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

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After launch of Euro (1999) Greece, Spain, Ireland, Portugal & other periphery countries:

► huge **current account deficits**

► **output and construction booms**

► inflation above Euro Area average

During & after Global Financial Crisis (2008-09):

► **sudden stop:** private capital flows to periphery collapsed

► **sharp fall in GDP & asset prices**

THIS PAPER:
QUANTITATIVE ANALYSIS OF SPAIN
Largest EA country with sizable capital inflows after launch of Euro, followed by sudden stop

ESTIMATED 3-COUNTRY MODEL:
ES, Rest of Euro Area (REA) and ROW

Spanish block:
- **construction sector**
- **credit constrained households & firms**
- **asset price bubbles (exogenous risk premia)**
- **nominal rigidities**

1995-2013: BOOM, GFC & AFTERMATH OF GFC

RESULTS:

1) MAIN DRIVERS OF CAPITAL INFLOWS TO ES:

●Fall in Spanish interest rates (EMU convergence)

●Credit loosening for households and firms.

●Housing and stock market bubbles: DOMINANT FACTOR

2) Adjustment of Spanish external balance after financial crisis.

●Fall in asset prices

●Tightening of collateral constraints ESPECIALLY FOR HOUSEHOLDS

KEY ROLE OF HOUSEHOLD BALANCE SHEETS

RELATED LITERATURE:
► Reis (2013), Villaverde et al (2013): claim pre-crisis boom was driven by CONVERGENCE OF SPANISH INTEREST RATES to lower REA rates

WE FIND: interest rate convergence mattered, but asset bubbles & loosening credit constraints more important

► Justiniano, Primiceri & Tambalotti (2013, 2014): quantify the effect of household (de-)leveraging in US, using calibrated DSGE model. Argue that shocks to LTV ratios per se cannot explain boom-bust cycle of US housing market.
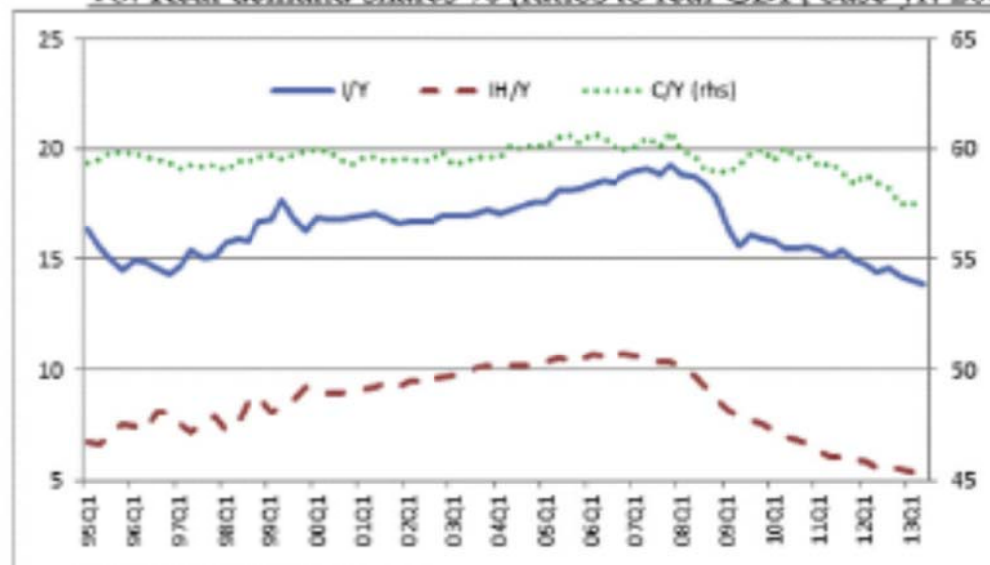
We show: need model with shocks to housing risk premia
► We have <u>estimated</u> model with wider range of shocks
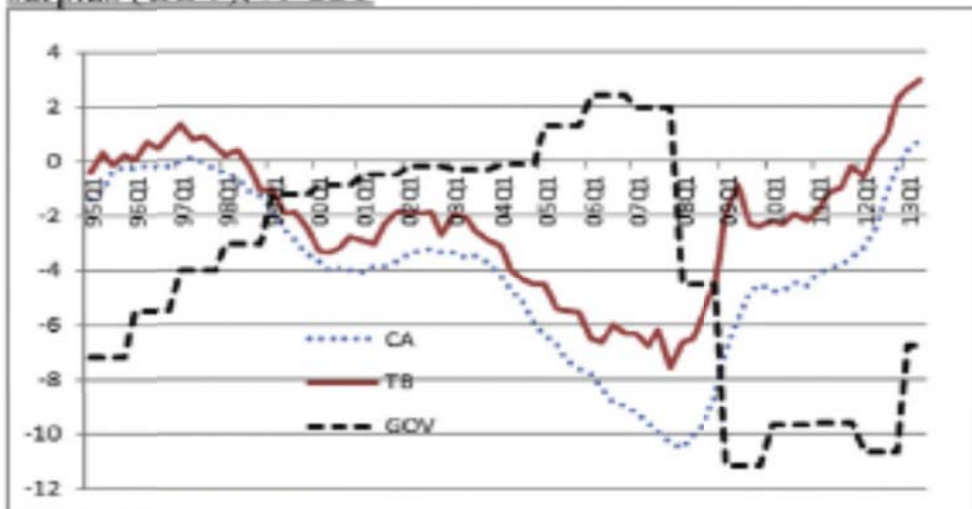
1a. Year-on-year GDP growth (%): Spain and REA

