How Income Changes Affect Personally Experienced Inflation

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Motivation

Much is hidden in the Bureau of Labor Statistic's monthly report of the Consumer Price Index that does not yield a holistic view of inflation's effect on consumers and individuals in the U.S. economy.

Literature review:
- Higher income individuals experience lower inflation through to access to product variety and innovation (Jaravel, 2017)
- Lower income individuals experienced higher inflation for the costs of living during the Great Recession (Argente & Lee, 2015)

No causal research... yet?

Causal Question of Interest

If someone experiences an increase to their income, how does this cause their personally experienced inflation to change?
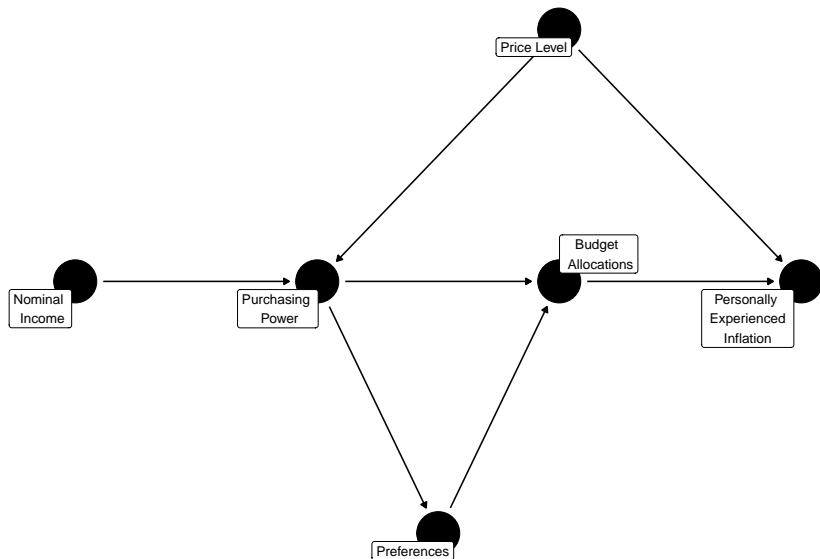
Calculation of personally experienced inflation:

$$\pi_t^i = \frac{\sum_l \theta_{l,t}^i P_{l,t} - \sum_l \theta_{l,t-1}^i P_{l,t-1}}{\sum_l \theta_{l,t-1}^i P_{l,t-1}}$$

As vectors:

$$\pi_t^i = [\theta_t^{i\prime} P_t - \theta_{t-1}^{i\prime} P_{t-1}][\theta_{t-1}^{i\prime} P_{t-1}]^{-1}$$

Potential Sources of Bias

Preferences & income | MPC | Income & Types of Goods |
Locations & inflation shocks | Seasonal Shocks | Methods used

Ideal Experiment

- Subjects: a large group of people with identical income streams, living in same location.
- Track their consumption of individual goods perfectly
- Randomly assign portion of group to receive a sizeable permanent pay increase
- Continue to track the consumption of the treatment & control groups
- Calculate personally experienced inflation & use diff-in-diff for point estimate

Practical Research Design (quasi-experimental)

▶ Large city planning a pay increase for teachers in one district but not another (not unheard of)

▶ With their permission, track their bank records before and after the pay raise (difficult but not impossible to obtain)

▶ Calculate personally experienced inflation & use diff-in-diff for point estimate: β_4 from:

