Project Dissertation Report on

DESCRIPTIVE ANALYSIS OF EUROZONE AND DEBT CRISIS IN GREECE

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January -May 2018

CERTIFICATE FROM THE INSTITUTE

This is to certify that the "A Descriptive Analysis of Eurozone and Debt Crisis in Greece", is a bonafide work carried out by Mr. Jitendra Tiwari of MBA 2016-2018 batch and has been submitted to Delhi School of Management, Delhi Technological University, Bawana Road, Delhi-110042 in partial fulfillment of the requirement for the award of the Degree of the Masters of Business Administration in the subject of Major Project Dissertation.

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The information and data given in the report is authentic to the best of my knowledge.

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ACKNOWLEDGEMENT

I would like to express my sincere gratitude towards my mentor, Dr. G.C. Maheshwari at Delhi School of Management, DTU for his support and valuable guidance throughout the duration of the project. I thank him for the constant encouragement and support at every stage. I also thank him for his patience, for taking time out of his daily work schedule to explain the project and for providing me with a goal-oriented approach towards this project.

My sincere gratitude goes out to the research scholars at DSM, and my colleagues whose participation in the project gave many valuable inputs for its completion.

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EXECUTIVE SUMMARY

The Eurozone officially known as the euro area is a monetary union comprising of 19 of the 28 European Union (EU) member countries which have adopted the currency euro (€) as their common and sole legal tender. The eurozone came to existence with its first 11-member countries on 1 January 1999. The ECB, which is governed by a president and a board comprising of the heads of national central banks, determines the monetary policy of the zone. The principal task of the ECB is to keep inflation under control.

Eurozone members are obliged to follow common monetary and fiscal policies irrespective of the size and extent of their economy, which seems to be pretty impractical in general sense. However, the strength of union is considerable in global scenario.

The adverse effects of Global recession of 2008 were felt throughout the world, Eurozone members were also adversely affected by them, 5 of the member nations have to opt for bailout in order to manage their deficits, debts and recovery of falling economy. The Greece Debt Crisis is taken as the model case in order to understand the intrinsic causes for the same.

With the crisis unveiling in 2010 accompanied with large budget deficits and pending debt maturities to be refinanced with issuance of more bonds, Greece's membership in the single currency acted as a lock on the system. Greece found itself without an adjustment mechanism that could have partly alleviated the impact of the crisis. Greece paid the price of this lack of control of its monetary policy in terms of a severe contraction in GDP and living standards.

TABLE OF CONTENTS

1. Introduction **1**

1.1 Eurozone Structure and Norms 3

1.2 The Eurozone Financial Crisis 6

1.3 Evolution of The Crisis 9

1.4 Objective of the Study 17

2. Literature Review **18**

2.1 Premise of the European Union 19

2.2 Structural Flaws in the EU System 20

2.3 Empirical approaches to the causes of the European debt crisis 23

3. Research Methodology **25**

3.1 Descriptive Research 26

3.2 Criteria chosen for Analysis 29

4. Greece Debt Crisis **30**

4.1 The Rise of Financial Crisis in Greece 31

4.2 Cost of Greece's Membership in the Eurozone 34

4.3 Investors speculative bet on convergence even before Greece joins the Eurozone .. 39

4.4 Continued surge in Government spending, contributing to the unsustainability of the crisis 43

4.5 Significant Government data revisions prompting sharp increases in spreads 45

4.6 Downgraded prompt bailouts because of unfavorable credit ratings 49

4.7 Findings and Conclusions 52

5. Bibliography **53**

LIST OF FIGURES

1. Infographic representing major statistics corresponding to the European Union 5

2. Public debt as % of GDP for Eurozone countries (For years 2000 & 2010) .12

3. Debt to GDP (%) vs Deficit to GDP (%) for selected EU Nations in year 2009 13

4. Debt to GDP (%) vs Deficit to GDP (%) for selected EU Nations in year 2012 14

5. Bailout programs for EU Members since 2008.....16

6. Greece's gross government debt as a % of GDP from 2002 through 2016 35

7. Greek government budget deficit as a % of GDP from 2002 to 2016 36

8. Share of Greek Sovereign Debt Held by Foreign Banks by Nationality, 2010 37

9. Nominal Greek Government Debt Yield, 1993–1999 40

10. Credit to the Private Sector as % of GDP……..41

11. Greek Real GDP Growth Rates, 1996–2016…….42

12. Greek Government Revenues and Expenditures % of GDP, 2002–2016.... 44

13. Greek 10-Year Bond Spreads vs. German Bonds, 2005–2011…….46

14. Greek Government Debt Interest Payments as % of GDP, 2002–2016……48

15. Greek Government Budget Deficit as % of GDP, 2002–2016……..51

1. INTRODUCTION

PREFACE:

The Eurozone officially known as the euro area is a monetary union comprising of 19 of the 28 European Union (EU) member countries which have adopted the currency euro (€) as their common and sole legal tender. The eurozone consists of Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

Other EU states (except for Denmark and the United Kingdom) are obliged to join once they meet the criteria to do so. No state has left, and there are no provisions to do so or to be expelled. Countries which are very smaller in the size of geographical land mass and economy, viz: Andorra, Monaco, San Marino, and Vatican City have formal agreements with the EU to use the euro as their official currency and issue their own coins. Kosovo and Montenegro have adopted the euro unilaterally, but these countries do not officially form part of the eurozone and do not have representation in the European Central Bank (ECB) or in the Eurogroup. Turkey too has been in negotiations since 1987, to join the European Union, but due to certain pertaining differences and political turmoil, Turkish accession talks had effectively been stopped.

The eurozone came to existence with its first 11-member countries on 1 January 1999. The first expansion of the eurozone, with entry of Greece, took place on 1 January 2001, one year before the euro had physically entered into circulation. The next enlargements were to states which formally joined the EU in 2004, and then joined the eurozone on 1 January in the year noted: Slovenia (2007), Cyprus (2008), Malta (2008), Slovakia (2009), Estonia (2011), Latvia (2014), and Lithuania (2015). All new EU members joining the bloc after the signing of the Maastricht treaty in 1992 are obliged to adopt the euro under the terms of their accession treaties.

1.1 Eurozone Structure and Norms:

The monetary authority of the eurozone is the Eurosystem. The other nine members of the European Union continue to use their own national currencies, although most of them are obliged to adopt the euro in the future. The ECB, which is governed by a president and a board comprising of the heads of national central banks, determines the monetary policy of the zone. The principal task of the ECB is to keep inflation under control.

Joining the Eurozone was somewhat lucrative, for example, it would reap considerable economic rewards to nations who have lower sovereign credit ratings with respect to the strongest member nations, after joining the Eurozone they too would be able to borrow money as if they too enjoy the same superior rating. In addition to this, the usage of common currency throughout the zone held the idea of preventing trading partners from devaluing their currencies, and hence providing a level playing platform for all eurozone members to compete.

The Maastricht Treaty provisions imposed specified critical economic requirements, known as "**convergence criteria**," that member nations are required to adhere to before they could gain formal entry to the common currency zone which is better known as the eurozone.

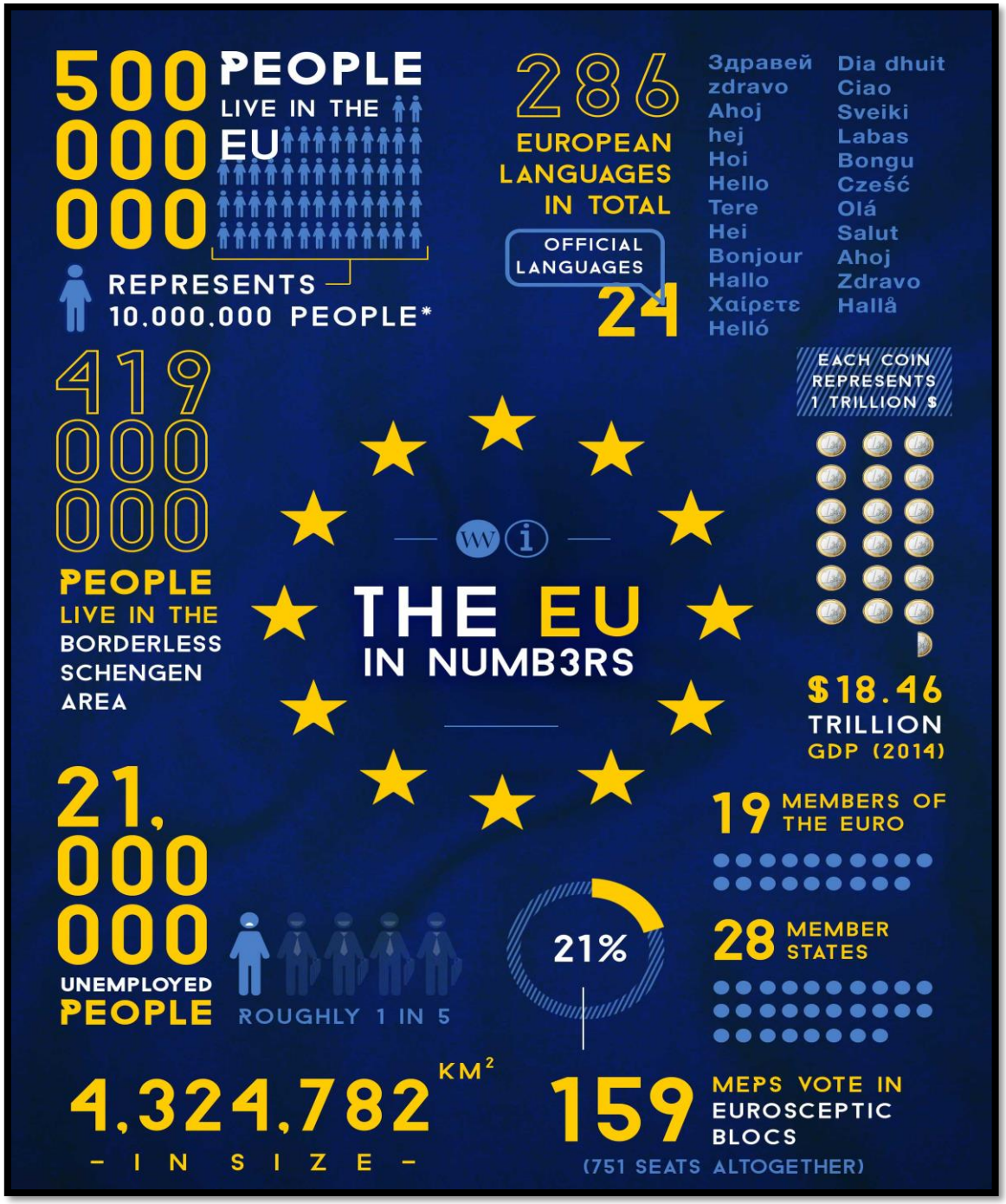
Among these convergence criteria are:

