



Contents lists available at ScienceDirect

## International Journal of Forecasting

journal homepage: [www.elsevier.com/locate/ijforecast](http://www.elsevier.com/locate/ijforecast)

## How biased are U.S. government forecasts of the federal debt?



Neil R. Ericsson\*

Division of International Finance, Board of Governors of the Federal Reserve System, Washington, DC 20551, USA  
 Department of Economics, The George Washington University, Washington, DC 20052, USA

## ARTICLE INFO

## Keywords:

Autometrics  
 Bias  
 Debt  
 Federal government  
 Forecasts  
 Impulse indicator saturation  
 Projections  
 United States

## ABSTRACT

Government debt and its forecasts attracted considerable attention during the recent financial crisis. The current paper analyzes potential biases in different U.S. government agencies' one-year-ahead forecasts of U.S. gross federal debt over 1984–2012. Standard tests typically fail to detect biases in these forecasts. However, impulse indicator saturation (IIS) detects economically large and highly significant time-varying biases, particularly at turning points in the business cycle. These biases do not appear to be politically related. IIS defines a generic procedure for examining forecast properties; it explains why standard tests fail to detect bias; and it provides a mechanism for potentially improving forecasts.

Published by Elsevier B.V. on behalf of International Institute of Forecasters.

## 1. Introduction

Government debt attracted considerable attention during the recent financial crisis and Great Recession. In the United States, federal debt limits, sequestration, and the federal government shut-down have posed substantial economic, political, and policy challenges; see [Bernanke \(2011, 2013\)](#), [Chokshi \(2013\)](#), [Podkul \(2011\)](#), [The Economist \(November 20, 2010\)](#), and [Yellen \(2014, pp. 20–21\) \*inter alia\*](#). In Europe, government debt and fiscal policy are central to current discussions about the euro-area crisis. Because future outcomes of government debt are unknown, forecasts of that debt may matter in government policy, so it is of interest to ascertain how good those forecasts are, and how they might be improved. A central focus in forecast evaluation is forecast bias, especially because forecast biases are systematic, and because ignored forecast biases may have substantive adverse consequences for policy.

Building on [Martinez \(2011, 2015\)](#), the current paper analyzes potential biases in different U.S. government

agencies' one-year-ahead forecasts of the U.S. gross federal debt over 1984–2012. Standard tests typically do not detect biases in these forecasts. However, a recently developed technique—impulse indicator saturation—detects economically large and highly statistically significant time-varying biases in the forecasts, particularly for 1990, 1991, 2001–2003, and 2008–2011. Biases differ according to the agency making the forecasts as well as over time. Biases are typically associated with turning points in the business cycle and (to a lesser degree) economic expansions, and thus are highly nonlinear and dynamic. That said, the forecast biases do not appear to be politically related. Impulse indicator saturation defines a generic procedure for examining forecast properties; it explains why standard tests fail to detect forecast bias; and it provides a mechanism for potentially improving the forecasts.

This paper is organized as follows. Section 2 describes the data and the forecasts being analyzed. Section 3 discusses different approaches to testing for potential forecast bias and proposes impulse indicator saturation as a generic test of forecast bias. Section 4 describes indicator saturation techniques, including impulse indicator saturation and several of its extensions. Section 5 presents evidence on forecast bias, using the methods detailed in Sections 3 and 4. Section 6 re-examines the forecast biases in light of business-cycle turning points. Section 7 concludes.

\* Correspondence to: Division of International Finance, Board of Governors of the Federal Reserve System, Washington, DC 20551, USA.

E-mail addresses: [ericsson@frb.gov](mailto:ericsson@frb.gov), [ericsson@gwu.edu](mailto:ericsson@gwu.edu).

## 2. The data and the forecasts

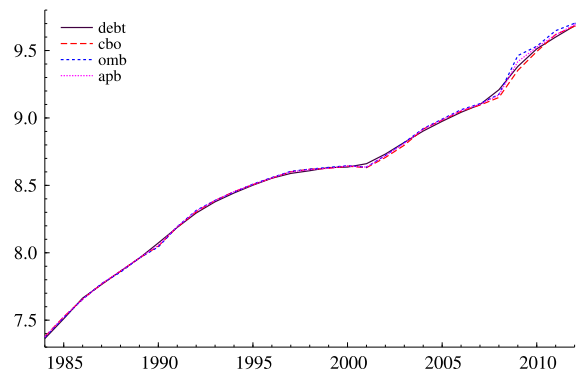
This section describes the data on the United States gross federal debt and the three different one-year-ahead forecasts of that debt that are analyzed herein. The forecasts are denoted by their sources:

- CBO (Congressional Budget Office) in its *Budget and Economic Outlook*,
- OMB (Office of Management and Budget) in its *Budget of the U.S. Government*, and
- APB (*Analysis of the President's Budget*).

