STAT 27420: Research Project Writeup

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We are hoping to revisit Bachmann et al. (2014), who examined the relationship between inflation expectations and spending attitudes. Specifically, the authors estimate the causal effect of 12-month inflation expectations on households' reported readiness to spend on durable goods. The direction and magnitude of this effect is relevant to ongoing debate about the importance of keeping inflation expectations "anchored" (see Rudd (2021), Binder et al. (2022), and Bernanke (2007)). The authors use micro-data from the University of Michigan's Survey of Consumer Expectations, a widely-used public dataset that asks a representative sample of households a comprehensive set of questions regarding their outlook on the economy and their own personal finances. The authors' findings suggest that inflation expectations have little to no impact on households' willingness to spend, in contrast to certain theoretical predictions that consumers would front-load spending in the face of rising prices.

The main empirical method deployed by the authors' are a set of ordered probit regressions. The authors' main specification is:

$$y^*_{i,t} = \beta_1 \pi^e_{i,t} + \beta_2 \pi^e_{i,t} \times D_{ZLB} + x_{i,t}\gamma + \varepsilon_{i,t}$$

for household i and month/year t where $\pi^e_{i,t}$ is the percent expected inflation in the next 12 months, D_{ZLB} is a dummy for the zero lower bound period, and $x_{i,t}\gamma$ is a vector of observables. The authors' conclusions therefore rely on an assumed underlying linear relationship between the treatment and outcome (with a change in slope allowed for when monetary policy is at the zero-lower bound (ZLB)). Furthermore, the authors' identification strategy relies heavily on the no-unobserved-confounders assumption. The authors adjust on demographic attributes, household-specific economic expectations, and several non-inflation macroeconomic measures.

Our approach will improve on this in several ways: we will expand the dataset, relax the parametric assumptions implicit in the authors' design, and perhaps attempt to improve plausibility of the selection-on-observables assumption by including better adjustments.

We'll expand the dataset in two ways. First, we will include recent economic developments. At the time of publication, the authors used data from 1984 to 2012 ($\approx 63,000$ observations). Adding data from 2012 to now will not only increase the observations, but also include expectations that occur during distinct monetary policy periods that may affect consumer's views. The distinct periods go as follows: the rest of the period where monetary policy was at the ZLB, the interest rate lift-off of 2015-2020, the COVID-19 and ensuing interest rate cuts back to the ZLB, and the current period of high cost-push inflation. These distinct periods may have different data-generating processes that lead to changes in causal relationships.

Furthermore, the original dataset is generated from a rotating panel survey design, in which 60% of each month's observations are first-time interviewees and 40% were interviewed 6 months earlier. The authors discarded the repeat interviews, whereas we aim to use them in our analysis.

We believe that the authors' reduced-form method can be improved upon using more conventional machine learning techniques. We will apply the AIPTW estimation procedure as covered in class to the

causal question, with modifications as needed to account for the ordered nature of the data and experimenting with different propensity and outcome ML models. While our identification will also rely on the no-unobserved-confounders assumption, we will apply a causal DAG analysis to identify modifications to the adjustment set that could improve the reasonableness of the assumption.

References

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