Post-Crisis Recovery in Slow-Motion Mode:
The Role of the Nonfinancial Corporate Sector

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*This presentation is based on joint work with **M. Gächter, M. Geiger and F. Glötzl**.*

*"The structure of an economic model … needs to include the **interrelated balance sheets** and income statements of the units of the economy."*

Hyman Minsky, 1996

Precrisis credit booms predict the drop in postcrisis economic activity
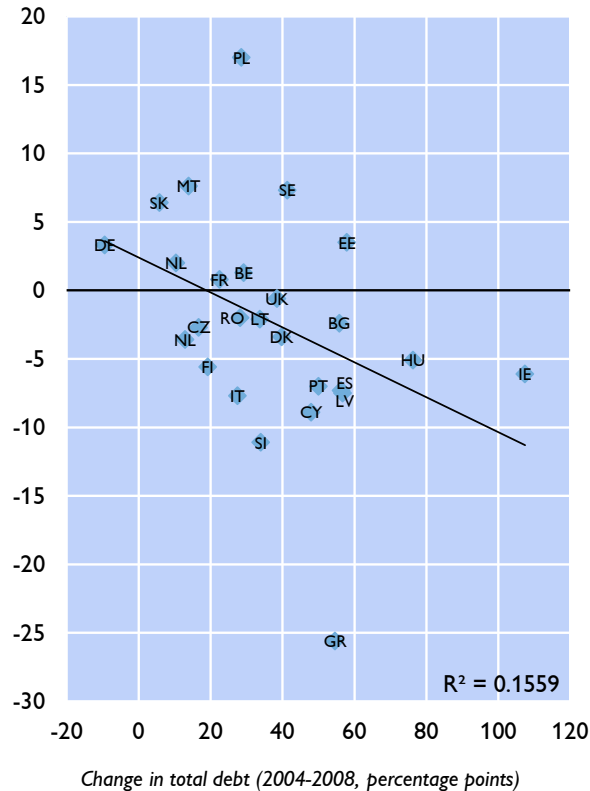
Precrisis credit booms are a drag on postcrisis recovery

Precrisis Credit Boom and Economic Activity since 2008

Real GDP

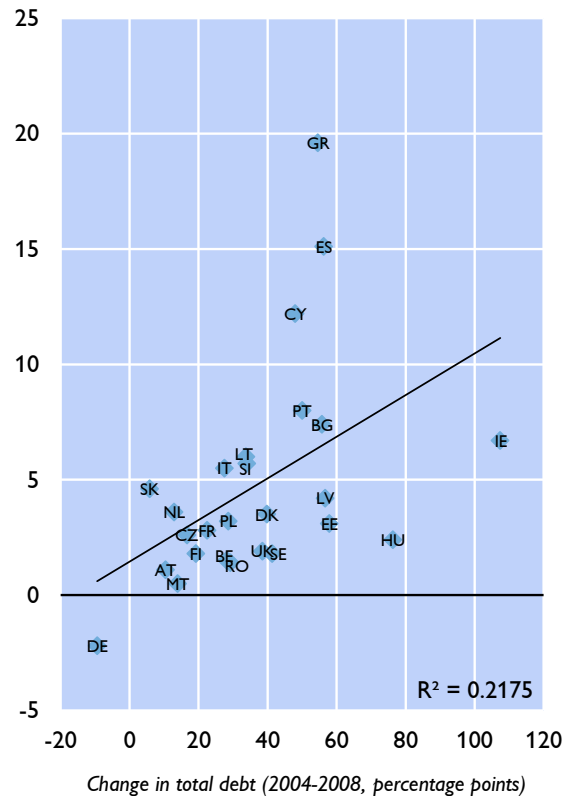*Change in real GDP (2008-2012, percent)*

R² = 0.1559

Change in total debt (2004-2008, percentage points)

Unemployment Rate

Change in unemployment rate (2008-2012, percentage points)

R² = 0.2175

Change in total debt (2004-2008, percentage points)

Investment Ratio

Change in investent-to-GDP ratio (2008-2012, percentage points)

R² = 0.2604

Change in total debt (2004-2008, percentage points)
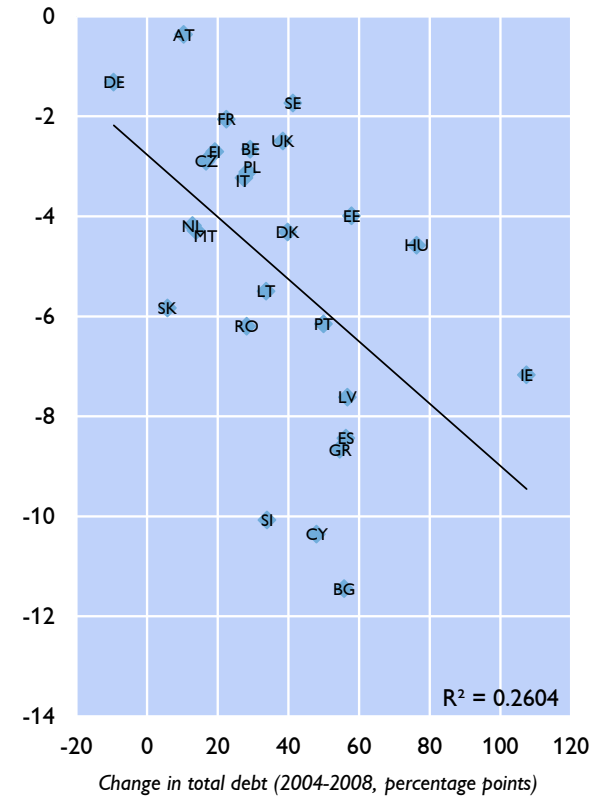
Source: European Commission, MIP Database.

Many countries are suffering from a massive drop in private sector demand

Increase of private sector saving relative to investment

Change in *Net Lending / Net Borrowing* (NLNB) 2007 to 2013

Public vs. Private Sector (2007 to 2013)

Public sector (in percentage points of GDP)
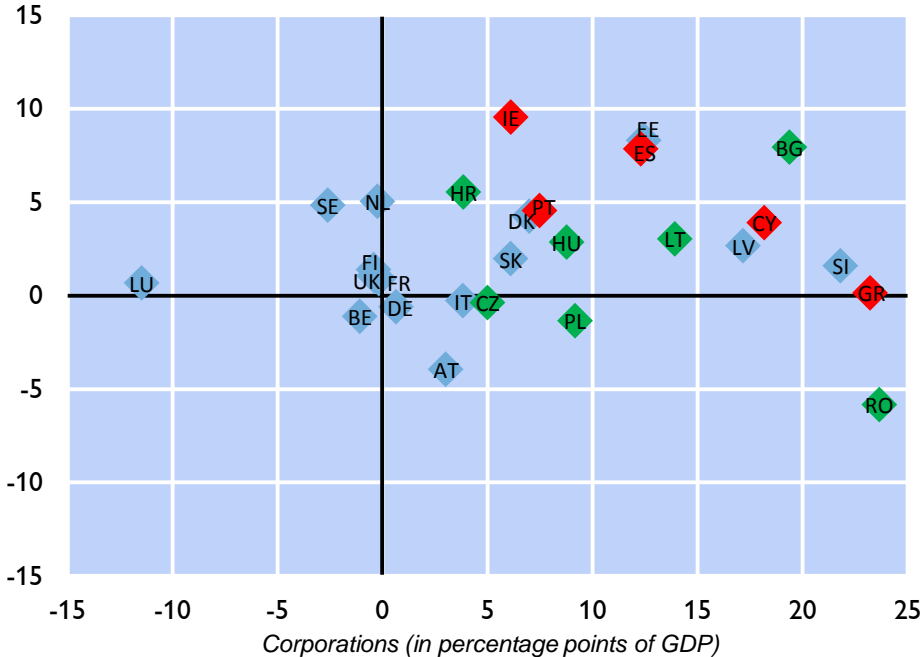

Private sector (corporations and households, in percentage points of GDP)
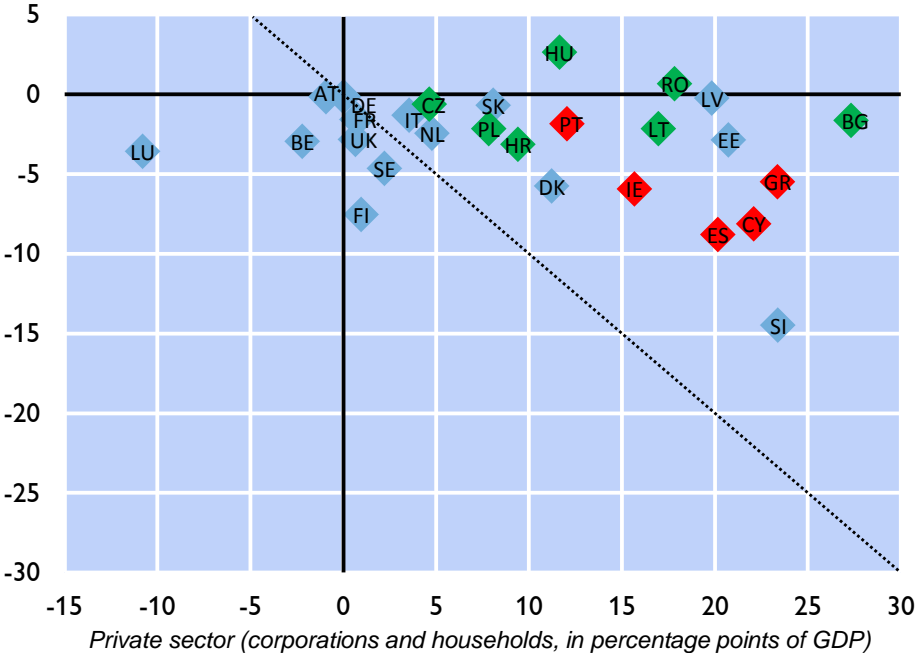
Source: European Commission, AMECO.

Households vs. Corporations (2007 to 2013)

Households (in percentage points of GDP)

Corporations (in percentage points of GDP)

Source: European Commission, AMECO.

