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FOMC forecasts and economic policy uncertainty

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Abstract

This paper investigates the influence of economic policy uncertainty on Federal Open Market Committee (FOMC) meeting participants' economic forecasts. We find evidence that during periods when the public had increased uncertainty about economic policy there was little change in the dispersion of views by FOMC meeting participants about the future path of inflation, consistent with increased emphasis on inflation objectives prior to formal inflation targeting. In contrast, there was increased dispersion of FOMC unemployment rate forecasts.

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1.Introduction

The end of the relatively benign macroeconomic conditions of the Great Moderation has increased interest in how monetary policy operates during periods of heightened economic uncertainty. Theoretical work (Riboni and Ruge-Murcia 2008) suggests that heightened uncertainty about the future state of the economy causes monetary policy committees to change policy less frequently.[1] Monetary policy inertia can decrease social welfare since a well-established result is that the public's uncertainty about the government's economic policies negatively impacts aggregate demand, especially investment spending, lowering output growth and inflation and increasing unemployment (Bloom 2009, Bachman *et al.* 2013, Baker *et al.* 2016, Alexopoulos and Cohen 2009, Jurado *et al.* 2015). Reinforcing the possibility of lower social welfare is evidence that monetary policy is less effective when the public's uncertainty about economic policies is higher (Bloom *et al.* 2007, Bloom 2009, Vavra 2014, Tillman 2020).

While the policy inertia of monetary policy committees during periods of uncertainty is potentially important, there is no empirical work we are aware of that studies how policy uncertainty affects monetary policy committee deliberations. In the case of the U.S., one input in monetary policy deliberations is the individual economic forecasts of meeting participants of the monetary policy committee of the Federal Reserve, the Federal Open Market Committee (FOMC).[2] Individual participant forecasts are prepared prior to the February and July meetings of the FOMC. They prepare inflation, real GDP growth rate and unemployment rate forecasts at the February meeting for the current year (three-quarter ahead) and two sets of forecasts at the July meeting, one updating the current year forecasts made in February (one-quarter ahead), and the other for the following year (five-quarter ahead). All forecasts are conditional on each participant's preferred monetary policy is followed over the forecast horizon.

Eichler and Lahner (2014) show that dissent voting on the FOMC in favor of countercyclical policy is positively related to the dispersion of individuals' forecasts. The relevance of this result for the analysis of monetary policy deliberations during periods of heightened policy uncertainty depends on if there is a link between policy uncertainty and the dispersion of FOMC forecasts. Furthermore, analysis of forecast dispersion can determine which indicators experience the most change in forecast dispersion as economic policy uncertainty increases. This would suggest if the disagreement on the FOMC is more related to forecasts of inflation or real economic activity and which are more important in explaining policy inertia.

The purpose of this paper is to study the link between economic policy uncertainty, measured by the policy uncertainty index developed in Baker *et al.* (2016), and the dispersion of FOMC meeting forecasts. We find evidence that an increase in economic policy uncertainty is associated with increased dispersion of FOMC unemployment forecasts and little evidence that

[1] The result is derived from a dynamic voting game between committee members that have uncertainty over future states of the economy and the associated policy preferences of committee members, consistent with the economic policy uncertainty we consider in this paper.

