Are the Fed's Inflation Forecasts Still Superior to the Private Sector's?

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Abstract: We examine the relative improvement in forecasting accuracy of the Federal Reserve (Greenbook forecasts) and private-sector forecasts (the Survey of Professional Forecasters and Blue Chip Economic Indicators) for inflation. Previous research by Romer and Romer (2000), and Sims (2002) shows that the Fed is more accurate than the private sector at forecasting inflation. In a separate line of research, Atkeson and Ohanian (2001) and Stock and Watson (2007) document changes in the forecastability of inflation since the Great Moderation. These works suggest that the reduced inflation variability associated with Great Moderation was mostly due to a decline in the variability of the predictable component inflation. We hypothesize that the decline in the variability of the predictable component of inflation has evened the playing field between the Fed and private sector and therefore led to a narrowing, if not disappearance, of the Fed's relative forecasting advantage. We find that the Fed's forecast errors remain significantly smaller than the private sector's but the gap has narrowed considerable since the mid-1980s, especially after 1994.

"…I've been in the forecasting business for 50 years. … I'm no better than I ever was, and nobody else is. Forecasting 50 years ago was as good or as bad as it is today. And the reason is that human nature hasn't changed. We can't improve ourselves."

Alan Greenspan, the Daily Show with Jon Stewart, Tuesday, September 18, 2007.

1. Introduction

Christina Romer and David Romer (2000) and Christopher Sims (2002) show that the Federal Reserve's staff forecasts of inflation are superior to the forecasts produced by commercial forecasters in the private sector[1]. Independent of those studies, there has been a number of studies showing that the economy experienced a Great Moderation starting around the mid-1980s[2]. Coinciding with that Great Moderation, the forecastability of the economy changed as well. The overall volatility of inflation has dropped, and therefore, in one sense, it is easier to forecast the average rate of inflation. But the bulk of that drop in volatility appears to have come from a drop in the volatility of the predictable component of inflation (Atkeson and Ohanian (2001), Stock and Watson (2007)). As a result, the marginal contribution of forecasters has dropped sharply since the mid-1980s. Referring to the post-1984 period, Stock and Watson (2007, p. 4) state "it has become much more difficult for an inflation forecaster to provide value added beyond a univariate model."

[1] Romer and Romer (2000) and Sims (2002) also look at the Fed's forecast errors for real output growth. The Fed's advantage in terms of real output growth forecasts appears to be smaller and less robust across forecast horizons. In an earlier version of this paper we examined the Fed's real output growth forecast errors and found similar results: the Fed did not have a clear forecast advantage across all forecast horizons prior to the Great Moderation. Therefore, the contrast between the Fed's relative forecast advantage pre- and post-Great Moderation is smaller. These results are available from the authors upon request.

[2] Although most studies focus on the decline in output variability (see Bernanke (2004), McConnell and Perez-Quiros (2000), Kim, Nelson, Piger (2004), Stock and Watson (2003) and Blanchard and Simon (2001)) Kahn, McConnell and Perez-Quiros (2002) find a break in inflation volatility in the mid-1980s as well.

We investigate whether the change in inflation forecastability that coincided with the Great Moderation has caused the Fed's forecasting advantage to decline relative to the private sector. To the extent that the Fed had an advantage in forecasting prior to the Great Moderation, that advantage was limited to the predictable component of inflation. We therefore hypothesize that the decline in the volatility of the predictable component of inflation has lead to a decline in the Fed's forecasting advantage as well. We also investigate whether there has been further decline in the Fed's relative forecasting advantage since the Fed moved toward greater transparency starting in 1994 since greater transparency provides information to the private sector.

We test these hypotheses by comparing the Federal Reserve's Greenbook forecast errors to two sets of private-sector forecast errors: The Survey of Professional Forecasters (SPF) and the Blue Chip Economic Indicators (BC) as well as a naïve forecast represented by the lagged value of inflation (random walk). We find that the Fed's forecasting advantage remains but the size of their advantage has declined significantly. Specifically, the gap between the Fed's forecast errors and the private sector's forecast errors has declined. In addition, the decline in the predictable part of inflation implies that the naïve (random walk) model produces forecasts that are statistically indistinguishable from the Fed's after 1994.

Our paper proceeds as follows. Section 2 reviews the related literature. Section 3 describes our data. Section 4 compares the Fed's root mean squared forecast errors (RMSE) over various sub-samples with the RMSEs from the private sector and naïve forecasts. Section 5 looks at whether the Fed's *relative* forecast errors have changed over various sub-samples. Section 6 looks at whether the Fed forecasts contain information not contained in private sector and naïve forecasts. Section 7 concludes.

2. Related Literature

Using data spanning the late 1960s through the early to mid 1990s, Romer and Romer (2000) and Sims (2002) show that the Federal Reserve is "better" at forecasting inflation. By "better" they mean specifically: 1) the Fed's Greenbook forecasts have lower root mean squared errors (RMSE) than the private sector and 2) given the Fed's Greenbook forecast, private sector forecasts have little or no additional explanatory power for inflation.

Romer and Romer (2000, p. 437) attribute the Fed's forecasting advantage to the fact that the "Federal Reserve commits far more resources to forecasting than even the largest commercial forecasters." Similarly, Sims' (2002) suggests two reasons for the Fed's forecasting advantage. The first is that the Fed has knowledge of its own likely policy actions and the second is that the Fed is better at collecting detailed information about current and recent movements in the economy. Sims empirical results are consistent with both explanations. Faust and Wright (2007) test Sims' second conjecture and find that for inflation, the Fed's forecasting advantage does not appear to stem from their ability to collect detailed information about the economy. Their results leave open the possibility that the Fed's forecasting advantage arises from its knowledge of its own policy actions or some other source such as superior modeling.

In a separate line of research, Atkeson and Ohanian (2001) and Stock and Watson (2007) examine changes in the forecastability of inflation after the onset of the Great Moderation in the mid-1980s. Atkeson and Ohanian find that the coefficient on unemployment in the short-run Phillips curve is significantly negative over the sample 1960-1983. After 1983 they find that the coefficient on unemployment in the short-run Phillips curve drops to zero implying that inflation is best forecasted with a random walk model. Stock and Watson find that inflation has become

both easier and more difficult to forecast. Inflation has become easier to forecast in the sense that the overall volatility of inflation has dropped and therefore so have RMSEs produced by univariate as well as Phillips-curve type forecasting models. But the relative improvement in RMSEs across these two types of models is striking. In the post-1984 sample, univariate forecasting models perform just as well as Phillips-curve models, suggesting that in the post-1984 period it is difficult for a forecaster to improve upon a simple univariate forecasting model.