The nonfinancial corporate sector has become a net lender in many countries

Changes of NLNB balances in the corporate sector…

Euro Area

Net Lending / Net Borrowing (% of GDP)
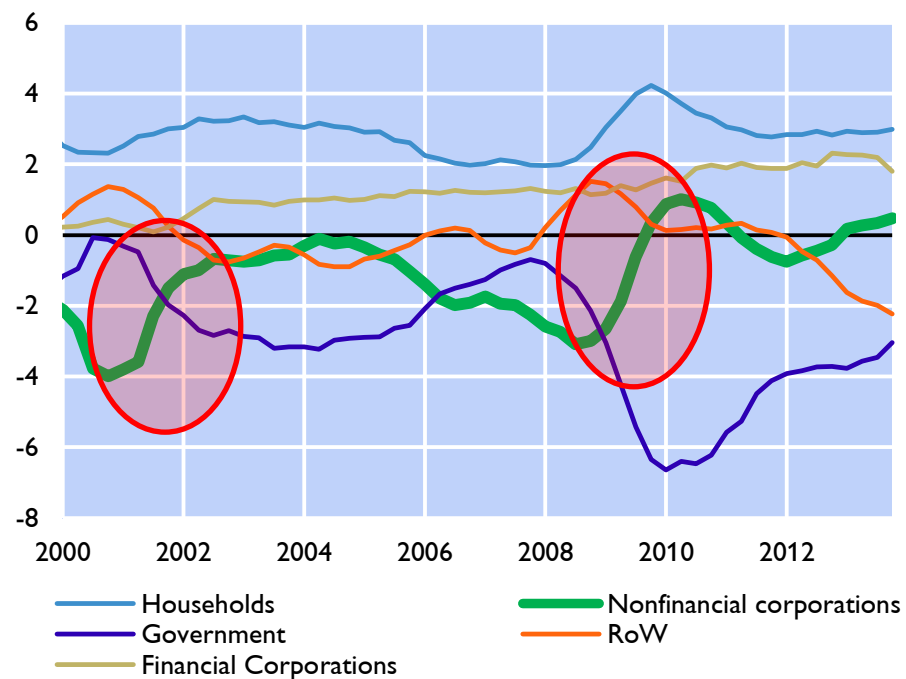
Households
Government
Financial Corporations
Nonfinancial corporations
RoW

Source: ECB - Euro Area Accounts.

Nonfinancial Corporations - Changes in Debt Ratio

% of GDP *% of GDP*

GDP
Transactions
◆ Total change
Inflation
Other changes
Debt-to-GDP ratio (r.a.)
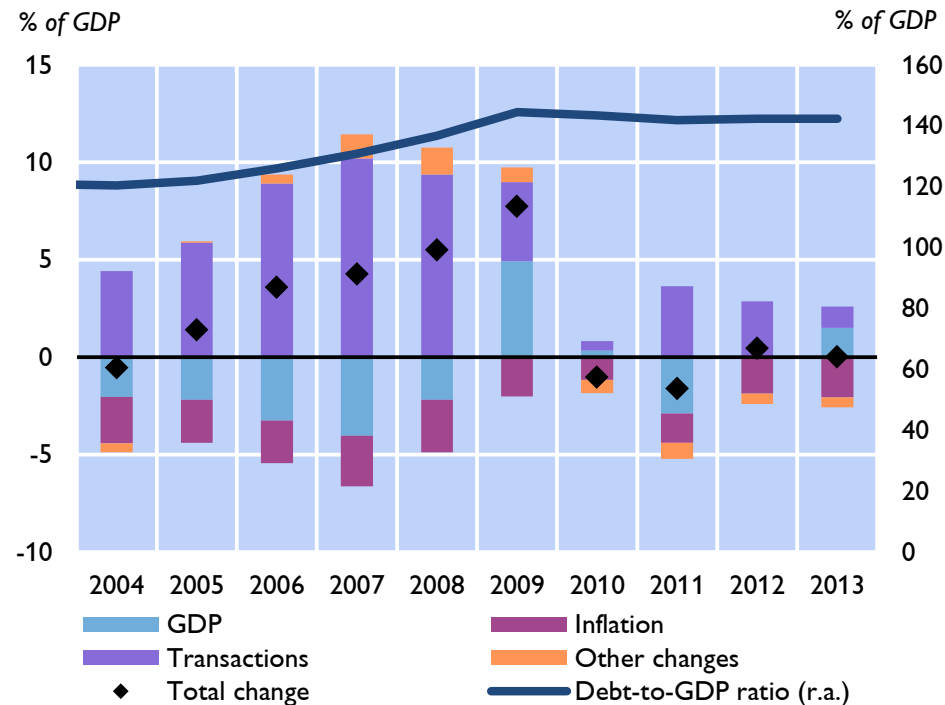
Source: ECB - Euro Area Accounts, own calcuations.

… have led to decreasing debt ratios in Germany …

Germany

Net Lending / Net Borrowing (% of GDP)
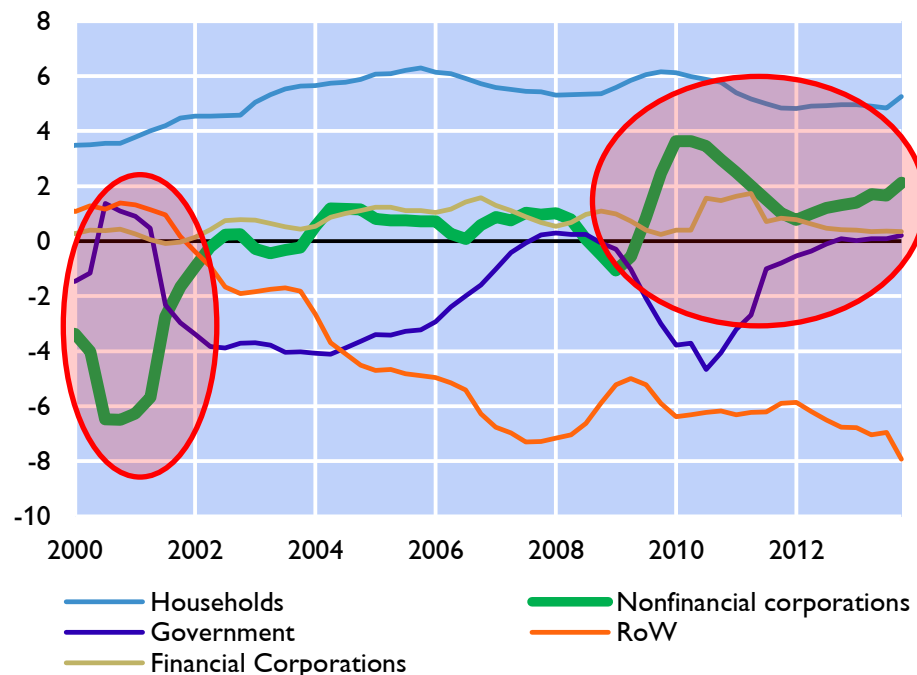
Legend:
- Households
- Government
- Financial Corporations
- Nonfinancial corporations
- RoW

Source: ECB - Euro Area Accounts.

Nonfinancial Corporations - Changes in Debt Ratio

% of GDP   *% of GDP*

Legend:
- GDP
- Transactions
- ◆ Total change
- Inflation
- Other changes
- Debt-to-GDP ratio (r.a.)
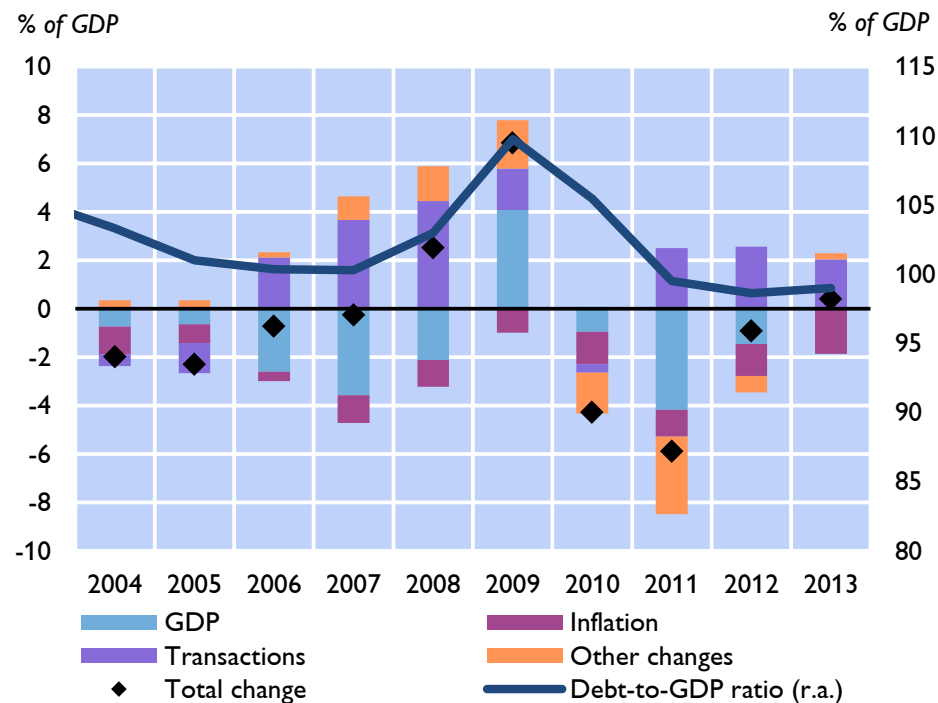
Source: ECB - Euro Area Accounts, own calcuations.

… and in some vulnerable euro area economies

Spain

Net Lending / Net Borrowing (% of GDP)
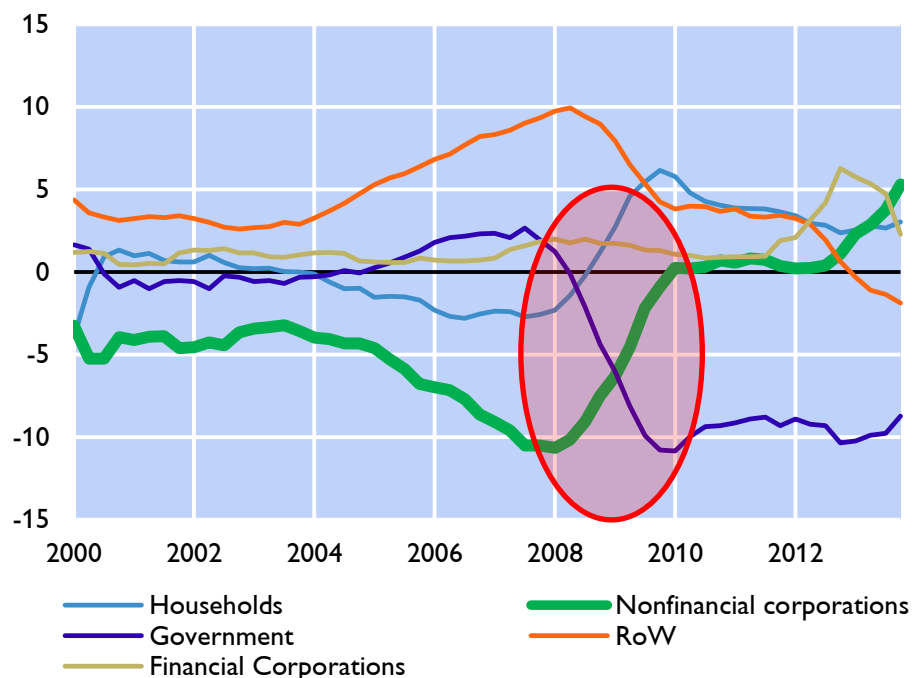
Households
Government
Financial Corporations
Nonfinancial corporations
RoW

Source: ECB - Euro Area Accounts.