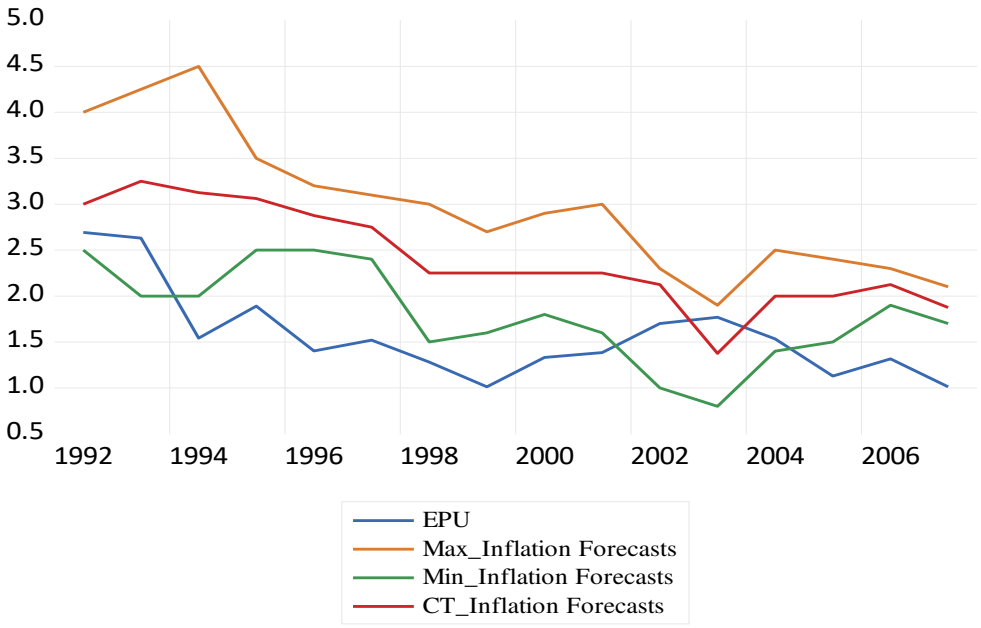
[2] The FOMC consists of members of the Board of Governors, the New York Federal Reserve Bank president and four other presidents of Federal Reserve banks on a rotating basis. In addition to the members of the FOMC, the non-member Federal Reserve Bank presidents participate in FOMC meetings and prepare forecasts. The Chair of the Board of Governors has not prepared such forecasts.

output growth and inflation forecast dispersion are related to policy uncertainty, the latter result consistent with increased implicit inflation targeting over the sample period (1992-2007).[3] Distinguishing between the forecast dispersion of members of the Board of Governors and presidents of Federal Reserve Banks, we find little evidence that the results vary across these groups. Disaggregating the economic policy uncertainty measure into monetary policy uncertainty and fiscal policy uncertainty, we find that the results are driven mainly by the public's uncertainty about monetary policy, consistent with a high level of central bank independence.

2. Results

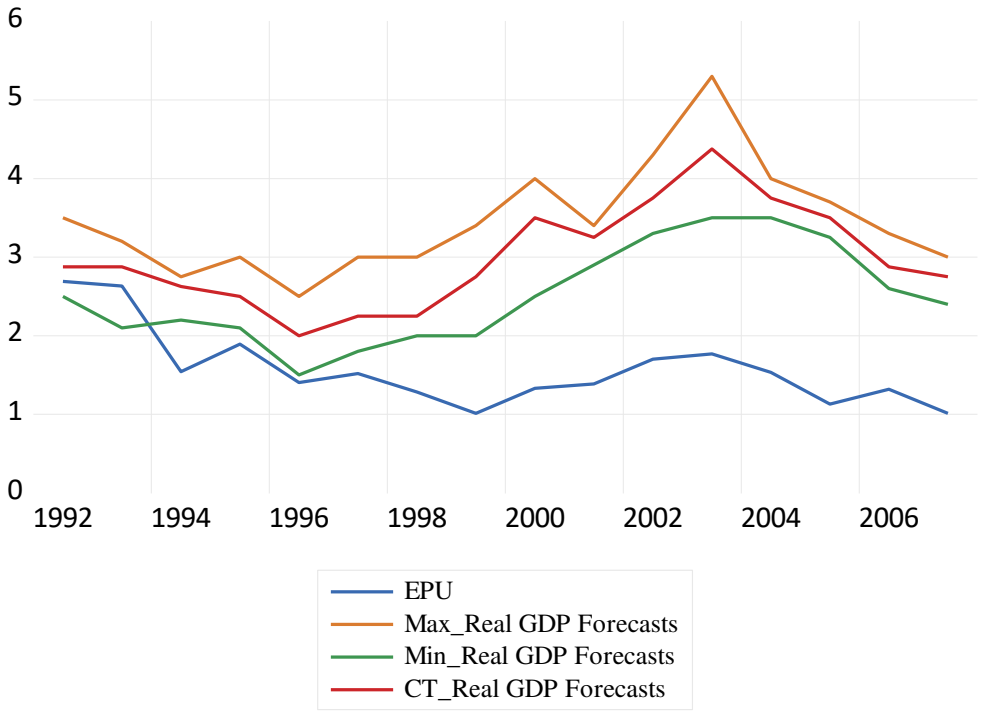
We first investigate if economic policy uncertainty by the private sector affects the dispersion of FOMC meeting forecasts, measured by the absolute difference of an individual participant's forecast and the midpoint of the central tendency of committee meeting forecasts of inflation, real GDP growth rate and the unemployment rate. The central tendency is the trimmed range of forecasts after the three highest and three lowest forecasts are omitted. Figure 1 shows the behavior of the midpoint of the central tendency and range of inflation, real GDP growth and unemployment rate forecasts and the economic policy uncertainty index[4]. The midpoint of the central tendency of inflation forecasts decreases over the sample period, converging to 2% by 2004. The economic policy uncertainty index trends downward from the beginning of the sample until 1999 and again after 2003 and increases from 1999 to 2003. Periods of declining policy uncertainty are generally associated with a narrower range of forecasts for each indicator and the range of forecasts increase during the period where policy uncertainty is increasing.

