

Is the FOMC Overly Optimistic?

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Cover page

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Is the FOMC Overly Optimistic?

“Well, optimism’s a good thing. It- makes people go out and- you know, start businesses and spend and do whatever is necessary to get the economy going.” – Ben Bernanke

Abstract

This study develops a new framework to characterize the FOMC’s forecasting behavior and to analyze whether the FOMC’s forecasts are overly optimistic. We find that the FOMC tended to over-forecast GDP growth and the unemployment rate and under-forecast inflation during the 2002-2018 period. We also find that the FOMC’s forecasts displayed different behavior under different chairs. Our analysis suggests that the FOMC has become overly optimistic, as it tends to forecast a more optimistic GDP growth outlook with “controlled” inflation expectations.

We find that the Blue Chip consensus’ forecast behavior differs from the FOMC’s forecast behavior, as the Blue Chip consensus over-forecasted both GDP growth and inflation over the same time period. From a theoretical perspective, the Blue Chip forecasting behavior is consistent in the post-2001 period, while the FOMC forecasting behavior is inconsistent, as over-forecasting GDP growth is consistent with over-forecasting inflation.

We also find that the FOMC under-forecasted the fed funds rate over the 2006-2018 time period, while the Blue Chip consensus over-forecasted the fed funds rate for the same time period. In sum, our analysis suggests that the FOMC has a tendency to forecast an economic outlook that is consistent with its mandate, where the economy is growing close to its potential, yet inflation remains in check.

We use the same framework to characterize whether the Committee’s December 2018 monetary policy rate decision was overly restrictive and inconsistent with its other forecasts. We also introduce an alternative method, in which we examine the gap between the federal funds rate forecasts compared to the Fed’s economic data projections. Our analysis suggests that the FOMC’s December 2018 rate hike seems to be overly restrictive and inconsistent with the Fed’s economic forecast.

Key Words: FOMC; Over Optimism; Blue Chip; Forecasting Behavior; Overly Restrictive.

JEL Classification: E31; E44; E52.

Is the FOMC Overly Optimistic?

Introduction

Does the Federal Open Market Committee (FOMC) behave over optimistically to achieve its objective? We propose a framework to find the answer by developing a loss function for the FOMC and utilizing this loss function to characterize the FOMC's forecasting behavior as overly optimistic or overly pessimistic. In addition, we analyze whether its forecasting behavior is consistent during different time periods.

Our analysis provides key insights by characterizing the FOMC's forecasting behavior for decision makers to design effective policies. That is, understanding the FOMC's forecasting behavior is crucial for monetary policy decisions and for private sector decision makers. For example, the FOMC utilizes its forecasts in setting its monetary policy stance. Furthermore, the FOMC's forecasts, in particular in the post-Great Recession era, are used as a communication tool.¹ Therefore, a particular forecasting behavior from the FOMC could result in an undesired monetary policy stance (for example, an overly-accommodative monetary policy stance that could potentially lead to an asset bubble) as well as unintended signals to private sector decision makers.

Our study also introduces a loss function for private sector forecasters using the Blue Chip consensus forecasts as a proxy, and characterizes this forecasting behavior using a loss function. Moreover, we compare FOMC and private sector forecasts to determine whether the FOMC is more optimistic than the private sector. By the same token, we analyze if FOMC and private sector forecast behavior is consistent over time.

It is important to note that our analysis does not focus on forecast evaluation to determine the accuracy of the FOMC or Blue Chip forecasts, as several studies have already done this type of analysis. For more detail see El-Shagi et al. (2016). Instead, we characterize the forecasting *behavior* of the FOMC and private sector forecasters. In our view, determining the forecasting accuracy of a forecaster is different from characterizing the behavior of that forecaster, and leads to unique insights for decision makers. A forecast accuracy analysis determines which forecaster is more accurate, and those forecasts can then be utilized in decision making processes. Analyzing

¹ The FOMC started providing its forecasts such as the Summary of Economic Projections (SEP) four times a year to increase its transparency in the post-Great Recession era.

forecasting behavior, however, indicates if a forecaster tends to favor a particular forecast outlook (a positive economic outlook, for example) and if that behavior could lead to an undesired policy-setting outcome. This specifically has potential implications for the FOMC's forecasting behavior, as it could send unintended signals. This could especially be the case when forecasts are used as a communication tool to a large public audience. Therefore, we believe our work is a unique contribution to the current literature by focusing on forecast behavior instead of forecast accuracy. We provide new insights for decision makers as to the behavior and rationale behind why the FOMC and private sector may adopt certain forecast tendencies. Understanding these tendencies allows decision makers to have a more complete picture as they respond to incoming data and use these forecasts as a tool to analyze the near-term economic outlook.

Specifically, we analyze whether the FOMC and private sector forecasters' loss functions are symmetric or asymmetric. We then examine whether this forecasting behavior is consistent in terms of over- or under-forecasting each variable of interest. In addition, we test whether the Blue Chip consensus and FOMC's forecasts are correlated, as some analysts suggest that the FOMC's forecasts may influence private sector expectations (Romer and Romer, 2000).

We believe that the FOMC's loss function is asymmetric, as it would prefer to avoid under-forecasting economic growth—for example by avoiding making a recession forecast. The Blue Chip consensus forecasts, a proxy for the private sector, also have an asymmetric loss function. For example, under-forecasting inflation may in turn affect firms' estimates of borrowing costs and real returns on investment, all else equal.

In terms of forecasting behavior, we analyze the FOMC and Blue Chip consensus forecasts from the 1992-2018 time period. While we include some findings for the complete time period, we choose to focus on the post-2001 recession time period due to its greater similarity to present economic conditions and their effect on the FOMC's monetary policy stance. Annual GDP growth measured from Q4 to Q4 notably downshifted after the 2001 recession. From 1992-2000, average GDP growth was 3.3%, while from 2002-2018 the average fell to 2.7% (excluding recessions). A similar trend exists for inflation, where pre-2001 average annual CPI growth measured from Q4 to Q4 was 2.6%, while from 2002-2018 average annual inflation as measured by the PCE deflator

from Q4 to Q4 was 1.9% (also excluding recessions).² We find that the FOMC tended to over-forecast GDP growth and the unemployment rate while it under-forecasted inflation during the 2002-2018 period. We also find that the FOMC's forecasts display different behavior under different chairs. Our work suggests that the FOMC has become overly optimistic in recent years, as it tends to forecast a more optimistic GDP growth outlook with "controlled" inflation expectations. Furthermore, outside of recessions, the FOMC never predicted negative or only slightly positive GDP growth.