Nonfinancial Corporations - Changes in Debt Ratio

% of GDP

% of GDP

GDP
Transactions
◆ Total change
Inflation
Other changes
Debt-to-GDP ratio (r.a.)
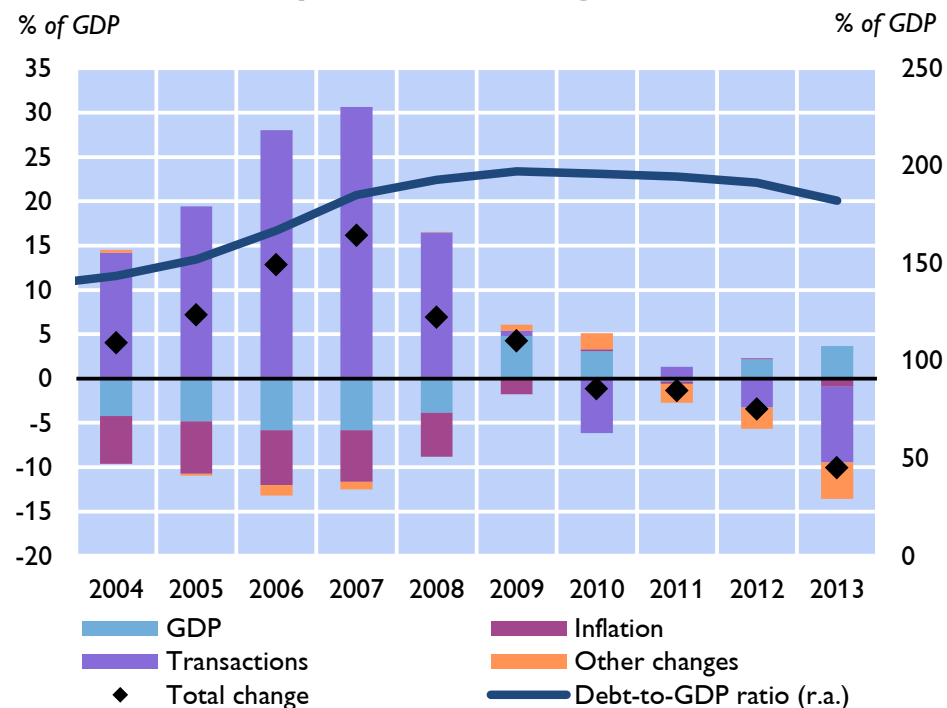
Source: ECB - Euro Area Accounts, own calcuations.

Investment spending has decreased dramatically across Europe

Change in Real Fixed Gross Investment

Total change (2007 to 2013, in percent)
- -64 – -30
- -30 – -15
- -15 – 0
- 0 – 20
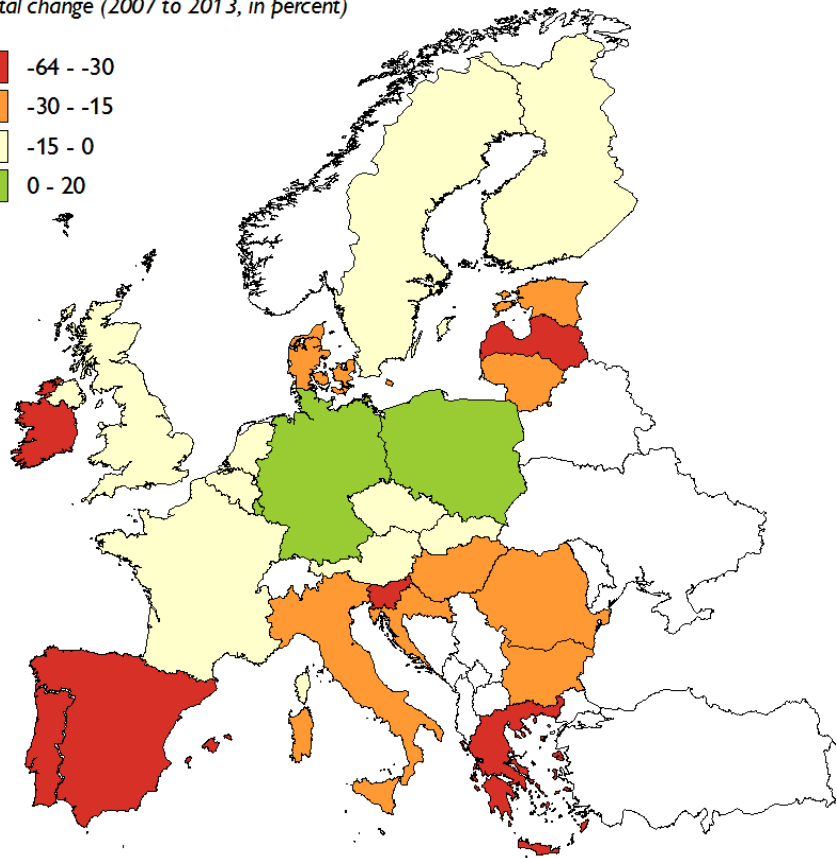
Change in Real Fixed Gross Investment

% of real fixed gross investment in 2007

Legend: 2007-2010, 2010-2013, 2007-2013
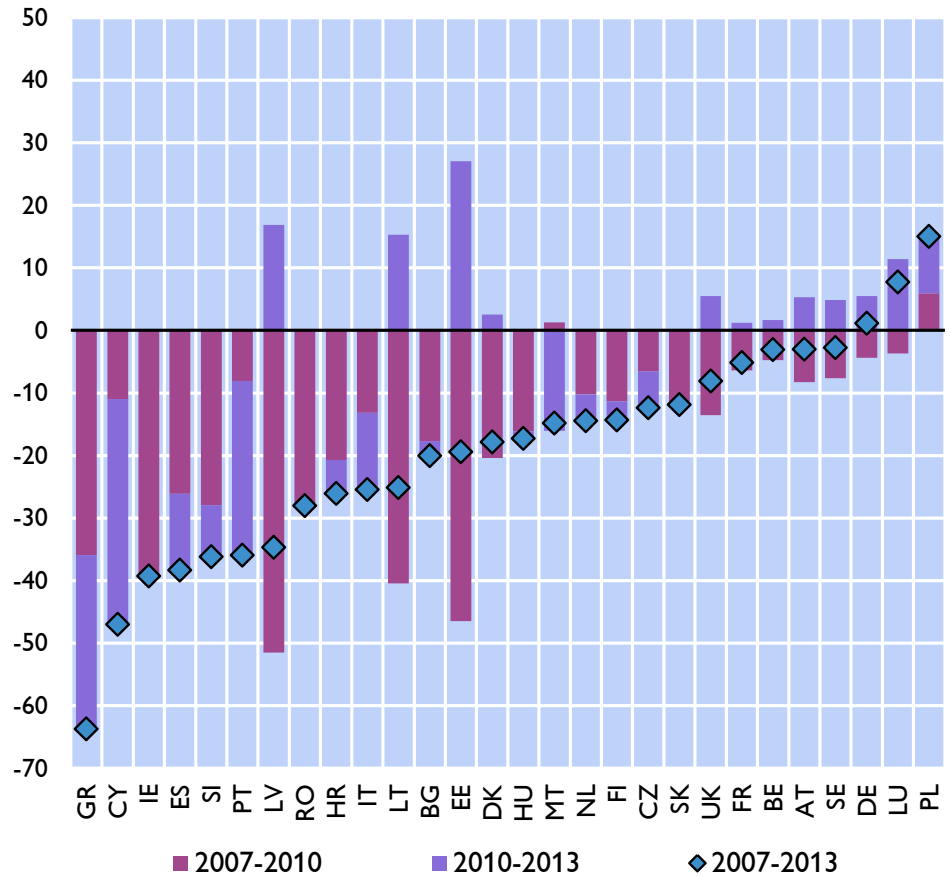
Source: European Commission - AMECO.

