Journal of Financial Stability 7 (2011) 70–77

Contents lists available at ScienceDirect

Journal of Financial Stability

journal homepage: www.elsevier.com/locate/jfstabil

The optimal monetary instrument for prudential purposes☆

C.A.E. Goodhart[a], P. Sunirand[a], D.P. Tsomocos[b,*]

[a] Financial Markets Group, London School of Economics, United Kingdom
[b] Saïd Business School and St. Edmund Hall, University of Oxford, United Kingdom

ARTICLE INFO

Article history:
Received 28 June 2008
Received in revised form 17 June 2009
Accepted 23 June 2009
Available online 5 August 2009

JEL classification:
D58
E44
G28

Keywords:
Interest rates
Monetary base
Bank capital
Financial stability
Monetary policy

ABSTRACT

The purpose of this paper is to assess the choice between adopting a monetary base or an interest rate setting instrument to maintain financial stability. Our results suggest that the interest rate instrument is preferable, since during times of a panic or financial crisis the Central Bank automatically satisfies the increased demand for money. Thus, it prevents sharp losses in asset values and enhanced asset volatility.

1. Introduction

The monetary authorities can, in principle, choose either a monetary (base) target, or set a nominal interest rate. Virtually all studies of these two alternatives have, heretofore, reviewed this choice in the context of macro-monetary policy, in particular for the objectives of achieving price (and output) stability. Milestones along this route include Poole (1970), Sargent and Wallace (1975) and more recently McCallum (1999, 2005), and Woodford (2006).[1]

But the achievement of macro-policy stability is only one of the objectives of the monetary authorities. A second core purpose is to maintain systemic stability, to prevent panics and contagious collapses of the banking and payments' systems. Just as the choice between adopting a monetary base or an interest rate setting instrument may impinge on macro-policy stability, so that same choice may also have implications for a Central Bank's ability to maintain systemic stability. The purpose of this paper is to explore those latter implications.

The basic intuition, why an interest rate instrument is preferable for this latter purpose, is almost trivially simple. A panic, or crisis, involves a loss of confidence, with sharp losses in asset values and enhanced asset price volatility. In these conditions there will be a marked increase in the demand for safe, liquid assets, for broad money if confidence in bank solvency survives, for base money if it does not. If the Central Bank holds interest rates pegged, it will quasi-automatically satisfy that increased demand for money. If it holds the monetary base constant, that extra demand for money will drive up interest rates, exacerbating asset price losses and worsening the crisis.

In particular, changes, especially declines, in asset markets can be sudden, and that can drive sharp swings in sentiment/confidence. Such fluctuations in confidence are latent variables, difficult to observe with any accuracy. So a policy stance that quasi-automatically offsets them is especially valuable. Moreover, panics/crises can emerge rapidly out of a blue sky, as in many Asian countries in 1997/1998 and from the US sub-prime mortgage market in mid-2007, or from seemingly extraneous events, as in Iceland in May 2006, or the Shanghai stock market in February 2007. Again

☆ The authors are grateful to an anonymous referee for helpful comments. However, all remaining errors are ours.
* Corresponding author. Tel.: +44 1865 288 932; fax: +44 1865 288 805.
E-mail address: dimitrios.tsomocos@sbs.ox.ac.uk (D.P. Tsomocos).
[1] The debate has circled, rather like Denis Robertson's hunted hare (in Lectures on Economic Principles, 1959) from espousing monetary targets, as having better stabilisation properties, at least in theory, in the 1970s to the present preference for setting interest rates directly to hit an inflation target (without any reference to the monetary aggregates) since this latter avoids the instability (error shocks) inherent in the velocity (demand for money) function. It is not our purpose here to comment on this literature.

1572-3089/$ – see front matter © 2009 Elsevier B.V. All rights reserved.
doi:10.1016/j.jfs.2009.06.002

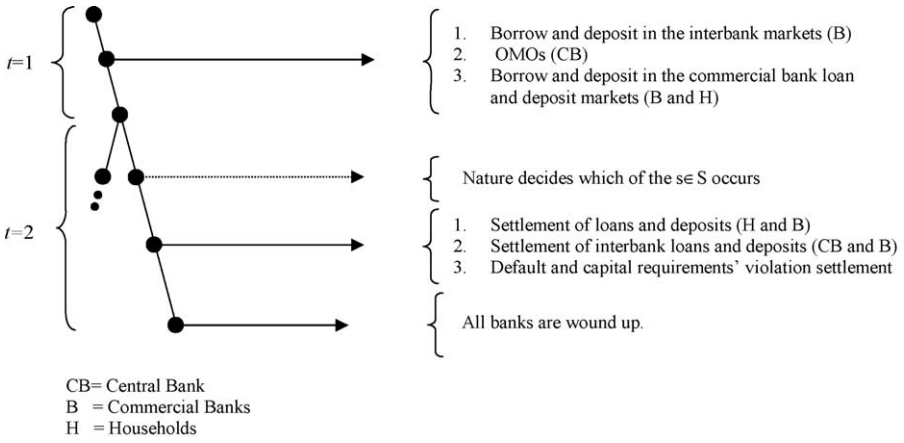

Fig. 1. The time structure of the model.

an instantaneous quasi-automatic policy response can be better than waiting for a Committee decision.