The FOMC's recent GDP growth and inflation forecasts appear to be inconsistent with each other, which may help the FOMC achieve its dual mandate. Over-forecasting GDP growth while under-forecasting inflation would project a positive picture where the economy is growing close to its potential, but not overheating. Another potential explanation for this overly optimistic behavior is that the FOMC may want to promote a positive economic outlook, and its forecasts could influence private sector expectations. However, if the FOMC forecasts a weaker economic outlook, some analysts could consider this a signal of a change in monetary policy stance and/or that a recession is on the horizon. In our view, the FOMC has an incentive to avoid predicting a weaker economic outlook.

Our analysis also finds that the Blue Chip consensus forecasting behavior differs from the FOMC's forecasting behavior, as the Blue Chip consensus over-forecasted both GDP growth and inflation for the 2002-2018 period. From a theoretical perspective, the Blue Chip consensus forecasts are consistent, while the FOMC's forecasts are inconsistent. Over-forecasting GDP growth is consistent with over-forecasting inflation, as above-trend GDP growth would also put upward pressure on inflation.

We also examine the statistical correlation between the FOMC and Blue Chip consensus forecasts, and both appear to have a strong correlation during the complete 1992-2018 period. However, in the post-2001 period, we find that the inflation association weakens, possibly due to differences in inflation targeting for each forecast source. Like the FOMC, the Blue Chip consensus forecasts display a strong GDP growth outlook, only forecasting GDP growth below 2% twice in the post-2001 period, with one of these forecasts occurring during the Great Recession. However, actual

²The FOMC shifted to forecasting the PCE deflator beginning in 2001, so we also incorporate this shift in comparing its forecasts to actual PCE deflator data beginning in 2001.

GDP growth dropped six times below 2% on a year-over-year basis during the sample period. The FOMC and Blue Chip consensus tend to follow the above-mentioned Bernanke quote, and the FOMC seems to be overly optimistic given its above-trend forecasting behavior.

Finally, our analysis suggests that the FOMC under-forecasted the fed funds rate, while the Blue Chip consensus over-forecasted the fed funds rate for the complete 1992-2018 time period. Under Fed Chair Bernanke's leadership, the FOMC under-forecasted the fed funds rate, while the Blue Chip consensus over-forecasted the fed funds rate for the same period. But under Chair Yellen, the FOMC over-forecasted the fed funds rate, while the Blue Chip consensus continued to over-forecast the fed funds rate for the same period.

The FOMC may use overly-optimistic behavior as a communication tool toward the private section, which would explain the varied forecasting behavior under different FOMC chairs. That is, under Bernanke, the FOMC over-forecasts GDP growth but under-forecasts the fed funds rate, while under Yellen the FOMC over-forecasts both GDP growth and the fed funds rate. Bernanke's leadership may have achieved dual benefits from the FOMC's GDP growth and fed funds forecasts, in that the FOMC may have forecasted an overly-optimistic outlook during and after the Great Recession. By the same token, under-forecasting the fed funds rate shows monetary policy's support to the economy in the aftermath of the Great Recession. Similarly, over-forecasting GDP growth and the fed funds rate under Yellen may have sent signals that the economy recovered, warranting a rollback of the accommodative monetary policy in the post-Great Recession period.

Some analysts are suggesting that the December 2018 fed funds target hike was a "policy error." We use the same framework to characterize whether the Committee's December 2018 monetary policy rate decision was overly restrictive and inconsistent with its other forecasts. We analyze the economic projections released at the year-end FOMC meeting compared to the FOMC's fed funds rate forecast projections. We also introduce an alternative method, in which we examine the gap between the fed funds rate forecasts compared to the Fed's economic data projections. Our analysis suggests that the FOMC's December 2018 rate hike seems to be overly restrictive and inconsistent with the Fed's economic forecast.

Overall, both the FOMC and private sector forecasts are consistent with their respective objectives. As Mark Twain said, “forecasting is a risky business,” but it seems that the FOMC may utilize its forecasts as a communication tool to support its dual mandate. That is, the FOMC’s overly-optimistic forecasting behavior could influence economic agents’ expectations that align the economy in a direction consistent with the FOMC’s mandate.

2. A Theoretical Framework to Estimate the Cost of Forecast Error

To determine whether the FOMC is overly optimistic, we first discuss a theoretical framework to evaluate the FOMC’s forecasting behavior. In practice, forecasts do not always hit their targets, creating a higher probability of forecast errors. The total cost (potential damages/losses) of forecast errors is labeled as the loss function. Moreover, the forecast error can be divided into an under-forecast, where the forecast is lower than the actual value, and an over-forecast, where the forecast is higher than the actual value. The question then becomes whether the cost of under-forecasting is identical to the cost of over-forecasting, known as a symmetric loss function. Conversely, an asymmetric loss function occurs when the cost of being wrong is not identical for both under- and over-forecasts. See Silvia et al. (2014) for more detail about the loss function.

In the case of a symmetric loss function, a forecaster is indifferent between under- and over-forecasting. However, an asymmetric loss function has the potential to dictate a preference for forecast errors. If a forecaster knows that under-forecasting could cause *more* damage than over-forecasting, that forecaster may tend to over-forecast. We utilize a simple example of weather forecasting to illustrate an asymmetric loss function scenario. In our view, a weather forecaster would generally prefer to over-forecast inclement weather, all else equal. The forecaster would want to prepare the general public for impending severe weather by increasing the probability of an upcoming winter storm, for example. If the storm never occurs, besides reputational losses for the forecaster, there would only be relatively small losses in terms of business closures and evacuations. However, under-forecasting a storm that did indeed affect the area could cause serious damages, both in terms of loss of life and monetary losses. Therefore, in our view, weather forecasters have an incentive to over-forecast because of their asymmetric loss function.

