



## Research Working Papers

# The Trend Real Interest Rate and Stagnation Risk: Bayesian Exponential Tilting with Survey Data

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New estimates of trend inflation and interest rates suggest the economy has not permanently shifted to a low-growth and low-inflation regime.

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The decline in the real interest rate during the recent few decades coupled with the Great Recession of 2007-2009 raised a concern that the U.S. economy might face stagnation like the Japanese economy since the late 1990s. The increased likelihood of the zero lower bound (ZLB) on the nominal interest rate that constrains the effectiveness of monetary policy at the low equilibrium real interest rate is often cited as a cause of stagnation. However, the central bank's unconventional policies such as large scale asset purchases and forward guidance can mitigate stagnation risk arising from the ZLB constraint. To empirically assess the impact of these opposing forces on the risk of stagnation, this paper uses long-horizon predictive distributions of macro variables from a time-varying parameter vector autoregression (TVP-VAR) model. While the concern for long-term (ve-year ahead) stagnation risk due to the ZLB constraint on monetary policy appears to be justified from the purely model-based predictive distributions for macro variables, the risk substantially declines when these predictive distributions are tilted to match both cross-sectional means and variances from survey forecasts of inflation and the nominal interest rate. And the probability score ranking based on the prediction accuracy of downside tail events favors the predictive distribution with tilting. This finding arms the view that unconventional monetary policies as conducted by the Federal Reserve were effective in reducing stagnation risk by influencing the private sector's expectations.

JEL Classification: C11; E43

## Article Citations

- Taeyoung Doh. 2017. "The Trend Real Interest Rate and Stagnation Risk: Bayesian Exponential Tilting with Survey Data" Federal Reserve Bank of Kansas City, working paper no. 17-08, July. Available at <https://doi.org/10.18651/RWP2017-08>

## Related Research

- Gagnon, E., B.K. Johansson, and D. Lopez-Salido. (2016): "Understanding the New Normal: the Role of Demographics," Finance and Economics Discussion Series 2016-080, Federal Reserve Board. Available at <https://www.federalreserve.gov/econresdata/feds/2016/files/2016080pap.pdf>.
  - Krger, F., T.E. Clark, and F. Ravazzolo. (2017): "Using Entropic Tilting to Combine BVAR Forecasts with External Nowcasts," Journal of Business and Economic Statistics, vol.35, no. 3, pp.470-485.
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Taeyoung Doh is a Senior Economist in the Economic Research Department of the Federal Reserve Bank of Kansas City. He joined the department in July 2007. He received a bachelor's degree in economics from Seoul National University in 1996, an M.A. degree from Seoul National University in 1998 and a Ph.D. in economics from the University of Pennsylvania in 2007. His current research interest include monetary policy and term structure of interest rates, estimation of dynamic stochastic general equilibrium models, and asset pricing based on long run macroeconomic risks.

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