The research by Atkeson and Ohanian and Stock and Watson compares the forecast performance of Phillips-curve models to time series models in which inflation depends only on its past values. Unlike our research, they do not directly compare the forecast performance of the Fed and the private sector. However, our hypothesis follows from their results combined with the results of Romer and Romer, and Sims that the Fed's forecasting advantage arises from the resources they expend on modeling and information gathering. In particular, Atkeson and Ohanian and Stock and Watson find that inflation forecasting models which rely on correlations among variables such as the Phillips curve have deteriorated in performance relative to models that rely only on past values of inflation. The large amount of resources that the Fed devotes to modeling and gathering detailed information regarding price pressures will lead to superior forecasts only if more complex, multivariate forecasting models out-perform simple univariate models. The findings of Atkeson and Ohanian and Stock and Watson suggest that after 1984 this is not the case and so it follows that the Fed's advantage in resources and information gathering no longer necessarily implies an advantage in forecasting. The private sector, which has equal access to simple univariate forecasting models, should produce forecasts of inflation that are just as accurate as the Fed's.

Closely related research by D'Agostino, et al. (2006) examines the decline in the forecast ability of the Fed and the SPF for several time series including inflation. They find a significant drop in the forecast accuracy of the Fed and the SPF relative to a naïve benchmark after 1985. However, their work differs from ours in several respects. First, their main finding, which is similar to Atkeson and Ohanian and Stock and Watson, is that models that rely on cross-correlations among variables have suffered a larger decline in forecast accuracy than models that rely on time series correlations. They conclude that this new stylized fact will need to be used to discriminate among alternative explanations of the Great Moderation.

Second, D'Agostino, et al.'s main interest is in the forecast performance of the Fed and the SPF relative to the naïve forecast. Our main concern is the forecast performance of the Fed relative to the private sector forecasts. And finally, we include the BC as well as the SPF in our study. The advantage of including the BC is that the overlap between the BC and the Fed produces much larger samples.

3. Data

In the empirical work that follows we compare the forecast errors from the Fed's Greenbook to the forecast errors generated by the median forecast from the SPF, the mean forecast from the BC and the naïve forecast.[3] The naïve forecast is simply the lagged value of inflation. The Greenbook forecasts are available monthly from 1968:11 through 1980:12 and eight times a year from 1981:01 through 2001:12 for a total of 317 observations. The SPF data are quarterly beginning in 1968:04 and continuing through the end of the Greenbook sample

[3] Blue Chip Economic Indicators defines the consensus as the mean of a group of forecasts. The SPF forecasts are available from the Federal Reserve Bank of Philadelphia web-site (http://www.philadelphiafed.org/econ/spf/index.cfm). The historical data on The Blue Chip Economic Indicators were purchased from Aspen Publishing Company.

2001:04 for a total of 133 observations. The BC data are available monthly from 1980:01 through 2001:12 for a total of 264 observations. All forecast errors are defined as "actual" minus the forecasted value where actual is the 45-day or second release of the relevant measure the price level.[4,5] We consider forecast horizons 0 through 4 quarters ahead as well as the average of all 5 forecast horizons which we call horizon 0-4.

In all of our forecast error comparisons we are interested in comparing the errors generated by different forecasters for identical quarters.[6] For example, in comparing the BC with the Fed, we consider only those forecasted quarters for which both sets of forecasts exist. The common sample for the BC and the Fed is from 1980.01 through 2001.12 and contains 176 observations. Similarly, in comparing the SPF with the Fed we consider only the forecasted quarters for which both sets of forecasts exist. The common sample for the SPF and the Fed spans 1968.11 through 2001.12 and contains 108 observations.

4. RMSE Comparison

Our purpose in this section is to compare the RMSEs for the Fed, SPF, BC and naïve forecasts of inflation over various sub-samples. The tests presented in this section address whether the Fed has a forecasting advantage relative to these comparison forecasts in any of the

[4] We use the GNP price deflator prior to 1992. Between 1992 and 1996 we use the GDP implicit price deflator and after 1996 we use the GDP price index . All real time data were obtained from the St. Louis Federal Reserve Web-site (http://alfred.stlouisfed.org/)

[5] We use the 45-day or second release data because it is the most consistently measured series over our entire sample. See Sinclair, Stekler and Kitzinger (2008). We obtained nearly identical results in an earlier version of this paper using BEA's 75-day or third release (also called first final) data.

[6] We arrange our forecast data as described in Romer and Romer (2000), pp. 431-33. The Greenbook and BC forecasts are aligned with the month that each is published. The SPF forecasts are aligned with the middle month of each quarter.

sub-samples but not across sub-samples. Section 5 addresses whether the *size* of the forecasting advantage has changed significantly across the various sub-samples.

Tables 1 through 3 show the RMSEs for the Fed, SPF, BC and naïve forecasts of inflation over various sub-samples. The full sample is 1968-2001 for the SPF and naïve forecasts and 1980-2001 for the BC[7]. We calculated the RMSE for sample splits at 1984 (pre- and post-Great Moderation, as identified by McConnell and Perez-Quiros (2000)) and 1994 (the date at which the Fed began announcing its policy changes immediately following FOMC meetings). We employed the modified Diebold-Mariano test statistic to test whether the forecast errors (RMSE) were different across forecasters.[8]

Table 1 compares the RMSEs of the Fed and the SPF. Overall, the results suggest that the Fed has significantly lower forecast errors compared to the SPF. Moreover, the Fed's forecast advantage holds in both the pre- and post-Great Moderation sub-samples, indicating that the Fed was able to maintain lower errors even though the volatility of the predictable component of inflation dropped after the Great Moderation making it "harder" to forecast inflation.

The post-announce period provides some evidence that the Fed's advantage may have narrowed. At the 0, 1 and 2 quarter ahead horizons, the Fed's errors were no longer significantly

[7] All samples end at 2001 because the Greenbook forecasts are available with a 5-year lag.

[8] According to Harvey, Leybourne and Newbold (1997), the unmodified Diebold-Mariano test statistic is "quite seriously oversized for moderate number of observations." They suggest the following modification which results in an improvement in the behavior of the test statistic for moderately-sized samples:

$$S_1^* = S_1\left(\frac{T+1-2(h+1)+h(h+1)/T}{T}\right)^{-\frac{1}{2}},\ S_1 = \frac{\bar{d}}{[\hat{V}(\bar{d})]^{1/2}}$$

where $\bar{d}$ is the mean difference of the prediction errors and $\hat{V}(\bar{d})$ is the estimated variance. The modified Diebold-Mariano test statistic is estimated with Newey-West corrected standard errors that allow for heteroskedastic autocorrelated errors.

smaller than the SPF's and at the 3 and 4 quarter horizon, the Fed's errors are only marginally smaller than the SPF's. However, the lack of significance may be due to the small sample (23 observations). In addition, the result for the combined horizons (0-4) indicate that the Fed did have significantly smaller errors overall during the post-announce period and the ratio $\mathbf{RMSE_{SPF}/RMSE_{Fed}}$ is similar in size to the combined-horizon ratios for the pre-GM and pre-announce periods.

