





D3.11 Analysis of the impact of the financial and economic crisis on European Union Member States

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Objective of deliverable:

- analyze the impact of the financial and economic crisis on the European Union countries
- Detect differences between euro and non-euro economies, and within eurozone

Four parts:

- Impact of crisis on three groups of EU countries: EMU-11, EMU-6, EU-10 (non-euro)
- Impact of crisis on individual EU economies
- Impact of the crisis on the coherence of European Monetary Union
- Empirical analysis of determinants of impact of economic and financial crisis

Variables analysed

Economic activity:

- rate of growth of real GDP
- rate of growth of GDP per capita
- rate of growth of potential GDP
- output gap

Labour market:

- employment growth
- unemployment rate
- rate of growth of real wages
- rate of growth of real unit labor costs

Income distribution:

- adjusted wage share
- GINI coefficient

Inflation:

- rate of inflation (CPI)

Balance of payments:

- balance on current account

Public finances:

- public budget balance
- public debt

Financial balance sheets of total economy and agents:

- financial assets
- financial liabilities
- net financial assets

Impact of the crisis on Euro and Non-Euro Countries

EU countries have been classified in 3 groups:

- Euro countries:
 - EMU-11 (BE, DE, IRL, ES, FR, IT, LUX, NL, AP, PT, FI)
 - EMU-6 (EE, GR, CY, MT, SL, SK)
- Non-Euro countries (EU-10) (BG, CZ, DK, LT, LV, HU, PL, RO, SW, UK)

For the 3 groups, values of selected variables have been weighted according to respective shares in total GDP of the group

Conclusions are biased by larger countries

Sources of variables: AMECO and Eurostat

REAL VARIABLES	2003-2007			2008-2013		
	EMU11	EMU6	EU10	EMU11	EMU6	EU10
Rate of growth of real GDP (%)	2.1	4.8	3.6	-0.2	-2.4	0.3
Rate of growth of real GDP per capita (%)	1.5	4.5	3.3	-0.5	-2.2	-0.3
Rate of growth of potential GDP (%)	1.8	3.5	2.8	0.7	-0.2	1.3
Output gap (% potential GDP)	0.7	2.3	1.2	-1.5	-4.1	-2.0
Employment (%)	1.6	1.9	1.0	-0.1	-2.7	0.3
Unemployment rate (%)	8.9	8.6	8.3	9.6	13.2	10.8
Rate of growth of real wages (%)	0.4	2.7	2.7	0.7	-1.6	-0.2
Rate of growth of real ULCs (%)	-0.7	-0.8	-0.4	0.6	-0.8	0.2
Adjusted wage share (% GDP)	55.2	51	56.1	56.2	51.6	56.0
Change in Adjusted wage share (% GDP) (since 2005)				-0.7	-3.8	-2.0
Gini coefficient	29.1	31.5	31.3	30	30.8	30.7
Inflation rate (CPI) (%)	2.0	3.5	2.2	1.8	2.5	3.0
Balance on current transactions (% GDP)	0.9	-9.8	-1.5	1.2	-7.0	-1.7
Public budget balance (% GDP)	-2.0	-4.8	-2.4	-4.1	-8.8	-5.8
Public debt (% GDP)	67.3	78.3	40.7	82.9	107.8	62.8

FINANCIAL VARIABLES (% GDP)	2003-2007			2008-2012		
	EMU11	EMU6	EU10	EMU11	EMU6	EU10
Financial Assets: Total Economy	858.0	451.0	1041.0	1035.0	534.0	1417.0
Financial Liabilities: Total Economy	866.0	516.0	1062.0	1043.0	620.0	1435.0
Net Financial Assets: Total Economy	-9.0	-65.1	-21.0	-8.5	-86.0	-18.4
Financial Assets: General Government	31.8	44.8	33.6	40.1	48.1	40.7
Financial Liabilities: General Government	97.2	124.3	62.2	96.8	111.7	75.0
Net Financial Assets: General Government	-48.4	-58.8	-17.1	-56.1	-63.9	-34.3
Financial Assets: Households	201.7	131.1	223.4	203.8	122.5	228.7
Financial Liabilities: Households	64.2	40.8	82.3	71.3	60.2	89.3
Net Financial Assets: Households	137.5	90.3	142.4	132.4	62.3	140.6
Financial Assets: Non-Financial Corporations	167.4	76.8	133.6	182.9	73.9	147.8
Financial Liabilities: Non-Financial Corporations	262.4	162.0	258.8	278.1	157.2	269.4
Net Financial Assets: Non-Financial Corporations	-93.4	-85.2	-124.0	-94.3	-83.4	-120.4
Financial Assets: Financial Corporations	456.8	198.0	650.3	607.7	289.5	999.8
Financial Liabilities: Financial Corporations	459.2	209.6	671.2	596.7	290.4	1002.9
Net Financial Assets: Financial Corporations	-2.5	-11.6	-20.9	-0.9	11.0	-3.1

Focusing on Real Variables, Eurozone has been more negatively affected by the financial and economic crisis than EU-10

The negative impact on EMU-6 has been higher than in EMU-11

EU-10 includes two countries that have joined eurozone after 2013 (Letonia and Lithuania). Adding these two countries to EMU (EMU-8) would present worse performance for EMU and, mainly, EMU-8 (i.e., new members of eurozone)

Results are biased by the performance of larger economies:

- EMU-11: DE: 30%, FR: 22%, IT: 17%
- EMU-6: GR: 58%, SK: 19%, SL: 11%
- EU-10: UK: 61%, Poland: 10%, Sweden: 10%

Results (may) hide significant individual differences between and within groups

Impact of the crisis on European Union Countries

We have analysed the evolution of the selected variables for the EU-27 between 2003 and 2013 (financial variables: 2003-2012)

We have analysed the averages for two subperiods (2003-2007, 2008-2013) (financial variables: 2003-2007, 2008-2012)

We present data for the change of each variable between 2007 and 2013 (2012)

	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SL	SK	FI	SW	UK
Rate of growth of real GDP (%)	-2,7	-5,5	-6,6	-1,2	-2,9	-5,1	-5,3	-7,4	-4,7	-2,1	-3,6	-10,5	-5,9	-6,5	-4,5	1,0	-1,2	-4,7	-3,4	-5,2	-3,8	-2,8	-8,1	-9,6	-6,7	-1,7	-1,7
Rate of growth of real GDP per capita (%)	-2,7	-3,5	-7,2	-1,3	-3,6	-4,5	-2,3	-3,3	-1,9	-1,4	-2,6	-8,4	-6,4	-6,7	-5,1	2,3	-1,0	-4,9	-3,2	-5,0	-2,0	-5,2	-8,0	-9,3	-6,7	-1,5	-1,2
Rate of growth of potential GDP (%)	-1,2	-4,1	-4,1	-1,4	-0,1	-2,7	-2,1	-5,0	-4,4	-0,8	-1,2	-5,0	-5,9	-4,7	-1,6	-1,6	-0,1	-1,8	-1,0	-0,8	-2,2	-4,7	-3,8	-3,5	-2,3	-0,7	-0,9
Output gap (% potential GDP)	-4,0	-3,8	-9,1	-7,6	-2,6	-12,0	-7,3	-18,5	-10,5	-4,8	-6,6	-9,8	-11,3	-9,2	-7,1	-5,4	-1,8	-5,8	-2,7	-4,3	-7,3	-7,4	-11,9	-11,6	-7,4	-5,2	-4,4
Employment (%)	-2,6	-4,6	-1,0	0,0	-1,3	0,1	-1,2	-5,7	-6,0	-1,8	-3,1	-11,0	4,8	-0,2	-2,8	1,7	0,2	-3,2	-2,7	-4,6	-2,8	-0,8	-4,4	-2,4	-3,0	-1,5	0,7
Unemployment rate (%)	0,9	6,1	1,7	3,2	-3,3	4,0	8,4	19,1	17,9	2,3	7,4	6,1	12,0	5,8	7,5	1,7	2,8	-0,1	3,1	0,5	0,7	7,2	0,7	5,2	3,0	1,3	1,9
Rate of growth of real wages (%)	0,8	7,6	-4,7	-2,0	1,3	-12,8	-2,5	-6,9	-0,6	0,4	-0,2	-5,3	-10,9	-3,8	0,6	0,1	-3,9	-1,0	-0,2	-0,5	2,7	-6,7	-0,7	-4,8	-1,9	-2,9	-2,5
Rate of growth of real ULCs (%)	0,5	6,0	-1,3	-2,6	2,2	-3,3	-2,6	-4,2	-3,1	1,0	0,5	-1,2	-3,9	4,0	1,0	0,6	0,2	0,8	1,6	1,3	1,7	-2,5	-0,2	-0,8	2,6	-1,6	-0,1
Adjusted wage share (% GDP)	3,0	10,6	1,7	0,5	3,0	1,1	1,5	-2,3	-1,5	2,6	1,8	-4,1	-2,6	-5,3	2,3	-3,4	1,1	3,8	2,9	-0,4	-2,2	-5,4	4,1	2,7	4,8	2,9	-0,7
Gini coefficient	-0,4	0,1	-0,7	2,3	-0,7	-0,5	-1,4	0,1	1,8	3,5	0,3	2,6	-0,2	0,8	3,0	2,4	1,6	-2,5	0,8	-1,5	-2,6	-3,8	1,2	-0,3	-0,8	1,5	-2,4
Inflation rate (CPI) (%)	-0,7	-7,5	-1,4	-0,9	-0,8	-3,8	-4,4	-3,8	-1,4	-0,6	-0,6	-2,8	-10,1	-4,7	-0,6	-6,3	0,1	0,9	-0,1	-1,6	-2,2	-0,8	-1,8	-1,4	-1,0	-2,3	0,2
Balance on current transactions (% GDP)	-5,4	26,7	2,5	5,5	-0,1	14,6	9,9	13,1	11,1	-0,9	2,4	9,6	18,9	16,2	-5,3	11,4	7,0	1,1	-1,0	5,1	9,8	12,7	8,8	6,3	-6,1	-2,5	-1,5
Public budget balance (% GDP)	-2,6	-2,7	-0,8	-5,7	-0,2	-2,6	-7,2	-5,9	-9,1	-1,5	-1,2	-8,9	-0,2	-1,2	-3,6	2,7	-0,5	-2,6	-0,5	-2,4	-1,8	0,6	-14,7	-1,0	-7,8	-4,8	-2,9
Public debt (% GDP)	17,6	1,7	17,9	17,7	13,4	6,4	99,4	71,9	56,6	28,0	28,1	48,1	29,8	22,4	16,4	11,5	7,4	25,9	16,4	11,5	59,6	25,2	47,7	24,8	22,0	0,3	43,7