Drop in investment is not only construction-driven

Change in Real Fixed Gross Investment by Type of Goods, 2007 to 2013

Contributions in percentage points of fixed gross investment in 2007
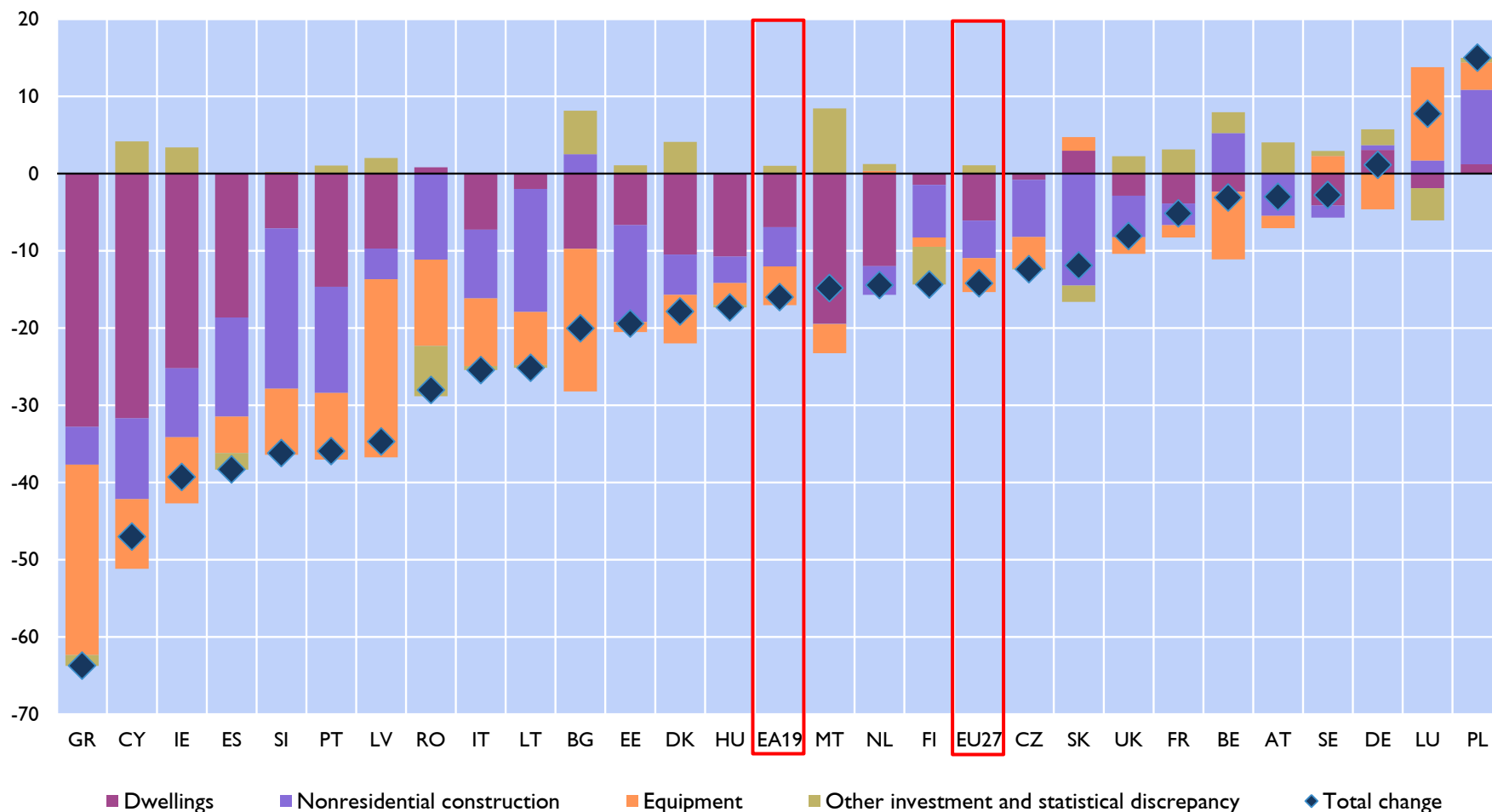
Legend:
- ■ Dwellings
- ■ Nonresidential construction
- ■ Equipment
- ■ Other investment and statistical discrepancy
- ◆ Total change

Source: European Commission - AMECO, own calcuations.

External rebalancing has mostly been driven by the decline in investment

Euro area: Rebalancing driven by investment decline

Euro Area: Saving, Investment and External Balance
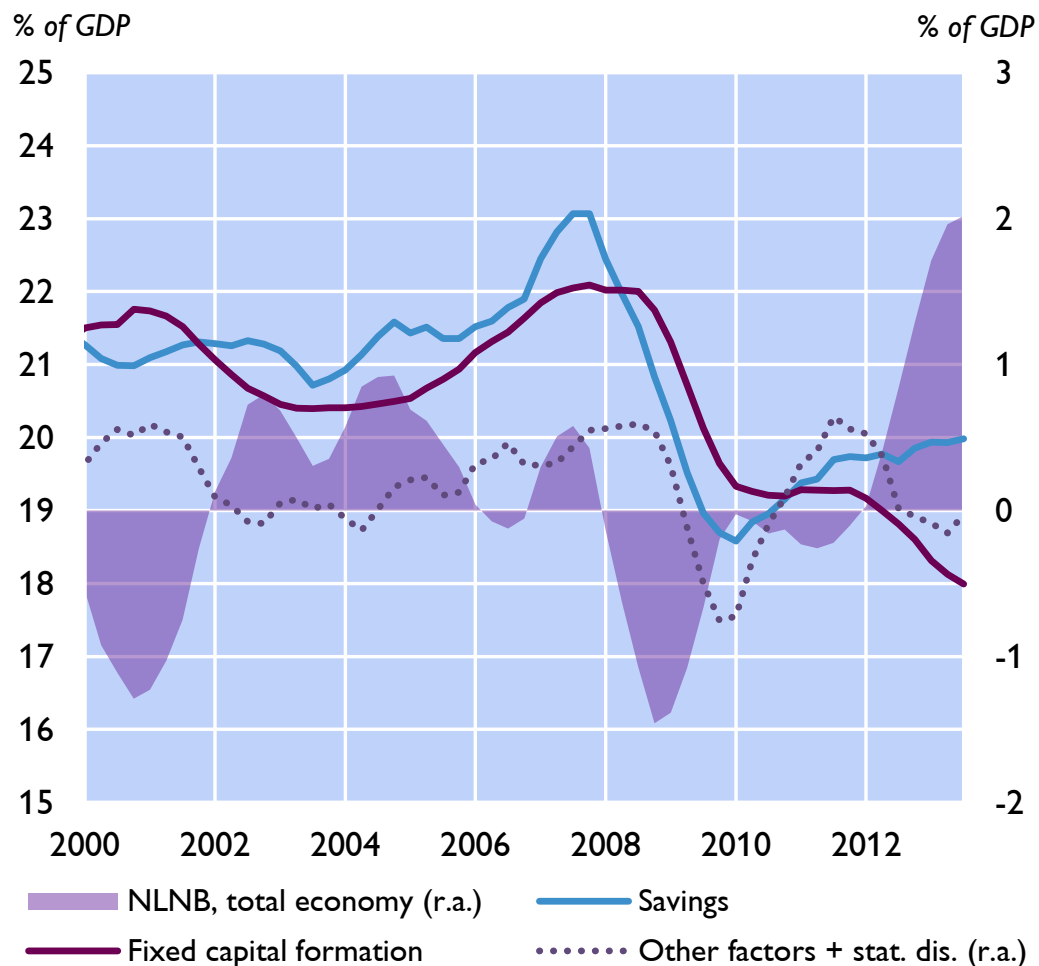
% of GDP   *% of GDP*

NLNB, total economy (r.a.) — Savings

Fixed capital formation ⋯⋯ Other factors + stat. dis. (r.a.)

Source: ECB - Euro Area Accounts.

Sectoral Saving Rates (% of GDP)

Households — Nonfinancial corporations

Government — Financial corporations

Total

Sorce: ECB - Euro Area Accounts.

Sectoral Investment Rates (% of GDP)

Households — Nonfinancial corporations

Government — Financial corporations

Total
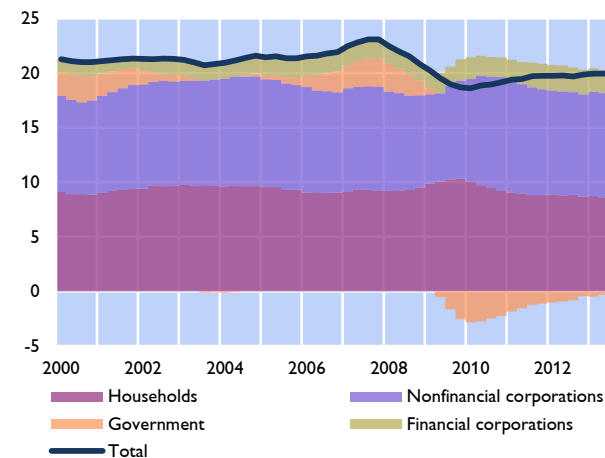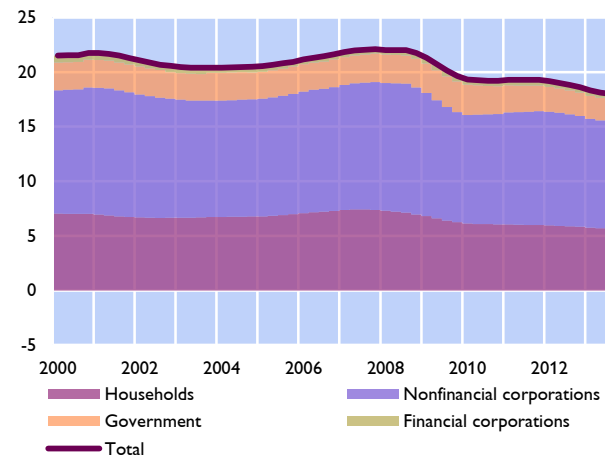
Source: ECB - Euro Area Accounts.

Spain: Rebalancing mainly driven by investment decline

Spain: Saving, Investment and External Balance
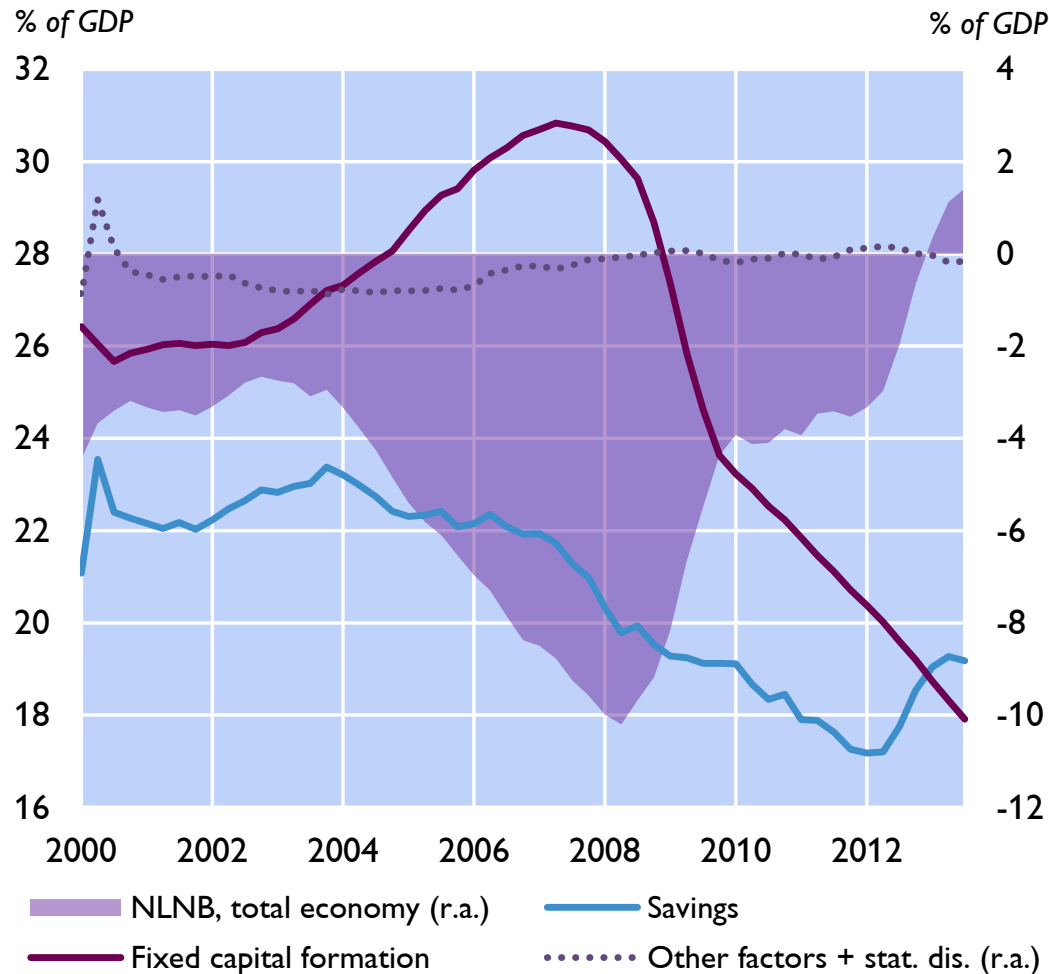
% of GDP   *% of GDP*