Table 2 compares the RMSEs for the Fed and the Blue Chip (BC). For the most part, the Fed's forecast errors are significantly smaller than the BC forecast errors. The Fed maintained its advantage in the post-Great Moderation sample, at all horizons. With the exception of the 1 quarter ahead forecast, the Fed had smaller errors in the post-announce period as well. The results for the BC in the post-announce period are based on a sample that is nearly three times larger than the SPF sample over that time period and are therefore a more reliable indicator of the Fed's relative forecasting ability in the post-announce period[9]. Thus, relative to the private sector, it appears that the Fed maintains a statistically significant forecasting advantage in the post-1994 period.

Table 3 compares the RMSEs for the Fed and the naïve model. For the most part, the Fed had smaller errors compared to the naïve model except for the post-announce period. These results are consistent with Atkeson and Ohanian (2001) and Stock and Watson (2007) in the sense that the Fed's value added relative to the naïve forecast has narrowed, if not dissappeared.

[9] We also tested (but do not report) the relative forecast ability of the BC and the SPF and found that over the full sample as well as the sub-samples, the BC and SPF forecast errors are statistically indistinguishable. This result further suggests that the post-1994 RMSEs for the BC are more representative of the private sector than the SPF which has far fewer observations.

5. Relative Forecast Errors

The previous section only tests whether there is an advantage for the Fed in a given time period not across time periods. In this section we test whether the Fed's advantage has gotten smaller across time. The question remains if someone uses a private sector forecast today would they be closer to the Fed than they were 20 years ago in a statistically significant way? For example, if the absolute value of the error for the Fed was on average .33 and for the SPF was on average .50 then the gap is (.50-.33) = .17 in period 1; for period 2 if the absolute values of the errors were .20 and .35 for the Fed and the SPF, respectively then the gap is (.35-.20) = .15. We want to find out if there is a statistical difference between .17 and .15. If no, then the gap has not narrowed and if yes, the gap has narrowed in a statistically significant way and on average using private sector forecasts will be closer to the Fed's Greenbook forecast than in the earlier time period. Formally, we define the forecast error gap as follows:

$$gap_t = |\, comparison\ error_t| - |\, Fed\ error_t|, \qquad (1)$$

where *comparison error* is either the SPF, BC or naïve forecast error.

Tables 4 through 6 show the value of gap_t for various sub-samples. The third column reports the modified Diebold-Mariano test statistic for the null hypothesis that the gap was unchanged across the sample break. Table 4 presents the results for the Fed versus the SPF. For the most part, the gap between the SPF's errors and the Fed's errors dropped after each sample break suggesting a narrowing of the Fed's advantage relative to the SPF. The break at 1994 yields the most consistently significant drop in the gap although the difference in pre- and post-1994 gaps is only marginally significant at the 0, 2 and 3 quarter horizons. The post-1994

sample for the SPF is small and therefore the post-1994 results for the BC, which are based on a larger sample, are likely a better measure of private sector forecast performance.

Table 5 presents the results for the Fed versus the BC. The BC had smaller forecast errors than the Fed at the zero horizon prior to 1984 and so it is not surprising that all of the comparisons with the pre-Great Moderation period show an increase in the gap at the zero horizon. Aside from the zero horizon results, however, the gap dropped in both the post-1984 and post-1994 periods. One difference between the BC results and the SPF results is that the decline in the gap appears to have taken place earlier than the mid-1990s. The gap dropped significantly between the pre-1984 period and the period which spans 1984 through 1993 (between the onset of the Great Moderation and the start of the Fed's announcement period). Furthermore, the drop in the gap was larger after the 1984 split compared to the post 1994 period.

Table 6 presents the results for the Fed versus the naïve forecast. The gap between the naïve forecast errors and the Fed's forecast errors dropped after 1994. The decline was significant at the zero horizon where the gap fell from .44 before 1994 to .13 after 1994. The decline in the gap was marginally significant at horizons 1 and 4. The gap for the combined horizons (0-4) dropped significantly. In fact, for the combined forecast horizons (0-4), the gap between the Fed's forecast errors and the naïve forecast errors dropped from 0.69 before 1994 to 0.08 after 1994. Overall, the results in Table 6 suggest that the Fed's forecasting advantage with respect to the naïve forecast narrowed after the mid-1990s.

Figures 1 through 6 show the pair-wise comparisons of the RMSEs for the Fed and the various alternative forecasts for horizons 1 and 4[10]. The information provided by these graphs reinforces the results presented in Tables 1 through 6. In all cases, the RMSEs for both the Fed

[10]The RMSEs used in these figures were computed by taking the square root of the 4-quarter moving average of the squared forecast errors.

and the comparison forecast declined over the sample. In addition, the gap (measured by the vertical distance between the two lines) narrowed, especially in the late 1990s.

6. Do Fed Inflation Forecasts Contain Additional Information?

The above comparisons of RMSEs and absolute forecast errors can be thought of as unconditional forecast comparisons. In this section we follow the empirical methodology used by Fair and Shiller (1989) as well as Romer and Romer (2000) to measure the marginal contribution of Fed, private sector and naïve forecasts. This method involves regressing actual observations (x_t) on two (or more) forecasts (x_{ht}^{f1} and x_{ht}^{f2}):

$$x_{ht} = \delta + \gamma_1 x_{ht}^{f1} + \gamma_2 \pi_{ht}^{f2} + \nu_{ht} \qquad (2)$$

where subscript h is the forecast horizon. If $\gamma_1 = 0$ then forecast 1 has no additional information that is not contained in forecast 2 and if $\gamma_2 = 0$ then forecast 2 has no additional information that is not contained in forecast 1.

In tables 7 through 9 we present the results of our estimations of equation 2 over various sub-samples. The results for the SPF (table 7) suggest a narrowing of the Fed's forecasting advantage with respect to inflation. As was the case in our earlier tests, the narrowing appears to have taken place well after the onset of the Great Moderation. The estimates reported in table 7 show that the Fed's forecasts did not provide additional information given the SPF's forecasts of inflation after 1994, but as was the case with our analysis of RMSEs, this result may be due to the small sample (23 observations).