- **Price developments:** The requirements relate to price developments are designed to make sure that member nations have low and stable inflation. Inflation in the year before potential admittance to the eurozone is only permissible to be 1.5% more than the combined average of the 3 best-performing member nations. In common practice, the rate of inflation used to determine if this criterion is met is the preceding 12-month average of the **Harmonized Index of Consumer Prices** — the EU-wide inflation index.
- **Fiscal developments:** These fiscal requirements are specified to ensure that a prospective member nation has a stable and strong fiscal condition. Among the requirements are budget deficits that cannot exceed 3% of GDP unless a nation

finds itself in exceptional and temporary circumstances. The amounts of total sovereign debt cannot exceed 60% of GDP. There is a provision of both of these criteria being waived substantial and continuous declines are being observed.

- **Exchange-rate developments:** The requirements for exchange-rate developments are in order to be assured of stability of a member state's currency exchange rate before gaining admittance. The provision states that, a prospective member cannot have made any devaluation of its currency relative to any other member nation's currency for the past 2 years. In addition to that, the currency must trade in a narrow range of ±2.25% corresponding to other member nations' currencies.

  In the times following the financial crisis of 2007–08, the eurozone has mandated and established provisions for granting emergency loans to its member states, in return for enacting the required economic reforms. The eurozone has also tried to make some limited fiscal integration, one example is peer review of each other's national budgets.



Source: http://www.dw.com/en/the-eurozone-crisis-by-the-numbers.

Fig.1: Infographic representing major statistics corresponding to the European Union.

1.2 The Eurozone Financial Crisis:

The Eurozone financial crisis often also referred to as the European debt crisis or the European sovereign debt crisis is a continuing and decade old debt crisis that has been taking place in the European Union since the end of 2009. Some of the member nations of the union such as Greece, Portugal, Ireland, Spain and Cyprus were unable to repay or refinance their government debt or to opt out for bail out packages in order to pay out the debt they owned to the banks under their national supervision without the assistance of third parties like other Eurozone countries, European Central Bank (ECB), and International Monetary Fund (IMF).

The 2008 global financial crisis spread to most of the developed economies, including those of the European Union. The detailed causes of the debt crisis may vary in cases for different countries. Some of the major causes which are attributed to trigger the crisis:

- In 1992, members of the EU signed the Maastricht Treaty, which placed a statutory limit over their debt levels and deficit spending. However, in the early 2000s, several EU member states were crossing the limits confined by the Maastricht criteria and turned to securitizing future government revenues to reduce their debts and/or deficits, it was in non-compliance with the prevailing best practice and ignorant with international standards.

- The practices allowed the nations to cover up their actual deficit and debt levels by using a combination of techniques, which included inconsistent accounting, off-balance-sheet transactions, and the use of complex currency and credit derivatives structures. In the late 2009 Greece's newly elected government stopped masking its true indebtedness and budget deficit, this lead towards speculations regarding sovereign defaults in certain European nations, in the mind of general public, and the government debt of several states was downgraded.

- The under-reporting was exposed through a revision of the forecast for the 2009 budget deficit from "6–8%" of GDP (no greater than 3% of GDP was a rule of the Maastricht Treaty) to 12.7%, The revelation by Greece sparked the trends in large upwards revision of budget deficit forecasts, and it was observed that the malpractices were everywhere, for example, in the United States forecast for the 2009 budget deficit was raised from US$ 407 billion as projected in the 2009 fiscal year budget, to US$ 1.4 trillion, The United Kingdom increased their final forecast more than 4 times higher than the original.

- Further the same irregularities were unveiled at other member nations and crisis subsequently spread to Ireland and Portugal, (hence sometimes referred as contagion) and arisen the concerns about Italy, Spain, and the overall European banking system, and more fundamental imbalances existing within the eurozone.

- The Greek debt exceeded US $400 billion (over 120% of GDP) and France owned 10% of that debt, Greek 10-year government bond yield only amounted to around 7% in April 2010.

- A large number of negative articles exaggerating the extent and future of the crisis were published in major dailies around the world, also leading to arguments about the role of international news media and other actors fueling the crisis.

- In some of the countries, private debts which have arisen from a highly inflated property (Real Estate) bubble were converted and transferred in the form of sovereign debt as a result of banking system bailouts and government responses to slowing economies post the period the bubble burst.

- Structural problem of the eurozone i.e., as a currency union (one common currency) but without fiscal union (different tax and public pension rules in different countries), as this limited the ability of European leaders to respond on a wholesome ground and as a union entity.

- Easy credit conditions during the 2002–2008 period that encouraged high-risk lending and borrowing practices.

- European banks owned a significant amount of sovereign debt, such that concerns regarding the solvency of banking systems or sovereigns were highly negative in notion.

- International trade imbalances and combination of complex factors, including the globalization of finance, and financial markets.

The European Union in its combined statement quoted that the main root causes for the four sovereign debt crises erupting in Europe were reportedly a mix of-

1. Weak actual and potential growth.
2. Competitive weakness.
3. Liquidation of banks and sovereigns.
4. Large pre-existing debt-to-GDP ratios.
5. Considerable liability stocks (government, private, and non-private sector).

1.3 Evolution of The Crisis:

The European debt crisis evolved in the times following the Global Recession (2008) around late 2009 and created a situation where government structural deficits were overly high and debt levels were accelerating, the comparatively weak banking sector was suffering large capital losses, most nations in Europe had to bail out several of their severely affected banks with some supporting recapitalization loans.

As of January 2009, a group of 10 central and eastern European banks had already asked for a bailout. At the time, the European Commission released a forecast of a 1.8% decline in EU economic output for 2009, hence making the outlook for banking sector to look even worse. The recapitalizations of many public funded bank were a major reason behind the sharply declining debt-to-GDP ratios being experienced by several European nations in the wake of the Global Recession.

In the opening months of 2010, market was covered with anxiety, because of excessive national debt the lenders were demanding ever-higher interest rates from several nations, which were already witnessing higher debt levels, deficits, and current account deficits. This action in turn made it further difficult for four out of eighteen Eurozone governments to finance further budget deficits and repay or to make measures for refinancing their existing government debt, specifically when the economic growth rates were considerably low, and when a major percentage of debt was in the hands of foreign creditors, as it was in the case of Greece and Portugal.

The nations which were most severely affected by the crisis witnessed a steep rise in the interest rate spreads for government bonds because of result of investor concerns about the sustainability of their future debt. Four eurozone states had to be bailed out by sovereign bailout schemes, which were provided cooperatively by the International Monetary Fund and the European Commission, additional support at the technical levels was provided from the European Central Bank.

These three international organizations came together representing the team of bailout creditors became nicknamed as "The Troika".

In order to control the crisis some governments have focused on increasing taxes and shortening expenditures, which contributed to social unrest and was a matter of debate among economists, many of whom supported greater deficits when economies are struggling.

In nations where budget deficits and sovereign debts were increasing sharply, a crisis of confidence has emerged with the widening of bond yield spreads and risk insurance on CDS between these countries and other EU member nations, most importantly Germany. In the upcoming year, by the end of 2011, Germany was estimated to have made more than €9 billion out of the crisis as investors were fascinated to the safer but near zero interest rate German federal government bonds (bunds).

