

Countercyclical Capital Regulation in a Small Open Economy DSGE Model

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Macroprudential rules based on house prices are more stabilising than the ESRB rule in a small open economy, as they do not prevent smoothing business cycles by borrowing abroad.

Outline

1. We build on an extended version of Clancy and Merola (2017), who in turn build on Beneš, Kumhof, Laxton (2014)
2. A small open economy model of Ireland with a financial sector
 - Banks lend to households, housing wealth serves as collateral
 - Individual households can default
 - Banks face a regulatory penalty if they breach minimal capital requirements
3. Regulatory authority imposes capital requirements
4. Countercyclical capital buffers are based on rules, including those proposed by the ESRB

Main Objectives

1. Select a set of typical shocks that are most likely to hit a small open economy such as Ireland.
2. Analyse the performance of the ESRB rule and rules based on house prices.
3. Analyse the performance "optimal simple rules."
4. Draw implications for regulatory policies.

Shocks considered

- Housing demand shock.
- Reduction in risk premium.
- Decline in export demand.
- Supply shock.

Housing boom scenario

- Disappointed expectations: everyone expects housing demand to increase in the future, but when this future arrives, the expectations do not materialise.

Macroprudential rules

Macroprudential rule varies regulatory capital requirement based on a reference variable. The latter is typically defined as a "gap," i.e., as a deviation from its (long-run) level:

Definition of gaps: Credit gap and house price gap

$$gap_t = \left(\frac{L_t}{Y_t + Y_{t-1} + Y_{t-2} + Y_{t-3}} - \frac{L}{4 * Y} \right),$$

$$price\ gap_t = \frac{P_{H,t}/P_t - \bar{P}_H/\bar{P}}{\bar{P}_H/\bar{P}}$$

The ESRB rule

$$g_t = 8\% + \begin{cases} 0 & \text{if } gap_t \leq 2\% \\ 0.3125 * gap_t & \text{if } 2\% < gap_t \leq 8\% \\ 2.5\% & \text{if } gap_t > 8\% \end{cases}$$

Alternative simple rules (based on the credit gap, house prices)

$$g_t = 8\% + \psi_{P_H} price\ gap_t + \psi_{CR} gap_t,$$

where ψ_{P_H} and ψ_{CR} are the weights on the house price gap and the credit gap, respectively, obtained by welfare maximisation. The rules are:

- **Fixed capital requirement:** $\psi_{P_H} = \psi_{CR} = 0$
- **Optimal simple rule** (unrestricted welfare maximisation): $\psi_{P_H} = 0.69$
- **Restricted optimal simple rule** (welfare maximisation if only credit gap can be in the rule): $\psi_{CR} = 0.74$

Conclusions

- The ESRB rule performs poorly when the credit gap does not move in the same direction as output. This is especially the case for a temporary decline in export demand, where the drop in domestic output could be alleviated by borrowing abroad.
- The ESRB rule does not release capital below minimum, which impedes smoothing of fluctuations.
- **The alternative rule based on house prices performs better than the ESRB rule for all the shocks considered.** The reason is that house prices are procyclical in the model.
- ESRB rule is not reactive enough (very large shocks required for the rule to kick in)