The results reported in table 8 for the Blue Chip are less consistent across horizons. The Fed apparently has lost an edge at horizons 3 and 4 and overall (horizons 0-4 combined) but still retains an informational advantage at the short horizons (0-2). Table 9 shows the information

content of the Fed's forecasts relative to the naïve forecasts. The Fed's forecasts contain information in all samples at all horizons except for the post-1994 sample, horizons 3 and 4 which is consistent with the BC results.

The overall fit (R^2) of these regressions declined after 1994, particularly at horizons 3 and 4. This is consistent with Stock and Watson (2007) who found that the variation in the predictable component of inflation declined after the Great Moderation.

7. Conclusion

Romer and Romer (2000) and Sims (2002) find that the Fed has a forecasting advantage with respect to inflation. We examine whether the Fed has maintained its forecasting advantage since the onset of the Great Moderation. Atkeson and Ohanian (2001), and Stock and Watson (2007) find that the volatility of the predictable components of inflation has declined after the Great Moderation. It therefore should follow that the Fed's forecasting advantage has declined as well. We find that the Fed's advantage in forecasting inflation is still significant but has narrowed. Across all forecast horizons (0-4 quarters ahead) the gap between Fed inflation forecast errors and private sector inflation forecast errors (all forecast horizons combined) dropped by roughly half after 1994. In comparison with the naïve forecast, the gap (all horizons combined) dropped by nearly 90%.

The question of why the Fed's forecasts are superior to the private sector remains open although somewhat less relevant since the Fed's superiority has narrowed. As noted above in section 2, Faust and Wright's (2007) results suggest the Fed's forecasting advantage is not solely due to its ability to assess current and recent movements in the economy. However, for the purposes of our research, the only relevant point is that the Fed's advantage must lie in its ability

to forecast the predictable component of inflation. Because that component accounts for relatively less of the overall variation in inflation, the Fed's relative advantage has shrunk. The Fed appears to be getting less bang for its buck in terms of improved forecasting accuracy relative to the private sector

Our findings may also shed light on another area of research that looks at the optimal degree of central bank transparency. Since 1994 the Federal Reserve has moved toward greater transparency and openness. One area that remains less-than-transparent, however, is the Fed's Greenbook which contains the economic forecasts that help guide Fed policy. Currently Greenbook forecasts are available with a 5-year lag.[11] Recently some economists (see Geraats (2001)) have argued that greater central bank transparency necessarily includes timely release of forecasts. As the Federal Reserve contemplates inflation targeting, it is likely that one consideration is whether to follow the central banks of England and Canada by releasing inflation forecasts. But some economists (Cukierman (2001, 2007), Ferguson (2002), and Gersbach (2003)) argue that releasing FOMC forecasts could be destabilizing. A central tenet of the non-release argument is that the Fed's forecasts contain information that is not contained in private sector forecasts. Our findings suggest that the potential destabilizing effects of releasing the Fed inflation forecasts has declined, if not disappeared, with the narrowing of the Fed's forecasting advantage.

[11] On Tuesday November 20, 2007 the Fed began releasing its FOMC forecasts 4 rather than 2, times per year. The Greenbook forecasts, which we study in this paper, differ from the FOMC forecasts. The Greenbook forecasts are prepared by the research staff of the Board of Governors about 3 workdays prior to each FOMC meeting. The FOMC forecasts are a summary (reported as a range and central tendency) of the forecasts produced by the 12 regional Federal Reserve Banks and the 7 governors of the Federal Reserve Board. See Reifschneider and Tulip (2007), Gavin and Mandal (2001) and Romer and Romer (2008) for detailed analyses of these forecasts.

Table 1
Inflation Forecast RMSE Comparison
Fed vs SPF

	horizon	RMSE Fed	RMSE SPF	Ratio $\mathbf{RMSE_{SPF}/RMSE_{Fed}}$	Modified DM	No. of Observations
Full sample	0	1.14	1.33	1.16	2.59*	108
1968-2001	1	1.50	1.77	1.18	5.25**	108
	2	1.81	2.07	1.15	4.15**	107
	3	1.82	2.12	1.17	4.47**	102
	4	1.87	2.25	1.20	6.00**	93
	0-4	1.13	1.38	1.23	6.24**	93
Pre-GM	0	1.43	1.64	1.15	1.61	56
1968-1983	1	1.89	2.24	1.18	5.27**	56
	2	2.34	2.66	1.14	3.48**	55
	3	2.42	2.79	1.15	3.40**	50
	4	2.58	3.08	1.19	4.47**	41
	0-4	1.57	1.89	1.20	4.46**	41
Post-GM	0	0.73	0.88	1.21	2.53**	52
1984-2001	1	0.90	1.06	1.19	2.12*	52
	2	0.97	1.16	1.20	2.31*	52
	3	0.90	1.17	1.29	3.08**	52
	4	1.00	1.27	1.27	4.49**	52
	0-4	0.56	0.77	1.37	4.42**	52
Pre-Announce	0	1.26	1.46	1.17	2.75**	85
1968-1993	1	1.63	1.94	1.19	5.62**	85
	2	1.99	2.28	1.14	3.95**	84
	3	2.02	2.36	1.17	4.32**	79
	4	2.09	2.53	1.21	5.87**	70
	0-4	1.25	1.53	1.22	6.08**	70
Post-Announce	0	0.56	0.62	1.10	0.16	23
1994-2001	1	0.85	0.93	1.09	0.51	23
	2	0.86	1.03	1.20	1.48	23
	3	0.82	0.96	1.18	1.77†	23
	4	0.92	1.06	1.16	1.84†	23
	0-4	0.63	0.78	1.25	2.08*	23
Post-GM & Pre-Announce	0	0.84	1.04	1.24	3.21**	29
1984-1993	1	0.93	1.16	1.25	2.19*	29
	2	1.04	1.25	1.20	1.77†	29
	3	0.97	1.31	1.35	2.56*	29
	4	1.06	1.42	1.33	4.71**	29
	0-4	0.50	0.76	1.52	4.36**	29

