

**Finance and Economics Discussion Series
Divisions of Research & Statistics and Monetary Affairs
Federal Reserve Board, Washington, D.C.**

How Useful are Estimated DSGE Model Forecasts

Rochelle M. Edge and Refet S. Gurkaynak

2011-11

NOTE: Staff working papers in the Finance and Economics Discussion Series (FEDS) are preliminary materials circulated to stimulate discussion and critical comment. The analysis and conclusions set forth are those of the authors and do not indicate concurrence by other members of the research staff or the Board of Governors. References in publications to the Finance and Economics Discussion Series (other than acknowledgement) should be cleared with the author(s) to protect the tentative character of these papers.

How Useful are Estimated DSGE Model Forecasts?*

Rochelle M. Edge
Federal Reserve Board

Refet S. Gürkaynak
Bilkent University

January 18, 2011

Abstract

DSGE models are a prominent tool for forecasting at central banks and the competitive forecasting performance of these models relative to alternatives—including official forecasts—has been documented. When evaluating DSGE models on an absolute basis, however, we find that the benchmark estimated medium scale DSGE model forecasts inflation and GDP growth very poorly, although statistical and judgmental forecasts forecast as poorly. Our finding is the DSGE model analogue of the literature documenting the recent poor performance of macroeconomic forecasts relative to simple naive forecasts since the onset of the Great Moderation. While this finding is broadly consistent with the DSGE model we employ—ie, the model itself implies that under strong monetary policy especially inflation deviations should be unpredictable—a “wrong” model may also have the same implication. We therefore argue that forecasting ability during the Great Moderation is not a good metric to judge the usefulness of model forecasts.

*We are grateful to Burçin Kısacıkoglu for outstanding research assistance that went beyond the call of duty. We thank Harun Alp, Selim Elekdag, Jeff Fuhrer, Marvin Goodfriend, Fulya Özcan, Jeremy Rudd, Frank Smets, Peter Tulip, Raf Wouters, and Jonathan Wright as well as seminar participants at Bilkent, the Brookings Panel, Central Bank of Turkey, Geneva Graduate Institute, GWU, Johns Hopkins, METU and PSE for very useful comments and suggestions. We thank Ricardo Reis, David Romer, Chris Sims and Justin Wolfers for several rounds of detailed feedback and also thank Volker Wieland and Maik Wolters for allowing us to cross check our data with theirs. This paper uses Blue Chip Economic Indicators and Blue Chip Financial Forecasts: Blue Chip Economic Indicators and Blue Chip Financial Forecasts are publications owned by Aspen Publishers. Copyright (C) 2010 by Aspen Publishers, Inc. All rights reserved. <http://www.aspenpublishers.com>. The views expressed here are our own and do not necessarily reflect the views of the Board of Governors or the staff of the Federal Reserve System.

1 Introduction

Dynamic stochastic general equilibrium (DSGE) models were descriptive tools at their inception. They were useful because they allowed economists to think about business cycles and carry out hypothetical policy experiments in Lucas critique proof frameworks. In their early form, however, they were viewed as too minimalistic to be appropriate for use in any practical application—such as macroeconomic forecasting—for which a strong connection to the data was needed.

The seminal work of Smets and Wouters (2003, 2007), however, changed this perception. In particular, their demonstration of the possibility of estimating a much larger and richly-specified DSGE model (similar to that developed by Christiano, Eichenbaum, and Evans, 2005) as well as their finding of a good forecast performance of their DSGE model relative to competing VAR and Bayesian VAR (BVAR) models led DSGE models to be taken more seriously by central bankers around the world. Indeed, estimated DSGE models are now quite prominent tools for macroeconomic analysis at many policy institutions with forecasting being one of the key areas where these models are used, in conjunction with other forecasting methods.

Reflecting this use of DSGE models, several central-bank modeling teams have in recent research evaluated the relative forecasting performance of their institutions’ estimated DSGE models. Notably, in addition to considering their DSGE models’ forecasts relative to time series models such as BVARs (as Smets and Wouters did), these papers also consider official central bank forecasts. For the U.S., Edge, Kiley, and Laforge (2010) compare the Federal Reserve Board’s DSGE model’s forecasts to alternatives such as those generated in pseudo real time by time series models as well as official Greenbook forecasts and find that the DSGE model forecasts are competitive with, and indeed often better than, others.¹ This is an especially notable finding given that previous analyses have documented the high quality of the Federal Reserve’s Greenbook forecasts (Romer and Romer, 2000, Sims, 2002).

We began writing this paper with the aim of establishing the marginal contributions of statistical, judgmental and DSGE model forecasts to efficient forecasts of key macroeconomic variables, such as GDP growth and inflation. “How much importance should central bankers attribute to model forecasts on top of judgmental or statistical forecasts?” was the question we wanted to answer. To do this, we first evaluated the forecasting performance of the Smets-Wouters (2007) model—a popular benchmark—for U.S. GDP growth, inflation and interest rates, and compared these forecasts to those of a BVAR and the FRB staff’s Greenbook forecasts. Importantly,

¹Other examples with similar findings include, Adolfson et al. (2007) for the Riksbank’s DSGE model and Lees et al. (2007) for the RBNZ’s DSGE model. In addition, Adolfson et al. (2006) and Christoffel et al. (2010) examine out-of-sample forecast performance for DSGE models of the euro area although the focus of these papers is much more on technical aspects of model evaluation.

to ensure that the same information is used to generate our DSGE model and BVAR model forecasts as was used to formulate the Greenbook forecasts, we used real time data and re-estimated the model at each Greenbook forecast date.

In line with the results in the DSGE model forecasting literature, we found that the root mean squared errors (RMSEs) of the DSGE-model forecasts were similar to, and often better than, those of the BVAR and Greenbook forecasts. Our surprising finding was that unlike what one would expect when told that the model forecast is better than that of the Greenbook, the DSGE model in an absolute sense did a very poor job of forecasting. The Greenbook and time series model forecasts similarly did not capture much of the realized changes in GDP growth and inflation in our sample, 1992 to 2004. There is a moderate amount of nowcasting ability and then almost nothing beginning with one quarter ahead forecasts. Thus, the forecast comparison is not one of one good forecast relative to another; all three methods of forecasting are poor and combining them does not lead to much improvement either.

This finding reflects the changed nature of macroeconomic fluctuations in the Great Moderation period. For example, Stock and Watson (2007) have shown that since the Great Moderation, the permanent (forecastable) component of inflation, which had earlier dominated, has diminished such that the inflation process more recently has been largely influenced by the transitory (unforecastable) component. An analogous point for GDP has been made by Tulip (2009). Data availability prevents us from answering the question of whether the forecasting ability of estimated DSGE models has worsened with the Great Moderation. We do, however, address the question of whether these models' forecasting performance are in an absolute sense poor and we find that they are.

A key point we make in this paper is that forecasting ability is not always a good criteria for a model's success. As we discuss in more detail below, DSGE models of the class we consider often imply that under a strong monetary policy rule there should not be much forecastability. In other words, when there is not much to be forecasted in the observed out of sample data, as is the case in the Great Moderation period, a "wrong" model will fail to forecast, but so will a "correct" model. Consequently, it is entirely possible that a model that is unable to forecast, say inflation, will nonetheless provide reasonable counterfactual scenarios, which is ultimately the main purpose of the DSGE models.

The remainder of the paper is organized as follows. Section two describes the different forecasting methods that we will consider in this paper, including those generated by the Smets and Wouters (2007) DSGE model, the Bayesian VAR model, the Greenbook, and the Blue Chip consensus forecast. The Blue Chip is an additional forecast that we consider primarily because there is a five-year delay in the public release of Greenbook forecasts and we want to consider the

most recent recession. Section three then describes the data that we use, which as noted is real-time to ensure that the same information is used to generate our DSGE model and BVAR model forecasts as was used to formulate the Greenbook and Blue Chip forecasts. Section four describes and presents the results for our forecast comparison exercises while section five discusses them. Section six considers robustness analysis and extensions. In particular we show in this section that judgmental forecasts have adjusted faster to capture the developments during the Great Recession. Section seven concludes.

A contribution of this paper is the construction of real-time data sets using data vintages that match Greenbook forecast dates and Blue Chip forecast dates. The appendix describes the construction of this data in detail.²

2 Forecast Methods

In this section we briefly review the four different forecasts that we will later consider. These forecasts are a DSGE model forecast, a Bayesian VAR model forecast, the Federal Reserve Board’s Greenbook forecast, and the Blue Chip Consensus forecast.

2.1 DSGE Model

The DSGE model that we use in this paper is exactly that of Smets and Wouters (2007) and the description of the model given here quite closely follows the description presented in section one of Smets and Wouters (2007) and section two of Smets and Wouters (2003).

The Smets and Wouters model is an application of a real business cycle model (in the spirit of King, Plosser, and Rebelo, 1988) to an economy with sticky prices and sticky wages. In addition to nominal rigidities, the model also contains a large number of real rigidities—specifically habit formation in consumption, costs of adjustment in capital accumulation, and variable capacity utilization—that ultimately appear to be necessary to capture the empirical persistence of U.S. macroeconomic data.

The model consists of households, firms, and a monetary authority. Households maximize a non-separable utility function with goods and labor effort as its arguments over an infinite life horizon. Consumption enters the utility function relative to a time-varying external habit variable and labor is differentiated by a union. This assumed structure of the labor market enables the household sector to have some monopoly power over wages. This implies a specific wage-setting

²All of the data used in this paper, except the Blue Chip median forecasts which are proprietary, are available at <http://www.bilkent.edu.tr/refet/research.html>

equation that in turn allows for the inclusion of sticky nominal wages, modeled following Calvo (1983). Capital accumulation is undertaken by households, who then rent capital to economy's firms. In accumulating capital households face adjustment costs, specifically investment adjustment costs. As the rental price of capital changes, the utilization of capital can be adjusted, albeit at an increasing cost.

The firms in the model rent labor and capital from households (in the former case via a union) to produce differentiated goods for which they set prices, with Calvo (1983) price stickiness. These differentiated goods are aggregated into a final good by different (perfectly competitive) firms in the model and it is this good that is used for consumption and accumulating capital.

The Calvo model in both wage and price setting is augmented by the assumption that prices that are not reoptimized are partially indexed to past inflation rates. Prices are therefore set in reference to current and expected marginal costs but are also determined, via indexation, by the past inflation rate. Marginal costs depend on the wage and the rental rate of capital. Wages are set analogously as a function of current and expected marginal rates of substitution between leisure and consumption and are also determined by the past wage inflation rate due to indexation. The model assumes a variant of Dixit-Stiglitz aggregation in the goods and labor markets following Kimball (1995). This aggregation allows for time-varying demand elasticities, which allows more realistic estimates of price and wage stickiness.

Finally, the model contains seven structural shocks, which is equal to the number of observables used in estimation. The model's observable variables are the log difference of real per capita GDP, real consumption, real investment, real wage, log hours worked, log difference of the GDP deflator, and the federal funds rate. These series, and in particular their real time sources, are discussed in detail below.

In estimation, the seven observed variables are mapped into 14 model variables by the Kalman filter. Then 36 parameters (17 of which belong to the seven ARMA shock processes in the model) are estimated via Bayesian methods (while 5 parameters are calibrated). It is the combination of the Kalman filter and Bayesian estimation which allows this large (although technically called a medium scale) model to be estimated rather than calibrated. In estimation we use exactly the same priors as Smets and Wouters (2007) as well as using the same data series. Once the model is estimated for a given data vintage, forecasting is done by employing the posterior modes for each parameter. The model can produce forecasts for all model variables but we only use the GDP growth, inflation and interest rate forecasts.

2.2 Bayesian VAR

The Bayesian VAR is, in its essence, a simple forecasting VAR(4). The same seven observable series that are used in the DSGE model estimation are used in the VAR. Having seven variables in a four lag VAR leads to a large number of parameters to be estimated which leads to over-fitting and poor out-of-sample forecast performance problems. The solution is the same as for the DSGE model. Priors are assigned to each parameter (and the priors we use are again those of Smets and Wouters, 2007) and the data are used to update these in the VAR framework. Similar to the DSGE model, the BVAR is estimated at every forecast date using real time data and forecasts are obtained by utilizing the modes of the posterior densities for each parameter.

Both the judgmental forecast and the DSGE model have an advantage over the purely statistical model, the BVAR, in that the people who produce the Greenbook and Blue Chip forecasts obviously know a lot more than seven time series and the DSGE model was built to match the data that is being forecast. That is, judgment also enters the DSGE model in the form of modeling choices. To help the BVAR overcome this handicap it is customary to have a training sample—to estimate the model with some data and use the posteriors as priors in the actual estimation. Following Smets and Wouters (2007) we also “trained” the BVAR with data from 1955-1965 but, in an sign of how different the early and the late parts of the sample are, found that the performance of the trained and untrained BVAR are comparable. We therefore report results from the untrained BVAR only.

2.3 Greenbook

The Greenbook forecast is a detailed judgmental forecast that until March 2010 (after which it became known as the Tealbook) was produced eight times a year by staff at the Board of Governors.³ The specific dates of when each Greenbook forecast is produced – and hence the data availability of each round – is somewhat irregular since the Greenbook is made specifically for each Federal Open Market Committee (FOMC) meeting and the timings of FOMC meetings are themselves somewhat irregular. Broadly speaking FOMC meetings take place at an approximate six-week interval (although they tend to be further apart at the beginning of the year and closer together at the end of the year). The Greenbook is generally closed about one week before the FOMC meeting takes place so as to allow FOMC members, and their staffs, enough time to review, analyze and critique the document. Importantly—and unlike several other central banks—the Greenbook forecast reflects the view of the staff and not the members of the FOMC.

Greenbook forecasts are formulated subject to a set of assumed paths for financial variables,

³The renaming of the Federal Reserve Board’s main forecasting document reflected a reorganization and combination and the original Greenbook and Bluebook. Throughout this paper we will continue to refer to the FRB’s main forecasting document as the Greenbook.

such as the policy rate, key interest rates, and stock market wealth. Over time there has been some variation in the way these assumptions have been set. For example, as can be seen from the Greenbook federal funds rate assumptions reported in the Philadelphia Fed’s Real-Time Data Set for Macroeconomists, from about the middle of 1990 to the middle of 1992 an essentially constant path of the federal funds rate was assumed in making the forecast.⁴ In other periods, however, the path of the federal funds rate does vary, reflecting a conditioning assumption about the path of monetary policy consistent with the forecast.

As is the case for most judgmental forecasts, the maximum projection horizon for the Greenbook forecast vintages is not constant and varies from ten to six quarters depending on the forecast round. The July/August round of each year has the shortest projection horizon of any forecast round. It extends six quarters: The current (third) quarter and the next (fourth) quarter and all four quarters of the following year. In the September round of each year, the staff extend the forecast to include the year following the next in the projection period. Since the third quarter is not yet finished at the time of the September forecast, that quarter is still included in the Greenbook projection horizon and so in total the horizon is ten quarters—the longest horizon for any forecast round. The end-point of the projection horizon remains fixed for subsequent forecasts as the starting point moves forward. This leaves the July/August forecast round with only a six-quarter forecast horizon. In our analysis, we consider a maximum forecast horizon of eight quarters because the number of observations for nine and ten quarters is very small. Of course, the number of observations for a forecast horizons of seven and eight quarters (which we do consider) will be smaller than the number of observations for horizons of six quarters and less.

We use the forecasts produced for the FOMC meetings starting in January 1992 and ending in December 2004. Our forecast-vintage start date represents when the GDP, rather than GNP, became the key indicator of economic activity. This is not a critical limitation since GNP forecasts can clearly be used for earlier vintages. The end date was chosen by necessity: Greenbook forecasts are made public only with a 5-year lag. The first two columns in Appendix Tables 1 to 13 provide detailed information on the dates of Greenbook forecasts we use and the horizons covered in each forecast. Note that the first four Greenbook forecasts that we consider fall in the episode of when the policy rate was assumed to remain flat throughout the projection period.

2.4 Blue Chip

The Blue Chip Economic Indicators are a monthly poll of the forecasts for U.S. economic growth, inflation, interest rates, and a range of other key variables of approximately 50 banks, corporations, and consulting firms. The Blue Chip poll is taken on about the 4th or 5th of the month and the

⁴See <http://www.philadelphiafed.org/research-and-data/real-time-center/greenbook-data/>.

forecasts are published on the 10th day of each month. A consensus forecast, which is equal to the median of the individual reported forecasts, is then reported along with the average of the top 10 and bottom 10 forecasts for each variable. In our analysis we use only the consensus forecast.

As with the Greenbook, the Blue Chip forecast horizons are not constant across forecast rounds and in the case of the Blue Chip the forecast horizons are uniformly shorter. The longest forecast horizon in the Blue Chip is nine quarters. This is for the January round for which a forecast is made for the year to come and the next one, but for which the fourth quarter of the previous year is not yet available and is also “forecast.” The shortest forecast horizon in the Blue Chip is five quarters. This is for the November and December rounds for which a forecast is made for the current (fourth) quarter and the following year.

We use the Blue Chip consensus forecasts over the period January 1992 to September 2009. The start date for the Blue Chip corresponds to the start date for the Greenbook. The end date is one year prior to the time of writing.

3 Data and Sample

In this section we provide a brief overview of the data involved in the forecasting process and our sample period. A detailed appendix presents sources and information on how the raw data is converted to the form used in estimation.

The data we use for the estimation of the Smets-Wouters DSGE model and the BVAR model are the same seven series used by Smets and Wouters (2007) but pulled for the real time vintages of each series at each forecast date. Our forecast dates coincide with either the dates of Greenbook forecasts or those of the Blue Chip forecasts. That is, at each Greenbook or Blue Chip forecast date, we use the data that was available on that date to estimate the DSGE model and the BVAR.⁵ We then generate forecasts out to eight quarters. From the data perspective, the last known quarter is the previous one, therefore the one quarter ahead forecast is the nowcast (and the n quarter ahead forecast corresponds to $n - 1$ quarters ahead counting from the forecast date.). This convention is also the case for Greenbook and most Blue Chip forecasts.⁶

We will evaluate the forecasts for real per capita GDP growth, GDP deflator inflation and the

⁵See the appendix for exceptions to this. There are a few instances where one of the variables from the last quarter is not released yet on a Greenbook forecast date. In these instances we help the DSGE and BVAR forecasts by appending the FRB staff backcast of that data point to the time series. That said, in these circumstances we verify that doing so does not influence our results by dropping these forecast observations from our analysis and re-running our results.

⁶The exception for the Blue Chip forecasts are the January, April, July, and October forecasts. These typically take place so early in the quarter that no or little data for the preceding quarter is available. For these forecasts the previous quarter is considered the nowcast.

short (policy) rate. GDP growth and inflation are in terms of non-annualized quarter-on-quarter rates, while interest rates are in levels. Our main focus will be on inflation forecasts because this is the forecast that is the most comparable across the different forecasting methods. The DSGE model and the BVAR produce continuous (and in very recent periods negative) interest rate forecasts while judgmental forecasts obviously factor in the discrete nature of the interest rate setting and the zero nominal bound. Furthermore, the Blue Chip forecasts do not contain forecasts of the federal funds rate and hence we cannot do robustness checks for the interest rates or use the longer sample for this variable.

The issue about GDP growth is more subtle. The DSGE model is based on per capita values and produces a per capita GDP growth forecast. The BVAR similarly uses and produces per capita values. On the other hand, GDP growth itself is announced in aggregate terms and Greenbook and Blue Chip forecasts are in terms of aggregate growth. Thus, one has to either convert the aggregate growth rates to per capita values by dividing them by realized population growth rates, or convert per capita values to aggregate forecasts by multiplying them with realized population growth numbers.

The two methods should produce similar results and the fact that the model uses per capita data should make little difference as population growth is a smooth series with little variance. However, the population numbers reported by the Census Bureau and used by Smets and Wouters (and work following them) has a number of extremely sharp spikes caused by census picking up previously uncaptured population levels as well as CPS rebasings. The spikes are there because the data is not revised backwards; that is, population growth is placed in the quarter that uncaptured population is measured, not across any estimate of the quarters over which it more likely occurred.