$$\pi_t^i = \beta_0 + \beta_1 D_i + \beta_2 T_t + \beta_3 CPI_t + \beta_4 D_i T_t + \epsilon_{it}$$
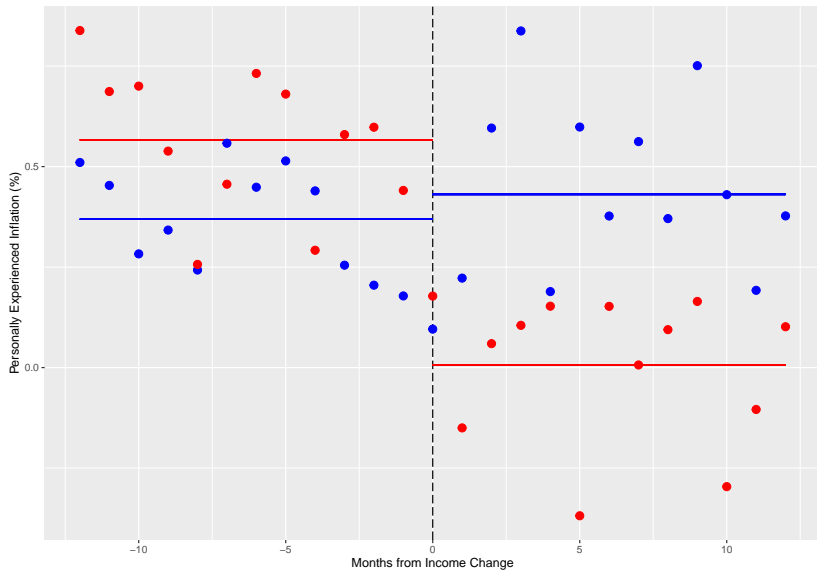
Possible Results: Positive Effect
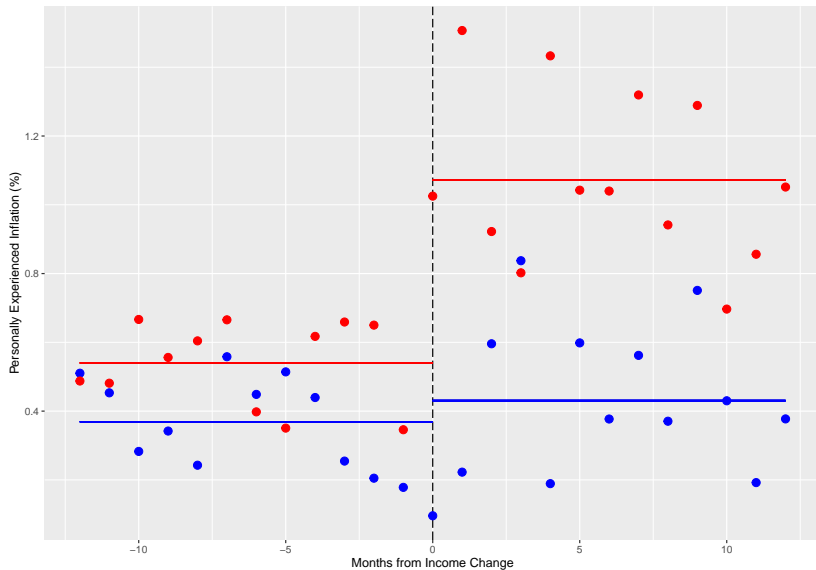
Possible Results: Null Effect
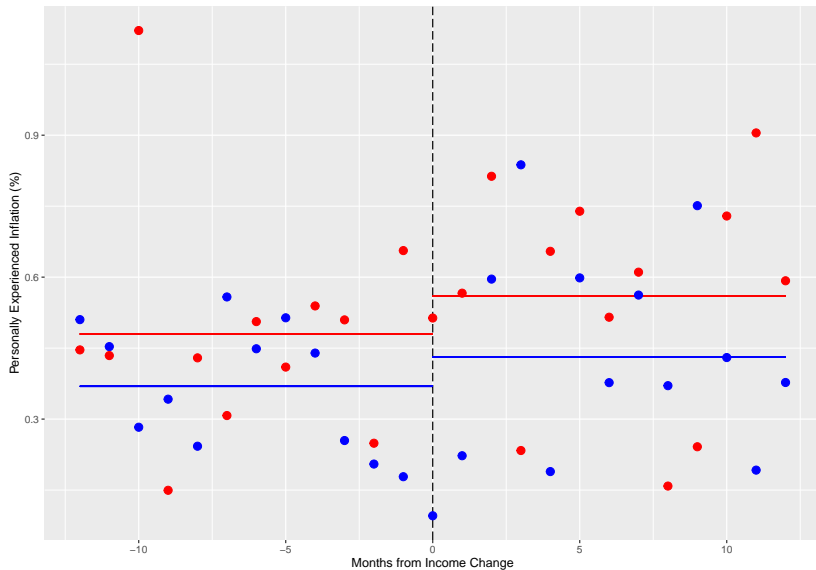
Possible Results: Negative Effect

Sources & Extra

Argente, David and Munseob Lee, "*Cost of Living Inequality during the Great Recession*," 2015

Jaravel, Xavier, "*The unequal gains from product innovations: Evidence from the US retail sector*," 2017

What's Your Rate of Inflation? NYT