



# Monetary policy and stock returns: Financing constraints and asymmetries in bull and bear markets

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## ABSTRACT

We examine asymmetries in the impact of monetary policy surprises on stock returns between bull and bear markets in the period 1994 to 2005. We ask how these impacts respond to the relative ability of firms to obtain external finance. We find that the impact of a surprise monetary policy in a bear market is large, negative, and statistically significant, and this holds across size decile portfolios. The impact of a surprise policy action in a bear market for most industries is significantly greater than the impact of surprise monetary policy in a bull market. Controlling for the capacity for external finance, stock returns of firms in bear states respond more than firms in bull states. Capacity for external finance is more important in a bear market, as it partially mitigates the larger impact of monetary policy in a bear market.

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## 1. Introduction

We investigate the asymmetric impact of monetary policy on stock returns across bull and bear markets, as well as how those asymmetric impacts are affected by the financial condition of firms. While many authors have examined the impact of monetary policy on stock returns, fewer have looked at asymmetric impacts, and fewer still at asymmetric impacts that depend on the state of the stock market itself, as indicated for instance by the market being characterized as a bull or bear market. Our work provides evidence on these asymmetries, and how the financial condition of a firm alters the magnitude of the impact of monetary policy on the firm's stock returns.

There are several articles that find monetary policy has an immediate impact on asset prices and stock returns. One set of articles shows that stock returns respond strongly to surprise changes in the federal funds rate. These include papers by Basistha and Kurov (2008), Bernanke and Kuttner (2005), Ehrmann and Fratzscher (2004), and Guo (2004). Another set of articles examines how monetary policy has asymmetric impacts on stock returns with asymmetries linked to firm characteristics such as firm size, capital intensity, and financial constraints. These asymmetries are of special interest because theoretical work, particularly work on the credit channel of monetary policy, suggests that monetary policy may have asymmetric impacts on firms and firm values depending on firm financial characteristics even for firms in the same industry. For instance, Ehrmann and Fratzscher (2004) report that capital-intensive industries are affected more by surprise changes in monetary policy. They also report that as firms are more financially constrained they are more strongly influenced by monetary policy. Thorbecke (1997) look at firm size and find that smaller firms are affected more by monetary policy. Yet another set of papers looks at asymmetric responses of stock returns to surprise changes in monetary policy at different stages of the business cycle. Basistha and Kurov (2008) find stock returns respond more strongly to surprise changes in monetary policy during recessions, and in tight credit market

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conditions. Guo (2004) reports that the stock returns of smaller firms are more strongly impacted by monetary policy compared to larger firms, and that a recession makes this differential impact even larger.

There are also a set of papers that look at asymmetries in the impact of monetary policy that are related to the aggregate status of the stock market itself. In particular, Chen (2007) and Perez-Quiros and Timmermann (2000) ask if monetary policy has asymmetric effects in bull and bear markets. The theoretical idea is that agency costs lead to information asymmetry between firms and financial intermediaries, and that the resulting external finance premium is larger in bear markets. Chen (2007) and Perez-Quiros and Timmermann (2000) provide evidence that monetary policy does have a stronger effect on stock returns in a bear market. These authors use data that provides an indirect measure of a monetary surprise, such as the M2 growth rate, the change in the discount rate, and the change in the Federal Funds rate. We use a more direct measure of a monetary surprise using the method used by Kuttner (2001) to measure surprise changes in the Federal Funds Rate target from futures data. This measure gives us a direct measure of surprise monetary policy, allowing a cleaner estimate of the immediate impact of a surprise change in the Federal Funds Rate on stock returns.<sup>1</sup> Kuttner's approach to measuring monetary policy surprises continues to be widely used, including recently by Chulia et al. (2010).