By July 2012 also the Netherlands, Austria, and Finland benefited from zero or negative interest rates. Looking at short-term government bonds with a maturity of less than one year the list of beneficiaries also includes Belgium and France. While Switzerland (and Denmark) equally benefited from lower interest rates, the crisis also harmed its export sector due to a substantial influx of foreign capital and the resulting rise of the Swiss franc. In September 2011 the Swiss National Bank has to take a hard decision and it surprised currency traders by pledging that "it will no longer tolerate a euro-franc exchange rate below the minimum rate of 1.20 francs", effectively weakening the Swiss franc. This was biggest Swiss monetary intervention since 1978.

In mid-2012, as a result of successful fiscal consolidation and implementation of structural reforms in the nations, (who were at maximum risk) and various policy measures taken by EU leaders and the ECB, financial stability started to improve significantly in the eurozone and interest rates have steadily fallen. This has also helped greatly in diminishing contagion risk for other eurozone nations.

In the aftermath of the events, leading European nations in order to minimize the effect of crisis and to bring back stability into the system, have implemented a series of financial support measures in form of designated institutions such as the European Financial Stability Facility (EFSF) and European Stability Mechanism (ESM).

The ECB have also taken measures which are under its jurisdiction in order to solve the crisis by lowering interest rates and providing cheap loans of more than 1 Trillion Euro in order to maintain that gradual flow of money is continued between the European banks. On 6 September 2012, the ECB announced free unlimited support for all eurozone countries involved in a sovereign state bailout/precautionary program from EFSF/ESM, through some yield lowering Outright Monetary Transactions (OMT).

As of October 2012, only 3 out of 17 eurozone nations, namely Greece, Portugal, and Cyprus still battled with long-term interest rates above 6%. In November 2013 ECB lowered its bank rate to only 0.25% to aid recovery in the eurozone. As of May 2014, only two countries (Greece and Cyprus) still need help from third parties

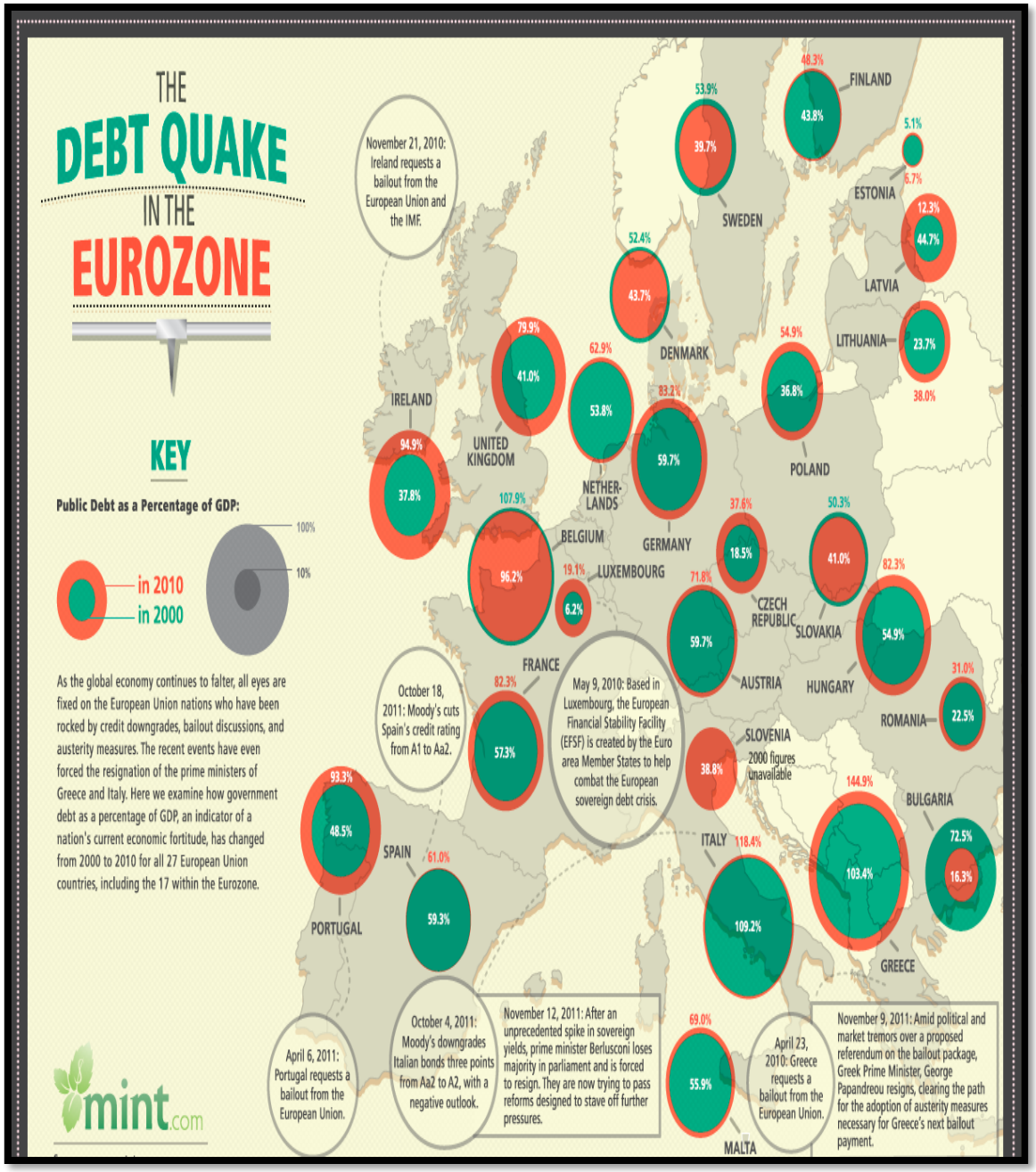


Fig. 2: Public debt as % of GDP for Eurozone countries (For years 2000 & 2010).

Source: mint.com

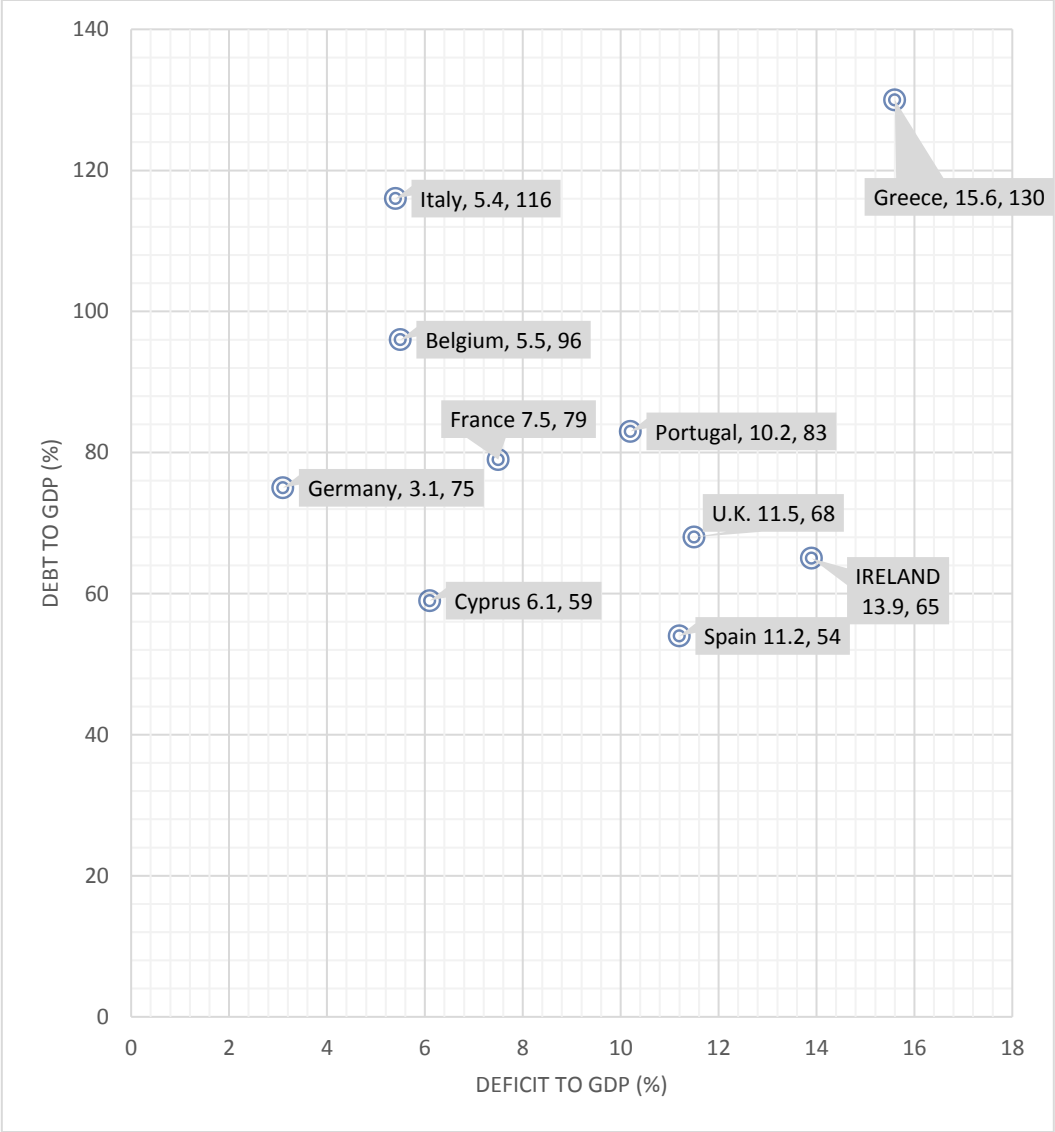


Fig. 3: Debt to GDP (%) vs Deficit to GDP (%) for selected EU Nations in year 2009.

