EU Economics: The Eurocrisis

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A broad overview of the global financial crisis and the Eurozone

A main objective of the European Union is to achieve economic convergence across the member states. That objective has experienced a severe setback due to the global financial crisis which lead to the sovereign debt crisis in the Eurozone. Let's start by examining the impact of this crisis on a range of macroeconomic indicators.

1. GDP (figure 1)
   - Countries across the EU where hit by the global recession
   - Although this was a common shock, some countries have experienced longer lasting effects
   - e.g. while Spain has been able to return to positive growth rates, the situation in Greece is still very dire
2. Unemployment (figure 2)
   - The effect of the crisis on the unemployment rate differs per country
   - Unemployment for the Eurozone on average went up but not by much
   - Contrast the situation in Germany, largely unaffected, with the huge increase in Spain
3. Budget surplus (figure 3)
   - On average the Eurozone wasn't doing that badly in terms of keeping budget close to the Maastricht Treaty guideline
   - As a result of the crisis government budget expanded due to decrease in output
   - Whereas Germany is relatively disciplined when it comes to budget, Greece has been running a deficit for many years
4. Government debt (figure 4)
   - Whereas countries tend to adhere to the rules concerning budget deficit, levels of public debt tend to be much higher than the 60% set by the Maastricht Treaty
   - Even countries like Germany have been over the limit for many years, although levels are coming down in recent years compared to Eurozone average

- Greece's public debt levels are very high above 100% of GDP moving towards 200%.

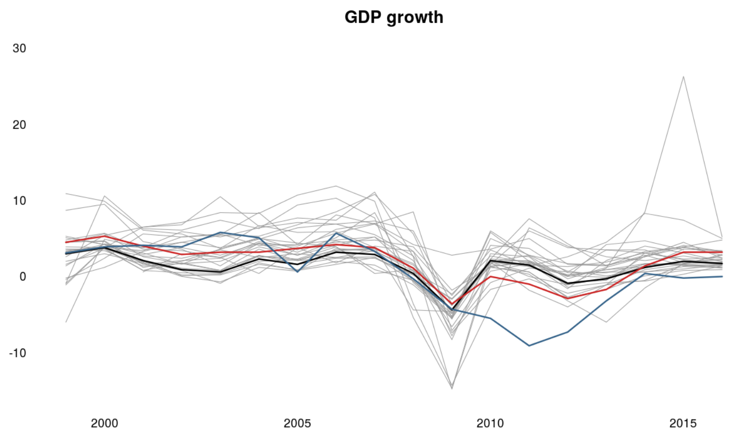

Figure 1: Annual GDP growth. Black line shows the average growth rate for the Eurozone, whereas the red line represents Spain and the blue line Greece. Data: Eurostat

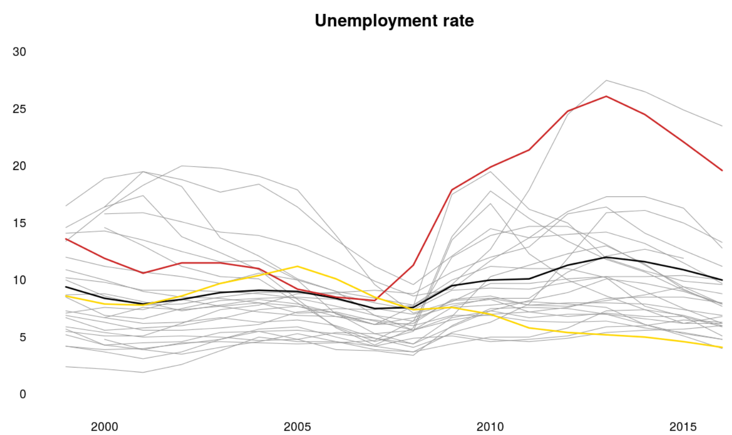

Figure 2: Unemployment rate. Black line shows the average rate for the Eurozone, whereas the red line represents Spain and the gold-coloured line Germany. Data: Eurostat

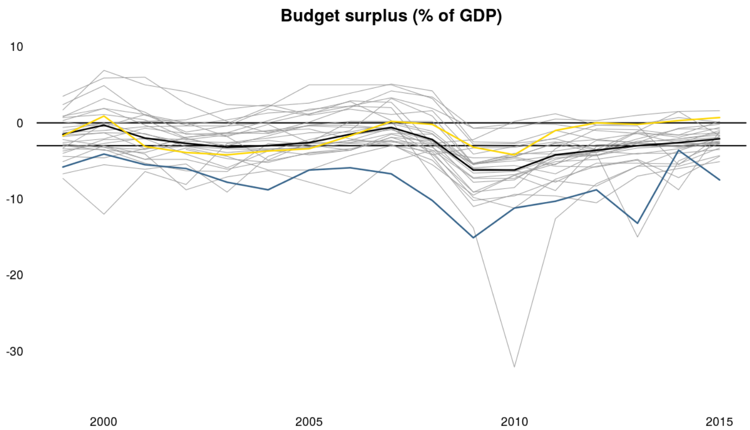

Figure 3: Budget surplus as percentage of GDP. Black line shows the average rate for the Eurozone, whereas the blue line represents Greece and the gold-coloured line Germany. The two black horizontal solid lines show the budget surplus allowed under the Maastricht Treaty (3%) and a balanced budget (0%). Data: Eurostat