We believe that the FOMC’s loss function is also asymmetric, as it would prefer to avoid under-forecasting economic growth, for example by avoiding making a recession forecast. The implications of this tendency are discussed in the following section.

3. The FOMC's Loss Function: Is Predicting a Recession Unsuitable?

The dual objective of the FOMC is price stability and fostering maximum employment. Naturally, the FOMC's loss function would be to avoid recessions, bubbles and a run-up in prices or deflationary periods. Furthermore, the FOMC utilizes its own forecasts in setting the stance of monetary policy, and these forecasts may also influence private sector expectations of the economic outlook. The potential consequences of the FOMC's forecast errors include an unsuitable monetary policy stance and undesired signals communicated to the private sector. We first analyze the potential consequences of under- and over-forecasting economic variables on monetary policy, and then highlight the implications for the private sector. We utilize GDP growth and inflation forecasts as a case study. We next discuss the potential cost of under-forecasting GDP growth and inflation, and then discuss the cost of over-forecasting these two variables. In this section we focus on theoretical possibilities, and in the following section we examine the FOMC's actual forecasts.

In theory, under-forecasting GDP growth and inflation would create the possibility of an overly-accommodative monetary policy stance, which could fuel an asset price bubble. For example, if the FOMC forecasts relatively weaker GDP growth and lower inflation rates, it would also likely follow an accommodative monetary policy stance to stimulate the economy and bring inflation toward its target goal. If we analyze one-year-ahead forecasts, the FOMC would learn roughly a year later the result of under-forecasting GDP growth and inflation. However, the FOMC would need to set policy in the near term using its forecasts, which would suggest an overly-accommodative policy stance. Assuming actual GDP growth and inflation are stronger, this scenario would suggest that the implied monetary policy stance is overly accommodative, potentially fueling an asset price bubble. We define an "overly-accommodative" monetary policy stance as an instance where the policy stance should have been neutral or tighter, but instead the FOMC follows an accommodative policy stance, and the fed funds target rate is lower than it would be otherwise. Some analysts suggest that the monetary policy stance was overly accommodative during the 2002-2004 period, which partially contributed to the housing bubble. For additional detail see Iqbal and Vitner (2013).

Conversely, over-forecasting GDP growth and inflation may push monetary policy toward an overly-restrictive stance, which could result in an economic slowdown or recession, as borrowing

costs would be overpriced. That is, forecasting GDP growth above its potential growth rate could coincide with over-forecasting inflation. Theoretically, the FOMC would raise the fed funds rate to tame inflation and prevent the economy from overheating. Raising the fed funds rate would broadly increase short-term interest rates and subsequently boost the cost of capital, as interest rates are an important element of borrowing costs. Assuming actual GDP growth and inflation are weaker than forecasted, the scenario would suggest an overly-restrictive monetary policy stance. By the same token, the fed funds target rate would be higher than it should be, given the actual data. Overpriced borrowing costs and weaker demand could lead to a slowdown or a recession, all else equal.

Romer and Romer (2000) suggest that the FOMC's forecasts influence private sector forecasts, because the private sector may modify its forecasts in response to Fed signals. Therefore, under- or over-forecasting economic variables, in theory, has potential consequences for the private sector and for the broader economy. For example, under-forecasting GDP growth and inflation may make the private sector nervous about the impending economic outlook. As suggested by Romer and Romer (2000), the private sector may believe the Fed has more information relative to other decision makers, and may view a weaker outlook as a signal for a potential slowdown or recession. Conversely, over-forecasting economic variables has the potential to make the private sector overly optimistic, which could fuel excessive growth and overheat the economy. For more detail see Hubert (2014).

As mentioned earlier, particularly in the post-Great Recession era, the FOMC utilizes its forecasts as a communication tool. Therefore, if the FOMC's forecasts are consistently too optimistic or pessimistic, it could affect its forecast reputation and ability to communicate effectively with various private sector participants, in addition to supporting an unsuitable monetary policy stance. Forecasting is a double-edged sword for the FOMC, and it would likely want to avoid forecasting extreme events such as bubbles or recessions. Similarly, under-forecasting key variables may cause concern in the private sector, which could bring about a slowdown or recession if businesses alter investment and production decisions. Given this proposed theoretical framework, we evaluate the FOMC's actual forecasts to analyze the FOMC's forecasting behavior.

3.1 Forecasts vs. Reality: Is Over-Optimism a Communication Tool for the FOMC?

As stated previously, we emphasize that our focus is not to evaluate the forecast accuracy of the FOMC, as many studies have previously done this kind of analysis. For more detail see El-Shagi et al. (2016) and Sheng (2015). Our work characterizes the *behavior* of the FOMC's forecasts and is unique from analyzing forecast accuracy. A forecast evaluation study identifies who is the "better" forecaster (in terms of a smaller forecast error, for example) among competitors for a given sample period, so those forecasts can be utilized in decision making processes. However, by characterizing a forecaster's behavior, analysts can learn whether that forecaster tends to over-forecast or under-forecast certain variables of interest for a given time period. This analysis outlines tendencies toward a certain forecast outlook by a forecaster. Furthermore, certain forecasting behaviors could include avoiding some types of forecasts. In theory, the FOMC could avoid making a one-year ahead recession forecast, as a recession call could lead to unease for other economic agents. Therefore, by analyzing the FOMC's forecasting behavior, decision makers can learn more about its specific forecast tendencies and whether it tends to be more optimistic or pessimistic. We discuss potential FOMC forecast tendencies in more detail below.

We start our analysis in 1992 to analyze three recent Fed chair tenures over the past 27 years, and examine forecast behavior under different FOMC leadership.³ As recessions are difficult to predict, particularly one year ahead, we exclude the 2001 and 2008-2009 recessionary periods when analyzing the forecasts. However, there are three recoveries/expansions in our analysis, and we evaluate the FOMC's behavior during these periods. We use an annual dataset with 24 observations for our analysis. We use a one-year-ahead forecast horizon, as long-term forecasting is inherently difficult and has the potential for larger forecast errors. The possibility of structural breaks and outliers is also higher in the long term. In our view, the FOMC gives more weight to the near-term outlook and actual data when setting the stance of monetary policy.