Data Source: Eurostat.

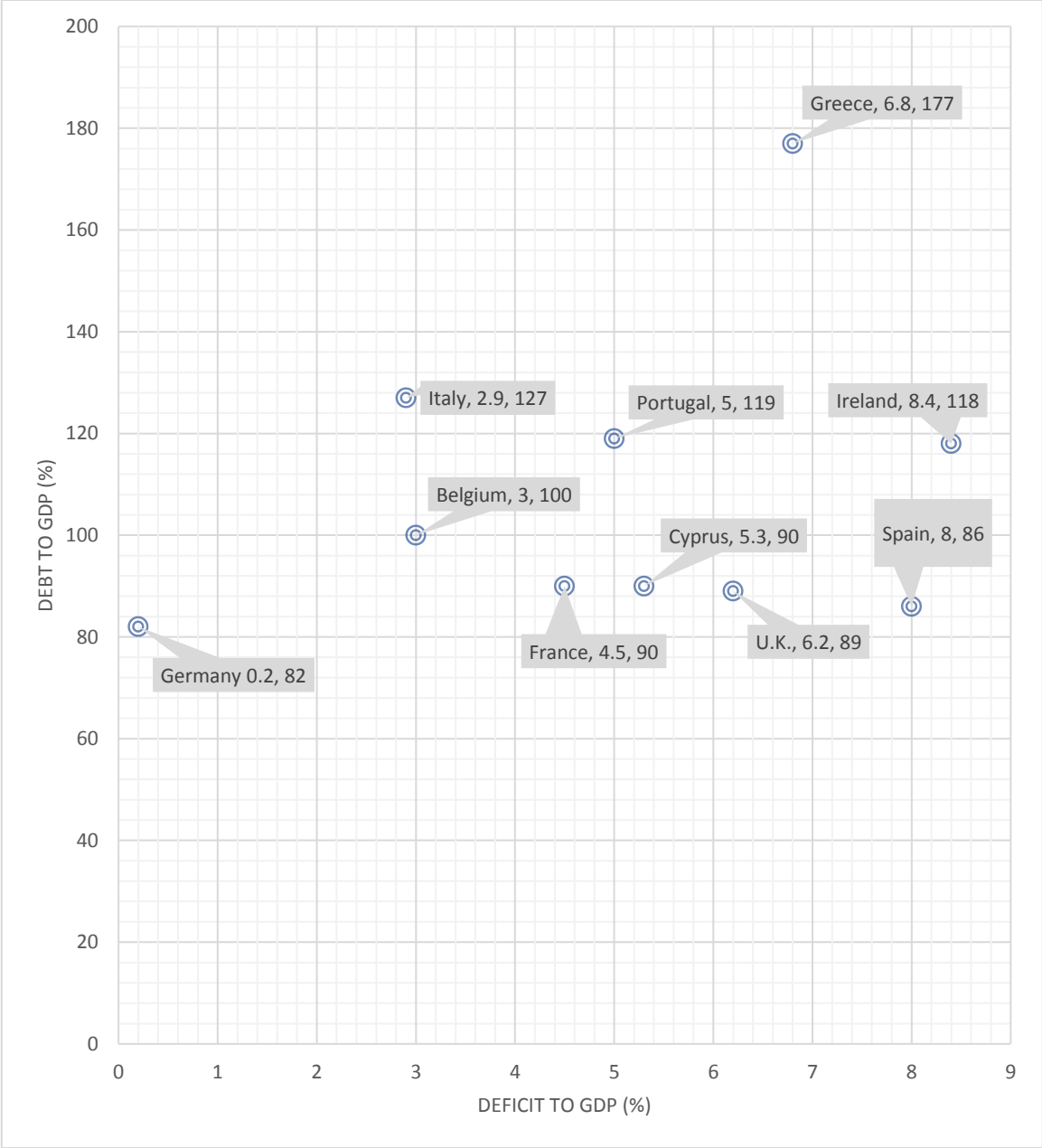


Fig. 4: Debt to GDP (%) vs Deficit to GDP (%) for selected EU Nations in year 2012.

Data source: Eurostat.

With planned efforts and implementation of economic reforms, return to economic growth and improved structural deficits were observed in Ireland and Portugal and they exited their bailout programs in July 2014. The nations of Greece and Cyprus both managed to partly regain market access in 2014 and their condition remains to be vulnerable till date. Spain never officially received a bailout program. The rescue package Spain received from the ESM was meant to go for a bank recapitalization fund and it did not include direct financial support for the government of Spain itself.

The crisis has made significant unfavorable economic effects and consequently had effects on the labor market, the unemployment rate in Greece and Spain reached 27%, this high rate of unemployment was blamed for subdued economic growth, not only having effects on the eurozone, but for much broader context of entire European Union. The crisis also seemed to have had an indirect but major political impact on the ruling governments in 10 out of 19 eurozone nations, resulting into power shifts in Greece, Ireland, France, Italy, Portugal, Spain, Slovenia, Slovakia, Belgium and the Netherlands, as well as outside of the eurozone, in the United Kingdom.

Unfortunately, despite decades of effort to build a Single Financial Market, almost all EU jurisdictions lacked proper crisis resolution mechanisms, especially with respect to the cross-border dimensions of a global crisis. This led to a threat of widespread bank failures in EU countries and near collapse of their financial systems. Today, in the context of the Eurozone financial crisis, the EU is at a critical crossroads. It has to decide whether the road to recovery runs through closer integration of financial policies and of bank supervision and resolution, or whether to take the path of fragmentation with a gradual return to controlled forms of protectionism in the pursuit of narrow national interest, although the latter is bound to endanger the single market. Therefore, the policy dilemmas facing the EU and contemporary institution building within the Eurozone provide an important window into the future of both global and regional financial integration.

Fig. 5: Bailout programs for EU Members since 2008.

EU Member	Time Span	IMF	World Bank	EIB/EBRD	Bilateral	BoP	GLF	EFSM	EFSF	ESM	Total Bailout (Billion €)
Cyprus	2011-12				2.5						2.5
Cyprus	2013-16	1.0								9.0	10.0
Greece	2010-15	32.1					52.9		130.9		215.9
Greece	2015-18	T.B.D.								Up till 86	86
Hungary	2008-10	9.1	1.0			5.5					15.6
Ireland	2010-13	22.5			4.8			22.5	18.4		68.2
Latvia	2008-11	1.1	0.4	0.1		2.9					4.5
Portugal	2011-14	26.5						24.3	26		76.8
Romania	2009-11	12.6	1	1		5.0					19.6
Romania	2011-13		1.15								1.15
Romania	2013-15		2.5								2.5
Spain	2012-13									41.3	41.3
Total Payment	2008-18	104.9	6.05	1.1	7.3	13.4	52.9	46.8	175.3	136.3	544.05

Data source: https://en.wikipedia.org/wiki/Template:Bailout_programs_for_EU_members_(since_2008)

1.4 Objective of the Study:

The study aims to gain an insight over the common currency area of countries in the continent of Europe, which have formed a monetary and fiscal union, with common currency in circulation, termed as eurozone.

Since its inception there has been certain skepticism regarding the policies and future prospects of the union, the study looks over the criteria required for member nations in order to accede to the EU. The inherent flaws and the wrong-doings done by certain member nations are also analyzed.

In the wake of global recession of 2008, its effects were observed in many global economies, several eurozone members who were enjoying the privilege of strong economies in the group, were prone to face the adverse effects because of their weak fiscal structures and flaws of economy.

As the crisis loomed further several economies were severely affected and five-member nations of the Eurozone have to opt for bailouts in order to sustain their national economy. The study analyzes some intrinsic causes and their role in the spread of debt crisis in Greece.

2. LITERATURE REVIEW

2.1 Premise of the European Union:

The "United States of Europe" were in the minds of many European writers, intellectuals, philosophers and visionaries of the last centuries.

The French author Victor Hugo wrote in 1849: "A day will arrive, where all nations of this continent, without giving up their particularities or their well-known individuality, will come together closely to a higher community and lay the foundations of the big European brotherhood. A day will arrive where there will be no other battlefields than the markets, which open for trade, and the spirit, which opens for ideas. A day will arrive where bullets and bombs will be replaced by ballot papers".

And in 1925 the French Minister of Foreign Affairs, Aristide Briand, said at the occasion of the Locarno Pact (Locarno is a little town on the Italian sea, where a peace pact has been signed): "In Locarno we spoke European, this is a new language, which has now to be learned".

In 1950 the French Foreign Minister Robert Schuman proposed integrating the coal and steel industries of Western Europe, which led to the European Coal and Steel Community in 1951 – the predecessor of today's European Union.

