Journal of Banking & Finance 49 (2014) 337–355

Contents lists available at ScienceDirect

Journal of Banking & Finance

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

House prices, capital inflows and macroprudential policy ☆

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ARTICLE INFO

Article history:
Received 15 July 2013
Accepted 11 June 2014
Available online 8 July 2014

JEL classification:
C33
E51
F32
G21

Keywords:
House prices
Financial frictions
Global imbalances
Saving glut
Dynamic loan-to value ratios
Monetary policy
Optimized simple rules

ABSTRACT

This paper evaluates the monetary and macroprudential policies that mitigate the procyclicality arising from the interlinkages between current account deficits and financial vulnerabilities. We develop a two-country dynamic stochastic general equilibrium (DSGE) model with heterogeneous households and collateralised debt. The model predicts that external shocks are important in driving current account deficits that are coupled with run-ups in house prices and household debt. In this context, optimal policy features an interest-rate response to credit and a LTV ratio that countercyclically responds to house price dynamics. By allowing an interest-rate response to changes in financial variables, the monetary policy authority improves social welfare, because of the large welfare gains accrued to the Savers. The additional use of a countercyclical LTV ratio that responds to house prices, increases the ability of borrowers to smooth consumption over the cycle and is Pareto improving. Domestic and foreign shocks account for a similar fraction of the welfare gains delivered by such a policy.

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1. Introduction

Between 1974 and 2006, U.S. house prices and households leverage increased by about 60 and 20 per cent, respectively. See Fig. 1. The housing developments were also associated with a growing current account deficit which reached 6 per cent of GDP by the end of 2006. The global transmission of such vulnerabilities increased policy makers interest in policies that could mitigate the procyclicality arising from the interlinkages between global imbalances and domestic financial vulnerabilities.

This paper evaluates various policy actions. We begin by revisiting the long standing debate on wether monetary policy should react to financial cycles. We contribute to the debate by considering a direct response to either credit or house prices in the interest-rate rule of the central bank. We also explore the effects of macroprudential policy, given the recent policy debate which questions the traditional (micro) focus of financial stability policies and suggests the need for preventive (macro-prudential) policies that mitigate financial cycles and their economy-wide effects. We focus on the loan-to-value (LTV) ratio as a macroprudential tool and assess the ability of LTV ratio policies to provide a stable provision of loans to households in the face of both domestic and external shocks.[1] The use of dynamic macroprudential policy requirements has been suggested by The Basel Committee on the Global Financial System.[2]

☆ The work on this paper is part of FinMaP (Financial Distortions and Macroeconomic Performance, contract no. SSH.2013.1.3-2), funded by the EU Commission under its 7th Framework Programme for Research and Technological Development. We thank Filipa Sá, Dominik Supera, Punnoose Jacob, Katrin Rabitsch, Jerome Vandenbussche, Frank Warnock and seminars participants at the Banco de Portugal, Nottinhgam University Malaysia Campus, Reserve Bank of New Zealand, Vienna University of Economics and Business and at the IFABS 2013 Conference for valuable comments and suggestions. Maria Teresa Punzi gratefully acknowledges the Banco de Portugal for the 2013 visiting research grant. The views expressed in this paper are solely the responsibility of the authors and should not be interpreted as reflecting the views of the Eurosystem or of the Bank of Portugal. Any errors or omissions are the responsibility of the authors.

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[1] Note that the LTV ratio has already been used in several countries to restrain credit growth and mitigate house price cycles, see Lim et al. (2011).

[2] See Basel Committee on the Global Financial System (2010).

http://dx.doi.org/10.1016/j.jbankfin.2014.06.007
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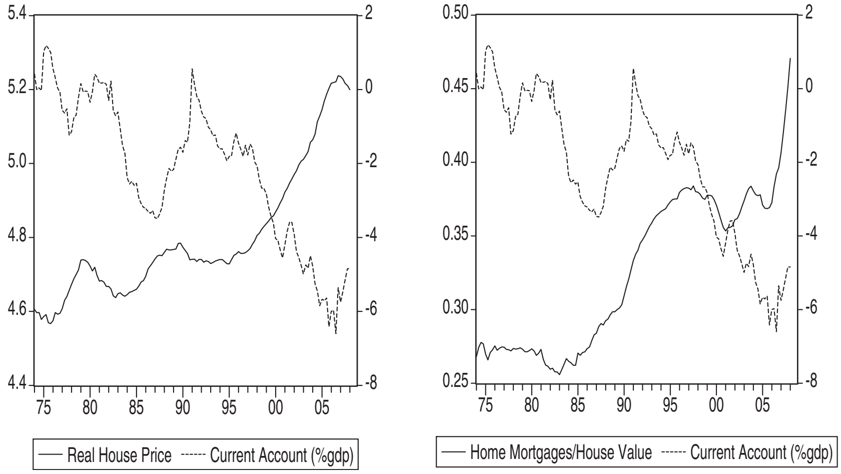

Fig. 1. Current Account (%gdp) (right axes) vs Real House Price (left panel, left axes) and Real Home Mortgage to House Value (right panel, left axes).

