Eurocrisis

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EU aims to achieve economic convergence across member states.
Encountered some setbacks

- Global financial crisis 2008 (Great Recession)
- Eurocrisis 2009 (sovereign debt crisis)

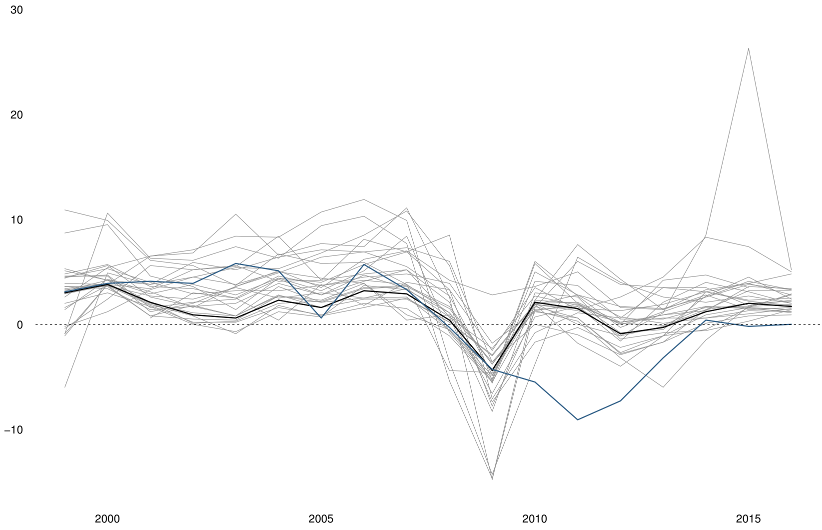
Number of countries unable to repay/refinance their sovereign debt

Couple of member states hard hit

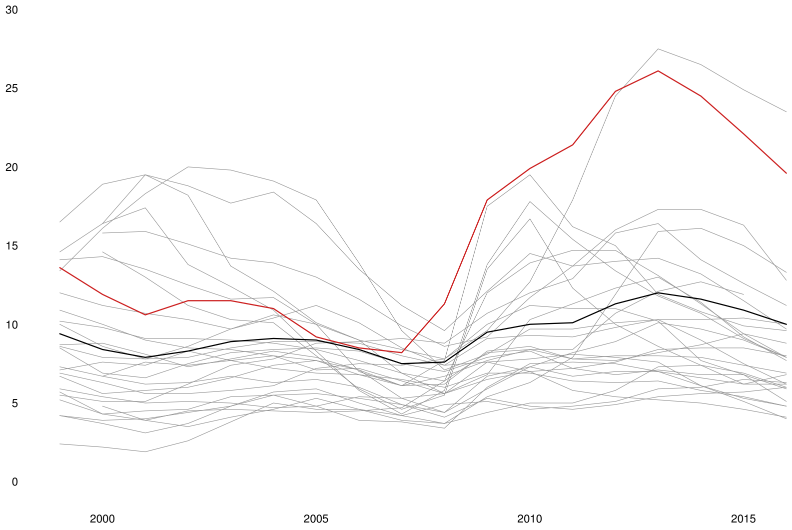
- Portugal
- Ireland
- Greece
- Spain
- Cyprus

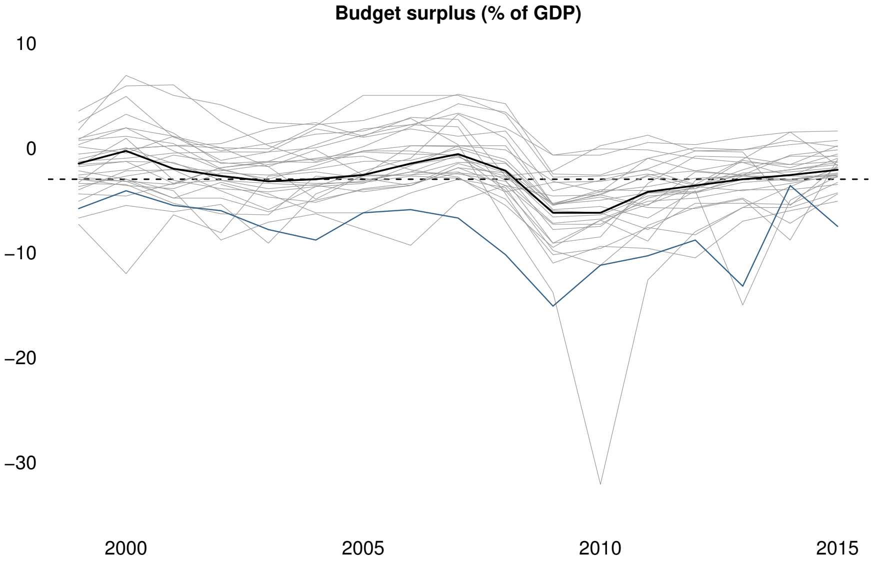
Countries had limited abilities to conduct countercyclical policies.

GDP growth



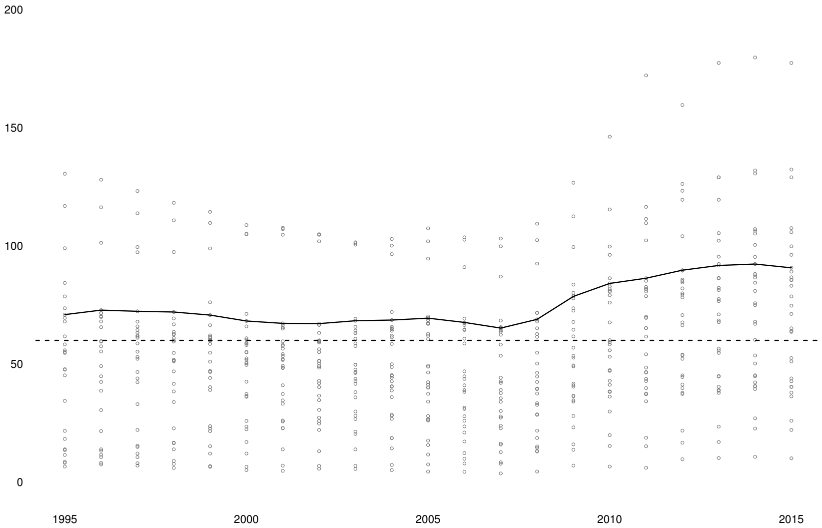
Unemployment rate





Budget surplus (% of GDP)
10
0
−10
−20
−30
2000
2005
2010
2015

Public debt (% of GDP)