Figure 1: EPU, Maximum, Minimum and Central Tendency of Inflation, Real GDP Growth and Unemployment Rate Forecasts



[3] Currently, the last meeting for which individual FOMC forecasts data are available is July 2007.

[4] The forecasts are 5-quarter ahead and the EPU index is scaled by 1/50. The 1-quarter ahead and 3-quarter ahead forecast have similarly patterns and are not reported here to save space.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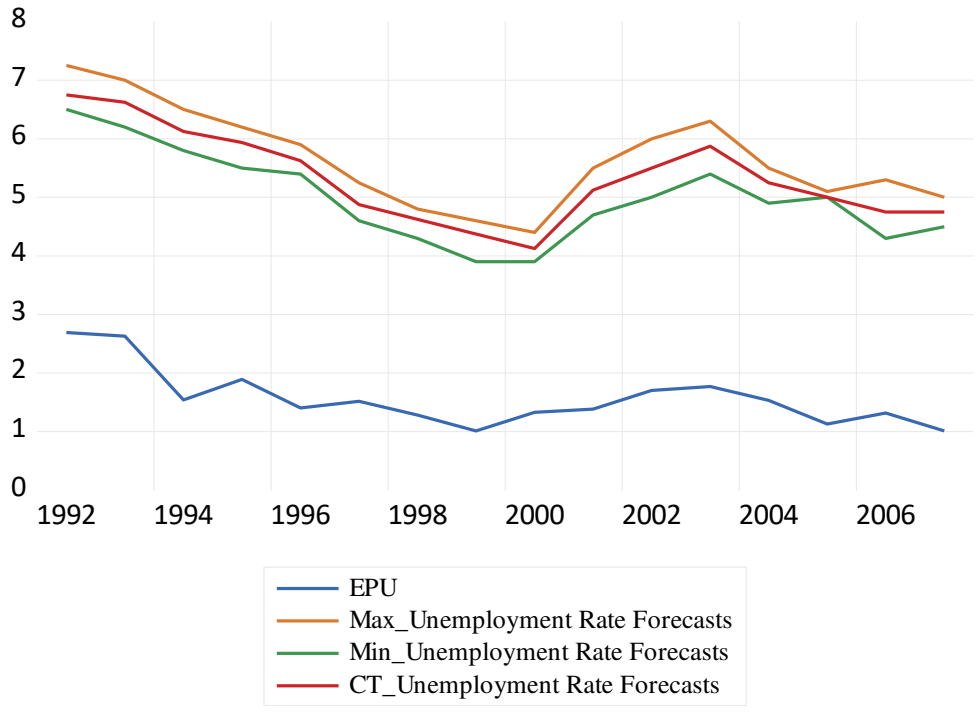
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Let $E_t^i y_{t+h}$ denote member i's forecast at meeting t, where y is the inflation rate, real GDP growth rate or unemployment rate, and h is the forecast horizon (1, 3, or 5-quarter).[5] The midpoint of the central tendency, $E_t^{ct} y_{t+h}$, is calculated from the range of FOMC forecasts reported in the Monetary Policy Report submitted to the Congress.[6] For the FOMC meetings that are held at the end of a month, such as the meeting on January 30-31, 2007, we use the current month measure of economic policy uncertainty. But for FOMC meetings that are held at the beginning of a month, such as meeting on February 4-5, 1992, we use the previous month measure of economic policy uncertainty. In addition, we include time dummies indicating the year a forecast is made to control for possible structural changes or productivity shocks. The equation we estimate is

