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National macroprudential policies in the euro area: Flexibility vs. supervision

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HIGHLIGHTS

- Macroprudential policies need to be more aggressive in the euro area periphery.
- National LTV policies are beneficial for the union as a whole.
- ECB supervision of national macroprudential policies is welfare enhancing.

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ABSTRACT

In this paper, I shed some light on a much discussed topic in the policy debate: Should national macroprudential policies be supervised by a supranational entity in a monetary union? To do so, I develop a two-country DSGE monetary union model, which I calibrate to the core and periphery regions of the euro area. Monetary policy is set by the ECB, while macroprudential policies, based on the loan-to-value ratio (LTV), are set nationally. Results show that, given that the economy in the periphery is more leveraged, macroprudential policies need to be more aggressive in that region. I also find that, when LTV policies are set independently in a non-coordinated manner by each authority, albeit being beneficial for both countries and for the union as a whole, welfare gains are not as high as when they are coordinated and supervised by a separate body.

1. Introduction

The severe crisis we have experienced in the last decade has taught us that we need policies now to prevent systemic risk and excessive credit growth, namely macroprudential policies. In the euro area, the institutional framework comprises various authorities with a macroprudential mandate at a national level, and the ECB with specific macroprudential competence at the Banking Union level. The ECB monitors developments in the banking sector of the euro area and the EU as a whole, as well as other financial sectors, to identify any vulnerabilities and check the resilience of the financial system. It carries out these tasks together with the other central banks of the Eurosystem and the European System of Central Banks. That is, macroprudential policies are implemented at a national level, but within a system of central supervision.

However, this current macroprudential framework still generates a number of doubts because of the complex process for coordinating measures across heterogeneous members. The euro area is indeed an area in which member states' business and financial cycles are not fully synchronized, especially as regards credit and housing markets. Following this debate, the European Commission launched in 2016 a consultation on the EU macroprudential framework to gather feedback and evidence on how it is functioning and how should be properly be designed. The key aim was to ensure the right balance between national flexibility and central supervision is achieved (See http://ec.europa.eu/finance/consultations/2016/macroprudential-framework/index_en.htm).

In this paper, I explore this issue from a theoretical perspective, with a two-country monetary union DSGE model calibrated for core and periphery. In particular, I study the welfare implications of having national macroprudential policies supervised by a centralized entity that is in charge of safeguarding the welfare of the whole union. In this way, I can propose what the optimal compromise between national and centralized policies would be. For that purpose, I consider two cases; one in which policies are set by each country independently, in a non-coordinated manner; and

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one in which there is a supranational authority that coordinates the policies and acts in favor of the whole union.

Results show that macroprudential policy should be more aggressive in the periphery, given its more leveraged economy, supporting the use of national macroprudential policies. However, welfare increases by more if policies are supervised and coordinated by a supranational authority, which acts in favor of having the ECB as a coordinating entity.

2. Model setup

The model constitutes a two-country monetary union version of the seminal paper of Iacoviello (2005), introducing cross-country housing-market heterogeneity in the spirit of Rubio (2014). The home country represents the core economy and the rest of the union is the periphery. Variables in the periphery are denote by a star. Households consume, work, and demand real estate. Each country produces one differentiated intermediate good, but households consume goods from both countries. There are two types of consumers in each country: borrowers and savers. Borrowers are constrained individuals who need to collateralize their debt repayment with housing. Firms follow a standard Calvo problem. There is a construction sector that produces houses. Monetary policy is conducted by a single central bank that responds to a weighted average of inflation in both countries. A separate authority conducts macroprudential policy. I allow for housing-market heterogeneity across the countries.

I summarize the consumer's problem below. Here, only the problems and the equations for the core economy are presented and discussed, since the model is symmetric. The complete set of structural equations is presented in the Appendix.

2.1. The consumer's problem

2.1.1. Savers

Savers in the core economy maximize as follows:

$$\max\ E_0 \sum_{t=0}^{\infty} \beta^t \left(\ln \widetilde{C}_t + j \ln H_t - \frac{\left(L_t^u\right)^{\eta}}{\eta} \right), \tag{1}$$

E_0 is the expectation operator, $\beta \in (0, 1)$ is the discount factor, and $\widetilde{C}_t$, H_t, and L_t are consumption at t, the stock of housing, and hours worked, respectively. j represents the weight of housing in the utility function. $1/(\eta - 1)$ is the aggregate labor-supply elasticity.

Consumption is a bundle of domestically and foreign-produced goods, defined as: $\widetilde{C}_t = (C_t)^n \left(C_t^*\right)^{1-n}$, where n is the size of the core economy. Savers provide labor to both the consumption and construction sector, so that $L_t = \left[(L_{ct})^{1-\nu} + (L_{ht})^{1-\nu} \right]^{\frac{1}{1-\nu}}$.

