# Sovereign debt crisis.
# From challenges to solutions

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**Abstract.** *Starting with 2007, the European Union felt the international financial crisis within the strong and the weak economies and finances of the member states. In 2008 and 2009 it sees the problem of sovereign debt crisis, although there is a strong link between the financial crisis and the sovereign debt crisis throughout economic history. The main objectives were the actions of central banks, particularly the European Central Bank in response to the economic and financial crisis. But, in 2010, after a slow recovery, the sovereign debt crisis installed, bringing in the weaknesses of Economic Monetary Union. This paper presents an analysis of the sovereign debt crisis in European Union, focusing on the causes of the sovereign debt crisis, ways of transmission, its evolution and not least on solutions that can be found.*

**Keywords:** sovereign debt, cause-effect, spillover, euro area.

**JEL Classification:** G01, F30.

## 1. Introduction

The success of European Monetary Union (EMU) was put under trial since early if it refers to the ability of euro area Member States to counteract economic shocks. In addition, it hasn't got a fiscal union or a financial one, as in the United States. Even if there were Stability and Growth Pact mechanism (limiting the budget deficit to 3% of gross domestic product (GDP) and public debt at 60% of GDP) and the "no bailout clause", the sovereign debt crisis problem occurred.

Arghyrou M. and Kontonikas A. (2011) give a detailed overview of the sovereign debt crisis, highlighting a shift in the behavior of markets from a model of trade convergence before August 2007 to a model characterized by risk after the crisis began. The idea of convergence exchange before the crisis can be explained by three factors. The first factor is the low risk and the global liquidity of the pre-crisis period, the second is the introduction of reforms that stimulate economic growth in the countries of the periphery of the euro zone, and the third, the lack of exit mechanism in the euro area. The solutions found in the study involve structural and institutional reforms in the countries of the EMU periphery and beyond.

This paper presents an analysis of the global financial crisis since 2007 that is closely linked to the sovereign debt crisis; focusing on the causes of the sovereign debt crisis, its transmission channels and its evolution.

## 2. The way to the sovereign debt crisis

Since 2009 the financial crisis turned into a sovereign debt crisis in the euro zone. Besides Greece, other countries that have suffered were Portugal, Ireland and Spain. Extraordinary measures were taken by policymakers to reduce and prevent the crisis spreading. In May 2009, it was ratified a package of measures to rescue Greece funded by the International Monetary Fund (IMF) and European Union (EU) worth 110 billion euro. Also it was created a segment of defense, a stabilization mechanism of 750 billion euro for the European states that might be in position of Greece. However, in November 2010, a second EMU member country received a package of 85 billion euro, demonstrating that the measures taken so far had not relieved the crisis.

Economic literature provides a number of empirical studies on the issue of the crisis. The main findings reveal that both the amount and the price of the risk perceived globally associated with investments in sovereign bonds have been growing during the recession, thus explaining the main role that had the transfer of risk from the banking sector by borrowers of sovereigns through banks rescue actions. But these studies do not provide explanations for the situation in Greece, which has seen a spillover effect more intense as the other countries at the periphery, or even raise questions about the issue of contagion.

The authors rely on the theoretical model of Arghyrou and Tsoukalas (2010), a model of the euro area debt crisis, the currency risk and the bankruptcy to be reflected in sovereign spreads. It provides explanations of the situation until the bailout of Greece in 2009. Until the credit crisis (in the 1999-2007 period) the markets sought the assumptions idea of

trade convergence, i.e. taking into account real convergence scenario for EMU member countries to the German model. Between 2007 and 2009, things have changed, markets established both international risk factors and macro-fundamentals in each country.

Also, there is provided evidence of the growing debt crisis in Greece. The Greek crisis is due to the fact that it had to transfer from a state that has assumed the commitment to comply with tax obligations, to a regime that no longer met these obligations. By 2010, countries like Portugal, Spain and Ireland were suffering from contagion from Greece.

However, they is information that not only speculation on the CDS (Credit Default Swap) market may have contributed to the sovereign debt crisis in the euro area, but also the macroeconomic imbalances and international conditions.

Both studies before the financial crisis of August 2007 and those after this time have three variables that influence bonds (Manganelli and Wolswijk, 2009): an international common risk factor, credit risk and liquidity risk. The first measures the yield spread between different categories of corporate bonds versus treasury bills of the United States. The second variable is addressed to the probability of partial or total reimbursement on behalf of a sovereign debtor, while the third variable, difficult to measure, liquidity risk refers to the size of the sovereign bond market.