Legend: ES_Y, REA_Y
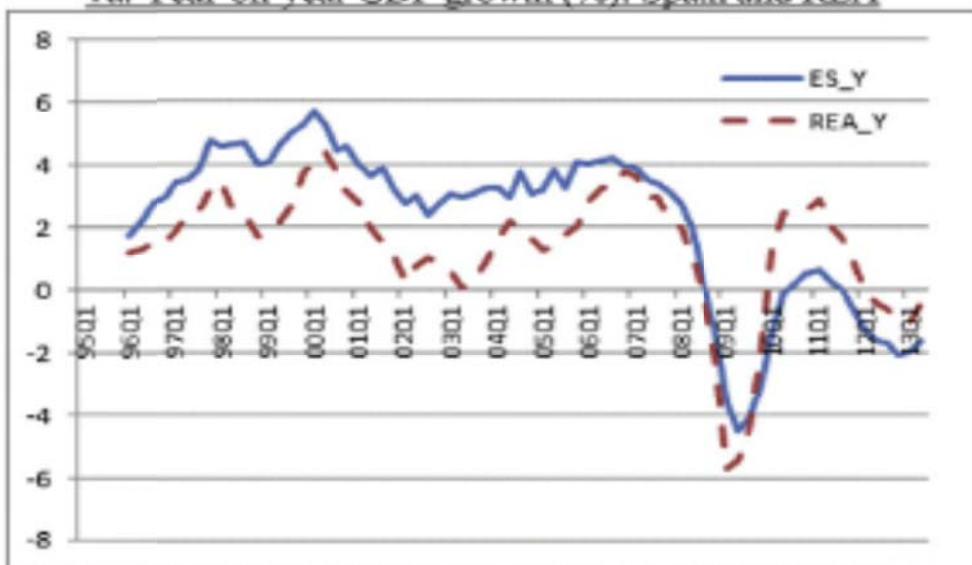
1b. Real demand shares % (ratios to real GDP, base yr. 2000)
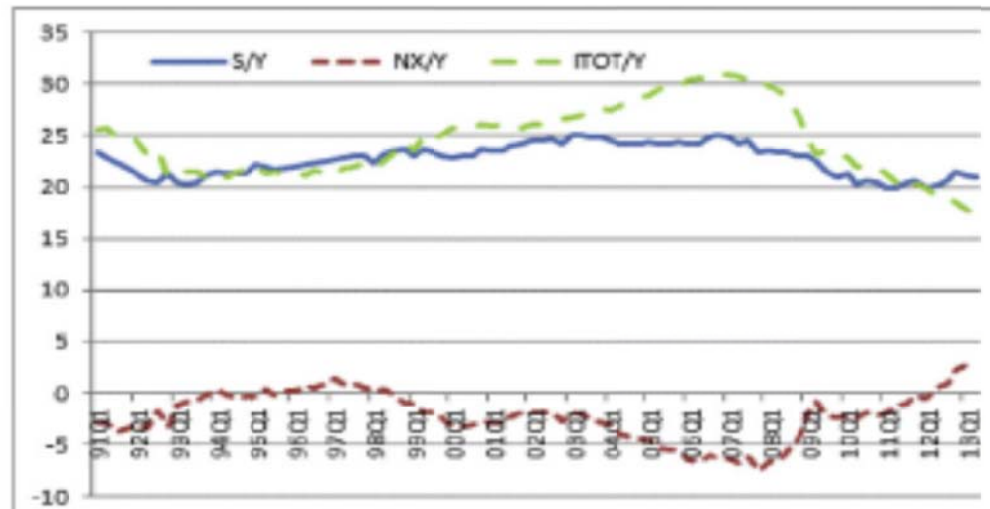

Legend: I/Y, IH/Y, C/Y (rhs)

