



How do central banks react to wealth composition and asset prices? ☆

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ABSTRACT

We assess the response of monetary policy to developments in asset markets in the euro area, the US and the UK. We estimate the reaction of monetary policy to wealth composition and asset prices using: (i) a linear framework based on a fully simultaneous system approach in a Bayesian environment; and (ii) a nonlinear specification that relies on a smooth transition regression model.

The linear framework suggests that wealth composition is indeed important in the formulation of monetary policy. However, the attempts of central banks to mitigate undesirable fluctuations in say, financial wealth, may disrupt housing wealth. A similar result can be found when we look at the reaction of monetary authority to asset prices, although “price” effects seem to play a weaker role.

The nonlinear model confirms these findings. However, the concerns over wealth and its components are stronger once inflation is under control, i.e. below a certain target. Some disruptions between financial and housing wealth effects are still present. They can also be found in the reaction to asset prices, despite being less intense.

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“We mustn’t allow the financial system to collapse as it did in the 1930s... The financial system has gone overboard and the financial engineering has grown to big, it takes up too big a share in the world’s resources... Now it is shrinking. When it becomes regulated it will be less profitable than the last 25 years.”

—George Soros, BBC Newsnight, 17 September 2008

1. Introduction

How does the monetary authority adjust to the dynamics of wealth? How does the central bank react to asset prices? Does monetary policy respond to wealth composition and to asset price composition in the same manner?

The deepness of the macroeconomic impact of the most recent financial turmoil has exposed central banks to the need of better understanding the linkages between policy instruments, macroeconomic

aggregates, and wealth composition. In addition, the unconventional measures adopted in many developed countries in the course of the crisis have highlighted the importance of: (i) the nexus between monetary stability and financial stability (Castro, 2011; Granville and Mallick, 2009; Sousa, 2010a, 2010b); (ii) the strong contagion across sectors (Blenman, 2004); (iii) the lack of synchronization among business cycles (Mallick and Mohsin, 2007, 2010; Rafiq and Mallick, 2008); (iv) the fostering of market segmentation (Blenman, 1991); (v) the long-term (un)sustainability of public finances (Afonso and Sousa, 2011; Hallett, 2008); and (vi) the “crowding-out” of private spending (Heim, 2010). Not surprisingly, a renewed interest on the topic has driven the attention of many researchers (Agnello and Schuknecht, 2011; Castro, 2010; Sousa, 2010c).

Despite the importance of asset markets for the conduction of monetary policy, the existing literature has typically focused on asset prices, therefore, not targeting the reaction of monetary authorities to household’s wealth. In fact, our knowledge about the response of central banks to asset markets is still incipient and we aim at uncovering this gap in the relationship between monetary policy actions and wealth developments in the current paper.

Using quarterly data for the euro area, the US and the UK, we compare the formulation of monetary policy in the context of “quantity” effects (that is, the response of the monetary authority to financial and housing wealth) and “price” effects (i.e., the reaction of the central bank to stock and housing prices).

Specifically, we estimate the monetary policy reaction function using a fully simultaneous system approach in a Bayesian framework, therefore, allowing for simultaneity between the monetary aggregate

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and the interest rate. Next, we assess the existence of nonlinearities in the monetary policy rule using a smooth transition regression (STR) model.

The results from the linear framework suggest that all central banks keep a vigilant posture regarding developments in aggregate wealth. In particular, an increase in aggregate wealth leads to a rise in the interest rate and the coefficient associated to aggregate wealth in the policy rule is, generally, large.

The empirical findings also show that wealth composition is relevant for the formulation of monetary policy. Specifically, while the European Central Bank (ECB) and the Federal Reserve Board (Fed) seem to pay a special attention to the dynamics of financial wealth, the Bank of England (BoE) tends to be more focused on the developments of housing wealth. Interestingly, the estimated reaction functions for the euro area and the US suggest that the interest rate is raised when financial wealth increases, while it is reduced in the outcome of an expansion in housing wealth. In contrast, in the UK, the monetary authority counteracts the changes in housing wealth, while potentially allowing an amplification of the dynamics of financial wealth. The estimated response is compatible with the wealth effect of stock and housing prices on aggregate consumption, whereby central banks react indirectly to asset prices because of their effects on aggregate demand. This duality is indeed extraordinary and it highlights that the attempts of central banks to mitigate unfavorable shocks in one component of wealth might have a disruptive effect in the other wealth component. As a result, tackling the developments in wealth composition may be a complicated task for monetary policy, that is, providing a unique answer to both financial and housing wealth may be hard to achieve from a monetary perspective.

When assessing how central banks react to asset prices, the empirical findings provide a similar picture regarding the importance of the asset composition. Nevertheless, our results suggest that “price” effects are not particularly relevant. In fact, the estimated policy rules show that the coefficients associated with asset prices are substantially smaller than the ones linked with wealth components.

