Journal of International Money and Finance 48 (2014) 314–335

Contents lists available at ScienceDirect

Journal of International Money and Finance

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

International capital flows and the boom-bust cycle in Spain ☆

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A R T I C L E I N F O

Article history:
Available online 8 June 2014

JEL code:
C11
E21
E32
E62

Keywords:
International capital flows
Boom-bust cycle
Sudden stop
Housing market
Financial frictions
Spain

A B S T R A C T

We study the joint dynamics of foreign capital flows and real activity during the recent boom-bust cycle of the Spanish economy, using a three-country New Keynesian model with credit-constrained households and firms, a construction sector and a government. We estimate the model using 1995Q1-2013Q2 data for Spain, the rest of the Euro Area (REA) and the rest of the world. We show that falling risk premia on Spanish housing and non-residential capital, a loosening of collateral constraints for Spanish households and firms, as well as a fall in the interest rate spread between Spain and the REA fuelled the Spanish output boom and the persistent rise in foreign capital flows to Spain, before the global financial crisis. During and after the global financial crisis, falling house prices, and a tightening of collateral constraints for Spanish borrowers contributed to a sharp reduction in capital inflows, and to the persistent slump in Spanish real activity. The credit crunch was especially pronounced for Spanish households; firm credit constraints tightened later and more gradually, and contributed much less to the slump.

☆ The views expressed in the paper are those of the authors and should not be attributed to the European Commission. R. Kollmann is also affiliated with the Centre for Applied Macro-economic Analysis (ANU) and the Globalization & Monetary Policy Institute (Dallas Fed).

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http://dx.doi.org/10.1016/j.jimonfin.2014.05.021

1. Introduction

After the launch of the Euro in 1999, Greece, Ireland, Portugal, Spain, and other countries in the EU periphery ran sizable current account deficits. This was often accompanied by output and construction booms in these countries, and by inflation rates above the Euro Area average. In the wake of the global financial crisis (2008–09), private capital flows to the periphery countries fell sharply, and a strong contraction in real activity and asset prices occurred.[1] This paper provides a quantitative analysis of the joint dynamics of the trade balance and real activity in Spain, the largest of the Euro Area countries that received sizable capital inflows after the creation of the Euro, and then experienced a sudden stop. We do so using a three-country New Keynesian Dynamic Stochastic General Equilibrium (DSGE) model consisting of Spain, an aggregate of the Rest of the Euro Area (REA) and an aggregate of the rest of the world (ROW).[2] We estimate the model using quarterly data for Spain, the REA and the ROW during the period 1995Q1-2013Q2. The Spanish block of the model has a rich structure that allows us to capture the key features of the Spanish boom-bust cycle. In particular, we assume a construction sector and a government; Spanish households and non-financial firms face collateral constraints (à la Kiyotaki and Moore (1997)). The model assumes nominal price and wage rigidities, as well as demand and supply shocks in goods, labor and asset markets. We use the model as a laboratory for quantifying the key drivers and transmission mechanisms that have affected the Spanish economy since 1995.

The creation of the Euro eliminated intra-Euro Area currency risk and led to a convergence of Spanish interest rates to the lower interest rates in the REA. Two other factors that may have caused the boom in the Spanish economy were loosening credit conditions, and asset bubbles. Our estimates suggest that these three factors all fuelled a sharp rise in Spanish investment and house prices, and increased the fragility of the balance sheets of Spanish households and non-financial firms. During the global financial crisis, a fall in Spanish asset prices, and a tightening of collateral constraints, led to a sharp improvement in the Spanish trade balance and current account, and to a persistent fall in Spanish residential and non-residential investment and output. The credit crunch was especially pronounced for Spanish households. Firm credit constraints tightened later and more gradually, and contributed much less to the slump.

Our analysis highlights the key role of domestic asset bubbles (explained in the model by exogenous asset risk-premium shocks) for the Spanish boom-bust cycle. In related analyses (not based on quantitative models), Reis (2013) and Fernández-Villaverde et al. (2013) argue that the pre-crisis boom in Spain (and in other Euro Area periphery countries) was largely driven by the convergence of Spanish interest rates to REA rates. While our model estimates show that interest rate convergence mattered for Spain, we find that asset bubbles and the loosening of credit constraints for households and firms had a more pronounced role.

In the aftermath of the global financial crisis, Spanish real house prices continued to fall, while equity prices stabilized after 2010. Household deleveraging during this period has been achieved through a fall in residential investment, while aggregate consumption as a share of GDP has remained comparatively stable. The tightening of firm credit constraints during the aftermath of the global crisis was partly off-set by a fall in the risk-premium on production capital. During the Spanish sovereign debt crisis, foreign *private* lending to Spain fell sharply—however, credit to Spanish households and non-financial firms was stabilized through the massive substitution of foreign private lending by central bank lending. The recovery of the world economy and increased productivity growth in Spain also contributed to the Spanish trade balance improvement, in the aftermath of the global financial crisis.

Our paper contributes to the literature that quantifies financial shocks before and during the financial crisis. By analyzing a wider range of financial shocks (interest rate spreads, risk premia on housing and production capital, shocks to collateral constraints of households and firms) in an *estimated* open economy model, we can more precisely identify the timing and relative importance of

[1] See Hale and Obstfeld (2014) and Hobza and Zeugner (2014) for detailed overviews of capital flows in the European Union.

[2] Throughout this paper, the term 'Euro Area' (EA) refers to the 17 countries that were members of the Euro Area in 2013. REA is the EA less Spain.