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The impact of conventional and unconventional monetary policy on investor sentiment

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ABSTRACT

This paper examines the relationship between monetary policy and investor sentiment across conventional and unconventional monetary policy regimes. During conventional times, we find that a surprise decrease in the fed funds rate leads to a large increase in investor sentiment. Similarly, when the fed funds rate is at its zero lower bound, research results indicate that expansionary unconventional monetary policy shocks also have a large and positive impact on investor mood. Together, our findings highlight the importance of both conventional and unconventional monetary policy in the determination of investor sentiment.

> "The most direct and immediate effects of monetary policy actions...are on financial markets; by affecting asset prices and returns, policymakers try to modify economic behavior in ways that will help to achieve their ultimate objectives. Understanding the links between monetary policy and asset prices is thus crucially important for understanding the policy transmission mechanism."
>
> [Bernanke and Kuttner, 2005]

1. Introduction

Investor sentiment can have a profound impact on the economy, fueling booms and exacerbating busts.[1] With the proliferation of bubble episodes in recent years, measures of investor behavior are now closely watched by both private sector investors and policymakers; necessitating the need for researchers to develop a deep understanding of the effects *and* drivers of sentiment. In this paper, we consider one potential determinant of investor behavior: monetary policy shocks. Changes in monetary policy may induce excess optimism or pessimism as equity market participants may be overly sensitive to monetary shocks (Kurov, 2010; Bernanke and Kuttner, 2005). Indeed, monetary policy announcements are closely followed by investors, have a large effect on financial markets, and are widely reported by the financial media. Further, as noted by Mahani and Poteshman (2008), individual investors tend to overreact to financial news relative to more sophisticated investors. Thus, the link between monetary policy and investor sentiment may have important implications for both practitioners and policymakers, especially as central banks contemplate the use of policy tools to counter the risks associated with asset bubbles in the wake of the recent financial crisis.[2]

This paper studies the impact of monetary policy shocks on investor sentiment during both conventional and unconventional monetary policy regimes. First, we consider the impact of monetary policy shocks on investor sentiment during conventional times (when the fed funds rate is above its zero lower bound) using the factor-augmented vector autoregression (FAVAR) model of Bernanke, Boivin, and Eliasz (2005; BBE) and Boivin, Giannoni,

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[1] There is a large and growing literature on the effects of sentiment on financial markets and the economy. See, for example, Shiller (2000), Brown and Cliff (2004), Tetlock (2007), Kling and Gao (2008), Kurov (2008), Brunnermeier (2009), Schmeling (2009), Fung et al. (2010), Gençay et al. (2010), Chen (2011), Lux (2011), Singer et al. (2011), Chung et al. (2012), Garcia (2013), and Lutz (2015). Baker and Wurgler (2007) provide an overview of these studies.

[2] Ben Bernanke."Monetary Policy and the Housing Bubble." January 3, 2010. Annual Meeting of the American Economic Association, Atlanta, Georgia. More recently, The Bank of International Settlements stated that central banks should use monetary policy to counter asset bubbles, while Janet Yellen suggested that monetary policy tools are note appropriate to counter asset bubble risks. "Janet Yellen Signals She Won't Raise Rates to Fight Bubbles." *The New York Times*. July 2, 2014.

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and Mihov (2009; BGM). The chief advantage of the FAVAR framework is that it can accommodate the numerous time series that are likely to span the information sets used by policymakers and private sector practitioners; this allows for a more accurate measurement of monetary policy shocks compared with standard macroeconomic techniques. Our results indicate that a surprise decrease in the fed funds rate leads to a large increase in investor sentiment over short- and medium-horizons. These effects, which hold for a broad set of sentiment proxies and persist after accounting for various financial and macroeconomic aggregates as additional controls, are economically meaningful and large in magnitude. For example, an unexpected 50 basis point decrease in the fed funds rate leads to a 1.5 standard deviation increase in Baker and Wurgler's (2006, 2007) stock market sentiment index after 48 months.[3]

Next, we examine the effects of unconventional monetary policy shocks on investor sentiment during the recent period when the fed funds rate was at its zero lower bound. Unconventional monetary policy shocks are identified using high-frequency, intraday interest rate futures data.[4] Using these identified monetary shocks, we then conduct an event study analysis similar to that used by Krishnamurthy and Vissing-Jorgensen (2011), Wright (2012), and Glick and Leduc (2013) to assess the effects of unconventional monetary policy on daily proxies of investor sentiment.[5] In line with our findings during conventional times, these results suggest that expansionary unconventional monetary policy shocks lead to increased investor sentiment.

Together, our findings imply that expansionary monetary policy shocks have a favorable effect on investor sentiment during both conventional and unconventional monetary policy regimes. These results are large in magnitude and thus highlight the importance of monetary policy actions in the determination of investor sentiment.

