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## A day late and a dollar short: The effect of policy uncertainty on fed forecast errors



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## ABSTRACT

Policy makers at the Federal Reserve must make decisions on less than perfect information. To the extent their forecasts are incorrect, policy decisions will also be incorrect. Unfortunately, economic forecasters have a relatively poor record and have not improved as much as one would hope. The research presented in this paper examines one potential source of forecast improvement, economic policy uncertainty. Modeling emotional responses of economic agents to uncertainty is difficult but the inclusion of a policy uncertainty variable could reduce forecast errors of the FOMC's consensus forecast by as much as 20%.

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## 1. Introduction

Economic forecasts are an important component in timely policy decisions; unfortunately, their accuracy often does not match their importance. The long and varied lag of monetary policy, which Culbertson (1960) suggests is shorter than six months, Friedman (1961, 1972) suggests may be upwards of a year, and more recent research including Batini and Nelson (2001) suggest is likely over a year before policy effects peak, requires policy makers to act at the start of recessions if not before. The average duration of a peak to trough recession since the NBER has been dating recessions is a little over 17 months and only a shade over 11 months for postwar cycles. The long lags of policy effects in terms relative to recession lengths led Friedman (1968) to warn of overreaction on the part of monetary authorities as they are often late undertaking policy actions.

The literature examining forecasts of Federal Reserve staff or members of the Federal Open Markets Committee (FOMC) often compares each group's forecasts to alternative forecasts from the private sector or tests against benchmark objectives such as unbiasedness and efficiency. Yet few article make suggestions about how to improve the accuracy of FOMC forecasts. Forecast errors are so problematic that the Federal Reserve Bank of St. Louis has abandoned traditional economic forecasting and moved to a regime based model for monetary policy guidance (Bullard, 2016).

The research presented below suggests a more complete incorporation of economic policy uncertainty may improve FOMC forecasts. Admittedly, policy uncertainty is not a cure-all for forecast problems but does potentially offer one avenue for improvement. While there is a deep theoretical literature discussing firms' and investors' reactions to uncertainty, empirical validations of the theories and resolutions to the theoretical disputes about causal directions are still active areas of research. Individuals and firms uncertain of future regulation, tax-liability, and economic conditions may forgo or delay

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projects weakening economic growth. Thus, uncertainty may be the cause of economic weakness. Alternatively, economic weakness may be the cause of uncertainty as forward-looking policy makers, seeing economic weakness on the horizon, pursue an active policy agenda at the expense of a clear economic policy path. Therefore, economic policy uncertainty could cause a slowdown or an expected slowdown could cause the policy uncertainty. Under either scenario, a measure of uncertainty may prove useful to forecasters. In this paper, we use a number of ex-post variables to explain FOMC forecast errors and find a small but significant positive relationship between uncertainty and error size. The relationship identified should be considered as a correlation, not causation. Nevertheless, the correlation may prove useful in improving forecasters' records.

Studies including [Romer and Romer \(2000\)](#), [Faust and Wright \(2009\)](#), and [Gamber and Smith \(2009\)](#) find that the Fed staff's forecasts, as presented in the Fed's Green Book, are slightly better than private sector alternatives or that the difference is small and economically insignificant in the case of [Gavin and Pande \(2008\)](#) and [Baghestani \(2008\)](#). [Gavin and Mandal \(2001\)](#) suggest that forecast differences between Blue Chip forecasts and FOMC forecasts have little effect on policy outcomes. However, [Romer and Romer \(2008\)](#) find the Fed Staff's forecasts are better than those of the FOMC members, despite members' ability to incorporate insider policy assumptions into their models. Furthermore, they find the FOMC is likely to act on members' inferior forecasts rather than the staff's. These differences are a potential source of monetary policy shocks.

