A Small Extension to "The Slope of the Phillips Curve: Evidence from U.S. States"

In this project, I create additional versions of Figure VI from "The Slope of the Phillips Curve: Evidence from U.S. States" by Jonathon Hazell, Juan Herreño, Emi Nakamura, and Jón Steinsson. In the original figure (shown below), the authors plot inflation less long-term inflation expectations against their Phillips curve fit. In the paper, the authors note, "the amplitude of inflation fluctuations over the last few business cycles has been roughly in line with what our cross-sectional estimates…suggest" (Hazell et al.).

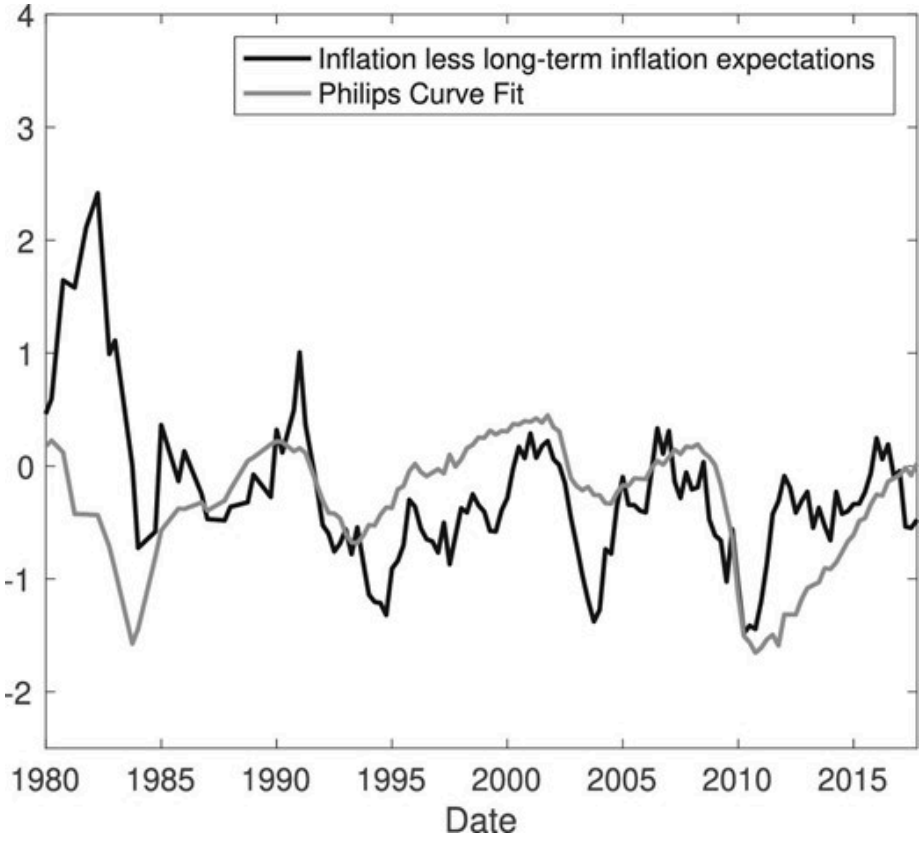

Figure VI: Aggregate Phillips Curve

Economists Tim Mahedy and Adam Shapiro published an FRBSF Economic Letter back in 2017 decomposing the overall core inflation rate into two components: cyclical and acyclical. The methodology of this decomposition is described in the Letter:

> "For each [individual] category we estimate a basic Phillips curve relationship between the unemployment gap…and changes in prices for that category, using data from 1985 through 2007…If the sector's inflation rate shows a negative and statistically significant relationship with the unemployment gap, we categorize the sector as procyclical. [Othersise], we categorize [it] as acyclical."

In my extension, I wanted to verify that the correlatory movement of the Hazell et al. (2022) model predictions and unexpected inflation held only for cyclical inflation, and not for acyclical

inflation. Thus, I created the following two figures, which replicate the Hazell et al. results and add unexpected cyclical and acyclical inflation rates from Mahedy and Shapiro (2017).