In this paper we used the population series used by Smets and Wouters in estimating the model because we realized the erratic behavior of the population series after our estimation and forecast exercise was complete. (We estimate the model more than 300 times, which took about two months, and did not have the time to re-estimate and re-forecast using the better population series.) We note the violence this does to the model estimates and encourage future researchers to smooth the population series before using that data to obtain per capita GDP. Here, we adjust the DSGE model and BVAR forecasts using the realized future population growth numbers to make them comparable to announced GDP growth rates and judgmental forecasts but we again note that this is an imperfect adjustment which likely hurts the DSGE model and BVAR forecasts.⁷

⁷We also experimented with converting the realized aggregate GDP growth numbers and Blue Chip forecasts to per capita values using the realized population growth rates, and converting the Greenbook GDP growth forecast into per capita values by using the Fed staff's internal population forecast. This essentially gives Blue Chip forecasts perfect foresight about the population component of per capita GDP, helping it quite a lot in forecasting because the variance of the population series is high, and hurts the Greenbook GDP forecast a lot because the Fed staff population growth estimate is a smooth series. Those results are available upon request.

We estimate the models (DSGE and BVAR) with data going back to 1965 and do the first forecast on January 1992. The Greenbook forecasts are embargoed for five years, therefore our last forecast is in 2004:Q4, forecasting the period out to 2006:Q3. There are two scheduled FOMC meetings per quarter and thus all of our forecasts that are compared to the Greenbook are made twice a quarter. This has consequences for correlated forecast errors, as explained in the next section. For Blue Chip forecasts, the forecasting period ends in 2010:Q1, the last quarter for which we know the realized values of variables of interest. Blue Chip forecasts are published monthly and we produce a separate set of real time DSGE and BVAR model forecasts coinciding with the Blue Chip publication dates.

We should note that, while not identical, our sample, 1992 to 2004 for Greenbook comparisons, is similar to the ones used in previous studies of forecast ability of DSGE models, such as Smets-Wouters (2007), who use 1990 to 2004, and Edge et al. (2010) who use 1996 to 2002. It is also important to note again that the sample is in the Great Moderation period, after the long disinflation was complete, and that most of the period corresponds to a particularly transparent monetary policy making episode, with the FOMC signalling likely policy actions in the near future with statements accompanying releases of interest rate decisions.

4 Forecast Comparison

We distinguish between two types of forecast evaluations. Given a variable to be forecasted, x , and its h -period ahead forecast (made h -periods in the past) by method y , \hat{x}_y^h , one can compute the root mean square error of the real time forecasts

$$RMSEx_y^h = \sqrt{\frac{1}{T} \sum_{t=1}^T (x_t - \hat{x}_{y,t}^h)^2}. \quad (1)$$

Comparing the root mean square errors across different forecast methods, a policy maker can then choose the method with the smallest RMSE to use. The RMSE comparison therefore answers the decision theory question: Which forecast is the best and should be used? To our knowledge, all of the forecast evaluations of DSGE models so far (Smets and Wouters 2007, Edge et al. 2010, and those mentioned earlier for other countries) have used essentially this metric—and concluded that the model forecasts do well.

In Figure 1 we carry out this exercise with real time data and show the RMSE of the DSGE model forecasts for inflation and GDP growth relative to those of the Greenbook and BVAR forecasts at different horizons. This figure visually conveys a result that Smets and Wouters and Edge et al. have shown earlier: except for very short horizon inflation forecasts (where the

Greenbook forecasts are better) the DSGE model forecasts have the lowest RMSE for both inflation and growth. The literature has taken this finding as both a vindication of the estimated medium scale DSGE model, and as a sign that these models can be used for forecasting as well as for positive analysis of counterfactuals and for optimal policy questions.

While Figure 1 indeed shows that the DSGE model has the best forecasting record among the three forecasting methods we consider, it does not offer any clues about how good the “best” is. To further evaluate the forecasts, we first look in Figure 2 at the scatter plots of the four quarter ahead forecasts (a horizon that the DSGE model outperforms the Greenbook and BVAR) of inflation and GDP growth from the DSGE model and the realized values of these variables. With a good forecast performance, the observations should lie on the 45-degree line.

The scatter plots shown in Figure 2 are surprising. For both variables, the points form clouds rather than 45-degree lines, suggesting that the four quarter ahead forecast of the DSGE model is quite unrelated to the realized value. To get the full picture, we run a standard forecast efficiency test (see Gürkaynak and Wolfers, 2007, for a discussion of tests of forecast efficiency and further references) and estimate

$$x_t = \alpha_y^h + \beta_y^h \hat{x}_{y,t}^h + \varepsilon_{y,t}^h. \quad (2)$$

A “good” forecast should have an intercept of zero, a slope coefficient of one, and a high R^2 . If the intercept is different from zero the forecast has on average been biased, if the slope is different from one, the forecast has consistently under or over predicted deviations from the mean, and if the R^2 is low then little of the variation of the variable to be forecasted is captured by the forecast. Note that especially when the point estimates of α_y^h and β_y^h are different from zero and one, respectively, the R^2 is a more charitable measure of the success of the forecast than the RMSE calculated in (1) as the errors in (2) are residuals obtained from the best fitting line. That is, a policy maker would make errors of size $\varepsilon_{y,t}^h$ only if she knew the values of α_y^h and β_y^h and adjusted $\hat{x}_{y,t}^h$ with these. The R^2 that is comparable to the RMSE measures calculated in (1) would be that implied by equation (2) with α_y^h and β_y^h constrained to 0 and 1, respectively.

Tables 1 to 3 show the estimation results of (2) for the DSGE model, BVAR and Greenbook forecasts of inflation, GDP growth and interest rates, respectively.⁸ The table suggests that forecasts of inflation and GDP growth have been very poor by all methods, except for the Greenbook inflation nowcast. The DSGE model inflation forecasts have about zero R^2 for forecasts of the next quarter and beyond, and slope coefficients very far away from unity. GDP growth forecasts are likewise capturing less than 10 percent of the actual variation in growth and point estimates of the

⁸The standard errors reported are Newey-West standard errors for $2 * h$ lags, given there are two forecasts made in each quarter. Explicitly taking the clustering at the level of quarters—as the forecasts made in the same quarter may be correlated—into account made no perceptible difference. Neither did using only the first or second forecast in each quarter.

slopes are again away from unity. Except for the Greenbook nowcast, the results are very similar for the judgmental forecast and the BVAR forecasts.

All three forecast methods, however, do impressively in forecasting interest rates (Table 3). This is surprising as short rates should be a function of inflation and GDP, and thus should not be any more forecastable than these two variables, except for the forecastability coming from interest rate smoothing by policy makers. The issue here is that the interest rate is highly serially correlated, which makes it easy to forecast. (Indeed, in our sample the level of the interest rate behaves like a unit root process as verified by an unreported ADF test.)⁹ Thus, Table 3 is possibly showing long-run cointegrating relationships rather than short-run forecasting ability. We therefore follow Gürkaynak, Sack, and Swanson (2005) in studying at the change in the interest rate rather than its level.

Table 4 shows the interest rate change forecast evaluations for the three methods. The forecast success is now more comparable to inflation and GDP growth forecasts, although in the short run there is quite high forecastability in interest rate changes. The very strong nowcasting ability of the Greenbook partly comes from the fact that while the Fed staff know interest rates changes in integer multiples of 25 basis points, while BVAR and the DSGE model produce continuous interest rate forecasts.

The panels of Figure 2 and Tables 1 to 4 collectively show that while the DSGE model forecasts are comparable and often better than Greenbook and BVAR forecasts, this is a comparison of very poor forecasts to each other. To provide a benchmarks for forecast quality, we introduce a constant and a random walk forecast and ask the following two questions. First, if a policy maker could have used one of these three forecasts over the 1992-2006 period or could have access to the actual mean of the series over the same period and used that as a forecast (and zero change as the interest rate forecast at all horizons) how would the root mean square errors compare? Second, how large would the root mean square errors be if the policy maker used the last observation on each date as the forecast for all horizons, essentially treating the series to be forecast as random walks?¹⁰

We show the actual levels of the root mean square errors in Figure 3. The constant forecast does about as well as the other forecasts, and often better, suggesting that the DSGE model, BVAR and Greenbook forecasts are not accomplishing much. It is some relief, however, that the DSGE model forecast usually does better than the random walk forecast, an often used benchmark.¹¹ But notice

⁹While nominal interest rates cannot theoretically be simple unit root processes due to the zero nominal bound, they can be statistically indistinguishable from unit root processes in small samples and pose their econometric difficulties.

¹⁰In the random walk forecasts we set the interest rate change forecasts to zero. That is, in this exercise the assumed policy maker treats the level of the interest rate as a random walk.

¹¹We also looked at how the DSGE model forecast RMSEs compare to other forecast RMSEs statistically (results available from the authors). The Diebold-Mariano test results show that for inflation the RMSE of the DSGE model

that the random walk RMSEs are very large. To understand the quantities involved, observe that the 6-quarter ahead inflation forecast RMSE of the DSGE model is about 0.25 in quarterly terms. This would be about one percent annualized and would lead to a 95 percent confidence interval that is 4 percentage points wide. That is not very useful for policy making.

5 Discussion

Our findings are surprising, especially for inflation, given the Romer and Romer (2000) finding that the Greenbook is an excellent forecaster of inflation at horizons out to eight quarters. Figure 4 shows the reason of the difference. The Romer and Romer sample covers a period when inflation had a large swing. Our sample—and the sample used in other studies for DSGE model forecast evaluations—covers a period where inflation behaves more as *i.i.d.* deviations around a constant level. That is, there is little to be forecasted over our sample.

This finding is in line with Stock and Watson’s (2007) result that after the Great Moderation, the permanent (forecastable) component of inflation, which had earlier dominated, diminished in importance and the bulk of the variance of inflation began to be driven by the transitory (unforecastable) component. It is therefore not surprising that no forecasting method does well. Trehan (2010) shows that a similar lack of forecast ability is also evident in the Survey of Professional Forecasters and the Michigan Survey. Atkeson and Ohanian (2001) document that over the period 1984 to 1999 a random-walk forecast of four-quarter ahead inflation outperforms the Greenbook forecast as well as Phillips curve models. (But note that here we find that the DSGE model, with a sophisticated microfounded Phillips curve, outperforms the random walk forecast.) Fuhrer et al. (2009) show that this is due to the parameter changes in the inflation process that have occurred with the onset of the Great Moderation. For forecasts of output growth, Tulip (2009) documents a notably larger reduction in actual output growth volatility following the Great Moderation relative to the reduction in Greenbook RMSEs, thus indicating that much of the reduction in output-growth volatility has stemmed from the predictable component—that is, the part that can potentially be forecast.

Reifschneider and Tulip (2009) perform a wide reaching analysis of institutional forecasts—specifically, the Greenbook, the SPF and the Blue Chip, as well as forecasts produced by the Congressional Budget Office and the Administration—for real GDP (or GNP) growth, the unemployment rate, and CPI inflation. Although they do not consider changes in forecast

is significantly lower than those of the BVAR and the random walk forecasts for most maturities, is indistinguishable from the RMSE of the Greenbook and is higher than that of the constant forecast for some maturities; while for GDP growth the DSGE model RMSE is statistically lower than those of the BVAR and the random walk forecasts and is indistinguishable from the RMSEs of the Greenbook and the constant forecasts.

performance associated with the Great Moderation their analysis, which is undertaken for the post-1986 period, finds overwhelmingly that errors for all institutional forecasts are large. More broadly D’Agostino and Giannone (2006) also consider a range of time series forecasting models, including univariate AR models, factor augmented AR models, and pooled bivariate forecasting models, as well as institutional forecasts—that is, the Greenbook forecast and the forecasts from the SPF—and document that while RMSEs for forecasts of real activity, inflation, and interest rates have dropped notably with the Great Moderation, time series and institutional forecasts have also largely lost their ability to improve on a random walk. Faust and Wright (2009) similarly note that performances of some of the forecasting methods they consider improves when data from periods preceding the Great Moderation is included in the sample.

We would argue that DSGE models should not be judged solely by their (lack of) absolute forecast abilities. Previous authors, such as, Edge et. al (2010), were conscious of the declining performance of Greenbook and time series forecasts when they performed their comparison exercises but took as given the fact that staff at the Federal Reserve Board are required to produce forecasts of the macroeconomy eight times a year. More precisely, they asked whether a DSGE model forecast should be introduced into the mix of inputs used to arrive at the final Greenbook forecast. In this case relative forecast performance is a relevant point of comparison. Another aspect of central bank forecasting that is important to note is that of “story telling.” That is, not only are the values of the forecast variables important but so too is the narrative explaining how present imbalances will be unwound as the macroeconomy moves toward the balanced growth path. A well thought out and much scrutinized story accompanies the Greenbook forecast but is not something present in reduced-form time series forecasts. An internally consistent and coherent narrative is, however, implicit in a DSGE model forecast, indicating that these models can also contribute along this important dimension of forecasting.

In sum, what do these findings say about the quality of DSGE models as a tool for telling internally consistent, reasonable stories for counterfactual scenarios? Not much. Inflation being unforecastable is a prediction of basic sticky price DSGE models when monetary policy responds aggressively to inflation. Goodfriend and King (2009) make this point explicitly using a tractable model. If inflation is forecasted to be high, policy makers increase interest rates and rein in inflation. Thus, inflation is never predictably different from the (implicit) target and all of the variation comes from unforecastable shocks. In models lacking real rigidities the divine coincidence will be present, which means that the output gap will have the same property of unforecastability. Thus, it is well possible that the model is “correct” and therefore cannot forecast cyclical fluctuations but the counterfactual scenarios produced by the model can still inform policy discussions.¹²

¹² Although see Gali (2010) about difficulties inherent in generating counterfactual scenarios using DSGE models.

Of course, the particular DSGE model we employ in this paper does not have the divine coincidence due to the real rigidities it includes, such as a real wage rigidity due to having both sticky prices and sticky wages. Moreover because in this model there is a trade-off between stabilizing price inflation, wage inflation, and the output gap, optimal policy is not characterized by price-inflation stabilization and therefore unforecastable price inflation. Nonetheless, price-inflation stabilization is a possible policy, which could be pursued even if not optimal, and this would imply unforecastable inflation. That said, this policy would likely not stabilize the output gap, so implying some forecastability of the output gap. Ultimately, whether, and to what extent, the model implies (un)forecastable fluctuations in inflation and GDP growth can be learned by simulating data from the model calibrated under different monetary policy rules and performing forecast exercises on the simulated data. We note the qualitative model implication that there should not be much predictability, especially for inflation, and leave the quantitative study to future research. Note also that our discussion here has focused on the forecastability of the output gap, not output growth, which is ultimately the variable of interest in our forecast exercises. Unforecastability of the output gap may not imply unforecastability of output growth.

Finally, we would note that a reduced form model with an assumed inflation process that is equal to a constant with *i.i.d.* deviations—i.e. a “wrong” model—will also have the same unforecastability implication. Thus evaluating forecasting ability during a period such as the Great Moderation, when no method is able to forecast, is not a test of the empirical relevance of a model.

6 Robustness and Extensions

To verify that our results are not specific to the relatively short sample we have used and to the Greenbook date vintages we employed, we repeated the exercise using Blue Chip forecasts as the judgmental forecast for the 1992-2010 period. (This also has the advantage of adding the Great Recession period to our sample.) We also estimated the DSGE model and the BVAR using data vintages of Blue Chip publication dates and produced forecasts.

We do not display the analogues of Figures 1 to 3 and Tables 1 to 4 for brevity but note that the findings are very similar when Blue Chip forecasts replace Greenbook forecasts and the sample is extended to 2010, encompassing the financial crisis episode. (One difference is that the Blue Chip forecast has nowcasting ability for GDP as well as inflation.) The DSGE model forecast is similar to the judgmental forecast and is better than the BVAR in the RMSE sense for almost all horizons, but all three forecasts are very poor forecasts. (This exercise omits the forecasts of interest rates as Blue Chip does not include forecasts of the overnight rate.) The longer sample allows us to answer some interesting questions and provide further robustness checks.

Although we use quarter over quarter changes and not annual growth rates for all of our variables, overlapping periods in long horizon forecasting is a potential issue. In Figure 5 we show the non-overlapping four quarter ahead absolute errors of DSGE model forecasts made in the January of each year for the first quarter of the subsequent year. Horizontal lines at -0.25 and 0.25 show forecast errors that would be one percentage point in annualized terms. Most errors are near or above (in absolute value) these bounds. It is clear that our statistical results are not driven by outliers (a fact also visible in Figure 1).

To provide a better understanding of the evolution of forecast errors over time, Figure 6 shows three year rolling averages of root mean square errors for four quarter ahead forecasts, using all 12 forecasts for each year. Not surprisingly, the forecast errors are considerably higher in the latter part of the sample, which includes the crisis episode. The DSGE model does worse than the Blue Chip forecast once the rolling windows includes 2008, for both inflation and the GDP growth forecasts.

Lastly, we look at the forecasting performance of the DSGE and BVAR models compared to the Blue Chip forecasts during the recent crisis and the recession. Figures 7 and 8 show the forecast errors for inflation and GDP growth beginning with 4 quarter ahead forecasts and ending with the nowcast for three quarters: 2007Q4, the first quarter of the recession according to the NBER dating, 2008Q3, when Lehman failed and per capita GDP growth turned negative, and 2009Q1, when the extent of the contraction became clear (see Wieland and Wolters, 2010, for a similar analysis of more episodes).¹³ A salient feature of all panels in Figures 7 and 8 is the closeness of the model forecast and the judgmental forecast to each other when the forecast horizon is four quarters. While all forecasts clearly first miss the recession, then its severity, the Blue Chip forecasts in general far better when the quarter to be forecasted gets closer and especially when nowcasting.

An interesting point is the within quarter improvement in the judgmental forecast, especially for the nowcast quarter, and the lack of a similar improvement for the DSGE and BVAR model forecasts. The DSGE and statistical models have access to more revised versions of data belonging to the previous quarter and before as the quarter progresses. On the other hand, forecasters surveyed by the Blue Chip survey observe within quarter developments and learn of industrial production, retail sales, etc. as well as receiving updates about policy responses, which were not following previous prescriptions that are in the estimated parameters. For example, the Blue Chip forecasters surely knew of the zero nominal bound, whereas both estimated models (DSGE and statistical) imply deeply negative nominal rate forecasts during the crisis.

It is not very surprising that judgmental forecasts fare better in capturing such regime switches. The DSGE model, lacking a financial sector and a zero nominal bound, should naturally do

¹³In the horizontal axis labels, (A), (B), and (C) denote the first, second, and third month of a given quarter.

somewhat better in the pre-crisis period. In fact, that is the period this model was built to explain. But this also cautions us that out-of-sample tests for DSGE models are not truly out of sample as long as the sample is in the period the model was built to explain. The next generation of DSGE models will likely have the zero nominal bound and a financial sector as standard features and will do better when explaining the great recession. Their real test will be to explain—but not necessarily to forecast—the first business cycle that follows those models’ creation.¹⁴

7 Conclusion

DSGE models are very poor in forecasting, but so are all other approaches. Forecasting ability is a nonissue in DSGE model evaluation because in recent samples (over which these models can be evaluated using real time data) there isn’t much to be forecasted. This is consistent with the literature on the Great Moderation, which emphasizes that not only the standard deviation of macroeconomic fluctuations, but also their nature has changed. In particular, cycles are driven more by temporary, unforecastable shocks.

The lack of forecastability is not, however, evidence against the DSGE model and indeed can be evidence in favor of it. Monetary policy was characterized with a strongly stabilizing rule in this period and the model implies that such policy will undo predictable fluctuations, especially in inflation. We leave scrutinizing this point and studying the forecasting ability of the model in pre- and post-Great Moderation periods in more detail to future work and conclude by repeating that forecasting ability is not a proper metric to judge a model.

References

- [1] Adolfson, M., M. Andersson, J. Linde, M. Villani, and A. Vredin. 2007. “Modern Forecasting Models in Action: Improving Macroeconomic Analyses at Central Banks,” *International Journal of Central Banking* 3(4), 111-144.
- [2] Adolfson, M., J. Linde, and M. Villani. 2006. “Forecasting Performance of an Open Economy Dynamic Stochastic General Equilibrium Model.” Sveriges Riksbank Working Paper Series, No. 190.
- [3] Atkeson, A. and L. Ohanian. 2001. “Are Phillips Curves Useful for Forecasting Inflation?,” *Quarterly Review, Federal Reserve Bank of Minneapolis* (Winter), 2-11.