	BE	BG	CZ	DK	DE	EE	IE	GR	ES	FR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SL	SK	FI	SW	UK
Financial Assets: Total Economy (% GDP)	-0,2	-32,0	53,2	134,7	18,5	-93,3	775,5	87,2	72,0	33,6	66,9	145,6	8,8	14,5	3177,9	93,0	153,1	341,6	14,7	20,6	152,9	-41,1	3,2	18,8	223,2	78,0	336,3
Financial Liabilities: Total Economy (% GDP)	-16,4	-87,0	56,8	91,3	-6,9	-112,4	871,3	105,1	83,3	50,2	64,6	249,9	5,2	14,1	3256,4	89,5	124,3	298,7	1,4	30,9	177,0	-15,2	25,9	29,7	184,2	79,9	336,4
Net Financial Assets: Total Economy (% GDP)	16,2	54,9	-3,8	43,5	25,4	19,1	-95,7	-18,0	-11,4	-16,6	2,3	-104,3	3,6	0,2	-78,6	3,5	28,8	43,0	13,4	-10,3	-24,2	-25,9	-22,7	-10,8	39,0	-1,9	0,0
Financial Assets: General Government (% GDP)	9,0	-7,2	-2,6	11,7	14,9	10,4	16,3	23,0	25,0	2,8	2,8	13,5	10,1	4,3	3,2	8,9	6,6	20,6	6,4	-3,3	35,9	-6,4	1,1	3,1	5,2	0,4	15,1
Financial Liabilities: General Government (% GDP)	18,3	0,5	24,5	23,0	22,8	6,4	99,3	39,2	66,8	37,4	25,2	36,9	21,5	39,2	6,7	16,3	15,2	35,0	24,6	14,8	64,6	24,1	27,3	21,4	22,4	-0,8	55,0
Net Financial Assets: General Government (% GDP)	-9,3	-7,7	-27,1	-11,3	-7,9	4,0	-83,1	-16,2	-41,8	-34,6	-22,4	-23,5	-11,3	-34,9	-3,6	-7,4	-8,6	-14,3	-18,2	-18,0	-28,7	-30,6	-26,2	-18,2	-17,1	1,1	-39,9
Financial Assets: Households (% GDP)	11,7	-0,5	19,2	23,9	0,9	-33,9	38,6	-16,5	-7,8	12,5	-5,4	-12,9	4,2	12,5	4,5	3,6	-0,3	43,0	6,0	-1,8	10,1	-27,4	-1,5	15,3	1,7	19,3	8,2
Financial Liabilities: Households (% GDP)	8,8	4,9	8,6	8,8	-5,0	-9,1	6,9	17,0	-1,3	10,6	6,0	30,0	-8,9	-4,3	7,5	1,3	7,8	19,9	0,7	11,7	2,0	0,9	5,0	9,9	13,0	13,2	-6,5
Net Financial Assets: Households (% GDP)	2,9	-5,4	10,5	15,1	5,9	-24,8	31,6	-33,5	-6,6	2,0	-11,5	-42,9	13,1	16,7	-2,9	2,3	-8,2	23,1	5,3	-13,5	8,1	-28,2	-6,5	5,5	-11,4	6,1	14,7
Financial Assets: Non-Financial Corporations (% GDP)	105,5	-36,6	5,9	-31,6	-5,7	-44,2	177,4	-22,9	-28,2	-20,5	-11,0	-22,2	-0,2	2,6	-128,8	61,4	47,1	51,3	14,6	2,4	1,1	-23,0	-13,6	2,4	20,9	4,5	8,1
Financial Liabilities: Non-Financial Corporations (% GDP)	90,1	-67,4	-3,8	-66,2	-16,4	-82,9	224,6	-32,9	-51,4	-28,2	-14,3	90,3	1,7	-14,1	-82,3	68,6	17,3	2,2	-1,5	-11,6	12,2	-44,3	-18,6	5,9	-46,9	14,1	-3,3
Net Financial Assets: Non-Financial Corporations (% GDP)	15,4	30,8	9,7	34,5	10,6	38,7	-47,2	10,0	23,2	7,6	3,3	-112,5	-1,9	16,7	-46,5	-7,2	29,9	49,1	16,2	14,2	-11,1	21,2	5,0	-3,5	67,9	-9,6	11,5
Financial Assets: Financial Corporations (% GDP)	-126,3	12,3	30,5	130,8	8,3	-25,6	543,4	103,5	82,9	38,9	80,6	167,2	-5,3	-4,9	3298,9	19,0	99,8	226,7	-12,2	23,2	105,8	15,7	17,2	-2,1	195,4	54,0	304,9
Financial Liabilities: Financial Corporations (% GDP)	-133,5	-25,1	27,5	125,6	-8,4	-26,7	540,5	81,8	69,2	30,6	47,6	92,8	-9,1	-6,7	3324,5	3,2	84,0	241,5	-22,4	16,1	98,1	4,0	12,2	-7,5	195,8	53,4	291,2
Net Financial Assets: Financial Corporations (% GDP)	7,2	37,4	3,0	5,2	16,7	1,1	2,9	21,7	13,7	8,5	33,0	74,5	3,8	1,8	-25,6	15,8	15,9	-14,8	10,1	7,1	7,6	11,7	5,0	5,4	-0,3	0,5	13,7

3 EU Countries with the worse economic performance

GDP growth:	Cyprus, Slovakia, Slovenia (EMU-6)
GDP per capita growth:	Cyprus, Slovakia, Slovenia (EMU-6)
Potential GDP growth:	Greece, Slovenia, Slovakia (EMU-6)
Output gap:	Estonia, Greece, Slovenia (EMU-6)
Employment:	Greece, Cyprus (EMU-6), Spain (EMU-11)
Unemployment rate:	Greece (EMU-6), Spain (EMU-11), Latvia (EU-10)
Wage growth:	Estonia, Greece (EMU-6), Latvia (EU-10)
Wage share:	Cyprus (EMU-6), Lithuania, Romania (EU-10)
Gini coefficient:	France, Luxembourg (EMU-11) Cyprus (EMU-11)
Current account balance:	
improvement	Bulgaria (EU-10), Latvia, Lithuania (EMU-6)
worsening	Belgium, Luxembourg, Finland (EMU-11)
Public budget balance:	Spain (EMU-11) Cyprus, Slovenia (EMU-6)
Public debt:	Greece (EMU-6), Spain, Portugal (EMU-11)

3 countries with highest variation in financial variables (highest increase and higher fall-lower increase)

TOTAL ECONOMY

assets

higher increase: Ireland, Netherlands (EMU-11), United Kingdom (EU-10)

higher fall: Bulgaria, Romania (EU-10), Estonia (EMU-6)

liabilities

higher increase: Ireland, Netherlands (EMU-11), United Kingdom (EU-10)

higher fall: Belgium (EMU-11), Bulgaria (EU-10), Estonia (EMU-6)

net financial assets

higher increase: Bulgaria, Denmark (EU-10), Netherlands (EMU-11)

higher fall: Ireland, Luxembourg (EMU-11), Cyprus (EMU-6)

GENERAL GOVERNMENT

assets

higher increase: Greece (EMU-6), Spain, Portugal (EMU-11)

higher fall: Bulgaria, Poland, Romania (EU-10)

liabilities

higher increase: Ireland, Spain, Portugal (EMU-11)

higher fall: Sweden, Bulgaria (EU-10), Estonia (EMU-6)

net financial assets

higher increase: Estonia (EMU-6), Luxembourg, Netherlands (EMU-11)

higher fall: Ireland, Spain (EMU-11), United Kingdom (EU-10)

HOUSEHOLDS

assets

higher increase: Ireland, Netherlands (EMU-11), Denmark (EU-10)

higher fall: Romania (EU-10), Greece, Estonia (EMU-6)

liabilities

higher increase: Greece, Cyprus (EMU-6), Netherlands (EMU-11)

higher fall: Latvia, United Kingdom (EU-10), Estonia (EMU-6)

net financial assets

higher increase: Lithuania (EU-10), Ireland, Netherlands (EMU-11)

higher fall: Romania (EU-10), Greece, Cyprus (EMU-6)

NON-FINANCIAL CORPORATIONS

assets

higher increase: Belgium, Ireland (EMU-11), Hungary (EU-10)

higher fall: Bulgaria (EU-10), Estonia (EMU-6), Luxembourg (EMU-11)

liabilities

higher increase: Belgium, Ireland (EMU-11), Cyprus (EMU-6)

higher fall: Bulgaria (EU-10), Estonia (EMU-6), Luxembourg (EMU-11)

net financial assets

higher increase: Estonia (EMU-6), Finland, Netherlands (EMU-11)

higher fall: Ireland, Luxembourg (EMU-11), Cyprus (EMU-6)