Note: ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 2
Inflation Forecast RMSE Comparison
Fed vs Blue Chip (BC)

	horizon	RMSE Fed	RMSE BC	Ratio $\mathbf{RMSE_{BC}/RMSE_{Fed}}$	Modified DM	No. of Observations
Full sample	0	0.89	1.01	1.13	2.70**	176
1980-2001	1	0.95	1.19	1.25	4.94**	176
	2	1.03	1.33	1.28	4.61**	176
	3	1.04	1.44	1.38	5.35**	176
	4	1.16	1.58	1.37	6.29**	172
	0-4	0.63	0.96	1.53	6.70**	172
Pre-GM	0	1.40	1.24	0.89	-0.98	34
1980-1983	1	1.21	1.62	1.33	4.58**	34
	2	1.44	1.99	1.38	3.91**	34
	3	1.37	2.10	1.53	3.91**	34
	4	1.68	2.48	1.48	4.54**	30
	0-4	0.91	1.48	1.62	3.81**	30
Post-GM	0	0.72	0.94	1.31	4.64**	142
1984-2001	1	0.88	1.07	1.21	3.52**	142
	2	0.91	1.11	1.22	3.41**	142
	3	0.95	1.23	1.30	4.26**	142
	4	1.01	1.32	1.30	5.42**	142
	0-4	0.55	0.81	1.47	6.10**	142
Pre-Announce	0	1.03	1.13	1.10	1.90†	114
1980-1993	1	1.03	1.33	1.29	5.60**	114
	2	1.15	1.48	1.29	3.90**	114
	3	1.14	1.62	1.42	4.56**	114
	4	1.29	1.81	1.40	5.63**	110
	0-4	0.66	1.05	1.60	5.81**	110
Post-Announce	0	0.56	0.74	1.31	2.24*	62
1994-2001	1	0.79	0.88	1.12	0.96	62
	2	0.77	0.97	1.27	2.79**	62
	3	0.82	1.03	1.25	3.33**	62
	4	0.88	1.07	1.22	3.51**	62
	0-4	0.58	0.78	1.34	3.96**	62
Post-GM & Pre-Announce	0	0.82	1.08	1.31	3.98**	80
1984-1993	1	0.95	1.19	1.26	3.82**	80
	2	1.00	1.21	1.20	2.38**	80
	3	1.04	1.37	1.32	3.21**	80
	4	1.11	1.48	1.34	4.51**	80
	0-4	0.53	0.83	1.57	5.27**	80

Note: ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 3
Inflation Forecast RMSE Comparison
Fed vs Naïve Model

	horizon	RMSE Fed	RMSE Naïve	Ratio $\mathbf{RMSE_{Naive}/RMSE_{Fed}}$	Modified DM	No. of Observations
Full sample	0	1.15	1.70	1.49	3.93**	316
1968-2001	1	1.56	2.02	1.30	2.44**	311
	2	1.81	2.17	1.20	1.74†	302
	3	1.88	2.29	1.22	2.23*	285
	4	1.93	2.59	1.34	3.05**	256
	0-4	1.17	1.95	1.67	4.04**	256
Pre-GM	0	1.40	2.02	1.44	2.68**	174
1968-1983	1	1.95	2.47	1.26	1.53	169
	2	2.34	2.71	1.16	0.99	160
	3	2.48	3.01	1.22	1.79†	143
	4	2.67	3.63	1.36	2.38**	114
	0-4	1.65	2.81	1.71	4.11**	114
Post-GM	0	0.72	1.22	1.69	3.87**	142
1984-2001	1	0.88	1.30	1.47	3.36**	142
	2	0.91	1.33	1.47	3.10**	142
	3	0.95	1.19	1.25	2.30*	142
	4	1.01	1.26	1.24	2.72**	142
	0-4	0.55	0.75	1.36	1.88†	142
Pre-Announce	0	1.25	1.86	1.49	3.81**	254
1968-1993	1	1.70	2.21	1.30	2.51**	249
	2	2.00	2.38	1.19	1.65†	240
	3	2.08	2.54	1.22	2.26*	223
	4	2.16	2.92	1.35	2.85**	194
	0-4	1.31	2.21	1.69	4.09**	194
Post-Announce	0	0.56	0.82	1.46	1.44	62
1994-2001	1	0.79	0.94	1.20	0.49	62
	2	0.77	1.01	1.32	1.26	62
	3	0.82	0.96	1.16	0.88	62
	4	0.88	1.06	1.21	1.88†	62
	0-4	0.58	0.73	1.26	0.88	62
Post-GM & Pre-Announce	0	0.82	1.45	1.76	3.69**	80
1984-1993	1	0.95	1.52	1.60	4.12**	80
	2	1.00	1.53	1.53	2.92**	80
	3	1.04	1.34	1.30	2.25*	80
	4	1.11	1.39	1.26	2.19*	80
	0-4	0.53	0.76	1.44	1.90†	80

Note: ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 4
Difference between the Absolute Forecast Errors (**SPF** minus Fed)

horizon	Pre-GM 1968-1983	Post-GM 1984-2001	Modified Diebold-Mariano t-stat
0	0.17	0.15	0.11
1	0.40	0.15	2.50*
2	0.35	0.15	1.66†
3	0.38	0.22	1.16
4	0.62	0.28	2.26*
0-4	0.35	0.21	1.58

	Pre-Announce 1968-1993	Post-Announce 1994-2001	Modified Diebold-Mariano t-stat
0	0.20	0.01	1.74†
1	0.34	0.04	3.15**
2	0.29	0.11	1.80†
3	0.34	0.15	1.75†
4	0.52	0.19	2.52*
0-4	0.31	0.15	1.91†

	Pre-GM 1968-1983	Post-GM & Pre-Announce 1984-1993	Modified Diebold-Mariano t-stat
0	0.17	0.27	-0.75
1	0.40	0.23	1.33
2	0.35	0.19	1.13
3	0.38	0.29	0.59
4	0.62	0.36	1.68†
0-4	0.35	0.26	0.99

	Post-GM & Pre-Announce 1984-1993	Post-Announce 1994-2001	Modified Diebold-Mariano t-stat
0	0.27	0.01	2.21*
1	0.23	0.04	1.50
2	0.19	0.11	0.62
3	0.29	0.15	1.02
4	0.36	0.19	1.42
0-4	0.26	0.15	1.19

Note: ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 5
Difference between the Absolute Forecast Errors (**Blue Chip** minus Fed)

