



Financial openness, financial frictions and optimal monetary policy

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ARTICLE INFO

Article history:

Received 17 June 2010

Accepted 28 June 2011

Available online 11 August 2011

JEL classification:

E52

F1

Keywords:

Global imbalances

Collateral constraints

Monetary regimes

ABSTRACT

Increasing financial integration challenges the optimality of inward-looking strategies for optimal monetary policy. Those issues are analyzed in an open economy where foreign net lending, and the current account, are determined by a collateral constraint. Durables represent collateral. The current account features persistent imbalances, but can deliver a long run stationary equilibrium. The comparison between floating and managed exchange rate regimes shows that the *impossible trinity* is reversed: higher financial integration increases the persistence and volatility of the current account and calls for exchange rate stabilization. In this context, the Ramsey plan too prescribes stabilization of the exchange rate, alongside with domestic inflation.

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1. Introduction

The last two decades have been characterized by an extraordinary wave of financial globalization often accompanied with persistent current account imbalances.¹ For many countries current account imbalances have been negatively related to booms in house prices, mortgages and consumer credits and in the demand for durable goods, such as residential properties. Since a significant proportion of claims on consumers credit has been placed in the international markets, for many countries the boom in the demand for durable goods has been financed mainly through foreign lending.² Lending standards have been in general quite loose along several dimensions and overall they have been tied to collateral values, in a way that swings (upward or downward) in durable prices (particularly house prices) have determined the amount of lending.³

Against this background many central banks around the world have followed, explicitly or implicitly, inflation targeting or price stability policies without assigning any weight to fluctuations in asset prices, house prices or exchange rates. This is

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¹ Backus et al. (2005) show that among industrialized countries the US, the UK, Spain and Australia have run persistent current account deficits.

² See Bernanke (2005) for a discussion of the link between global imbalances and house price booms. He noticed that countries whose current accounts have moved toward deficits have generally experienced substantial housing appreciation and increases in household wealth.

³ The practice on the collateral policies adopted by the banks in the last two decades have been quite risky. Banks, mostly in the US and the UK, had tied mortgages solely to the market value of the underlying houses, without any requirement in terms of future income streams. In those circumstances the availability of lending is heavily dependent on the market swings of the underlying durable good. In many occasions banks have renewed and replenished mortgages whenever the house price had gone up, independently from the ability of the borrower to repay.

remarkable given that some countries had experienced significant exchange rate depreciations and asset price growth. We therefore ask whether the prescriptions for monetary policy change in an environment as the one described above.

To this purpose we lay down a DSGE small open economy model in which agents consume durable and non-durable goods,⁴ supply labor services and finance consumption with foreign lending. The rest of the world is populated by infinitely lived agents, whose behavior is in accordance with the consumption smoothing hypothesis. Total (net) lending is constrained by a borrowing limit and is secured by collateral in the form of durable stock, as the latter can be seized by lenders in the event of default. Due to imperfect monitoring only a fraction of this collateral can be pledged by lenders. The type of borrowing constraint considered is a collateral constraint.⁵ We further assume that durable goods provide utility services⁶ and that durable investment is subject to adjustment costs, an assumption which allows to reproduce persistence in response to various shocks.⁷ In this model net asset accumulation is determined by the borrowing constraint and depends upon the future value of collateral. The degree of financial exposure in this economy is captured by the loan to value ratio, which, along the dynamic, corresponds to the sensitivity of foreign lending to the value of collateral. There are two production sectors in the domestic economy: the durable good sector and the non-durable goods sector. Firms in both sectors are monopolistic competitive and face quadratic adjustment costs: this assumption is introduced to study non-neutral monetary policy and to compare alternative exchange rate regimes. Monetary policy is conducted by means of Taylor type rules, so that exchange rate regimes are identified by a certain response of the interest rate to changes in the exchange rate.

Three results arise. First, we show that the net asset accumulation in this model is uniquely determined in the steady state and that it is saddle path stationary in a neighborhood of the steady state. A crucial assumption for this result is that foreign agents have higher discount rates than domestic lenders. In this case the domestic economy experiences a persistent current account deficit, as in equilibrium domestic residents behave as impatient agents and borrow from the rest of the world. Despite this, the current account deficit leads to stationary dynamics. Second, we compare alternative exchange rate regimes (floating versus managed exchange rates) under productivity, government expenditure and global liquidity shocks and for alternative degrees of financial openness. Our findings show that, under high financial liberalization, fluctuations in the exchange rate induce swings in the value of collateral, therefore affecting the availability of foreign lending. As a result, fluctuations in consumption, output and CPI appear amplified under a scenario with high financial liberalization. In this case the monetary authority can stabilize the economy by responding to the exchange rate. This result reverts the logic of the impossible trinity, which states that under high degree of financial openness pegging the exchange rate reduces the ability of the monetary authority to stabilize the economy. Third, we analyze the trade-offs faced by the policy maker in this environment and derive the optimal (Ramsey) plan. The design of optimal policy is conducted in two steps. First, we lay down analytically the conditions that characterize the *constrained Pareto optimal* allocation for the model economy under flexible prices; this allows us to highlight the role of real wedges in our economy. Second, we analyze the quantitative properties of the Ramsey plan for the economy with sticky prices. We find that monetary policy should deviate from price stability and smooth exchange rate fluctuations, the more so the higher the degree of financial liberalization. The Ramsey planner faces a trade-off between stabilizing domestic prices, both in the durable and the non-durable sectors, as this serves the goal of closing the price adjustment costs, and stabilizing fluctuations in the exchange rate. Movements in the latter, indeed, tend to amplify the fluctuations in the wedges, induced by the presence of the collateral constraint, on both, the marginal rate of substitution between durable and non-durable consumption and the marginal rate of substitution between non-durable consumption at two different dates. Through those channels, indeed, financial openness can amplify inefficient fluctuations in consumption. The exchange rate stabilization motive tends to prevail with increasing financial openness.

Our paper focuses on one aspect of financial globalization, namely the impressive recent growth in foreign denominated debt (see [Figs. 1 and 2](#)). The surge in foreign debt has been particularly evident in countries like the United States and the United Kingdom. The same figures show that the surge started roughly at the end of the 1990s or at the beginning of the 2000. Certainly the concept of financial globalization might be broader than that, as it involves also other types of assets. However, in our view the growth in foreign debt acquires a special importance, since it constituted a large part of the global imbalances, which are among the causes of the recent financial crisis. Particularly the existence of large unsecured debt, coupled with ample availability of global liquidity, have both, fueled the unprecedented growth in residential properties prices and determined the ensuing collapse. Such events, certainly pose for policy makers several challenges, among which reconsidering a response to exchange rate fluctuations, particularly in presence of persistent global imbalances.

The rest of the paper proceeds as follows. [Section 2](#) comments on the related literature. [Section 3](#) presents the model. [Section 4](#) demonstrates how to obtain a stationary equilibrium. [Section 5](#) describes the transmission mechanism in this model. [Section 6](#) shows the comparison of alternative exchange rate regimes under alternative degree of financial liberalization. [Section 7](#) shows the results of the optimal policy plan. [Section 8](#) concludes.

⁴ We assume that only non-durable goods are tradable and are aggregated through Armington aggregator.

⁵ See [Kiyotaki and Moore \(1997\)](#), [Kocherlakota \(2000\)](#), [Chari et al. \(2005\)](#) among others.

⁶ See [Miles \(1992\)](#) and [Iacoviello \(2005\)](#).

⁷ See [Topel and Rosen \(1988\)](#).

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