Eurocrisis made two things very clear

1. Euro design faults
2. Political inertia

Euro design faults

Currency union with common monetary but not fiscal policy

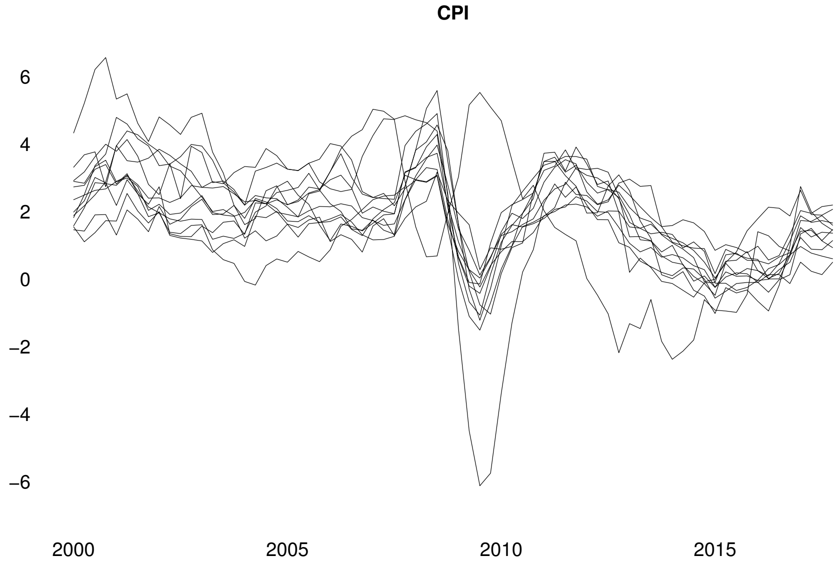
- Complicates matters in terms of crisis response
- Even with EU coordination on fiscal policy (differences in debt levels)

Lisbon treaty article 125

1. The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project. A Member State shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project.
2. The Council, on a proposal from the Commission and after consulting the European Parliament, may, as required, specify definitions for the application of the prohibitions referred to in Articles 123 and 124 and in this Article.

Lisbon treaty article 122

1. Without prejudice to any other procedures provided for in the Treaties, the Council, on a proposal from the Commission, may decide, in a spirit of solidarity between Member States, upon the measures appropriate to the economic situation, in particular if severe difficulties arise in the supply of certain products, notably in the area of energy.
2. Where a Member State is in difficulties or is seriously threatened with severe difficulties caused by natural disasters or exceptional occurrences beyond its control, the Council, on a proposal from the Commission, may grant, under certain conditions, Union financial assistance to the Member State concerned. The President of the Council shall inform the European Parliament of the decision taken.


CPI
6
4
2
0
−2
−4
−6
2000
2005
2010
2015

Inflation differences

OCA theory emphasises risk of

1. Asymmetric shocks
2. Symmetric shock with asymmetric effect (e.g. Great recession)

Main issue: inflation rates

- e.g. Greece/Italy persistent higher inflation rates compared to Germany

Countries cannot devalue their currency to regain competitiveness

- ECB sets monetary policy
- Appreciation of real exchange rate

Consider one good which is sold in two countries

1. Italy
2. Germany

Price in Italy is: p
Price in Germany is: p^*

Pre-euro: compare prices using exchange rate E.
Real exchange rate given by

$$\frac{Ep}{p^*} \tag{1}$$

With euro E is fixed; inflation causes increase in

$$\frac{p}{p^*} \tag{2}$$

Appreciation in

$$\frac{Ep}{p^*} \tag{3}$$

Result: loss in competitiveness.

Various explanations for diverging inflation rates

- Balassa-Samuelson effect
- ECU fixed at wrong rates

Various explanations for diverging inflation rates (cont.)

- Autonomous wage and price setting
  - Wage increases caused by factors other than labour productivity decreases competitiveness
  - e.g. raising minimum wage, bargaining by sectors that don't face much competition such as civil servants, administered prices in transport and energy
- Policy mistakes
  - e.g. government increases prices/wages through expansionary fiscal policies
- Different preferences
  - Inflation tax/seigniorage preferred when country is poor at collecting taxes
  - Different consumption baskets can cause different inflations across countries with same monetary policy

Political inertia

Negotiations led to kicking the can further down the road

- Bail outs granted; no structural reforms implemented
- Recall; no fiscal transfers

Symmetric shock led to asymmetric effects

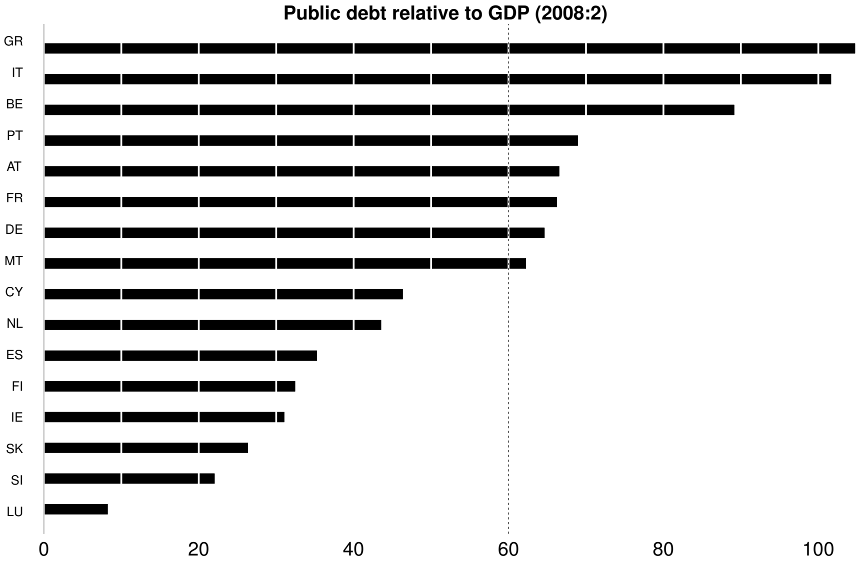
- Differences across countries on desired approach to deal with problem

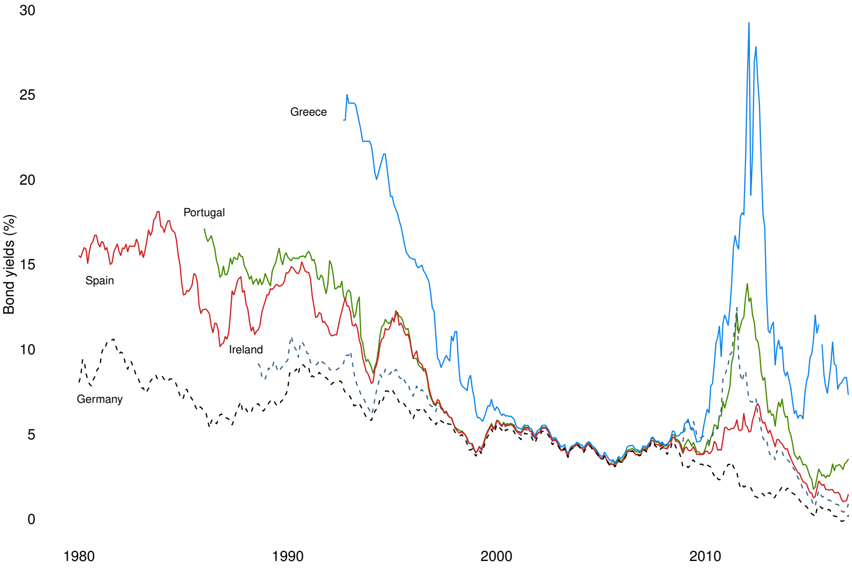
Juncker's populism

> *Financial markets are clearly wrong if they believe they can break Greece into little bits.*
>
> *We have to strengthen the primacy of politics. We have to be able to stop financial markets. We have instruments of torture in the basement. We will display them if it becomes necessary.*