The budget constraint is as follows:

$$\begin{aligned} &P_t C_t + P_t^* C_t^* + Q_t \left(H_t - H_{t-1}\right) + R_{t-1} B_{t-1} + R_{t-1}^* D_{t-1} + \frac{\psi}{2} D_t^2 \\ &\quad \leq W_{ct} L_{ct} + W_{ht} L_{ht} + B_t + D_t + P_t F_t + P_t T_t, \end{aligned} \tag{2}$$

where P_t and P_t^* are the prices of the goods produced in the home country and abroad, respectively, Q_t is the housing price, and W_{ct} and W_{ht} are the consumption and housing sector wages for unconstrained consumers. B_t represents domestic bonds denominated in the common currency. R_t is the nominal interest rate in the home economy. Positive bond holdings signify borrowing, and negative signify savings. However, as we will see, unconstrained consumers will choose not to borrow at all: they are the savers in this economy. D_t are foreign-bond holdings by savers at home.[1] R_t^* is the nominal rate of foreign bonds, which are denominated in euros. As is common in the literature, to ensure stationarity of net foreign assets we introduced a small quadratic cost of deviating from zero foreign borrowing, $\frac{\psi}{2} D_t^2$.[2] Savers obtain interest on their savings. F_t are lump-sum profits received from the firms. T_t are lump-sum government transfers.

Dividing by P_t, we can rewrite the budget constraint in terms of goods at home. Maximizing (1) subject to the budget constraint, we obtain the first-order conditions for the savers.

2.1.2. Borrowers

Borrowers are more impatient than savers, that is $\widetilde{\beta} < \beta$. They face a collateral constraint: the expected debt repayment in the next period cannot exceed a proportion of the expectation of tomorrow's value of today's stock of housing:

$$E_t \frac{R_t}{\pi_{t+1}} b_t' \leq k_t E_t q_{t+1} H_t', \tag{3}$$

k_t can be interpreted as the loan-to-value ratio and it is the instrument for the national macroprudential regulator.

Borrowers maximize their lifetime utility function:

$$\max\ E_0 \sum_{t=0}^{\infty} \widetilde{\beta}^t \left(\ln \widetilde{C}_t' + j_t \ln H_t' - \frac{\left(L_t'\right)^{\eta}}{\eta} \right), \tag{4}$$

where $\widetilde{C}_t' = \left(C_t'\right)^n \left(C_t^{*'}\right)^{1-n}$, $L_t' = \left[\left(L_{ct}'\right)^{1-\nu} + \left(L_{ht}'\right)^{1-\nu} \right]^{\frac{1}{1-\nu}}$, subject to the budget constraint (in terms of the consumption good):

$$\begin{aligned} &C_t' + \frac{P_t^*}{P_t} C_t^{*'} + q_t \left(H_t' - H_{t-1}'\right) + \frac{R_{t-1} b_{t-1}'}{\pi_t} \\ &\quad \leq w_{ct}' L_{ct}' + w_{ht}' L_t' + b_t', \end{aligned} \tag{5}$$

and subject to the collateral constraint (3).

2.2. Macroprudential policy

As an approximation for a realistic macroprudential policy, I consider a Taylor-type rule for the loan-to-value ratio (LTV), which responds to credit deviations from its steady state.[3] Macroprudential policy is national, that is, each country can implement its own rule:

$$k_t = k_{SS} \left(\frac{b_t}{b} \right)^{-\phi_b}, \tag{6}$$

$$k_t^* = k_{SS}^* \left(\frac{b_t^*}{b^*} \right)^{-\phi_b^*}. \tag{7}$$

2.3. Parameter values

Parameters are calibrated to reflect the core economy and the periphery. Some of the parameters are standard and are common for both economies and some others will be specifically calibrated for each area. See Table A.1.

Discount factors are set to be common in both economies, following the standard values in the literature. The discount factor for savers, β, is set to 0.99 so that the annual interest rate is 4% in steady state. The discount factor for borrowers, $\widetilde{\beta}$, is set to 0.98.[4] The steady-state weight of housing in the utility function, j, is set to 0.12. This parameter pins down the ratio of housing wealth to

[1] Savers have access to international financial markets.

[2] See Iacoviello and Smets (2006) for a similar specification of the budget constraint.

[3] I call it "Taylor type" because its structure reminds that of the traditional Taylor rule for monetary policy.

[4] Lawrance (1991) estimate discount factors for poor consumers at between 0.95 and 0.98 at quarterly frequency.