$$\left|E_t^i y_{t+h} - E_t^{ct} y_{t+h}\right| = \beta_0 + \beta_1 EPU_t + \beta_2 D_t + \varepsilon_t^i, \quad (1)$$

where $EPU_t$is the economic policy uncertainty measure developed by Baker, et al. (2016) and $D_t$is the time dummy. The *EPU* variable is an index constructed from three types of components: the frequency of articles in ten leading U.S. newspapers that contain mentions of words related to monetary, fiscal and regulatory policy uncertainty; the provisions of the federal tax code that are temporary and subject to extension; and the private sector forecasts of the Consumer Price Index and government purchases at the federal, state and local levels, taken from the Federal Reserve Bank of Philadelphia.[7] Given the linkage between monetary and fiscal policy through the government budget constraint and the potential effect of government regulation on structural indicators relevant to monetary policy, such as the natural rate of unemployment, this measure of policy uncertainty should be reflected in monetary policy uncertainty. In addition to *EPU*, we consider more focused measures of monetary and fiscal policy uncertainty below.

The results are reported in Table 1. The coefficient on *EPU* is positive at all forecast horizons, meaning that an increase in the public's uncertainty of government economic policy is associated with a higher degree of forecast dispersion among FOMC meeting participants. However, only the unemployment rate forecasts are statistically significant at all forecast horizons. The coefficients on the unemployment rate forecasts are statistically significant at the 1% level at the one-quarter and five-quarter horizons and at the 10% level at the three-quarter horizon. The coefficient on the inflation forecast is statistically significant only at the one-quarter horizon and the coefficient on the real GDP growth rate forecast is statistically significant only at the three-quarter horizon. The results suggest that increased uncertainty mainly increases the dispersion of FOMC forecasts of the unemployment rate and less of an effect on the dispersion of inflation and real GDP forecasts. The lack of statistical significance of inflation forecasts at the longer forecast horizons is consistent with the increased emphasis on inflation during the sample period. By doing so, the FOMC was supporting the effort to convince the private sector of the Fed's emphasis to maintain long run inflation at a low level, finally made explicit with the declaration of an inflation target in 2012.[8] Since FOMC member forecasts are made under the

[5] Data source: https://www.philadelphiafed.org/research-and-data/real-time-center/monetary-policy-projections/
[6] Data source: https://www.federalreserve.gov/monetarypolicy/mpr_default.htm
[7] For more details in the construction of the index see the online appendix of Baker *et al.* (2016), https://www.policyuncertainty.com/us_monthly.html .
[8] Federal Reserve Bank of St. Louis president James Bullard suggests the Federal Reserve had an implicit inflation target of 2% by 1995. See Bullard (2018).

assumption that each member's preferred monetary policy is followed, lack of statistical significance suggests that even as the public's economic policy uncertainty increases the meeting participants do not disagree more about the ability of the Fed to attain the implicit inflation target. However, members may disagree about the underlying pressures on inflation or relative weighting of the inflation and unemployment objectives over the forecast horizons and thus on the preferred monetary policies. Different preferred monetary policies are associated with more disagreement in member forecasts of the path of unemployment and may account for policy inertia.

Table 1: Deviation of individual FOMC member forecast from the midpoint of central tendency including time dummy: all FOMC participants

	Inflation Rate			Real GDP Growth			Unemployment Rate		
Horizon	h=1	h=3	h=5	h=1	h=3	h=5	h=1	h=3	h=5
β_0	0.0687**	0.203***	0.0696	0.145***	0.116*	0.137***	0.0147	0.0681***	0.0244
	(0.029)	(0.068)	(0.043)	(0.046)	(0.063)	(0.048)	(0.022)	(0.025)	(0.036)
β_1	0.000823**	0.000271	0.00115	0.000531	0.00148***	0.000552	0.000902***	0.000505*	0.00126***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
# obs.	270	273	270	270	273	270	270	273	270
adj.R^2	0.070	0.006	0.143	0.008	0.108	0.163	0.096	0.139	0.102

Notes: The dependent variable is the deviation of individual FOMC member forecast from the midpoint of central tendency. β_0 is the coefficient on constant and β_1 is the coefficient on EPU. The robust clustered standard errors are reported in parenthesis. A significance level of 1%, 5% and 10% is indicated by ***, **, and *, respectively.

