

Peer Review Plan

Preliminary Title: Time-series Methods for Forecasting and Modeling Uncertainty in the Food Price Outlook

Type of Report
(ERR, EIB, EB,
TB, SOR,)

TB

Agency: Economic Research Service [X] Influential Scientific Information
USDA [] Highly Influential Scientific Assessment

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Subject of Review: This Technical Bulletin describes a time-series-based approach for forecasting food price inflation that utilizes forecast intervals to communicate uncertainty. Forecasts created with this approach are compared to the performance of previously published ERS Food Price Outlook (FPO) forecast ranges. The methods in this new approach are intended to be used in future FPO data releases, which provide monthly forecasts of annual food price inflation. The new approach may also prove useful in other forecasting endeavors. The new approach, which uses an autoregressive integrated moving average (ARIMA) model selected based on performance (information loss), generates a more precise forecast than previously used methods. With the parameter estimates and estimated error distribution from the optimal ARIMA model, Monte Carlo simulations are used to develop forecast intervals, which reflect uncertainty about future food prices. These forecast intervals include the realized level of inflation more often than do the archived forecast ranges. On average, the forecast intervals also include the realized level of inflation earlier in the forecasting process. The use of standardized econometric models and model selection also allows for the inclusion of data not currently included in FPO. The methods can easily test whether the inclusion of external variables improves forecast accuracy or can be deployed to create new forecasts. As case studies, this report considers new price inflation forecasts of apples, seafood, and limited-service restaurants in 2020 and the potential forecast performance improvement from incorporating futures prices.

Purpose of Review: The purpose of the review is to ensure the high-quality of the economic analysis, transparent explanation of methods, objective interpretation of results, and effective communication to the intended audience.

Type of Review: [] Panel Review [X] Individual Reviewers

[] Alternative Process (Briefly Explain):

Timing of Review (Est.): Start: 08/16/2021 Completed: 1/11/2022 Withdrawn: XX/XX/XX

Number of Reviewers: [] 3 or fewer [] 4 to 10 [] More than 10

Primary Disciplines/Types of Expertise Needed for Review: Economists

Reviewers selected by: [X] Agency [] Designated Outside Organization

Organization's Name:

Opportunities for Public Comment? [] Yes [X] No

If yes, briefly state how and when these opportunities will be provided:

How:

When:

Peer Reviewers Provided with Public Comments? [] Yes [X] No

Public Nominations Requested for Review Panel? [] Yes [X] No

