupation”, and “whether the individual starts raising child” etc. to deal with different situations.

*I will follow several different life/career courses of individuals to better capture the possible factors that might have influence on the causality I'm interested in.*

## Initial Results

As the data is still being processed, the following results are only tentative. For the basic Mincer Earning Equation, I use PSID data to conduct a first-step empirical analysis. The results show that all the variables used in this basic model can explain current wage of an individual to a certain level, since they're all statistically significant. The model's performance is limited according to the low R-square, but this seems to be reasonable since individuals' wages are influenced by a lot of factors in real life. As a basis of my future research, this result reveals a promising credibility of the dataset.

Table 3: Initial Result on PSID data (Basic Mincer Earning Equation)

	<i>Dependent variable:</i>
	Log of current wage
Log of initial wage (first start career)	0.280*** (0.014)
Years of Education	0.005*** (0.001)
Years of Experience	0.024*** (0.002)
Square of Experience	−0.0002*** (0.00003)
Constant	1.924*** (0.038)
Observations	2,228
R <sup>2</sup>	0.220
Adjusted R <sup>2</sup>	0.218
Residual Std. Error	0.436 (df = 2223)
F Statistic	156.536*** (df = 4; 2223)
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

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