¹⁴A promising avenue of research is adding unemployment explicitly to the model, as in Gali, Smets and Wouters (2010). This will likely help improve the model forecasts as Stock and Watson (2010), show that utilizing an unemployment gap measure helps improve forecasts of inflation in recession episodes.

- [4] Calvo, G. 1983. "Staggered Prices in a Utility-Maximizing Framework," *Journal of Monetary Economics* 12(3), 383-398.
- [5] Christiano, L., M. Eichenbaum, and C. Evans. 2005. "Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy," *Journal of Political Economy* 113(1), 1-45.
- [6] Christoffel, K., G. Coenen, and A. Warne. 2010. "Forecasting with DSGE Models," in M. Clements and D. Hendry (eds), *Handbook of Forecasting*, Oxford University Press, Oxford, forthcoming.
- [7] D'Agostino, A. and D. Giannone. 2006. "Comparing Alternative Predictors Based on Large-Panel Factor Models," ECB Working Paper No. 680.
- [8] Edge, R., M. Kiley, and JP. Laforge. 2010. "A Comparison of Forecast Performance between Federal Reserve Staff Forecasts, Simple Reduced-Form Models, and a DSGE Model," *Journal of Applied Econometrics*, 25(4), 720-54.
- [9] Faust, J. and J. Wright. 2009. "Comparing Greenbook and Reduced Form Forecasts Using a Large Realtime Dataset," *Journal of Business and Economic Statistics* 27(4), 468-479.
- [10] Fuhrer, J., G. Olivei, and G. Tootell. 2009. "Empirical Estimates of Changing Inflation Dynamics," FRB Boston Working Paper No. 09-4.
- [11] Gali, J. 2010. "Are Central Banks' Projections Meaningful?" CEPR Discussion Paper 8027.
- [12] Gali, J., F. Smets, and R. Wouters. 2010. "Unemployment in an Estimated New Keynesian Model," Working Paper, CREI.
- [13] Goodfriend, M. and R. King. 2009. "The Great Inflation Drift," NBER Working Paper No. 14862
- [14] Gürkaynak, R., E. Swanson and B. Sack. 2005. "Market-Based Measures of Monetary Policy Expectations," *Journal of Business and Economic Statistics* 25(2), 201-12.
- [15] Gürkaynak, R. and J. Wolfers. 2007. "Macroeconomic Derivatives: An Initial Analysis of Market-Based Macro Forecasts, Uncertainty, and Risk," *NBER International Seminar on Macroeconomics* 2005 (2), 11-50.
- [16] Kimball, M. 1995. "The Quantitative Analytics of the Basic Neomonetarist Model," *Journal of Money, Credit, and Banking* 27(4), 1241-1277
- [17] King, R., C. Plosser, and S. Rebelo. 1988. "Production, Growth and Business Cycles I," *Journal of Monetary Economics* 21(2-3), 195-232.

- [18] Lees K., T. Matheson, and C. Smith. 2007. "Open Economy DSGE-VAR Forecasting and Policy Analysis - Head to Head with the RBNZ Published Forecasts," Reserve Bank of New Zealand Discussion Paper No. 2007/01.
- [19] Reifschneider, D. and P. Tulip. 2007. "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," FEDS Working Paper 2007-60.
- [20] Romer, C. and D. Romer. 2000. "Federal Reserve Information and the Behavior of Interest Rates," *American Economic Review* 90(3), 429-457.
- [21] Sims, C. 2002. "The Role of Models and Probabilities in the Monetary Policy Process," *Brookings Papers on Economic Activity* 2002(2), 1-40.
- [22] Smets, F. and R. Wouters. 2003. "An Estimated Stochastic Dynamic General Equilibrium Model of the Euro Area," *Journal of European Economic Association*, 1(5), 1123-1175.
- [23] Smets, F. and R. Wouters. 2007. "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach," *American Economic Review* 97(3), 586-607.
- [24] Stock, J. and M. Watson. 2007. "Why Has U.S. Inflation Become Harder to Forecast?" *Journal of Money Credit and Banking* 39(1), 3-33.
- [25] Stock, J. and M. Watson. 2010. "Modeling Inflation after the Crisis," Paper presented at the Federal Reserve Bank of Kansas City Economic Policy Symposium.
- [26] Trehan, B. 2010. "Survey Measures of Expected Inflation and the Inflation Process," FRBSF Working Paper Series No. 2009-10
- [27] Tulip, P. 2009. "Has the Economy Become More Predictable? Changes in Greenbook Forecast Accuracy," *Journal of Money, Credit and Banking* 41(6), 1217-1231.
- [28] Wieland, W. and M. Wolters. 2010. "The Diversity of Forecasts from Macroeconomic Models of the U.S. Economy," Working Paper, Goethe University.

	1Q ahead	2Q ahead	3Q ahead	4Q ahead	5Q ahead	6Q ahead
DSGE Model						
Slope	0.451** (0.108)	0.089 (0.149)	0.031 (0.250)	0.209 (0.261)	0.167 (0.216)	0.134 (0.174)
Intercept	0.261** (0.051)	0.421** (0.082)	0.446** (0.122)	0.363** (0.128)	0.386** (0.112)	0.398** (0.112)
R ²	0.13	0.00	0.00	0.02	0.01	0.01
No. of Obs	104	104	104	104	104	104
BVAR Model						
Slope	0.472** (0.096)	0.205 (0.133)	0.224* (0.104)	0.209 (0.121)	0.062 (0.094)	−0.033 (0.119)
Intercept	0.216** (0.052)	0.344** (0.091)	0.322** (0.066)	0.329** (0.085)	0.430** (0.069)	0.497** (0.097)
R ²	0.17	0.03	0.04	0.04	0.00	0.00
No. of Obs	104	104	104	104	104	104
Greenbook						
Slope	0.642** (0.084)	0.288 (0.161)	0.268 (0.188)	0.209 (0.245)	−0.007 (0.306)	−0.386 (0.253)
Intercept	0.138** (0.048)	0.322** (0.091)	0.332** (0.106)	0.369** (0.130)	0.477** (0.157)	0.657** (0.136)
R ²	0.48	0.08	0.05	0.02	0.00	0.06
No. of Obs	104	104	104	104	104	104

Notes: Standard errors in parentheses;

**/* denotes significance at the 1/5 percent level, respectively.

Table 1: DSGE Model, BVAR Model, and Greenbook Inflation Forecast Accuracy

	1Q ahead	2Q ahead	3Q ahead	4Q ahead	5Q ahead	6Q ahead
DSGE Model						
Slope	0.374*	0.485	0.477	0.507	0.485	0.553
	(0.174)	(0.249)	(0.321)	(0.303)	(0.312)	(0.279)
Intercept	0.419*	0.313	0.331	0.299	0.320	0.284
	(0.206)	(0.292)	(0.362)	(0.346)	(0.344)	(0.311)
R ²	0.08	0.09	0.07	0.08	0.07	0.06
No. of Obs	104	104	104	104	104	104
BVAR Model						
Slope	0.041	−0.057	0.094	0.082	0.110	0.037
	(0.130)	(0.136)	(0.143)	(0.135)	(0.146)	(0.206)
Intercept	0.784**	0.894**	0.735**	0.754**	0.713**	0.815**
	(0.160)	(0.196)	(0.198)	(0.189)	(0.205)	(0.263)
R ²	0.00	0.00	0.01	0.01	0.01	0.00
No. of Obs	104	104	104	104	104	104
Greenbook						
Slope	0.641**	0.260	−0.081	−0.115	−0.416	−0.001
	(0.172)	(0.339)	(0.287)	(0.318)	(0.359)	(0.422)
Intercept	0.561**	0.721**	0.875**	0.893**	1.015**	0.852**
	(0.102)	(0.179)	(0.162)	(0.181)	(0.195)	(0.233)
R ²	0.13	0.01	0.00	0.00	0.02	0.00
No. of Obs	104	104	104	104	104	104

Notes: Standard errors in parentheses;

**/* denotes significance at the 1/5 percent level, respectively.

Table 2: DSGE Model, BVAR Model, and Greenbook GDP Growth Forecast Accuracy

	1Q ahead	2Q ahead	3Q ahead	4Q ahead	5Q ahead	6Q ahead
DSGE Model						
Slope	1.138** (0.031)	1.286** (0.085)	1.373** (0.181)	1.385** (0.305)	1.381** (0.416)	1.324* (0.538)
Intercept	-0.149** (0.027)	-0.308** (0.068)	-0.427** (0.153)	-0.483 (0.289)	-0.528 (0.422)	-0.512 (0.582)
R ²	0.95	0.83	0.66	0.48	0.35	0.24
No. of Obs	104	104	104	104	104	104
BVAR Model						
Slope	0.924** (0.020)	0.888** (0.041)	0.867** (0.076)	0.852** (0.126)	0.828** (0.191)	0.807** (0.262)
Intercept	0.056** (0.020)	0.067 (0.036)	0.056 (0.064)	0.037 (0.117)	0.031 (0.195)	0.025 (0.281)
R ²	0.96	0.87	0.74	0.60	0.47	0.35
No. of Obs	104	104	104	104	104	104
Greenbook						
Slope	0.993** (0.006)	0.962** (0.025)	0.904** (0.057)	0.829** (0.098)	0.735** (0.148)	0.614** (0.194)
Intercept	0.001 (0.006)	0.012 (0.025)	0.049 (0.056)	0.112 (0.096)	0.200 (0.150)	0.316 (0.205)
R ²	1.00	0.96	0.87	0.72	0.54	0.36
No. of Obs	104	104	104	104	104	104

Notes: Standard errors in parentheses;

**/* denotes significance at the 1/5 percent level, respectively.

Table 3: DSGE Model, BVAR Model, and Greenbook Interest Rate Forecast Accuracy

	1Q ahead	2Q ahead	3Q ahead	4Q ahead	5Q ahead	6Q ahead
DSGE Model						
Slope	0.498** (0.121)	0.453* (0.173)	0.560* (0.240)	0.862* (0.411)	1.127* (0.473)	1.003 (0.507)
Intercept	-0.012 (0.016)	-0.009 (0.019)	-0.017 (0.023)	-0.029 (0.028)	-0.041 (0.031)	-0.034 (0.031)
R ²	0.15	0.11	0.11	0.17	0.20	0.12
No. of Obs	104	104	104	104	104	104
BVAR Model						
Slope	0.724** (0.133)	0.978** (0.274)	1.202* (0.459)	1.064* (0.489)	1.025* (0.476)	1.040* (0.482)
Intercept	-0.018 (0.014)	-0.027 (0.019)	-0.044 (0.028)	-0.043 (0.033)	-0.040 (0.033)	-0.038 (0.033)
R ²	0.30	0.17	0.16	0.16	0.17	0.18
No. of Obs	104	104	104	104	104	104
Greenbook						
Slope	1.052** (0.030)	1.191** (0.144)	0.986** (0.212)	0.588 (0.358)	0.423 (0.215)	-0.279 (0.333)
Intercept	-0.006 (0.003)	-0.022 (0.013)	-0.023 (0.022)	-0.011 (0.023)	-0.006 (0.024)	0.005 (0.022)
R ²	0.96	0.50	0.14	0.03	0.02	0.01
No. of Obs	104	104	104	104	104	104

Notes: Standard errors in parentheses;

**/* denotes significance at the 1/5 percent level, respectively.

Table 4: DSGE Model, BVAR Model, and Greenbook Interest Rate Change Forecast Accuracy

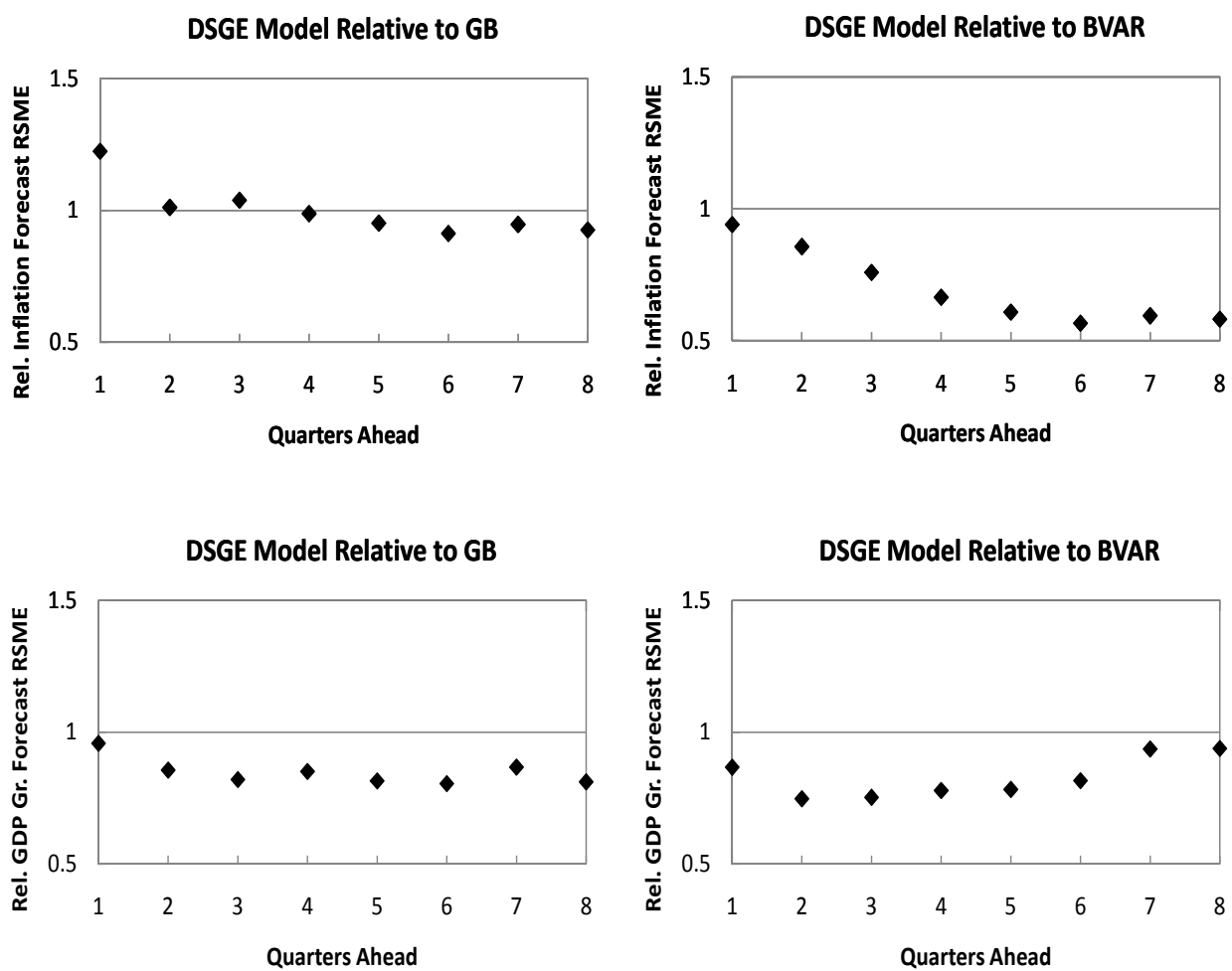


Figure 1: Relative Forecast RMSEs

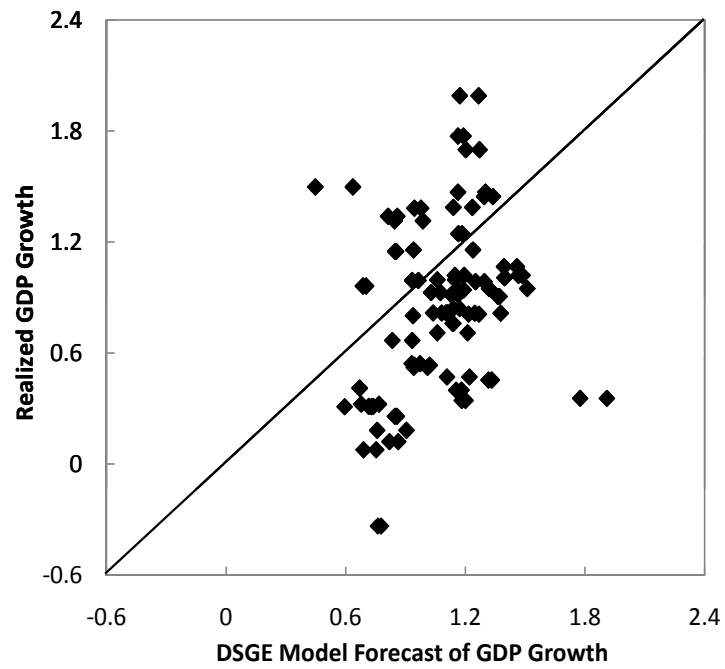
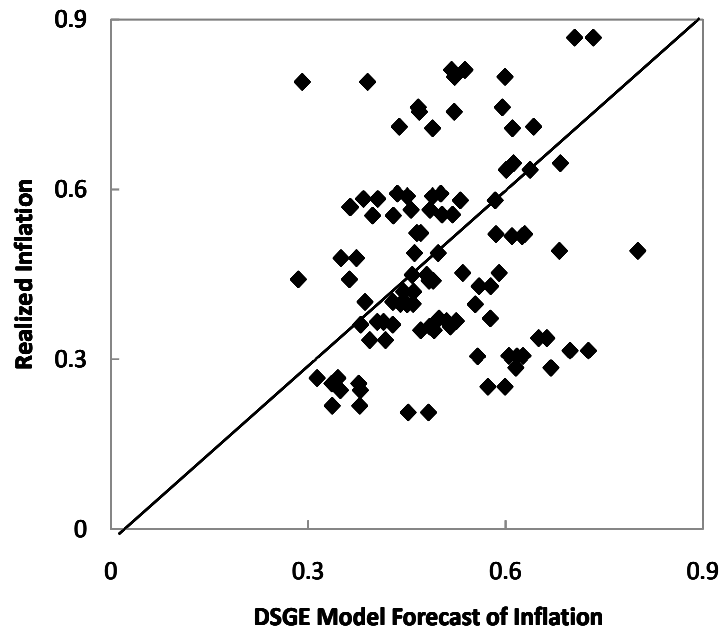


Figure 2: Realized and Four-quarter Ahead DSGE Inflation and Real GDP Growth Forecast