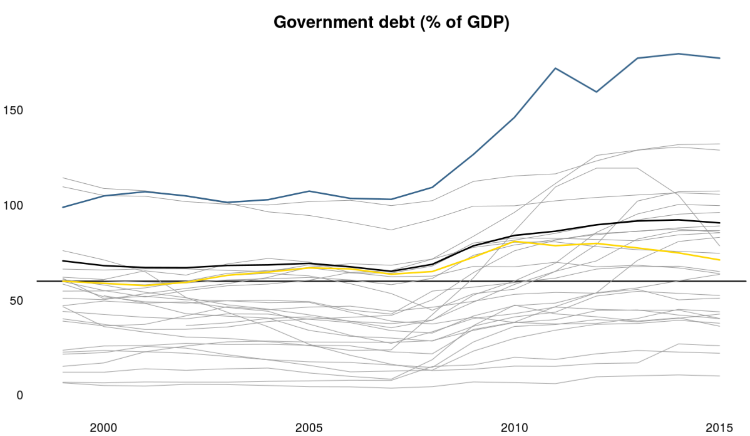

Figure 4: Government debt as percentage of GDP. Black line shows the average rate for the Eurozone, whereas the red line represents Spain and the gold-coloured line Germany. The black horizontal line shows the allowed level of government debt under the Maastricht Treaty. Data: Eurostat

The Eurocrisis

The sovereign debt crisis in the Eurozone[1] has been a particular difficult episode in EU's history. The crisis saw a number of countries unable to repay or refinance their sovereign debt, needing external assistance. Countries that were particularly hard hit include[2]

[1] Which started roughly at the end of 2009

For instance from other countries in the Eurozone, the EU itself, the European Central Bank, or the International Monetary Fund.

[2] One factor contributing to the severity of the crisis in these countries was the limited buffer to conduct countercyclical policies during the crisis.

- Portugal
- Ireland
- Greece
- Spain
- Cyprus

The crisis made two things painfully clear

1. The design faults of the euro
   - The euro is a currency union with common monetary policy but not fiscal policy
   - This greatly complicates matters in terms of responding to a crisis and coordinating fiscal policy
   - Countries can't devalue their currency to regain competitiveness since it is set by the ECB
   - Fiscal policy is still in the hand of the individual countries, leading to large discrepancies in public debt levels
2. Failure of EU to decisively deal with the crisis
   - Every round of negotiations led to kicking the can further down the road
   - Bail outs were granted but no structural solutions were implemented
   - Symmetric shock led to asymmetric effects
   - Differences across countries on desired approach to deal with issue at hand[3]

[3] One issue that is still not resolved is that of fiscal transfers.

During the Great Recession, most eurozone countries suffered from the same issues that had affected the United States such as the housing bubble. However, there were arguably three important factors that made the situation in the eurozone more severe

The collapse of the property market in Spain is notable in this sense.

1. Level of government debt
   - Especially in the Southern European countries

- Introduction of euro allowed countries to borrow money at a favourable rate (figure 5)
- Government debt increased as result (figure 4)
- Boom period in early century also increased public spending (both at national, regional, and local level)[4]
- When recession arrived countries could no longer finance their debt, see example of Spain (figure 6)

[4] For instance the science and arts park in Valencia.

2. Trade imbalances

- Cheap credit allowed countries to buy on loans
- As a result Germany saw its trade surplus increase whereas deficits increased in e.g. Italy and Spain (figure 7)
- Germany could export relatively cheaply because euro kept prices artificially low since it didn't appreciate

The crux of the Eurocrisis in this sense is that the peripheral areas of the Eurozone have racked up large debts buying German goods, while now they don't have the money to pay for these goods.

3. Financial integration

- Financial integration in the eurozone progressed just far enough to make the system unstable through the risk of contagion
- Due to indebtedness of countries vis-a-vis each other (figure 8), one sovereign default could potentially trigger another