For the overall 1992-2018 period (excluding recessions), the FOMC was evenly split between over- and under-forecasting GDP growth, while it under-forecasted inflation 52% of the time and over-forecasted the unemployment rate 92% of the time. However, since the 2001 recession, the FOMC over-forecasted GDP growth 69% of the time and under-forecasted inflation 58% of the time. This is different from the pre-2001 era (1992-2000), when the FOMC under-forecasted GDP

³ See Appendix A for more detail about the data.

growth 78% of the time and over-forecasted inflation 56% of the time. On net, the FOMC displayed different forecasting behavior for the post-2001 period compared to the pre-2001 period. In addition, the FOMC over-forecasted GDP growth in the 2010-2012 period after the Great Recession, possibly to promote optimism in the early phase of the recovery.⁴

Essentially, our analysis suggests that the FOMC has become overly optimistic in recent years, as it forecasts a stronger growth outlook with “controlled” inflation expectations. The FOMC’s optimism has also grown over time, as the FOMC had a greater tendency to over-forecast GDP growth in the post-2001 period, while outside of recessions, the FOMC never predicted negative or only slightly positive GDP growth. During the 1992-2018 period (excluding the Great Recession), the FOMC predicted a GDP growth rate less than 2% three times, all in the 1990s. This means that when Bernanke and Yellen held office, neither forecasted GDP growth below 2%. However, excluding recessions, actual GDP growth dropped five times below 2% during the sample period (1992-2018). One potential reason for above 2% forecasts after the Great Recession is that the potential GDP growth rate was slightly below 2% (1.5% for the 2008-2018 period per CBO estimates).⁵ The FOMC may have been suggesting that the economy was healthy and growing above its potential growth rate.

Another interesting observation from the FOMC’s GDP growth and inflation forecasts is that they appear to be inconsistent with each other. For example, in the 2002-2018 period the FOMC over-forecasted GDP growth 69% of the time, but under-forecasted inflation 58% of the time. Higher GDP growth rates should put upward pressure on prices, all else equal, and over-forecasting GDP growth would have coincided with over-forecasting inflation. However, the FOMC’s inflation and GDP growth forecasts are inconsistent. The FOMC may have acted over optimistically to help support to its dual mandate. Over-forecasting economic growth while under-forecasting inflation would project a positive picture where the economy is growing close to its potential, but economic growth would not create excessive inflationary pressures in the near term.

Another potential justification for the FOMC’s overly-optimistic behavior is that the FOMC’s forecasts may influence private sector expectations. If the FOMC forecasts a weaker outlook, it could lead the financial sector and others using the Fed’s forecasts to become uneasy about the

⁴ See Appendix B for full detail regarding our forecast analysis.

⁵ For more detail about the potential growth rates, see CBO’s website: <https://www.cbo.gov/about/products/budget-economic-data>

near-term economic outlook. Some of those participants could consider a weaker outlook a signal for upcoming changes in the near-term monetary policy stance and/or that a recession is on the horizon. In our view, the FOMC may have an incentive to avoid predicting a weaker economic outlook in the near term. Eisenhower once said that pessimism never won any battle, and by being overly optimistic, the FOMC seems to follow Eisenhower's quote.

3.2 The Legacy of FOMC Leadership: The Chairperson Matters

We also analyze the FOMC's forecasting behavior under different chairs, and find that its behavior is different under different leadership. For example, under Greenspan, the FOMC under-forecasted GDP growth 62% of the time, inflation 57% of the time and over-forecasted the unemployment rate 93% of the time. During the Bernanke era, the FOMC over-forecasted GDP growth 80% of the time and the unemployment rate 100% of the time, and under-forecasted inflation 60% of the time. Yellen's leadership displayed different forecasts than Greenspan and Bernanke. Under Yellen, the FOMC over-forecasted GDP growth and the unemployment rate two-thirds of the time and over-forecasted inflation 100% of the time.

Through 2017, the FOMC actually slightly over-forecasted GDP growth for the complete 1992-2017 time period. While we do not explicitly break out the most recent 2018 economic forecasts at the beginning of Chair Powell's tenure due to having just one year of forecast data, we note that in 2018 the FOMC under-forecasted GDP growth, accurately forecasted the inflation rate and over-forecasted the unemployment rate. We specifically note that the most recent 2018 data point for GDP growth may be somewhat of an outlier. In 2018, effects of the 2017 Tax Cuts and Jobs Act (TCJA) began to filter through the economy, and provided a boost to output through effects on consumer and business spending. As a result, the 3.1% annual GDP growth rate was significantly higher than the 2.5% forecast by the FOMC. We point out that possible distortions from the TCJA may have resulted in a notable shift in overall forecast outcomes for the 1992-2018 period.⁶

4. The Blue Chip Consensus Forecasts: Is Over-Optimism Always Necessary?

The Blue Chip consensus forecasts are a proxy for the private sector, and most forecasters and their firms potentially have "skin in the game" in the sense that the economic outlook could affect their decision-making process. In theory, decision makers would likely adopt a different set of

⁶ See Table 2 in Appendix B for our forecast analysis by Fed chair.

actions during recessionary periods than during expansionary periods. For example, an explicit recession forecast for the upcoming year could lead to pessimism surrounding the economic outlook. The Blue Chip consensus forecasts, however, do not have to adhere to an explicit inflation target, and may not have an anchoring bias. Under-forecasting inflation may also affect firms' estimates of borrowing costs and real returns on investment, all else equal. Therefore, we believe the Blue Chip consensus' loss function is also asymmetric, and we characterize the Blue Chip consensus' forecast behavior in this section.

