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Macroeconomic cycles and the stock market's reaction to monetary policy ☆

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ABSTRACT

This paper examines cyclical variation in the effect of Fed policy on the stock market. We find a much stronger response of stock returns to unexpected changes in the federal funds target rate in recession and in tight credit market conditions. Using firm-level data, we also show that firms that face financial constraints are more affected by monetary shocks in tight credit conditions than the relatively unconstrained firms. Overall, the results are consistent with the credit channel of monetary policy transmission.

1. Introduction

Few events are watched by market participants with more interest than decisions of the Federal Reserve regarding monetary policy. This interest stems from a significant impact of news about Fed policy on asset prices. For example, Fleming and Remolona (1997) show that federal funds target rate announcements tend to cause large price changes in the US Treasury market. Fair (2002) reports that more than 30% of identifiable events that caused a large immediate price change in the stock market were monetary announcements. Bernanke and Kuttner (2005) show that an unexpected 25-basis point cut in the federal funds target rate leads to a one percent increase in the level of stock prices on average.

Policymakers recognize that the stock market is an important conduit of monetary policy that can be used to influence real economic activity. Stock prices affect the real economy through a number of channels. Fluctuations in stock prices affect the firms' cost of capital and their capacity to raise new capital and invest. Another channel is the wealth effect of stock prices on consumption and economic growth. The first step in each of these channels, however, is the effect of monetary policy on the stock market. A review of FOMC meeting transcripts shows that the Fed officials are often concerned about the possible impact of policy actions on the stock market and the resulting effects on consumption and investment. Therefore, it is important for policy makers to understand what determines the magnitude of the stock market's reaction to policy moves.

This paper argues that there is significant cyclical variation in the impact of monetary policy on stock prices. We show that the size of the response of stock returns to monetary shocks is more than twice as large in recessions and tight credit conditions as in good economic times. This result is important for several reasons. First, the direction of the time variation supports the credit channel of monetary policy transmission using stock market data. Prior evidence on this issue has been mixed.[1] Second, our findings contribute to the literature on state dependence in the stock market's response to macroeconomic news. Andersen et al. (2007) find no evidence of state dependence in the stock market's response to monetary news. Using a more accurate measure of monetary news, a longer sample period, and multiple proxies for macroeconomic state, we find strong evidence of such state dependence. Finally, our evidence of cyclical variation in the response of stocks to monetary news should be useful to Fed policymakers by helping them predict the effect of a target rate change on the stock market.

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[1] See Warner and Georges (2001) and Ehrmann and Fratzscher (2004).

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In further analysis, we use disaggregated firm-level data to examine the response of stock returns to monetary shocks in the cross-section of firms. The results show that the response of stock returns to monetary news over the macroeconomic cycle depends on individual credit characteristics of firms. Specifically, stocks of companies that are likely to be credit constrained react more strongly to monetary news in recessions and in tight credit market conditions than stocks of relatively unconstrained firms. This finding supports the credit channel hypothesis and contributes to the literature by showing how macroeconomic conditions interact with firm characteristics to determine the reaction of stocks to monetary policy moves.

2. Background and related literature

2.1. Channels of monetary policy transmission

There are two channels through which stock prices respond to monetary news. The first and more traditional channel is the interest rate channel that relates to economic activity primarily through consumption and investment. This channel of monetary transmission relies on the effect of interest rate changes on loan demand. A cut in the interest rates reduces the cost of borrowing for investment and leads to an increase in economic activity. Furthermore, reduced cost of borrowing translates into lower cost of capital for firms, increasing the present value of future cash flows and thereby directly affecting the stock prices. A drop in the interest rates also promotes current over future consumption. Alternatively, an increase in the cost of borrowing increases the cost of capital for firms and reduces consumer demand. Hypothetically, the interest rate channel may lead to time variation in the response of stock returns if the elasticity of investment borrowing varies over time or if the intertemporal elasticity of substitution of consumption is cyclical. But, as Peersman and Smets (2005) argue, there is no clear economic reason for the effects of the interest rate channel to vary over the business cycle and no prediction regarding the direction of possible variation.