Number of factors amplified Great Recession in Europe

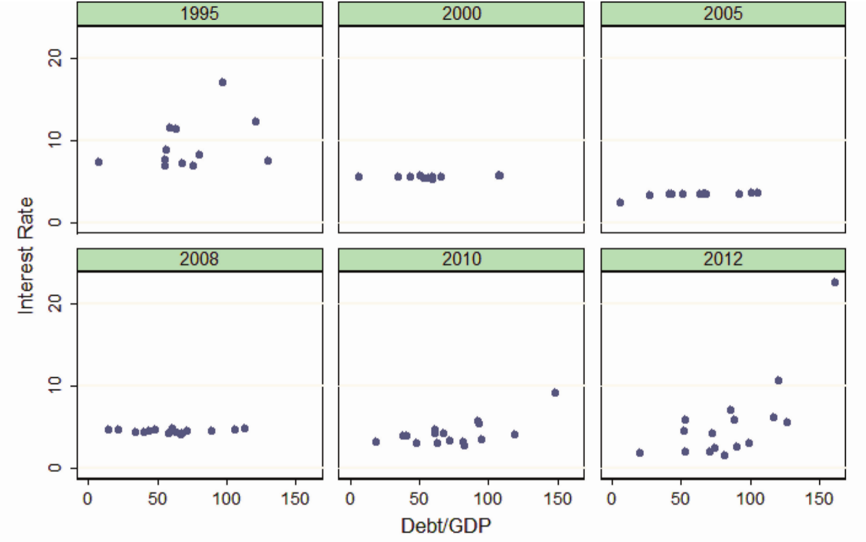
1. Level of public debt
2. Trade imbalances
3. Financial integration

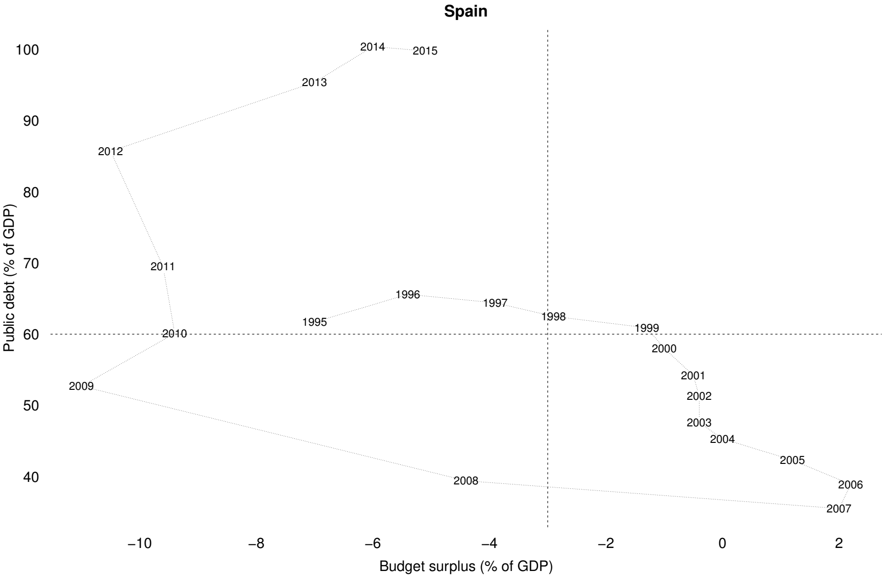

Public debt relative to GDP (2008:2)
GR
IT
BE
PT
AT
FR
DE
MT
CY
NL
ES
FI
IE
SK
SI
LU
0
20
40
60
80
100

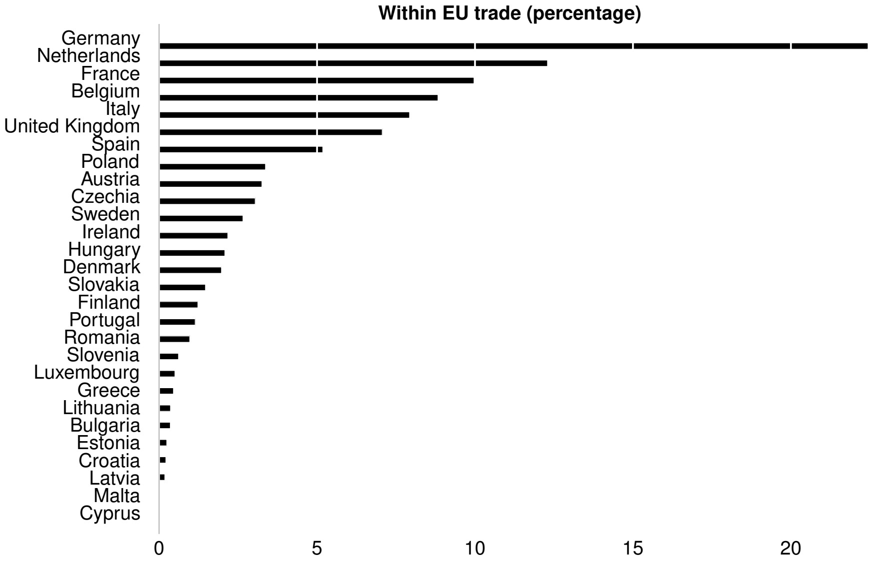


30
25
20
15
10
5
0
Bond yields (%)
Greece
Portugal
Spain
Ireland
Germany
1980
1990
2000
2010

Figure 2: The relationship between sovereign debt and sovereign interest rates in the euro area




Spain
100
90
80
70
60
50
40
Public debt (% of GDP)
−10
−8
−6
−4
−2
0
2
Budget surplus (% of GDP)
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015



Within EU trade (percentage)
Germany
Netherlands
France
Belgium
Italy
United Kingdom
Spain
Poland
Austria
Czechia
Sweden
Ireland
Hungary
Denmark
Slovakia
Finland
Portugal
Romania
Slovenia
Luxembourg
Greece
Lithuania
Bulgaria
Estonia
Croatia
Latvia
Malta
Cyprus
0
5
10
15
20