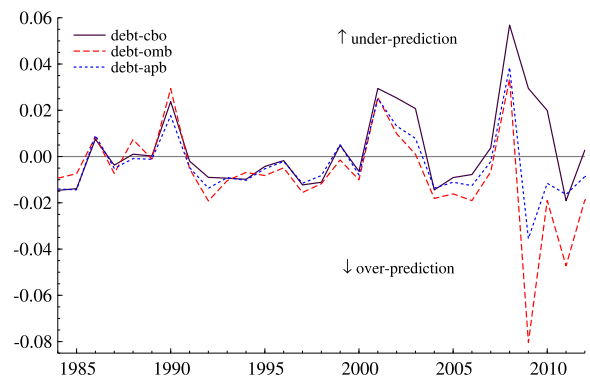
The Congressional Budget Office and the Office of Management and Budget are different agencies within the U.S. federal government. The *Analysis of the President's Budget* is produced by the Congressional Budget Office, but the forecast in the *Analysis of the President's Budget* is referred to as the “APB forecast” in order to distinguish it from the “CBO forecast”, which appears in the CBO’s *Budget and Economic Outlook*. The agencies’ publications detail how debt is forecast and the assumptions made in generating those forecasts. Significantly, the CBO forecast assumes that current law remains unchanged, whereas the OMB and APB forecasts assume that the president’s proposed budget is implemented. The assumptions underlying the forecasts, the complex process involved in generating the forecasts, and the goals and objectives of that process are of considerable interest in their own right and merit detailed examination. However, in the spirit of [Chong and Hendry \(1986\)](#), [Fildes and Stekler \(2002\)](#), and [Stekler \(1972\)](#) *inter alia*, the current paper focuses on the properties of the forecasts themselves. The data on the debt are published by the Financial Management Service at the U.S. Department of the Treasury in the *Treasury Bulletin*.

The data on debt are annual (end of fiscal year) over 1984–2012 (29 observations), and are for total gross federal debt outstanding held by the public and the government. The CBO, OMB, and APB forecasts typically are published in late January, early February, and early March respectively, where those months directly precede the end of the fiscal year (September 30); see [Martinez \(2011, Table 2; 2015\)](#) for details. For convenience, these forecasts are called “one-year-ahead”, even though the actual horizon is somewhat less than one year, differs for the three forecasts, and varies somewhat from one year to the next. Debt and its forecasts are in billions of U.S. dollars (nominal), and the analysis below is of the logs of debt and of its forecasts.

[Fig. 1](#) plots actual U.S. gross federal debt and its forecasts by the CBO, OMB, and APB (in logs, denoted by lowercase). Actual and forecast values appear close, reflecting in part the scale of the graph: debt increases by approximately an order of magnitude over the sample. [Fig. 2](#) plots the forecast errors for the log of U.S. gross federal debt. The forecast errors for all three forecasts are often small—under 2% in absolute value—but sometimes they are much larger, and with the magnitude and even the sign differing across agency as well as by forecast date. Forecast errors are often persistent, suggestive of systematic biases in the forecasts. For comparison, the growth rate of debt is 8.3% on average, and its standard deviation is 4.1%.



**Fig. 1.** Actual U.S. gross federal debt and its forecasts by the CBO, OMB, and APB (in logs).



**Fig. 2.** Forecast errors for the log of U.S. gross federal debt.

The presence of forecast bias has both economic significance and statistical significance. That said, the particular sense in which forecast bias is significant depends in part on whether an agency’s forecasts are interpreted as “forecasts” or as “projections”, where “projections” are in the sense of being policy simulations conditional upon a certain set of assumptions. If the agency’s forecasts are interpreted *qua* forecasts, then forecast bias implies potential room for improvement in terms of standard performance measures such as the root mean squared error. If the forecasts are interpreted *qua* projections, then forecast bias implies a limited usefulness of the forecasts as representing interesting hypothetical paths for economic policy. With that in mind, the agencies’ forecasts are always referred to as “forecasts” below, while recognizing that some of these forecasts may be more usefully viewed as projections. This broader usage of the term “forecast” is also in line with [Clements and Hendry \(2002b, p. 2\)](#): “A forecast is any statement about the future”. For some previous analyses of these and other governmental and institutional forecasts, see [Corder \(2005\)](#), [Engstrom and Kernell \(1999\)](#), [Frankel \(2011\)](#), [Joutz and Stekler \(2000\)](#), [Nunes \(2013\)](#), [Romer and Romer \(2008\)](#), [Sinclair, Joutz, and Stekler \(2010\)](#), and [Tsuchiya \(2013\)](#). Finally, many prior studies have compared forecasts whose assumptions differ from each other. Hence, the differing assumptions of the CBO, OMB, and APB forecasts are not grounds *per se* for not comparing the forecasts.

Download English Version:

<https://daneshyari.com/en/article/5106337>

Download Persian Version:

<https://daneshyari.com/article/5106337>

[Daneshyari.com](https://daneshyari.com)