These results are robust to measures of committee meeting forecasts other than the midpoint of the central tendency, the mean FOMC member forecasts and the Board of Governors Staff forecasts. The effects of economic uncertainty on dispersion of individual FOMC meeting participant forecasts from the mean FOMC meeting forecasts or Staff forecasts are mainly the result of greater unemployment rate forecast dispersion, however the coefficient on the five-quarter inflation are positive and statistically significant as well. These results are available from the authors on request.

Next, we study if there are differences between subgroups of FOMC meeting participants by comparing the presidents of Federal Reserve Banks and members of the Board of Governors in terms of their forecast dispersion and relationship with economic policy uncertainty. We introduce a dummy variable in equation (2), $President_t^i$, which equals to one if member *i* is a regional bank president at meeting *t* and zero otherwise. In addition, we include an interaction term for regional bank president status and economic uncertainty:

$$|E_t^i y_{t+h} - E_t^{ct} y_{t+h}| = \beta_0 + \beta_1 EPU_t + \beta_2 President_t^i + \beta_3 President_t^i * EPU_t + \beta_4 D_t + \varepsilon_t^i. \quad (2)$$

The results are reported in Table 2. The results regarding the coefficients on economic uncertainty are similar to those reported in Table 1, except that the coefficients on the five-quarter real GDP growth rate is statistically significant, and the statistical significance of unemployment rate forecasts decrease at the one and five-quarter horizons. There is little evidence that the dispersion of regional bank presidents' forecasts with the central tendency is different from the dispersion of members of the Board of Governors from the central tendency,

as the coefficient on $President_t^i$ is statistically insignificant in eight of nine regressions. The coefficient on the interaction term is also generally statistically insignificant, suggesting that the effect of uncertainty on forecast dispersion is similar for both regional bank presidents and members of the Board of Governors. Only at the one-quarter horizon for inflation and five-quarter horizon for real GDP, *EPU* increases the presidents' forecast dispersion by a smaller magnitude compared with the governors, but the coefficients on these variables are only marginally statistically significant. An analysis of voting and non-voting FOMC meeting participants' forecast dispersion, available from the authors on request, yields similar results, so the results in Table 1 do not seem to be driven by these subgroups of FOMC members.[9]

Table 2: Deviation of individual FOMC member forecast from the midpoint of central tendency including time dummy: Presidents vs. Governors

	Inflation Rate			Real GDP Growth			Unemployment Rate		
Horizon	h=1	h=3	h=5	h=1	h=3	h=5	h=1	h=3	h=5
β_0	0.0223	0.148*	0.0662	0.0777	0.130*	0.0307	0.0147	0.0630*	0.0361
	(0.040)	(0.085)	(0.067)	(0.069)	(0.074)	(0.072)	(0.034)	(0.032)	(0.050)
β_1	0.00144***	0.000620	0.000915	0.00137	0.00159**	0.00168**	0.000966**	0.000621*	0.00113*
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
β_2	0.0676	0.0738	0.00303	0.0980	-0.0161	0.153**	0.000404	0.00795	-0.0170
	(0.047)	(0.051)	(0.086)	(0.086)	(0.056)	(0.077)	(0.034)	(0.028)	(0.053)
β_3	-0.000905*	-0.000467	0.000374	-0.00123	-0.000197	-0.00164*	-0.0000984	-0.000176	0.000198
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
# obs.	270	273	270	270	273	270	270	273	270
adj.R^2	0.071	0.007	0.141	0.007	0.110	0.169	0.091	0.136	0.095

Notes: The dependent variable is the deviation of individual FOMC member forecast from the midpoint of central tendency. β_0 is the coefficient on constant, β_1 the coefficient on EPU, β_2 is the coefficient on the president dummy and β_3 the coefficient on the interaction term of EPU and the president dummy. The robust clustered standard errors are reported in parenthesis. A significance level of 1%, 5% and 10% is indicated by ***, **, and *, respectively.