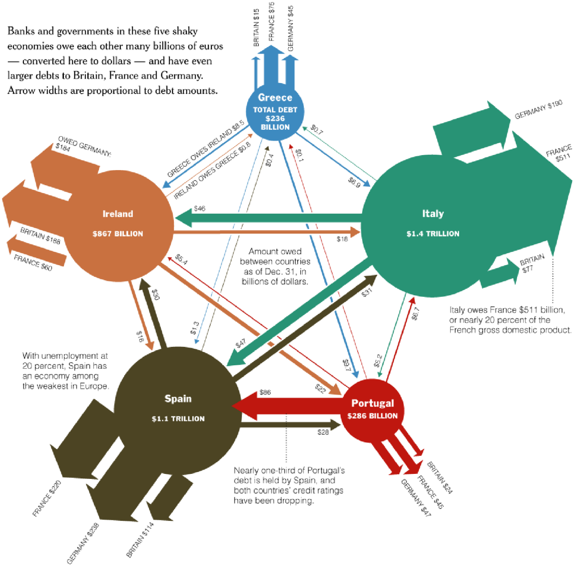
Trade imbalances

Cheap credit allowed countries to buy on loans

- Germany increase in trade surplus
- Italy, Spain, etc. increase in trade deficit

Eurozone peripheral areas rack up debts buy German goods: don't have money to pay for goods

- Germany could export relatively cheaply because euro kept prices artificially low since it didn't appreciate


Banks and governments in these five shaky economies owe each other many billions of euros — converted here to dollars — and have even larger debts to Britain, France and Germany. Arrow widths are proportional to debt amounts.
BRITAIN $15
FRANCE $75
GERMANY $45
Greece
TOTAL DEBT $236 BILLION
GREECE OWES IRELAND $8.5
IRELAND OWES GREECE $0.8
$0.7
$6.9
$0.1
$0.4
OWED GERMANY: $184
BRITAIN $188
FRANCE $60
Ireland
$867 BILLION
$46
$18
GERMANY $190
FRANCE $511
Italy
$1.4 TRILLION
BRITAIN $77
Amount owed between countries as of Dec. 31, in billions of dollars.
Italy owes France $511 billion, or nearly 20 percent of the French gross domestic product.
$5.4
$30
$16
$1.3
$47
$31
$6.7
$5.2
$37
$22
With unemployment at 20 percent, Spain has an economy among the weakest in Europe.
Spain
$1.1 TRILLION
$86
$28
Portugal
$286 BILLION
Nearly one-third of Portugal's debt is held by Spain, and both countries' credit ratings have been dropping.
FRANCE $220
GERMANY $238
BRITAIN $114
BRITAIN $24
FRANCE $45
GERMANY $47

Debt and deficit

Straightforward that debt is caused by budget deficits, but how does this work in relation to GDP?

Let B_t be debt at end of year t in nominal terms
D_t is deficit and will equal

$$B_t - B_{t-1} = D_t \tag{4}$$

Relative to GDP Y we get

$$\frac{B_t - B_{t-1}}{Y_t} = \frac{D_t}{Y_t} \tag{5}$$

$$b_t - \frac{B_{t-1}}{Y_t} = d_t \tag{6}$$

Can write GDP growth as

$$g_t = \frac{Y_t - Y_{t-1}}{Y_{t-1}} = \frac{Y_t}{Y_{t-1}} - 1 \tag{7}$$

Can write

$$\frac{B_{t-1}}{Y_t} = \frac{B_{t-1}}{Y_{t-1}} \cdot \frac{Y_{t-1}}{Y_t} = \frac{b_{t-1}}{1 + g_t} \tag{8}$$

$$b_t - \frac{b_{t-1}}{1+g_t} = d_t \tag{9}$$
$$b_t - b_{t-1} = (1+g_t)d_t - g_t b_t$$

Constant debt-to-GDP ratio requires

$$b_t = b_{t-1} \tag{10}$$

Implies deficit-to-GDP ratio equaling

$$(1+g_t)d_t - g_t b_t = 0 \tag{11}$$
$$dt = \frac{g_t b_t}{1+g_t} = \frac{g_t}{1+g_t} b_t$$

Maastricht Treaty has set convergence criteria to

$$b_t = 60\%$$
$$d_t = 3\%$$

Therefore, g needs to equal about 5.3%

- Implicit assumption: real GDP growth of 3%, inflation 2%, equaling a nominal growth rate of 5%.

If a country is able to keep the debt level constant then naturally the debt-to-GDP ratio will decrease due to GDP growth.

- This also implies that the deficit becomes larger at high nominal growth rates.

EU response

Economic problem required solution with political backing

- Not easy given break down in confidence between member states: specifically North vs. South

Some solutions that didn't make it

1. Eurobonds
2. Fiscal transfers
3. Grexit
4. Quantitative Easing (QE)

Eurobonds

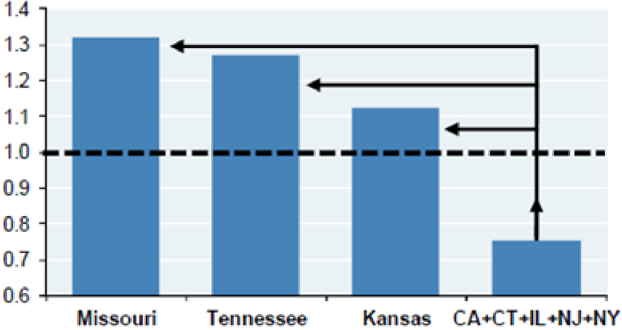
- Allows government to refinance debts: high-yield countries benefit from creditworthiness low-yield countries
- Moral hazard problem

Fiscal transfers

- Richer countries pay poorer countries (peripheraid, permanent bail out)
- No system in place to do this: would need political backing; unlikely to be popular with population of richer countries

Fiscal transfers between states in the U.S.

Dollars, federal spending received per dollar of tax paid, 2005



1.7%	1.8%	0.9%	30.5%	% of US GDP

If seamless transfers existed in the EU, they might look like this:

Portugal	Greece	Ireland	DEU+LUX+ NLD+AUT+FIN	EU proxy
1.7%	1.8%	0.9%	27.8%	ECB capital weight

Source: US Census, Tax Foundation, ECB. ECB capital weights based on EU membership, not Eurozone membership.

Grexit

- Return to drachme: Greece would be able to set own monetary policy and regain competitiveness
- Would create undesired precedent and risk stability of the whole euro project

QE

- Help boost economic activity (e.g. Japan)
- Germany not a fan (ECB did engage in form of QE eventually)

EU took following measures (2010)

- European Financial Stability Facility (EFSF)
- European Financial Stabilisation Mechanism (EFSM)

More or less temporary measures followed up by a more formalised structure to assist eurozone member states under the European Stability Mechanism (ESM) in 2012.