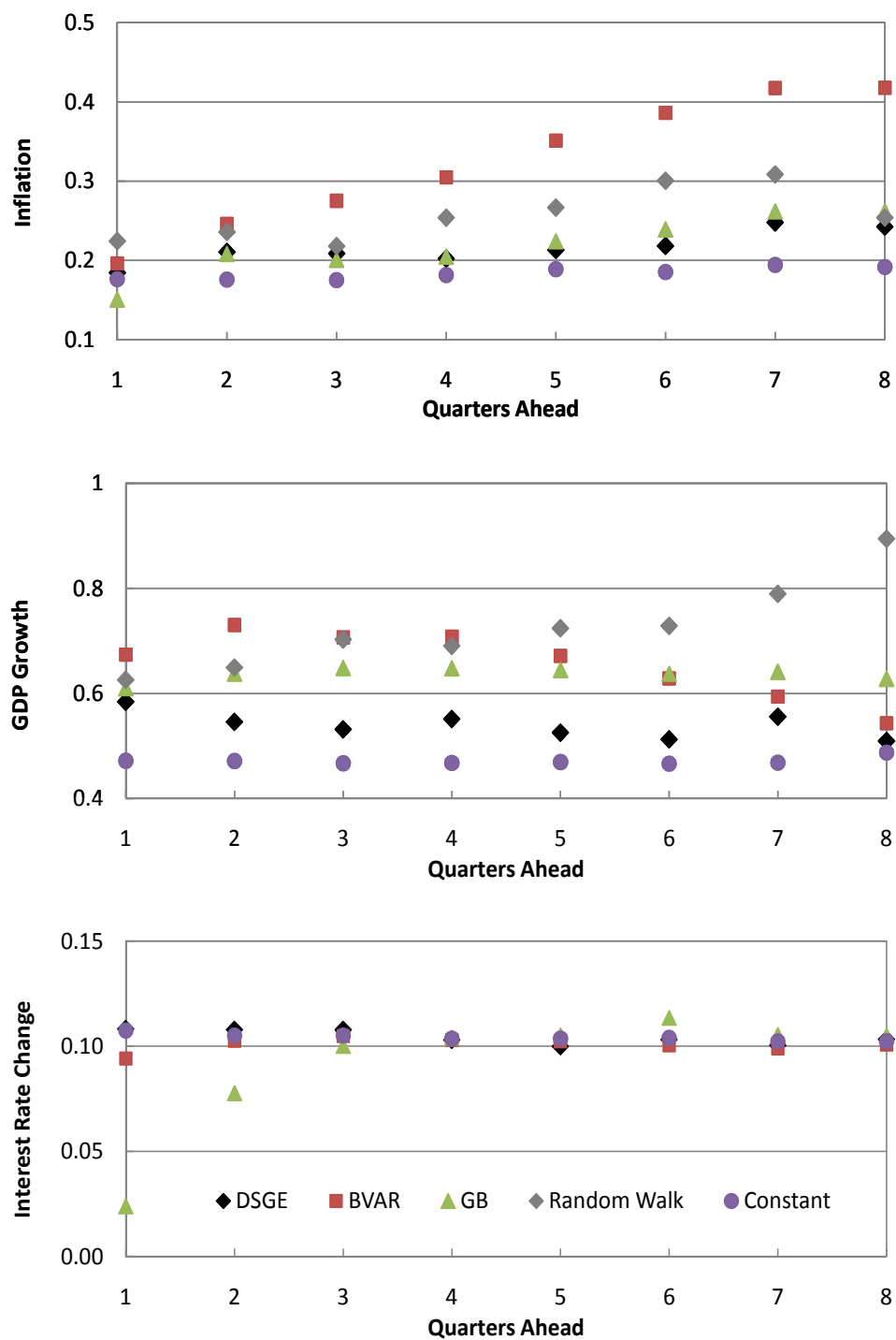


Figure 3: RSMEs of Alternative Forecasts

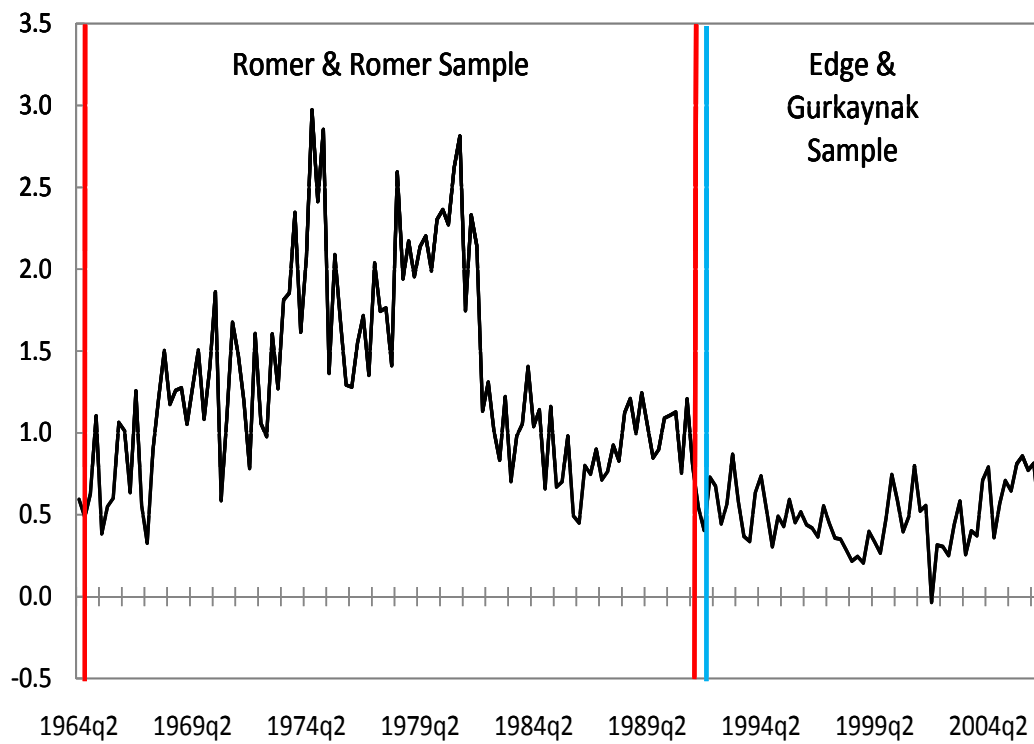


Figure 4: A Short History of Inflation

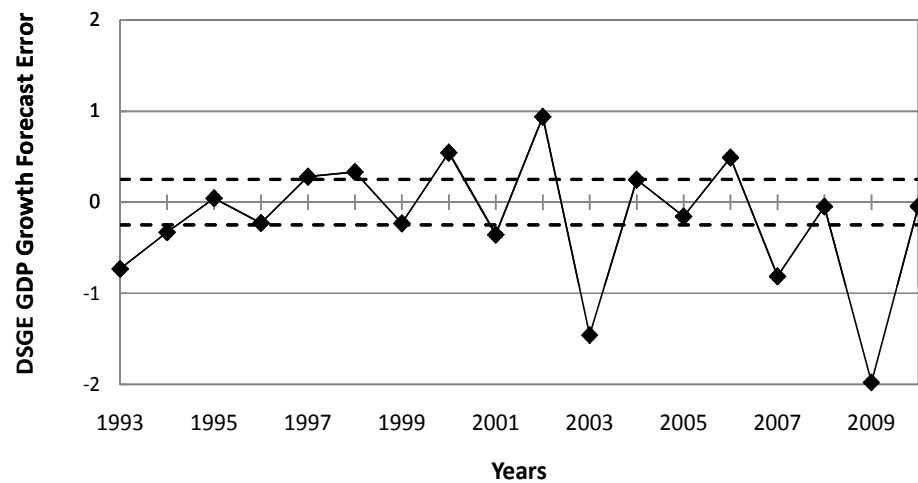
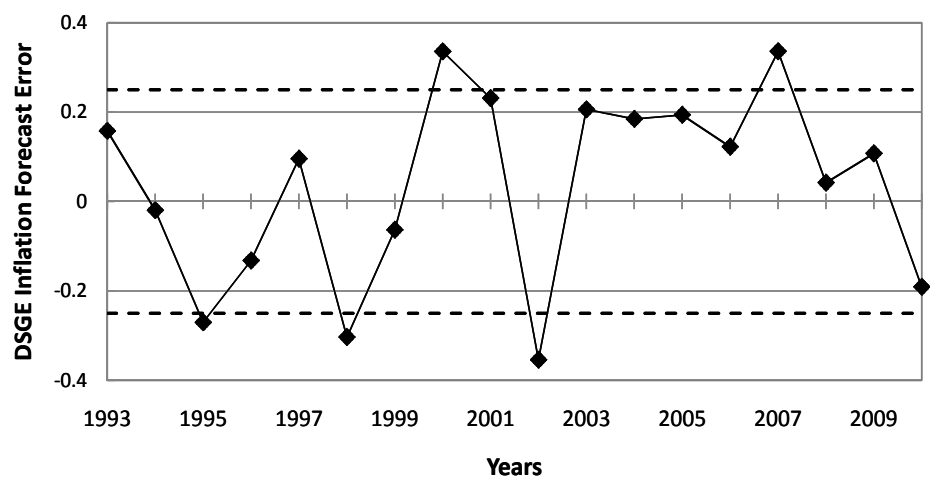


Figure 5: Non-overlapping Four-quarter Ahead Forecast Errors

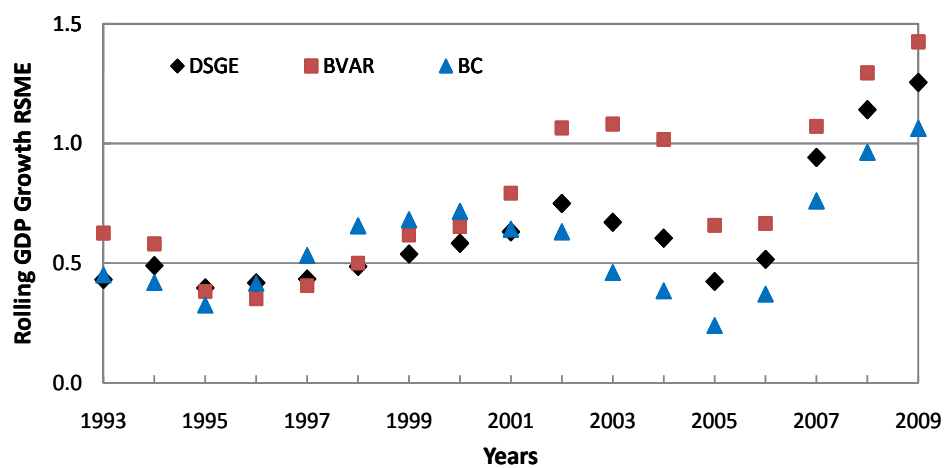
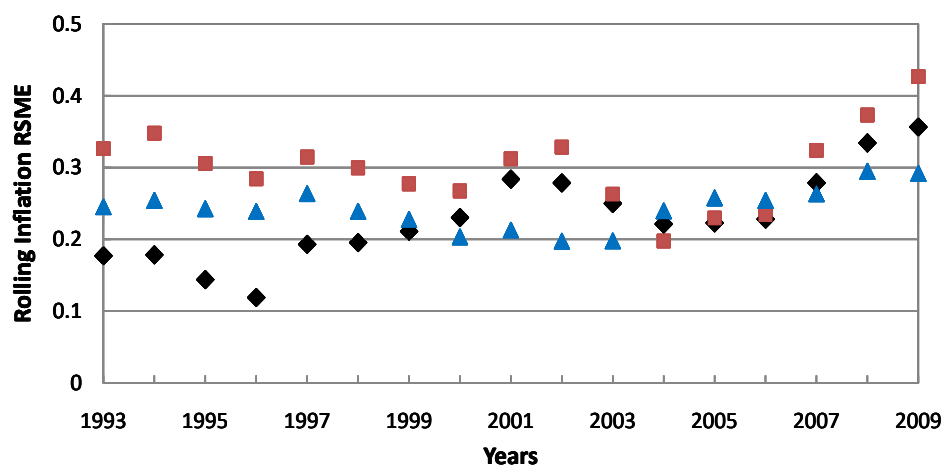


Figure 6: Three-year Rolling Average of Four-quarter Ahead RMSEs

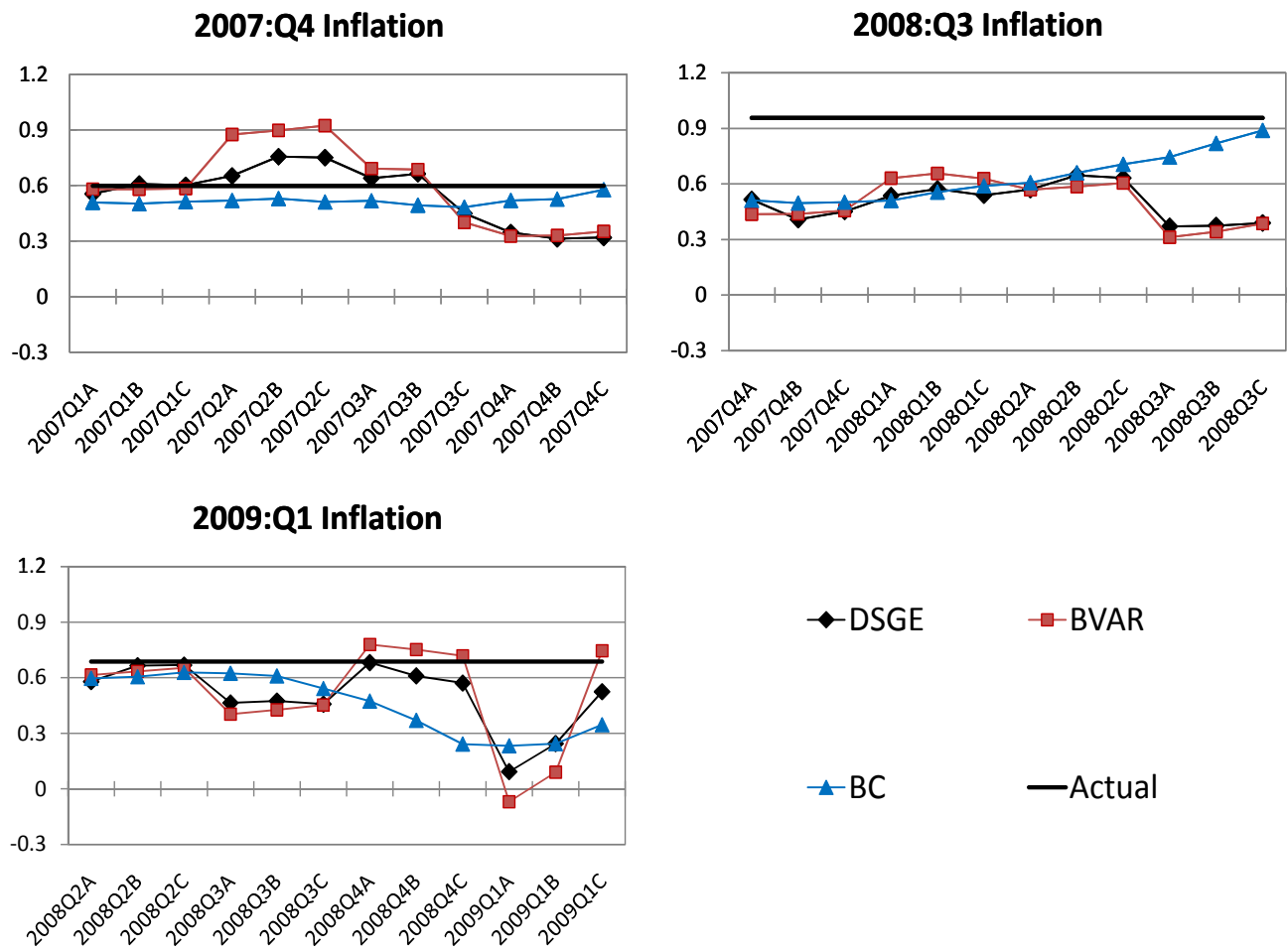


Figure 7: Forecasts of Inflation during the Crisis

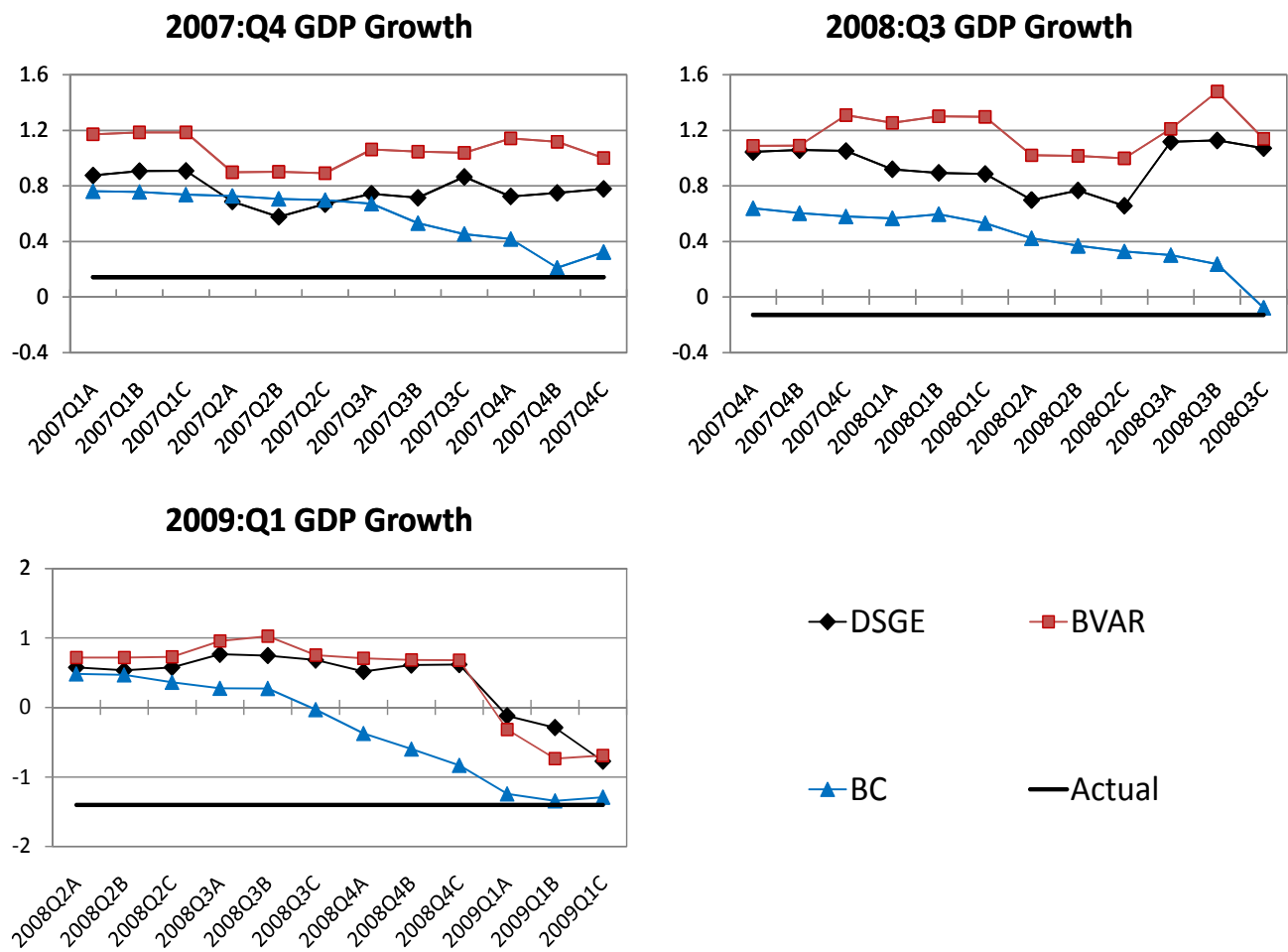


Figure 8: Forecasts of GDP Growth during the Crisis

Appendix A. Constructing the Real Time Data Sets

In this appendix we discuss how the real time data sets that we use to generate all of the forecasts other than those of the Greenbook are constructed. To ensure that when we carry out our forecast performance exercises we are indeed comparing the ability to forecast of different methodologies (and not some other difference) it is critical that the information/data sets that we use to generate our model forecasts are the same as those used to generate the Greenbook and Blue Chip forecasts. For this we are very conscious of the timing of the releases of the data that we use to generate our model forecasts and how they relate to timings of the Greenbook’s closing dates and Blue Chip publication dates.

We begin by documenting the data series that are used in the DSGE model and in the other reduced-form forecasting models. Here relatively little discussion is necessary, since we employ essentially all of the same data series that were used by Smets and Wouters in estimating their model. We then move on to provide a full account of how we constructed the real-time data sets that we then use to generate the model forecasts. We then briefly explain our construction of the “first final” data, which are ultimately what we consider to be realized value of real GDP growth and the rate of GDP price inflation against which we compare the forecasts.

The data series used

To allow comparability with the results of Smets and Wouters (2007) we use exactly the same data series that they used in their analysis. Because we will subsequently have to obtain different release vintages for all of our data series (other than the federal funds rate) we do need to be very specific about the data release from which each series is obtained (not only the government statistical agency from the data series is obtained).

Four series used in our estimation are taken from the National Income and Product Accounts (NIPA). These accounts are produced by the Bureau of Economic Analysis and they are constructed at the quarterly frequency. The four series from the NIPA are real GDP (*GDPC*), the GDP price deflator (*GDPDEF*), nominal personal consumption expenditures (*PCEC*), and nominal fixed private investment (*FPI*). The mnemonics that we use – given in parenthesis – are in all cases other than real GDP the same as those used by Smets and Wouters. And, the only reason for using a different mnemonic for real GDP is that whereas in Smets and Wouters real GDP is defined in terms of chained 1996 dollars (and therefore denoted by *GDPC96*), for our analysis the chained dollars for which real GDP is defined changes with the data’s base year. Actually, the GDP price deflator also changes with the base year (since it is usually set to 100 in the base year) though it appears that its mnemonic does not change.

One series used in our estimation is taken from the Labor Productivity and Costs (P&C) release. These data are produced by the Bureau of Labor Statistics and are constructed at the quarterly frequency. The series that we used from the P&C release is compensation per hours for the nonfarm business sector (*PRS85006103*). The mnemonic here is not intuitive but rather reflects the name that data service that Smets and Wouters used to extract their data – macrospect – gave to the series.