Legend:
- NLNB, total economy (r.a.)
- Savings
- Fixed capital formation
- Other factors + stat. dis. (r.a.)

Source: ECB - Euro Area Accounts.

Sectoral Saving Rates (% of GDP)

Legend:
- Households
- Government
- Total
- Nonfinancial corporations
- Financial corporations

Sorce: ECB - Euro Area Accounts.

Sectoral Investment Rates (% of GDP)

Legend:
- Households
- Government
- Total
- Nonfinancial corporations
- Financial corporations
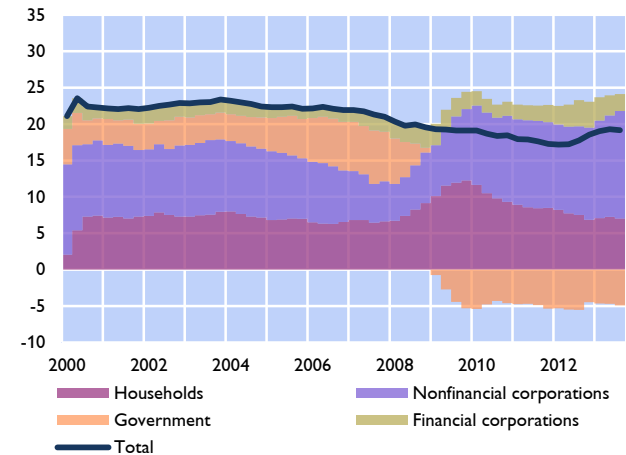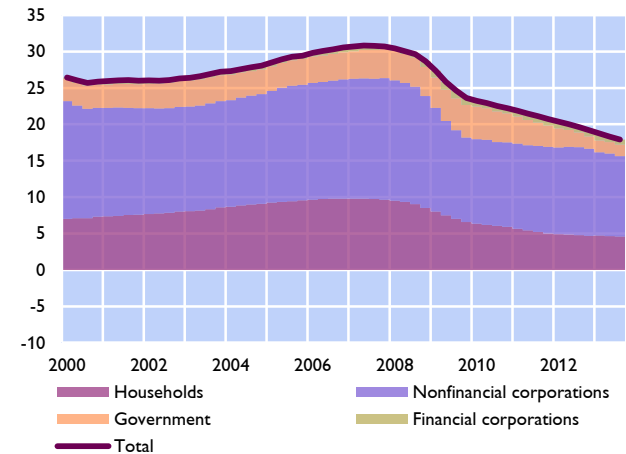
Source: ECB - Euro Area Accounts.

Germany: Positive saving shocks, investment decline

Germany: Saving, Investment and External Balance
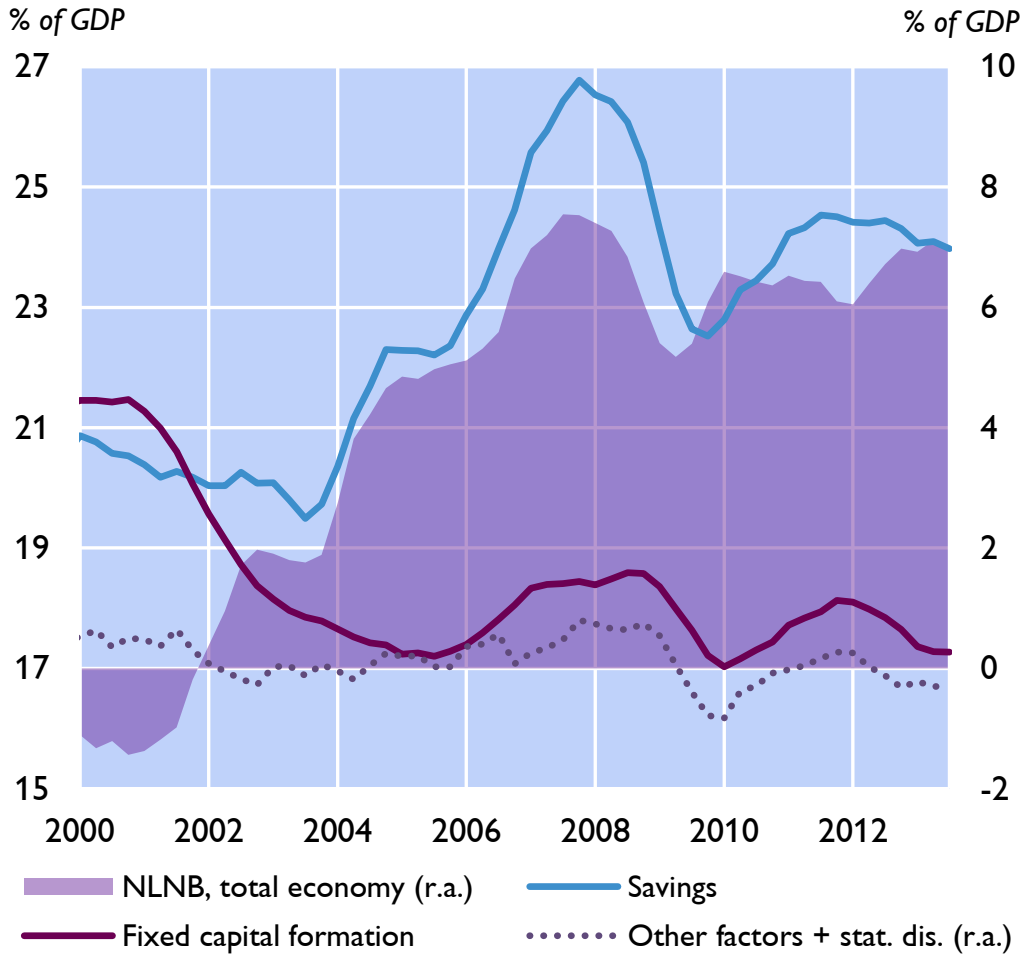
% of GDP

Legend:
- NLNB, total economy (r.a.)
- Savings
- Fixed capital formation
- Other factors + stat. dis. (r.a.)

Source: ECB - Euro Area Accounts.

Sectoral Saving Rates (% of GDP)

Legend:
- Households
- Nonfinancial corporations
- Government
- Financial corporations
- Total

Sorce: ECB - Euro Area Accounts.

Sectoral Investment Rates (% of GDP)

Legend:
- Households
- Nonfinancial corporations
- Government
- Financial corporations
- Total
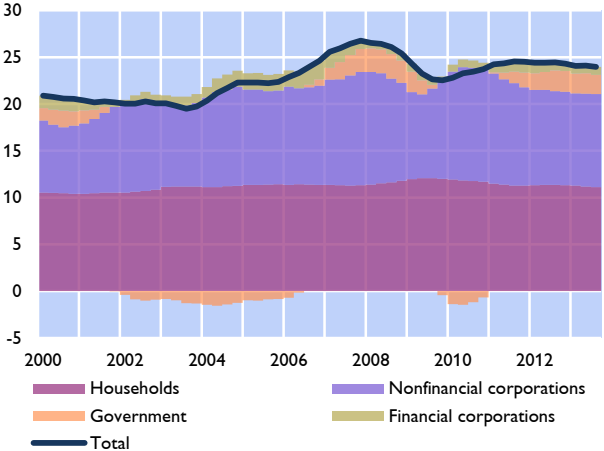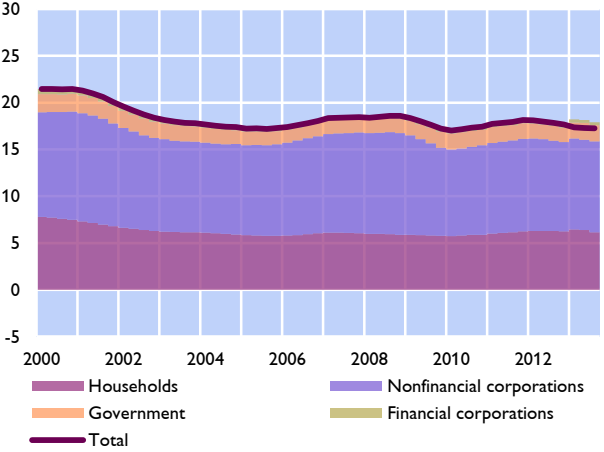
Source: ECB - Euro Area Accounts.

External rebalancing at the expense of investment

External Rebalancing: Change in Net Lending / Net Borrowing (Total Economy), 2007 to 2014

Legend: ■ Contribution of investment ■ Contribution of savings ■ Statistical discrepancy ◆ Total change in net lending / net borrowing, 2007-2013

Source: European Commission - AMECO.