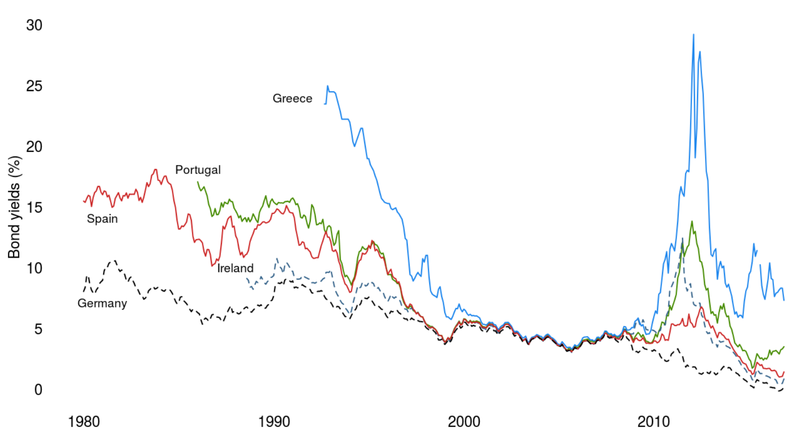

Figure 5: Government bond yields, 10 years' maturity. Data: Eurostat

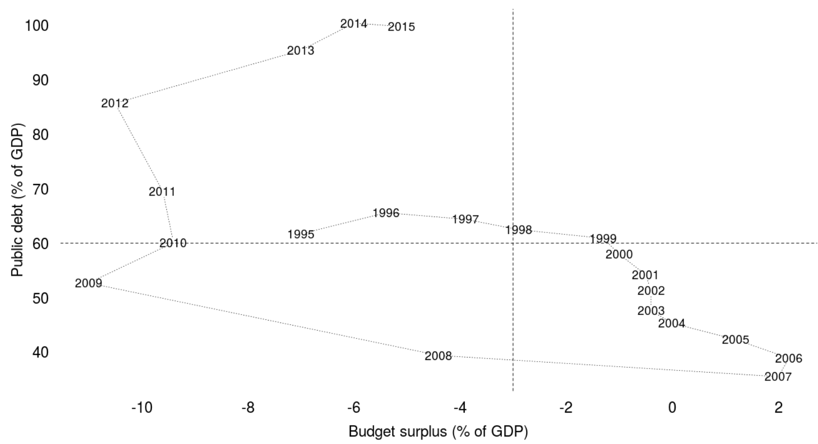

Figure 6: Development of budget surplus and public debt in Spain. Data: Eurostat

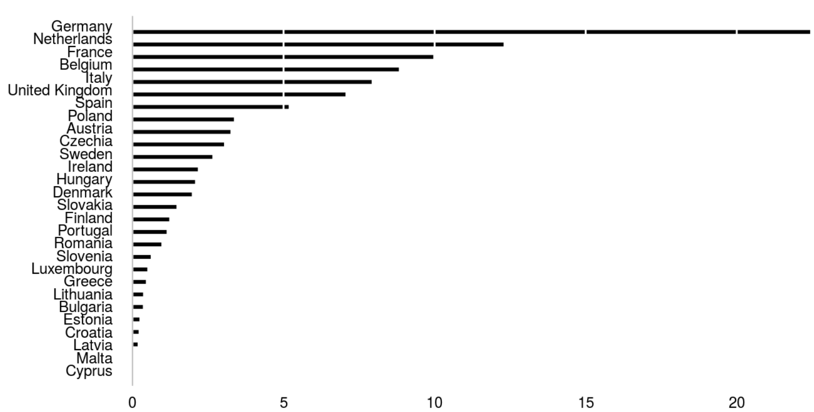

Figure 7: Average share of EU exports to other member states for 2002-2016. Data: Eurostat

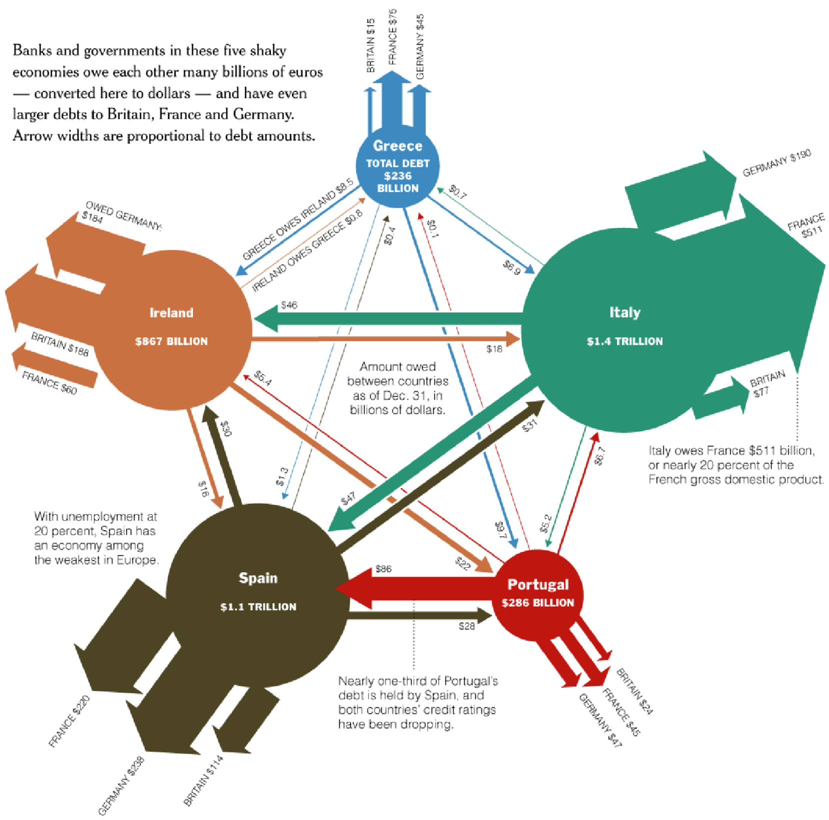

Figure 8: Debt among selected European economies. Source: New York Times

Relation between deficit and debt.