Three series used in our estimation are taken from the Employment Situation Summary (ESS), which contains the findings of two surveys the Household Survey and the Establishment Survey. This data release is produced by the Bureau of Labor Statistics and is constructed at the monthly frequency. The three series from this source are average weekly hours of production and nonsupervisory employees for total private industries (*PRS85006023*), civilian employment (*CE16OV*), and civilian noninstitutional population (*LNSINDEX*). The first of these series is from the establishment survey while the latter two are both from the household survey.¹⁵ Clearly, since our model is at the quarterly frequency we make simple transformations – specifically, take averages – of the monthly data.

The final series in our model – the federal funds rate – does not revise. This series, which is obtained from the Federal Reserve Board’s H.15 release, comes at the business day frequency and the quarterly series is simply the average of this daily data.

We transform all of our data sources for use in the model in exactly the same way as Smets and Wouters as described below.

$$\begin{aligned}
CONSUMPTION &= LN((PCEC/GDPDEF)/LNSINDEX) * 100 \\
INVESTMENT &= LN((FPI/GDPDEF)/LNSINDEX) * 100 \\
OUTPUT &= LN((GDPC)/LNSINDEX) * 100 \\
HOURS &= LN((PRS85006023 * CE16OV/100)/LNSINDEX) * 100 \\
INFLATION &= LN(GDPDEF/GDPDEF(-1)) * 100 \\
REAL WAGE &= LN(PRS85006103/GDPDEF) * 100 \\
INTEREST RATE &= FEDERAL FUNDS RATE/4
\end{aligned}$$

¹⁵Note that there is an employment series in the establishment survey as well, which when the data is released usually receives more attention. We use the household survey series for the reason that it is the series that Smets and Wouters use.

Obtaining the real time data sets corresponding to Greenbook forecasts

Tables 1 to 13 provide for the years 1992 to 2004 what – in the vertical dimension – is essentially a time line of the dates of all Greenbook forecasts and all release dates for the data sources that we use *and that also revise*. The horizontal dimension of the table sorts the release dates according to the data source in question.

From these tables it is reasonably straightforward to understand how we go about constructing the real time data sets that we will use to estimate our models from which we will obtain our model forecasts that will in turn have their forecast performance compared to the Greenbook forecasts. Specifically, for each Greenbook forecast we can look-up in the table what the most recent release – or vintage – of each data source was. For example, for the June 1997 Greenbook forecast (shown about halfway down Table 6) that closed on June 25, we can see that the most recent release of NIPA data was the preliminary release of 1997:Q1 on May 30 and the most recent release of the P&C data was the final release of 1997:Q1 on June 18.¹⁶ The ESS requires a little more explanation. This is a monthly series for which the first estimate of the data is available quite promptly (*i.e.*, within a week) of the data’s reference period. Thus the most recent release of the ESS prior to the June Greenbook is the estimate for May 1997, released on June 6. An employment report release includes, however, not only the first estimate of the preceding month’s data (in this case May) but also revisions to the two preceding months (in this case April and March). This means that from the perspective of thinking about quarterly data, the June 6 ESS release represents the second and last revision of 1997:Q1 data.¹⁷ From looking up what vintage of the data was available at the times of each Greenbook we can construct a data set corresponding to each Greenbook that contains observations for each of our model variables taken from the correct release vintage. All vintages for 1992 to 1996 (shown in Tables 1 to 5) were obtained from “ALFRED,” which is an archive of Federal Reserve Economic Data maintained by the St Louis Fed. All vintages for 1997 to 2004 (shown in Tables 6 to 13) were obtained from datasets that since September 1996 have been archived by Board staff at the end of each Greenbook round.

In the June 1997 example given above the last observation that we have for each data series is the same – 1997:Q1. This will not always be the case. For example, in every January Greenbook round P&C data are not available for the preceding year’s fourth quarter but EES data is always available and NIPA data sometimes is available. This means that in the January Greenbook for all

¹⁶Until last year the names of the three releases in the NIPA were, in the following sequence the advance release, the preliminary release, and the final release. Thus, the preliminary release described above is the second of three releases. Last year, however, the names of the NIPA releases were changed to the first release, the second release, and the final release. We refer to the original names of the releases in this paper. Note also that there are only two releases of the P&C for each quarter. These are called the preliminary release and the final release.

¹⁷Of course, the release also contains two thirds of the data for 1997:Q2, but we do not use this information at all. This is reasonably standard practice.

years other than 1992 to 1994 there is – relative to the NIPA – one extra quarter of employment data. This is also the case in the 2002 and 2003 October Greenbooks; all Greenbooks for which this is an issue are marked with a † in Tables 1 to 13. Differential data availability can also work the other way. For example, in the Greenbooks marked with a * in Tables 1 to 13 of the working paper we always have one less observation of the P&C relative to the NIPA. We use the availability of the NIPA as what determines whether data is available for a quarter or not. Thus, if we have an extra quarter of the ESS (as we do in the † rounds) we ignore it in making our first quarter ahead forecasts – even those for *HOURS*. If we have one less quarter of P&C data (as we do in the * rounds) we use the staff’s estimate of compensation per hour for the quarter, which is calculated based on the ESS’s reading average hourly earnings. This is always available in time since the ESS is very prompt. Of course, this raises the question of why (given its timeliness) not just use the ESS’s estimate for wages – that is, average hourly earnings for total private industry – instead of the P&C’s compensation per hours for the nonfarm business sector series. One reason arises from our desire to stay as close as possible to Smets and Wouters, but another is that real time data on average hourly earnings in ALFRED only extend back to 1999. We would also note that there are much more elegant ways to deal with the jaggedness in data availability that we face. In particular, the Kalman filter, which is present in our DSGE model, does represent one way to make use of data that is available for only some series. We leave this to future work.

Obtaining the real time data sets corresponding to Blue Chip forecasts

Tables 14 through 31 provide the time line of the dates for all Blue Chip forecasts and the release dates of all our data sources. They are exactly analogous to Table 1 to 13 for the Greenbook although they extend further in time – specifically, to September 2009, one year ago from the time of writing. Note also that there are 12 Blue Chip forecasts per year.

As with the Greenbook there are instances where the last observation of data that we have is different across series. Indeed this is more frequent for the Blue Chip due to the fact that the survey of forecasters occurs at the beginning of the month and the EES is also released near the beginning of every month while the preliminary release of the P&C is usually at the beginning of the second, fifth, eighth, and eleventh months of each year. The timing of the release of the EES means that for every January, April, July, and October Blue Chip there is an extra quarter of employment data that we do not use in the estimation. Again, these rounds are marked with a † in Tables 14 to 31. Note that Blue Chip databases marked with a * denote when we have one less quarter of P&C data than we have NIPA data. In this case when we have a quarter less of P&C data it is really only by a day or so that we are missing the LPS release so we make the assumption that forecasters do have this data over the quarters for which we have to make this data. As with

the Greenbook forecast we use the availability of NIPA data to determine if data is available for a quarter.

Constructing the first final

A review of the data release tables should also give some indication of how we construct the “first final” data series, which is the series against which the Greenbook and model forecasts are evaluated. As can be seen in the table, every third release of the NIPA data and every second release of the P&C is marked with an “(F).” This represents the final release of the data prior to it getting revised in either an annual or comprehensive revision. For EES releases the final release for any quarter is represented by “r2.” This denotes the second revision to the data, which is the last revision before any annual revision – or benchmarking – is made. Note that even when considering our economic growth forecasts we are in fact considering real GDP growth per capita and for this reason we must also pay attention to the “first final” releases of the ESS.

We make the first final data by simply extracting the first final observation – always the last one – from each final (F) or second revision (r2) vintage. We must, however, not extract the *levels* of these observations but rather the *growth rates*. This is because whenever there is a comprehensive revision the base year of real GDP and the GDP price deflator change, so were we to make our first-final series in levels, the series would be characterized by large jumps for the observation at the quarter for which the comprehensive revision takes place. Deriving our first final series in growth rates addresses this problem.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			91:Q3(F): 12/20/91 91:Q4(A): 1/29/92	91:Q3(F): 1/3/92	91:Dec & CPS Revisions: 1/10/92	91:Q4: 1/10/92
Jan. 92*	1/30/92	92:Q1-93:Q4	91:Q4(P): 2/28/92	91:Q4(P): 2/5/92 91:Q4(F) & Ann. Revisions: 3/10/92	92:Jan: 2/7/92 92:Feb: 3/6/92	91:Q4(r1): 2/7/92 91:Q4(r2): 3/6/92
Mar. 92	3/25/92	92:Q1-93:Q4		—		
			91:Q4(F): 3/26/92 92:Q1(A): 4/28/92		92:Mar: 4/3/92 92:Apr: 5/8/92	92:Q1: 4/3/92 92:Q1(r1): 5/8/92
May 92*	5/14/92	92:Q2-93:Q4	92:Q1(P): 5/29/92 92:Q1(F): 6/25/92	92:Q1(P,F): 6/17/92	92:May & CES Revisions: 6/5/92	92:Q1(r2): 6/5/92
Jun. 92	6/26/92	92:Q2-93:Q4	92:Q2(A) & Ann. Revisions: 7/30/92	92:Q2(P) & NIPA Revisions: 8/11/92	92:Jun: 7/2/92 92:Jul: 8/7/92	92:Q2: 7/2/92 92:Q2(r1): 8/7/92
Aug. 92	8/13/92	92:Q3-93:Q4	92:Q2(P): 8/27/92 92:Q2(F): 9/24/92	92:Q2(F): 9/3/92	92:Aug: 9/4/92	92:Q2(r2): 9/4/92
Sep. 92	9/30/92	92:Q3-94:Q4	92:Q3(A): 10/27/92	92:Q3(P): 11/5/92	92:Sep: 10/2/92 92:Oct: 11/6/92	92:Q3: 10/2/92 92:Q3(r1): 11/6/92
Nov. 92	11/12/92	92:Q4-94:Q4	92:Q3(P): 11/25/92	92:Q3(F): 12/3/92	92:Nov: 12/4/92	92:Q3(r2): 12/4/92
Dec. 92	12/16/92	92:Q4-94:Q4				

Table 5: Greenbook Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1992.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			92:Q3(F): 12/20/92 92:Q4(A): 1/28/93	—	92:Dec & CPS Revisions: 1/8/93	92:Q4: 1/8/93
Jan. 93*	1/29/93	93:Q1-94:Q4	92:Q4(P): 2/26/93	92:Q4(P): 2/4/93 92:Q4(F) & Ann. Revisions: 3/9/93	93:Jan & CES 93:Feb: 3/5/93	92:Q4(r1): 2/5/93 92:Q4(r2): 3/5/93
Mar. 93	3/17/93	93:Q1-94:Q4	92:Q4(F): 3/26/93 93:Q1(A): 4/29/93	93:Q1(P): 5/6/93	93:Mar: 4/2/93 93:Apr: 5/7/93	93:Q1: 4/2/93 93:Q1(r1): 5/7/93
May 93	5/14/93	93:Q2-94:Q4	93:Q1(P): 5/28/93 93:Q1(F): 6/23/93	93:Q1(F): 6/17/93	93:May & CES Revisions: 6/4/93	93:Q1(r2): 6/4/93
Jun. 93	6/30/93	93:Q2-94:Q4	93:Q2(A) & Ann. Revisions: 7/29/93	93:Q2(P) & NIPA Revisions: 8/10/93	93:Jun: 7/2/93 93:Jul: 8/6/93	93:Q2: 7/2/93 93:Q2(r1): 8/6/93
Aug. 93	8/11/93	93:Q3-94:Q4	93:Q2(P): 8/31/93	93:Q2(F): 9/9/93	93:Aug: 9/3/93	93:Q2(r2): 9/3/93
Sep. 93	9/15/93	93:Q3-95:Q4	93:Q2(F): 9/29/93 93:Q3(A): 10/28/93	93:Q3(P): 11/4/93	93:Sep: 10/8/93 93:Oct: 11/5/93	93:Q3: 10/8/93 93:Q3(r1): 11/5/93
Nov. 93	11/10/93	93:Q4-95:Q4	93:Q3(P): 12/1/93	93:Q3(F): 12/8/93	93:Nov: 12/3/93	93:Q3(r2): 12/3/93
Dec. 93	12/15/93	93:Q4-95:Q4				

Table 6: Greenbook Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1993.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			93:Q3(F): 12/22/93 93:Q4(A): 1/28/94	—	93:Dec & CPS Revisions: 1/7/94	93:Q4: 1/7/94
Jan. 94*	1/31/94	94:Q1-95:Q4	93:Q4(P): 3/1/94	93:Q4(P): 2/8/94 93:Q4(F) & Ann. Revisions: 3/8/94	94:Jan: 2/4/94 94:Feb: 3/4/94	93:Q4(r1): 2/4/94 93:Q4(r2): 3/4/94
Mar. 94	3/16/94	94:Q1-95:Q4	93:Q4(F): 3/31/94 94:Q1(A): 4/28/94	94:Q1(P): 5/5/94	94:Mar: 4/1/94 94:Apr: 5/6/94	94:Q1: 4/1/94 94:Q1(r1): 5/6/94
May 94	5/13/94	94:Q2-95:Q4	94:Q1(P): 5/27/94 94:Q1(F): 6/29/94	94:Q1(F): 6/15/94	94:May & CES Revisions: 6/3/94	94:Q1(r2): 6/3/94
Jun. 94	6/30/94	94:Q2-95:Q4	94:Q2(A) & Ann. Revisions: 7/29/94	94:Q2(P) & NIPA Revisions: 8/9/94	94:Jun: 7/8/94 94:Jul: 8/5/94	94:Q2: 7/8/94 94:Q2(r1): 8/5/94
Aug. 94	8/12/94	94:Q3-95:Q4	94:Q2(P): 8/26/94	94:Q2(F): 9/7/94	94:Aug: 9/2/94	94:Q2(r2): 9/2/94
Sep. 94	9/21/94	94:Q3-96:Q4	94:Q2(F): 9/29/94 94:Q3(A): 10/28/94	94:Q3(P): 11/9/94	94:Sep: 10/7/94 94:Oct: 11/4/94	94:Q3: 10/7/94 94:Q3(r1): 11/4/94
Nov. 94	11/9/94	94:Q4-96:Q4	94:Q3(P): 11/30/94	94:Q3(F): 12/7/94	94:Nov: 12/2/94	94:Q3(r2): 12/2/94
Dec. 94	12/14/94	94:Q4-96:Q4				

Table 7: Greenbook Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1994.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			94:Q3(F): 12/22/94	—	94:Dec & CPS Revisions: 1/6/95	94:Q4: 1/6/95
Jan. 95†	1/25/95	95:Q1-96:Q4				
			94:Q4(A): 1/27/95 94:Q4(P): 3/1/95	94:Q4(P): 2/7/95 94:Q4(F) & Ann. Revisions: 3/8/95	95:Jan: 2/3/95 95:Feb: 3/10/95	94:Q4(r1): 2/3/95 94:Q4(r2): 3/10/95
Mar. 95	3/22/95	95:Q1-96:Q4				
			94:Q4(F): 3/31/95 95:Q1(A): 4/28/95	95:Q1(P): 5/9/95	95:Mar: 4/7/95 95:Apr: 5/5/95	95:Q1: 4/7/95 95:Q1(r1): 5/5/95
May 95	5/17/95	95:Q2-96:Q4				
			95:Q1(P): 5/31/95	—	95:May & CES Revisions: 6/2/95	95:Q1(r2): 6/2/95
Jun. 95	6/20/95	95:Q2-96:Q4				
			95:Q1(F): 6/30/95 95:Q2(A) & Ann. Revisions: 7/28/95	95:Q1(F): 6/21/95 95:Q2(P) & NIPA Revisions: 8/8/95	95:Jun: 7/7/95 95:Jul: 8/4/95	95:Q2: 7/7/95 95:Q2(r1): 8/4/95
Aug. 95	8/16/95	95:Q3-96:Q4				
			95:Q2(P): 8/30/95	95:Q2(F): 9/7/95	95:Aug: 9/1/95	95:Q2(r2): 9/1/95
Sep. 95	9/20/95	95:Q3-97:Q4				
			95:Q2(F): 9/29/95 95:Q3(A): 10/27/95	95:Q3(P): 11/7/95	95:Sep: 10/6/95 95:Oct: 11/3/95	95:Q3: 10/6/95 95:Q3(r1): 11/3/95
Nov. 95	11/8/95	95:Q4-97:Q4				
			Shutdown	Shutdown	95:Nov: 12/8/95	95:Q3(r2): 12/8/95
Dec. 95	12/14/95	95:Q4-97:Q4				

Table 8: Greenbook Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1995.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			95:Q3(P,F) and Comp. Revisions: 1/19/96	—	95:Dec & CPS Revisions: 1/19/96	95:Q4: 1/19/96
Jan. 96*	1/26/96	96:Q1-97:Q4	95:Q4(A,P): 2/23/96	95:Q3(F): 2/8/96 95:Q4(P) & Ann. Revisions: 3/6/96	96:Jan: 2/2/96 96:Feb: 3/8/96	95:Q4(r1): 2/2/96 95:Q4(r2): 3/8/96
Mar. 96	3/21/96	96:Q1-97:Q4				
			95:Q4(F): 4/2/96 96:Q1(A): 5/2/96	95:Q4(F): 4/10/96 96:Q1(P): 5/16/96	96:Mar: 4/5/96 96:Apr: 5/3/96	96:Q1: 4/5/96 96:Q1(r1): 5/3/96
May 96	5/16/96	96:Q2-97:Q4				
			96:Q1(P): 5/30/96	96:Q1(F): 6/18/96	96:May & CES Revisions: 6/7/96	96:Q1(r2): 6/7/96
Jun. 96	6/26/96	96:Q2-97:Q4				
			96:Q1(F): 6/28/96 96:Q2(A) & Ann. Revisions: 8/1/96	96:Q2(P) & NIPA Revisions: 8/14/96	96:Jun: 7/5/96 96:Jul: 8/2/96	96:Q2: 7/5/96 96:Q2(r1): 8/2/96
Aug. 96	8/15/96	96:Q3-97:Q4				
			96:Q2(P): 8/29/96	96:Q2(F): 9/10/96	96:Aug: 9/6/96	96:Q2(r2): 9/6/96
Sep. 96	9/18/96	96:Q3-98:Q4				
			96:Q2(F): 9/27/96 96:Q3(A): 10/30/96	—	96:Sep: 10/4/96	96:Q3: 10/4/96
Nov. 96*	11/6/96	96:Q4-98:Q4				
			96:Q3(P): 11/27/96	96:Q3(P): 11/7/96 96:Q3(F): 12/5/96	96:Oct: 11/1/96 96:Nov: 12/6/96	96:Q3(r1): 11/1/96 96:Q3(r2): 12/6/96
Dec. 96	12/12/96	96:Q4-98:Q4				

Table 9: Greenbook Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1996.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			96:Q3(F): 12/20/96	—	96:Dec & CPS Revisions: 1/10/97	96:Q4: 1/10/97
Jan. 97†	1/29/97	97:Q1-98:Q4				
			96:Q4(A): 1/31/97 96:Q4(P): 2/28/97	96:Q4(P): 2/11/97 96:Q4(F) & Ann. Revisions: 3/11/97	97:Jan: 2/7/97 97:Feb: 3/7/97	96:Q4(r1): 2/7/97 96:Q4(r2): 3/7/97
Mar. 97	3/19/97	97:Q1-98:Q4				
			96:Q4(F): 3/28/97 97:Q1(A): 4/30/97 97:Q1(A,Err): 5/7/97	97:Q1(P): 5/7/97	97:Mar: 4/4/97 97:Apr: 5/2/97	97:Q1: 4/4/97 97:Q1(r1): 5/2/97
May 97	5/15/97	97:Q2-98:Q4				
			97:Q1(P): 5/30/97	97:Q1(F): 6/18/97	97:May & CES Revisions: 6/6/97	97:Q1(r2): 6/6/97
Jun. 97	6/25/97	97:Q2-98:Q4				
			97:Q1(F): 6/27/97 97:Q2(A) & Ann. Revisions: 7/31/97	97:Q2(P) & NIPA Revisions: 8/12/97	97:Jun: 7/3/97 97:Jul: 8/1/97	97:Q2: 7/3/97 97:Q2(r1): 8/1/97
Aug. 97	8/14/97	97:Q3-98:Q4				
			97:Q2(P): 8/28/97	97:Q2(F): 9/9/97	97:Aug: 9/5/97	97:Q2(r2): 9/5/97
Sep. 97	9/24/97	97:Q3-99:Q4				
			97:Q2(F): 9/26/97 97:Q3(A): 10/31/97	—	97:Sep: 10/3/97	97:Q3: 10/3/97
Nov. 97*	11/6/97	97:Q4-99:Q4				
			97:Q3(P): 11/26/97	97:Q3(P): 11/13/97 97:Q3(F): 12/4/97	97:Oct: 11/7/97 97:Nov: 12/5/97	97:Q3(r1): 11/7/97 97:Q3(r2): 12/5/97
Dec. 97	12/11/97	97:Q4-99:Q4				