FINANCIAL CORPORATIONS

assets

higher increase: Luxembourg, Ireland (EMU-11), United Kingdom (EU-10)

higher fall: Bulgaria (EU-10), Estonia (EMU-6), Belgium (EMU-11)

liabilities

higher increase: Luxembourg, Ireland (EMU-11), United Kingdom (EU-10)

higher fall: Bulgaria (EU-10), Estonia (EMU-6), Belgium (EMU-11)

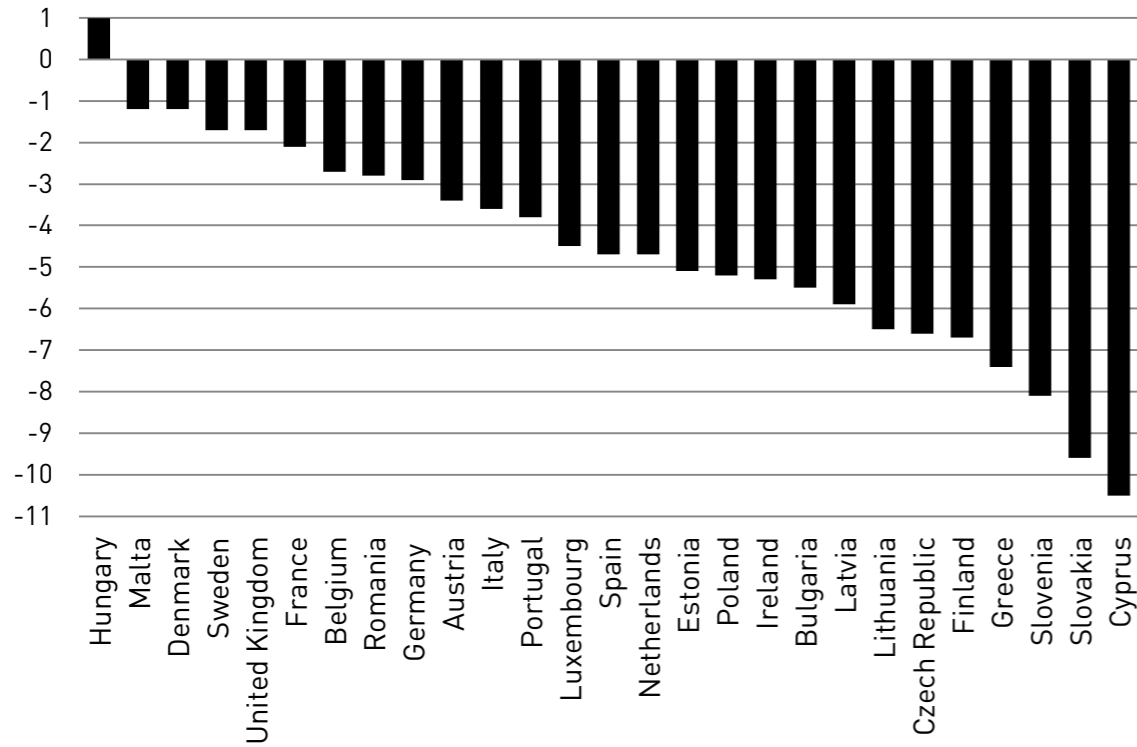
net financial assets

higher increase: Cyprus (EMU-6), Italy (EMU-11), Bulgaria (EU-10)

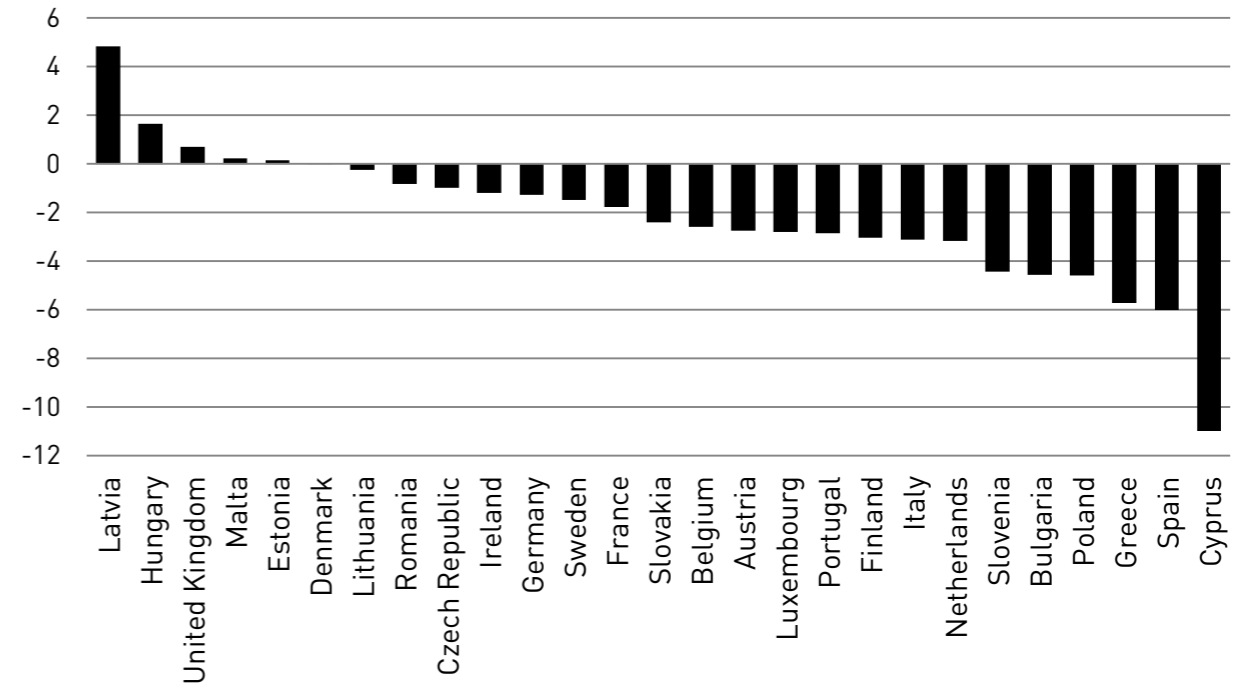
higher fall: Ireland, Luxembourg, Netherlands, Finland (EMU-11)