Alexandre de Streel in his paper titled "The Evolution of the EU Economic Governance since the Treaty of Maastricht: a Unfinished Task" stated that: "When the Economic and Monetary Union (EMU) was established in Maastricht, the authors of the Treaty made two fundamental choices. First, they decided that the euro would be the currency of the Union and all EU Member States should adopt it when their macroeconomic conditions enable them to do so. Second, they decided to centralize the monetary policy but to leave the economic policy decentralized. This fundamental imbalance, which was criticized by some, was the only feasible political option at the time".

2.2 Structural Flaws in the EU System:

The primary goal of European integration is to maintain peace and ensure freedom and prosperity in Europe. (European Commission, 2015) Also, the Treaty on the Functioning of the European Union is the confirmation as it emphasizes economic aspects of its formation to significantly limited extent. Moreover, the discrepancy in the opinions of political scientists and economists on the benefits of the single currency, i.e., euro for such a heterogeneous group of countries which constitute the EMU, argues for the goal. Outstanding confirmations are, of course, continually changing increasingly risky conditions and rules in EMU along with controversial politically promoted integration and harmonization of its members. Additionally, the ratification of the Maastricht treaty in 1992 cannot be considered as economically sufficient and reasonable decision due to lack of labor mobility and fiscal transfers, artificial suppression of German unit labor costs and the inflation policy benefiting mainly the surplus countries and a low level of diversification of the economies in EMU. (Detlef, 2012) The previous is documented in the empirical study of Ferreira, Dionisio & Zebende (2014). The authors stress that there are significant differences in the achieved levels of financial integration among selected Eurozone countries by applying the detrended cross-correlation analysis based on the CIP. Their results, based on data before the introduction of the Euro, show the problems of peripheral countries with asymmetric shocks that have prevented them from achieving the full degree of financial integration and gaining benefits from it. The example of such an asymmetric shock is the current debt crisis in the Eurozone, as most Member States were not willing to transfer their economic policies to the EU.

According to the authors of Optimum Currency Area Theory, money is the essential tool for absorbing imbalances in an independent state with its own currency. Therefore, a country that decides to abandon its currency with adopting a single monetary policy to create a monetary union loses an important instrument to smooth internal and external imbalances emerging in a monetary union. (De Grauwe & Ji, 2013).

In the study of Martin & Philippon (2014), the authors analyzed the effectiveness of the policies based on counterfactual experiments of the selected countries during the boom years of the crisis. Their results showed that countries having the biggest problems, i.e., the GIIPS countries, should have adopted the combination of macroprudential policy for the limit of private leverage leading to the stabilization of employment together with the prudential fiscal policy. The authors' opinion is that implementation of only one of these policies leads to the worsening of the current problems. Therefore, it is important to consider the policies as complements. Grahl (2011) recommends the EMU to create an adjustment mechanism to absorb the imbalances arising between the members. Sklias, Roukanas, & Maris (2014) appeal to the need for the introduction of the mechanism for fiscal transfers. Eichengreen (1991) agrees with the previous statement and recommends creating a system of fiscal transfers in the form of liquidity injections in EMU and establishing central fiscal authority. (Dibooglu & Horváth, 1997) Varoufakis (2012) assumes that a necessary system of fiscal transfers can have either the form of money transfers among countries or the form of international investments in production in deficit countries. Moreover, a need to set certain limits on internal trade in EMU is required. (Sklias, Roukanas, & Maris, 2014) Concerning this issue, Brancaccio (2012) recommends the EMU to introduce a European wage standard. The aim would be to help the EMU and its members in absorbing asymmetric shocks attacking their economies through the greater flexibility of wages.

Low-interest rates hugely reduced borrowing costs in the private and also public sector in many Eurozone countries. That led to formation of bubbles, whether in the real estate markets – Spain, Ireland, or in the public sector – Greece, which resulted in deepening of the economic recession and moral hazard of the ECB and Eurozone governments.

Moreover, Arellano, Conesa, & Kehoe (2012) described the anti-crisis policies and measures of the EU and the IMF as detrimental and supporting further indebtedness of its members. This issue of governments' or institutions' measures

has been a controversial theme in the empirical literature. In the study of Ureche-Rangau & Burietz (2013), the authors analyzed the impact of the implementation of rescue packages to the level of government debt based on the GMM panel data approach. Their results confirm the negative impact of capital injections on the level of government debt, indicating that guarantees and the behavior of the stock markets that contribute to public debt's increase. Other empirical studies confirm the results and particularly stressed the short-term effect of rescue measures, which also result in increased market volatility and a higher probability of contagion to other countries. (Archarya, Drechsler, & Schnabl, 2011; Van Riet, 2010; De Santis, 2012) That is also related with the factor of the level of government debt. The previous is the essential element of government decision on the implementation of policies or going into deeper debt, i.e., whether it is worth to gamble for survival, or not. (Arellano, Conesa, & Kehoe, 2012) Therefore, it is more than appropriate to revise the rules of fiscal discipline included in the Stability and Growth Pact and the Fiscal Compact. Significant capital inflows in many Eurozone countries reflecting the investors' faith in the newly discovered apparent prosperity of its members were also the result of the Euro Illusion. A substantial reduction in long-term bond yields, a large increase in the growth rate of money supply and loans, a relatively fast pace of price growth and a deterioration of competitiveness that accompanied these capital inflows, have been discouraging Eurozone governments to implement reforms and comply with their budgetary constraints. (Lothian, 2014).

2.3 Empirical approaches to the causes of the European debt crisis:

The following section provides a brief overview of empirical studies dealing with causes of the European debt crisis taking into account different approaches, e.g. monetary, fiscal or banking.

Regarding the banking approach, the study of Reinhart & Rogoff (2010) can be considered as a breakthrough when investigating a possible link between banking and debt crises. The authors developed long historical time series comprising two centuries on public debt and external debts. The findings supported a significant link between banking crises and sovereign default across advanced and emerging economies around the world. Moreover, they argued that banking crises could behave as predictors of sovereign debt crises. A similar study of Candelon & Palm (2010) based on the balance sheet approach showed a possible mutation of the subprime crisis into a sovereign debt crisis. The authors concluded that the possibility of default in the Eurozone at the end of 2009 was less significant than six months earlier. Also, they stressed the importance of the relationship between banking and sovereign debt crises based on the graphical approach. The studies of De Bruyckere, Gerhardt, Shepens, & Vander Vennet (2013), Angeloni & Wolff (2012) support the previous conclusions fairly well. In the recent study of Calabrese, Elkink, & Giudici (2014), the authors pointed to the importance of contagion effects of bank failures that had a significant impact on the development of the recent European sovereign debt crisis. They applied the spatial autocorrelation parameter of a binary spatial autoregressive model for Eurozone countries that showed high levels of systemic risk due to contagion. The previous analysis has its root in the fact based on the debts decomposition, the GIIPS countries held their debts by each other. A high level of debts composition may easily spread from one peripheral country to another or even core country too.

Some authors considered the European debt crisis to be a hidden currency crisis or, at least, they believed that there existed a causal link between the currency and debt crises. Dreher, Herz, & Karb (2006) concluded that currency crises have a

negative but lagged impact on debt crises and often occur simultaneously based on a panel data of 80 countries during 1975-2000. The study of Arghyrou & Kontonikas (2012) supported the previous finding. Moreover, the authors added that the reason was the absence of currency markets as a systemic risk is diverted into the government bond market. Also, the authors argued that the major factors having impact on the debt crisis were the international risk, macro fundamentals and contagion, too.

Barrios, Iversen, Lewandowska, & Setzer (2009) examined the determinants of government bond yield spreads in the Eurozone countries. The authors concluded that international factors like general risk perception were key drivers in explaining governments´ bond yields spread. Moreover, they added that domestic factors such as liquidity and sovereign risk played a smaller role. However, their impact increased during the crisis as international investors started to pay more attention to different factors across countries. Similar results were presented in the study of De Grauwe & Ji (2013) and Croci Angelini, Farina, & Valentini (2015) too. Moreover, the study of Attinasi, Checherita, & Nickel (2009) pointed out that the main sources of increasing government debts were predominantly international risk aversion and a deterioration of fiscal fundamentals since the end of 2007.

3. RESEARCH METHODOLOGY

3.1 Descriptive Research:

Descriptive research can be explained as a statement of affairs as they are at present with the researcher having no control over variable. Moreover, "descriptive studies may be characterized as simply the attempt to determine, describe or identify what is, while analytical research attempts to establish why it is that way or how it came to be".

Descriptive research is "aimed at casting light on current issues or problems through a process of data collection that enables them to describe the situation more completely than was possible without employing this method."

In its essence, descriptive studies are used to describe various aspects of the phenomenon. In its popular format, descriptive research is used to describe characteristics and/or behavior of sample population.

An important characteristic of descriptive research relates to the fact that while descriptive research can employ a number of variables, only one variable is required to conduct a descriptive study. Three main purposes of descriptive studies can be explained as describing, explaining and validating research findings.

Descriptive studies are closely associated with observational studies, but they are not limited with observation data collection method. Case studies and surveys can also be specified as popular data collection methods used with descriptive studies.