Table 10: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 1997.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			97:Q3(F): 12/23/97	—	97:Dec & CPS Revisions: 1/9/98	97:Q4: 1/9/98
Jan. 98†	1/28/98	98:Q1-99:Q4				
			97:Q4(A): 1/30/98 97:Q4(P): 2/27/98	97:Q4(P): 2/10/98 97:Q4(F) & Ann. Revisions: 3/10/98	98:Jan: 2/6/98 98:Feb: 3/6/98	97:Q4(r1): 2/6/98 97:Q4(r2): 3/6/98
Mar. 98	3/19/98	98:Q1-99:Q4				
			97:Q4(F): 3/26/98 98:Q1(A): 4/30/98	98:Q1(P): 5/07/98	98:Mar: 4/3/98 98:Apr: 5/8/98	98:Q1: 4/3/98 98:Q1(r1): 5/8/98
May 98	5/14/98	98:Q2-99:Q4				
			98:Q1(P): 5/28/98	98:Q1(F): 6/4/98	98:May & CES Revisions: 6/5/98	98:Q1(r2): 6/5/98
Jun. 98	6/24/98	98:Q2-99:Q4				
			98:Q1(F): 6/25/98 98:Q2(A) & Ann. Revisions: 7/31/98	98:Q2(P) & NIPA Revisions: 8/8/98	98:Jun: 7/2/98 98:Jul: 8/7/98	98:Q2: 7/2/98 98:Q2(r1): 8/7/98
Aug. 98	8/13/98	98:Q3-99:Q4				
			98:Q2(P): 8/27/98	98:Q2(F): 9/3/98	98:Aug: 9/4/98	98:Q2(r2): 9/4/98
Sep. 98	9/23/98	98:Q3-00:Q4				
			98:Q2(F): 9/24/98 98:Q3(A): 10/30/98	98:Q3(P): 11/10/98	98:Sep: 10/2/98 98:Oct: 11/5/98	98:Q3: 10/2/98 98:Q3(r1): 11/5/98
Nov. 98	11/13/98	98:Q4-00:Q4				
			98:Q3(P): 11/24/98	98:Q3(F): 12/3/98	98:Nov: 12/4/98	98:Q3(r2): 12/4/98
Dec. 98	12/16/98	98:Q4-00:Q4				

Table 11: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 1998.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			98:Q3(F): 12/23/98	—	98:Dec & CPS Revisions: 1/8/99	98:Q4: 1/8/99
Jan. 99†	1/10/99	99:Q1-00:Q4				
			98:Q4(A): 1/29/99 98:Q4(P): 2/26/99	98:Q4(P): 2/9/99 98:Q4(F) & Ann. Revisions: 3/9/99	99:Jan: 2/5/99 99:Feb: 3/5/99	98:Q4(r1): 2/5/99 98:Q4(r2): 3/5/99
Mar. 99	3/10/99	99:Q1-00:Q4				
			98:Q4(F): 3/31/99 99:Q1(A): 4/30/99	99:Q1(P): 5/11/99	99:Mar: 4/2/99 99:Apr: 5/7/99	99:Q1: 4/2/99 99:Q1(r1): 5/7/99
May 99	5/10/99	99:Q2-00:Q4				
			99:Q1(P): 5/27/99	99:Q1(F): 6/8/99	99:May & CES Revisions: 6/4/99	99:Q1(r2): 6/4/99
Jun. 99	6/10/99	99:Q2-00:Q4				
			99:Q1(F): 6/25/99 99:Q2(A): 7/29/99	99:Q2(P): 8/5/99	99:Jun: 7/2/99 99:Jul: 8/6/99	99:Q2: 7/2/99 99:Q2(r1): 8/6/99
Aug. 99	8/10/99	99:Q3-00:Q4				
			99:Q2(P): 8/26/99	99:Q2(F): 9/2/99	99:Aug: 9/3/99	99:Q2(r2): 9/3/99
Sep. 99	9/10/99	99:Q3-01:Q4				
			99:Q2(F): 9/30/99 99:Q3(A) & Comp. Revisions: 10/29/99	—	99:Sep: 10/8/99 99:Oct: 11/5/99	99:Q3: 10/8/99 99:Q3(r1): 11/5/99
Nov. 99*	11/10/99	99:Q4-01:Q4				
			99:Q3(P): 11/24/99	99:Q3(P): 11/12/99 99:Q3(F): 12/7/99	99:Nov: 12/3/99	99:Q3(r2): 12/3/99
Dec. 99	12/10/99	99:Q4-01:Q4				

Table 12: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 1999.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			99:Q3(F): 12/22/99	—	99:Dec & CPS Revisions: 1/7/00	99:Q4: 1/7/00
Jan. 00†	1/27/00	00:Q1-01:Q4				
			99:Q4(A): 1/28/00 99:Q4(P): 2/25/00	99:Q4(P): 2/8/00 99:Q4(F) & Ann. Revisions: 3/7/00	00:Jan: 2/4/00 00:Feb: 3/3/00	99:Q4(r1): 2/4/00 99:Q4(r2): 3/3/00
Mar. 00	3/15/00	00:Q1-01:Q4				
			99:Q4(F): 3/30/00 99:Q4(F,r): 4/3/00 00:Q1(A): 4/27/00	00:Q1(P): 5/4/00	00:Mar: 4/7/00 00:Apr: 5/5/00	00:Q1: 4/7/00 00:Q1(r1): 5/5/00
May 00	5/11/00	00:Q2-01:Q4				
			00:Q1(P): 5/25/00	00:Q1(F): 6/6/00	00:May & CES Revisions: 6/2/00	00:Q1(r2): 6/2/00
Jun. 00	6/21/00	00:Q2-01:Q4				
			00:Q1(F): 6/29/00 00:Q2(A) & Ann. Revisions: 7/28/00	00:Q2(P) & NIPA Revisions: 8/8/00	00:Jun: 7/7/00 00:Jul: 8/4/00	00:Q2: 7/7/00 00:Q2(r1): 8/4/00
Aug. 00	8/16/00	00:Q3-01:Q4				
			00:Q2(P): 8/25/00	00:Q2(F): 9/6/00	00:Aug: 9/1/00	00:Q2(r2): 9/1/00
Sep. 00	9/27/00	00:Q3-02:Q4				
			00:Q2(F): 9/28/00 00:Q3(A): 10/27/00	00:Q3(P): 11/2/00	00:Sep: 10/6/00 00:Oct: 11/3/00	00:Q3: 10/6/00 00:Q3(r1): 11/3/00
Nov. 00	11/8/00	00:Q4-02:Q4				
			00:Q3(P): 11/29/00	00:Q3(F): 12/6/00	00:Nov: 12/8/00	00:Q3(r2): 12/8/00
Dec. 00	12/13/00	00:Q4-02:Q4				

Table 13: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 2000.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			00:Q3(F): 12/21/00	–	00:Dec & CPS Revisions: 1/5/01	00:Q4: 1/5/01
Jan. 01†	1/25/01	01:Q1-02:Q4				
			00:Q4(A): 1/31/01 00:Q4(P): 2/28/01	00:Q4(P): 2/7/01 00:Q4(F) & Ann. Revisions: 3/6/01	01:Jan: 2/2/01 01:Feb: 3/9/01	00:Q4(r1): 2/2/01 00:Q4(r2): 3/9/01
Mar. 01	3/14/01	01:Q1-02:Q4				
			00:Q4(F): 3/29/01 01:Q1(A): 4/27/01	01:Q1(P): 5/8/01	01:Mar: 4/6/01 01:Apr: 5/4/01	01:Q1: 4/6/01 01:Q1(r1): 5/4/01
May 01	5/9/01	01:Q2-02:Q4				
			01:Q1(P): 5/25/01	01:Q1(F): 6/5/01	01:May & CES Revisions: 6/1/01	01:Q1(r2): 6/1/01
Jun. 01	6/20/01	01:Q2-02:Q4				
			01:Q1(F): 6/29/01 01:Q2(A) & Ann. Revisions: 7/27/01	01:Q2(P) & NIPA Revisions: 8/7/01	01:Jun: 7/6/01 01:Jul: 8/3/01	01:Q2: 7/6/01 01:Q2(r1): 8/3/01
Aug. 01	8/15/01	01:Q3-02:Q4				
			01:Q2(P): 8/29/01	01:Q2(F): 9/5/01	01:Aug: 9/7/01	01:Q2(r2): 9/7/01
Sep. 01	9/26/01	01:Q3-03:Q4				
			01:Q2(F): 9/28/01 01:Q3(A): 10/31/01	–	01:Sep: 10/5/01	01:Q3: 10/5/01
Oct. 01*	10/31/01	01:Q4-03:Q4				
			01:Q3(P): 11/30/01	01:Q3(P): 11/7/01	01:Oct: 11/2/01	01:Q3(r1): 11/2/01
Dec. 01	12/5/01	01:Q4-03:Q4				

Table 14: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 2001.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			01:Q3(F): 12/21/01	01:Q3(F): 12/6/01	01:Nov: 12/7/01 01:Dec & CPS Revisions: 1/4/05	01:Q3(r2): 12/7/01 01:Q4: 1/4/02
Jan. 02†	1/23/02	02:Q1-03:Q4				
			01:Q4(A): 1/30/02 01:Q4(P): 2/28/02	01:Q4(P): 2/6/02 01:Q4(F) & Ann. Revisions: 3/7/02	02:Jan: 2/1/01 02:Feb: 3/8/02	01:Q4(r1): 2/1/02 01:Q4(r2): 3/8/02
Mar. 02	3/13/02	02:Q1-03:Q4				
			01:Q4(F): 3/28/02 02:Q1(A): 4/26/02	—	02:Mar: 4/5/02	02:Q1: 4/5/02
May 02*	5/1/02	02:Q2-03:Q4				
			02:Q1(P): 5/24/02	02:Q1(P): 5/7/02 02:Q1(F): 5/31/02	02:Apr: 5/3/02 02:May & CES Revisions: 6/7/02	02:Q1(r1): 5/3/02 02:Q1(r2): 6/7/02
Jun. 02	6/19/02	02:Q2-03:Q4				
			02:Q1(F): 6/27/02 02:Q2(A) & Ann. Revisions: 7/31/02	—	02:Jun: 7/5/02 02:Jul: 8/2/02	02:Q2: 7/5/02 02:Q2(r1): 8/2/02
Aug. 02*	8/7/02	02:Q3-03:Q4				
			02:Q2(P): 8/29/02	02:Q2(P) & NIPA Revisions: 8/9/02 02:Q2(F): 9/5/02	02:Aug: 9/6/02	02:Q2(r2): 9/6/02
Sep. 02	9/18/02	02:Q3-04:Q4				
			02:Q2(F): 9/27/02	—	02:Sep: 10/4/02	02:Q3: 10/4/02
Oct. 02†	10/30/02	02:Q4-04:Q4				
			02:Q3(A): 10/31/02 02:Q3(P): 11/26/02	02:Q3(P): 11/7/02 02:Q3(F): 12/4/02	02:Oct: 11/1/02	02:Q3(r1): 11/1/02
Dec. 02	12/4/02	02:Q4-04:Q4				

Table 15: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 2002.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			02:Q3(F): 12/20/02	–	02:Nov: 12/6/02 02:Dec & CPS Revisions: 1/10/03	02:Q3(r2): 12/6/02 02:Q4: 1/10/03
Jan. 03†	1/22/03	03:Q1-04:Q4	02:Q4(A): 1/30/03 02:Q4(P): 2/28/03	02:Q4(P): 2/6/03 02:Q4(F) & Ann. Revisions: 3/6/03	03:Jan: 2/7/03 03:Feb: 3/7/03	02:Q4(r1): 2/7/03 02:Q4(r2): 3/7/03
Mar. 03	3/12/03	03:Q1-04:Q4	02:Q4(F): 3/27/03 03:Q1(A): 4/25/03	–	03:Mar: 4/4/03	03:Q1: 4/4/03
Apr. 03*	4/30/03	03:Q2-04:Q4	03:Q1(P): 5/29/03	03:Q1(P): 5/1/03 03:Q1(F): 6/4/03	03:Apr: 5/2/03 03:May & CES Revisions: 6/6/03	03:Q1(r1): 5/2/03 03:Q1(r2): 6/6/03
Jun. 03	6/18/03	03:Q2-04:Q4	03:Q1(F): 6/26/03 03:Q2(A): 7/31/03	–	03:Jun: 7/3/03 03:Jul: 8/1/03	03:Q2: 7/3/03 03:Q2(r1): 8/1/03
Aug. 03*	8/6/03	03:Q3-04:Q4	03:Q2(P): 8/28/03	03:Q2(P): 8/7/03 03:Q2(F): 9/4/03	03:Aug: 9/5/03	03:Q2(r2): 9/5/03
Sep. 03	9/10/03	03:Q3-05:Q4	03:Q2(F): 9/26/03	–	03:Sep: 10/3/03	03:Q3: 10/3/03
Oct. 03†	10/22/03	03:Q4-05:Q4	03:Q3(A): 10/30/03 03:Q3(P): 11/25/03	03:Q3(P): 11/6/03 03:Q3(F): 12/3/03	03:Oct: 11/7/03	03:Q3(r1): 11/7/03
Dec. 03	12/3/03	03:Q4-05:Q4				

Table 16: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 2003.

F'cast Name	GB closed	GB F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim ESS releases (mthly)	Interim ESS releases (qtrly)
			Comp. Rev.: 12/10/03 03:Q3(F): 12/23/03	—	03:Nov: 12/5/03 03:Dec & CPS Revisions: 1/9/04	03:Q3(r2): 12/5/03 03:Q4: 1/9/04
Jan. 04†	1/21/04	04:Q1-05:Q4				
			03:Q4(A): 1/30/04 03:Q4(P): 2/27/04	03:Q4(P): 2/5/04 03:Q4(F) & Ann. Revisions: 3/4/04	04:Jan & CES Revisions: 2/6/06 04:Feb: 3/5/04	03:Q4(r1): 2/6/04 03:Q4(r2): 3/5/04
Mar. 04	3/10/04	04:Q1-05:Q4				
			07:Q4(F): 3/25/04	—	04:Mar: 4/2/04	04:Q1: 4/2/04
Apr. 04	4/28/04	04:Q2-05:Q4				
			04:Q1(A): 4/29/04 04:Q1(P): 5/27/04	04:Q1(P): 5/6/04 04:Q1(F): 6/3/04	04:Apr: 5/7/04 04:May: 6/4/04	04:Q1(r1): 5/7/04 04:Q1(r2): 6/4/04
Jun. 04	6/23/04	04:Q2-05:Q4				
			04:Q1(F): 6/25/04 04:Q2(A) & Ann. Revision: 7/30/04	—	04:Jun: 7/2/04	04:Q2: 7/2/04
Aug. 04*	8/4/04	04:Q3-05:Q4				
			04:Q2(P): 8/27/04	04:Q2(P) & NIPA Revision: 8/10/04 04:Q2(F): 9/2/04	04:Jul: 8/6/04 04:Aug: 9/3/04	04:Q2(r1): 8/6/04 04:Q2(r2): 9/3/04
Sep. 04	9/15/04	04:Q3-06:Q4				
			04:Q2(F): 9/29/04 04:Q3(A): 10/29/04	04:Q2(Err.): 10/13/04	04:Sep: 10/8/04	04:Q3: 10/8/04
Nov. 04	11/3/04	04:Q4-06:Q4				
			04:Q3(P): 11/30/04	04:Q3(P): 11/4/04 04:Q3(F): 12/7/04	04:Oct: 11/5/04 04:Nov: 12/3/04	04:Q3(r1): 11/5/04 04:Q3(r2): 12/3/04
Dec. 04	12/8/04	04:Q4-06:Q4				

Table 17: Greenbook Forecasts and NIPA, P&C. amd Employment Situation Release Dates, 2004.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
Jan. 92†	1/10/92	91:Q4-93:Q4	91:Q3(F): 12/20/91	91:Q3(F): 1/3/92	91:Nov: 12/6/91 91:Dec & CPS Revisions: 1/10/92	91:Q3(r2): 12/6/91 91:Q4: 1/10/92
Feb. 92	2/10/92	92:Q1-93:Q4	91:Q4(A): 1/29/92	96:Q4(P): 2/05/92	92:Jan: 2/7/92	91:Q4(r1): 2/7/92
Mar. 92	3/10/92	92:Q1-93:Q4	91:Q4(P): 2/28/92	96:Q4(P): 3/10/92	92:Feb: 3/6/92	91:Q4(r2): 3/6/92
Apr. 92†	4/10/92	92:Q1-93:Q4	91:Q4(F): 3/26/92		92:Mar: 4/3/92	92:Q1: 4/3/92
May 92*	5/10/92	92:Q2-93:Q4	92:Q1(A): 4/28/92	–	92:Apr: 5/8/92	92:Q1(r1): 5/8/92
Jun. 92*	6/10/92	92:Q2-93:Q4	92:Q1(P): 5/29/92 92:Q1(F): 6/25/92	–	92:May & CES Revisions: 6/5/92	92:Q1(r2): 6/5/92
Jul. 92†	7/10/92	92:Q2-93:Q4	92:Q1(F): 6/25/92	92:Q1(P,F): 6/17/92	92:Jun: 7/2/92	92:Q2: 7/2/92
Aug. 92*	8/10/92	92:Q3-93:Q4	92:Q2(A) & Ann. Revisions: 7/30/92	–	92:Jul: 8/7/92	92:Q2(r1): 8/7/92
Sep. 92	9/10/92	92:Q3-93:Q4	92:Q2(P): 8/27/92	92:Q2(P): 8/11/92 92:Q2(F): 9/3/92	92:Aug: 9/4/92	92:Q2(r2): 9/4/92
Oct. 92†	10/10/92	92:Q3-93:Q4	92:Q2(F): 9/24/92	–	92:Sep: 10/2/92	92:Q3: 10/2/92
Nov. 92	11/10/92	92:Q4-93:Q4	92:Q3(A): 10/27/92	92:Q3(P): 11/05/92	92:Oct: 11/6/92	92:Q3(r1): 11/6/92
Dec. 92	12/10/92	92:Q4-93:Q4	92:Q3(P): 11/25/92	92:Q3(F): 12/3/92	92:Nov: 12/4/92	92:Q3(r2): 12/4/92

Table 18: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1992.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			92:Q3(F): 12/22/92	–	92:Dec & CPS Revisions: 1/8/93	92:Q4: 1/8/93
Jan. 93†	1/10/93	92:Q4-94:Q4				
			92:Q4(A): 1/28/93	92:Q4(P): 2/4/93	93:Jan: 2/5/93	92:Q4(r1): 2/5/93
Feb. 93	2/10/93	93:Q1-94:Q4				
			92:Q4(P): 2/26/93	92:Q4(F) & Ann. Revisions: 3/9/93	93:Feb: 3/5/93	92:Q4(r2): 3/5/93
Mar. 93	3/10/93	93:Q1-94:Q4				
			92:Q4(F): 3/26/93	–	93:Mar: 4/2/93	93:Q1: 4/2/93
Apr. 93†	4/10/93	93:Q1-94:Q4				
			93:Q1(A): 4/29/93	93:Q1(P): 5/6/93	93:Apr: 5/7/93	93:Q1(r1): 5/7/93
May 93	5/10/93	93:Q2-94:Q4				
			93:Q1(P): 5/28/93 93:Q1(F): 6/23/93	–	93:May & CES Revisions: 6/4/93	93:Q1(r2): 6/4/93
Jun. 93	6/10/93	93:Q2-94:Q4				
			93:Q1(F): 6/23/93	93:Q1(F): 6/17/93	93:Jun: 7/2/93	93:Q2: 7/2/93
Jul. 93†	7/10/93	93:Q2-94:Q4				
			93:Q2(A) 7/29/93	–	93:Jul: 8/6/93	93:Q2(r1): 8/6/93
Aug. 93	8/10/93	93:Q3-94:Q4		93:Q2(P): 8/10/93 93:Q2(F): 9/9/93 Revisions: 8/31/93	93:Aug: 9/3/93	93:Q2(r2): 9/3/93
Sep. 93	9/10/93	93:Q3-94:Q4				
			93:Q2(F): 9/29/93	–	93:Sep: 10/8/93	93:Q3: 10/8/93
Oct. 93†	10/10/93	93:Q3-94:Q4				
			93:Q3(A): 10/28/93	93:Q3(P): 11/4/93	93:Oct: 11/5/93	93:Q3(r1): 11/5/93
Nov. 93	11/10/93	93:Q4-94:Q4				
			93:Q3(P): 12/1/93	93:Q3(F): 12/8/93	93:Nov: 12/3/93	93:Q3(r2): 12/3/93
Dec. 93	12/10/93	93:Q4-94:Q4				