European Financial Stability Facility
Temporary crisis resolution mechanism for euro area member states financed through the issuance of bonds and other debt instruments

- Capacity of 500B EU
- Guaranteed by other eurozone member states (so sort of eurobonds)

Assistance was used to provide loans, recapitalise banks, or buy sovereign debt

- For Ireland, Portugal, Greece

European Financial Stabilisation Mechanism

Provides financial assistance to any EU member state which is facing severe financial disturbances

- Country can get up to 60B EUR in assistance from the European Commission
- The fund is financed through bond sales, using EU budget as collateral
- Provided assistance to Ireland and Portugal, and a short term loan to Greece

European Stability Mechanism

Aimed to help overcome the problem for countries facing a debt crisis that they couldn't get credit from international financial markets or at unfavourable rates

- Basically extension of EFSF

Budget of 700B EUR Between 2012-2016, the programme disbursed about 250B EUR to five countries

- Ireland, Portugal, Greece (2x), Spain, Cyprus February 2011 (part of EFSF)

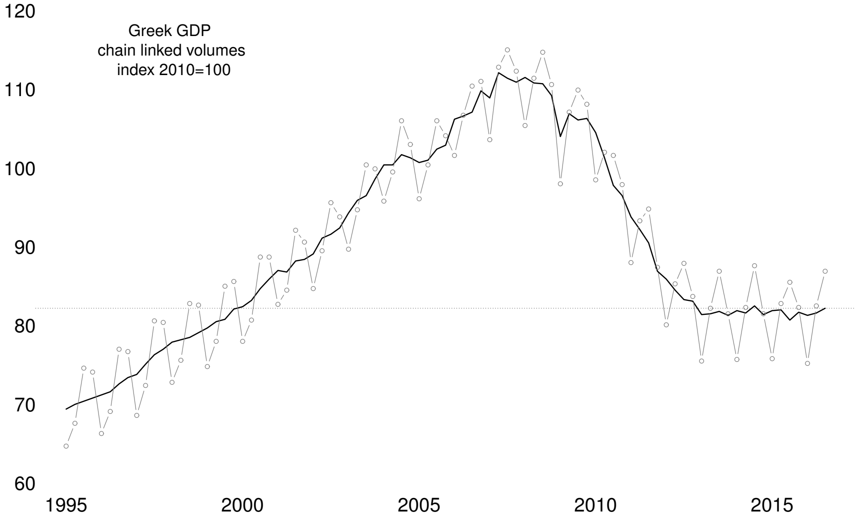
The Greek Depression
Focal point of eurocrisis when it emerged in late 2009 that they had been understating their debt figures

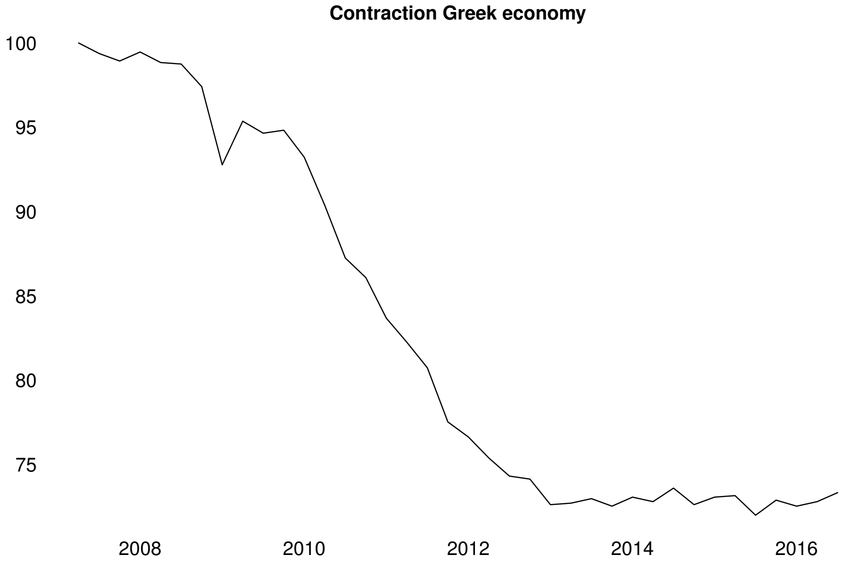
- Misreported numbers at Eurostat
- Led to serious doubts about the state of the Greek economy and government finances in particular leading to high yields on its bonds, effectively barring the country from lending money on the international market.

Although the country experienced a substantial period of growth from 1995 onwards, the crisis destroyed much of the progress made over the years with current GDP being at the level of 2000.

Greece is an important country in the European Union, given its history in Europe, its strategic position in the Eastern Mediterranean, and its potential in the services industries. Europes commitment to Greece is manifested in the heavy transfers it makes every year. It is in Europes interest to wean countries like Greece and Portugal from these transfer payments and the best chance to do so is to help Greece to establish the conditions for bringing its economy into macroeconomic balance. That could best be achieved by allowing Greece to enter the EMU. If 14 countries were to qualify for EMU, and Greece made a concerted effort to bring its economy into balance, the marginal cost of allowing Greece to enter would be small compared to its huge benefits

Mundell (1997)


120
110
100
90
80
70
60
Greek GDP
chain linked volumes
index 2010=100
1995
2000
2005
2010
2015

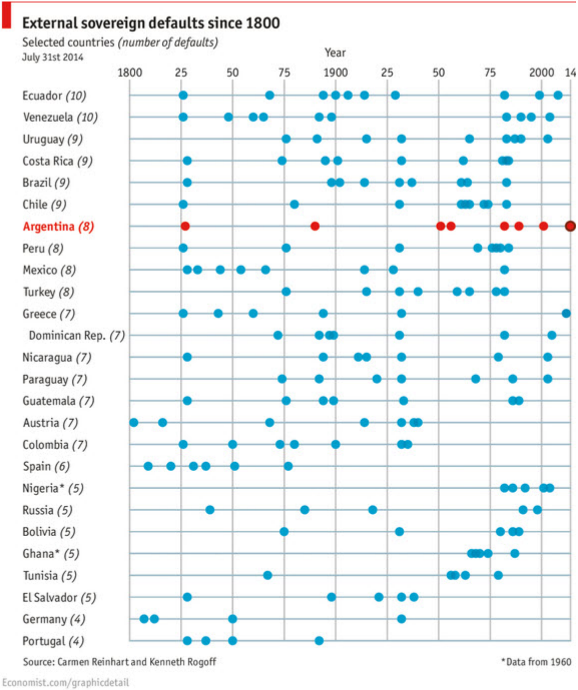

Contraction Greek economy
100
95
90
85
80
75
2008
2010
2012
2014
2016

Debt reduction schemes

1. Unilateral debt forgiveness
2. Third party buy-backs
3. Debt restructuring (haircut)
4. Debt swaps
5. Default (nuclear option)