The role of the three variables is not clearly defined in the studies on government bonds within EMU. Authors such as Barrios et al. (2009), Codogno et al. (2003), Longstaff et al. (2007), Manganelli and Wolswijk (2009), Sgherri and Zoli (2009) argue that the risk was representative for determining international sites Spread against Germany. There are questions regarding how the Growth and Stability Pact was a credible mechanism to implement fiscal discipline in the euro area countries. After the crisis, studies are focusing on global risk as a factor in the expansion of the EMU spreads, highlighting the role of the banking sector, which transforms the overall risk in sovereign risk in two ways. The first relates to recapitalize banks using public money in difficult times, and lack of liquidity result in restricting loans leading to economic imbalances. The second approach suggests that economic imbalances are penalized stronger than before the financial crisis.

Arghyrou and Tsoukalas (2010) present a theoretical model of the euro zone debt crisis. They say that systemic risk is underlying the current macroeconomic debt crisis, which in the absence of national currencies is diverted to the sovereign bond market, reinforced the idea of default risk. They develop a model out of EMU on the basis of the second and third generation models of currency crises, like Obstfeld (1996) and Krugman (1998), assuming a control variable for government (decision to stay or exit the euro area). The cost is a constant and can be explained as the difference between steady inflation rates with an independent monetary policy and the EMU caused by higher inflation and political costs related to withdrawal from EMU, whether forced or voluntary. The cost of remaining in the euro area is a second-degree function of the exchange rate deviation with which the country entered in the euro area, deviation that aimed at the macroeconomic shocks effect on domestic demand. The credibility of commitment to participate in EMU government is established by the private sector (as in Obstfeld, 1996), and as in Reinhart

and Rogoff (2010), all private sector determine the conception of the government's fiscal responsibilities as secured or unsecured.

Hence, one can see three regimes. The first way involves overall credibility of a State participation in EMU (i.e. everyone expects the government to take all necessary measures to correct macroeconomic imbalances, while capital losses to be zero). It also implies a mechanism in which the government receives signals from the private sector observed in the application of higher cost debt. The second scheme suggests ensuring fiscal debt in the euro area remaining period, but the credibility is not total, with a probability greater than zero as the government concerned is to choose exit from EMU. In the third scheme, government debt is no longer seen as guaranteed and the cost of remaining in the EMU is increasingly higher. As long as EMU participation cost is lower than the leaving, the state will remain in the euro area.

Values observed between January 1999 and July 2007 provides evidence of the credibility of full participation in EMU, tax guarantees, while real convergence of the states on the periphery decreased compared to the nucleus, not being penalized with higher interest rates for government bonds. After the outbreak of the crisis in August 2007, sovereign bond prices were set according to each country's economic performance. After this time, fiscal imbalances and competitiveness losses reflected the overvaluation of the real exchange rates. One explanation for the increase in Greek debt may be provided by changing from a standby with confidence and guarantee the tax debt from one opposite, non-credible commitment to EMU and failing debt. Changes occurred in two stages; the first was held in November 2009, when Greek spreads increased 130 basis points to 240 at the end, reinforcing the idea that Greece will be able to improve structural problems to stay in the EMU and the introduction of risk defaulted in December 2009. The second phase has meant to increase from 240 points to 700 points in April 2010.

In April 2010 Greece's sovereign debt rating is downgraded to "junk" by the Standard and Poor's rating agency, thus increasing the lack of trust towards sovereign debt. This downgrade makes Greek government's debt to no longer eligible as collateral for the European Central Bank. The effect of this measure was felt in both European capital markets and the depreciation of the euro versus most currencies.

It can be summarized as follows: between 1999 and July 2007 the real exchange rate did not explain the movement spreads, which it changed after the crisis, when the appreciation rate leads to higher values of spreads, explaining contagion.

Lane (2012) describes the relationship between the euro area and the European sovereign debt crisis through three stages: the fiscal risk has increased because institutional project before the crisis, within the crisis, the fiscal impact was greater, the recovery in the post-crisis period is determined by the limitations of monetary union. It also states that there is a strong link between the banking crisis and the sovereign debt crisis in the euro zone.