We address the role of monetary and macroprudential policy in the interlinkages between global imbalances and financial vulnerabilities through the lens of a stochastic general equilibrium model. First, we develop a two-country dynamic stochastic general equilibrium (DSGE) model with heterogeneous households and collateral constraints. At the core of the model is the borrowers-lenders setup developed by Kiyotaki and Moore (1997) and extended to the household sector by Iacoviello (2005). The domestic economy features two types of households that differ in terms of the rate at which they discount the future. In equilibrium, one type of households borrows whereas the other type lends. Credit constraints arise because lenders cannot force borrowers to repay. Thus, houses are also used as loan collateral in the domestic credit market. We assume that the foreign economy is populated by savers and runs a current account surplus. The foreign economy is thus willing to extend credit to the domestic economy and finance their current account deficit.[3]

We consider both domestic and external sources of economic fluctuations. Capital inflow shocks are modeled as both preference shocks to the foreign economy and as risk premium shocks. A positive shock to preferences makes foreign agents more patient and, thus, more willing to save, while a lower risk premium makes foreign borrowing less costly. We show that foreign shocks lead to both an increase in capital inflows and a persistent current account deficit. The greater availability of foreign funds leads to an increase in domestic consumption and housing investment. Due to a higher demand for housing, house prices rise, exacerbating the financial accelerator effect linked to the existence of housing collateral. Domestic shocks, such as housing preference shocks and credit shocks, generate similar results. However, in the calibrated version of the model, foreign shocks explain around 50 per cent of the volatility of the current account and 20 per cent of the variability of house prices. Monetary policy shocks account for about 30 per cent of the volatility in the current account but do not have a substantial effect on house prices. Housing preference shocks are an important driver of house prices and household credit but only explain a limited fraction of fluctuations in the current account.

In this model's context, we explore the benefits of policies that target changes in financial variables. We start by exploring whether monetary policy should explicitly recognize financial stability goals. To this end we investigate the optimality of an interest-rate response to changes in financial variables. Further, we investigate whether the use of dynamic LTV ratio policies can raise social welfare above what monetary policy could achieve by allowing for an interest-rate response to financial variables. Thus, we assess the additional benefits of allowing the LTV ratio to vary in a counter-cyclical manner. We first consider the optimal interest-rate response to changes in household credit or house-prices. We then search for the optimal LTV ratio response to variables that reflect domestic or global financial cycles. In order to draw meaningful conclusions about the desirability of alternative policies, we compare their performance on the basis of welfare criteria.

Our results show that an interest-rate response to changes in financial variables reduces macroeconomic volatility. In particular, an interest rate that directly responds to fluctuations in household credit is preferred in terms of social welfare. However, we find that the social welfare gains associated with this policy are due to the large welfare gains accrued to the Savers. An interest rate response to household credit reduces the volatility of both financial variables and the real interest rate. This results in a reduction in the volatility of the interest income of Savers which helps to stabilize their housing investment and consumption over the business cycle. At the same time, by reducing the volatility of financial variables, this policy limits the amplification effect of the collateral constraint and, thus, the Borrowers' ability to invest and consume. As a result, the welfare of one group of agents is increased at the cost of a reduction in the welfare of the other group.

We argue that the additional use of a countercyclical LTV ratio that optimally responds to changes in house prices improves social welfare relative to a constant LTV ratio policy. Limiting leverage and domestic borrowing capacity during periods of expansion and facilitating the use of credit during recessionary periods helps Borrowers to smooth consumption over time. In particular, the LTV ratio rule that optimally responds to fluctuations in house prices eliminates the trade-off between the Savers' and Borrowers' welfare. Thus, a policy that optimally combines an interest rate response to household credit with the use of dynamic requirements for the loan-to-value (LTV) ratios is Pareto improving.

Further, in terms of stabilization effects, this policy is more successful than others in reducing the volatility of both financial variables and the real interest rate. The analysis conducted in this paper does not target the smoothing out of specific shocks. By investigating the importance of varying sources of fluctuations, we find that the optimality of this policy is not driven by particular shocks. Indeed, domestic and foreign shocks account for a similar fraction of the welfare gains delivered by such a policy.

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[3] Close economy models of the housing market with borrowing constraints have been developed by Iacoviello (2005) and Campbell and Hercowitz (2005). For open economy extensions, see Christensen et al. (2013) for a small open economy and Iacoviello and Minetti (2006) and Punzi (2013) for two-country economy versions, among others.

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