Firms have reacted strongly to the crisis

The microdata perspective: Firm behavior during the crisis

- European Records of IFRS Consolidated Accounts (ERICA)

- Stock-listed firms in eight euro area countries (AT, BE, DE, ES, FR, GR, IT, PT)

- Most observations from DE, IT & FR (~ 84% of observations)

- Approximately 1,000 firms, 2005 to 2012 (~ 7,400 firm/year observations)

- Covers the lion's share of listed companies in the respective countries

Structural breaks in the behavior of large firms

- **Corporate investment decisions**

    - Investment may depend on the availability of internal funds if firms are financially constrained (Fazzari et al., 1988)
    - ⇨ Positive cash flow sensitivity of investment

- **Corporate saving behavior**

    - Alternative approach to reveal financial constraints (Almeida et al., 2004)
    - Constrained firms should respond by increasing their cash holdings
    - ⇨ Positive cash flow sensitivity of cash

- **Comparison of firm behavior pre- and postcrisis**

    - Existence (or anticipation) of financial constraints likely in the case of…
    - ⇨ an increase of the **cash flow sensitivity of investment**, and
    - ⇨ an increase of the **cash flow sensitivity of cash** (increased liquidity preference)

Even large firms reduce investment while hoarding cash

Investment Ratio of Stock-listed Corporations

% of total assets

Legend: Interquartile range — Median — Mean
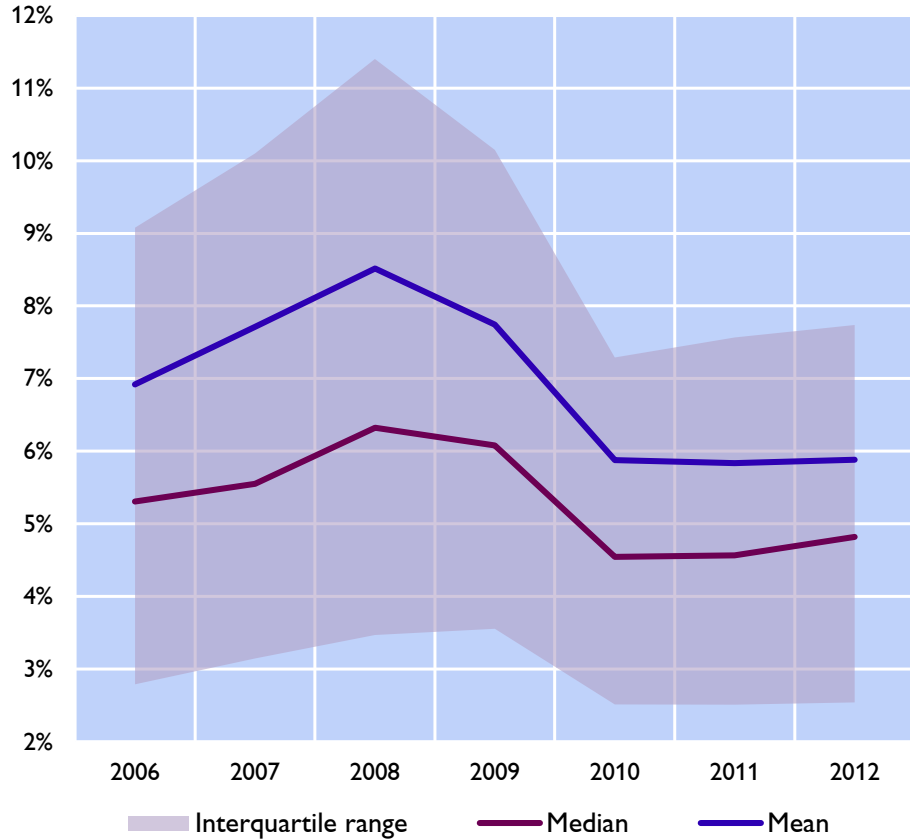
Source: ERICA database, own calculations.

Cash Holdings of Stock-listed Corporations

% of total assets

Legend: Interquartile range — Median — Mean
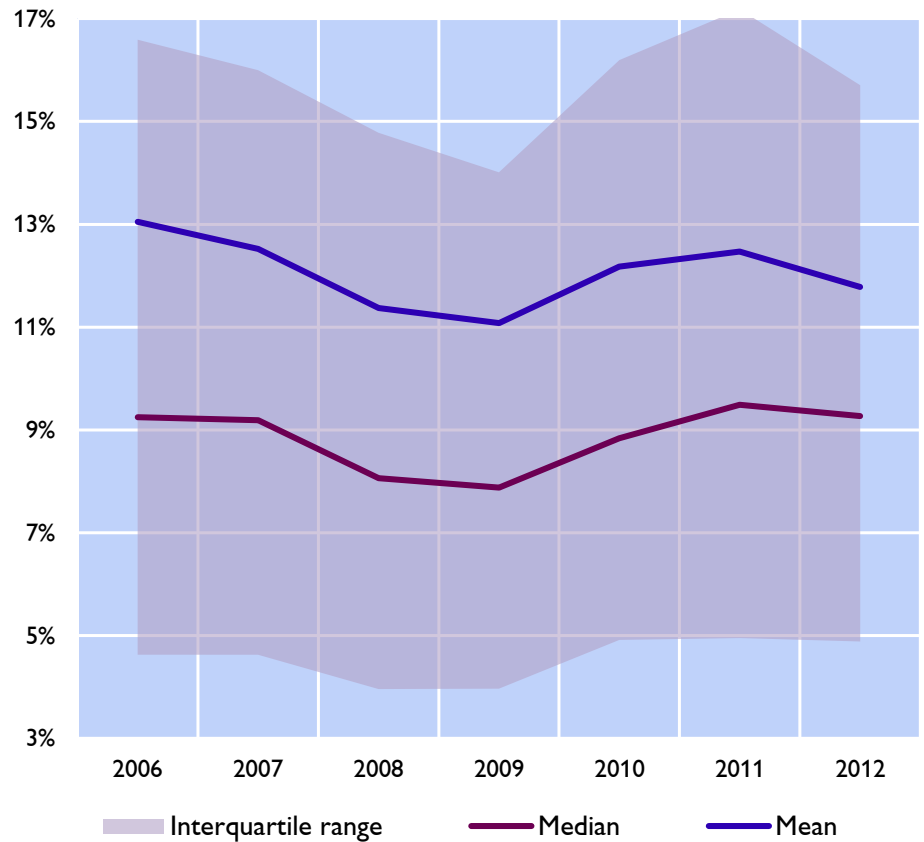
Source: ERICA database, own calculations.

The micro perspective (I): Investment

Firm Investment Behavior: Pre- and Postcrisis Differences

Cash Flow Sensitivity of Investment

Estimated coefficient

Coef. 0.133***
p-value 0.000

Coef. 0.117
p.value 0.191

Operating cash flow
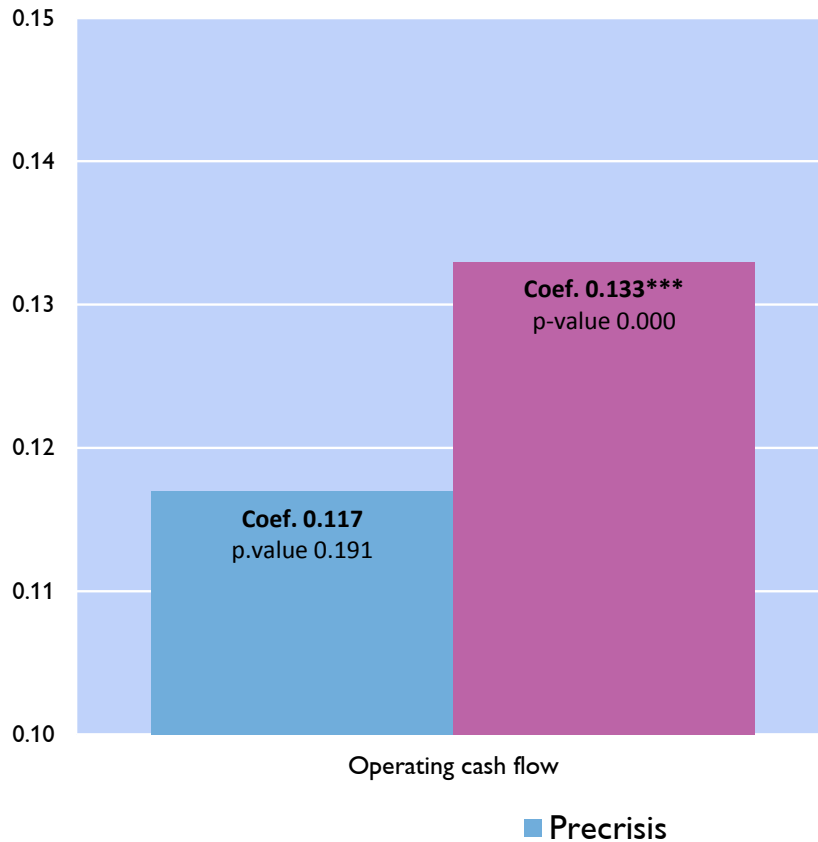
Lagged Cash Holdings and their Impact on Investment

Estimated coefficient

Coeff. 0.552***
p-value 0.000

Coeff. 0.102
p-value 0.145

(Lagged) Cash holdings

■ Precrisis   ■ Postcrisis
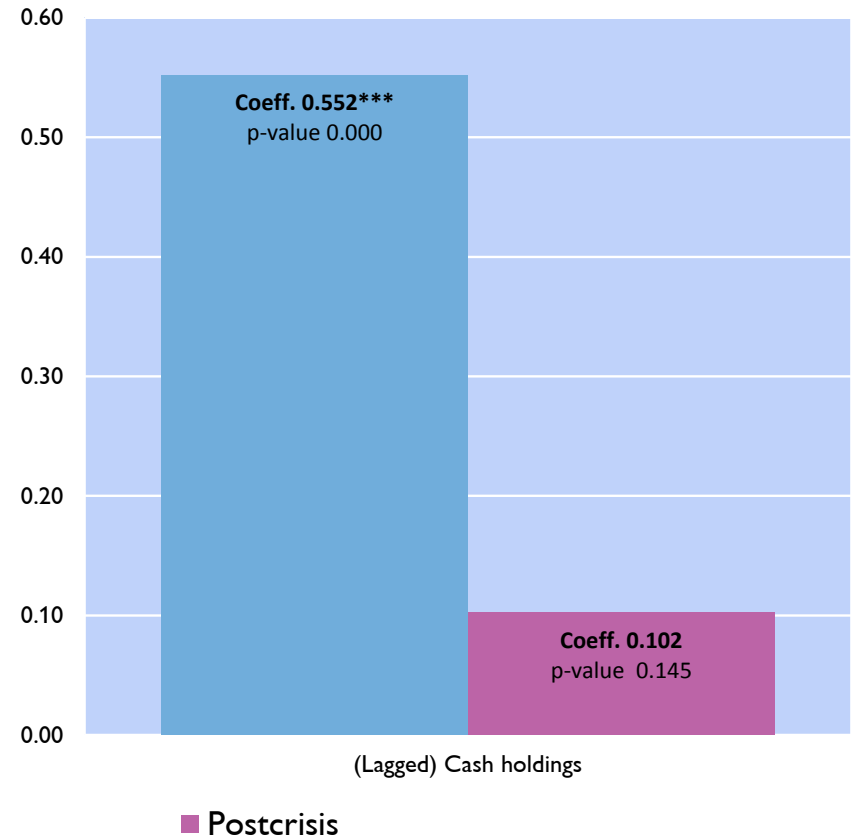
Source: ERICA database, own calculations.