Similar to our analysis of the FOMC's forecasts, we also analyze 24 years of Blue Chip consensus forecast data from 1992 to 2018 to compare private sector forecasting behavior across three different Fed chairs. Similar to our previous analysis, we exclude the 2001 and 2008-2009 recessionary periods due to the difficulty in accurately predicting recessions, placing more emphasis on our findings for the 2002-2018 period. For the entire 1992-2018 period, we find that the Blue Chip consensus under-forecasted GDP growth, while it over-forecasted inflation and the unemployment rate. We also find that similar to the Fed, the Blue Chip consensus forecasts display increased optimism as the forecast period progresses. Prior to 2001, the Blue Chip consensus under-forecasted GDP growth 88% of the time, however after 2001 it over-forecasted GDP growth 67% of the time. In both time periods, the Blue Chip consensus over-forecasted inflation. Like the Fed, the Blue Chip consensus also consistently over-forecasted the unemployment rate, and we discuss possible reasons for this trend in more detail below.⁷

Examining forecast results by Fed chair also displays similar results to the Fed's forecast behavior. Under Chair Greenspan, the Blue Chip consensus under-forecasted GDP growth 75% of the time, however over-forecasted inflation 57% of the time and the unemployment rate 92% of the time. The trend reverses under Bernanke, and the Blue Chip consensus over-forecasted GDP growth 80% of the time. The tendency to over-forecast increases further under Chair Yellen, where the Blue Chip consensus over-forecasted GDP growth 100% of the time. During both Bernanke and Yellen's tenures, the Blue Chip consensus over-forecasted inflation 67% of the time and the unemployment rate 100% of the time. For the same reasons as stated above, we do not explicitly

⁷ See Appendix B for details.

break out forecasts under Chair Powell, however we note that for 2018 the Blue Chip consensus under-forecasted GDP growth and inflation, while it accurately forecasted the unemployment rate.⁸

Both the Fed and Blue Chip consensus consistently over-forecast the unemployment rate during the sample period, which may seem surprising given the tendency to be generally optimistic on growth and inflation prospects at the same time. However, one possible explanation for this divergence in forecasts is the structural shift in employment trends over the past 25 years. For example, the length of time for the peak unemployment rate to recover to its previous trough was 60 months after the 1991 recession, 43 months in the 2001 recession, yet a whopping 91 months after the Great Recession. The Great Recession is often characterized as a “jobless recovery,” so it would intuitively make sense that forecasters would tend to over-forecast the unemployment rate more significantly in recent years, given the longer recovery period compared to the previous two recessions.

4.1 The FOMC vs. the Blue Chip Consensus: A Partial Alliance?

We examine the extent to which the FOMC and Blue Chip consensus forecasts display a statistical correlation. We find that the Blue Chip consensus forecasts are statistically correlated with the FOMC’s forecasts over the 1992-2018 time period, with correlation coefficients of 0.71 for GDP growth, 0.75 for inflation and 0.99 for the unemployment rate. However, the association becomes a “partial alliance” in the post-2001 period, as the correlation for GDP growth increases to 0.77, (0.64 for the pre-2001 period) but the inflation association weakens to 0.33 (0.81 for the pre 2001-period). The FOMC has an explicit inflation target of 2% and its inflation forecasts are “anchored” around that target which could, in part, explain the weakening inflation association. However, the Blue Chip consensus forecasts do not need to adhere to an overarching inflation target like the FOMC. We also acknowledge that the FOMC and Blue Chip consensus forecasts use slightly different calculations for GDP growth and inflation, which may result in different outcomes when analyzing these correlations.⁹

When using the Blue Chip consensus forecasts as a proxy for the private sector, we find that the private sector displays different forecasting behavior than the FOMC. The Blue Chip consensus over-forecasted both GDP growth and inflation over the 2002-2018 period, while the FOMC over-

⁸ See Table 2 in Appendix B for our forecast analysis by Fed chair.

⁹ For more detail on these calculations, please see Appendix A.

forecasted GDP growth but under-forecasted inflation. In theory, these findings make sense—the FOMC’s dual mandate gives it an incentive to forecast an optimistic growth outlook, yet inflation that is anchored in line with its 2% target. The private sector, however, does not have to abide by an inflation target, and therefore does not have the same anchoring bias as the FOMC. While the Blue Chip consensus and FOMC forecasts abide by different objectives, both display a statistical correlation over the forecast period. However, the correlation for inflation weakens over time, likely due to the differences in inflation targeting for each forecast source. Given these findings, while both the Blue Chip consensus and FOMC display optimism over the forecast period, differing objectives have a measured effect on forecast behavior.

5. Fed Funds Forecasts: The FOMC vs. the Blue Chip Consensus

The Blue Chip consensus forecasts are a proxy for the private sector, and most forecasters and their firms would likely be affected by changing borrowing costs. In theory, a rising fed funds rate would increase borrowing costs for the private sector, and forecasters could send signals about the potential path of the fed funds rate to gauge the borrowing cost trajectory. For example, a stronger growth outlook along with rising inflation would suggest a rising interest rate environment, all else equal, meaning that over-forecasting GDP growth and inflation would be consistent with over-forecasting the fed funds rate. Most Blue Chip members’ forecasts also likely do not have the same type of explicit goal as the FOMC’s dual mandate, or the potential to influence expectations to the same degree as the FOMC.

The FOMC, however, has an explicit dual mandate, and its forecasts may influence private sector forecasts. In addition, the FOMC could influence private sector expectations via its fed funds rate forecast, as its forecast would indicate its expected policy stance. That is, a declining fed funds rate trajectory may suggest an accommodative monetary policy stance, compared to a rising fed funds forecast, which would indicate policy normalization or a restrictive policy stance, all else equal. The FOMC’s fed funds forecasts have a different objective than the private sector in terms of setting monetary policy, while the private sector responds to these policy changes.