One reason why the initial Sargent and Wallace (1975) preference for using a monetary aggregate as the authorities' instrument was later abandoned is that inflation is a relatively slow-moving variable, reasonably accurately observed at frequent intervals. So, despite the fact that using the monetary base as instrument also provides quasi-automatic stabilisation properties for the real economy, there is usually plenty of time and of information to adjust interest rates directly to drive forecast inflation back into line with target inflation, while remaining within the periodic cycle of policy committee meetings. When dealing with potential financial crises, however, the relevant time frame is often much more immediate, and information on market moods much less concrete. In such circumstances quasi-automatic stabilising properties become much more valuable.

We do not claim that this simple argument is original; it is too patently self-evident for that to be true, though it is not all that frequently made.[2] What we do claim is that we are the first, in this paper, to present a rigorous, rational expectations, general equilibrium model in which the alternative effects on systemic stability of the choice between a monetary aggregate and an interest rate policy can be calibrated in quantitative terms.

In Section 2, we present our basic model. This is not new in this paper. It is the model that we have been developing for several years, in a number of papers (Goodhart et al., 2004, 2005, 2006a,b; Aspachs et al., 2006). Indeed parts of Section 2 follow directly from Aspachs et al. (2007), so that readers do not have to go to a separate site to follow what is going on. Then in Section 3 we calibrate the effect of a variety of shocks on the model in identical circumstances, except that in one case the policy instrument is a (temporarily) pegged money stock, while in the other it is a (temporarily) pegged interest rate. We demonstrate that the effects on key variables in the financial system of most such shocks are far more destabilising when the money stock is held constant, than when the interest rate is pegged. Section 4 indicates some qualifications, indicates avenues for further research, and concludes.

2. Description of the model[3]

The model incorporates heterogeneous banks and capital requirements in a general equilibrium model with incomplete markets, money and default. It extends over two periods and all uncertainty is resolved in the second period. Trade takes place in both periods in the goods market. In the first period agents also borrow from, or deposit money with banks, mainly to achieve a preferred time path for consumption. Banks also trade amongst themselves, to smooth out their individual portfolio positions. The Central Bank intervenes in the interbank market to change the money supply and thereby set the interest rate. Capital adequacy requirements (CARs) on banks are set by a regulator, who may, or may not, also be the Central Bank. Penalties on violations of CARs, and on the default of any borrower, are in force in both periods. In order to achieve formal completeness for the model, banks are liquidated at the end of the second period and their profits and assets distributed to shareholders. Fig. 1 makes the time line of the model explicit.

In the first period trades by all agents take place against a background of uncertainty about the economic conditions (the state of nature) that will prevail in the second period. Agents are, however, assumed to have rational expectations, and to know the likelihood of good and bad states occurring when they make their choices in period one. In period two the actual economic conjuncture is revealed and all uncertainty is resolved.

The model incorporates a number of distinct, i.e. heterogeneous, commercial banks (in this calibration, three (γ, δ, τ)) each characterised by a unique risk/return preference and different initial capital. Since each bank is, and is perceived as being, different, it follows that there is not a single market for either bank loans or bank deposits. In addition, we introduce limited access to consumer credit markets, with each borrowing household (households α, β and θ) assigned (by history and custom) to borrow from a predetermined bank. There is also a single (wealthy) household (Φ) who places deposits with the banks. This feature allows for different interest rates across the commer-

[2] One recent example where it is made comes in a paper by Gaspar (2006), who writes (pp. 7–8)"A corridor system for monetary policy implementation provides a very effective framework to ensure central bank's control over daily interest rates. It does so while providing an elastic currency, in other words by accommodating economic agents' demands for payments *media* in a way compatible with the smooth functioning of transactions mechanisms in the economy. A corridor system includes a marginal lending facility that fulfils the principles of the classical lender of last resort doctrine. Therefore, the corridor system for monetary policy implementation subsumes the classical lender of last resort function. It ensures it either through open market operations or through the automatic functioning of the marginal lending facility (or both). Hence, such framework contributes to financial stability, in accordance with the general principle of an open market economy, with free competition".

[3] For an extensive description of this variant of the model see Goodhart et al. (2005).