I [IH]: non-residential [housing] investment; C: consumption

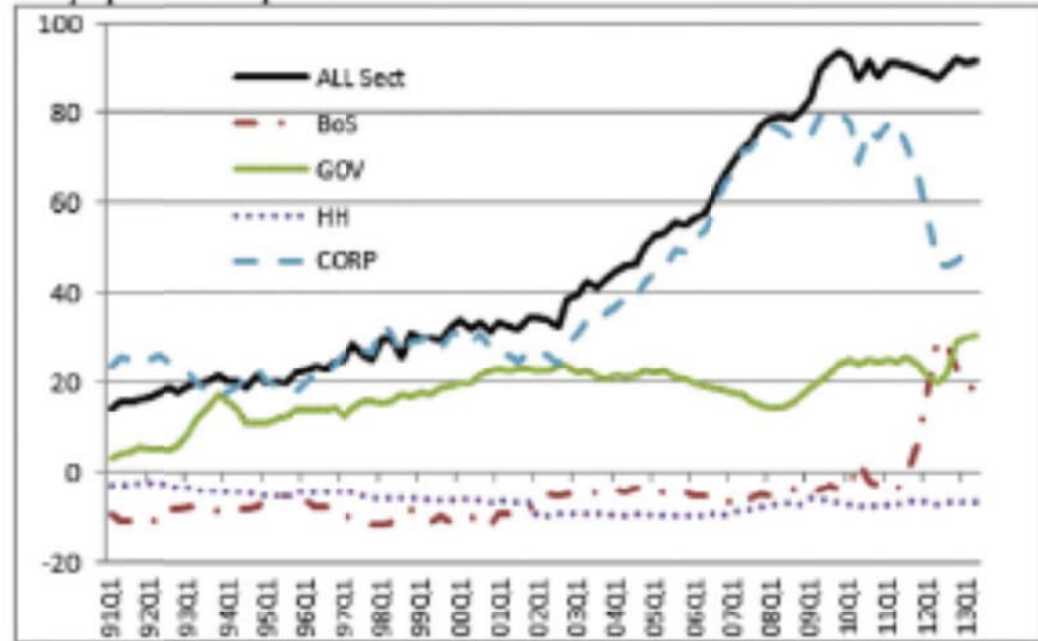## 1c. Trade balance (TB), current account (CA) and gov't surplus (GOV), % GDP

Legend: CA, TB, GOV

1d. Savings, investment, net exports, % GDP
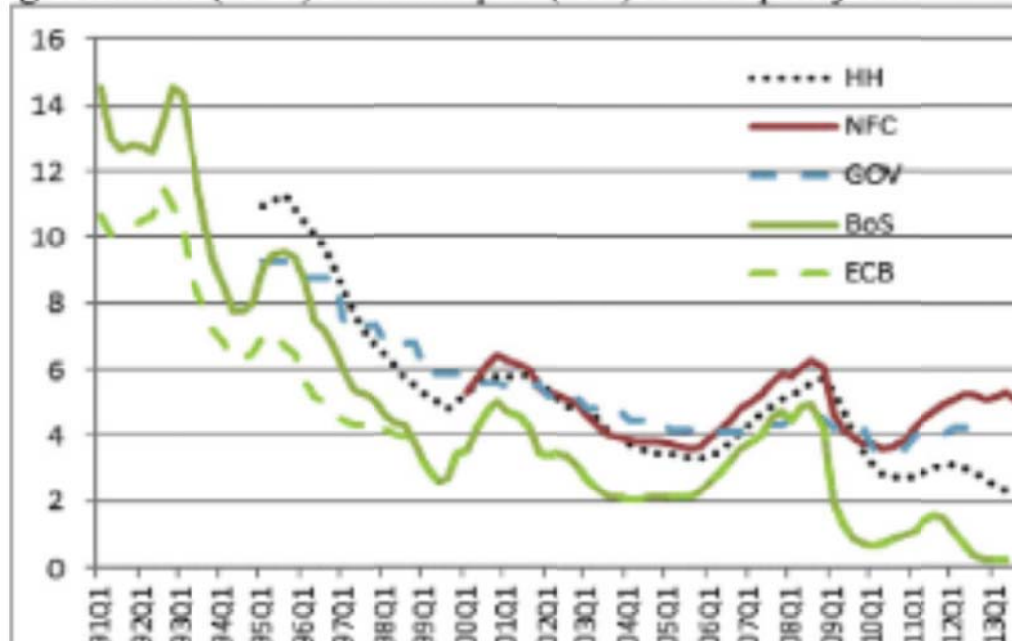

