

Initial Assessment of ERS Forecasts

This study examines the quarterly forecast record of the food CPI inflation rates made by ERS over the period 1984q2-1997q1. Table 1 lists the food CPI series examined in this report. ERS forecasts for 23 components of the CPI are analyzed at the one-quarter-ahead to four-quarter-ahead horizons. Then, the ERS forecast record was compared against an alternative set of models. A separate univariate model for each series was constructed. These alternative models were fit over the sample 1984q1-1991q4 and then used in a recursive manner to forecast one through four quarters ahead. After the forecasts for 1992q1-1992q4 were made, the models were fit over the sample 1984q1-1992q1 and forecasts were made from 1992q2-1993q1. The process is repeated until there are no longer any observations. The forecast comparison is performed over the sample period 1992q1-through 1997q1. The forecasts from the alternative models can be treated as realtime forecasts since they use the same information that was available to the staff at ERS.

The inflation forecasts in this study are quarterly. ERS and the WAOB make forecasts every month on a quarterly basis. For example, in January a one-quarter-ahead forecast for the first quarter is made using data available through December of the previous year. (This is sometimes referred to as a current-quarter forecast or a 3-month-ahead forecast.) In February and March of the same quarter, forecasts are made using the latest CPI data from January and February, respectively. These are current quarter forecasts, but effectively 2- and 1-month-ahead forecasts, respectively. A two-quarter-ahead or 6-month-ahead forecasts for the first quarter in a given year is made in October of the previous year. It is based on data through September, which includes livestock working data numbers from the beginning of the month, with revisions made if necessary after the CPI indexes are released mid-month. Similarly, the three-quarter-ahead and four-quarter-ahead forecasts for the first quarter of a given year are made in June and March. The quarterly forecasts in the study are based on data at the 3-, 6-, 9-, and 12-month horizons.

Summary statistics for the one-quarter- through four-quarters-ahead ERS forecasts are given in tables 4a-4d for the period 1984q2 through 1997q1. There are 52, 48, 35, and 22 observations for each of the forecast horizons respectively.

Five statistics are reported, the mean error, mean absolute error (MAE), root mean squared error (RMSE), the minimum error, and the maximum error. These statistics are explained in greater detail below. (See the section Comparison with Alternative Models.) The mean errors are statistically insignificant from zero. None of the ratios of the mean error to the RMSE are greater than unity. Typically, forecast evaluations find that the RMSE increases with the horizon. In this case, only four of the forecast error measures go up with the horizon by more than 10 percent: Fish and Seafood, Poultry, Dairy Products, and Nonalcoholic Beverages. The RMSE neither increases or decreases for 12 series while in 7 it appears to fall by more than 10 percent. This result is likely due to the seasonality in the data.

Figures 6a-6w provide plots of the historical series and the one-quarter ahead forecasts from 1984q2 through 1997q1. The left hand axes give the price changes on an annual growth rate basis. The All Food and Food at Home forecasts appear to have under-predicted the actual inflation rates from 1986 to 1991. The Meats, Poultry, and Fish inflation rate is over-predicted for most of the sample. This appears to be primarily the result of predictions from the Meats forecasts, in particular the Beef and Veal and the Other Meats series. The Poultry price inflation rate tends to be over-predicted as well. Despite the nearly 40-percent inflation range for Eggs, the forecasts appear to perform rather well. The Fruits and Vegetables series appear to be seasonal, particularly in the first half of the sample. In 1986 and 1993, the forecasts for Fats and Oils had sharp increases when the actual index change was negative both years. This forecast increase was likely due to smaller world supplies and higher prices for oilseeds, which would signal increases for the Fats and Oils index.