**Figure 1.** *Government/surplus (% of GDP)*
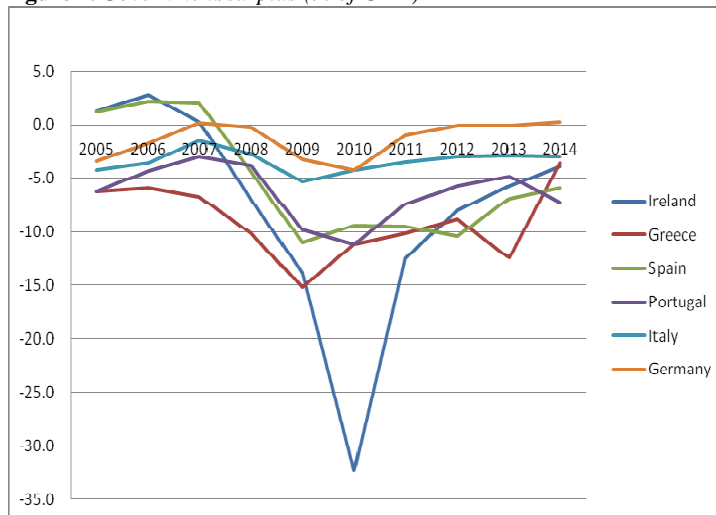


**Source:** Eurostat Database.

The timing of the 2007 credit crisis has affected European markets, causing budget deficits. Figure 1 and 2 show that budget balance of the euro area worsened and that it increased government debt as a percentage of GDP since 2008. These things highlight the transformation of the credit crisis in the sovereign debt crisis and the fiscal cost of financial sector aid offered. Greece reaches a budget deficit of 15.2% of GDP in 2009 to 3.6% in 2014 and public debt reached 178.6% in 2014. It may be noted that Ireland had a budget deficit of 32.3% in 2010, and in 2014 it reached 3.9%. The public debt of Ireland was 107.5% of GDP in 2014.

Regarding the period before the financial crisis in 2007, it did not seem to be a problem debt in the Union. However, at country level, things are different. Fiscal and financial vulnerabilities have gone unnoticed because of the period of economic growth.

**Figure 2.** *General government gross debt*
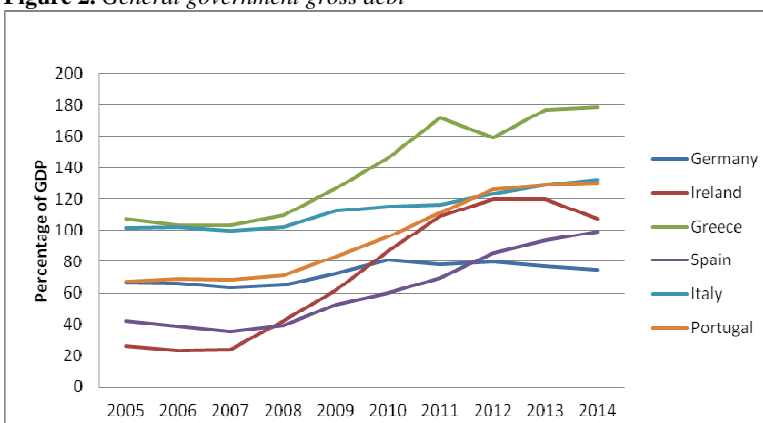


**Source:** Eurostat Database.

Figure 3 presents the credit/GDP evolution in six EMU countries (Greece, Ireland, Portugal, Spain, Italy, Germany) and explains the credit boom that participation in the euro area allowed banks to obtain funds in euro. On the other hand, consumer loans were also fueled by low interest rates and the ease with which they could get a loan.