Descriptive research can be either quantitative or qualitative. It can involve collections of quantitative information that can be tabulated along a continuum in numerical form, such as scores on a test or the number of times a person chooses to use a-certain feature of a multimedia program, or it can describe categories of information such as gender or patterns of interaction when using technology in a group situation. Descriptive research involves gathering data that describe events

and then organizes, tabulates, depicts, and describes the data collection (Glass & Hopkins, 1984). It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Because the human mind cannot extract the full import of a large mass of raw data, descriptive statistics are very important in reducing the data to manageable form. When in-depth, narrative descriptions of small numbers of cases are involved, the research uses description as a tool to organize data into patterns that emerge during analysis. Those patterns aid the mind in comprehending a qualitative study and its implications.

Most quantitative research falls into two areas: studies that describe events and studies aimed at discovering inferences or causal relationships. Descriptive studies are aimed at finding out "what is," so observational and survey methods are frequently used to collect descriptive data (Borg & Gall, 1989).

Descriptive statistics utilize data collection and analysis techniques that yield reports concerning the measures of central tendency, variation, and correlation. The combination of its characteristic summary and correlational statistics, along with its focus on specific types of research questions, methods, and outcomes is what distinguishes descriptive research from other research types.

In some types of descriptive research, the researcher does not interact with the subjects. In other types, the researcher does interact with the subjects and collects information directly from them. Some descriptive studies may be cross-sectional, whereby the researcher has a one-time interaction with the test subjects. Other studies may be longitudinal, where the same test subjects are followed over time. There are three main methods that may be used in descriptive research:

- **Observational Method** – Used to review and record the actions and behaviors of a group of test subjects in their natural environment. The research typically does not have interaction with the test subject.
- **Case Study Method** – This is a much more in-depth student of an individual or small group of individuals. It may or may not involve interaction with the test subjects.

- **Survey Method** – Researchers interact with individual test subjects by collecting information through the use of surveys or interviews.

Advantages of Descriptive Research

1. Effective to analyze non-quantified topics and issues
2. The possibility to observe the phenomenon in a completely natural and unchanged natural environment
3. The opportunity to integrate the qualitative and quantitative methods of data collection
4. Less time-consuming than quantitative experiments.

Disadvantages of Descriptive Research

1. Descriptive studies cannot test or verify the research problem statistically
2. Research results may reflect certain level of bias due to the absence of statistical tests
3. The majority of descriptive studies are not 'repeatable' due to their observational nature
4. Descriptive studies are not helpful in identifying cause behind described phenomenon.

3.2 Criteria chosen for Analysis:

For the purpose of analysis following major criteria are identified and corresponding study over them is performed:

1. Cost of Greece's membership in the Eurozone.
2. Investors speculative bet on convergence even before Greece joins the Eurozone.
3. Continued surge in Government spending, contributing to the unsustainability of the crisis.
4. Significant Government data revisions prompting sharp increases in spreads.
5. Downgraded prompt bailouts because of unfavorable credit ratings.

4. Greece Debt Crisis

4.1 The Rise of Financial Crisis in Greece:

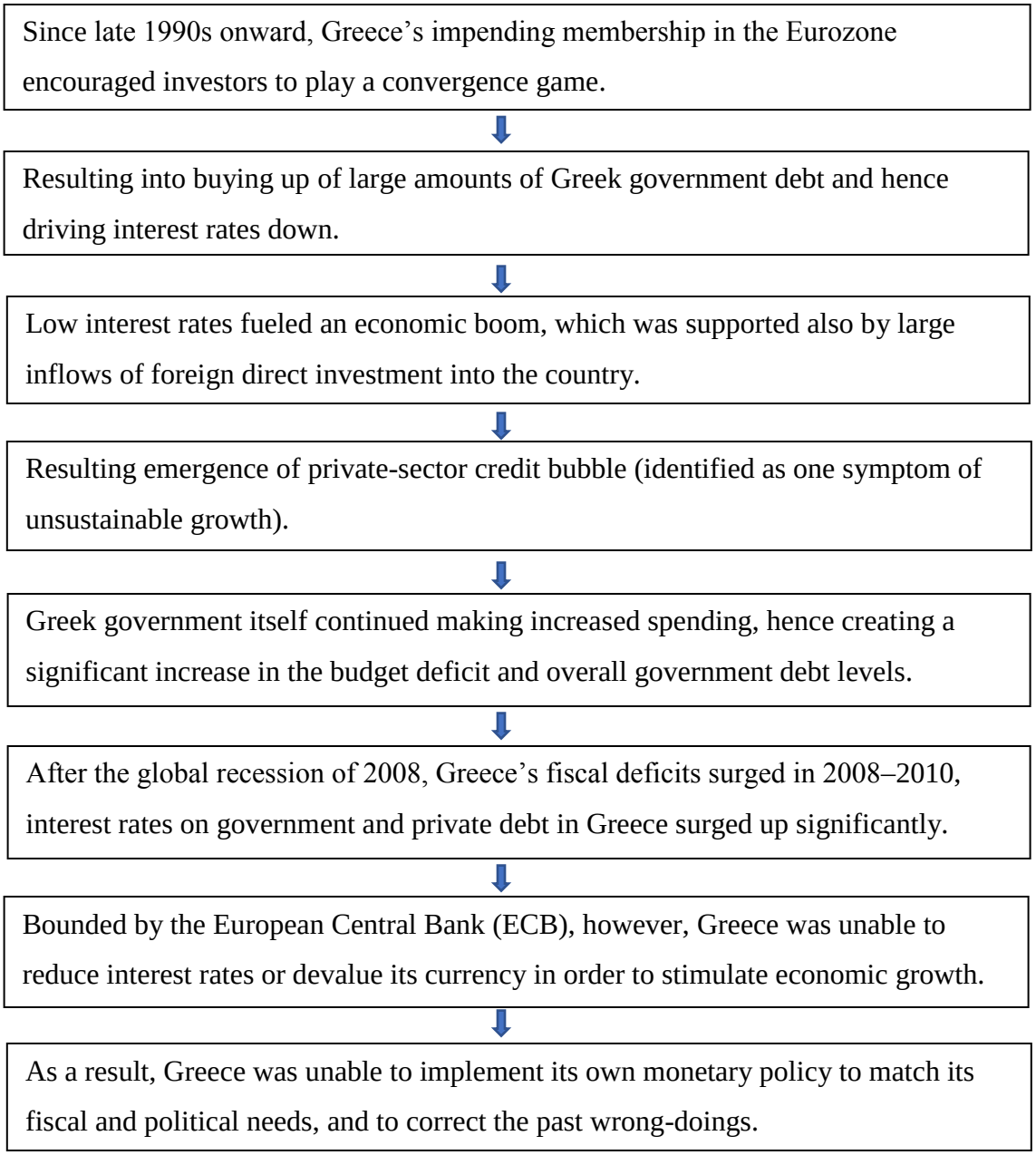
The Greek financial crisis could be defined as a series of debt crises that triggered with the global financial crisis of 2008. Considering the causes behind this, we could observe that they were largely home-grown in nature, this could be attributed because its sources found their origin in mismanagement of the Greek economy and of government finances rather than international factors or factors in the Eurozone. Furthermore, Greece being a member nation of the Eurozone had to surrender its right to exercise full control over its monetary policy, the implications of it were visible when interest rates were kept too low for too long relative to the inflationary stress that were building up in the Greek economy. Monetary policy was not in accordance with what a booming economy deserves and access to credit was too much easier.

The analysis will focus on two aspects which could be attributed as primary causes for the Greek financial crisis. First, Greece was severely affected by government economic mismanagement, including widespread fraud and an absence of public accountability. Second, in the exchange for Greece's membership in the Eurozone, the economic policies and regulations imposed on it were ill suited to and non-aligned with its political and financial goals.

One interesting observation is that, the investors and institutions failed to notice or interpret the growing collection of warning signs, which were there because of the economic mismanagement and misreporting of economic performance by successive governments in Greece. In the context of analysis, following warning signs could be stated:

- Unsustainable debt levels,
- High wage growth not supported by productivity growth, which led to a decline in Greece's competitiveness,
- Excessive public spending,
- A huge surge in credit growth, and
- Massive tax evasion.

The Eurozone, which was basically established to create a regional union integrity and for the political purposes as a further step on the path to closer economic and monetary sub-union within the European Union, this gave rise to a flawed economic structure, and Greece's inclusion in the Eurozone made Greece's crisis inevitable. The events pertaining to this could be seen in the following flowchart.



Three bailouts followed for Greece, amounting to a total of €246 billion. This flow of funds accompanied with strict austerity measures, somewhat partially stabilized the situation but the relief came at a high cost in terms of generating chronically high unemployment, widespread poverty, and declining incomes. Real GDP shrank by approximately one-fourth between 2009 and 2015.

Investors too allowed the favorable economic upswing and convergence of the Greek economy with its Eurozone partner countries to divert their attention from closer scrutiny of Greece's fundamental financial and economic problems. As a basic trait, while making investment decision we should not align thoroughly on government statistics or public pronouncements at face value; instead there must be own research and analysis of the situation using all possible inputs.