We've discussed repeatedly the development of deficit and debt over time in certain European countries. It is quite straightforward to see how debt is caused by deficits, but we haven't really discussed how the debt to GDP ratio relates to the deficit to GDP ratio. Let's say that, in nominal terms, the public debt at the end of a year t is B_t and the deficit is D_t. D_t will equal

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

The convergence criteria set out by the Maastricht Treaty are based on ratios rather than levels, so using b_t and d_t to denote debt and deficit to GDP ratios respectively and Y for GDP we can rewrite eq. 1 as

$$\frac{B_t - B_{t-1}}{Y_t} = \frac{D_t}{Y_t} \tag{2}$$

$$b_t - \frac{B_{t-1}}{Y_t} = d_t \tag{3}$$

Note that the second term in eq.3 is

$$\frac{B_{t-1}}{Y_t} = \frac{B_{t-1}}{Y_{t-1}}\frac{Y_{t-1}}{Y_t} = \frac{b_{t-1}}{1+g_t} \tag{4}$$

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

We can then rewrite eq.3 as

$$b_t - \frac{b_{t-1}}{1+g_t} = d_t \tag{5}$$

$$b_t - b_{t-1} = (1+g_t)d_t - g_t b_t \tag{6}$$

For a constant debt-to-GDP ratio we need b_t to equal b_{t-1} which implies that the deficit-to-GDP ratio equals

$$(1+g_t)d_t - g_t b_t = 0 \tag{7}$$

$$dt = \frac{g_t b_t}{1+g_t} = \frac{g_t}{1+g_t} b_t \tag{8}$$

The Maastricht Treaty has set the convergence criteria to $b_t = 60\%$ and $d_t = 3\%$ so eq.8 would be satisfied when the growth rate is about 5%.[5]. The implicit assumption is that real GDP growth is 3% and inflation is 2%, equalling 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.

[5] Actually 5.3%

Response by the EU

One of the main obstacles in dealing with the eurocrisis is that what is essentially an economic problem required a solution with political backing. It became evident that there was a break down in confidence among member states and that different countries had very different preferences about how to solve the crisis. A main narrative was that the Southern eurozone members had been very reckless in their finance and that they only had themselves to blame really. Needless to say, governments from Northern eurozone countries were very reluctant to go ahead with some of the proposed solutions. A couple of solutions to the crisis that eventually didn't make it include

One of the shadiest thing to emerge was the fact that Goldman Sachs, a key player in the Great Recession, had helped the Greek government to hide some of its deficit in the books using currency swaps.

1. Issue eurobonds
    - Allowed governments to refinance debts as high-yield countries benefit from creditworthiness of low-yield countries
    - Creates a moral hazard problem as it is possible subject to free riding
2. Fiscal transfers
    - Basically rich eurozone countries compensating poor eurozone countries for their losses
    - No system in place to do this, and would need political backing which is unlikely to be popular with population of richer countries
3. Kick Greece out of the euro
    - Return to drachme, Greece would be able to set own monetary policy and regain competitiveness[6]
    - Would create undesired precedent and risk stability of the whole euro project
4. Quantitative easing (QE)
    - Can help boost economic activity
    - Germany is not a fan of QE although the ECB did engage in some form of QE eventually

An interesting development was the story that Finland had achieved a separate deal with Greece in settling the debt, where Greece used some of its islands as collateral.

[6] Would still costs a lot of money to Greece because the debt has to be repaid.

The EU eventually did agree on the following measures aimed at helping member states that found themselves in financial difficulties

1. European Financial Stability Facility (EFSF)
    - June 2010

- Temporary crisis resolution mechanism for euro area member states
- Financed through the issuance of bonds and other debt instruments on the capital markets (capacity of €500 billion)[7]
- Assistance was used to provide loans, recapitalise banks, or buy sovereign debt
- Provided assistance to Ireland, Portugal, Greece[8]

2. European Financial Stabilisation Mechanism (EFSM)
   - May 2010 (first bonds sold in January 2011)
   - Provides financial assistance to any EU member state which is facing severe financial disturbances
   - Country can get up to €60 billion 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

[7] Guaranteed by the other euro area member states so almost sort like eurobonds.

[8] The EFSF was superseded by the European Stability Mechanism. Although it doesn't provide assistance any more, it is still operational to

- Receive loan payments from beneficiary countries
- Make interest and principal payments to holders of EFSF bonds
- Roll over outstanding EFSF bonds, as the maturity of loans provided to Ireland, Portugal and Greece is longer than the maturity of bonds issued by the EFSF

These more or less temporary measures were followed up by a more formalised structure to assist eurozone member states under the European Stability Mechanism (ESM).[9] The ESM was established in October 2012, and 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. The ESM, in combination with the running EFSF, has a budget of €700 billion. Between 2012-2016, the programme disbursed about €250 billion to five countries

[9] Basically the EFSF expanded.

- Ireland, February 2011 (part of EFSF)
- Portugal, June 2011 (part of EFSF)
- Greece, March 2012 (part of EFSF)
- Spain, October 2012
- Cyprus, May 2013
- Greece, August 2015 (still running)

Note that the ESM is just a temporary backstop, as acknowledged by the programme itself. It serves as a safety net, so that countries can cover the running costs, but does not address structural issues. Within the Maastricht Treaty there is actually a provision against these types of financial assistance as it could lead to lapses in fiscal discipline.