We study the effects of surprise changes in conventional monetary policy on a large array of popular monthly sentiment indicators including Baker and Wurgler's (2006, 2007) sentiment index (henceforth, BWsent), the Investors Intelligence Surveys (henceforth, Intelligence), Consumer Sentiment from the University of Michigan (henceforth, MichSent), and mutual fund flows measured by net exchanges between stock and bond mutual funds as in Ben-Rephael, Kendal, Wohl (2012) (henceforth, NEIO). Furthermore, in an extension of our baseline results, we also consider a number of classic sentiment measures including the price-dividend premium, the closed-end fund discount, proxies for the IPO market, the equity-share of new issues, and NYSE turnover.[6] We entertain a number of sentiment indicators for three reasons: (1) there is no perfect measure of investor mood and different indicators may capture different dimensions of investor behavior; (2) some measures of investor mood, such as the price-dividend premium of Baker and Wurgler, 2006, may mechanically react to changes in interest rates that do not reflect changes in investor sentiment, while others, including the Investors Intelligence Surveys are direct measures of investor sentiment (Fisher and Statman, 2006); and (3) our key objective is to study the effects of monetary policy actions on the broad concept of "sentiment" rather than just the idiosyncrasies of a particular time series.

The sentiment indicators are combined with other macroeconomic and financial variables to produce our main dataset of 112 monthly time series. Thus, in addition to behavioral proxies, we have a broad dataset that is likely to span the information sets used by private sector investors and policymakers. For example, the data include information on several stock return series; proxies for stock market fundamentals; and various economic indicators.

Lastly, the daily sentiment proxies used during unconventional times include the daily closed-end fund discount of Hwang (2011), Chan et al. (2008) and Lee et al. (1991) and the survey-based Gallup Daily Economic Conditions Index. As noted above, our findings indicate that expansionary unconventional monetary policy shocks increase investor sentiment.

Overall, our key findings build on previous studies that consider the relationship between monetary policy and equity markets. For example, Bernanke and Kuttner, 2005 conclude that an unexpected increase in the fed funds rate leads to a decrease in stock returns. We view our results as an extension of Bernanke and Kuttner as we find that a surprise expansionary monetary policy shock leads to an increase in investor sentiment even after controlling for equity market fundamentals and returns. Other studies also have examined the relationship between monetary policy and certain proxies of investor behavior. Indeed, Kurov (2010) examines the relationship between sentiment and unexpected changes in the fed funds rate. The results in this paper are congruent with Kurov's findings. Moreover, Mahani and Poteshman (2008) contend that individual investors often overreact to financial news. As monetary policy announcements are widely covered by financial media outlets, we would expect an abounded reaction by individual investors to surprise changes in monetary policy. Together, these arguments lend credence to the notion that monetary policy can affect investor sentiment.

Our work, however, diverges from previous studies in a number of important ways. First, we use the FAVAR framework to accommodate many macroeconomic and financial variables and identify the initial response and longer run effects of conventional monetary shocks on investor sentiment. Thus, this paper addresses the potential endogeneity issues found in standard macro techniques using a structural framework that documents the short- and long-run path of investor sentiment in response a monetary policy shock. Lastly, this paper is, to the best of our knowledge, the first to exploit more recent data to examine the impact of unconventional monetary shocks on investor sentiment.

The rest of this article proceeds as follows: Section 2 provides an overview of the econometric framework; in Section 3, we describe the data; an analysis of the results regarding conventional monetary policy shocks is in Section 4; a number of robustness checks and extensions are considered in Section 5; Section 6 discusses the impact of unconventional monetary policy shocks on investor sentiment; and Section 7 concludes.

2. Econometric framework

To study the impact of monetary policy on investor sentiment during conventional times, we use the factor augmented vector autoregression (FAVAR) model of BBE and BGM. Then, to assess the effects of unconventional monetary policy shocks, such as large scale asset purchases of long-term Treasuries or mortgage backed securities (e.g. Quantitative Easing), we employ an event study methodology similar to that used by Krishnamurthy and Vissing-Jorgensen (2011), Wright (2012) and Glick and Leduc (2013). In the following two subsections, we discuss the FAVAR framework and our event study approach in more detail.

[3] An unexpected 50 basis point change in the fed funds rate can be interpreted as a surprise change in the fed funds rate relative to market expectations. See BBE and BGM and the references therein for more details.

[4] We would like to thank an anonymous referee for providing us with these data.

[5] There is a large and growing literature that studies the effects of unconventional monetary policy. See, for example, Gagnon et al. (2011), Neely (2010), D'Amico et al. (2012), Glick and Leduc (2012), Hamilton and Wu (2012), Li and Wei (2013), Gabriel and Lutz (2014) and Lutz (2014).

[6] See Baker and Wurgler (2006) or Section 3 for further explanations of these measures.