For the purpose of analysis following major criteria are identified and corresponding analysis of them is performed:

1. Cost of Greece's membership in the Eurozone.
2. Investors speculative bet on convergence even before Greece joins the Eurozone.
3. Continued surge in Government spending, contributing to the unsustainability of the crisis.
4. Significant Government data revisions prompting sharp increases in spreads.
5. Downgraded prompt bailouts because of unfavorable credit ratings.

4.2 Cost of Greece's Membership in the Eurozone:

It could be ascertained that many of the causes pertaining to financial crisis in Greece arisen from its membership in the Eurozone. The Eurozone started as a monetary union among 11 nations (of the, then, 15-member states of the European Union) but the lack of corresponding fiscal and political unions was ignored.

Because Greece failed to meet the criteria defined by 1992 Maastricht Treaty economic requirements for nations joining the zone, it was eventually not qualified to join the Eurozone in 1999 when the initial list of founding member nations was being drawn up, as per the terms governed by the EU Stability and Growth Pact (established in 1996), The economies of new member nations had to converge with existing Eurozone members to a certain degree. The empirical value of convergence was obtained by taking compliance from five criteria, which included: low inflation, a budget deficit of less than 3% of GDP, and government debt levels of less than 60% of GDP.

However, Greece was belatedly allowed to become the youngest and first non-founding member nation to join the Eurozone in early 2001 as its 12th member despite having a budget deficit well in excess of 3% of GDP and government debt in excess of 100% of GDP.

By allowing Greece to join the Eurozone under these circumstances was a visible case of political rule bending, and resultingly it undermined the further credibility of the European project. Instead of thoroughly following their own set standards for membership, the EU decided to grant Greece membership. Greece was ever enthusiastic since the beginning, to join at the earliest opportunity, irrespective of its own degree of readiness.

Figure 6 shows Greece's gross government debt as a percentage of GDP from 2002 through 2016. Figure 7 shows the Greek government budget deficit as a percentage of GDP for the same years.

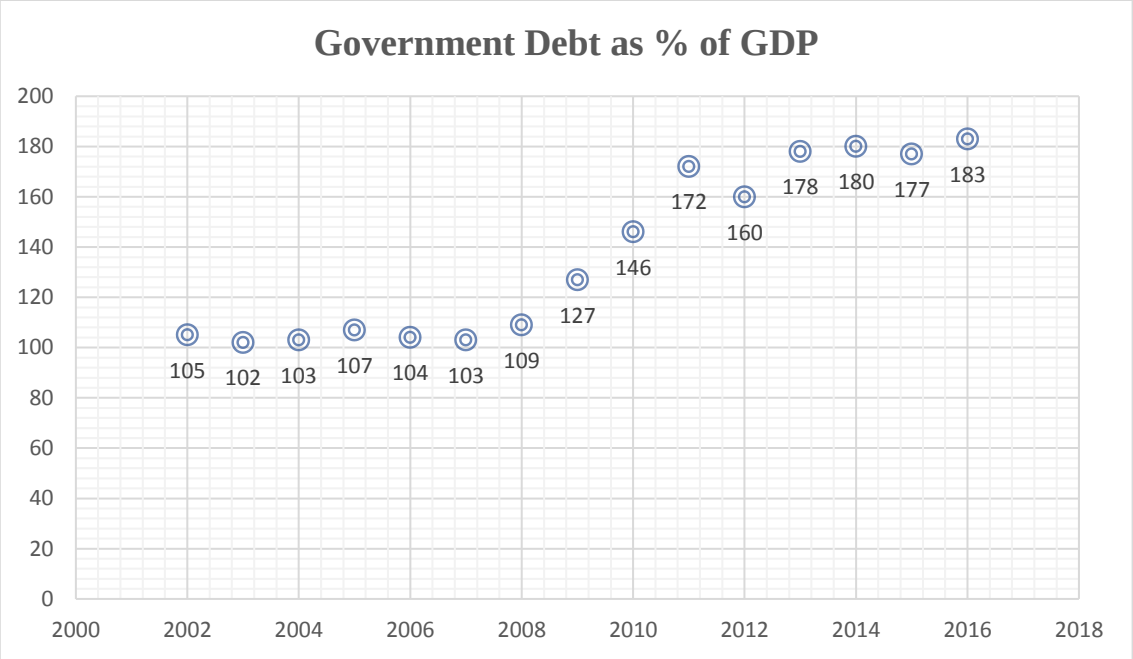


Fig.6: Greece's gross government debt as a percentage of GDP from 2002 through 2016.

Data Source: European Commission, Eurostat.

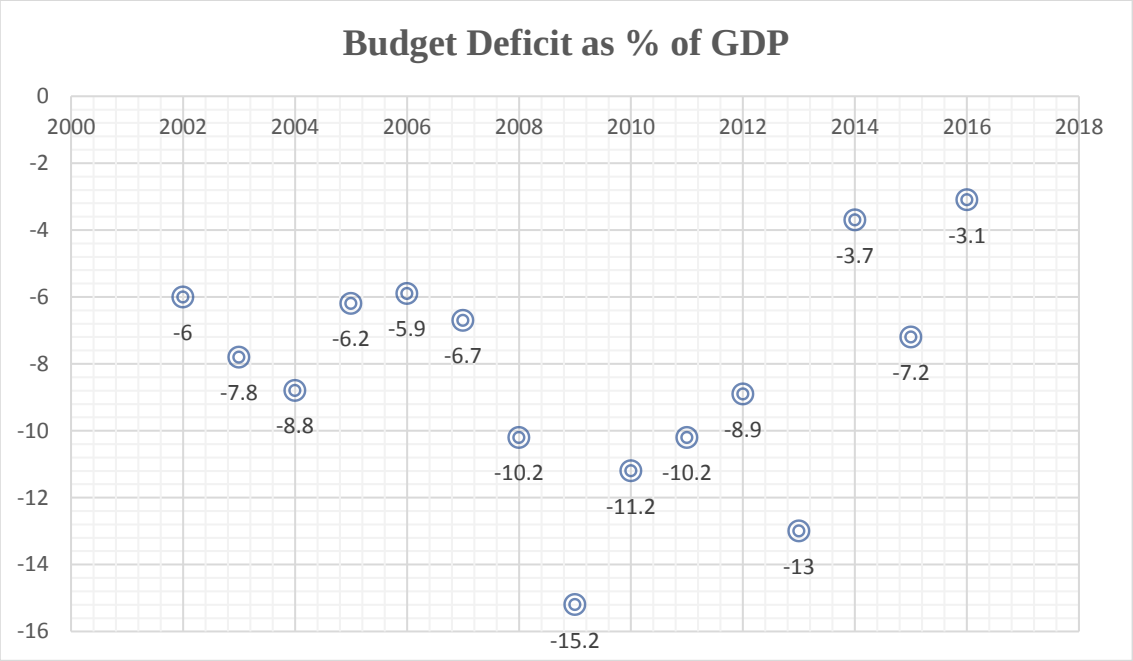


Fig. 7: Greek government budget deficit as a percentage of GDP from 2002 to 2016.

Data Source: European Commission, Eurostat.

Membership in the Eurozone which was an old and well-known fascination for the Greece acted as a major economic constraint on Greece. If only Greece had not been member of the eurozone and was not following the single currency model:

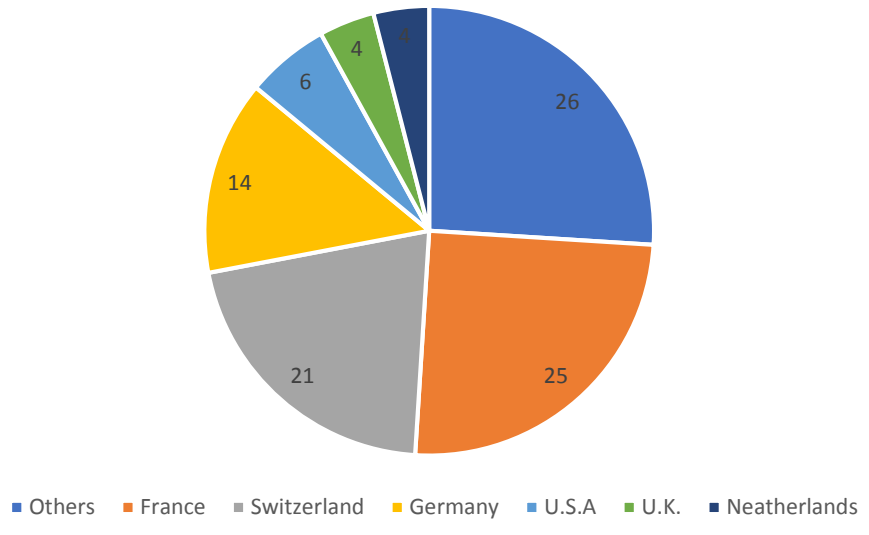
1. Greece could have devalued its currency in order to stimulate the exports and hence its economy and inflate itself out of the crisis.
2. The pressure exerted by interest rates could have been handled with Currency devaluation would have taken the pressure off interest rates.
3. Greece lost its right to set and maintain its own interest rates, on the basis of fact that for a member of the Eurozone, the role of determining interest rates is undertaken by the ECB.