Variation of selected variables between 2007 and 2013

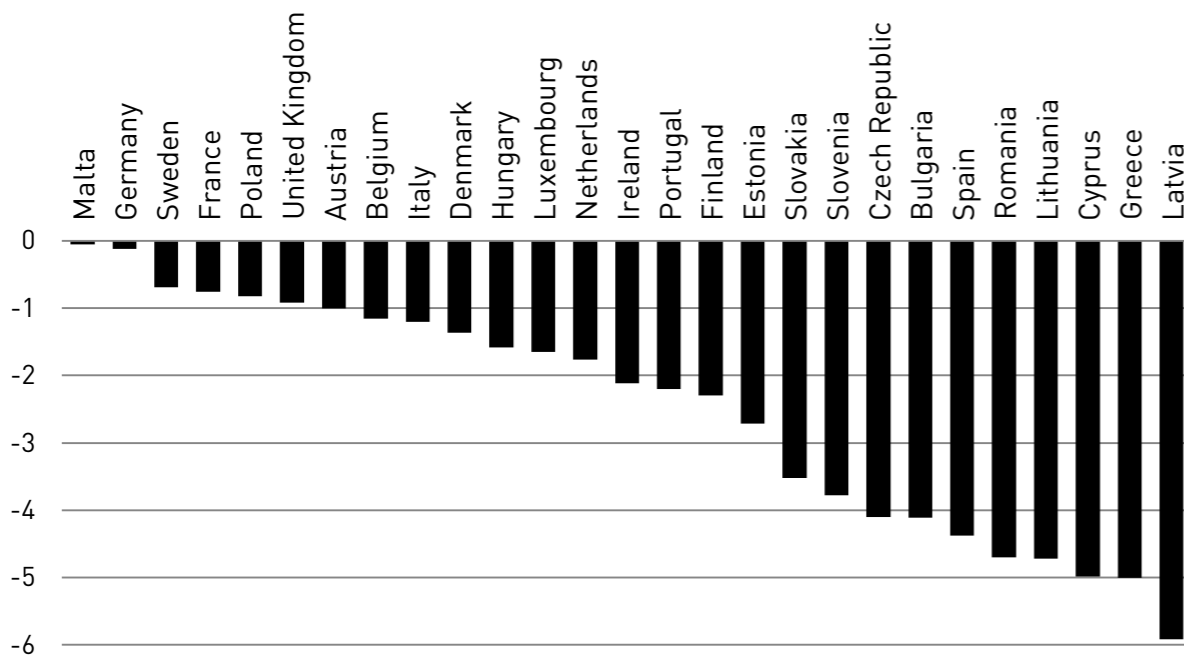
GDP rate of growth



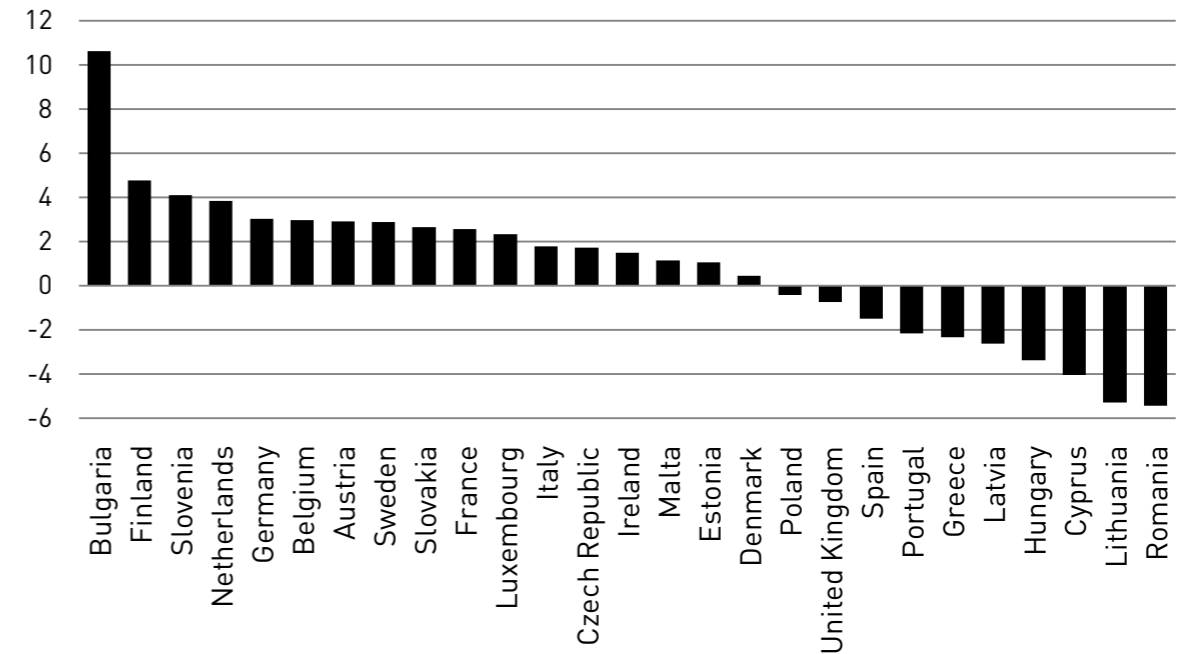
Employment rate of growth



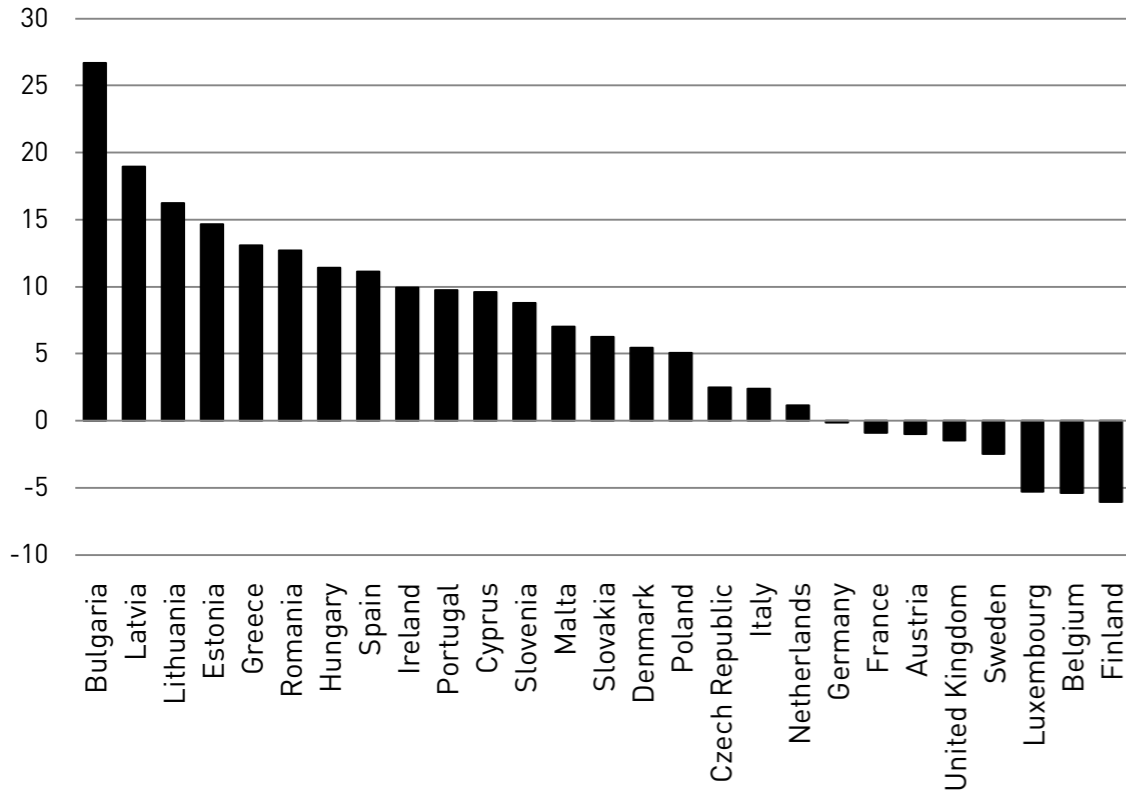