Response by the European Central Bank

What did the European Central Bank, responsible for monetary policy in the eurozone, actually do?[10] Given its original mandate, the ECB's preferred course of action is to do nothing at all, and let governments sort out the mess. However, as the crisis progressed and got worse they had to come into action at some point. A main fear was the risk of contagion from smaller, peripheral economies, such as Greece and Portugal, to larger central ones such as Italy and possibly France.[11] The ECB took two type of measures

[10] Recall that the ECB is independent, in order to limit government interference in its policy.

[11] Risk of contagion was a serious issue as for instance Italy owed France about 20% of French GDP.

1. Standard
   - Adjusting the key interest rates downwards
   - 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
   - Measures include fixed rate lending, providing longer maturity liquidity, expanding set of assets that can serve as collateral
   - Taken because the banking system wasn't functioning properly
   - ECB wanted to have a proper transmission of their monetary policy

In addition to these measures the ECB took a number of unconventional steps to show the commitment of the bank to guaranteeing the stability of the Eurozone

- Long Term Refinancing Operations (LTRO)
  - ECB committed itself to refinancing operations for multiple years, rather than couple of months which is common
  - LTROs are provided at relatively cheap rates
  - ECB serves as lender of first resort to troubled banks, these banks could then help struggling governments by purchasing debt
- Securities Market Program (SMP)
  - 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[12]

[12] Both the Federal Reserve and the Bank of England used quantitative easing (QE) which is just turning on the money press which injects liquidity in the system. In contrast, the ECB keeps the money supply stable to avoid fuelling inflation, by sterilising the purchases, offering deposits equal in value to the government bonds it holds.

- Outright Money Transactions (OMT)
  - Follow up of SMP (in September 2012)
  - 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[13]

[13] See web page on its technical features.

An important thing to note here is that when the ECB buys large quantities of bonds from a country that is at risk of default, the bank puts itself at risk. If the ECB gets into to much difficulty, the Germans have agreed to bail out the bank. Therefore, you can understand why the Germans are not very keen on the ECB buying large quantities of bonds.[14] Some people at the ECB are indeed not happy with this course of action as the original mandate of the bank is to target inflation, rather than sorting out the financial mess of the eurocrisis, the result mainly of countries not sticking to their budget requirements. Nonetheless, the ECB measures have been very important as they showed commitment to keeping the euro intact. Still, it doesn't address any of the core issues that were responsible for the crisis. To guarantee long run stability, a political solution must be implemented to overcome the remaining economic obstacles.

[14] Their top man at the bank, Jürgen Stark, actually resigned when the policy was implemented.

Inflation differences

The optimum currency area emphasised the risk of asymmetric shocks, and certainly the effects of the Great Recession has had very divergent effects across the Eurozone. One issue here is the inflation rate where countries such as Greece and Italy have had persistently higher inflation rates compared to for instance Germany. The problem with a common currency is that a country with high inflation rates will see a loss in competitiveness as the real exchange rate appreciates. As illustration, consider the price of a good in Italy which has price P and the same good has price P^* in Germany. Prior to the introduction of the Euro we could compare the price using exchange rate E, and we could construct a real exchange rate as $\frac{EP}{P^*}$ Now with the introduction of the euro E is fixed, so inflation will cause $\frac{P}{P^*}$ to increase and an appreciation in $\frac{EP}{P^*}$ leading to a loss in competitiveness. Some explanations for the divergence in inflation rates include[15]

[15] Additionally, inflation is low in countries that had a current account surplus and high in countries with a current account deficit.

- Balassa-Samuelson effect
  - *"Equilibrium real exchange rates of countries that enjoy lasting fast growth, because they are catching up from low development levels, follow an appreciating trend"*
  - i.e. inflation rates sign of increase in competitiveness

- ECU fixed at wrong rates[16]
- 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
- Mistakes in policy
  - Government could increase prices and wages through for instance expansionary fiscal policies
- Different preferences
  - A country poor at collecting taxes might prefer inflation tax or seigniorage
  - Variation in consumption baskets can cause different inflations across countries with same monetary policy

[16] Likely that the German Deutschmark was undervalued and the Greek Drachme overvalued.

Development since crisis

The process of economic and monetary integration in the EU is all about convergence of economic performance; raising living standards. For a time this process seemed to have paid off during the boom years in the first decade of the 21st century, but it unravelled quickly in the years after the crisis. Again focusing on a number of macroeconomic indicators we can illustrate how the crisis led to a divided Europe.

1. Growth (figure 9)
   - As a whole, the Eurozone only managed to exceed its 2007 level round about 2014
   - Germany got over the recession relatively quick
   - The UK experienced slower recovery
   - Spain is only catching up now, and Italy is still lagging
2. Investment (figure 10)
   - Investment levels in the Eurozone are still low
   - Germany and France only recently caught up with their 2007 level
   - Eurozone as a whole still lagging, again Italy and Spain are far behind
3. Unemployment (figure 11)
   - There is a huge difference in unemployment rates between the North and South of the Eurozone
   - Eurozone average at about 10% is relatively high, but decreasing
   - Mediterranean countries show no strong decreasing trend
   - Moreover, youth unemployment is very high in the Southern countries
4. Exports (figure 12)
   - Can countries export their way back to prosperity?
   - Ireland is doing well, but that came at the cost of reducing wages
   - The Mediterranean countries still have low export levels
   - Noticeable is Italy which is one of the largest economies in the world and part of the G7

