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How good are US government forecasts of the federal debt?

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ABSTRACT

This paper compares annual one-year-ahead and five-year-ahead forecasts from government agencies for the US gross federal debt and deficit from 1984 to 2013. Other studies have compared two of these agencies' forecasts, but not for debt. The current paper finds that the forecast from the Analysis of the President's Budget performs best across both horizons but does not encompass the other forecasts. Instead, each of the forecasts lacks information included by the other agencies and therefore a combination of all three outperforms all individual forecasts.

1. Introduction

In the aftermath of the recent financial and economic crisis, the rapidly increasing government debt around the world has heightened worries about economic growth. In 2013, the US total federal government debt outstanding was 99% of GDP, a share that had not been reached since World War II. US government agencies have forecast that government debt will continue to rise. These forecasts have prompted concerns that the US debt burden will become unsustainable; and the actual debt and its forecasts have led to a national debate over the debt, the debt ceiling, and deficits.[1]

The intense focus on the US federal debt makes it important that we understand how well both the debt and the deficit are forecast. The available forecasts vary considerably, highlighting the need to know which forecast tracks the trajectory of the debt most closely. The short-, medium- and long-term forecasts are all of interest, given concerns about the debt ceiling and about debt sustainability.

This paper aims to answer these questions. Using annual data since 1984, this paper compares the three different forecasts of the US federal debt and deficit at both the one- and five-year-ahead horizons. The forecasts are denoted by their sources:

- CBO (Congressional Budget Office) from its *Budget and Economic Outlook*,
- OMB (Office of Management and Budget) from its *Budget of the US 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 US federal government. The *Analysis of the President's Budget* is produced by the Congressional Budget Office, but the policy assumptions embedded in the forecasts from the *Analysis of the President's Budget* differ from those in the forecasts from the *Budget and Economic Outlook*. Thus, these two forecasts are referred to as the "APB forecast" and the "CBO forecast", noting that both are produced by the Congressional Budget Office. Also, for expositional convenience, the three forecasts are referred to as "agency forecasts", even though only two agencies are involved.

The current analysis adds to the previous literature in several ways. First and foremost, it extends comparisons of government agencies' forecasts to include the federal debt. Second, it compares the CBO, OMB, and APB forecasts with each other individually, and with averages of the agencies' forecasts. Finally, the analysis uses both root mean square forecast errors (RMSE) and forecast-encompassing tests to

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[1] For some examples, see IMF Survey (2013), and Standard and Poors (2011).

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compare the forecasts. These tools help to assess whether certain forecasts can outperform other forecasts. The analysis finds that all of the short-term agency forecasts have relatively small forecast errors, except during recessions. It also finds value in examining debt forecasts separately from deficit forecasts. Furthermore, it shows that either the APB's debt forecast or a combination of the agencies' forecasts performs better than individual CBO and OMB debt forecasts.

In public discourse, the discussion of the deficit often overshadows any discussion of the federal debt, since the deficit is commonly thought of as equaling the change in debt. However, the deficit excludes certain items that contribute to the change in debt. Focusing on the deficit alone could miss significant components of the debt. Therefore, it is important to examine forecasts of the federal debt, which aggregate across multiple sources of debt, including the deficit.

Comparing forecasts from different government agencies is complicated because they condition on different economic and policy assumptions. The CBO assumes that current law will remain unchanged, whereas the OMB and APB assume that the policy changes proposed in the president's budget will be implemented. However, that being said, analyzing these different forecasts relative to actual outcomes can give a sense of the degree of usefulness of the agencies' forecasts. Also, as a linguistic matter, CBO refers to its forecasts of deficits and debts as "projections", while OMB refers to them as "estimates", and the APB publications typically call them "re-estimates". The current paper uses the term "forecasts" throughout, drawing on the more encompassing usage given by Clements and Hendry (2002, chap. 1, p. 2): "A forecast is any statement about the future".[2]

Poor performance – whether measured as forecast non-encompassing or as a large RMSE – has both economic and statistical significance. However, that being said, the specific meaning of "poor forecast performance" depends in part on whether an agency's forecasts are interpreted as "forecasts" or as "projections", where "projections" are taken in the sense of being policy simulations conditional upon a certain set of assumptions. If the agency's forecasts are interpreted *qua* forecasts, then a poor forecast performance implies potential room for improvement in terms of these performance measures. If the forecasts are interpreted *qua* projections, then a poor forecast performance implies a limited usefulness of the forecasts as representing interesting hypothetical paths for economic policy.

In this analysis, a poor forecast performance is interpreted in the latter sense. Therefore, in that context, the overarching questions that this paper seeks to address are: which forecast represents the most useful path for economic policy, and does any one of the agency forecasts incorporate all of the relevant information such that the other agency forecasts are not useful?

This paper is structured as follows. Section 2 reviews the literature on comparisons of US government agency forecasts. Section 3 provides a background to the forecast-encompassing tests used. Section 4 describes the data and some initial comparisons of the forecasts. Section 5 presents the empirical findings and analysis. Section 6 concludes.

2. Literature review

There is a considerable body of literature on the comparison of US government agency forecasts. These studies can be divided into two types. The first and more popular type typically compares the agencies' forecasts using summary statistics such as RMSE, mean absolute errors (MAE), and mean absolute percent errors (MAPE). The second type uses forecast-encompassing tests to compare the forecasts. Both types of studies provide valuable information about the forecasts.

Studies of the first type have obtained a variety of results. Kamlet, Mowery, and Su (1987) compare one-year-ahead and multi-year-ahead forecasts from CBO, OMB, their own ARIMA model, and the ASA/NBER survey for the real growth rate, inflation rate, and unemployment from 1976 to 1984.[3] They find that neither agency outperforms the other for short-term forecasts. However, for forecasts extending beyond three years, the authors find that OMB forecasts are more optimistic than CBO forecasts, but not less accurate. Plesko (1988) examines the CBO and OMB forecasts of nominal GNP, current receipts, current outlays, and the deficit from 1974 to 1988, and finds similar results for the short-term forecasts.

McNees (1995) compares forecasts from the Federal Reserve Board (FRB), the CBO, the Council of Economic Advisors (CEA), and several private forecasters for inflation, GNP, and unemployment from 1976 to 1994.[4] For long-term forecasts, McNees finds that the CEA is more optimistic than any of the other forecasters. Frendreis and Tatalovich (2000) compare CBO, OMB, and FRB one-year-ahead forecasts of GNP growth, inflation, and unemployment from 1979 to 1997. While all three agencies' forecasts tend to be close, the authors find that the CBO forecasts are the best, followed by those of the FRB, then those of OMB.

The CBO itself conducts a semi-annual comparison of its own forecasts with OMB and Blue Chip forecasts. The most recent update is that of US CBO (2013), which compares two-year-ahead and five-year-ahead forecasts for output, inflation, three-month Treasury rates, long-term interest rates, and wage and salary disbursements from 1980 to 2010. Similarly to previous studies, it finds that the CBO's forecasts are as accurate as the OMB and Blue Chip forecasts.

Studies of the second type use forecast-encompassing tests to compare forecasts, and also obtain mixed results. Howard (1987) compares CBO and OMB forecasts of the

[2] See also Rasche (1985), who discusses the differences between projections and forecasts.

[3] The ASA/NBER survey is a survey of private forecasters that is conducted by the American Statistical Association and the National Bureau of Economic Research.

[4] The CEA and OMB forecasts of the federal debt are identical. Thus, studies use one or the other for comparisons with the CBO. The private forecasters considered are the American Statistical Association (ASA), Data Resources Inc (DRI), and Blue Chip Economic Indicators.