Documentation for the Spreadsheet: aaronson_french_cfl_313_calculations.xlsx

This file has 4 different tabs

- Table1: has basic calculations used to generate table 1 given CPS data.
- Income: calculates nominal income gain of minimum wage workers from a $1.75 increase in the minimum wage. These calculations are in the section "Household Income"
- Prices: Given the results in the tab "Income", gives increase in aggregate prices. These calculations are presented in section "Consumer Prices"
- Spending: gives increase in aggregate spending. These calculations are presented in section "Aggregate Spending". This tab is slightly more involved than the others, and needs more explaining.

Documentation for the tab: Spending

The key cells are:

- Cells B4-B8: this is just Table 1 of the paper
- Rows 15 and 16: assumed disemployment elasticities
- Row 20: number of workers making between $6 and $9 per hour, plus one third of those making $9-$10 (we down-weight this group because we think they will only get a small income boost from a minimum wage hike
- Row 21: Gives the spending response of minimum wage workers to a $1 increase in the minimum wage. This is the key equation of the paper. The derivation for the equation is below.
- Rows 29-33: this is the predicted decline in spending of above minimum wage guys.
- Row 34: total spending response, aggregating over all members of the economy

Derivation of Row 21 in the "Spending" tab

We have two groups of minimum wage workers g=teens,adults. c^g is the group's consumption. α^g is the group's spending response to a dollar increase in the minimum wage. n^g is the number of workers in the group. w^g is the group's wage. For minimum wage workers, this is the minimum wage.

The goal is to infer the spending response of minimum wage workers to an increase in the minimum wage. We assume

$$c^g = \alpha^g n^g w^g$$

$$\frac{dc^g}{dw^g} = \alpha^g (\frac{dn^g}{dw^g} w^g + n^g)$$

$$\epsilon^g = \frac{dn^g}{dw^g} \frac{w^g}{n^g}$$

$$\therefore \frac{dc^g}{dw^g} = \alpha^g (\epsilon^g n^g + n^g) = \alpha^g n^g (1 + \epsilon^g)$$

We have

- $\alpha^{adults} = 2800$ (i.e., each \$1 increase in the minimum wage increases annual spending of adult minimum wage workers by \$2,800)
- $\alpha^{teens} = 1000$
- $n^{adults} = .77N$, which is the share of all minimum wage workers who are adults
- $n^{teens} = .23N$, which is the share of all minimum wage workers who are teenagers
- $\epsilon^{adults} = -.25$, which is the elasticity of adult minimum wage employment to the minimum wage
- $\epsilon^{teens} = -.5$, which is the elasticity of teenage minimum wage employment to the minimum wage
- $N = 17,507,426.00$

The spreadsheet is designed so that we can vary parameters easily. The different columns of the spreadsheet use different employment elasticities.

Total spending response to an increase in the minimum wage (given in Row 21) is

$$\frac{dc}{dw} = \alpha^{adults} n^{adults} (1 + \epsilon^{adults}) + \alpha^{teens} n^{teens} (1 + \epsilon^{teens})$$