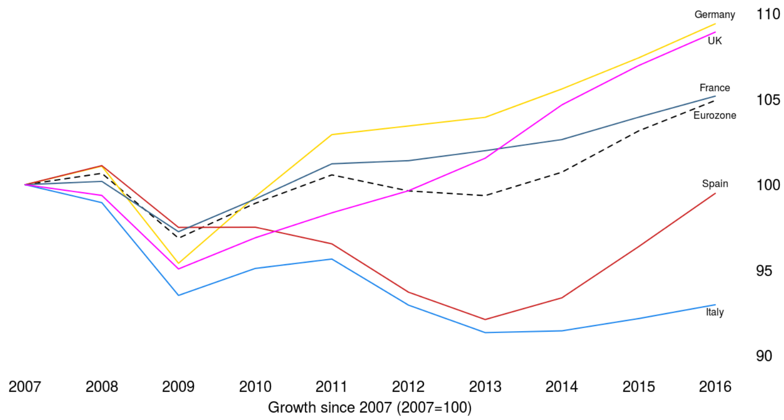

Figure 9: Growth for large European economies (2007=100). Data: Eurostat

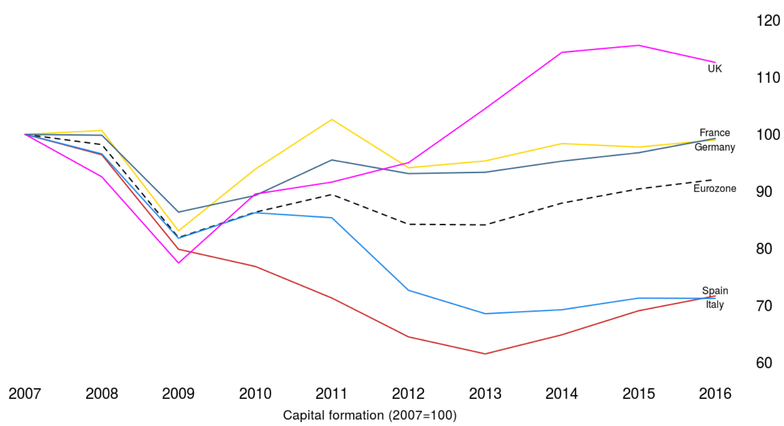

Figure 10: Capital formation in large European economies (2007=100). Data: Eurostat

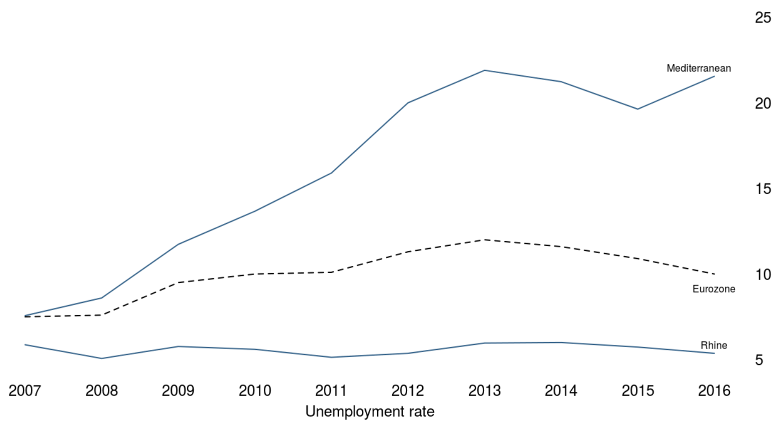

Figure 11: Unemployment since 2007 for the Eurozone as a whole and Mediterranean countries (Greece, Italy, Spain, Portugal) and some countries in the Rhine basin (Austria, Germany, the Netherlands). Data: Eurostat

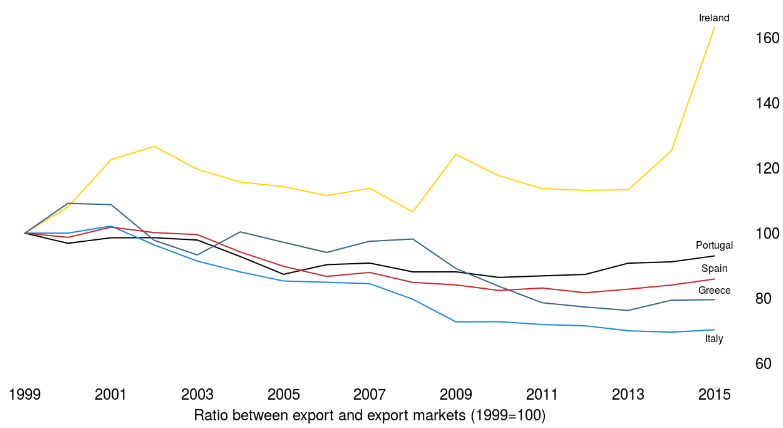

Figure 12: Exports since 1999 (=100). Data: Eurostat

The Greek Depression

Greece became ground zero for the European debt crisis after it emerged in late 2009 that is had been understating its debt figures for years.[17]Rather unsurprisingly this 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. Figure 13 shows the development of Greece's GDP over time. 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. Figure 14 illustrates just how severe the contraction of the Greek economy has been, wiping away about 25% of GDP.