We examine 12 years of historical fed funds rate forecast data from the FOMC and the Blue Chip consensus as a proxy for private sector expectations. We compare the year-ahead fed funds rate

forecast for each source to the actual year-end fed funds rate.¹⁰ While we only have limited readily available forecast data back to 2006, we find that for the entire forecast period, the FOMC under-forecasts the fed funds rate 58% of the time, while the Blue Chip consensus over-forecasts the fed funds rate 58% of the time. When we break out forecasts by Fed chair, we find a similar story for the Bernanke era, as the FOMC under-forecasted the fed funds rate 63% of the time, while the Blue Chip consensus over-forecasted the fed funds rate 63% of the time. Moving to the Yellen era, the trend reverses for the FOMC, as it over-forecasts the fed funds rate 67% of the time. The Blue Chip consensus maintains its forecast consistency over the same time period, also over-forecasting the fed funds rate 67% of the time. For similar reasons as stated above, we do not explicitly break out the most recent 2018 forecasts under Chair Powell, however we note that in 2018 both the FOMC and Blue Chip consensus under-forecasted the fed funds rate.¹¹

5.1 Fed Funds vs. GDP and Inflation: Not All Forecasts are Created Equal

In our view, the fed funds rate forecasts may carry a higher weight than growth and inflation forecasts. The GDP growth and inflation forecasts represent the FOMC's expectations about the near-term economic outlook. The growth and inflation outlook is an integral element of rate-setting decisions; however, it is likely not the only aspect that influences these decisions. The FOMC has mentioned several times in its policy statements that financial sector developments, fiscal policy and international events are also part of the process when setting the fed funds rate target. Essentially, the fed funds rate forecast could shed light on the FOMC's expectations of the near-term outlook, encompassing not only domestic economic factors, but also political and international events. Finally, the fed funds rate is arguably the most visible of these forecasts, giving it additional consideration in the policymaking process.

The FOMC may also utilize its forecasts as a communication tool that could influence private sector expectations. This could explain the FOMC's overly-optimistic behavior and different forecasting behavior by Fed chair. Under Bernanke, the FOMC over-forecasted GDP growth and under-forecasted the fed funds rate, while under Yellen the FOMC over-forecasted both GDP growth and the fed funds rate. Bernanke's leadership may have achieved dual benefits from the

¹⁰ For more detail on our methodology, please see Appendix A.

¹¹ See Table 3 in Appendix B for fed funds forecast comparisons.

FOMC's GDP growth and fed funds forecasts. Over-forecasting GDP growth suggests that the FOMC displayed an overly-optimistic outlook during and after the Great Recession. Similarly, under-forecasting the fed funds rate shows monetary policy's support to the economy in the aftermath of the Great Recession. Similarly, under Yellen, over-forecasting both GDP growth and the fed funds rate may have sent signals that the economy had "recovered" and warranted rolling back the accommodative monetary policy of the post-Great Recession period.

6. Was the Fed's Rate Hike in December a "Policy Error"?

Some analysts now criticize the Fed's December 2018 monetary policy rate decision, suggesting that the rate hike was a "policy error". We use the same framework as previously described to characterize whether the committee's December 2018 monetary policy rate decision was overly restrictive and inconsistent with its other forecasts. The Fed previously stated it would take a "data dependent" approach to setting policy, or rely on incoming data to reveal where the economy is at the time of each FOMC meeting relative to its goals. With this in mind, we evaluate the economic projections compared to the FOMC's fed funds rate forecast projections released at the year-end FOMC meeting. We also introduce an alternative method, in which we examine the gap between the fed funds rate forecasts compared to the Fed's economic data projections. Our analysis suggests that the FOMC's December 2018 rate hike seems to be overly restrictive and inconsistent with the Fed's economic forecast.

We use forecast data since 2006, but we start our analysis in 2009 to analyze if the committee's monetary policy forecast was consistent with its growth forecasts for the same period, assuming external factors, such as trade tensions, are embedded within the forecast. In 2010 and 2011 GDP was forecast to climb 3.6% and 3.7%, respectively, while the fed funds rate was forecast to remain unchanged (median forecast of 0.1%). The Fed may have followed an accommodative policy, rather than the expected restrictive policy during this period due to painfully slow growth lingering from the Great Recession, low inflation and an expected pick-up in the unemployment rate. The FOMC also introduced several rounds of quantitative easing (QE) during this period 2009-2011 to jump start the recovery. In 2012, we find that GDP growth was expected to slow to 2.3% while the policy rate was held steady. The central bank's decision to hold rates steady in an environment with decelerating growth likely stemmed from lingering uncertainty regarding the depth of the Great Recession.

In 2015-2017 GDP growth was expected to remain between 2-2.5%, while the fed funds rate was forecasted to rise by 1.25 percentage points. The FOMC's rate decision may have been influenced by rising inflation expectations, an above average trend in the GDP growth forecast and/or a declining trend in the unemployment rate. Overall, the Fed's monetary policy stance in 2009 through 2017 seems consistent with the FOMC's economic projections.

The Summary of Economic Projections released in December 2017 forecasted GDP to rise 2.5% in 2018 after rising 2.1% in 2017, inflation to remain flat at 1.9% and the fed funds rate to rise to 2.1% (median estimate) from 1.4%. The Fed's restrictive monetary policy in 2018 may have been justified by the relatively stronger growth forecasts. Meanwhile, the SEP released in December 2018, forecast softer GDP growth and steady inflation, at 1.9%, but estimated the fed funds rate forecast to rise to 2.9% from 2.1%. In theory, the rising fed funds forecast is inconsistent with muted inflation, which never hit the Fed's 2% target, and lower GDP growth forecasts. Therefore, our analysis suggests that the December 2018 rate hike may have been overly restrictive and inconsistent, given the FOMC's economic and fed funds rate projections for 2019.

6.1 Gap Method to Analyze Inconsistent and Overly Restrictive Behavior

Next we introduce an alternative method, in which we examine the gap between the fed funds rate forecasts compared to the Fed's economic data projections. The gap method helps us characterize the FOMC's forecast behavior. A wider gap between GDP growth/inflation and the fed funds forecasts is typically associated with an accommodative policy, while a narrow gap suggests policy normalization. The gap's magnitude represents the potential change in monetary policy. Shown in Figure 1 and Figure 2, the gap widened from 2009-2015. During this period the federal funds rate bottomed, reaching the nominal lower bound (0.00%). Rather than adjusting the fed funds rate, the Fed introduced QE as an effort to stimulate the economy. Thus we assume a widening gap correlates with monetary easing, while the narrowing gap in 2015-2018 represents policy normalization. In 2018, the gap turns negative for the first time in the post-Great Recession era, as the fed funds rate was forecast to increase to a higher rate than GDP growth and inflation. With GDP growth trending downward and inflation flat, and below the Fed's 2% target, the negative gap suggests forecast inconsistency.

