Research Proposal: Incorporating the Textual Information of FOMC Meetings in Measuring Monetary Shocks

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Research Question: How can we incorporate anticipatory information that the Federal Reserve has in the measure of monetary shocks?

Monetary policies implemented by the Federal Reserve (Fed) have a significant impact on the real economy. When studying the responses of macroeconomic variables (such as real output, inflation, and employmnt) to shocks in monetary policies, the validity of the measure of these shocks is crucial. The typical traditional measure of monetary policy, the federal funds rate, has two major flaws. One is the endogenous movements. The federal funds rate moves a lot along with the economic conditions, especially when the Federal Reserve was not closely targeting the federal funds rate. This endogeneity gives rise to invalid estimation of the effects of monetary policies on macroeconomic variables.

To overcome this problem, one might use the Federal Reserve's targets for the funds rate or non-borrowed reserves as the measure of monetary policies, since the target should not be affected by the economic conditions. However, another problem is anticipatory movements. Based on its information of the current and past economic conditions, the Federal Reserve tries to anticipate the future movement of the economy and make countercyclical targeted funds rate or non-borrowed reserves to smooth out the

fluctuations in macroeconomic variables. Again, biased estimation emerges if the countercyclical actions are common. For example, when the growth of real output slows down, the Federal Reserve sees the potential of a recession in the future, so it cuts down the intended funds rate. Then if the recession comes in the future, and although it's moderated by the anticipatory action of the Federal Reserve, the growth of output still slows down. In this case a regression would fail to reveal the negative relationship between the interest rate and the growth rate of output.

Nowadays macroeconomics researchers use the measure invented by Romer and Romer (2004), which avoids the anticipatory movements by using the residual of the regression of the change in the intended funds rate on the Federal Reserve's forecasts of inflation, real output growth, and the unemployment rate in the Bluebooks. Using this measure in a VAR estimation, the affect of monetary policy on output is substantially stronger and faster than in the VAR using traditional measures. However, with a variety of textual resources of the FOMC meetings (such as the Minutes of Federal Open Market Committee and the Bluebook) in hand, the Federal Reserve's forecast information extracted from the texts might be a useful supplement to the quantitative forecasts in the Bluebooks.

Inspired by the work of Jegadeesh and Wu (2017), which dissects the Minutes of Federal Open Market Committee into eight economic topics and examines the stock market and the bond market's response to the informativeness of each of these topics, I plan to use the

Latent Dirichlet Allocation model to identify potentially relevant topics in the Minutes of Federal Open Market Committee, and compute the tone scores for each topic. Then these topic loadings and tone scores can be incorporated in the regression in Romer and Romer (2004) as additional proxies for the Federal Reserve's forecast information. The residuals of this regression will be my new measure of monetary policy shocks, and can be used in a VAR to assess the response of output and inflation to monetary policies. The estimated impulse responses can be compared with those obtained by traditional measures and the measure of Romer and Romer (2004).

Reference

[1] Romer, Christina D., and David H. Romer. "A new measure of monetary shocks: Derivation and implications." American Economic Review 94.4 (2004): 1055-1084.

[2] Jegadeesh, Narasimhan, and Di Andrew Wu. "Deciphering fedspeak: The information content of fomc meetings." (2017).