[17] They misreported their numbers at Eurostat which the EU uses.

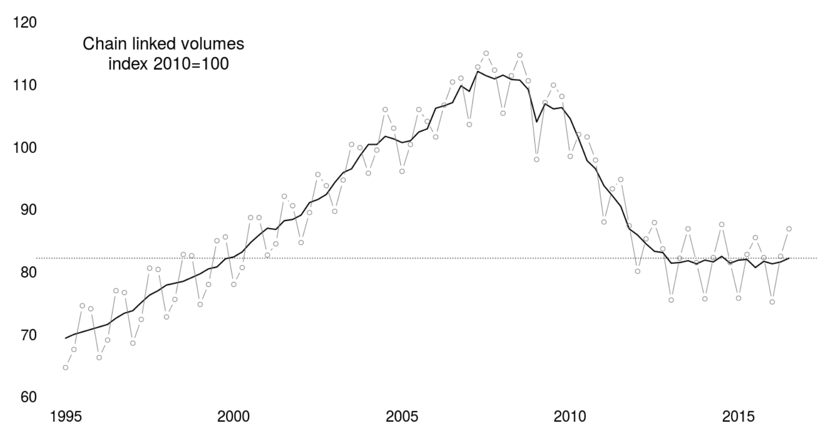

Figure 13: GDP, unadjusted and seasonally and calendar adjusted, for Greece over time. Greece GDP (unadjusted and adjusted) Data source: Eurostat

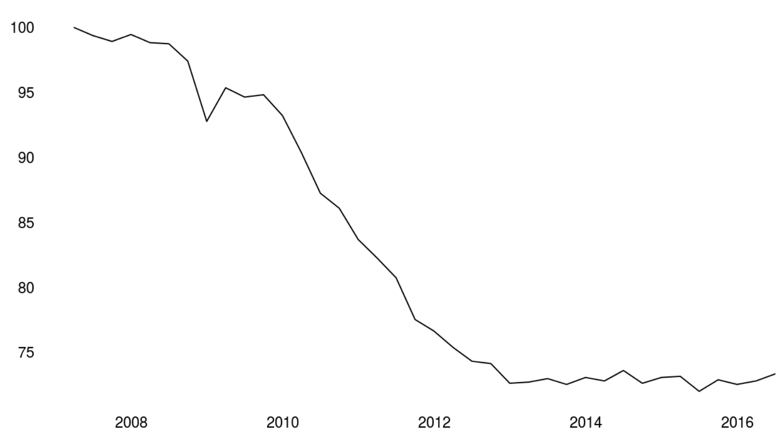

Figure 14: Contraction of the Greek economy since the second quarter of 2007. Arguably, the situation in Greece has been worse than that in America during the Great Depression, and possibly comparable to the German situation during the Weimar Republic. Data: Eurostat

Unable to repay or refinance its debt Greece was on the brink of bankruptcy in the Spring of 2010 and needed international assistance to stay afloat.[18] To give a chronological overview of the events in Greece related to the debt crisis:

[18] These were bail outs provided by the Troika of the European Commission, the European Central Bank, and the International Monetary Fund.

- 2009
  - October: budget deficit expected to reach 12.5% of GDP
  - October-December: Credit status downgraded
- 2010
  - February: first austerity package
  - March: second austerity package
  - April: first bail out request
  - May: Bail out agreed and third austerity package
- 2011
  - June: fourth austerity package
  - October: fifth austerity package, debt haircut of 50% agreed with international lenders[19]
- 2012
  - January: sixth austerity package
  - February: second bail out[20]
  - November: Seventh austerity package
- 2015
  - January: Elections won by current PM
  - February: 4-month extension on loan brokered between Greece and other Eurozone members
  - June-July: Referendum held on another bailout agreement, rejected by population
  - July: Additional Greek request for financial aid rejected, Greece defaults on IMF loan

The implementation of the austerity measures are followed by civil unrest.

[19] Half of Greece's public debt was reduced up to 75%. This was repackaged as a new loan. Investors were willing to accept this large immediate loss over future uncertainty and possible larger losses. The two largest Cypriot banks were among the losers as they had a lot of assets in Greek bonds, and a year later they collapsed.

[20] Political deadlock after elections from May till June.

The assistance that the Greeks received came with some strings attached though.

- Harsh austerity terms (figure 15)
  - Cuts in public spending such as investments (figure 16)
  - 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[21]
- Making business in Greece easier

[21] Note also that the shipping industry in Greece pays very little tax.