Greek debt reduction scheme

- **21 Jan. 2010** Greek-German spread for 10-y debt reaches 300 basis points
  - Default only option without outside help
- **2 May 2010** Troika agree to 140B EUR bail-out package
  - Guarantee Greek public debt: debt swap
- **27 Oct. 2011** Major private bond holders agree on haircut
  - 50%: 83.5% of Greek bond holders participate
- **2012-2014** Arrangement becomes third party buy-back: ECB buys out large fraction and lowers interest rates
- **Feb. 2014** Greek debt/GDP >170%: Greece hopes for debt forgiveness from Troika
- **2015** Greece defaults on IMF loan


External sovereign defaults since 1800
Selected countries (number of defaults)
July 31st 2014
Year
1800
25
50
75
1900
25
50
75
2000
14
Ecuador (10)
Venezuela (10)
Uruguay (9)
Costa Rica (9)
Brazil (9)
Chile (9)
Argentina (8)
Peru (8)
Mexico (8)
Turkey (8)
Greece (7)
Dominican Rep. (7)
Nicaragua (7)
Paraguay (7)
Guatemala (7)
Austria (7)
Colombia (7)
Spain (6)
Nigeria* (5)
Russia (5)
Bolivia (5)
Ghana* (5)
Tunisia (5)
El Salvador (5)
Germany (4)
Portugal (4)
Source: Carmen Reinhart and Kenneth Rogoff
*Data from 1960
Economist.com/graphicdetail

Consider country has $P(\mathit{default}) = 0.1$ over next year; leading to 50% default on outstanding debt

- Country needs to pay 5% premium on debt relative to safe assets

Premium imposes additional burden on government

- Interest costs rise above the funds that country can access to pay off the interest payments
- Alternatively the country's GDP could expand in order to keep debt stable

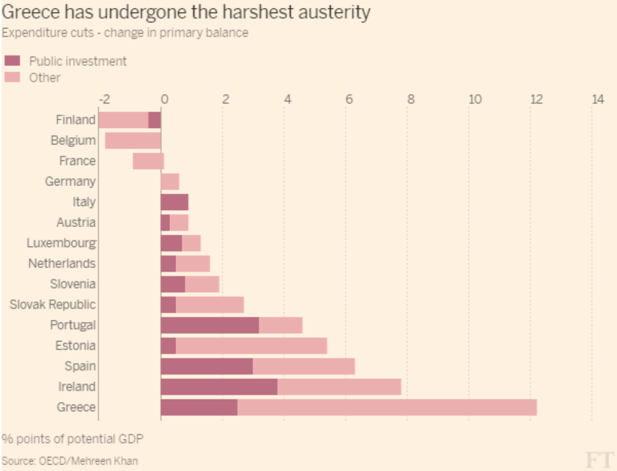
Market for government bonds might cease to operate as the country is deemed not credit-worthy: risk goes from unlikely to likely

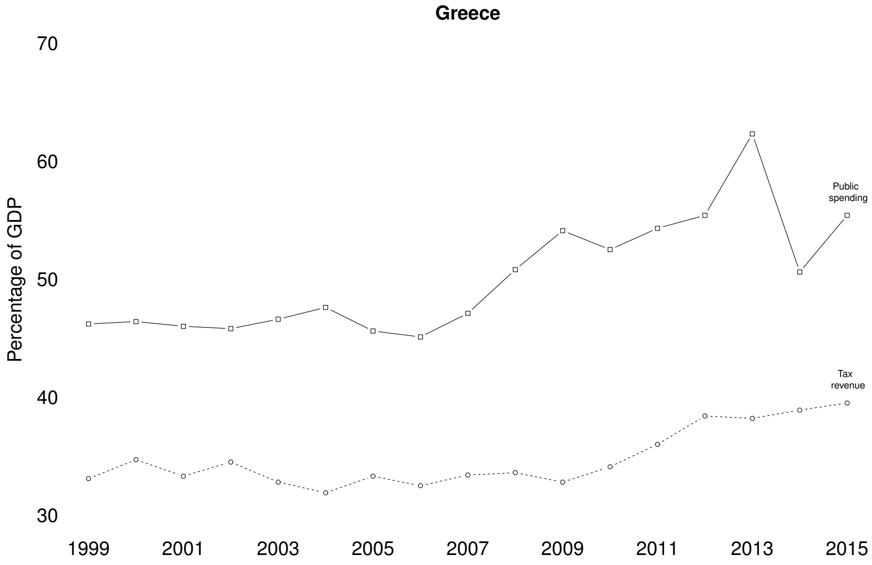
- Closing of a bond market is an rare and abrupt events: People often don't see it coming

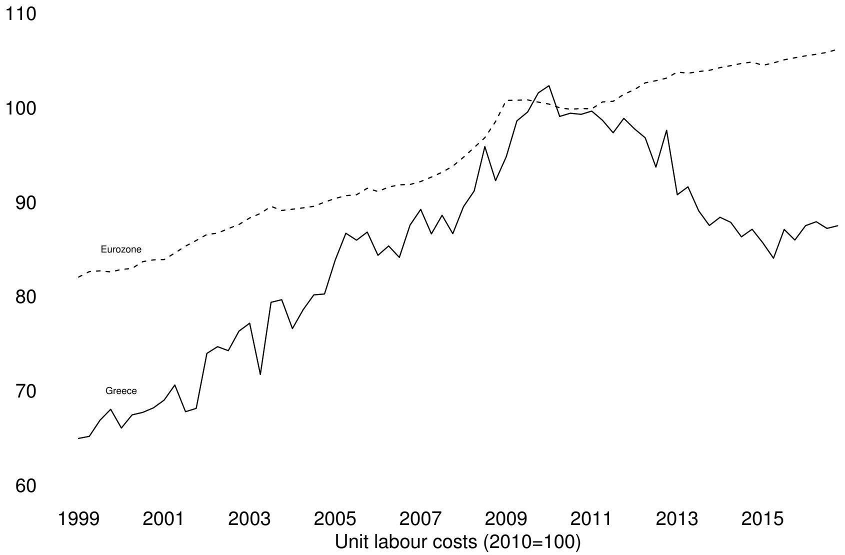
After a default a country needs to restructure it debt which often involves writing off part of it, in order to restore the debt level to a more sustainable level.