Rate of growth of potential GDP



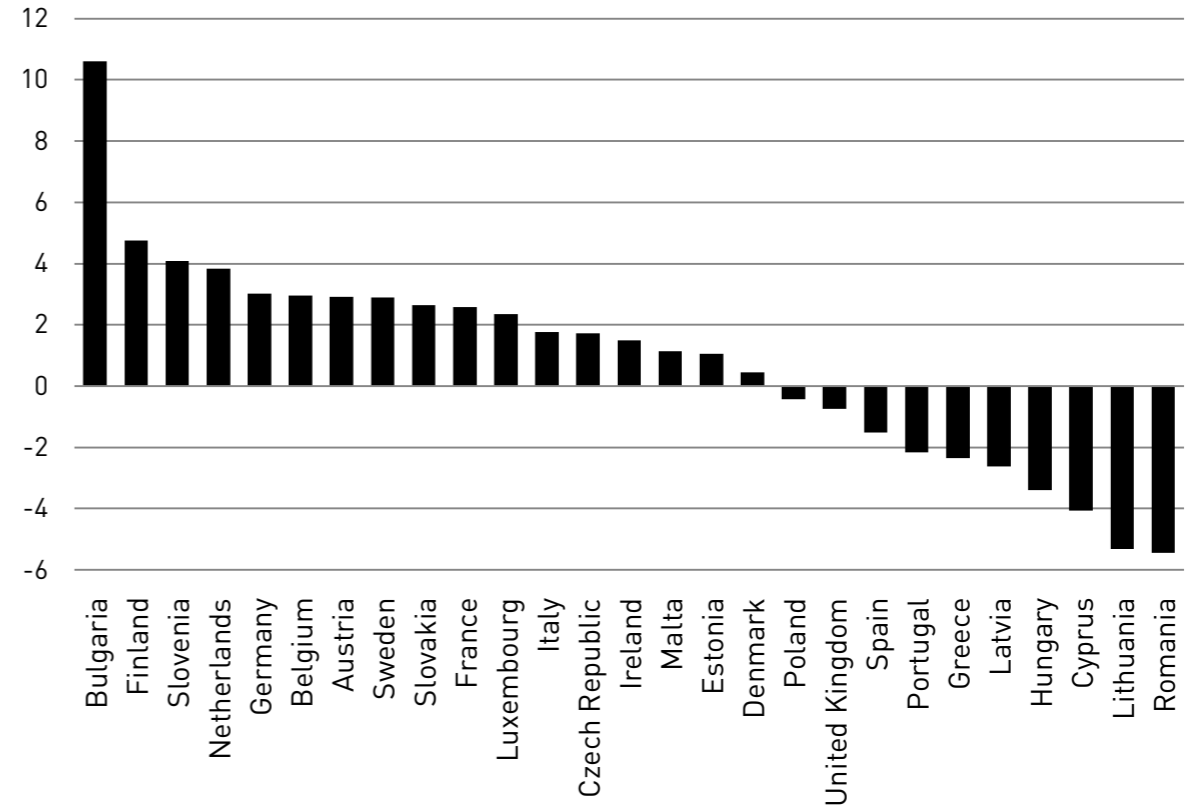
Output gap



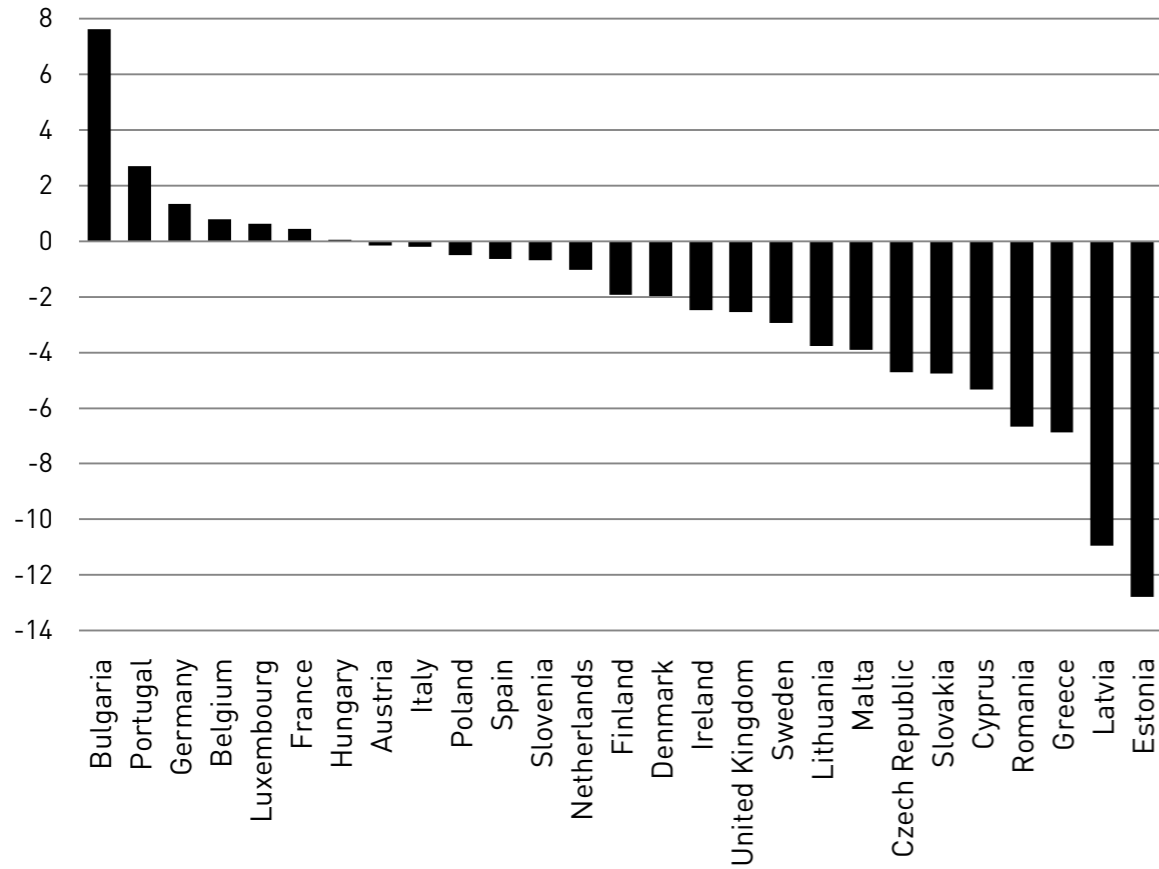
Balance on current transactions



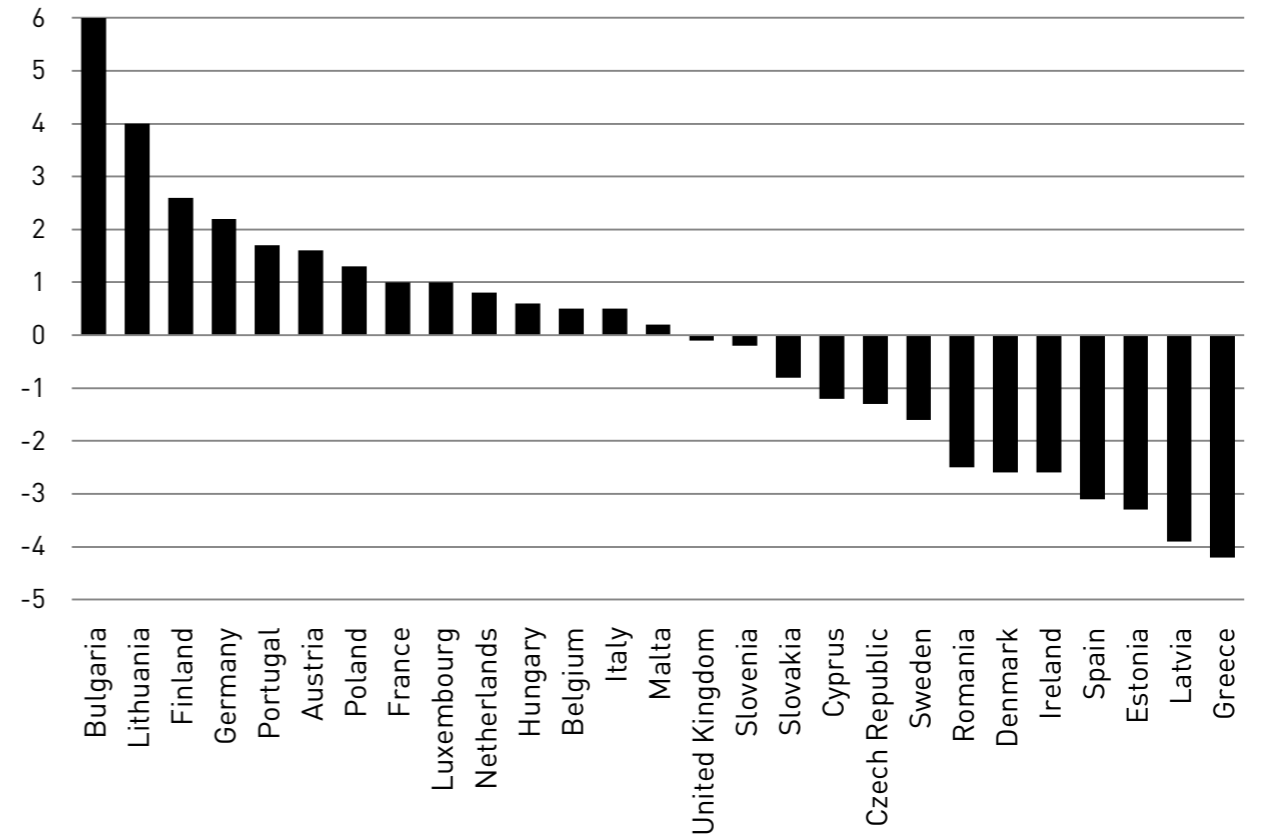
Adjusted wage share (%GDP)