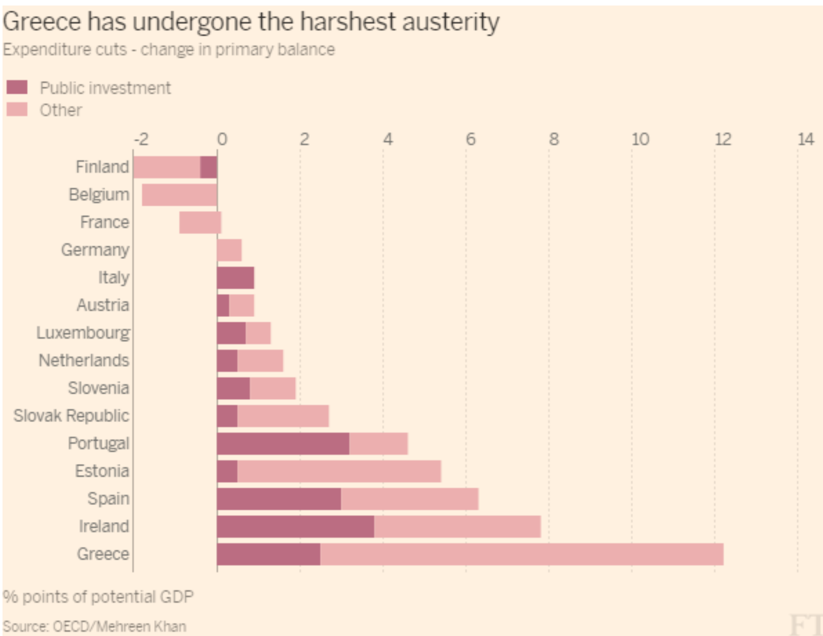

Figure 15: Austerity across Europe. Source: Financial Times

The outside intervention entailed a serious loss of Greek autonomy across a number of areas, specifically government spending, which made a lot of people very angry. Over the years, between 2010-2015 Greece has received three bail outs amounting to a total of €240 billion, or about €22,000 per capita. It is important to note that most of this bail out money went either to paying off existing debts or recapitalising the banks, and did not benefit directly the population.[22] A lot of structural problems in Greece still need to be addressed while public debt is at a record high. There are some early signs of improvement where the Greek economy is even reporting some positive growth rates, but the process of getting the economy to be competitive again is a long and painful one. For instance it involves reduction in wages as shown in figure 17.

[22] I.e. the bail outs were not used for investments in infrastructure, education, or something similar.

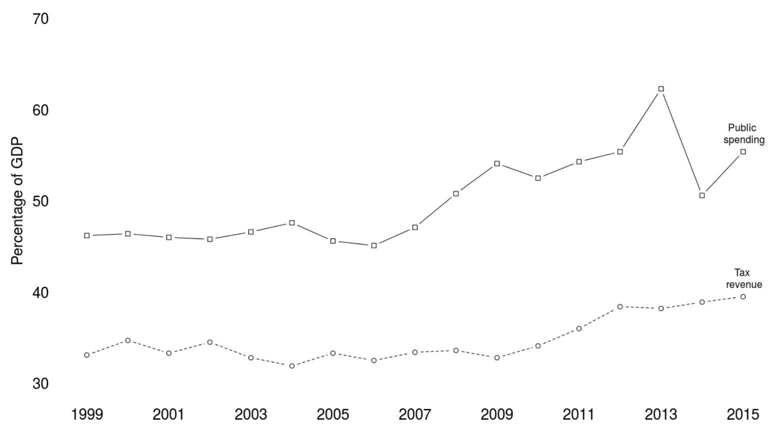

Figure 16: Public spending and tax revenues as a percentage of GDP in Greece. Data source: Eurostat

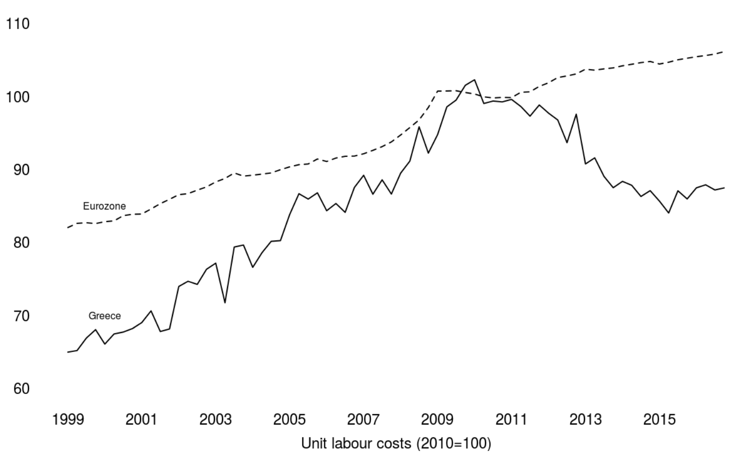

Figure 17: Unit labour costs in Greece and the Eurozone (dashed line) Data source: OECD

Background: How does a sovereign default happen?

Normally sovereign defaults are pretty rare as most developed economies are relatively stable. Now image that the market perceives that a particular country has a 10% chance of a default over the next year, leading to a 50% default on its outstanding debt. In this scenario the country has to pay a 5% premium on debt relative to safe assets. The extra premium will place an additional burden on the government, this could lead to a situation where the interest costs rise above the funds that country can access to pay off the interest payments. Subsequently, the market for government bonds might cease to operate as the country is deemed not credit-worthy, which means an increase in the risk of default going from unlikely to likely. It is important to note that the 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.

Safe assets here is debt with virtually no default risk.

Alternatively the country's GDP could expand in order to keep debt stable.