We find support to the idea that both the ECB and the Fed strongly respond to the dynamics in money markets. In fact, an increase in the relevant monetary aggregate leads to a strong rise in the interest rate, reflecting the concerns of monetary authorities regarding medium to long-term price stability. As for the BoE, there seems to be an “hybrid” approach that places an important weight in both the monetary aggregate and the interest rate dynamics in the policy conduction.

The estimation of the nonlinear smooth transition regression model shows that the ECB puts more attention to inflation than to wealth (or to developments in its components), especially, when inflation is high. This may indicate a higher concern with inflation than with wealth *per se*. In fact, only when inflation is under control, we find a positive reaction of the interest rate to financial wealth. Similar evidence is found for the BoE: as soon as the BoE is able to keep inflation at a “low” level, the reaction to wealth becomes stronger. In that case, the inflationary pressures that may arise from increases in the aggregate wealth (or its financial component) are fought with a rise in the interest rate. On the contrary, the Fed is always tracking the dynamics of financial and housing wealth – especially, since the eighties – no matter what the inflation state is.

In what concerns the reaction of central banks to asset prices, the empirical findings confirm the role played by asset composition. The monetary authorities seem to adjust their behavior in response to stock prices (in particular, in the case of the Fed and the BoE), but their reaction to housing prices is, somewhat, relaxed when inflation is “low”. On the other hand, the ECB seems to actively react to housing prices, but only when inflation is “high”. However, a greater allocation of attention is given towards inflation, in particular, when it surpasses its target. Therefore, asset prices seem to have a secondary relevance in the policy rule. Summing up, these findings confirm the conclusions provided by the linear framework that central banks’ concerns

over asset prices are, generally, limited and it is difficult to simultaneously stabilize stock and housing prices.

The rest of the paper is organized as follows. Section 2 reviews the existing literature on the monetary policy rule. Section 3 presents the estimation methodologies. Section 4 discusses the evidence on the reaction of monetary policy to wealth composition, while Section 5 analyzes the results on the adjustment of policy conduction to asset price developments. Finally, Section 6 concludes with the main findings and policy implications.

2. Review of the literature

Since the seminal work by Taylor (1993), some extensions have been made to the simple linear monetary policy rule, namely, by considering the effect of other variables in the conduction of monetary policy, a point that we intend to explore further in this paper. For instance, considering the role of money supply in the ECB reaction function, Surico (2007b) argues that it does not affect the ECB’s behavior directly but it is a good instrument to predict future inflation. Chadha et al. (2004) presents some evidence of central banks’ reaction to the exchange rate deviations from its average. Similarly, Castro (2011) builds a financial indicator that includes the exchange rate, share and house prices, and credit spread and future interest rate spread in the estimation of a Taylor rule for some central banks.

The role of asset prices is also considered in the literature, despite the absence of consensus regarding whether the central bank should or should not target this kind of variables. Cecchetti et al. (2000) and Chadha et al. (2004) provide strong support and evidence in the direction that central banks track the behavior of asset prices. On the contrary, Bernanke and Gertler (2001) do not agree with an *ex-ante* control over asset prices. They consider that once the predictive content of asset prices for inflation has been accounted for, monetary authorities should not respond to movements in asset prices. Instead, central banks should act only if it is expected that they affect inflation forecast or after the burst of a financial bubble in order to avoid damages to the real economy. Similarly, for housing markets, Aoki et al. (2004) argue that there is a collateral transmission mechanism to consumption but do not condition on monetary policy. Chirinko et al. (2008) stress the role that housing shocks have in the formulation of monetary policy vis-a-vis equity shocks. Iacoviello and Neri (2010) show that residential investment and housing prices are very sensitive to monetary policy and the wealth effects from housing on consumption are positive and significant.

In the majority of the studies mentioned so far, the monetary policy reaction function is not modeled in the context of parsimoniously restricted multivariate time-series models, an issue that the works of Leeper and Zha (2003) and Sims and Zha (2006a, 2006b) have nicely overcome.¹ Moreover, the analysis has generally focused on asset prices, therefore, not targeting the impact of central bank’s actions on household’s wealth composition. In this context, Christiano et al. (1996) show that a contraction in monetary policy leads to an increase of the net funds raised by non-financial corporations, while leaving net funds raised by households unchanged. More recently, Sousa (2010a, 2010b) shows that a monetary contraction generates an important (negative) wealth effect, leads to a quick adjustment in financial wealth and a gradual and persistent response by housing wealth. However, the author’s analysis is aimed at looking at the impact of monetary policy on asset markets and not on how it reacts to developments in such markets.

The extraordinary events associated with the current financial turmoil have brought the strength of the relationship between wealth, the financial and the housing sectors and monetary conduction to the

¹ Afonso and Sousa (2011) also use a fully simultaneous system of equations to uncover the effects of unexpected variation in fiscal policy on asset prices, and find that it can substantially increase the variability of housing and stock prices.

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