Legend: S/Y, NX/Y, ITOT/Y

1e. Net foreign claims against Spanish sectors, % GDP

BoS: Bank of Spain, GOV: general government; HH: households;
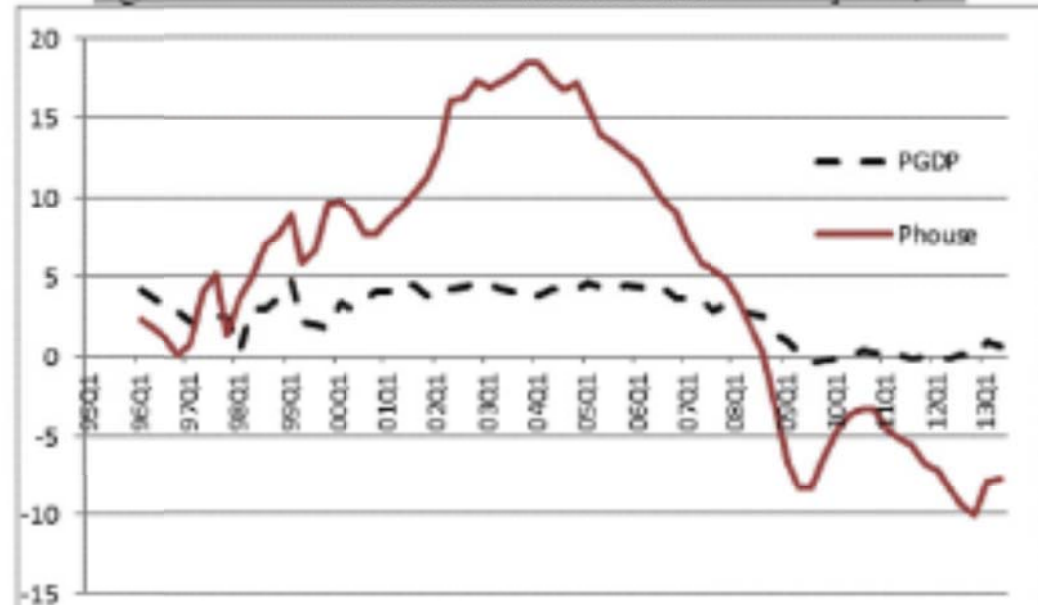Corp: private corporations

1f. Nominal interest rates,% p.a.

Borrowing rates: Spanish households (HH), non-fin. firms (NFC),
government (GOV). Bank of Spain (BoS) & ECB policy rates

1g. YoY Growth of GDP deflator and house price, %

The Model: 39 observables; 44 shocks

● ES block

● Spain: two types of households that invest in house

► Ricardian households (patient): save, own financial assets & firms

► Borrowers (impatient): collateral constraint
    indexed to house value (Iacoviello (2005))

$$D_{t+1}^{c,d} \leq \chi_t^{c,d} \, p_t^H H_{t+1}^c \qquad D_{t+1}^{c,f} \leq \chi_{t+1}^{c,f} \, p_t^H H_{t+1}^c,$$