The Fed has cut interest rates three times in 2019, at its July, September and October meetings, which may widen the gap again. Historically, we see changes in the Fed's behavior (i.e. over

optimism) when the gap widens. This means that when the gap widens, the Fed tends to be overly optimistic, while the narrowing of the gap encourages the Fed to introduce stimulus measures and be less optimistic. Even though we do not have a fed funds forecast readily available in 2002-2004, the Fed's decision to cut rates during the period was consistent with its forecast for inflation to trend lower and GDP growth higher. In 2010-2012, the gap between the fed funds rate forecast and GDP growth and inflation widened significantly. During this period the FOMC was overly optimistic. We also see a similar trend in 2017 and 2018 when the gap began to narrow, as the Fed changed its behavior and began to have less optimism.

In late 2018, the FOMC suggested that the economy was moving more consistently with the Fed's dual-mandate objectives, decreasing downside risk. Thus the FOMC's decision to adopt a "patient" stance in early 2019 did not come as a surprise to most market participants. In light of headline inflation slipping in the first quarter amid trade-related tensions, the FOMC reduced the fed funds rate a total of 75 bps so far in 2019. In our view, the Fed's decision to hike rates in December 2018 was inconsistent and seems to be overly restrictive given the SEP for 2019 suggested a gradual slowdown in growth.

7. Conclusion: The Power of Positive Thinking Matters in Policymaking

Our study develops a new framework to characterize the FOMC's forecasting behavior. Our analysis suggests that the FOMC has become overly optimistic, as it tends to forecast a more optimistic GDP growth outlook with "controlled" inflation expectations over the 2002-2018 time period. And, outside of recessions, the FOMC never predicted negative or only slightly positive GDP growth. We find that the Blue Chip consensus forecasts differ from the FOMC's forecasts, as the Blue Chip consensus over-forecasted both GDP growth and inflation over the 2002-2018 time period. From a theoretical perspective, in the post-2001 period the Blue Chip consensus forecasts are consistent, while the FOMC's forecasts are inconsistent.

Overall, our analysis suggests that the FOMC has a tendency to forecast an overly-optimistic economic outlook that is consistent with its mandate, where the economy is growing close to potential, yet inflation is not a concern. Our analysis also suggests that the FOMC's December 2018 rate hike seems to be overly restrictive and inconsistent with the Fed's economic forecast.

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Appendix A: Data Description

FOMC Forecasts

Our analysis utilizes 24 years of historical forecast data from the Fed's Greenbook forecasts and the FOMC's Summary of Economic Projections (SEP). As the FOMC did not begin publishing the SEP until 2012, we use the forecasts compiled by the Fed staff in the Greenbook and given to the FOMC ahead of each meeting as a proxy for the FOMC's forecasts from 1992-2012. Our three variables of interest are GDP growth, inflation and the unemployment rate.

For each variable, we take the one-year ahead forecast published in the December Greenbook/SEP of the prior year. For example, we use the December 1991 Greenbook to get the full-year 1992 forecast. For GDP growth, both the Greenbook and the SEP calculate the annual growth rate as the change from the fourth quarter of the prior year to the fourth quarter of the given year. For inflation, prior to 2000 the FOMC used CPI inflation as its forecast measure, then began using the PCE deflator in 2000. We align our data with this addition, analyzing the CPI forecasts until 2000 and the PCE forecasts from 2000-2018. The Greenbook/SEP forecasts for inflation are also the change from the fourth quarter of the prior year to the fourth quarter of the given year. For the unemployment rate, the Greenbook/SEP forecasts annual values are calculated as the average for the fourth quarter of the given year. While the FOMC began publishing the SEP in 2012, it forecasted only the central tendency and range of each variable until 2015, and only began publishing the median in 2015. From 2012-2014 we use the average of the central tendency for each variable, and began using the median forecast for each variable in 2015.

For the fed funds comparisons, we use 12 years of historical fed funds forecast data from the Fed's Greenbook forecasts/Summary of Economic Projections (SEP) and the Blue Chip Economic Forecasts. The FOMC did not begin publishing the SEP until 2012, thus, we use the fed funds forecasts' compiled by the Fed staff in the Greenbook (given to the FOMC ahead of each meeting) as a proxy for the FOMC's forecasts from 2006-2012. For each year, we take the one-year ahead forecast measured as the Q4 average published in the December Greenbook/SEP of the prior year. For example, we use the December 2006 Greenbook to get the full-year 2007 forecast. Once the FOMC began publishing the SEP in 2012, we use the median year-ahead forecast from the December "Dot Plot," which displays fed funds rate projections of FOMC members.

Blue Chip Consensus Forecasts

We utilize the Blue Chip data from the monthly Blue Chip Economic Indicators publication, which includes an aggregate consensus forecast of the individual forecast submissions of more than 50 business economists.¹² We take the one-year-ahead forecast for each variable that is published in the January Blue Chip Economic Forecast publication. Using the January publication allows for the most complete year-ahead forecast, because forecasters effectively do not have information on economic conditions for the current year when preparing to submit forecasts for a January release. We compare the annual year-over-year growth rate for GDP and CPI and the full-year unemployment rate from the Blue Chip consensus forecasts to the actual data. For the Blue Chip consensus fed funds rate forecasts, we use the Blue Chip Financial Forecast publication¹³, which includes an aggregate consensus forecast of the individual forecast submissions of leading forecasters. We take the one-year ahead forecast measured as the Q4 average for fed funds rate that is published in the January Blue Chip Financial Forecast publication.

Actual Data

For the actual data, we use the calculation method closest to the method in which the forecast data are calculated. Since GDP growth data are subject to several revisions, we use the advance year-over-year growth rate estimate for each year beginning in 1996. This allows for the most accurate comparison between each forecast and actual value. Prior to 1996, the historical GDP press release archives were not readily available, thus we utilized historical GDP vintage data from the Federal Reserve Bank of Philadelphia¹⁴, calculating the annual growth rate using the average quarterly GDP figures. For years in which there were major GDP revisions, we calculate the full year growth rate using the advance figures for the current year and the first revision figures for the prior year, to account for the level shift from the GDP revision. For CPI inflation, we take the average annual percent change, and for the unemployment rate, we take the average annual rate. For the fed funds rate, we use the year-end fed funds rate for the given year.