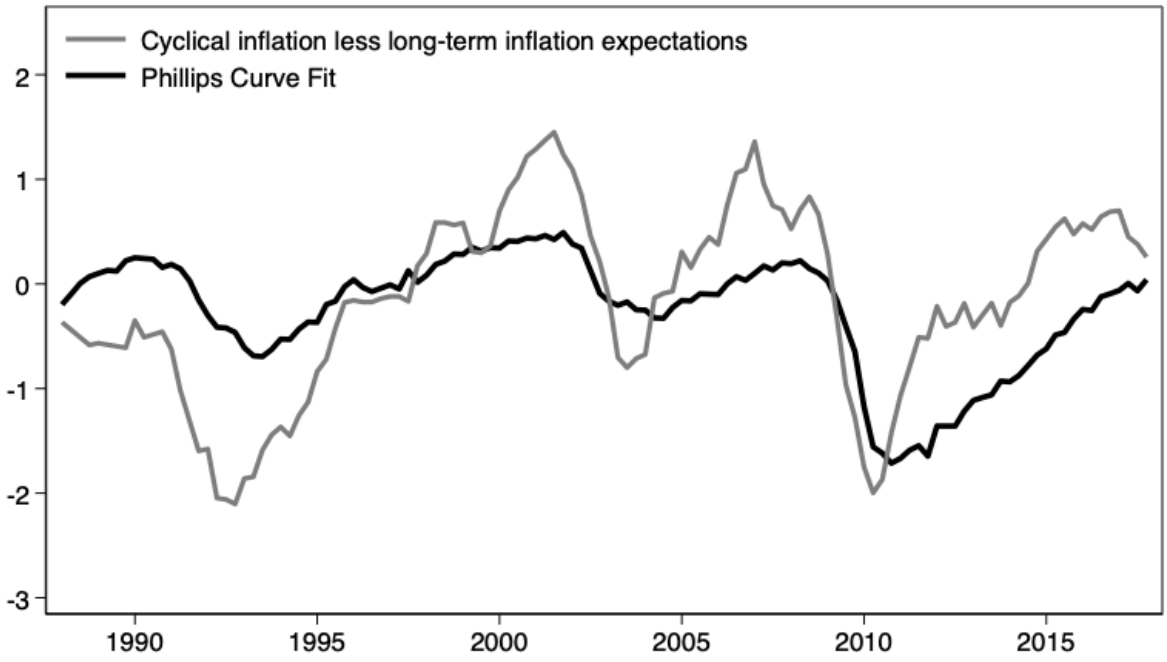

FIGURE VI (a): Aggregate Phillips Curve and Cyclical Inflation

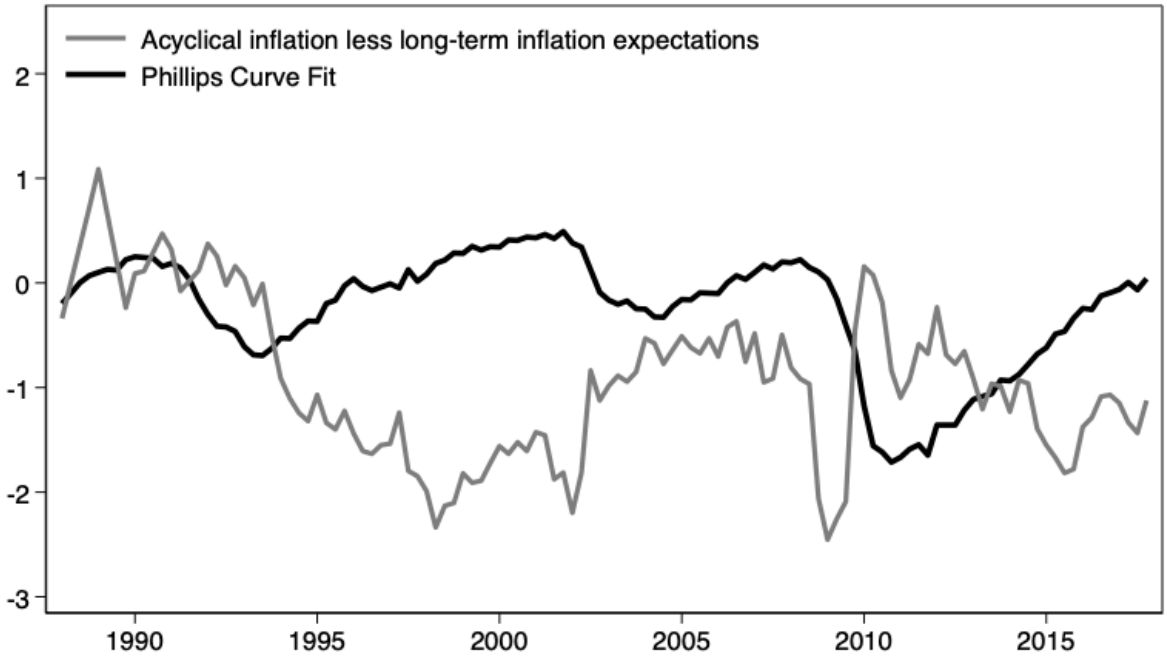

FIGURE VI (b): Aggregate Phillips Curve and Acyclical Inflation

In Figure VI (a), we can see that movements in cyclical inflation and the model's predictions do in fact coincide with each other, as expected. While the magnitudes of cyclical inflation are larger, the direction of both rates stay the same throughout the entire time series. In contrast, in Figure VI (b), the trends of acyclical inflation and the model's fit are not similar, differing in direction of movement for almost the entire sample (from 1995 onwards).

References

Hazell, J., J. Herreño, E. Nakamura, and J. Steinsson. "The slope of the Phillips curve: Evidence from U.S. states." *The Quarterly Journal of Economics* Vol. 137, Iss. 3, August 2022, Pgs 1299–1344. Retrieved November 27, 2024 from https://doi.org/10.1093/qje/qjac010.

Mahedy, T. & Shapiro, A. “What’s down with inflation?” *FRBSF Economic Letter,* November 27, 2017. Retrieved November 27, 2024 from https://www.frbsf.org/wp-content/uploads/el2017-35.pdf.