**Figure 3.** *Domestic credit to private sector (% of GDP)*
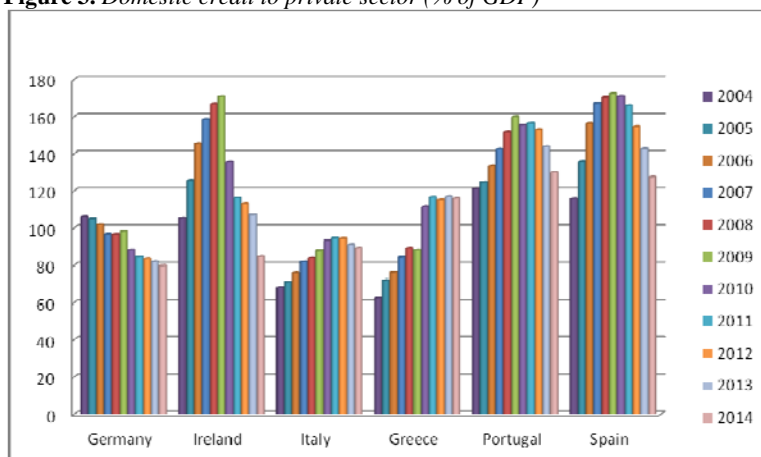


**Source:** World Bank Database.

During 2003-2007, the government was not a net debtor, neither in Ireland nor in Spain. In Greece and Portugal, governments had borrowed extensively. However, they failed to impose a restrictive fiscal policy. Credit expansion and construction tax receipts brought in higher income, and inflation in the expanding member states were above the inflation rate in the euro area. There was also a lack of a cautious approach regarding financial and macroeconomic risk.

Before 2009 there were not many concerns about the sovereign debt crisis, although the global financial crisis was a signal to assess the sustainability of loans. The sovereign debt crisis stemmed from the recession occurred, the plight of the banking sector and decreases in the desire of international investors to invest. Meanwhile, the European Central Bank reduced interest rate and tried to stabilize the financial and banking system.

Before the financial crisis, international risk wasn't given much importance. Since August 2007 there have been changes in the government bond market in the euro area, countries had begun to differentiate by the loss of competitiveness and liquidity risk.

Regarding Greece, it had a central role in the euro zone debt crisis. Greek spreads stresses default risk and the currency, and that the issue of the Greek state is more reliable one than economic. The Greek state should regain markets' confidence. After November 2009 a large part of the EMU member states (Spain, Portugal, Ireland) had contagion effects from Greece. Thus, in the EMU, the need for institutional reforms had been highlighted in order to prevent the crisis and the contamination from amplifying them. After 2010, the European Union and International Monetary Fund provided funding for state programs to Greece, Portugal, Cyprus, Ireland, in return for implementing fiscal austerity measures in order to improve economic growth and debt redemption of the banking

system. The macroeconomic adjustment period was three years, but in the given situation this term was not met. In June 2011, Greece needed a second loan.

The interconnectedness of the financial system caused the credit risk to be transmitted to the bank's balance sheets. The fact that the financial institutions in the euro zone had large amounts of sovereign debt from other countries (Bolton and Jeanne, 2011) led to the depreciation of bank assets, which in turn has negatively affected the central government's capacity to pay its own debt (Glover and Richards-Shubik, 2014).

On the other hand, weaknesses in the banking system could be compromised by fiscal austerity, default risk in the private sector increasing with decreasing household disposable income. When public debt and sovereign risk are affected, the plan to recapitalize banks can become an issue. Also, to avoid contagion to other EMU countries, governments should help banks that may go bankrupt.

Another important factor during the crisis was the increasing volatility in sovereign debt markets in the euro area (Lane, 2012). An increase in the interest debts rates a state has makes it vulnerable to speculative attacks if it has a high level of sovereign debt. The creation of the European Financial Stability Facility and the European Stability Mechanism can be seen as an attempt to reduce the risk of default of a country. Another option would be the European Central Bank program of purchasing sovereign bonds.

Because EMU hadn't had the tools to act promptly on the crisis, Gianviti et al. (2010) proposed the creation of a European crisis resolution mechanism which is based on the following ideas: the need for special courts to handle negotiations between creditors and debtors of unsustainable sovereign debt and the determination of rules for providing financial assistance. This mechanism should minimize moral hazard and not be too lenient with private creditors.

Corbet (2014) shows the effect of contagion among euro area countries that were downgraded by credit rating agencies, finding links between government bonds spreads response and rating announcements. Between 2005 and 2012 there were around ninety announcements rating for the European countries studied. The biggest impact rating agencies are Fitch and Standard and Poor's. For five-year CDS and ten years government bonds the highest risk was held by Greece.

## 3. Conclusions

The post-crisis challenge is to bring government debt up to sustainable levels. Problems may be encountered, as the slowdown in nominal GDP or the political environment. The introduction of the new European Compact Treaty aims to avoid the repeating of the economic crisis. Besides a budget deficit of 3% of GDP and a public debt level of below 60%, a structural deficit target of 0.5% of GDP has been introduced for each country.

The initial draft of EMU has several weaknesses that contributed to the spread of the sovereign debt crisis, weaknesses that can traced to the lack of a banking or a fiscal union. The globalization of the financial system also brings about new challenges in the evaluation of the contagion risk.

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