¹² <https://irus.wolterskluwer.com/store/blue-chip-publications/>

¹³ <https://irus.wolterskluwer.com/store/product/blue-chip-financial-forecasts/>

¹⁴ <https://www.philadelphiafed.org/research-and-data/real-time-center/real-time-data/data-files/routput>

Appendix B: Data Tables

Table 1

Forecast Comparisons 2002 to 2018: FOMC vs. Blue Chip						
	FOMC			Blue Chip		
<u>Metric</u>	GDP	CPI/PCE	UR	GDP	CPI/PCE	UR
Years Over-Forecasted	69.2%	41.7%	93.3%	66.7%	53.3%	100.0%
Years Under-Forecasted	30.8%	58.3%	6.7%	33.3%	46.7%	0.0%
Average Over-Estimation	0.91%	0.44%	0.35%	0.51%	0.51%	0.48%
Average Under-Estimation	0.58%	1.05%	0.03%	0.50%	1.09%	N/A

Source: U.S. Department of Commerce, U.S. Department of Labor, Federal Reserve System, Blue Chip Economic Indicators and Authors' Calculations

Table 2

Forecast Comparisons by Fed Chair: FOMC vs. Blue Chip						
Greenspan (1987-2006)						
	FOMC			Blue Chip		
<u>Metric</u>	GDP	CPI/PCE	UR	GDP	CPI/PCE	UR
Years Over-Forecasted	38.5%	42.9%	92.9%	25.0%	57.1%	92.3%
Years Under-Forecasted	61.5%	57.1%	7.1%	75.0%	42.9%	7.7%
Average Over-Estimation	0.69%	0.44%	0.33%	0.46%	0.52%	0.42%
Average Under-Estimation	1.31%	0.82%	0.17%	1.03%	0.89%	0.57%
Bernanke (2007-2014)						
	FOMC			Blue Chip		
<u>Metric</u>	GDP	CPI/PCE	UR	GDP	CPI/PCE	UR
Years Over-Forecasted	80.0%	40.0%	100.0%	80.0%	66.7%	100.0%
Years Under-Forecasted	20.0%	60.0%	0.0%	20.0%	33.3%	0.0%
Average Over-Estimation	1.05%	0.37%	0.46%	0.53%	0.55%	0.79%
Average Under-Estimation	0.30%	0.82%	N/A	0.09%	1.85%	N/A
Yellen (2015-2017)						
	FOMC			Blue Chip		
<u>Metric</u>	GDP	CPI/PCE	UR	GDP	CPI/PCE	UR
Years Over-Forecasted	66.7%	100.0%	66.7%	100.0%	66.7%	100.0%
Years Under-Forecasted	33.3%	0.0%	33.3%	0.0%	33.3%	0.0%
Average Over-Estimation	0.75%	0.57%	0.33%	0.82%	0.37%	0.32%
Average Under-Estimation	0.40%	N/A	0.03%	N/A	0.20%	N/A

Source: U.S. Department of Commerce, U.S. Department of Labor, Federal Reserve System, Blue Chip Economic Indicators and Authors' Calculations

Table 3

Fed Funds Rate Forecast Comparisons: 2006-2018		
Metric	Blue Chip	FOMC
Total Time Period		
Percent Over-Forecast	58.3%	41.7%
Percent Under-Forecast	41.7%	58.3%
2007-2014		
Percent Over-Forecast	62.5%	37.5%
Percent Under-Forecast	37.5%	62.5%
2015-2017		
Percent Over-Forecast	66.7%	66.7%
Percent Under-Forecast	33.3%	33.3%

Source: Federal Reserve System, Blue Chip Economic Indicators and Authors' Calculations

Table 4

Forecast Comparisons 1992 to 2018: FOMC vs. Blue Chip						
Metric	FOMC			Blue Chip		
	GDP	CPI/PCE	UR	GDP	CPI/PCE	UR
Years Over-Forecasted	50.0%	47.6%	91.7%	45.0%	58.3%	95.2%
Years Under-Forecasted	50.0%	52.4%	8.3%	55.0%	41.7%	4.8%
Average Over-Estimation	0.83%	0.45%	0.36%	0.57%	0.51%	0.49%
Average Under-Estimation	1.07%	0.82%	0.10%	0.87%	0.96%	0.57%

Source: U.S. Department of Commerce, U.S. Department of Labor, Federal Reserve System, Blue Chip Economic Indicators and Authors' Calculations

Figure 1

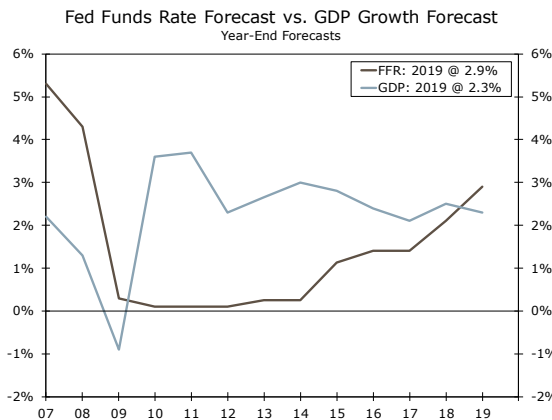
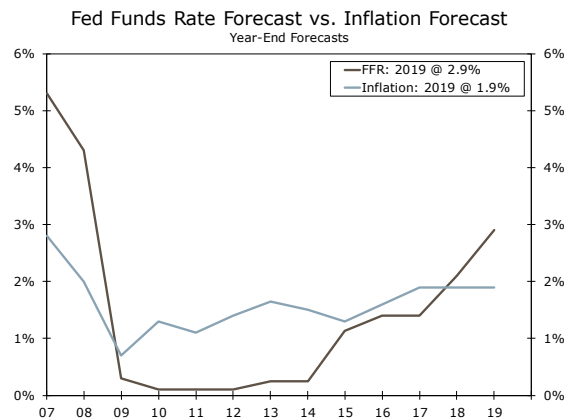


Figure 2



Source: Federal Reserve Board, IHS Markit and Authors' Calculations