



Research Working Papers

Assessing Macroeconomic Tail Risks in a Data-Rich Environment

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A large set of economic and financial indicators suggests a negligible risk of unexpectedly low real GDP growth but a modest risk of unexpectedly low inflation.

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We use a large set of economic and financial indicators to assess tail risks of the three macroeconomic variables: real GDP, unemployment, and inflation. When applied to U.S. data, we find evidence that a dense model using principal components (PC) as predictors might be misspecified by imposing the “common slope” assumption on the set of predictors across multiple quantiles. The common slope assumption ignores the heterogeneous informativeness of individual predictors on different quantiles. However, the parsimony of the PC-based approach improves the accuracy of out-of-sample forecasts when combined with a sparse model using the dynamic model averaging method. Out-of-sample analysis of U.S. data suggests that the downside risk for real macro variables spiked to by the end of the Great Recession but subsequently declined to a negligible level. On the other hand, the downside tail risk for inflation fluctuated around a non-negligible level even after the end of the Great Recession. The disconnect between the downside risk of inflation and that of real activities can be in line with the evidence for the reduced role of the output gap for inflation during the recent period.

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Related Research

- Adrian, Tobias, Nina Boyarchenko, and Domenico Giannone. 2019. “Vulnerable Growth.” *American Economic Review*, vol. 109, no. 4, pp. 1263–1289.

- Bai, Jushan, and Serena Ng. 2008. "Forecasting Economic Time Series using Targeted Predictors." *Journal of Econometrics*, vol. 146, no. 2, pp. 304-317.
 - Belloni, Alexandre, and Victor Chernozhukov. 2011. "-Penalized Quantile Regression in High-Dimensional Sparse Models." *Annals of Statistics*, vol. 39, no. 1, pp. 82-130.
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