The micro perspective (II): Cash holdings

Firm's Cash Holdings: Pre- and Postcrisis Differences

Cash Flow Sensitivity of Cash

Estimated coefficient

Coef. 0.30***
p-value 0.000

Coef. 0.18***
p.value 0.01

Operating cash flow

■ Precrisis
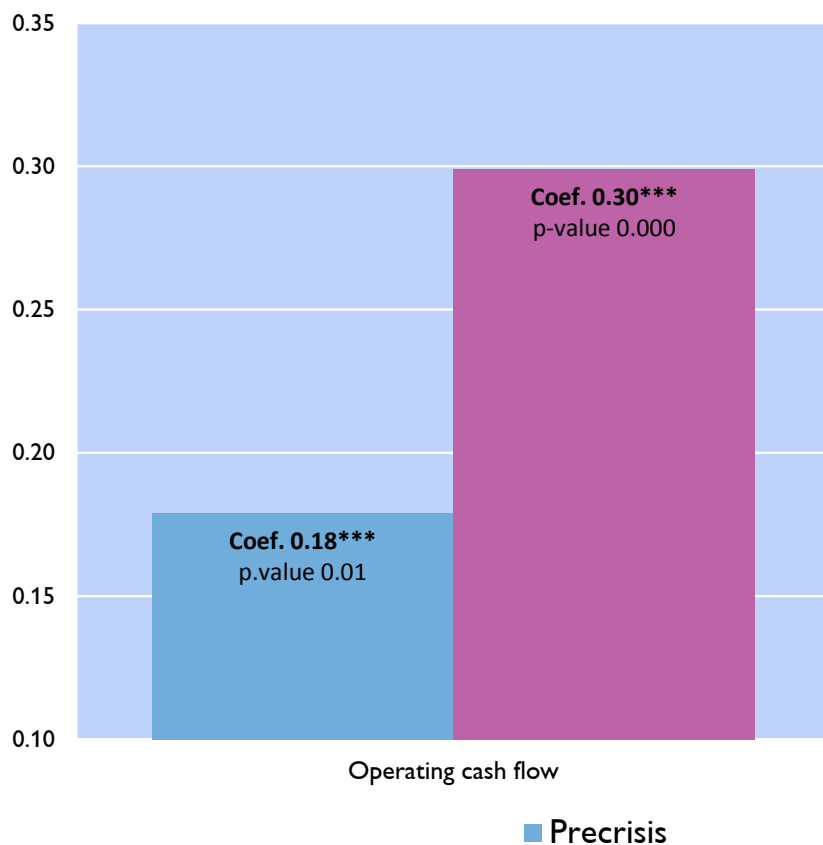
Investment Expenditures and their Impact on Cash Holdings

Estimated coefficient
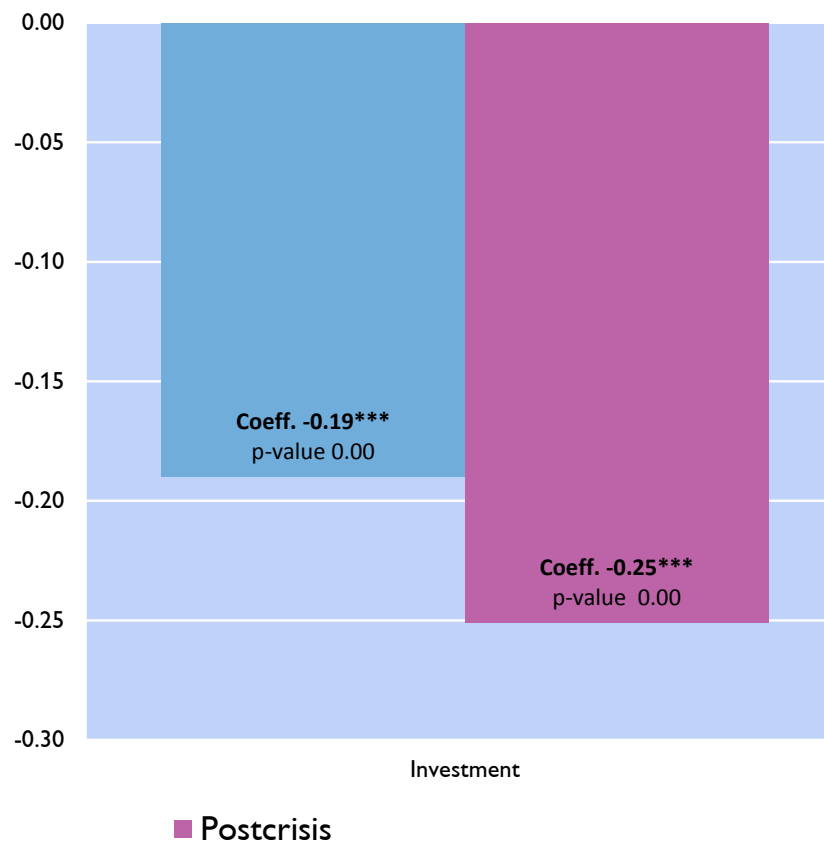
Coeff. -0.19***
p-value 0.00

Coeff. -0.25***
p-value 0.00

Investment

■ Postcrisis

Source: ERICA database, own calculations.

The investment decline jeopardizes the European convergence process

Convergence has stalled in many countries

GDP per capita (p.c.) in 2001 vs. 2013

Index, 100 = EU-28 average

Legend: ■ GDP p.c. 2001   ■ Relative change 2001-2007   ■ Relative change 2007-2013   ◆ GDP p.c. 2013
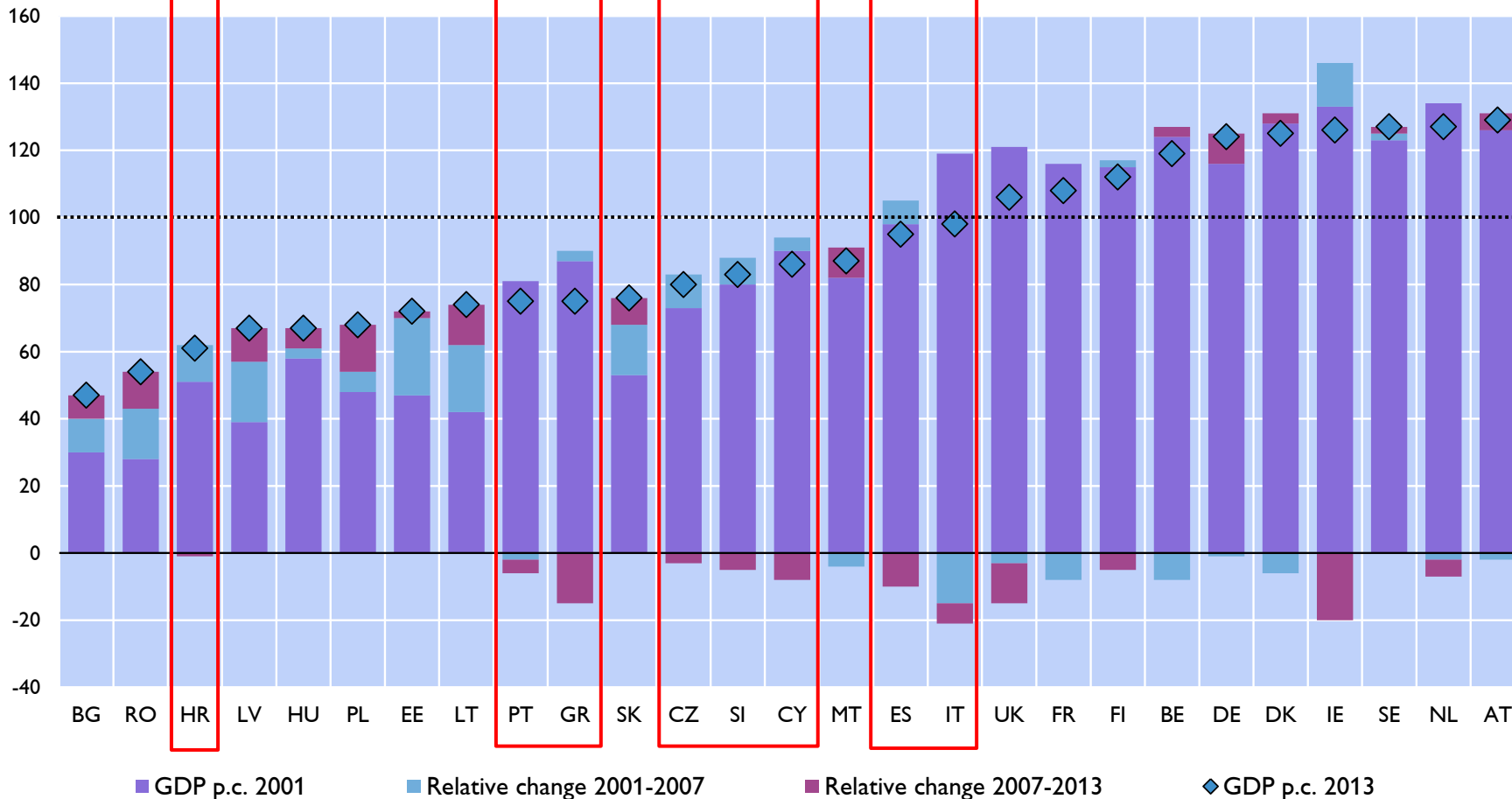
Source: Eurostat.