Figure 1: Housing demand shock

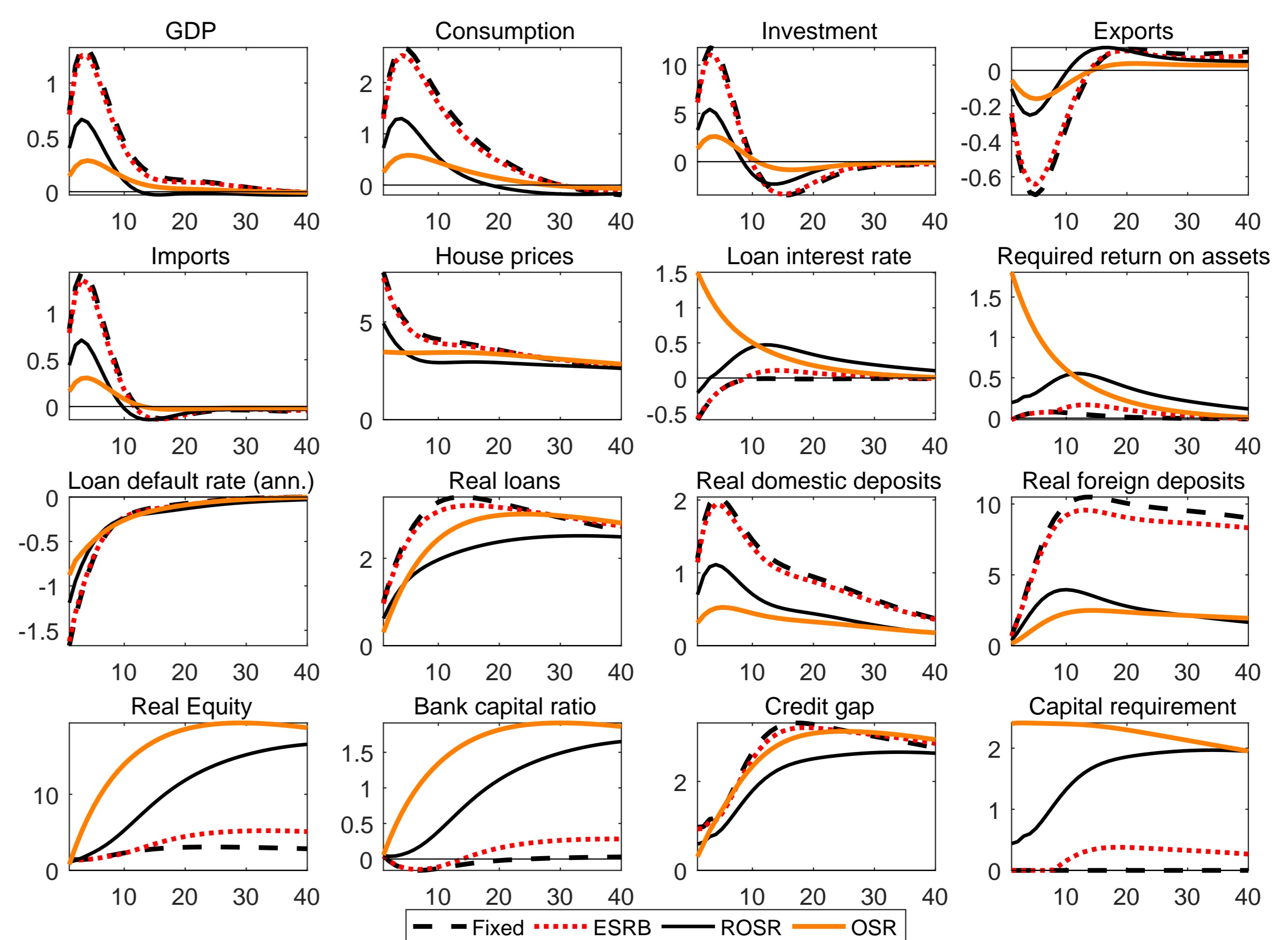


Figure 2: Terms of trade shock

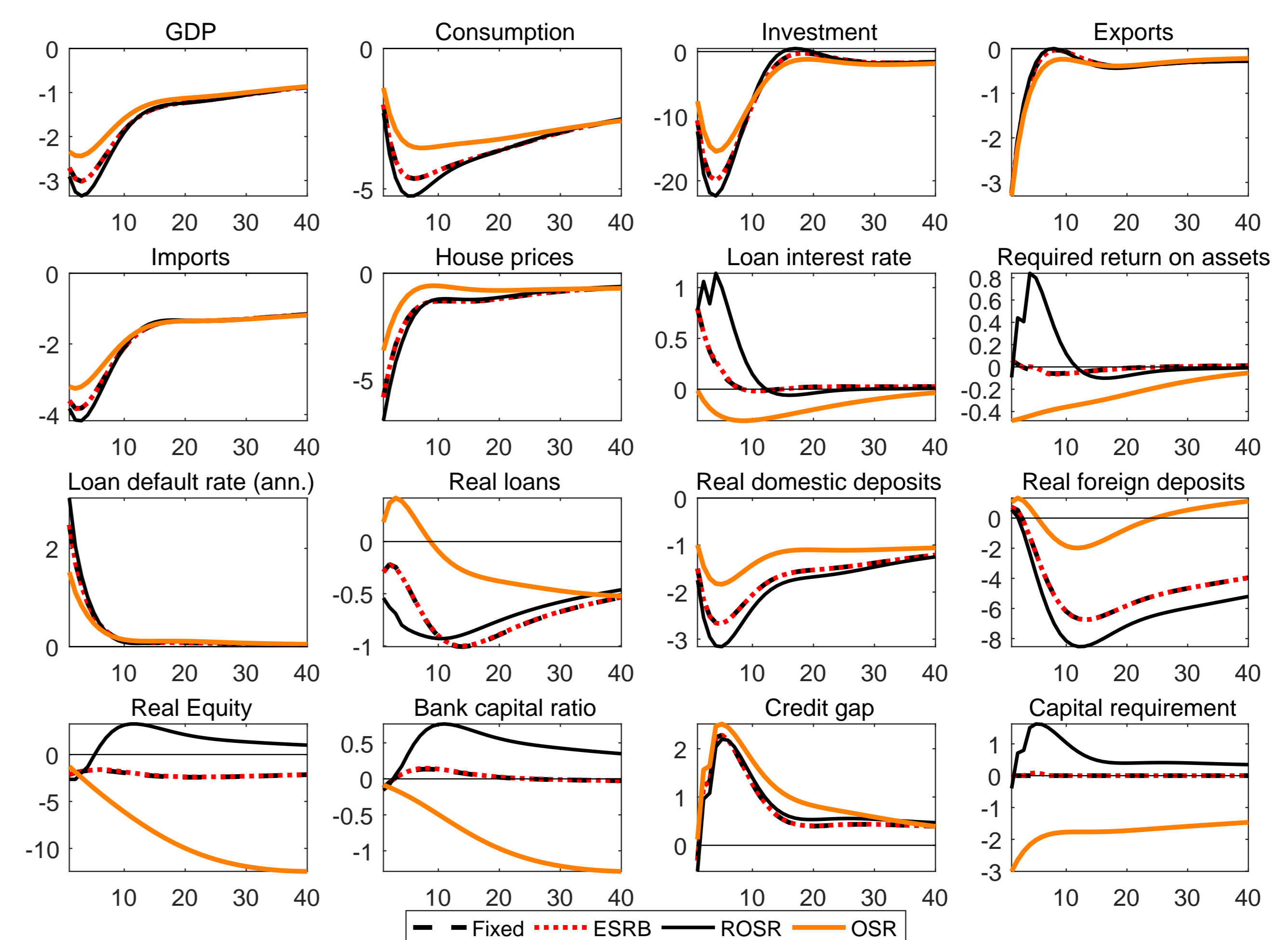


Figure 3: Boom and bust in the housing market

