Replication Project: The Slope of the Phillips Curve: Evidence from U.S. States by Hazell et al. (2022)

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This file contains information required by Assignment 2, including the short summary of the paper and the dataset.

Main Question and Contribution:

The paper's main question is to estimate the slope of the U.S. Phillips curve, and explain the inflation puzzle observed between 1990-2020. The main contributions of the study are three folds. First, the authors constructed a novel data set of state-level consumer price indices that includes the data from small cities as opposed to the previous data set that other papers use, which includes only price data from big cities. Second, the paper proposes a new identification strategy by deriving the Philips curve that is a function of long-term inflation expectation to show that the estimates from previous studies do not reflect the true slope of the Phillips curve. Third, the paper develops a framework that incorporates the spillover of supply shock between tradeable and non-tradeable sectors at a regional-level. It then uses the regional-level slopes to infer the aggregate slopes of the Phillips curve.

Empirical Framework:

Empirical framework: The concept proposed in the paper is that changes in long-term inflation expectation will affect current inflation and contaminate the estimate of the true Phillips curve slope. To construct a regression specification that captures long-term expectation, the paper proposes a two-region open economy model with tradeable and non-tradeable sectors. Then It log-linearizes the model to obtain the regional-level and aggregate Philips curves which are functions of long-term inflation expectation. Then it replaces the expectation term with time and region fixed effects. In this setting, state-level specification and state fixed effects helps distinguish demand and supply shocks, while changes in long-term inflation expectation is captured by the time fixed effect. This specification offers more accurate estimate of the PC slope compared to the previous studies.

Description of the First Dataset:

The raw dataset is from the Fred database. It contains the quarterly data of unemployment rate, natural rate of unemployment, and headline and core personal consumption expenditures (PCE) inflation. There are 332 observations in the dataset starting from 1948-2030 where the data from 2020-2030 is the forecast for the natural rate of unemployment All variables are in percentage point.

Histogram of the Unemployment Rate: