

Problem set to Lecture 2

Estimate labour supply elasticity

Important

Upload a log file that includes both the commands and outputs!
Use comments to

Data

This exercise uses EU-SILC public microdata from Finland that can be downloaded from <https://ec.europa.eu/eurostat/web/microdata/public-microdata/statistics-on-income-and-living-conditions>.

The documentation for the dataset (including variable descriptions) can be downloaded from <https://circabc.europa.eu/ui/group/853b48e6-a00f-4d22-87db-c40bafd0161d/library/be52ec21-09db-4b2e-9998-97c27fb5db4d/details>.

The dataset is a ZIP folder with yearly CSV files. You need household- and person-level datafiles for years 2004 and 2005:

- FI_2004h_EUSILC.csv
- FI_2004p_EUSILC.csv
- FI_2005h_EUSILC.csv
- FI_2005p_EUSILC.csv

Cleaning steps

1. Merge household- and person-level data separately for each year.
Household-level data contains variable HB030 with unique household ID. Person-level data contains variable PB030 with unique person ID. You can recover household ID in person-level data by removing the last 2 digits from person ID. Then, merge the household- and person-level data by year (HB010 and PB010) and household ID.

2. Select variables of interest.

- PB010 - Year of survey
- HB030 - Household ID
- PB030 - Personal ID
- HH060 - Current rent related to occupied dwelling
- HH070 - Total housing cost
- HS130 - Lowest monthly income to make ends meet
- HY010 - Total household gross income
- PB140 - Year of birth
- PB150 - Sex
- PL020 - Actively looking for a job
- PL040 - Status in employment
- PL060 - Number of hours usually worked per week in main job
- PY010G - Employee cash or near cash income

You may use other variables in the dataset. If you do, you should clearly specify which variable you are using and why.

3. For simplicity, keep only individuals

- who are or were employed (based on employment status variable),
- for whom looking for job indicator is missing (currently employed), and
- who work at least 25 hours in a week
- who are only observed once per year (there is one odd person ID which appears twice in 2005)

You should have 10 761 observations in total (see the tabulation below).

year	N
2004	5221
2005	5540
All	10761

4. Prepare variables for the estimation

You can use variables for rent, housing cost or lowest monthly income to make ends meet to capture consumption value.

Make sure to clearly specify which variable you are using, how and why! That is, specify which variable from the dataset you use, any transformations you apply to it, where it enters in the regression equation and why you chose this variable.

Estimations

1. Estimate the cross-sectional elasticity in 2005 using regression Equation 1.

$$\ln H_{it} = \alpha_w \ln w_{it} + \alpha_R (C_{it} - w_{it} H_{it}) + \theta X_{it} + v_{it} \quad (1)$$

- a. Report Marshallian wage elasticity, income effect and Hicksian wage elasticity given average value of wage and $H_{it} = 40$.
- b. Compare the estimates to those reported in Table 1.19 in Pencavel (1986)

Table 1.19
Estimates from U.S. nonexperimental data of behavioral responses for men.

	<i>E</i>	<i>mpe</i>	<i>E*</i>
Ashenfelter and Heckman (1973)	-0.16	-0.27	0.12
Bloch (1973)	0.06	-0.06	0.12
Boskin (1973)	-0.29	-0.41	0.12
DaVanzo, DeTray and Greenberg (1973)	-0.15	-0.004	-0.14
Dickinson (1974)	-0.11	0.08	-0.19
Fleisher, Parsons and Porter (1973)	-0.19	-0.23	0.04
Garfinkel (1973)	0	0	0
Greenberg and Kosters (1973)	-0.09	-0.29	0.20
Ham (1982)	-0.16	-0.11	-0.05
Hausman and Ruud (1984)	-0.08	-0.63	0.55
Kniesner (1976a)	-0.17	-0.01	-0.16
Kosters (1966)	-0.09	-0.14	0.04
Masters and Garfinkel (1977)	-0.11	-0.05	-0.06
Wales and Woodland (1979)	0.14	-0.70	0.84

Notes: The estimates reported for DaVanzo, DeTray and Greenberg (1973) correspond to those given on the last line of Table 11 of their Rand report where both the wage rate and nonwage income variables were instrumented. Those for Ham (1982) correspond to those given in column (1) of Table IV of his paper. Those for Kniesner (1976a) apply to those men whose wives were not at work for pay. For Masters and Garfinkel (1977), I took what they described as their “best estimates” of *E* and the *mpe* even though the coefficients reported did not derive from the same regression equation. Boskin’s (1973) results are those for white men only. Dickinson’s (1974) *mpe* is calculated from his estimate coefficient on “other (nontransfer) family income”. Hausman and Ruud’s estimates are calculated for a household with an assumed marginal tax rate of 25 percent so the husband’s net wage rate is \$4.31 and the wife’s net wage rate is \$2.63.

- c. Discuss possible issues with the estimates and suggest ways to mitigate these issues (either by using alternative estimation strategy or data source). Explain how the proposed solutions help improve the estimates. **You do not need to implement these solutions.**
2. Estimate the Frisch elasticity using regression Equation 2.

$$\Delta \ln H_{it} = \rho + \alpha_w \Delta \ln w_{it} + \theta \Delta X_{it} + \Delta v_{it} \quad (2)$$

- a. Report Frisch elasticity.
- b. Discuss possible issues with the estimate and suggest ways to mitigate these issues. Explain how the proposed solutions help improve the estimates. **You do not need to implement these solutions.**

References

Pencavel, John. 1986. "Chapter 1 Labor Supply of Men: A Survey." In *Handbook of Labor Economics*, 1:3–102. Elsevier. [https://doi.org/10.1016/S1573-4463\(86\)01004-0](https://doi.org/10.1016/S1573-4463(86)01004-0).