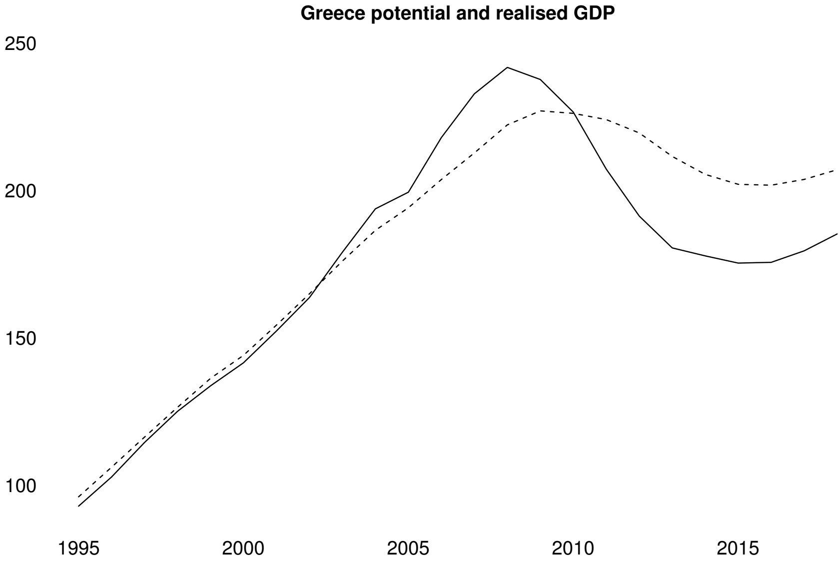
Terms and conditions apply

- Harsh austerity terms
  - Cuts in public spending such as investments
  - Tax increases
- Government overhaul
  - Reducing size of the government apparatus
  - Cutting back on pensions
  - Importantly there were no cuts to defense spending in terms of percentage GDP
- Ending tax evasion by its citizens
- Making business in Greece easier


Greece has undergone the harshest austerity
Expenditure cuts - change in primary balance
Public investment
Other
-2
0
2
4
6
8
10
12
14
Finland
Belgium
France
Germany
Italy
Austria
Luxembourg
Netherlands
Slovenia
Slovak Republic
Portugal
Estonia
Spain
Ireland
Greece
% points of potential GDP
Source: OECD/Mehreen Khan
FT


Greece
70
60
50
40
30
Percentage of GDP
Public spending
Tax revenue
1999
2001
2003
2005
2007
2009
2011
2013
2015


110
100
90
80
70
60
Eurozone
Greece
1999
2001
2003
2005
2007
2009
2011
2013
2015
Unit labour costs (2010=100)


Greece potential and realised GDP
250
200
150
100
1995
2000
2005
2010
2015

ECB response to eurocrisis

ECB's preferred course of action: do nothing

- Governments should clear up mess
- Recall ECB independence: in order to limit government interference in its policy

Unatainable as crisis progressed

- Main fear: contagion of crisis from periphery to central economies
- Serious risk: Italy owed France about 20% of French GDP

Lisbon treaty article 123

1. Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States (hereinafter referred to as national central banks) in favour of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments.
2. Paragraph 1 shall not apply to publicly owned credit institutions which, in the context of the supply of reserves by central banks, shall be given the same treatment by national central banks and the European Central Bank as private credit institutions.

ECB took two measures

1. Standard
   - Downward adjustment of key interest rates
   - Taken due to the macroeconomic circumstances and the risk for price stability
   - Short-term interest rates are close to zero at the moment

2. Non-Standard
   - Includes fixed rate lending, providing longer maturity liquidity, expanding set of assets that can serve as collateral
   - Taken because banking system wasn't functioning properly: ECB needs proper transmission mechanisms for monetary policy

ECB also took number of unconventional steps

1. Securities Market Program (SMP)
2. Long Term Refinancing Operations (LTRO)
3. Outright Money Transactions (OMT)

Securities Market Program

- Purchasing government and private debt, from countries facing problems
- Similar to QE, main difference is that ECB keeps the books balanced; offsetting the purchases by offering the banks interest-bearing deposits

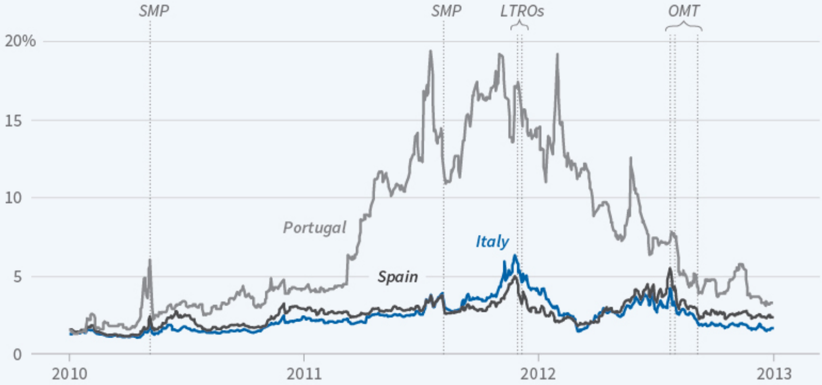
Long Term Refinancing Operations

- ECB committed to refinancing operations for multiple years, rather than couple of months which is common
- ECB serves as lender of first resort to troubled banks, these banks could then help struggling governments by purchasing debt

Outright Money Transactions

- Under certain circumstances a state could request the ECB to buy bonds
- OMTs haven't been used yet as none of the candidate countries met the criteria

Two-Year Government Bond Yields Around ECB Policy Announcements



ECB policy announcements include the Securities Market Programme (SMP), the Long-Term Refinancing Operations (LTROs), and the Outright Monetary Transactions (OMT)
Source: Researchers' calculations using data from Bloomberg

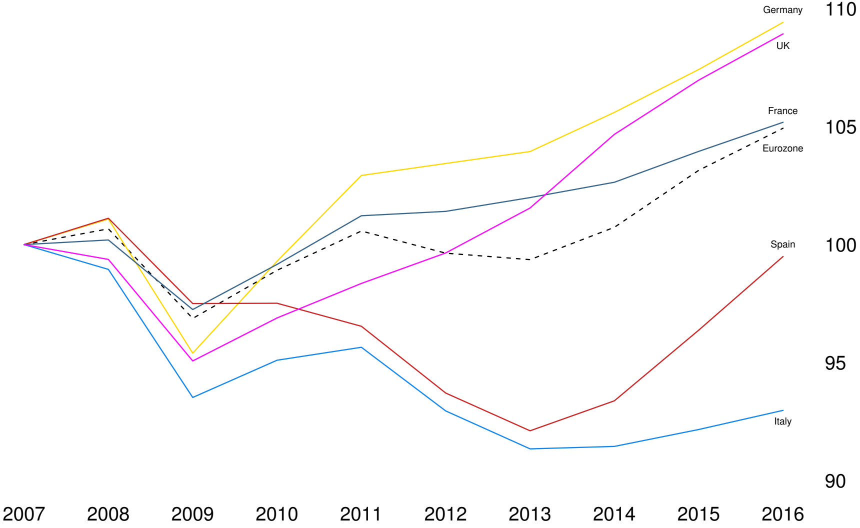
EU economic and monetary integration is all about convergence