Table 19: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1993.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			93:Q3(F): 12/22/93	–	93:Dec & CPS Revisions: 1/7/94	98:Q4: 1/7/94
Jan. 94†	1/10/94	93:Q4-95:Q4				
			93:Q4(A): 1/28/94	93:Q4(P): 2/8/94	94:Jan: 2/4/94	98:Q4(r1): 2/4/94
Feb. 94	2/10/94	94:Q1-95:Q4				
			93:Q4(P): 3/1/94	93:Q4(F) & Ann. Revisions: 3/8/94	94:Feb: 3/4/94	98:Q4(r2): 3/4/94
Mar. 94	3/10/94	94:Q1-95:Q4				
			93:Q4(F): 3/31/94	–	94:Mar: 4/1/94	94:Q1: 4/1/94
Apr. 94†	4/10/94	94:Q1-95:Q4				
			94:Q1(A): 4/28/94	94:Q1(P): 5/5/94	94:Apr: 5/6/94	94:Q1(r1): 5/6/94
May 94	5/10/94	94:Q2-95:Q4				
			94:Q1(P): 5/27/94 94:Q1(F): 6/29/94	–	94:May & CES Revisions: 6/3/94	94:Q1(r2): 6/3/94
Jun. 94	6/10/94	94:Q2-95:Q4				
			94:Q1(F): 6/29/94	94:Q1(F): 6/15/94	94:Jun: 7/8/94	94:Q2: 7/8/94
Jul. 94†	7/10/94	94:Q2-95:Q4				
			94:Q2(A) & Ann. Revisions: 7/29/94	94:Q2(P): 8/9/94	94:Jul: 8/5/94	94:Q2(r1): 8/5/94
Aug. 94	8/10/94	94:Q3-95:Q4				
			94:Q2(P): 8/26/94	94:Q2(F): 9/7/94	94:Aug: 9/2/94	94:Q2(r2): 9/2/94
Sep. 94	9/10/94	94:Q3-95:Q4				
			94:Q2(F): 9/29/94	–	94:Sep: 10/7/94	94:Q3: 10/7/94
Oct. 94†	10/10/94	94:Q3-95:Q4				
			94:Q3(A): 10/28/94	94:Q3(P): 11/09/94	94:Oct: 11/4/94	94:Q3(r1): 11/4/94
Nov. 94	11/10/94	94:Q4-95:Q4				
			94:Q3(P): 11/30/94	94:Q3(F): 12/7/94	94:Nov: 12/2/94	94:Q3(r2): 12/2/94
Dec. 94	12/10/94	94:Q4-95:Q4				

Table 20: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1994.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			94:Q3(F): 12/22/94	–	99:Dec & CPS Revisions: 1/6/95	99:Q4: 1/6/95
Jan. 95†	1/10/95	94:Q4-96:Q4				
Feb. 95	2/10/95	95:Q1-96:Q4	94:Q4(A): 1/27/95	94:Q4(P): 2/7/95	95:Jan: 2/3/95	99:Q4(r1): 2/3/95
			94:Q4(P): 3/01/95	94:Q4(F) & Ann. Revisions: 3/8/95		
Mar. 95	3/10/95	95:Q1-96:Q4			95:Feb: 3/10/95	99:Q4(r2): 3/10/95
			94:Q4(F): 3/31/95	–	95:Mar: 4/7/95	95:Q1: 4/7/95
Apr. 95†	4/10/95	95:Q1-96:Q4				
			95:Q1(A): 4/28/95	95:Q1(P): 5/9/95	95:Apr: 5/5/95	95:Q1(r1): 5/5/95
May 95	5/10/95	95:Q2-96:Q4				
			95:Q1(P): 5/31/95	–	95:May & CES Revisions: 6/2/95	95:Q1(r2): 6/2/95
Jun. 95	6/10/95	95:Q2-96:Q4				
			95:Q1(F): 6/30/95	95:Q1(F): 6/21/95	95:Jun: 7/7/95	95:Q2: 7/7/95
Jul. 95†	7/10/95	95:Q2-96:Q4				
			95:Q2(A): 7/28/95	95:Q2(P): 8/8/95	95:Jul: 8/4/95	95:Q2(r1): 8/4/95
Aug. 95	8/10/95	95:Q3-96:Q4				
			95:Q2(P): 8/30/95	95:Q2(F): 9/7/95	95:Aug: 9/1/95	95:Q2(r2): 9/1/95
Sep. 95	9/10/95	95:Q3-96:Q4				
			95:Q2(F): 9/29/95	–	95:Sep: 10/6/95	95:Q3: 10/6/95
Oct. 95†	10/10/95	95:Q3-96:Q4				
			95:Q3(A): 10/27/95	95:Q3(P): 11/7/95	95:Oct: 11/3/95	95:Q3(r1): 11/3/95
Nov. 95	11/10/95	95:Q4-96:Q4				
			Shutdown	Shutdown	95:Nov: 12/8/95	95:Q3(r2): 12/8/95
Dec. 95	12/10/95	95:Q4-96:Q4				

Table 21: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1995.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			Shutdown	–	Shutdown	Shutdown
Jan. 96	1/10/96	95:Q4-97:Q4				
			95:Q3(P,F) & Comp. Revisions: 1/19/96	95:Q3(F): 2/8/96	95:Dec & CFS Revisions: 1/19/96 96:Jan: 2/2/96	00:Q4: 1/19/96 00:Q4(r1): 2/2/96
Feb. 96*	2/10/96	96:Q1-97:Q4				
			95:Q4(A,P): 2/23/96	95:Q4(P): 3/6/96	96:Feb: 3/8/96	00:Q4(r2): 3/8/96
Mar. 96	3/10/96	96:Q1-97:Q4				
			95:Q4(F): 4/2/96		96:Mar: 4/5/96	96:Q1: 4/5/96
Apr. 96†	4/10/96	96:Q1-97:Q4		95:Q4(F) & Ann. Revisions: 4/10/96		
			96:Q1(A): 5/2/96		96:Apr: 5/3/96	96:Q1(r1): 5/3/96
May 96*	5/10/96	96:Q2-97:Q4				
			96:Q1(P): 5/30/96	96:Q1(P): 5/16/96	96:May & CES Revisions: 6/7/96	96:Q1(r2): 6/7/96
Jun. 96	6/10/96	96:Q2-97:Q4				
			96:Q1(F): 6/28/96	96:Q1(F): 6/18/96	96:Jun: 7/5/96	96:Q2: 7/5/96
Jul. 96†	7/10/96	96:Q2-97:Q4				
			96:Q2(A) & Ann. Revisions: 8/01/96	96:Q2(P) & NIPA Revisions: 8/14/96	96:Jul: 8/2/96	96:Q2(r1): 8/2/96
Aug. 96*	8/10/96	96:Q3-97:Q4				
			96:Q2(P): 8/29/96	–	96:Aug: 9/6/96	96:Q2(r2): 9/6/96
				96:Q2(F): 9/10/96		
Sep. 96	9/10/96	96:Q3-97:Q4				
			96:Q2(F): 9/27/96	–	96:Sep: 10/4/96	96:Q3: 10/4/96
Oct. 96†	10/10/96	96:Q3-97:Q4				
			96:Q3(A): 10/30/96	96:Q3(P): 11/7/96	96:Oct: 11/1/96	96:Q3(r1): 11/1/96
Nov. 96	11/10/96	96:Q4-97:Q4		96:Q3(F): 12/5/96	96:Nov: 12/6/96	96:Q3(r2): 12/6/96
			96:Q3(P): 11/27/96			
Dec. 96	12/10/96	96:Q4-97:Q4				

Table 22: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1996.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
Jan. 97†	1/10/97	96:Q4-98:Q4	96:Q3(F): 12/20/96	96:Q3(F): 12/5/96	96:Nov: 12/6/96	96:Q3(r2): 12/6/96
Feb. 97*	2/10/97	97:Q1-98:Q4	96:Q4(A): 1/31/97	–	96:Dec & CPS Revisions: 1/10/97 97:Jan: 2/7/97	96:Q4: 1/10/97 96:Q4(r1): 2/7/97
Mar. 97	3/10/97	97:Q1-98:Q4	96:Q4(P): 2/28/97	96:Q4(P): 2/11/97	97:Feb: 3/7/97	96:Q4(r2): 3/7/97
Apr. 97†	4/10/97	97:Q1-98:Q4	96:Q4(F): 3/28/97	96:Q4(F) & Ann. Revisions: 3/11/97	97:Mar: 4/4/97	97:Q1: 4/4/97
May 97	5/10/97	97:Q2-98:Q4	97:Q1(A): 4/30/97 97:Q1(A,r): 5/7/97	97:Q1(P): 5/07/97	97:Apr: 5/2/97	97:Q1(r1): 5/2/97
Jun. 97	6/10/97	97:Q2-98:Q4	97:Q1(P): 5/30/97	–	97:May & CES Revisions: 6/6/97	97:Q1(r2): 6/6/97
Jul. 97†	7/10/97	97:Q2-98:Q4	97:Q1(F): 6/27/97	97:Q1(F): 6/18/97	97:Jun: 7/3/97	97:Q2: 7/3/97
Aug. 97*	8/10/97	97:Q3-98:Q4	97:Q2(A) & Ann. Revisions: 7/31/97	–	97:Jul: 8/1/97	97:Q2(r1): 8/1/97
Sep. 97	9/10/97	97:Q3-98:Q4	97:Q2(P): 8/28/97	97:Q2(P): 8/12/97 97:Q2(F): 9/9/97	97:Aug: 9/5/97	97:Q2(r2): 9/5/97
Oct. 97†	10/10/97	97:Q3-98:Q4	97:Q2(F): 9/26/97	–	97:Sep: 10/3/97	97:Q3: 10/3/97
Nov. 97*	11/10/97	97:Q4-98:Q4	97:Q3(A): 10/31/97	–	97:Oct: 11/7/97	97:Q3(r1): 11/7/97
Dec. 97	12/10/97	97:Q4-98:Q4	97:Q3(P): 11/26/97	97:Q3(P): 11/13/97 97:Q3(F): 12/4/97	97:Nov: 12/5/97	97:Q3(r2): 12/5/97

Table 23: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1997.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qrtly)
			97:Q3(F): 12/23/97	–	97:Dec & CPS Revisions: 1/9/98	97:Q4: 1/9/98
Jan. 98†	1/10/98	97:Q4-99:Q4				
			97:Q4(A): 1/30/98	–	98:Jan: 2/6/98	97:Q4(r1): 2/6/98
Feb. 98	2/10/98	98:Q1-99:Q4		97:Q4(P): 2/10/98		
			97:Q4(P): 2/27/98	–	98:Feb: 3/6/98	97:Q4(r2): 3/6/98
Mar. 98	3/10/98	98:Q1-99:Q4		97:Q4(F) & Ann. Revisions: 3/10/98		
			97:Q4(F): 3/26/98	–	98:Mar: 4/3/98	98:Q1: 4/3/98
Apr. 98†	4/10/98	98:Q1-99:Q4				
			98:Q1(A): 4/30/98	98:Q1(P): 5/07/98	98:Apr: 5/8/98	98:Q1(r1): 5/8/98
May 98	5/10/98	98:Q2-99:Q4				
			98:Q1(P): 5/28/98	98:Q1(F): 6/4/98	98:May & CES Revisions: 6/5/98	98:Q1(r2): 6/5/98
Jun. 98	6/10/98	98:Q2-99:Q4				
			98:Q1(F): 6/25/98	–	98:Jun: 7/2/98	98:Q2: 7/2/98
Jul. 98†	7/10/98	98:Q2-99:Q4				
			98:Q2(A) & Ann. Revisions: 7/31/98	–	98:Jul: 8/7/98	98:Q2(r1): 8/7/98
Aug. 98*	8/10/98	98:Q3-99:Q4				
			98:Q2(P): 8/27/98	98:Q2(P): 8/11/98 98:Q2(F): 9/3/98	98:Aug: 9/4/98	98:Q2(r2): 9/4/98
Sep. 98	9/10/98	98:Q3-99:Q4				
			98:Q2(F): 9/24/98	–	98:Sep: 10/2/98	98:Q3: 10/2/98
Oct. 98†	10/10/98	98:Q3-99:Q4				
			98:Q3(A): 10/30/98	–	98:Oct: 11/5/98	98:Q3(r1): 11/5/98
Nov. 98	11/10/98	98:Q4-99:Q4		98:Q3(P): 11/10/98		
			98:Q3(P): 11/24/98	98:Q3(F): 12/3/98	98:Nov: 12/4/98	98:Q3(r2): 12/4/98
Dec. 98	12/10/98	98:Q4-99:Q4				

Table 24: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1998.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			98:Q3(F): 12/23/98	–	98:Dec & CPS Revisions: 1/8/99	98:Q4: 1/8/99
Jan. 99†	1/10/99	98:Q4-00:Q4				
			98:Q4(A): 1/29/99	98:Q4(P): 2/9/99	99:Jan: 2/5/99	98:Q4(r1): 2/5/99
Feb. 99	2/10/99	99:Q1-00:Q4				
			98:Q4(P): 2/26/99	98:Q4(F) & Ann. Revisions: 3/9/99	99:Feb: 3/5/99	98:Q4(r2): 3/5/99
Mar. 99	3/10/99	99:Q1-00:Q4				
			98:Q4(F): 3/31/99	–	99:Mar: 4/2/99	99:Q1: 4/2/99
Apr. 99†	4/10/99	99:Q1-00:Q4				
			99:Q1(A): 4/30/99	–	99:Apr: 5/7/99	99:Q1(r1): 5/7/99
May 99*	5/10/99	99:Q2-00:Q4				
			99:Q1(P): 5/27/99	99:Q1(P): 5/11/99 99:Q1(F): 6/8/99	99:May & CES Revisions: 6/4/99	99:Q1(r2): 6/4/99
Jun. 99	6/10/99	99:Q2-00:Q4				
			99:Q1(F): 6/25/99	–	99:Jun: 7/2/99	99:Q2: 7/2/99
Jul. 99†	7/10/99	99:Q2-00:Q4				
			99:Q2(A): 7/29/99	99:Q2(P): 8/5/99	99:Jul: 8/6/99	99:Q2(r1): 8/6/99
Aug. 99	8/10/99	99:Q3-00:Q4				
			99:Q2(P): 8/26/99	99:Q2(F): 9/2/99	99:Aug: 9/3/99	99:Q2(r2): 9/3/99
Sep. 99	9/10/99	99:Q3-00:Q4				
			99:Q2(F): 9/30/99	–	99:Sep: 10/8/99	99:Q3: 10/8/99
Oct. 99†	10/10/99	99:Q3-00:Q4				
			99:Q3(A) & Comp. Revisions: 10/29/99	–	99:Oct: 11/5/99	99:Q3(r1): 11/5/99
Nov. 99*	11/10/99	99:Q4-00:Q4				
			99:Q3(P): 11/24/99	99:Q3(P): 11/12/99 99:Q3(F): 12/7/99	99:Nov: 12/3/99	99:Q3(r2): 12/3/99
Dec. 99	12/10/99	99:Q4-00:Q4				

Table 25: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 1999.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			99:Q3(F): 12/22/99	–	99:Dec & CPS Revisions: 1/7/00	99:Q4: 1/7/00
Jan. 00†	1/10/00	99:Q4-01:Q4	99:Q4(A): 1/28/00	99:Q4(P): 2/8/00	00:Jan: 2/4/00	99:Q4(r1): 2/4/00
Feb. 00	2/10/00	00:Q1-01:Q4	99:Q4(P): 2/25/00	99:Q4(F) & Ann. Revisions: 3/7/00	00:Feb: 3/3/00	99:Q4(r2): 3/3/00
Mar. 00	3/10/00	00:Q1-01:Q4	99:Q4(F): 3/30/00 99:Q4(F,r): 4/3/00	–	00:Mar: 4/7/00	00:Q1: 4/7/00
Apr. 00†	4/10/00	00:Q1-01:Q4	00:Q1(A): 4/27/00	00:Q1(P): 5/4/00	00:Apr: 5/5/00	00:Q1(r1): 5/5/00
May 00	5/10/00	00:Q2-01:Q4	00:Q1(P): 5/25/00	00:Q1(F): 6/6/00	00:May & CES Revisions: 6/2/00	00:Q1(r2): 6/2/00
Jun. 00	6/10/00	00:Q2-01:Q4	00:Q1(F): 6/29/00	–	00:Jun: 7/7/00	00:Q2: 7/7/00
Jul. 00†	7/10/00	00:Q2-01:Q4	00:Q2(A) & Ann. Revisions: 7/28/00	00:Q2(P) & NIPA Revisions: 8/8/00	00:Jul: 8/4/00	00:Q2(r1): 8/4/00
Aug. 00	8/10/00	00:Q3-01:Q4	00:Q2(P): 8/25/00	00:Q2(F): 9/6/00	00:Aug: 9/1/00	00:Q2(r2): 9/1/00
Sep. 00	9/10/00	00:Q3-01:Q4	00:Q2(F): 9/28/00	–	00:Sep: 10/6/00	00:Q3: 10/6/00
Oct. 00†	10/10/00	00:Q3-01:Q4	00:Q3(A): 10/27/00	00:Q3(P): 11/2/00	00:Oct: 11/3/00	00:Q3(r1): 11/3/00
Nov. 00	11/10/00	00:Q4-01:Q4	00:Q3(P): 11/29/00	00:Q3(F): 12/6/00	00:Nov: 12/8/00	00:Q3(r2): 12/8/00
Dec. 00	12/10/00	00:Q4-01:Q4				

Table 26: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2000.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			00:Q3(F): 12/21/00	–	00:Dec & CPS Revisions: 1/5/01	00:Q4: 1/5/01
Jan. 01†	1/10/01	00:Q4-02:Q4				
			00:Q4(A): 1/31/01	00:Q4(P): 2/7/01	01:Jan: 2/2/01	00:Q4(r1): 2/2/01
Feb. 01	2/10/01	01:Q1-02:Q4				
			00:Q4(P): 2/28/01	00:Q4(F) & Ann. Revisions: 3/6/01	01:Feb: 3/9/01	00:Q4(r2): 3/9/01
Mar. 01	3/10/01	01:Q1-02:Q4				
			00:Q4(F): 3/29/01	–	01:Mar: 4/6/01	01:Q1: 4/6/01
Apr. 01†	4/10/01	01:Q1-02:Q4				
			01:Q1(A): 4/27/01	01:Q1(P): 5/8/01	01:Apr: 5/4/01	01:Q1(r1): 5/4/01
May 01	5/10/01	01:Q2-02:Q4				
			01:Q1(P): 5/25/01	01:Q1(F): 6/5/01	01:May & CES Revisions: 6/1/01	01:Q1(r2): 6/1/01
Jun. 01	6/10/01	01:Q2-02:Q4				
			01:Q1(F): 6/29/01	–	01:Jun: 7/6/01	01:Q2: 7/6/01
Jul. 01†	7/10/01	01:Q2-02:Q4				
			01:Q2(A) & Ann. Revisions: 7/27/01	01:Q2(P) & NIPA Revisions: 8/7/01	01:Jul: 8/3/01	01:Q2(r1): 8/3/01
Aug. 01	8/10/01	01:Q3-02:Q4				
			01:Q2(P): 8/29/01	01:Q2(F): 9/5/01	01:Aug: 9/7/01	01:Q2(r2): 9/7/01
Sep. 01	9/10/01	01:Q3-02:Q4				
			01:Q2(F): 9/28/01	–	01:Sep: 10/5/01	01:Q3: 10/5/01
Oct. 01†	10/10/01	01:Q3-02:Q4				
			01:Q3(A): 10/31/01	01:Q3(P): 11/7/01	01:Oct: 11/2/01	01:Q3(r1): 11/2/01
Nov. 01	11/10/01	01:Q4-02:Q4				
			01:Q3(P): 11/30/01	01:Q3(F): 12/6/01	01:Nov: 12/7/01	01:Q3(r2): 12/7/01
Dec. 01	12/10/01	01:Q4-02:Q4				