	Pre-GM	Post-GM	Modified
horizon	1980-1983	1984-2001	Diebold-Mariano t-stat
0	-0.16	0.22	-2.33*
1	0.43	0.17	2.56*
2	0.60	0.17	2.77**
3	0.70	0.24	2.53*
4	0.94	0.31	3.02**
0-4	0.58	0.24	2.25*
	Pre-Announce	Post-Announce	Modified
	1980-1993	1994-2001	Diebold-Mariano t-stat
0	0.14	0.15	-0.02
1	0.31	0.06	3.09**
2	0.30	0.16	1.50
3	0.40	0.21	1.71†
4	0.52	0.25	2.36*
0-4	0.36	0.19	2.06*
	Pre-GM	Post-GM & Pre-Announce	Modified
	1980-1983	1984-1993	Diebold-Mariano t-stat
0	-0.16	0.27	-2.55*
1	0.43	0.26	1.57
2	0.60	0.17	2.57*
3	0.70	0.26	2.28*
4	0.94	0.36	2.67**
0-4	0.58	0.27	1.96*
	Post-GM & Pre-Announce	Post-Announce	Modified
	1984-1993	1994-2001	Diebold-Mariano t-stat
0	0.27	0.15	1.34
1	0.26	0.06	2.21*
2	0.17	0.16	0.17
3	0.26	0.21	0.50
4	0.36	0.25	1.09
0-4	0.27	0.19	1.10

Note: ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 6

Difference between the Absolute Forecast Errors (**Naïve** minus Fed)

horizon	Pre-GM 1968-1983	Post-GM 1984-2001	Modified Diebold-Mariano t-stat
0	0.43	0.32	0.59
1	0.35	0.31	0.17
2	0.26	0.26	-0.02
3	0.50	0.18	1.08
4	0.88	0.26	1.64
0-4	1.06	0.13	3.52**

	Pre-Announce 1968-1993	Post-Announce 1994-2001	Modified Diebold-Mariano t-stat
0	0.44	0.13	2.13*
1	0.41	0.05	1.81†
2	0.29	0.12	0.86
3	0.41	0.08	1.62
4	0.65	0.19	1.87†
0-4	0.69	0.08	3.23**

	Pre-GM 1968-1983	Post-GM & Pre-Announce 1984-1993	Modified Diebold-Mariano t-stat
0	0.43	0.47	-0.21
1	0.35	0.51	-0.61
2	0.26	0.37	-0.39
3	0.50	0.26	0.77
4	0.88	0.32	1.43
0-4	1.06	0.17	3.30**

	Post-GM & Pre-Announce 1984-1993	Post-Announce 1994-2001	Modified Diebold-Mariano t-stat
0	0.47	0.13	2.20*
1	0.51	0.05	2.78**
2	0.37	0.12	1.57
3	0.26	0.08	1.22
4	0.32	0.19	0.76
0-4	0.17	0.08	0.72

Note: ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 7
Tests for Additional Information: Fed vs SPF

Sample	horizon	Fed	SPF	R^2	No. of Observations
Full	0	.87** (.17)	.19 (.17)	.84	108
1968-2001	1	1.46** (.21)	-.39* (.19)	.75	108
	2	1.57** (.39)	-.59 (.42)	.63	107
	3	1.67** (.28)	-.66* (.27)	.61	102
	4	1.88** (.28)	-.81** (.29)	.65	93
	0-4	1.79** (.33)	-.81* (.34)	.83	93
Pre-GM	0	.82** (.20)	.21 (.21)	.73	56
1968-1983	1	1.48** (.26)	-.61* (.24)	.57	56
	2	1.52** (.46)	-.89† (.50)	.40	55
	3	1.56** (.30)	-.86* (.36)	.39	50
	4	1.86** (.29)	-1.30** (.40)	.45	41
	0-4	2.01** (.31)	-1.42** (.37)	.66	41
Post-GM	0	.84** (.24)	.13 (.21)	.62	52
1984-2001	1	1.00** (.23)	.03 (.20)	.56	52
	2	.85** (.25)	.15 (.25)	.50	52
	3	1.12** (.25)	-.20 (.29)	.55	52
	4	1.13** (.25)	-.34 (.32)	.50	52
	0-4	.98** (.27)	-.04 (.27)	.76	52
Pre-Announce	0	.89** (.18)	.14 (.19)	.79	85
1968-1993	1	1.49** (.21)	-.48* (.20)	.68	85
	2	1.59** (.39)	-.75 (.44)	.53	84
	3	1.68** (.28)	-.79** (.29)	.52	79
	4	1.96** (.28)	-.97** (.31)	.56	70
	0-4	1.97** (.34)	-1.09** (.36)	.78	70
Post-Announce	0	.31 (.21)	.42 (.28)	.38	23
1994-2001	1	.71† (.38)	-.26 (.41)	.17	23
	2	.94 (.64)	-.65 (.74)	.15	23
	3	.18 (.40)	.003 (.46)	.01	23
	4	-.43 (.27)	.51 (.38)	.08	23
	0-4	.25 (.24)	.06 (.26)	.07	23
Post-GM & Pre-	0	1.14** (.31)	-.31 (.32)	.45	29
Announce	1	1.13** (.27)	-.03 (.23)	.45	29
1984-1993	2	.84** (.27)	.11 (.34)	.33	29
	3	1.32** (.32)	-.51 (.39)	.43	29
	4	1.61** (.22)	-.98* (.31)	.50	29
	0-4	1.42** (.29)	-.62* (.29)	.72	29

Note: Newey-West standard errors are in parentheses next to the coefficients, ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 8
Tests for Additional Information: Fed vs BC

Sample	horizon	Fed	SPF	R^2	No. of Observations
Full	0	.64** (.12)	.38** (.15)	.89	176
1980-2001	1	1.01** (.13)	-.04 (.16)	.86	176
	2	1.11** (.18)	-.20 (.20)	.80	176
	3	1.17** (.19)	-.25 (.21)	.79	176
	4	1.04** (.25)	-.17 (.21)	.66	172
	0-4	1.02** (.17)	-.11 (.17)	.92	172
Pre-GM	0	.21 (.20)	1.00** (.26)	.85	34
1980-1983	1	1.19** (.28)	-.29 (.41)	.85	34
	2	1.27** (.37)	-.43 (.57)	.79	34
	3	1.55** (.37)	-.90 (.61)	.80	34
	4	1.29† (.72)	-.54 (.93)	.59	30
	0-4	1.11** (.27)	-.25 (.31)	.91	30
Post-GM	0	.88** (.10)	.11 (.12)	.70	142
1984-2001	1	.92** (.16)	.09 (.16)	.56	142
	2	1.03** (.24)	-.04 (.23)	.55	142
	3	1.13** (.23)	-.25 (.24)	.52	142
	4	1.04** (.27)	-.20 (.29)	.48	142
	0-4	1.00** (.25)	-.07 (.25)	.77	142
Pre-Announce	0	.61** (.16)	.41* (.20)	.86	114
1968-1993	1	1.14** (.16)	-.22 (.22)	.84	114
	2	1.16** (.20)	-.29 (.25)	.76	114
	3	1.23** (.21)	-.35 (.25)	.76	114
	4	1.17** (.27)	-.33 (.26)	.60	110
	0-4	1.08** (.18)	-.22 (.18)	.92	110
Post-Announce	0	.76** (.13)	.22 (.26)	.58	62
1994-2001	1	.71** (.24)	-.22 (.32)	.23	62
	2	1.10** (.37)	-.63 (.39)	.22	62
	3	.62 (.39)	-.19 (.41)	.07	62
	4	.06 (.33)	.08 (.37)	.01	62
	0-4	.87 (.34)	-.38 (.31)	.20	62
Post-GM & Pre-	0	.98** (.13)	-.12 (.21)	.56	80
Announce	1	1.10** (.20)	-.11 (.23)	.44	80
1984-1993	2	.96** (.28)	-.02 (.31)	.36	80
	3	1.24** (.26)	-.52 (.31)	.38	80
	4	1.40** (.32)	-.77† (.41)	.39	80
	0-4	1.05** (.26)	-.26 (.27)	.66	80