While the Federal Reserve's forecasts are among the best, the forecasts tend to be, in terminology of the efficient markets hypothesis, weak-form efficient and potentially biased. Weak-form efficiency requires that forecasts include previous movements of the data being forecast. Stated another way, use of lagged values or changes in the series being forecast cannot improve the forecast. Earlier studies including [Joutz and Stekler \(2000\)](#) and [Gavin and Mandal \(2003\)](#) find the FOMC and staff forecasts to be unbiased but suffer from small time period samples and weak tests for unbiasedness. More recent research by [Baghestani \(2008\)](#) and [Clements et al. \(2007\)](#) suggests that with larger datasets, pooled data in the case of Clements, Joutz, and Stekler, the null of unbiasedness can be rejected.

Forecast efficiency questions have centered on weak-form efficiency as defined by [Fama \(1970\)](#) and test whether the forecast errors are serially correlated. Previous studies including [Baghestani \(2008\)](#), [Joutz and Stekler \(2000\)](#), and [Gavin and Mandal \(2003\)](#) find weak-form efficiency to hold for Fed forecasts but do not address semi-strong form efficiency. Semi-strong form efficiency requires a forecast include all publicly available data, including the previous movements and series values as required for weak form efficiency, and cannot be improved by including additional data or variables. Our analysis examines semi-strong form efficiency by incorporating a measure of economic policy uncertainty to see if all publicly available information is adequately reflected in FOMC forecasts. In order for a forecasting model to be semistrong-form efficient, errors must be orthogonal to previous forecast errors, examined in the previous literature, and any other relevant data known to forecasters ex-ante, a case of which is examined here. The analysis below expands on previous examinations of FOMC forecasts to include economic policy uncertainty as a relevant variable.

Twice each year, typically in February and July, in accordance with Humphrey–Hawkins Full Employment and Balanced Growth Act, the Federal Reserve System provides congress with a *Monetary Policy Report* containing information regarding the FOMC's forecast of economic conditions over the next several months or years.<sup>1</sup> The forecasts represent the committee members' view regarding the path of output growth, unemployment, and inflation from the fourth quarter of one year to the fourth quarter of the following year, denoted as Q4/Q4. Early editions of the February report contained only Q4/Q4 forecasts for the contemporaneous period while the earlier July editions contained forecasts for the contemporaneous period as well as the following Q4/Q4 period; in other words, a forecast for the year in progress and a forecast for the next year. Over time, the number of periods forecasted has increased and the report now includes projections for several years into the future. The published FOMC forecasts are not a point estimate of the committee but instead include the range of forecast values from the individual committee member's forecasts. Forecast releases also include a central tendency which excludes the three most extreme forecasts on each side of the forecast distribution.

## 2. Forecast and uncertainty data

The analysis below compares the forecasts presented in the Fed's Monetary Policy Report, for 1985 through 2014, to realized growth in output and inflation. Output data, GNP or GDP depending on year, is provided by the Federal Reserve Economic Data database (FRED) of the Federal Reserve Bank of St. Louis ([FRED, 2013](#)). Percentage changes are calculated for the corresponding Q4/Q4 period, the percentage growth in GDP from the fourth quarter of one year to the fourth quarter of the next.<sup>2</sup> Over the year the FOMC's preferred measure of inflation has evolved from a fixed weight index, the consumer price index, to a chain-type index, personal consumption expenditures, to personal consumption expenditures less food and energy. FOMC forecasts are compared against the realized value of the forecasted measure.

The candlesticks in [Fig. 1](#) present a visual representation of the FOMC's forecasts by forecast horizon with the candle wick (the thin vertical lines) representing the forecast range and the body (the rectangles on the vertical lines) representing the central tendency. The solid line in [Fig. 1](#) connects the realized growth values. The gaps between forecast range and the

<sup>1</sup> There is some minor variation in when the reports are released and the length and number of forecasts included has increased with time.

<sup>2</sup> This follows the Fed's accepted practice of using Q4/Q4 instead of annual growth rates.

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