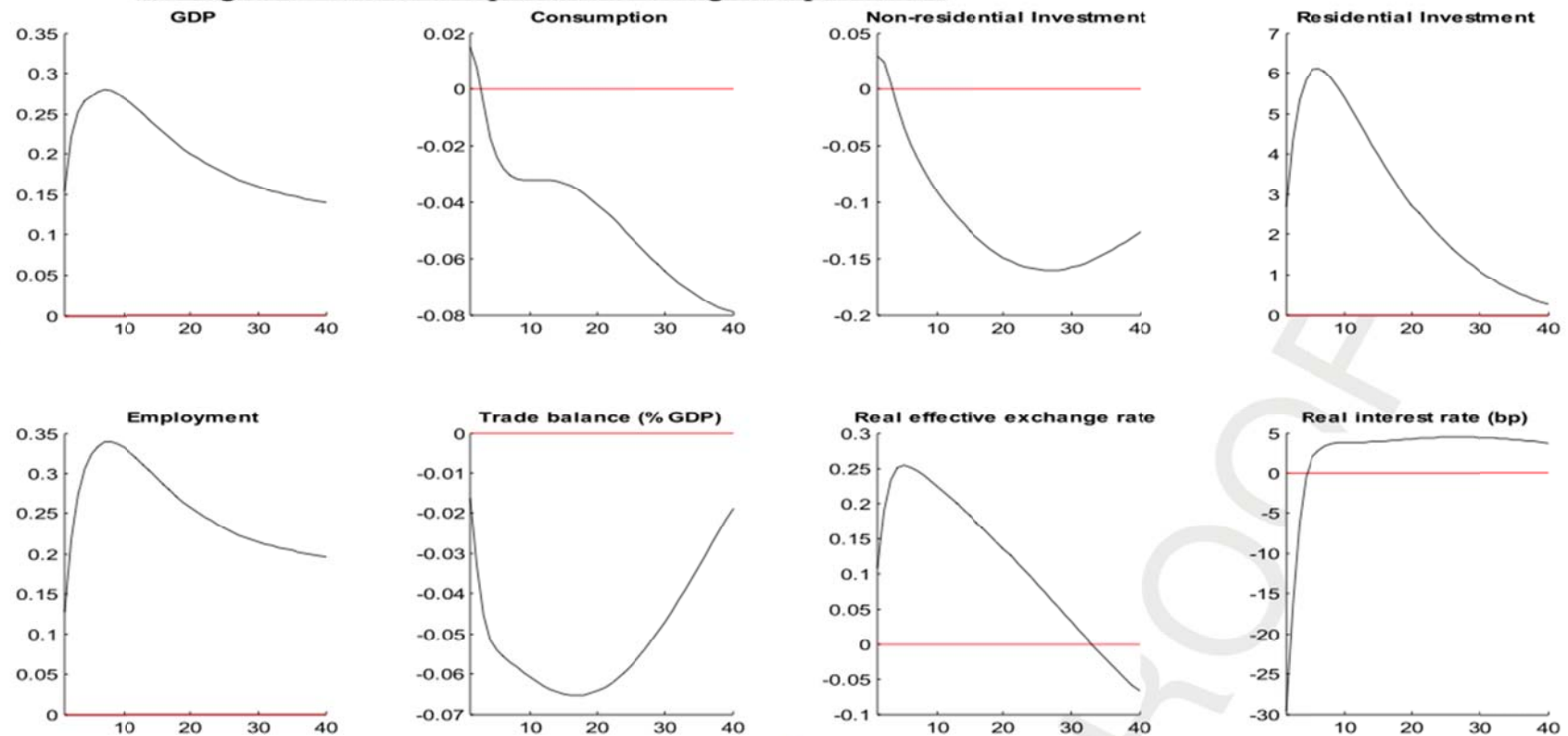$$r_t^c = r_t + spr_t^c; \text{ exog. spread on policy rate}$$

► Firms borrow because of high return on equity

$$D_{t+1}^{i,d} \leq \chi_t^{i,d} \, p_t^K K_{t+1}, \qquad D_{t+1}^{i,f} \leq \chi_t^{i,f} \, p_t^K K_{t+1},$$

$$r_t^i = r_t + spr_t^i \cdot \text{ exog. spread on policy rate}$$

● Fiscal authority: rules based stabilisation policies.

a. Negative shock to Spanish housing risk premium

NEGATIVE SHOCK TO SPANISH HOUSING RISK PREMIUM

● Residential investment & house price↑

● Private consumption ↓ (slightly): expenditure switching. Saving rate ↑

● Non-housing inv. ↑ on impact (inflation ↓ ⇒ real interest rate ↓) but falls after. Total investment ↑
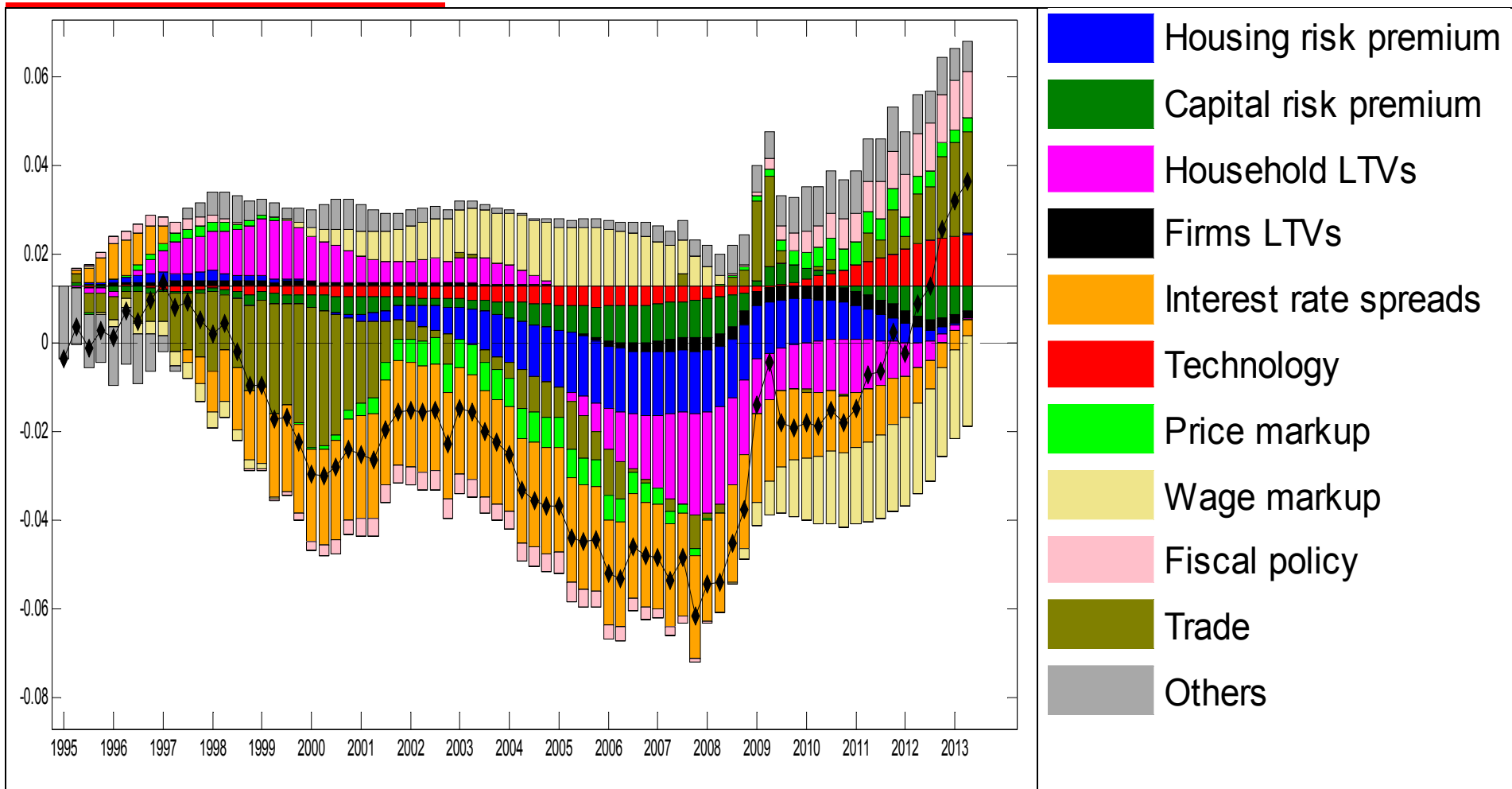
● Net exports ↓