Finally, we consider disaggregated policy uncertainty measures developed by Baker, et al. (2016) to investigate whether monetary policy and fiscal policy uncertainty affect FOMC forecast dispersion differently. We estimate equation (3), where *MPU* and *FPU* denote monetary policy uncertainty and fiscal policy uncertainty, respectively:

$$|E_t^i y_{t+h} - E_{t+h}^{ct}| = \beta_0 + \beta_1 MPU_t + \beta_2 FPU_t + \beta_3 D_t + \varepsilon_t^i. \quad (3)$$

[9] Most of the coefficients on voting status and the interaction of economic policy uncertainty and voting status are statistically insignificant. For the cases of one quarter real GDP growth and three-quarter unemployment growth, the coefficient on the voting status variable (1 if a voter and 0 if a non-voter) is negative and significant at the 5% level for real GDP growth forecasts and at the 10% level for unemployment forecasts. The interaction terms of these forecasts and uncertainty are positive and significant at the 5% level. While these results suggest voting members' forecasts of one quarter real GDP growth and three-quarter unemployment are less dispersed from the midpoint of the central tendency, all the other results suggest no difference in the forecasts of voters and voters regarding forecast dispersion.

The measures for monetary and fiscal policy uncertainty are based solely on newspaper mentions of terms related to monetary and fiscal policy uncertainty, similar to the news-based component of the *EPU* index.[10] The results are reported in Table 3. The coefficient on monetary policy uncertainty is positive and the coefficient on fiscal policy uncertainty is negative for one-quarter inflation forecasts. The magnitude of the coefficient on monetary policy uncertainty is marginally larger and suggests that the increased one-quarter inflation forecast dispersion associated with the public's policy uncertainty results from the effect of monetary policy uncertainty being larger than the effect of fiscal policy uncertainty. The coefficients of monetary policy uncertainty are positive and statistically significant for one and five-quarter unemployment forecasts, while the coefficients on fiscal policy uncertainty are negative and none are statistically significant. Thus, the result that increased policy uncertainty is associated with increased dispersion of FOMC unemployment forecasts seems to be driven by monetary policy uncertainty. The only coefficient that is statistically significant for real GDP growth forecasts is the positive coefficient on fiscal policy uncertainty for five-quarter real GDP growth forecasts.

Table 3: Deviation of individual FOMC member forecast from the midpoint of central tendency including time dummy: monetary vs. fiscal policy uncertainty

	Inflation Rate			Real GDP Growth			Unemployment Rate		
Horizon	h=1	h=3	h=5	h=1	h=3	h=5	h=1	h=3	h=5
β_0	0.110***	0.224***	0.0415	0.117***	0.162***	0.118***	0.0555***	0.0794***	0.0728**
	(0.030)	(0.060)	(0.034)	(0.042)	(0.060)	(0.038)	(0.010)	(0.021)	(0.029)
β_1	0.00105***	-0.000561	-0.0000987	0.000352	0.000777	-0.00111	0.000767*	0.000308	0.00135**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
β_2	-0.000996***	0.000376	0.00184	0.000388	0.000277	0.00193**	-0.000595	-0.0000704	-0.000809
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
# obs.	270	273	270	270	273	270	270	273	270
adj.R^2	0.036	0.019	0.053	0.062	0.133	0.181	0.071	-0.020	0.061

Notes: The dependent variable is the deviation of individual FOMC member forecast from the midpoint of central tendency. β_0 is the coefficient on constant, β_1 the coefficient on MPU, β_2 is the coefficient on FPU. The robust clustered standard errors are reported in parenthesis. A significance level of 1%, 5% and 10% is indicated by ***, **, and *, respectively.

3. Conclusion

We find that the public's uncertainty about economic policy is associated with increased dispersion of individual FOMC forecasts of economic activity, especially unemployment, and little evidence such uncertainty is related to inflation forecast dispersion. The results suggest that during periods when the public had increased uncertainty about economic policy there was little change in the dispersion of views by FOMC meeting participants about the future path of inflation beyond one quarter, consistent with increased emphasis on inflation objectives prior to

[10] For more detail about the construction of these indices, see the online appendix of Baker *et. al* (2016), https://www.policyuncertainty.com/categorical_terms.html.

formal inflation targeting during the sample period. In contrast, during periods when the public had increased uncertainty about economic policy there was increased dispersion of FOMC unemployment rate forecasts, consistent with differences in preferred monetary policies of FOMC members to attain inflation objectives. The results are consistent with the interpretation that infrequent changes in monetary policy by the FOMC were caused mainly by policy disagreements reflected in the dispersion of unemployment rate forecasts. The results are not driven by whether the meeting participants were members of the Board of Governors or presidents of the Federal Reserve banks. We also find that the public's uncertainty regarding monetary policy account for the results, instead of uncertainty regarding fiscal policy, consistent with a high level of central bank independence.

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