

Monetary policy, oil shocks, and TFP: Accounting for the decline in US volatility [☆]

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Abstract

An equilibrium model is used to assess the quantitative importance of monetary policy for the post-1984 decline in US inflation and output volatility. The principal finding is that monetary policy played a substantial role in reducing inflation volatility, but a small role in reducing real output volatility. The model attributes much of the decline in real output volatility to smaller TFP shocks. We also investigate the pattern of output and inflation volatility under an optimal monetary policy counterfactual. We find that real output volatility would have been somewhat lower, and inflation volatility substantially lower, had monetary policy been set optimally.

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1. Introduction

The volatility of the US economy since the mid-1980s is much lower than it was during the prior 20-year period. The proximate causes of the increased stability and their relative importance remain unsettled, but the sharpness of the volatility decline and its timing has led authors such as Taylor (2000) to argue that a sudden shift in monetary policy is a prime candidate. Many studies

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in the economic volatility literature date the break in real output growth volatility around 1984, some four years after the beginning of the Volcker chairmanship of the FOMC.¹ A growing body of research indicates that systematic monetary policy changed significantly with the onset of the Volcker chairmanship. For example, Galí et al. (2003) examine the Fed's systematic response to technology shocks and its implication for hours, output, and inflation. They find significant differences in the Fed's response pre-1979 and post-1979, and that post-1979 policy is close to optimal.

Has monetary policy played a quantitatively significant role in the volatility decline? Recent work by Boivin and Giannoni (2003) argues yes: their estimated structural models imply a reduced effect of monetary policy shocks in the post-1980 period that is almost entirely explained by an increase in the Fed's responsiveness to inflation and output. Their estimates suggest that the monetary transmission mechanism was different pre-1979 compared to post-1979, with most of the difference traced to a change in the monetary policy rule rather than to a change in private-sector behavior. On the other hand, the VAR analysis in Stock and Watson (2002, 2003), Ahmed et al. (2004), and Primiceri (2003) indicates that monetary policy played little role in the moderation of output volatility, though it perhaps played a role in lowering the volatility of inflation.² These studies tend to indicate that smaller shocks hitting the economy are the principal cause of the moderation in US volatility.³

Standard models suggest that, aside from monetary policy, a change in the volatility of TFP may have played a significant role in the increased stability of the US economy. Indeed, recent work by Arias et al. (2006) supports this view. Another plausible candidate for the less-volatile economy is a change in the magnitude and frequency of oil shocks. To assess the relative contributions of monetary policy and shocks to the decline in US economic volatility we build a standard, sticky-price monetary model of the business cycle. The model is simulated over the high-volatility period 1956–1979 and the low-volatility period 1984–1999. The simulations use measured historical TFP, oil shocks, and monetary policy rules. Counterfactual analysis is used to quantify the relative contributions of TFP, monetary policy, and oil shocks to the decline in output and inflation volatility since 1984.

A natural question that arises in our analysis is how the post-war pattern of volatility might have differed had monetary policy been set optimally. This paper is one of the first to investigate the implications of optimal monetary policy in a sticky-price model with endogenous capital accumulation.⁴

Our principal finding is that while the change in monetary policy played a role in the postwar moderation of output volatility, most of the decline can be attributed to a reduction in the volatility of TFP and oil shocks. Our benchmark specification suggests that the change in monetary

¹ See Kim and Nelson (1999), McConnell and Perez-Quiros (2000), and Stock and Watson (2002).

² Stock and Watson (2003) investigate counterfactuals in four small macroeconomic models and find that improved monetary policy accounts for less than 10 percent of the decline in output volatility post-1984. The models do suggest, though, that improved policy helps bring down the variance of inflation. Primiceri (2003) estimates a time-varying structural VAR and finds that though the systematic component of monetary policy changed post-1980, the change had a negligible effect on inflation and unemployment.

³ Blanchard and Simon (2001) also argue that the principal reason for a less volatile economy is that it has been hit by smaller shocks.

⁴ Schmitt-Grohé and Uribe (2004) and Kollman (2003) examine welfare-maximizing monetary policies in a class of simple, implementable rules in models with endogenous capital accumulation. Our optimal policy analysis does not restrict monetary policy to follow simple Taylor-type rules. Erceg et al. (2000) solve for optimal monetary policy in a model with a fixed aggregate capital stock.

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