The second channel of monetary policy transmission, the credit channel, can be subdivided into two mechanisms: the bank loan channel and the balance sheet channel. The bank loan channel stresses cyclicality in the availability of loans. A reduction in the supply of bank credit affects the economic activity of bank-dependent borrowers. The balance sheet channel focuses on changes in creditworthiness of firms due to procyclical fluctuations in the quality of their balance sheets. Both mechanisms of the credit channel stress the supply of funds to the firms. When credit markets are tight, a surprise monetary easing reduces the quantity restrictions on the availability of credit, resulting in a larger effect on the level of economic activity.

Theories of the credit channel predict that worsening credit market conditions give rise to the "financial accelerator" effects by amplifying the effect of real or monetary shocks on the economy. Borrowers have better information about their creditworthiness than the lenders do. Such informational frictions lead to an "external finance premium" between the cost of internally generated funds and funds raised from financial markets. Bernanke and Gertler (1989) argue that these frictions are largest in recessions, when weak balance sheets lead to higher costs of external finance, resulting in lower investment demand and reduced economic activity. Furthermore, banks and other financial intermediaries may tighten credit standards ahead of a period of weak economy, reducing the supply of credit to weaker borrowers. These riskier borrowers have limited access to alternative sources of credit. As a result, they are more affected by macroeconomic shocks in adverse credit market conditions.

To sum up, the credit channel implies two sources of variation in the effect of monetary policy on the economy: a macro cycle variation and a firm-dependent variation amplified by the macro cycle. The empirical evidence on the credit channel is somewhat mixed. For example, Miron et al. (1994) and Driscoll (2004) find little support for the bank lending channel of monetary transmission. However, Kashyap et al. (1993) and Kashyap and Stein (2000) provide support for the bank lending channel. Bernanke et al. (1996) and Peersman and Smets (2005) also find evidence of the credit channel effects by testing the cross-sectional implications of the credit channel view.

The two studies that examine the monetary transmission by looking at the response of disaggregated stock returns to monetary shocks show opposite results. Warner and Georges (2001) find no evidence supporting a credit channel. In contrast, consistent with the credit channel, Ehrmann and Fratzscher (2004) document firm-level heterogeneity in the effect of monetary news on stocks based on financial constraints.[2] We generalize the framework of Ehrmann and Fratzscher (2004) by simultaneously allowing for the business cycle variation in the stock market response to monetary shocks and for the dependence of this response on firm-specific credit characteristics. This framework accounts for the two credit channel effects, as well as for the traditional interest rate channel.

2.2. State dependence in the stock market's reaction to economic news

Several studies have examined whether the stock market's reaction to economic news depends on the state of the economy. McQueen and Roley (1993) examine state dependence in the stock market response to several macroeconomic announcements, including changes in the Fed's discount rate. They find that in periods of strong economic growth the stock market responds significantly to news about prices and real activity. More recently Boyd et al. (2005) show that the stock market's reaction to unemployment news depends on the state of the economy. They provide evidence that the state dependence in the stock market's reaction is related to news about the equity premium and growth expectations.

Andersen et al. (2007) use intraday data to examine the state dependence in the reaction of stock, bond and foreign exchange markets to a wide range of macroeconomic announcements. They find that good economic news tends to have a negative effect on the stock market in periods of economic expansion and a positive effect in recession. Using forecasts of market participants compiled by Money Market Services (MMS) as a measure of the market expectations of the fed funds target rate, Andersen et al. (2007) do not find a significant state dependence in the reaction of the stock market to monetary news.

We add to this literature by using the measure of surprise policy actions derived from the fed funds futures prices proposed by Kuttner (2001) to examine the state dependence in the stock market's reaction to monetary news. This measure of target rate surprises is theoretically cleaner than measures derived from survey-based expectations, since the expected component of the release is incorporated in the fed funds futures prices available immediately before the announcement.[3] It also allows us to examine target rate changes made at unscheduled meetings of the Federal Open Market Committee (FOMC), most of which are excluded from the sample in Andersen et al. (2007). Furthermore, we use several different proxies for macroeconomic cycles and perform a

[2] Warner and Georges (2001) examine 10 policy shocks from 1991, 1992 and 1994, whereas Ehrmann and Fratzscher (2004) use a sample period from February 1994 to January 2003.

[3] Chun (2007) shows that the forecasts of the fed funds rate extracted from the fed funds futures prices are more accurate than survey forecasts.