Strong implications for the catching-up process

GDP per capita and Gross Fixed Capital Formation excluding Construction

2007

Gross fixed capital formation excl. construction to GDP (%)
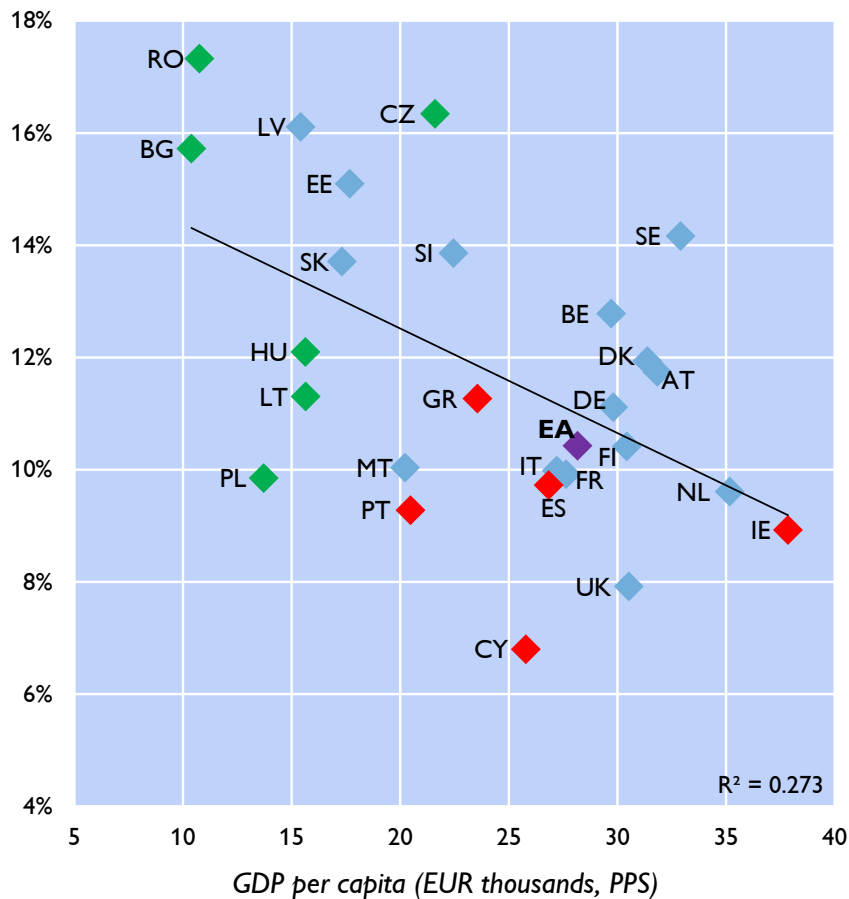
2013

Gross fixed capital formation excl. construction to GDP (%)

R² = 0.273

R² = 0.0012

GDP per capita (EUR thousands, PPS)

GDP per capita (EUR thousands, PPS)
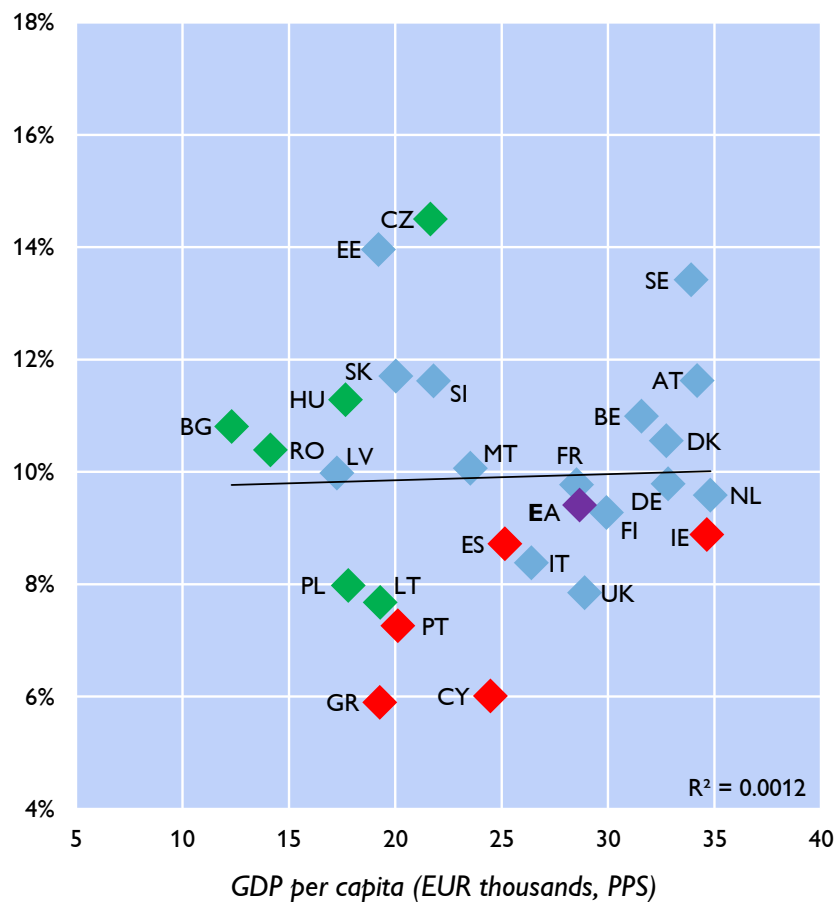
Source: European Commission - AMECO, own calculations.

Thank you for your attention

ANNEX

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Empirical specifications – investment equation

$$Inv_{i,t} = \alpha + \beta Inv_{i,t-1} + \gamma OCF_{i,t} + Z'_{i,t}\delta + \lambda_t + \nu_{i,t}$$

- $Inv_{i,t}$ … Investing cash flow (ratio to total assets)
- $OCF_{i,t}$ … Operating cash flow (ratio to total assets)
- $Z'_{i,t}$ … Control variables (log assets, sales, employment, leverage, cash holdings)
- λ_t … Time dummies (years)
- $\nu_{i,t}$ … Error term

- Estimator:

  Dynamic panel regression
  following Blundell & Bond (1998)

| Time Horizon Dependent Var.	Model 1 2005-12 CF Invest.	Model 2 2005-08 CF Invest.	Model 3 2009-12 CF Invest.	Model 4 2005-12 CF Invest.	Model 5 2005-08 CF Invest.	Model 6 2009-12 CF Invest.	Model 7 2005-12 BS Invest.	Model 8 2005-08 BS Invest.	Model 9 2009-12 BS Invest.
L.Investment	0.118*** (0.006)	-0.0191 (0.855)	0.149*** (0.002)	0.163*** (0.004)	0.0581 (0.716)	0.169*** (0.004)	0.0703 (0.246)	-0.135 (0.206)	0.0977 (0.179)
Assets	0.00107 (0.257)	0.00275 (0.309)	0.000881 (0.391)	0.0172 (0.148)	0.0132 (0.724)	0.0105 (0.306)	0.0105 (0.256)	0.0126 (0.325)	0.0124 (0.207)
L.Sales	0.000240 (0.974)	0.0213 (0.400)	-0.00183 (0.818)	0.00467 (0.625)	0.0306 (0.254)	-0.00300 (0.683)	0.00523 (0.551)	0.0182 (0.431)	0.00171 (0.869)
Operating CF	0.0949*** (0.000)	0.0868** (0.030)	0.102*** (0.000)	0.138*** (0.000)	0.117 (0.191)	0.133*** (0.000)	0.0890*** (0.001)	0.0887 (0.144)	0.0962*** (0.001)
Employment				-0.0189 (0.188)	-0.00885 (0.854)	-0.0116 (0.356)	-0.00893 (0.426)	-0.00826 (0.608)	-0.0116 (0.328)
L.Cash				0.190*** (0.005)	0.552*** (0.000)	0.102 (0.145)	0.118* (0.058)	0.332* (0.086)	0.0988 (0.147)
L.Leverage				-0.00112 (0.314)	0.000972 (0.725)	-0.00124 (0.264)	-0.00118 (0.424)	0.00154 (0.631)	-0.00180 (0.310)
Constant	0.0310* (0.084)	0.0221 (0.708)	0.0332* (0.090)	-0.0676 (0.270)	-0.136 (0.364)	-0.0173 (0.733)	-0.0438 (0.385)	-0.0909 (0.194)	-0.0433 (0.432)
Time Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	3068	896	2172	2375	709	1666	1691	335	1356

p-values in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Empirical specifications – cash equation

$$Cash_{i,t} = \alpha + \beta Cash_{i,t-1} + \gamma OCF_{i,t} + Z'_{i,t}\delta + \lambda_t + \nu_{i,t}$$

- $Cash_{i,t}$ …   Cash holdings (ratio to total assets)
- $OCF_{i,t}$ …   Operating cash flow (ratio to total assets)
- $Z'_{i,t}$ …   Control variables (log assets, investment, leverage)
- λ_t …   Time dummies (years)
- $\nu_{i,t}$ …   Error term

- *Estimator:*

  Dynamic panel regression

  following Blundell & Bond (1998)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Time Horizon	2005-12	2005-08	2009-12	2005-12	2005-08	2009-12	2005-12	2005-08	2009-12
Dependent Var.	Cash&LA	Cash&LA	Cash&LA	Cash&LA	Cash&LA	Cash&LA	Cash	Cash	Cash
L.Cash	0.630***	0.888***	0.552***	0.704***	0.985***	0.569***	0.703***	0.814***	0.556***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Assets	0.00828	-0.00430	0.0168	0.00682	-0.000838	0.0222**	0.00699	-0.0123	0.0174***
	(0.237)	(0.806)	(0.134)	(0.202)	(0.946)	(0.031)	(0.196)	(0.294)	(0.003)
Operating CF	0.250***	0.172**	0.274***	0.280***	0.179***	0.299***	0.274***	0.204***	0.305***
	(0.000)	(0.031)	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.002)	(0.000)
Investment				-0.199***	-0.190***	-0.251***	-0.215***	-0.185***	-0.264***
				(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
L.Leverage				-0.00216	0.00460	-0.00688**	-0.00228	0.00355	-0.00622***
				(0.198)	(0.102)	(0.016)	(0.135)	(0.188)	(0.002)
Constant	-0.0880	0.0493	-0.195	-0.0695	-0.00142	-0.245*	-0.0727	0.168	-0.187**
	(0.330)	(0.837)	(0.181)	(0.269)	(0.993)	(0.060)	(0.265)	(0.270)	(0.010)
Year Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	3777	1188	2589	3777	1188	2589	3777	1188	2589

p-values in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$