Table 27: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2001.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			01:Q3(F): 12/21/01	–	01:Dec & CPS Revisions: 1/4/02	01:Q4: 1/4/02
Jan. 02†	1/10/02	02:Q4-03:Q4				
			01:Q4(A): 1/30/02	01:Q4(P): 2/6/02	02:Jan: 2/1/01	01:Q4(r1): 2/1/02
Feb. 02	2/10/02	02:Q1-03:Q4				
			01:Q4(P): 2/28/02	01:Q4(F) & Ann. Revisions: 3/7/02	02:Feb: 3/8/02	01:Q4(r2): 3/8/02
Mar. 02	3/10/02	02:Q1-03:Q4				
			01:Q4(F): 3/28/02	–	02:Mar: 4/5/02	02:Q1: 4/5/02
Apr. 02†	4/10/02	02:Q1-03:Q4				
			02:Q1(A): 4/26/02	02:Q1(P): 5/7/02	02:Apr: 5/3/02	02:Q1(r1): 5/3/02
May 02	5/10/02	02:Q2-03:Q4				
			02:Q1(P): 5/24/02	02:Q1(F): 5/31/02	02:May & CES Revisions: 6/7/02	02:Q1(r2): 6/7/02
Jun. 02	6/10/02	02:Q2-03:Q4				
			02:Q1(F): 6/27/02	–	02:Jun: 7/5/02	02:Q2: 7/5/02
Jul. 02†	7/10/02	02:Q2-03:Q4				
			02:Q2(A) & Ann. Revisions: 7/31/02	02:Q2(P) & NIPA Revisions: 8/9/02	02:Jul: 8/2/02	02:Q2(r1): 8/2/02
Aug. 02	8/10/02	02:Q3-03:Q4				
			02:Q2(P): 8/29/02	02:Q2(F): 9/5/02	02:Aug: 9/6/02	02:Q2(r2): 9/6/02
Sep. 02	9/10/02	02:Q3-03:Q4				
			02:Q2(F): 9/27/02	–	02:Sep: 10/4/02	02:Q3: 10/4/02
Oct. 02†	10/10/02	02:Q3-03:Q4				
			02:Q3(A): 10/31/02	02:Q3(P): 11/7/02	02:Oct: 11/1/02	02:Q3(r1): 11/1/02
Nov. 02	11/10/02	02:Q4-03:Q4				
			02:Q3(P): 11/26/02	02:Q3(F): 12/4/02	02:Nov: 12/6/02	02:Q3(r2): 12/6/02
Dec. 02	12/10/02	02:Q4-03:Q4				

Table 28: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2002.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
Jan. 03†	1/10/03	02:Q4-04:Q4	02:Q3(F): 12/20/02	–	02:Dec & CPS Revisions: 1/10/03	02:Q4: 1/10/03
Feb. 03	2/10/03	03:Q1-04:Q4	02:Q4(A): 1/30/03	02:Q4(P): 2/6/03	03:Jan: 2/7/03	02:Q4(r1): 2/7/03
Mar. 03	3/10/03	03:Q1-04:Q4	02:Q4(P): 2/28/03	02:Q4(F) & Ann. Revisions: 3/6/03	03:Feb: 3/7/03	02:Q4(r2): 3/7/03
Apr. 03†	4/10/03	03:Q1-04:Q4	02:Q4(F): 3/27/03	–	03:Mar: 4/4/03	03:Q1: 4/4/03
May 03	5/10/03	03:Q2-04:Q4	03:Q1(A): 4/25/03	03:Q1(P): 5/1/03	03:Apr: 5/2/03	03:Q1(r1): 5/2/03
Jun. 03	6/10/03	03:Q2-04:Q4	03:Q1(P): 5/29/03	03:Q1(F): 6/4/03	03:May & CES Revisions: 6/6/03	03:Q1(r2): 6/6/03
Jul. 03†	7/10/03	03:Q2-04:Q4	03:Q1(F): 6/26/03	–	03:Jun: 7/3/03	03:Q2: 7/3/03
Aug. 03	8/10/03	03:Q3-04:Q4	03:Q2(A): 7/31/03	03:Q2(P): 8/7/03	03:Jul: 8/1/03	03:Q2(r1): 8/1/03
Sep. 03	9/10/03	03:Q3-04:Q4	03:Q2(P): 8/28/03	03:Q2(F): 9/4/03	03:Aug: 9/5/03	03:Q2(r2): 9/5/03
Oct. 03†	10/10/03	03:Q3-04:Q4	03:Q2(F): 9/26/03	–	03:Sep: 10/3/03	03:Q3: 10/3/03
Nov. 03	11/10/03	03:Q4-04:Q4	03:Q3(A): 10/30/03	03:Q3(P): 11/6/03	03:Oct: 11/7/03	03:Q3(r1): 11/7/03
Dec. 03	12/10/03	03:Q4-04:Q4	03:Q3(P): 11/25/03	03:Q3(F): 12/3/03	03:Nov: 12/5/03	03:Q3(r2): 12/5/03

Table 29: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2003.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			Comp. Rev.: 12/10/03 03:Q3(F): 12/23/03	– –	03:Dec & CPS Revisions: 1/9/04	03:Q4: 1/9/04
Jan. 04†	1/10/04	03:Q4-05:Q4	03:Q4(A): 1/30/04	03:Q4(P): 2/5/04	04:Jan & CES Revisions: 2/6/06	03:Q4(r1): 2/6/04
Feb. 04	2/10/04	04:Q1-05:Q4	03:Q4(P): 2/27/04	03:Q4(F) & Ann. Revisions: 3/4/04	04:Feb: 3/5/04	03:Q4(r2): 3/5/04
Mar. 04	3/10/04	04:Q1-05:Q4	07:Q4(F): 3/25/04	–	04:Mar: 4/2/04	04:Q1: 4/2/04
Apr. 04†	4/10/04	04:Q1-05:Q4	04:Q1(A): 4/29/04	04:Q1(P): 5/6/04	04:Apr: 5/7/04	04:Q1(r1): 5/7/04
May 04	5/10/04	04:Q2-05:Q4	04:Q1(P): 5/27/04	04:Q1(F): 6/3/04	04:May: 6/4/04	04:Q1(r2): 6/4/04
Jun. 04	6/10/04	04:Q2-05:Q4	04:Q1(F): 6/25/04	–	04:Jun: 7/2/04	04:Q2: 7/2/04
Jul. 04†	7/10/04	04:Q2-05:Q4	04:Q2(A) & Ann. Revision: 7/30/04	–	04:Jul: 8/6/04	04:Q2(r1): 8/6/04
Aug. 04	8/10/04	04:Q3-05:Q4	04:Q2(P): 8/27/04	04:Q2(P) & NIPA Revision: 8/10/04	04:Aug: 9/3/04	04:Q2(r2): 9/3/04
Sep. 04	9/10/04	04:Q3-05:Q4	04:Q2(F): 9/29/04	–	04:Sep: 10/8/04	04:Q3: 10/8/04
Oct. 04†	10/10/04	04:Q3-05:Q4	04:Q3(A): 10/29/04	04:Q2(Err.): 10/13/04 04:Q3(P): 11/4/04	04:Oct: 11/5/04	04:Q3(r1): 11/5/04
Nov. 04	11/10/04	04:Q4-05:Q4	04:Q3(P): 11/30/04	04:Q3(F): 12/7/04	04:Nov: 12/3/04	04:Q3(r2): 12/3/04
Dec. 04	12/10/04	04:Q4-05:Q4				

Table 30: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2004.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			04:Q3(F): 12/22/04	04:Q3(F): 12/7/04	04:Dec & CPS Revisions: 1/7/05	04:Q4: 1/7/05
Jan. 05†	1/10/05	04:Q4-06:Q4				
			04:Q4(A): 1/28/05	04:Q4(P): 2/3/05	05:Jan & CES Revisions: 2/4/05	04:Q4(r1): 2/4/05
Feb. 05	2/10/05	05:Q1-06:Q4				
			04:Q4(P): 2/25/05	04:Q4(F) & Ann. Revisions: 3/3/05	05:Feb: 3/4/05	04:Q4(r2): 3/4/05
Mar. 05	3/10/05	05:Q1-06:Q4				
			04:Q4(F): 3/30/05	–	05:Mar: 4/1/05	05:Q1: 4/1/05
Apr. 05†	4/10/05	05:Q1-06:Q4				
			05:Q1(A): 4/28/05	05:Q1(P): 5/5/05	05:Apr: 5/6/05	05:Q1(r1): 5/6/05
May 05	5/10/05	05:Q2-06:Q4				
			05:Q1(P): 5/26/05	05:Q1(F): 6/2/05	05:May: 6/3/05	05:Q1(r2): 6/3/05
Jun. 05	6/10/05	05:Q2-06:Q4				
			05:Q1(F): 6/29/05	–	05:Jun: 7/8/05	05:Q2: 7/8/05
Jul. 05†	7/10/05	05:Q2-06:Q4				
			05:Q2(A) & Ann. Revisions: 7/29/05	05:Q2(P) & NIPA Revisions: 8/9/05	05:Jul: 8/5/05	05:Q2(r1): 8/5/05
Aug. 05	8/10/05	05:Q3-06:Q4				
			05:Q2(P): 8/31/05	05:Q2(F): 9/7/05	05:Aug: 9/2/05	05:Q2(r2): 9/2/05
Sep. 05	9/10/05	05:Q3-06:Q4				
			05:Q2(F): 9/29/05	–	05:Sep: 10/7/05	05:Q3: 10/7/05
Oct. 05†	10/10/05	05:Q3-06:Q4				
			05:Q3(A): 10/28/05	05:Q3(P): 11/3/05	05:Oct: 11/4/05	05:Q3(r1): 11/4/05
Nov. 05	11/10/05	05:Q4-06:Q4				
			05:Q3(P): 11/30/05	05:Q3(F): 12/6/05	05:Nov: 12/2/05	05:Q3(r2): 12/2/05
Dec. 05	12/10/05	05:Q4-06:Q4				

Table 31: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2005.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			05:Q3(F): 12/21/05	–	05:Dec & CPS Revisions: 1/6/06	05:Q4: 1/6/06
Jan. 06†	1/10/06	05:Q4-07:Q4				
			05:Q4(A): 1/27/06	05:Q4(P): 2/2/06	06:Jan & CES Revisions: 2/3/06	05:Q4(r1): 2/3/06
Feb. 06	2/10/06	06:Q1-07:Q4				
			05:Q4(P): 2/28/06	05:Q4(F) & Ann. Revisions: 3/7/06		
Mar. 06	3/10/06	06:Q1-07:Q4			06:Feb: 3/10/06	05:Q4(r2): 3/10/06
			05:Q4(F): 3/30/06	–	06:Mar: 4/7/06	06:Q1: 4/7/06
Apr. 06†	4/10/06	06:Q1-07:Q4				
			06:Q1(A): 4/28/06	06:Q1(P): 5/4/06	06:Apr: 5/5/06	06:Q1(r1): 5/5/06
May 06	5/10/06	06:Q2-07:Q4				
			06:Q1(P): 5/25/06	06:Q1(F): 6/1/06	06:May: 6/2/06	06:Q1(r2): 6/2/06
Jun. 06	6/10/06	06:Q2-07:Q4				
			06:Q1(F): 6/29/06	–	06:Jun: 7/7/06	06:Q2: 7/7/06
Jul. 06†	7/10/06	06:Q2-07:Q4				
			06:Q2(A) & Ann. Revisions: 7/28/06	06:Q2(P) & NIPA Revisions: 8/8/06	06:Jul: 8/4/06	06:Q2(r1): 8/4/06
Aug. 06	8/10/06	06:Q3-07:Q4				
			06:Q2(P): 8/30/06	06:Q2(F): 9/6/06	06:Aug: 9/1/06	06:Q2(r2): 9/1/06
Sep. 06	9/10/06	06:Q3-07:Q4				
			06:Q2(F): 9/28/06	–	06:Sep: 10/6/06	06:Q3: 10/6/06
Oct. 06†	10/10/06	06:Q3-07:Q4				
			06:Q3(A): 10/27/06	06:Q3(P): 11/2/06	06:Oct: 11/3/06	06:Q3(r1): 11/3/06
Nov. 06	11/10/06	06:Q4-07:Q4				
			06:Q3(P): 11/29/06	06:Q3(F): 12/5/06	06:Nov: 12/8/06	06:Q3(r2): 12/8/06
Dec. 06	12/10/06	06:Q4-07:Q4				

Table 32: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2006.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			06:Q3(F): 12/21/06	–	06:Dec & CPS Revisions: 1/5/07	06:Q4: 1/5/07
Jan. 07†	1/10/07	06:Q4-08:Q4				
			06:Q4(A): 1/31/07	06:Q4(P): 2/7/07	07:Jan & CES Revisions: 2/2/07	06:Q4(r1): 2/2/07
Feb. 07	2/10/07	07:Q1-08:Q4				
			06:Q4(P): 2/28/07	06:Q4(F) & Ann. Revisions: 3/6/07	07:Feb: 3/9/07	06:Q4(r2): 3/9/07
Mar. 07	3/10/07	07:Q1-08:Q4				
			06:Q4(F): 3/29/07	–	07:Mar: 4/6/07	07:Q1: 4/6/07
Apr. 07†	4/10/07	07:Q1-08:Q4				
			07:Q1(A): 4/27/07	07:Q1(P): 5/3/07	07:Apr: 5/4/07	07:Q1(r1): 5/4/07
May 07	5/10/07	07:Q2-08:Q4				
			07:Q1(P): 5/31/07	07:Q1(F): 6/6/07	07:May: 6/1/07	07:Q1(r2): 6/1/07
Jun. 07	6/10/07	07:Q2-08:Q4				
			07:Q1(F): 6/28/07	–	07:Jun: 7/6/07	07:Q2: 7/6/07
Jul. 07†	7/10/07	07:Q2-08:Q4				
			07:Q2(A) & Ann. Revisions: 7/27/07	07:Q2(P) & NIPA Revisions: 8/7/07	07:Jul: 8/3/07	07:Q2(r1): 8/3/07
Aug. 07	8/10/07	07:Q3-08:Q4				
			07:Q2(P): 8/30/07	07:Q2(F): 9/6/07	07:Aug: 9/7/07	07:Q2(r2): 9/7/07
Sep. 07	9/10/07	07:Q3-08:Q4				
			07:Q2(F): 9/27/07	–	07:Sep: 10/5/07	07:Q3: 10/5/07
Oct. 07†	10/10/07	07:Q3-08:Q4				
			07:Q3(A): 10/31/07	07:Q3(P): 11/7/07	07:Oct: 11/2/07	07:Q3(r1): 11/2/07
Nov. 07	11/10/07	07:Q4-08:Q4				
			07:Q3(P): 11/29/07	07:Q3(F): 12/5/07	07:Nov: 12/7/07	07:Q3(r2): 12/7/07
Dec. 07	12/10/07	07:Q4-08:Q4				

Table 33: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2007.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			07:Q3(F): 12/20/07	–	07:Dec & CPS Revisions: 1/4/08	07:Q4: 1/4/08
Jan. 08†	1/10/08	07:Q4-09:Q4				
			07:Q4(A): 1/30/08	07:Q4(P): 2/6/08	08:Jan & CES Revisions: 2/1/08	07:Q4(r1): 2/1/08
Feb. 08	2/10/08	08:Q1-09:Q4				
			07:Q4(P): 2/28/08	07:Q4(F) & Ann. Revisions: 3/5/08	08:Feb: 3/7/08	07:Q4(r2): 3/7/08
Mar. 08	3/10/08	08:Q1-09:Q4				
			07:Q4(F): 3/27/08	–	08:Mar: 4/4/08	08:Q1: 4/4/08
Apr. 08†	4/10/08	08:Q1-09:Q4				
			08:Q1(A): 4/30/08	08:Q1(P): 5/7/08	08:Apr: 5/2/08	08:Q1(r1): 5/2/08
May 08	5/10/08	08:Q2-09:Q4				
			08:Q1(P): 5/29/08	08:Q1(F): 6/4/08	08:May: 6/6/08	08:Q1(r2): 6/6/08
Jun. 08	6/10/08	08:Q2-09:Q4				
			08:Q1(F): 6/26/08	–	08:Jun: 7/3/08	08:Q2: 7/3/08
Jul. 08†	7/10/08	08:Q2-09:Q4				
			08:Q2(A) & Ann. Revisions: 7/31/08	08:Q2(P) & NIPA Revisions: 8/8/08	08:Jul: 8/1/08	08:Q2(r1): 8/1/08
Aug. 08	8/10/08	08:Q3-09:Q4				
			08:Q2(P): 8/28/08	08:Q2(F): 9/4/08	08:Aug: 9/5/08	08:Q2(r2): 9/5/08
Sep. 08	9/10/08	08:Q3-09:Q4				
			08:Q2(F): 9/26/08	–	08:Sep: 10/3/08	08:Q3: 10/3/08
Oct. 08†	10/10/08	08:Q3-09:Q4				
			08:Q3(A): 10/30/08	08:Q3(P): 11/6/08	08:Oct: 11/7/08	08:Q3(r1): 11/7/08
Nov. 08	11/10/08	08:Q4-09:Q4				
			08:Q3(P): 11/25/08	08:Q3(F): 12/3/08	08:Nov: 12/5/08	08:Q3(r2): 12/5/08
Dec. 08	12/10/08	08:Q4-09:Q4				

Table 34: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2008.

F'cast Name	BlueChip released	BC F'cast horizon	Interim NIPA releases	Interim P&C releases	Interim EES releases (mthly)	Interim EES releases (qtrly)
			08:Q3(F): 12/23/08	–	08:Dec & CPS Revisions: 1/9/09	08:Q4: 1/9/09
Jan. 09†	1/10/09	08:Q4-10:Q4	08:Q4(A): 1/30/09	08:Q4(P): 2/5/09	09:Jan & CES Revisions: 2/6/09	08:Q4(r1): 2/6/09
Feb. 09	2/10/09	09:Q1-10:Q4	08:Q4(P): 2/27/09	08:Q4(F) & Ann. Revisions: 3/5/09	09:Feb: 3/6/09	08:Q4(r2): 3/6/09
Mar. 09	3/10/09	09:Q1-10:Q4	07:Q4(F): 3/26/09	–	09:Mar: 4/3/09	09:Q1: 4/3/09
Apr. 09†	4/10/09	09:Q1-10:Q4	09:Q1(A): 4/29/09	09:Q1(P): 5/7/09	09:Apr: 5/8/09	09:Q1(r1): 5/8/09
May 09	5/10/09	09:Q2-10:Q4	09:Q1(P): 5/29/09	09:Q1(F): 6/4/09	09:May: 6/5/09	09:Q1(r2): 6/5/09
Jun. 09	6/10/09	09:Q2-10:Q4	09:Q1(F): 6/25/09	–	09:Jun: 7/2/09	09:Q2: 7/2/09
Jul. 09†	7/10/09	09:Q2-10:Q4	09:Q2(A) & Comp. Revisions: 7/31/09	–	09:Jul: 8/7/09	09:Q2(r1): 8/7/09
Aug. 09*	8/10/09	09:Q3-10:Q4	09:Q2(P): 8/27/09	09:Q2(P) & NIPA Revision: 8/11/09 09:Q2(F): 9/2/09	09:Aug: 9/4/09	09:Q2(r2): 9/4/09
Sep. 09	9/10/09	09:Q3-10:Q4	09:Q2(F): 9/30/09	–	09:Sep: 10/2/09	09:Q3: 10/2/09

Table 35: Blue Chip Forecasts and NIPA, P&C. and Employment Situation Release Dates, 2009.