c. Negative shock to Spanish private interest rate spread
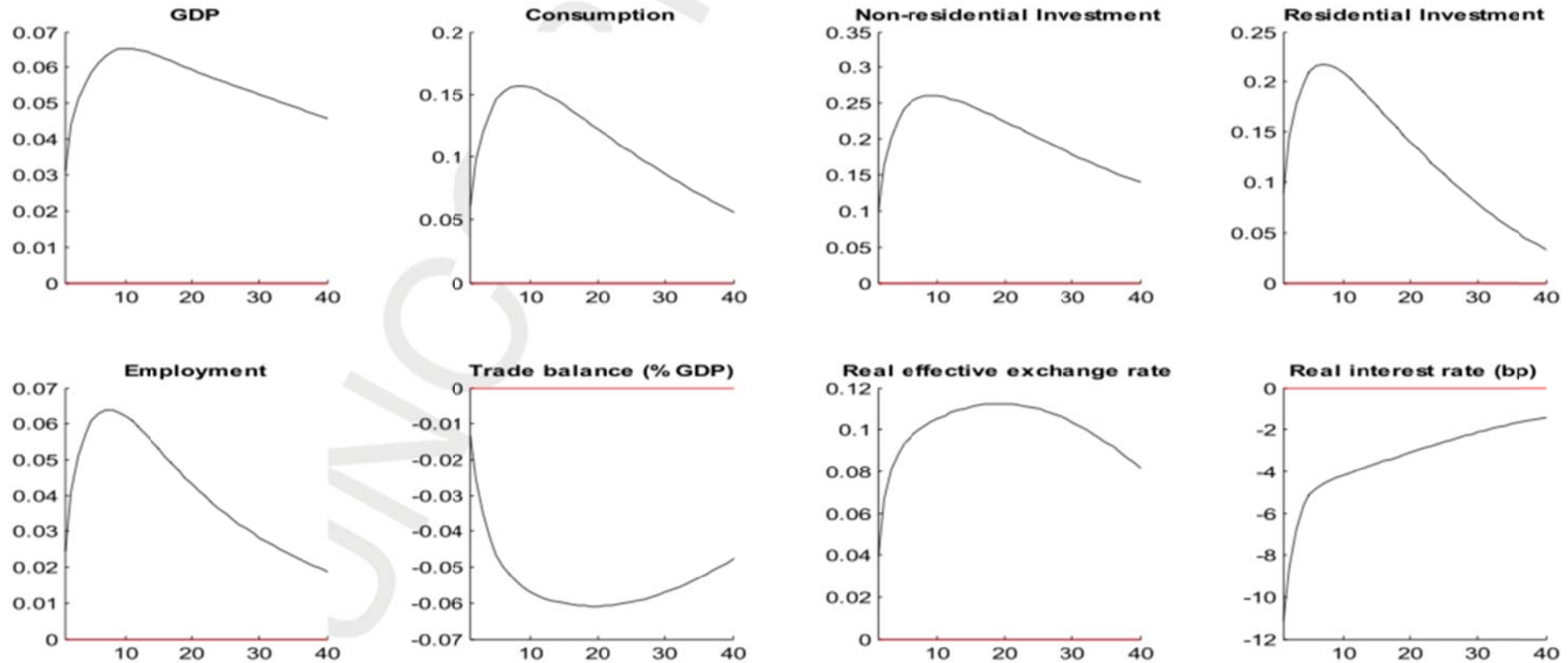
NEGATIVE SHOCH TO SPANISH INTEREST RATE SPREAD

