Stock returns and monetary policy: Are there any ties?

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ABSTRACT

This paper empirically investigates the following three questions: (i) Do stock returns respond to monetary policy shocks? (ii) Do stock returns alter the transmission mechanism of monetary policy? and (iii) Does monetary policy systematically react to stock returns? Unlike existing empirical research on these topics, we use a structural vector auto-regression that relaxes the restrictions commonly imposed in earlier studies and identify monetary policy shocks by exploiting the conditional heteroskedasticity of the structural innovations. Applying this method to US data, we find that the interaction between monetary policy and stock returns is much weaker than suggested by earlier empirical studies.

1. Introduction

This paper empirically investigates the following three questions using monthly US data: (i) Do stock returns respond to monetary policy shocks? (ii) Do stock returns alter the transmission mechanism of monetary policy? and (iii) Does monetary policy systematically react to stock returns? Using a flexible identification strategy that relaxes the commonly used identifying restrictions, we find that the interaction between monetary policy and stock returns is much weaker than suggested by earlier empirical studies.

The interdependence between asset prices and monetary policy is a central issue in financial economics, in which interest has been rekindled in light of the latest global financial crisis. Among the various aspects of this interdependence, the responsiveness of stock returns to monetary policy shocks has received relatively more attention in the empirical literature than the questions of whether stock returns matter for the conduct of monetary policy or whether they affect its propagation mechanism. Given the high relevance of the latter two questions both for academics and policy makers, this paper develops an empirical framework that allows to investigate them jointly with question (i).

Earlier research that attempted to measure the responsiveness of stock returns to monetary policy shocks generally finds that stock returns increase significantly following an unanticipated monetary policy expansion. This literature can be grouped into two strands: event studies, which rely on a narrative approach to isolate exogenous and unanticipated changes in monetary policy, and those based on estimating Structural Vector Auto-Regressions (SVAR). Event studies implicitly assume that the various shocks affecting the economy do not occur systematically on the same dates as policy announcements.

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Therefore, the effects of monetary policy shocks can be identified by aggregating over many events at different dates, even though each event may be individually contaminated by other shocks (e.g. Cook and Hahn, 1989; Kuttner, 2001; Bernanke and Kuttner, 2005).

SVAR-based studies, on the other hand, impose some exclusion restrictions that limit the interaction of economic variables in a way that is not necessarily consistent with the data. These restrictions can be of two types: those that define the policy indicator and those that determine the way in which monetary policy shocks propagate. Regarding the former, existing SVAR studies invariably define the federal funds rate as being the relevant and unique indicator of US monetary policy. As for the latter, two different schemes are found in the literature: a recursive scheme, which assumes that the federal funds rate is predetermined with respect to stock returns (e.g. Thorbecke, 1997; Patelis, 1997; Bernanke and Kuttner, 2005; and Gilchrist et al., 2009), and a simultaneous scheme, which allows for contemporaneous interactions between these two variables but which restricts their interactions with remaining economic variables (e.g. Bjørnland and Leitemo, 2009). Under the usually maintained assumption that the structural shocks are conditionally homoskedastic, none of these identification schemes is testable.

In this paper, we estimate the interdependence between stock returns and monetary policy using a methodology that relaxes the identifying assumptions commonly used in earlier studies. Instead, monetary policy shocks and their effects are identified by exploiting the conditional heteroskedasticity of the innovations to the variables included in the SVAR, as in Normandin and Phaneuf (2004) and Bouakez and Normandin (2010). The presence of conditional heteroskedasticity in the macroeconomic time series typically used in empirical work on the effects of monetary policy on stock returns has been documented by several existing studies.[1] The idea behind this approach is that time variation in the conditional volatilities of the structural innovations provides additional information that allows to identify more parameters (relative to the conventional conditionally homoskedastic case). As a result, no arbitrary restrictions need to be imposed on the contemporaneous interactions between policy instruments and the variables of interest, thus leaving unrestricted both the policy indicator and the propagation mechanism of shocks. Interestingly, the flexible system estimated in this paper nests, and hence allows to test, the various specifications proposed in existing SVAR studies. This in turn allows us to gauge the consequences of imposing counterfactual identifying restrictions and to determine the extent to which they are responsible for the established results.

We start by showing that the identifying restrictions commonly used in the literature are not supported by the data and that their implications regarding the dynamics of output and the price level are at odds with well-accepted beliefs about the effects of monetary policy shocks. For example, a surprise monetary easing implies a decline in output for the first six months after the shock and a fall in the price level over more than 24 months. In contrast, the flexible system implies that an unanticipated monetary expansion induces a positive and hump-shaped effect on output and a gradual increase of the price level, so that there is no price puzzle.

We then turn to the analysis of the relationship between stock returns and monetary policy. We find that relaxing the commonly used identifying restrictions, and especially those related to the selection of the policy indicator, yields a response of stock returns that is negative on impact but statistically insignificant at all horizons. Importantly, we show that this lack of responsiveness does not stem from aggregating individual stocks into a broad portfolio. This result is puzzling given that standard theoretical models suggest that asset prices, and thus stock returns, should increase following a monetary policy expansion, owing to an increase in firm's expected future cash flows and a decline in the rate at which those cash flows are discounted. Thus, it appears that while our agnostic methodology resolves some of the anomalies related to the response of output and the price level, it uncovers a new puzzle pertaining to the reaction of the stock market to monetary policy shocks.

Our analysis also indicates that asset prices play little role in the transmission mechanism of monetary policy. We establish this result by comparing the unrestricted responses of key macroeconomic aggregates with the responses computed by shutting down all contemporaneous and dynamic interactions between stock returns and the other variables in the system. Specifically, we find that the unrestricted responses of output, consumption, investment, and the price level are almost identical to those obtained from a system in which stock returns do not interact with any other variable. This result contrasts with the conventional wisdom that asset prices affect consumption through a wealth channel, and investment through a Tobin's Q effect (higher expected profits) and a credit channel (improvement in the firms' balance sheet).

Finally, we find little evidence that stock returns have a direct influence on US monetary policy, beyond their effects on conventional macroeconomic indicators, namely output and the price level. The parameter estimates of the monetary authority's feedback rule imply that the policy indicator is not significantly affected by current and lagged changes in stock returns. This suggests that stock returns do not carry relevant information (for monetary policy) that is not already contained in the usual macroeconomic indicators.

Our paper is closely related to the work of Rigobon and Sack (2003, 2004), who assume that the *unconditional* volatilities of the structural innovations change across pre-selected regimes.[2] Two important differences distinguish our approach from

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[1] See, for example, Engle (1983), Baillie et al. (1996), Garcia and Perron (1996), Den Haan and Spear (1998), Dueker (1999), Beck (2001), Hwang (2001), Lee (2002), McQueen and Vorkink (2004), Conrad and Karanasos (2005), Demiralp and Farley (2005), Hilton (2005), Bernard et al. (2008), Grassi and Tommaso (2010), Fu (2009), Jacks et al. (2011), and Fernandez-Villaverde et al. (2011).

[2] Alternatively, the volatilities of the structural innovations may be estimated within a Markov switching framework, without pre-selecting the regimes. Lanne et al. (2010) derive the conditions under which identification can be achieved in this context. Lanne and Lütkepohl (2008) use this methodology to assess the effects of monetary policy shocks on macroeconomic aggregates.