Note: Newey-West standard errors are in parentheses next to the coefficients, ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Table 9
Tests for Additional Information: Fed vs Naive

Sample	horizon	Fed	SPF	R^2	No. of Observations
Full	0	.90** (.08)	.16* (.07)	.85	316
1968-2001	1	.93** (.12)	.14** (.09)	.72	311
	2	.88** (.19)	.17 (.20)	.63	302
	3	.96** (.15)	.13 (.16)	.61	285
	4	1.12** (.15)	.01 (.13)	.59	256
	0-4	.96** (.12)	.10 (.11)	.82	256
Pre-GM	0	.87** (.12)	.16† (.08)	.76	174
1968-1983	1	.81** (.14)	.11 (.16)	.53	169
	2	.68** (.22)	.14 (.23)	.36	160
	3	.81** (.18)	.04 (.16)	.32	143
	4	.90** (.23)	-.15 (.13)	.22	114
	0-4	.74** (.17)	.08 (.14)	.49	114
Post-GM	0	.91** (.08)	.09 (.08)	.70	142
1984-2001	1	.97** (.12)	.03 (.08)	.56	142
	2	1.12** (.15)	-.15 (.10)	.56	142
	3	.87** (.16)	.04 (.10)	.51	142
	4	.80** (.18)	.08 (.12)	.48	142
	0-4	.89** (.11)	.03 (.06)	.77	142
Pre-Announce	0	.90** (.09)	.15* (.07)	.80	254
1968-1993	1	.91** (.12)	.12 (.14)	.64	249
	2	.80** (.19)	.17 (.20)	.51	240
	3	.91** (.15)	.13 (.15)	.50	223
	4	1.09** (.17)	.005 (.13)	.46	194
	0-4	.92** (.13)	.10 (.12)	.74	194
Post-Announce	0	.78** (.11)	.18 (.12)	.60	62
1994-2001	1	.60** (.17)	.05 (.16)	.23	62
	2	.70** (.25)	-.15 (.22)	.18	62
	3	.44 (.30)	.01 (.23)	.06	62
	4	.18 (.23)	-.16 (.17)	.03	62
	0-4	.51**(.19)	-.0002 (.13)	.17	62
Post-GM & Pre-Announce	0	.90** (.10)	.02 (.12)	.56	80
	1	1.05** (.15)	-.04 (.09)	.44	80
1984-1993	2	1.09** (.19)	-.20† (.12)	.38	80
	3	.85** (.18)	.03 (.11)	.35	80
	4	.78** (.22)	.11 (.15)	.35	80
	0-4	.81** (.13)	.02 (.07)	.65	80

Note: Newey-West standard errors are in parentheses next to the coefficients, ** denotes significance at 1%, * denotes significance at 5%, † denotes significance at 10%

Figure 1: Fed vs SPF
1-quarter ahead forecast

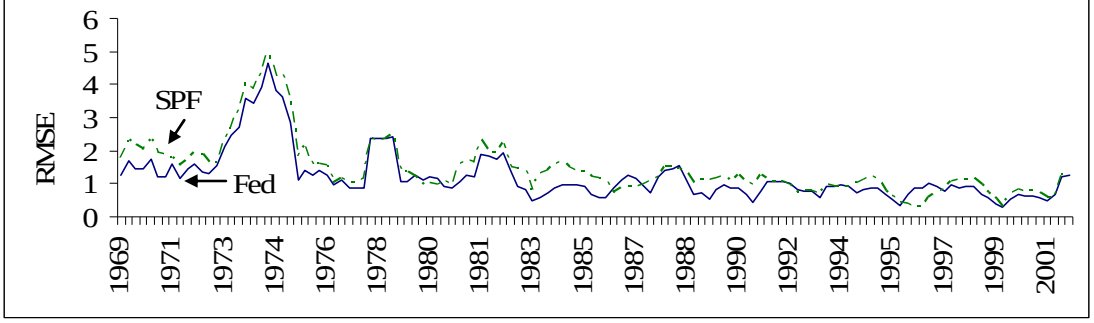
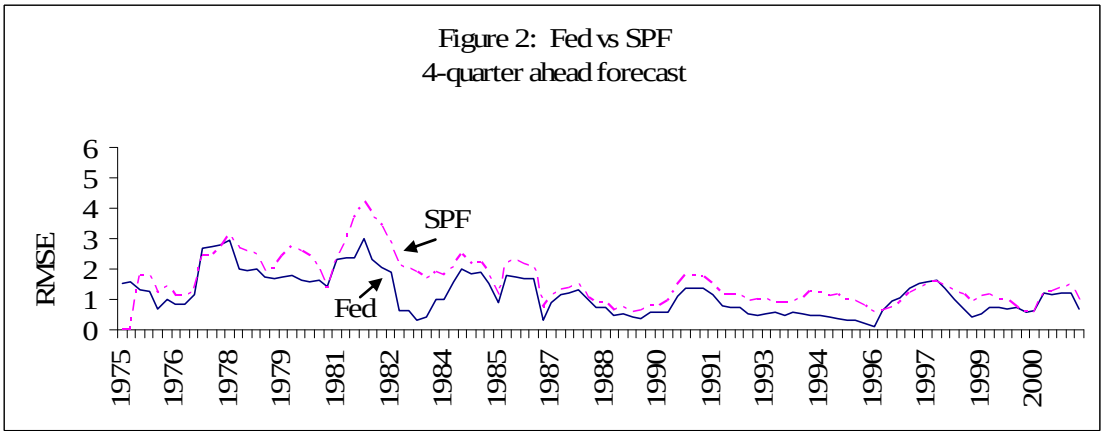