●Simultaneous rise of C, corporate & housing investment

●Saving and invest. rate ↑, TB ↓

Trade balance/GDP

Boom: ●Housing & non-residential bubbles.
● Some collateral tightening before 2005. Looser credit conditions after 2005.
● Declining risk premia/international capital flows
Bust: ●Higher risk premia, HH collateral tightening, and fiscal consolidation.
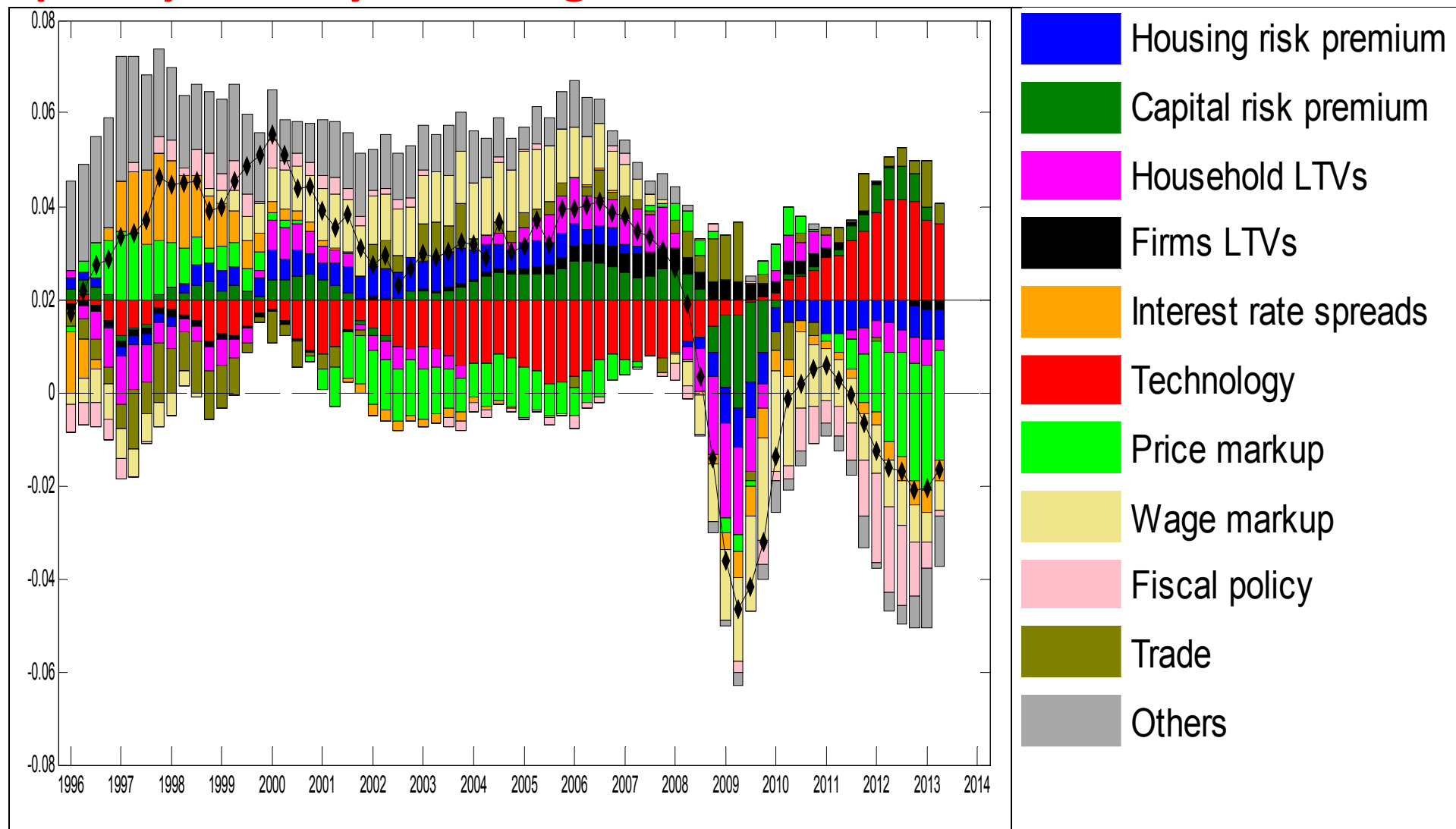trade shocks/imports after 2010 (gradual recovery of world economy).
●Wages slow down the adjustment.

