Unconventional monetary policy and the stock market's reaction to Federal Reserve policy actions

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Abstract

We examine the change in the effect of Federal Reserve’s policy actions on stock returns after the Fed started to use unconventional policy actions. We find that the response of stock returns to monetary policy actions are almost seven times higher after the federal funds rate hit the zero lower bound. We conduct additional analysis to examine the underlying causes of the increase in the impact of monetary policy actions of stock returns. We show that investors rebalance their portfolios towards equity after selling Treasury securities to the Federal Reserve during large scale asset purchases.

LSAPs also appear to have boosted stock prices, presumably both by lowering discount rates and by improving the economic outlook; it is probably not a coincidence that the sustained recovery in U.S. equity prices began in March 2009, shortly after the FOMC’s decision to greatly expand securities purchases. This effect is potentially important because stock values affect both consumption and investment decisions.

(Ben S. Bernanke, Jackson Hole, Wyoming, August 31, 2012)

1. Introduction

Before the financial crisis of 2007–09, the Federal Reserve (Fed) was using the federal funds rate as the main policy instrument. The Fed lowered the federal funds rate to boost aggregate demand and provide economic stimulus. However, since the end of 2008 the Federal Open Market Committee (FOMC) sets a near-zero target range for the federal funds rate. After hitting the zero lower bound (ZLB) of the federal funds rate the Fed started to use unconventional monetary policy tools, namely forward policy guidance¹ and large-scale asset purchases (LSAPs), to support economic recovery. During LSAPs, the Fed purchased longer-term securities with the goal of putting downward pressure on longer-term interest rates and promote economic activity by making financial conditions more accommodative. In this paper, we examine the change in the sensitivity of stock returns to monetary policy actions after the Fed started to use these unconventional policies.

¹ In the September 2012 statement, the FOMC states that “the Committee also decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015.”

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Many studies in the economics and finance literature examine the relationship between the stock market and monetary policy. Understanding this relationship is essential for both monetary policy makers and financial market participants. Bernanke and Kuttner (2005) state that “The most direct and immediate effects of monetary policy actions, such as changes in the Federal funds rate, are on the financial markets; … Understanding the links between monetary policy and asset prices is thus crucially important for understanding the policy transmission mechanism.” (Page 1221). Monetary policy makers need this information to identify the real effects of monetary policy actions, and financial market participants require a precise estimate of the reaction of stock prices to policy actions to design effective investment decisions. Gali and Gambetti (2015) argue that the recent financial crisis challenged the consensus of the interaction between monetary policy and financial markets. Accordingly, the investigation of the structural change in the impact of the actions of the Fed on financial markets has the potential to provide critical information for both policy makers and investors.

The Fed used the unconventional policy actions of forward-guidance and LSAPs after the federal funds rate reached the ZLB. The Fed started to conduct forward-guidance by making commitments about the future path of the federal funds rate in late 2008. As summarized in Table 2 of Engen, Laubach, and Reifschneider (2015), there have been nine FOMC statements which mention that the exceptionally low levels of the federal funds rate will be warranted in the future. Starting with the August 2011 statement, the FOMC provided more explicit information about future policy outlook. Williams (2012) states that forward-guidance was successful in shifting market expectations about the future path of the federal funds rate. The Fed completed three LSAPs by purchasing longer-term Treasury and mortgage-backed securities. When the recent LSAP program ended in October 2014, the Fed’s balance rose from $500 billion to over $4 trillion.

One of the major challenges of this empirical analysis is measurement of the overall stance of monetary policy. Studies such as Bernanke and Kuttner (2005), Bjornland and Leitemo (2009) and Gali and Gambetti (2015) use the federal funds rate as a measure of monetary policy when examining the effect of monetary policy shocks on stock returns. On the other hand, since the federal funds rate was set to the ZLB, implementation of unconventional monetary policy makes it difficult to assess the stance of monetary policy. One possible proxy for this stance can be the size of the Fed’s balance sheet. Using this proxy, several financial services companies like the Raymond James Financial drew attention to the correlation between S&P 500 index and the total assets of the Fed to examine the relationship between large-scale asset purchases and stock prices. Fig. 1 below displays the expansion of the Fed’s Balance Sheet through LSAPs and the S&P 500 index.

Fig. 1 shows that S&P 500 index climbed to 2000 in 2015 from less than 700 in 2009. Moreover, the figure presents that there is a strong relationship between the stock market and expansion of FED’s balance sheet through LSAPs. Fig. 1 calls for further analysis of this relationship between stock returns and unconventional policy actions of FED.

Using the Fed’s balance sheet as a proxy for monetary policy is not problem-free. First, as stated by Wright (2012): “with forward-looking financial markets, one would expect a policy of asset purchases to impact asset prices not at the time that the purchases are actually made but rather at the time that investors learn that they will take place.” (Page 448) Since LSAPs are announced ahead of time, investors form expectations about them and act accordingly. In addition, the Fed uses other unconventional monetary policy actions like forward guidance to guide the expectations of the public. Secondly, we need a measure for Fed’s unconventional monetary policy actions that is consistent with the federal funds rate to be able to assess whether there is a structural change in the reaction of stock returns to policy shocks. We try to overcome both problems by using “the shadow interest rate” constructed by Wu and Xia (2016). This rate is equal to the federal funds rate before 2009, and provide a similar composite measure for the monetary policy for the following era. Wu and Xia (2016) construct a term structure model which produces a “shadow rate” interacting with macroeconomic variables similarly as the federal funds rate. The shadow rate is derived using a linear function of latent variables which follow VAR (1) processes. The latent factors and the shadow rate are estimated using one-month forward rates.

Several methodological issues also present challenges in estimating the reaction of stock returns to monetary policy. First issue is the endogeneity problem caused by the endogeneity of monetary policy actions and stock returns. Second, other variables about the macroeconomic condition of the economy and related news contemporaneously affect monetary policy and stock returns. Hence, identification of the “responsiveness of asset prices” is problematic under previously used methods as stated by Rigobon and Sack (2004). In this paper, we follow the suggestion of Rigobon and Sack (2004) and implement a methodology which “identifies the response of asset prices based on the heteroskedasticity of monetary policy shocks.” (Page 1554). Our methodology follows Lewbel (2012), which serves to identify structural parameters in regression models with endogenous or mismeasured regressors.

Our results indicate that the impact of monetary policy on stock returns increases immensely—almost seven times higher—since the start of the unconventional policy actions at the end of 2008. To uncover the reasons behind this dramatic change, we examine the effect of LSAPs on investor portfolios. We find that during LSAPs investors sell Treasury securities to the Fed and rebalance their portfolios towards riskier assets by buying stocks. This result suggests that the Fed contributed....

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2 Bernanke and Kuttner (2005) study differs from the other studies mentioned above in a way that use an event study approach, based on daily changes observed on monetary policy decision dates, to uncover the response of stock prices to unanticipated changes in the federal funds rate.


4 Lombardi and Zhou (2014) and Krippner (2012) calculate alternative shadow policy rates than Wu and Xia (2016)’s for the US economy. We prefer to use the Wu and Xia (2016) shadow rate calculations as presented by the Federal Reserve Bank of Atlanta for two reasons. First, the Wu and Xia (2016) shadow rate is much smoother compared to its alternatives. Lombardi and Zhou (2014) rate has very high variation. It switches between negative and positive values over time. Second, the Wu and Xia (2016) shadow rate does not have extreme values. For example, Krippner (2012) rate drops to below –9% in August 2011 showing an extremely loose monetary policy stance.
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