Figure 2: Fed vs SPF
4-quarter ahead forecast



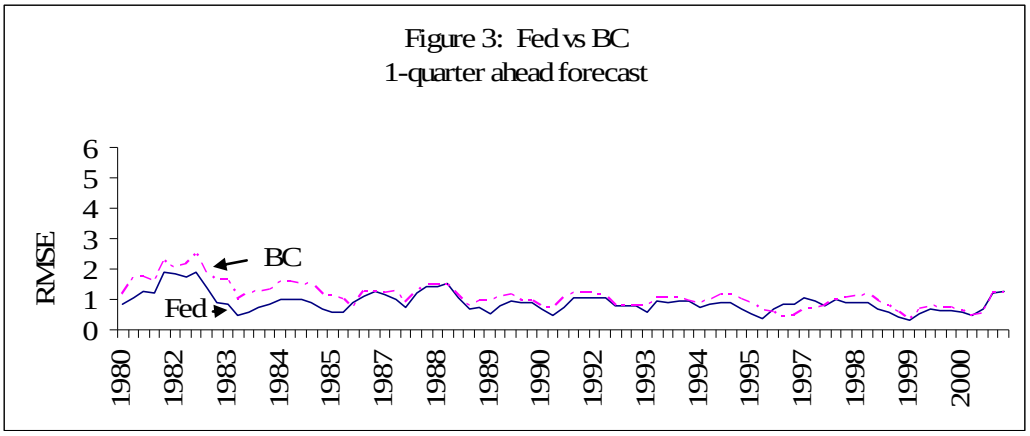


Figure 3: Fed vs BC
1-quarter ahead forecast
RMSE
6
5
4
3
2
1
0
BC
Fed
1980
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1998
1999
2000

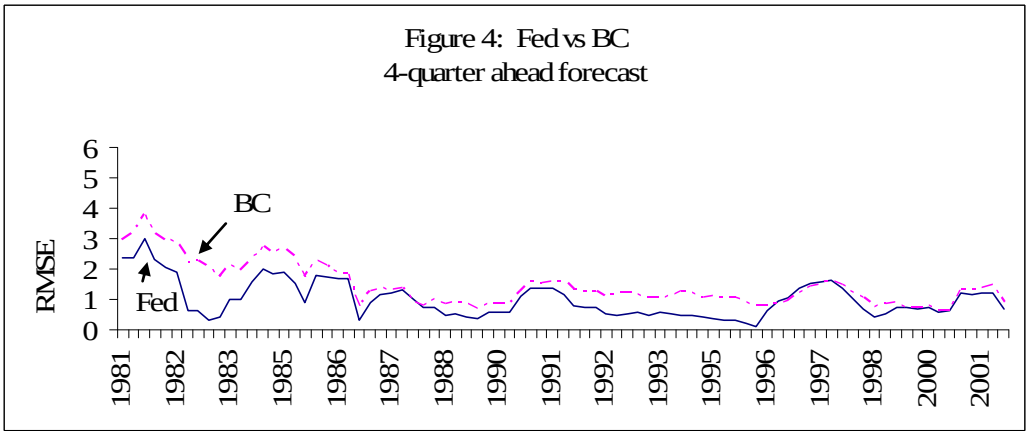
Figure 4: Fed vs BC
4-quarter ahead forecast
RMSE
6
5
4
3
2
1
0
BC
Fed
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1998
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2001

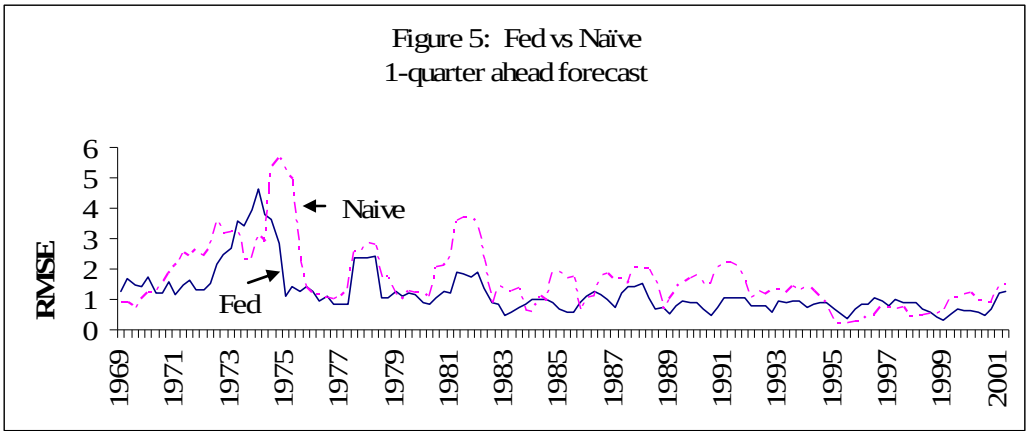
Figure 5: Fed vs Naïve
1-quarter ahead forecast
RMSE
6
5
4
3
2
1
0
Naive
Fed
1969
1971
1973
1975
1977
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1983
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1987
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1995
1997
1999
2001

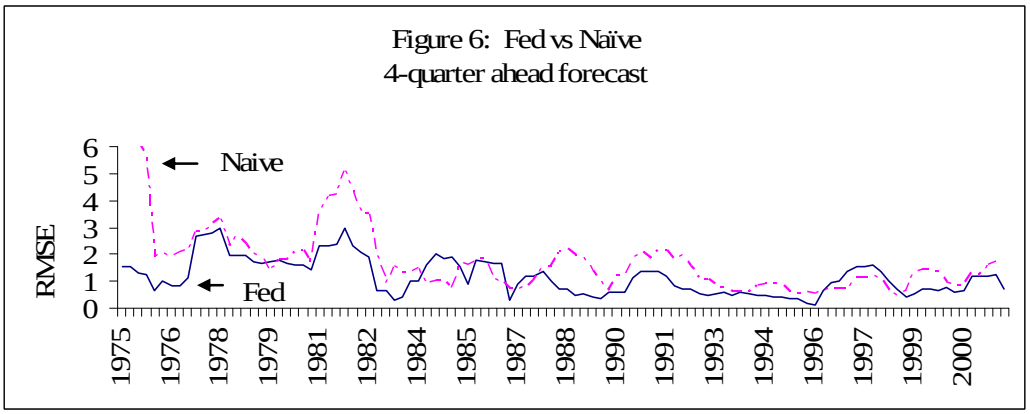
Figure 6: Fed vs Naïve
4-quarter ahead forecast
RMSE
6
5
4
3
2
1
0
Naive
Fed
1975
1976
1978
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1999
2000

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