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The distribution of inflation forecast errors☆

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Abstract

This paper investigates the cross-sectional distribution of inflation forecasts errors over the period 1984–2007. Our working hypothesis is that the Fed's movement toward greater transparency starting in the mid-1990s likely affected both the distribution of forecast errors and the location of the Fed's staff forecasts within that distribution. This paper builds on earlier work which compared Fed forecasts to the mean or median of private sector forecasts by examining the entire distribution of forecasts. By examining the entire distribution we are able to compare the forecasting record of particular forecasters against a record comprised of randomly assigned forecasts from the Survey of Professional Forecasters. Since the Fed's move toward greater transparency beginning in 1994, its forecasting record is no longer significantly better than the forecasting record comprised of randomly assigned forecasts.

JEL classification: E31; E37; E58

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1. Introduction

We investigate changes in the cross-sectional distribution of inflation forecast errors. We assess whether the Federal Reserve's placement within that distribution has shifted over time,

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and if so, whether such shifts correspond to the Fed's movement toward greater monetary policy transparency.

Previous studies of the Fed's forecast performance typically (but not exclusively) compare the Fed's forecasts with individual forecasts, or the mean or median of a sample of forecasts.[1] In this paper we take a more nuanced look at the relative forecasting performance of the Federal Reserve by examining the Fed's location, and changing location, within the cross-sectional distribution of private-sector forecasts.[2]

Previous studies have examined both inflation and output growth forecasts, finding that the Fed's greatest forecasting advantage is with respect to inflation. Because we are interested in changes in the Fed's forecasting ability over time, we focus on inflation forecasts. Our measure of inflation is the annualized growth rate of quarterly CPI. By using the CPI inflation rate we are also able to compare the Fed and private sector forecasts to forecasts produced by a variety of "core" measures of inflation.

Our working hypothesis is that the Fed's movement toward greater transparency starting in the mid-1990s likely affected both the distribution of forecast errors and the Fed's location within that distribution. In an earlier paper (Gamber & Smith, 2009) we showed how the Fed's forecasting superiority has diminished since it began moving toward greater transparency in the mid-1990s. In Gamber, Smith, and McNamara (2014) we divided the cross-sectional distribution of SPF forecast errors into quartiles and looked for the location of the Fed within quartiles over various sub-samples. We located a group of forecasters that consistently beat the Fed's forecasts of output growth and inflation.

The methods we employ in this paper are related to those used by D'Agostino, McQuinn, and Whelan (2012). D'Agostino et al. tested whether participants in the Survey of Professional Forecasters have equal forecasting ability. Using a bootstrap technique that re-assigned forecasts among forecasters they find that the distribution of the forecast accuracy scores by rank are not different than what could be found by randomly assigning forecasts. They concluded, "most of the participants in the Survey of Professional Forecasters appear to have approximately equal forecasting ability." Their analysis does not assess the performance of individual forecasters. Our analysis does assess the performance of specific forecasts and specific forecasters. In particular we test whether the quality of the Fed's inflation forecasts are due to random chance, or superior forecasting. We perform this same test on measures of core inflation as well.

We find that the Fed has lost ground against the median SPF forecaster after the movement toward greater transparency beginning in the early 1990s. More specifically, prior to 1994 the Fed's forecasting record with respect to inflation was significantly better than random chance. Greater monetary policy transparency since 1993 has led to a reduction in the Fed's forecasting record relative to random chance. With respect to the forecasters in the SPF, the very best SPF forecasters consistently beat the Fed but there is no specific SPF forecaster who consistently beats the Fed. And finally, core inflation measures such as the trimmed mean and median CPI are respectable forecasts but are not consistently better than the Fed.

Section 2 reviews the literature. Section 3 describes our data and methods. Section 4 presents our results and Section 5 concludes.

[1] Romer and Romer (2000), Sims (2002) and Gamber and Smith (2009).

[2] Throughout this paper we use Fed forecast to refer to the forecasts produced by the Staff of the Board of Governors in preparation for the Greenbook.