Spain: total investment/GDP
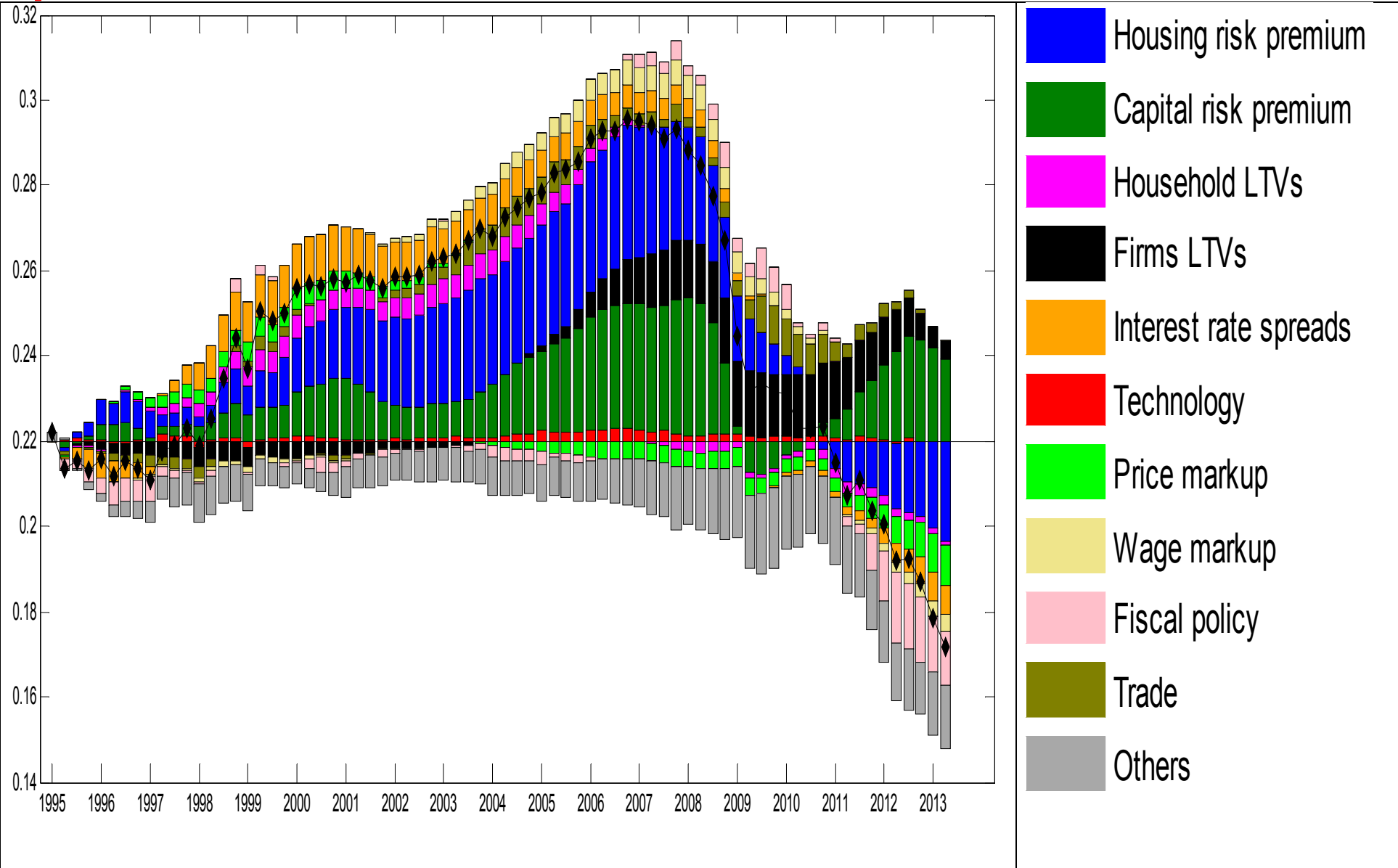
Bubble shocks and firms LTV.

Spain: year-on-year GDP growth

- **Bubble shocks and LTV loosening drive the boom**
- **Growth of low skilled labor (immigration), so TFP fell in the boom**
- **Employment growth interpreted partly by a fall in wage markup**