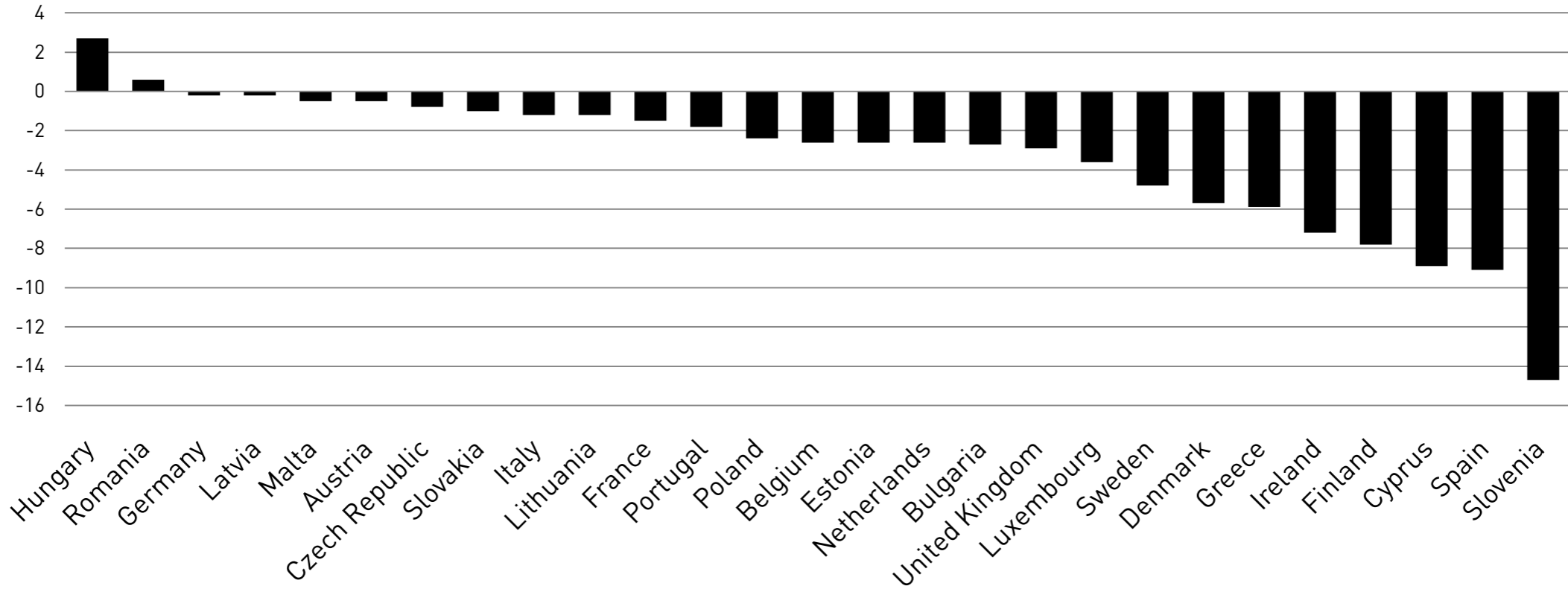
Rate of growth of real wages



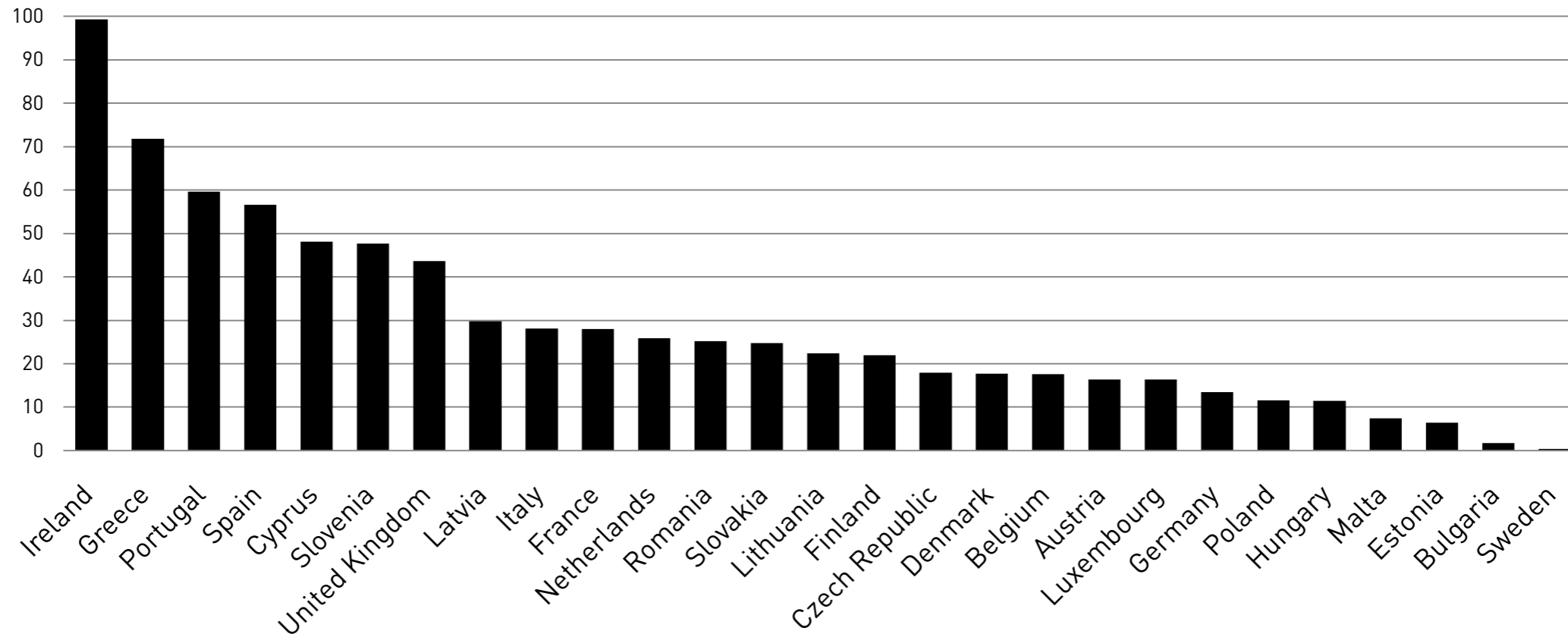
Rate of growth of real ULCs



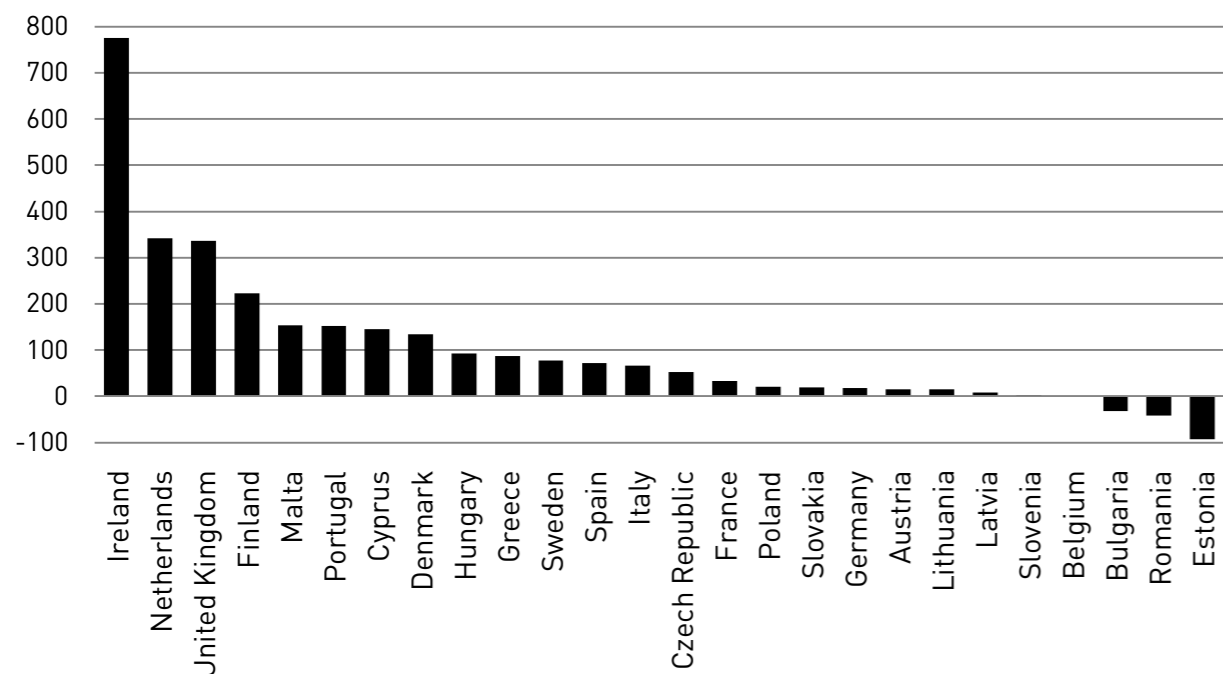
Public budget balance (%GDP)



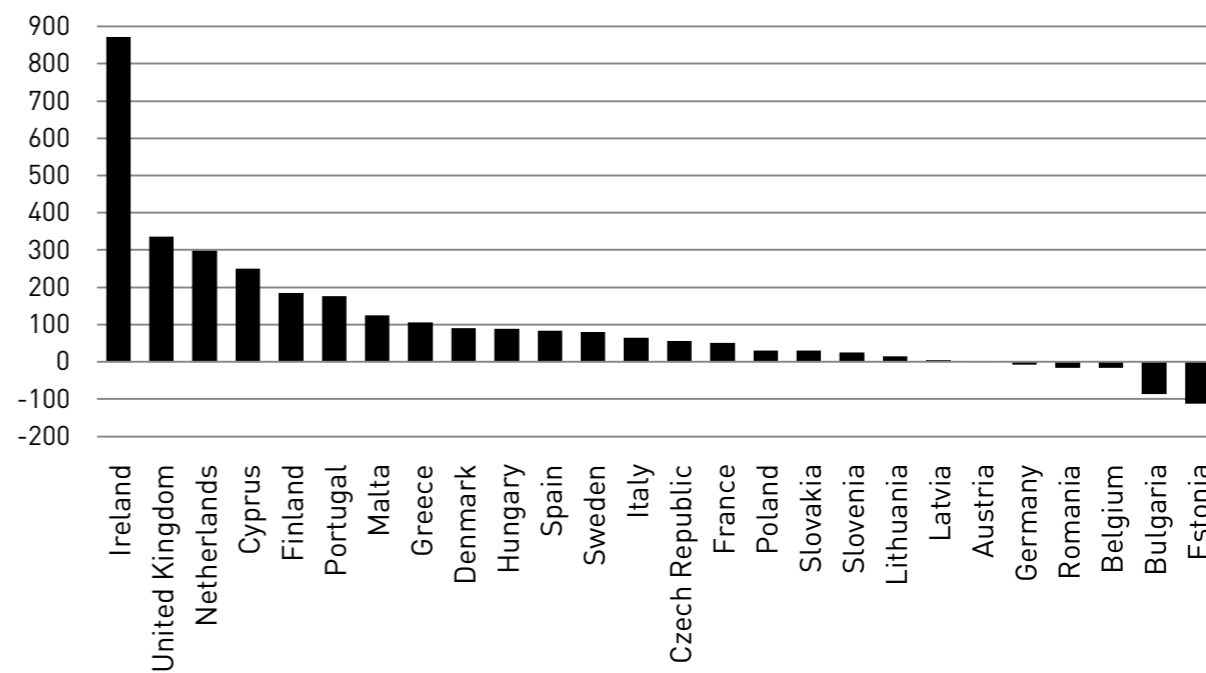
Public debt (% GDP)



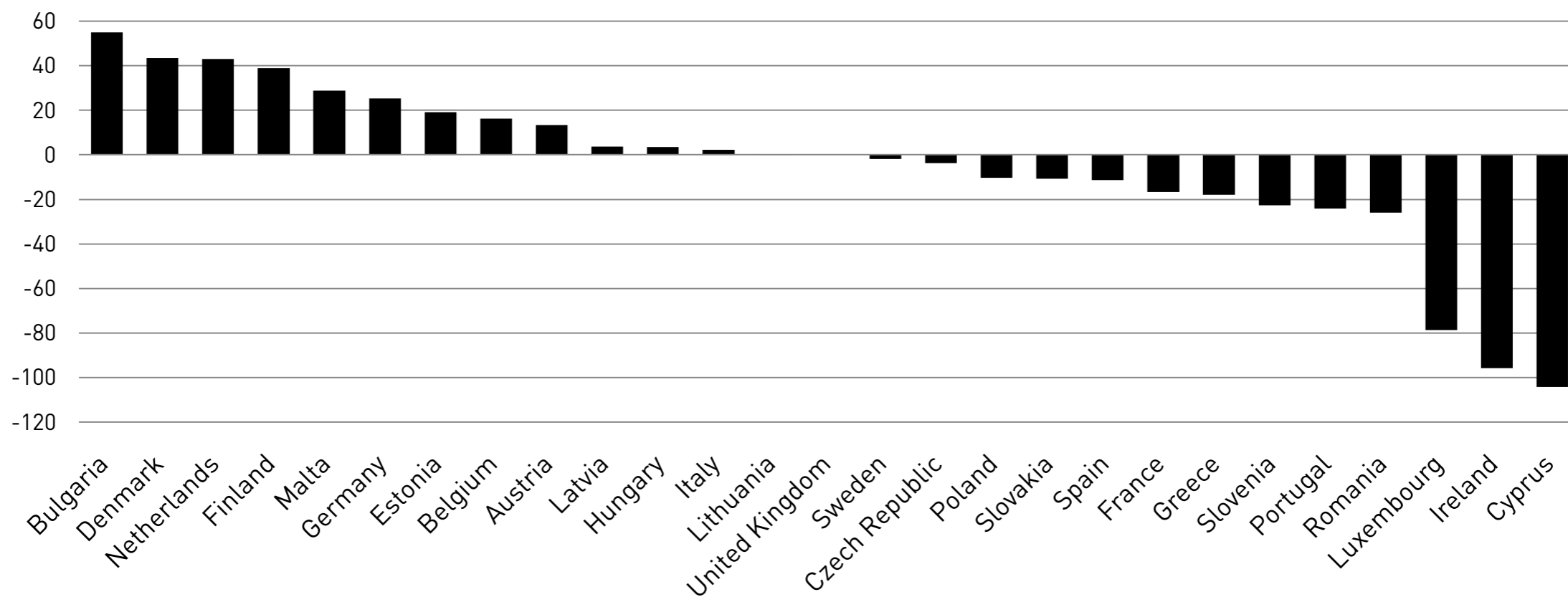
Financial assets. Total economy (% GDP)



Financial liabilities. Total economy (%GDP)



Net financial assets. Total economy (%GDP)



Data show that the highest negative impact has taken place in new eurozone countries (i.e., EMU-6 + Latvia and Lithuania)

Within EMU-6, only Malta present “good” performance

Within EMU-11, Spain is the economy with the worst economic performance in the crisis

Within EU-10, Poland, Denmark, Sweden and the UK show “good” performance

Impact of the crisis on the coherence of European Monetary Union

The objective of the study is to analyze whether (and how much) the economic and financial crisis has affected the coherence of EMU.