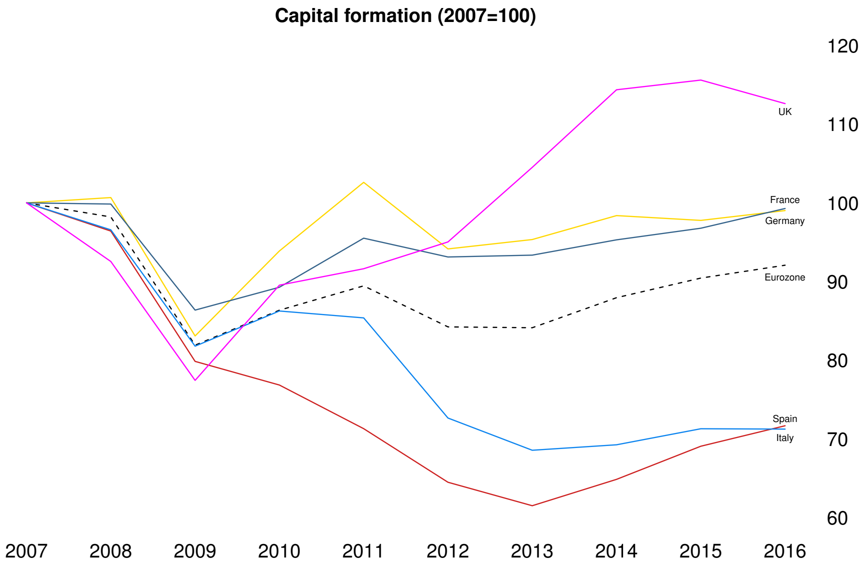
- Raising living standards
- Reducing gap between Western Europe and the rest

Went well for long time; early 2000s seemed promising

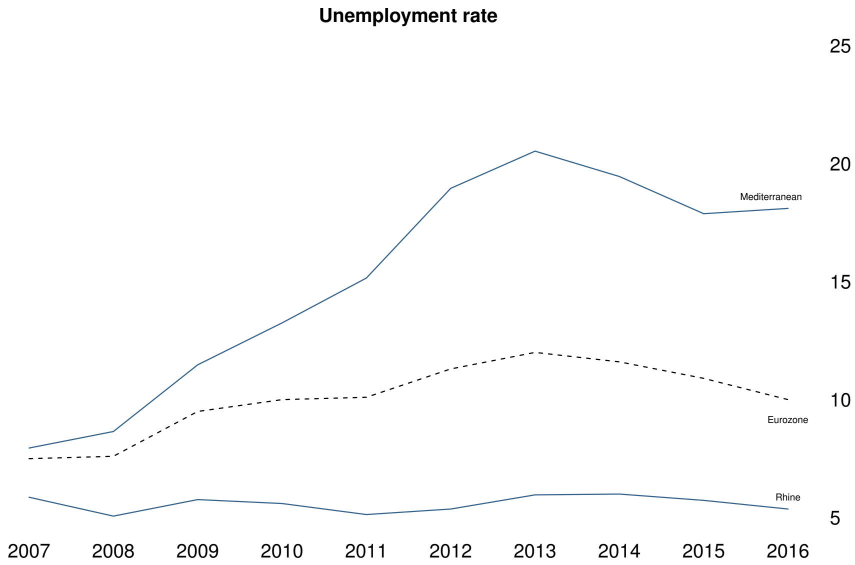
- Crisis put serious dent in progress: setting countries back a decade
- Led to new divergence

Growth since 2007 (2007=100)

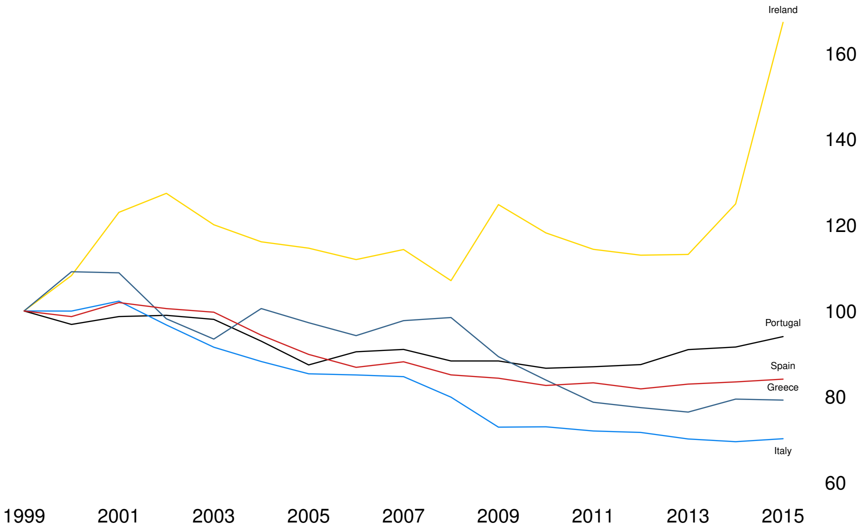




Capital formation (2007=100)
120
110
100
90
80
70
60
UK
France
Germany
Eurozone
Spain
Italy
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

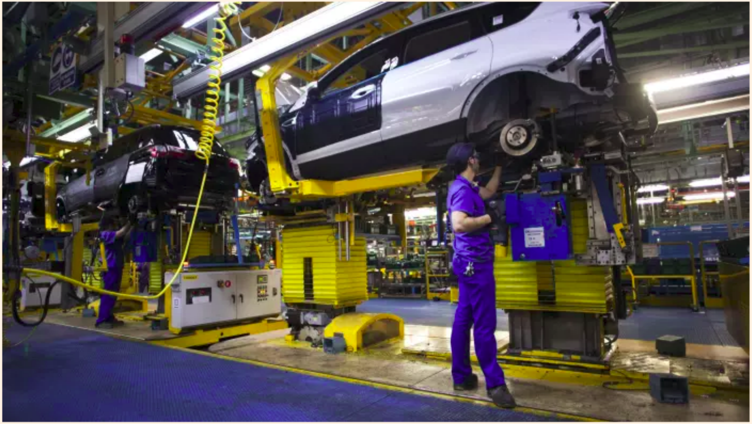

Unemployment rate
25
20
15
10
5
Mediterranean
Eurozone
Rhine
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

Ratio between export and export markets (1999=100)



Spain's exporters drive robust economic recovery

Rebalancing since crisis has led to more sustainable and broader-based growth



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