Our first goal is to add to our understanding of the asymmetric impacts of stock returns across bull and bear markets. We begin by isolating the unanticipated component of changes in the Federal Funds Rate using Federal Funds futures data. We use this measure to reexamine the issue of possible asymmetries in the impact of monetary policy surprises on stock returns in bull and bear markets.<sup>2</sup>

When the capital market is imperfect, information asymmetries are expected to lead to the wedge between the cost of internal and external funds. Jaffee and Russell (1976) and Stiglitz and Weiss (1981) argue that agency problems combined with imperfect capital markets generate an external finance premium. Due to information asymmetries, financial intermediaries monitor and screen a firm's ability to repay debt. Debts are often secured by collateral, and firms with higher collateral values will generally have higher debt capacity, which in turn provides easier access to external finance. Thus firms with higher collateral value will face a lower external finance premium, which in turn allows more investment in assets that can serve as collateral for further borrowing. The issue of whether, and by how much, financing frictions influence investment decisions is an important issue. Almeida and Campello (2007) and Hahn and Lee (2009) find that debt capacity is an important determinant of stock returns.<sup>3</sup>

Other researchers look at possible asymmetries in the impact of monetary policy on the stock returns of financially constrained and unconstrained firm. For instance, Ehrmann and Fratzscher (2004) find that the more financially constrained firms are also more strongly influenced by the surprise change of monetary policy.<sup>4</sup> Gertler and Hubbard (1993) reported that credit constraints vary over the business cycles, and Gertler and Gilchrist (1994) along with Kashyap et al. (1994) suggest a connection between stock returns and macroeconomic conditions.<sup>5</sup>

A recent paper by Chulia, Martens, and van Dijk (2010) examines the possible asymmetric impact of positive and negative surprise federal funds target changes on stock returns, volatilities, and correlations. This paper uses the Kuttner measure of surprise policy announcements but a five-minute window around the announcement. These authors report asymmetries in the response of stock returns to positive and negative funds rate changes, with a surprise increase in the funds rate of 10 basis points causing a stock return decline of 46 basis points. They also find that the existence of a surprise increase in the funds rate is more important than the magnitude of the increase, whereas for a surprise decrease in the funds rate the magnitude is important.<sup>6</sup>

Gan (2007) finds that firms with higher collateral losses are less likely to sustain their banking relationships, and tend to obtain smaller amounts of bank credit, as compared to firms with lower collateral losses. Thus firms with higher losses have a decreased debt capacity and likely to have a decrease in investment. This is consistent with the notion that financing frictions are likely to bind more during economic downturns, the so-called "collateral channel" (see Fisher (1933)). The collateral channel has important implications for the transmission of monetary policy – a tightening of monetary policy through higher interest rates impairs the net worth of firm, thus diminishing the firm's ability to borrow.

There has been little empirical work to date that examines possible asymmetries in the impact of credit constraints on stock returns. The second goal of this paper is to test the hypothesis that there is a differential effect of external debt capacity on stock

<sup>1</sup> These alternative measures of surprise monetary policy are typically based on monthly data and hence not well suited for a study that looks at the day-of-announcement impact of monetary policy.

<sup>2</sup> Guo (2004) defined the period 1974–1979 as a period of economic recession and the period 1988–2000 as a period of economic expansion. He provides evidence on the asymmetric responses of stock returns across expansions and recessions. He did not investigate the issue of asymmetric responses across bull and bear markets.

<sup>3</sup> Almeida and Campello (2007) use the tangibility of a firm's asset to measure the ability of external financing and found a firm's investment are significantly increasing with the tangibility of a firm's assets on financially constrained firms. Hahn and Lee (2009) use four alternative firm classification criteria to proxy for the status of financial constraints, including asset size, payout ratio, bond rating, and commercial paper rating. They use firm-level tangibility (market capitalization, book to market value, leverage ratio, asset tangibility) to measure a firm's debt capacity. They report a significant positive impact of debt capacity on a firm's stock returns for financially constrained firms.

<sup>4</sup> Ehrmann and Fratzscher (2004) found firms are more strongly impacted by monetary policy if they have low cash flows, small size, poor credit ratings, low debt to capital ratios, high price-earnings ratios, or a high Tobin's q.

<sup>5</sup> Livdan, Saprizza, and Zhang (2009) incorporate external finance in a business cycle model and find that financial constraints are more binding in economic booms because the stochastic discount factor makes capital investment more procyclical, which, however, is not consistent with the conventional notion that financing frictions are likely to bind more in economic depression.

<sup>6</sup> Chulia et al. (2010) investigate asymmetries of positive and negative shocks, whereas we investigate asymmetries over the business cycle. A useful extension of these papers would be to investigate whether business cycle states add to the asymmetries from positive and negative surprises.

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