We have analyzed the evolution of the economic and financial variables before mentioned to detect:

- whether they are converging or diverging in EMU-17 countries
- the economic crisis has led to higher convergence-divergence in these variables

Analysis has been made based on:

- evolution of means
- evolution of standard deviations
- boxplots (detection of outliers)

Period: 1995-2013 (2012 for financial variables)

Economic activity

Real GDP (absolute size):

- Rising divergence, except in 2009 (due to the declining GDP in Germany and France)

GDP growth:

- no clear trend
- rising divergence in 2009 and 2011 due to Greece and Estonia

GDP per capita growth

- Divergence until 2007, divergence since 2008 (higher decline of GDP per capita in more developed EMU countries)

Potential GDP growth:

- Convergence since 1997 (lower potential GDP growth in Ireland), divergence since 2009

Output gap:

- Rising divergence since 1998 (when all data are available)
- Convergence between 2007 and 2010
- Divergence since 2011.
 - Outliers: Estonia (2009-2010), Spain (2011), Greece (2011-2013)

Labour market

Employment:

- Convergence since 1999
- Divergence since 2009, partially explained by outliers:
 - 2009: Estonia (-), Luxembourg (+)
 - 2011: Greece (-), Estonia(+)
 - 2012: Greece (-), Luxembourg (+)

Unemployment rate:

- Convergence until 2008 (with declining unemployment) and divergence since 2009 (with rising unemployment)
- Since 2008, only one outlier (Greece)

Rate of growth of real wages:

- Divergence increases between 2008 and 2010 (with declining wages), declines in 2011 and rises again in 2012-2013 (when wages decline started to moderate) [1013 outliers: Luxembourg (+) and Greece-Cyprus(-)]

Real unit labor costs:

- Divergence increases in 2007-2008, in 2009 converge, and there is no change since 2010

Income distribution

Adjusted wage share:

- Convergence until 2007, divergence since 2009 (declining share)

GINI coefficient:

- Convergence until 2010, divergence since 2011 (rising Gini coefficient)

Inflation

CPI: Convergence

Balance on current account transactions

Divergence from 1999 to 2007, divergence since 2008 (declining deficits)

Public finances:

Public budget balance

- Convergence from 2000 to 2007 (declining deficits)
- Divergence from 2008 to 2010 (rising deficits) (mainly due to 1 outlier: Ireland)
- Convergence 2001-2012 (declining deficits)
- Divergence in 2013: due to two outliers (Greece and Slovenia)

Public debt:

- Convergence until 2004
- Divergence since 2005
- Rising public debt since 2007

Financial balance sheets of total economy

Financial assets (Luxembourg not included)

- Rising divergence
- Rising size of financial assets
- Outlier since 2008: Ireland (+)

Financial liabilities (Luxembourg not included)

- Rising divergence
- Rising size of financial assets
- Outlier since 2008: Ireland (+)

Net financial assets

- Rising divergence since 2002
- Net financial liabilities rose in 2003-2009, fell since 2010

Data show that before the crisis there was a convergence process in the macroeconomic (and financial) performance of euro economies.

After the onset of the crisis, there is strong diverging process.

Main question: does this divergence process have a cyclical or structural nature?

Determinants of impact of economic and financial crisis

The main objective is to know whether the higher impact of the crisis on Europe is due to particular elements of the EU as a whole, of some groups of EU countries (euro, non-euro, CEE, Baltic States) or to particular features of individual economies

$$\begin{aligned}GDP_{i,post} &= \pi_1 + \pi_2 Trade_{i,pre} + \pi_3 Gov_{i,pre} \\ &+ \pi_4 Inf_{i,pre} + \pi_5 PubBal_{i,pre} + \pi_6 CA_{i,pre} \\ &+ \epsilon_i\end{aligned}$$

First model:

Is GDP change after the crisis (2008-2013) explained by pre-crisis (2000-2007) values of relevant variables (trade openness, public expenditure, inflation, public budget balance, current account balance)?

55 developed and developing countries

Table 2. Pre-crisis disparities and post-crisis output change

Dependent variable: Accumulated change in GDP in post-crisis period

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	38.9143 (0.0000)	36.0812 (0.0000)	35.8016 (0.0000)	31.6727 (0.0002)	31.7104 (0.0002)	38.9269 (0.0000)	38.4311 (0.0000)	37.3761 (0.0000)	38.9544 (0.0000)
Trade openness	-0.0281 (0.0713)	-0.0231 (0.1220)	-0.0099 (0.5369)	0.0025 (0.8839)	0.0052 (0.7626)	-0.0289 (0.0684)	-0.0212 (0.2337)	-0.0174 (0.2733)	-0.0290 (0.0957)
Government size	-0.8369 (0.0000)	-0.7251 (0.0000)	-0.7205 (0.0000)	-0.5663 (0.0025)	-0.5677 (0.0026)	-0.7983 (0.0000)	-0.7827 (0.0000)	-0.7438 (0.0000)	-0.7992 (0.0000)
Inflation	0.1535 (0.4495)	0.0940 (0.6539)	0.0448 (0.8360)	0.0177 (0.9270)	-0.0098 (0.9614)	0.0736 (0.7235)	0.0711 (0.7183)	0.0166 (0.9404)	0.0704 (0.7443)
Public balance	-0.8511 (0.0526)	-0.9136 (0.0330)	-0.8783 (0.0373)	-0.9136 (0.0306)	-0.9134 (0.0311)	-0.8338 (0.0430)	-0.8135 (0.0480)	-0.8202 (0.0690)	-0.8974 (0.0442)
Current account	0.8881 (0.0002)	0.9350 (0.0002)	0.7602 (0.0010)	0.6288 (0.0054)	0.6209 (0.0059)	0.7757 (0.0007)	0.6424 (0.0187)	0.6876 (0.0106)	0.7757 (0.0016)
EA-12		-6.5700 (0.0298)							
EA-19			-6.6937 (0.0136)		-11.0076 (0.0006)				
EU-28				-9.6224 (0.0020)					
EU-28 (other than EA-19)					-7.2513 (0.0626)				
GIIPS						-11.2299 (0.0028)	-12.6228 (0.0020)	-13.1120 (0.0017)	
CEE							-3.7291 (0.3164)		
Baltic states								-5.4465 (0.1303)	
EA-19 (no GIIPS no Baltics)								-3.6949 (0.2596)	
Greece									-25.2607 (0.0000)
Ireland									-9.9570 (0.0000)
Italy									-6.5534 (0.0114)
Portugal									-5.8646 (0.0068)
Spain									-9.0407 (0.0000)
R-squared	0.5827	0.6154	0.6204	0.6327	0.6416	0.6381	0.6455	0.6505	0.6646
Wald F-stat	11.6450	11.2027	12.6519	13.6876	12.6866	11.3822	10.4367	10.8412	8.7189*
Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

White heteroskedasticity-consistent standard errors & covariance; *p-values* in parentheses; *F-stat

Second model

We analyze the change between the pre-crisis (2003-2007) and the post-crisis (2008-2012) of a number of variables in the euro area

We focus on Euro Area EA-12. We use 2 control groups (non-euro EU countries, and OECD high income countries)

$$\text{Model: } x_{i,\text{post}} - x_{i,\text{pre}} = a_1 + a_2 x_{i,\text{pre}} + a_3 D_i + \mu_i$$

Dummies:

- EA-12
- GIIPS
- Core: AT, BE, FI, FR, DE, LUX, NL
- CEE: BG, CZ, HU, PL RO, SK, SL, EE, LT, LV

	Control group:EU-27											
	Inflation (GDP deflator)				GDP growth				GDP percapita			
Constant	0.734 (0.012)	1.273 (0.001)	1.177 (0.002)	1.153 (0.000)	-0.122 (0.808)	1.158 (0.176)	1.080 (0.192)	0.956 (0.154)	-1.221 (0.006)	-0.318 (0.661)	-0.276 (0.704)	-0.268 (0.625)
Pre-crisis	-0.617 (0.000)	-0.669 (0.000)	-0.648 (0.000)	-0.613 (0.000)	-1.015 (0.000)	-1.175 (0.000)	-1.160 (0.000)	-1.271 (0.000)	-0.798 (0.000)	-0.906 (0.000)	-0.914 (0.000)	-1.127 (0.000)
EA-12		-0.782 (0.087)				-1.356 (0.059)				-1.070 (0.161)		
GIIPS			-1.596 (0.015)	-1.677 (0.009)			-2.460 (0.007)	-2.003 (0.003)			-2.093 (0.024)	-1.682 (0.009)
Core			-0.120 (0.716)				-0.504 (0.349)				-0.382 (0.585)	
CEE				-0.333 (0.462)				1.017 (0.361)				1.755 (0.199)
R-squared	0.754	0.784	0.838	0.841	0.719	0.762	0.818	0.825	0.708	0.735	0.779	0.805
Wald F-statistic	218.439	84.329	81.591	100.487	72.817	42.742	34.784	37.669	79.379	44.078	30.239	41.132
Prob(WaldF-statistic)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Control group: OECD High-income countries											
	Inflation (GDP deflator)				GDP growth				GDPpercapita			
Constant	0.110 (0.756)	0.488 (0.266)	0.230 (0.480)		-0.367 (0.496)	0.947 (0.214)	0.840 (0.215)		-1.236 (0.007)	-0.290 (0.622)	-0.225 (0.685)	
Pre-crisis	-0.339 (0.054)	-0.357 (0.053)	-0.258 (0.104)		-0.817 (0.000)	-0.987 (0.000)	-0.958 (0.000)		-0.677 (0.003)	-0.819 (0.001)	-0.841 (0.000)	
EA-12		-0.749 (0.138)				-1.685 (0.009)				-1.281 (0.045)		
GIIPS			-1.802 (0.016)				-2.832 (0.001)				-2.290 (0.007)	
Core			0.034 (0.924)				-0.824 (0.058)				-0.595 (0.290)	
R-squared	0.118	0.195	0.388		0.364	0.531	0.644		0.312	0.429	0.528	
Wald F-statistic	4.085	4.052	5.537		16.520	12.398	11.059		10.731	7.578	6.445	
Prob (WaldF-statistic)	0.054	0.030	0.005		0.000	0.000	0.000		0.003	0.003	0.003	
Whiteheteroskedasticity-consistentstandarderrors&covariance;p-valuesinparentheses												

	Control group: EU-27											
	Long-term unemployment				Unemployment				Employment			
Constant	8.794 (0.014)	6.259 (0.061)	7.162 (0.037)	6.241 (0.055)	4.926 (0.008)	4.554 (0.020)	5.130 (0.001)	4.276 (0.003)	9.097 (0.042)	9.304 (0.042)	11.116 (0.003)	13.614 (0.000)
Pre-crisis	-0.287 (0.001)	-0.267 (0.001)	-0.288 (0.001)	-0.225 (0.016)	-0.457 (0.064)	-0.442 (0.078)	-0.513 (0.007)	-0.632 (0.003)	-0.176 (0.032)	-0.176 (0.031)	-0.210 (0.001)	-0.240 (0.000)
EA-12		3.850 (0.087)				0.571 (0.681)				-0.455 (0.585)		
GIIPS			7.974 (0.004)	6.316 (0.022)			4.239 (0.021)	6.005 (0.001)			-3.010 (0.000)	-3.984 (0.000)
Core			0.760 (0.716)				-2.158 (0.010)				1.369 (0.037)	
CEE				-2.999 (0.342)				2.378 (0.050)				-1.098 (0.086)
R-squared	0.304	0.376	0.487	0.505	0.148	0.154	0.530	0.537	0.184	0.195	0.651	0.624
WaldF-statistic	13.504	7.506	8.003	7.947	3.749	1.973	11.179	9.358	5.156	2.681	16.470	15.792
Prob(WaldF-statistic)	0.001	0.003	0.001	0.001	0.064	0.161	0.000	0.000	0.032	0.089	0.000	0.000
	Control group: OECD High-income countries											
	Long-term unemployment				Unemployment				Employment			
Constant	5.387 (0.012)	5.031 (0.021)	5.397 (0.017)		3.334 (0.017)	2.700 (0.027)	3.053 (0.001)		6.699 (0.093)	10.393 (0.027)	12.099 (0.001)	
Pre-crisis	-0.194 (0.004)	-0.243 (0.004)	-0.258 (0.003)		-0.351 (0.124)	-0.395 (0.045)	-0.451 (0.003)		-0.125 (0.064)	-0.179 (0.021)	-0.208 (0.001)	
EA-12		4.173 (0.142)				2.086 (0.101)				-1.398 (0.191)		
GIIPS			8.513 (0.012)				5.837 (0.001)				-4.138 (0.000)	
Core			1.446 (0.552)				-0.509 (0.392)				0.235 (0.743)	
R-squared	0.258	0.340	0.463		0.128	0.233	0.665		0.144	0.221	0.660	
Wald F-statistic	10.362	5.445	6.101		2.533	3.642	10.456		3.744	3.108	17.516	
Prob (WaldF-statistic)	0.004	0.011	0.003		0.124	0.042	0.000		0.064	0.063	0.000	

Current account				
	Control group: EU-27			
Constant	0.366 (0.489)	1.438 (0.079)	0.900 (0.319)	0.101 (0.914)
Pre-crisis	-0.462 (0.000)	-0.397 (0.001)	-0.487 (0.001)	-0.384 (0.018)
EA-12 dummy		-1.937 (0.081)		
GIIPS dummy			-3.054 (0.033)	-1.661 (0.375)
Core dummy			-0.177 (0.913)	
CEE dummy				2.226 (0.276)
R-squared	0.522	0.561	0.593	0.618
Wald F-statistic	18.816	10.662	8.190	9.040
Prob (Wald F-statistic)	0.000	0.000	0.001	0.000
	Control group: OECD High-income countries			
Constant	-0.063 (0.860)	0.331 (0.455)	0.332 (0.465)	
Pre-crisis	-0.193 (0.000)	-0.191 (0.000)	-0.185 (0.001)	
EA-12 dummy		-0.885 (0.223)		
GIIPS dummy			-0.742 (0.420)	
Core dummy			-0.992 (0.316)	
R-squared	0.361	0.401	0.402	
Wald F-statistic	16.525	10.273	6.827	
Prob (Wald F-statistic)	0.000	0.001	0.002	

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	Control group: EU-27							
	Government consolidated gross debt				Cash surplus/deficit (% GDP)			
Constant	12.441 (0.081)	11.517 (0.089)	13.939 (0.015)	15.782 (0.046)	-3.602 (0.000)	-2.872 (0.000)	-3.034 (0.000)	-2.280 (0.002)
Pre-crisis	0.025 (0.836)	-0.091 (0.548)	-0.156 (0.162)	-0.143 (0.249)	-0.697 (0.005)	-0.674 (0.002)	-0.766 (0.000)	-0.754 (0.000)
EA-12 dummy		13.427 (0.085)				-1.506 (0.261)		
GIIPS dummy			28.973 (0.005)	26.209 (0.004)			-4.763 (0.032)	-5.496 (0.018)
Core dummy			4.953 (0.294)				0.920 (0.296)	
CEE dummy				-1.743 (0.780)				-0.909 (0.310)
R-squared	0.002	0.167	0.464	0.448	0.335	0.372	0.606	0.607
Wald F-statistic	0.044	1.906	3.498	3.425	9.716	5.913	8.249	9.074
Prob (Wald F-statistic)	0.836	0.172	0.034	0.036	0.005	0.008	0.001	0.000
	Control group: OECD High-income countries							
	Government consolidated gross debt				Cash surplus/deficit (% GDP)			
Constant	9.052 (0.201)	4.951 (0.484)	6.633 (0.359)		-3.204 (0.000)	-2.768 (0.003)	-2.717 (0.004)	
Pre-crisis	0.107 (0.203)	0.108 (0.235)	0.081 (0.405)		-0.060 (0.752)	-0.092 (0.655)	-0.148 (0.537)	
EA-12 dummy		8.040 (0.238)				-0.948 (0.561)		
GIIPS dummy			20.265 (0.054)				-3.847 (0.165)	
Core dummy			-0.729 (0.886)				0.927 (0.365)	
R-squared	0.052	0.113	0.315		0.004	0.020	0.213	
Wald F-statistic	1.720	1.916	2.911		0.103	0.213	1.415	
Prob(Wald F-statistic)	0.203	0.172	0.060		0.752	0.810	0.265	

	Control group: EU-27							
	Gini index				Palma ratio			
Constant	0.040 (0.055)	0.039 (0.071)	0.053 (0.130)	0.058 (0.060)	0.206 (0.021)	0.202 (0.031)	0.233 (0.119)	0.295 (0.021)
Pre-crisis	-0.153 (0.048)	-0.158 (0.067)	-0.204 (0.128)	-0.203 (0.080)	-0.220 (0.018)	-0.231 (0.034)	-0.259 (0.116)	-0.268 (0.046)
EA-12 dummy		0.004 (0.536)				0.031 (0.504)		
GIIPS dummy			0.008 (0.511)	0.003 (0.814)			0.046 (0.582)	-0.005 (0.946)
Core dummy			0.001 (0.843)				0.017 (0.551)	
CEE dummy				-0.010 (0.136)				-0.086 (0.074)
R-squared	0.253	0.283	0.314	0.438	0.360	0.395	0.404	0.580
Wald F-statistic	4.840	2.170	1.382	3.473	7.731	3.383	2.042	5.817
Prob (Wald F-statistic)	0.048	0.161	0.304	0.059	0.018	0.075	0.178	0.017
	Control group: OECD High-income countries							
	Gini index				Palma ratio			
Constant	0.015 (0.557)	0.016 (0.552)	0.010 (0.777)		0.203 (0.061)	0.200 (0.076)	0.227 (0.241)	
Pre-crisis	-0.065 (0.482)	-0.066 (0.488)	-0.046 (0.710)		-0.210 (0.051)	-0.214 (0.075)	-0.238 (0.228)	
EA-12 dummy		-0.001 (0.922)				0.013 (0.778)		
GIIPS dummy			-0.002 (0.840)				0.023 (0.787)	
Core dummy			0.001 (0.842)				0.003 (0.933)	
R-squared	0.048	0.049	0.056		0.299	0.306	0.310	
Wald F-statistic	0.523	0.270	0.227		4.814	2.170	1.453	
Prob (Wald F-statistic)	0.482	0.768	0.875		0.051	0.165	0.291	

Whiteheteroskedasticity-consistentstandarderrors&covariance.p-valuesinparentheses

Conclusions

Analyses have shown that the impact of the economic and financial crisis has been more intense in euro than in non-euro European Union countries

Within euro area, the impact of the crisis has been more severe in PIIGS and new member states (peripheral countries) than in the core countries

The higher impact of the crisis in the euro zone (in relation to other developed and developing economies and other non-euro EU countries) implies that there are common (structural problems of competitiveness) and individual-endemic problems (endemic of some economies)

The crisis has led to a rising divergence in the euro area, exacerbating previous differences in the economic performance of euro countries. If this divergence not only has a cyclical nature (but also a structural-permanent one), coherence of the eurozone can diminish, making the working (survival?) of the (current?) euro area more problematic.