4. Although the central aim of ECB is to maintain stability of the euro and the related Eurozone economies and to manage the rate of inflation under permissible control. However, it has no direct obligatory mandate concerning Greece in particular or any other individual Eurozone economy.

As a result of the increasing effects of the crisis, talks were rising about Greece leaving the Eurozone. However, Greece operating as an isolated nation with its own currency outside the Eurozone would have embarked other challenges. Firstly, the EU would most likely not have felt any obligation required to get involved in Greece's crisis and would have been more inclined to let the country make measures for itself. No any sort of huge bailouts of Greek debt would have been provided from the zone.

The inherent reason behind other Eurozone nations being eager to bail out Greece in part was so because their banks were pretty much involved in lending to Greece. They had own interest in keeping Greece afloat and functioning in order to keep a Greek default from destabilizing and having negative impacts on the financial systems of their own countries.

Fig. 8: Share of Greek Sovereign Debt Held by Foreign Banks by Nationality, 2010



Source: Bank for International Settlements, April 2010.

Imagining a scenario where Greece had reintroduced its own currency, it would have required a significant degree of devaluation in order to compensate the involved investors because of the risk of holding the currency, especially when Greece was having this dubious track record of misleading investors with wrongly reported economic and financial data. Significant currency devaluation in general is followed by times of higher inflation, which is a visible scenario of real wealth transfer from creditors to debtors.

Most importantly, devaluation of the newly-introduced local currency relative (adopted by Greece) to the euro may have further compounded the extent of problem by significantly increasing the amount of debt in terms of the local currency being introduced. Hence even if an exit from the Eurozone was there, it was likely to provide only some short-term relief before letting long-term problems set in.

4.3 Investors speculative bet on convergence even before Greece joins the Eurozone:

Long before joining the Eurozone in 2001, global investors were speculating that Greece would converge with the core Eurozone countries, which practically have far lower interest rates as compared to Greece. Lower interest rates in core Eurozone countries were an indicator of sustainability, low inflation rates and reasonably balanced budgets, which cater a platform for additional financial stability and promoted economic growth.

One of the intrinsic benefits of being the Eurozone member was ascertaining to an almost certain degree of convergence in terms of economic criteria, including standard of living, economic integration and cooperation.

EU authorities expected a certain degree of convergence to have taken place before allowing any new member to join, so that it does not destabilize the euro. In addition, investors expected further convergence to take place between peripheral Eurozone countries (Portugal, Greece, Italy, Spain, Ireland) and the core Eurozone countries (Germany, France).

In Greece, currency risk measures were already absent before the adoption of the euro, it coupled with the establishment of convergence criteria which led to a considerable inflow of funds, resultingly driving down the interest rates as investors would require a lower risk premium for holding Greek debt, in both forms public or private. This pattern could be further understood through the graph, which highlights the dramatic transformation in Greek bond yields in the run-up to the country joining the Eurozone in 2001. Bond yields slumped from 25% in early 1993 to around 6.5% by late 1999.

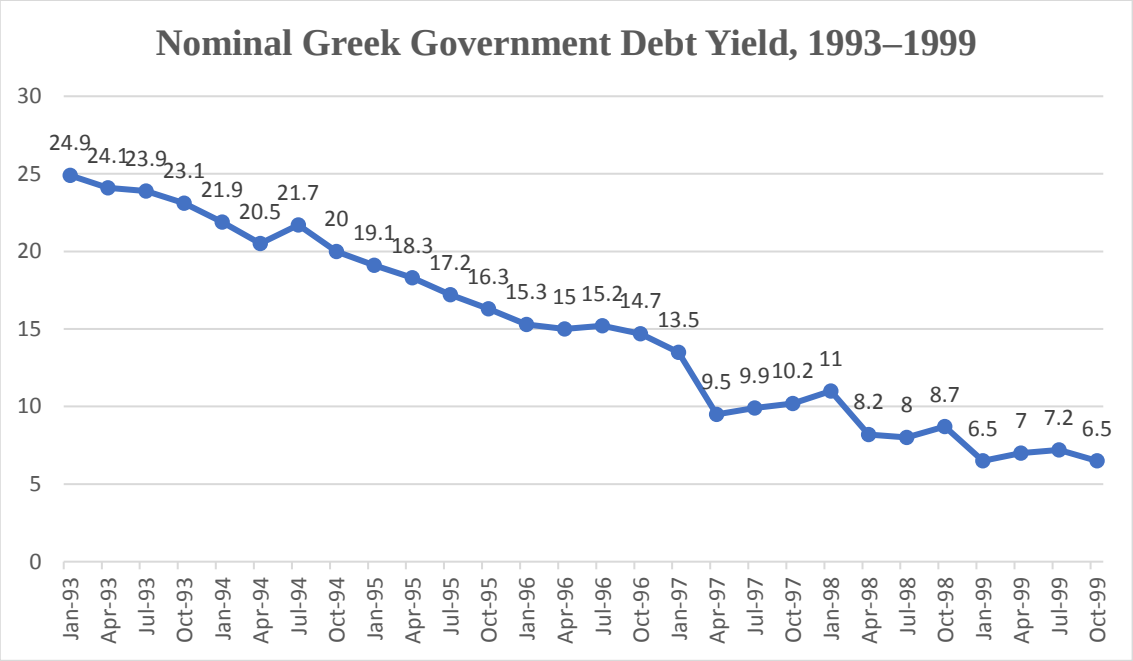


Fig. 9: **Nominal Greek Government Debt Yield, 1993–1999**

Data Source: ECB Statistical Data Warehouse.

Scale is measured in percentage terms.

Yield spreads in correlation with the German bonds gradually slumped over the same period—from 17% to well below 2%, which signifies a remarkable change in market and investor perceptions regarding risk and return prospects. So, interest rate convergence had considerably taken place even before Greece joined the Eurozone.

Low interest rates were encouraging a boom in private-sector consumption. The corresponding graph highlights the surge in lending to the private sector brought about by the slack monetary policy and resulting booming economy with strong inward investment.

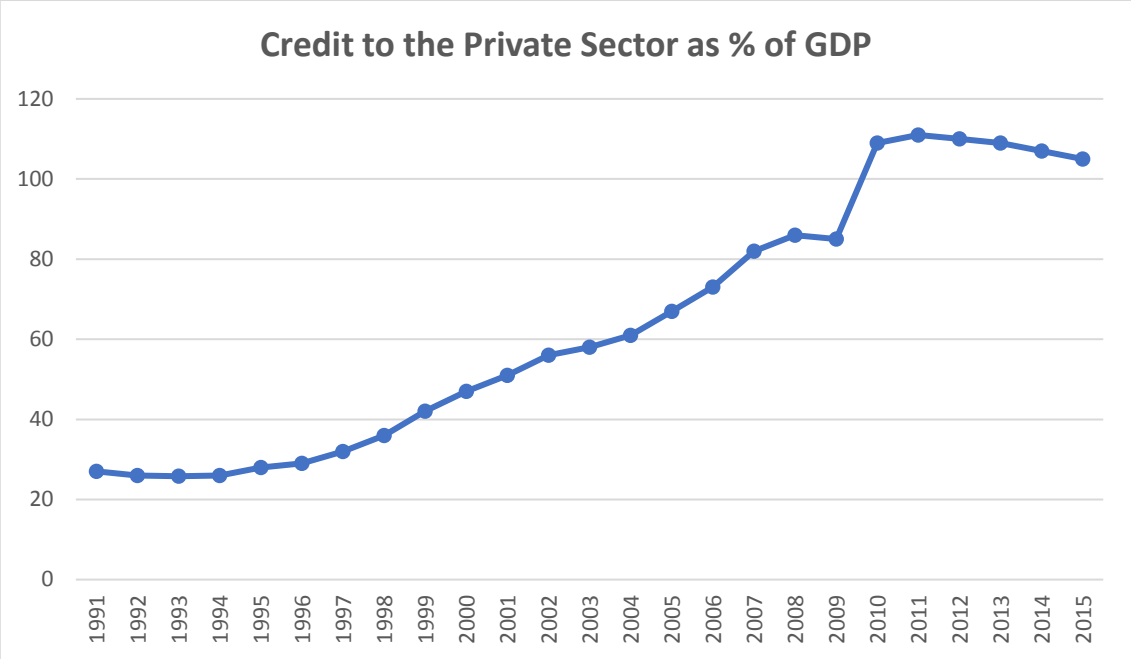


Fig. 10: Credit to the Private Sector as % of GDP

Data Source: World Bank.

As a general global trend Private-sector lending had been decreasing through the 1980s, a period attributed with strong credit growth in many developed countries because of financial and economic liberalization. However, Private-sector lending took path of recovery in the mid-1990s, it boomed really only from the late 1990s and throughout the 2000s—under the influence of the euro and as a result of Greece's attempts to converge to the Eurozone membership criteria.

Ironically, as represented in the next graph, in the run-up to the crisis, Greece was considered to be coming up as one of the developed world's fastest growing economies. The perfect combination of low interest rates, investors playing on the notes of convergence theme, and considerably strong inward investment brought about an economic boom.

Real GDP growth was around 4% on average, a healthy pace of growth, in the 10 years up to and including 2007. During that decade, the Greek economy grew nearly 50% in real terms, which is not a small feat in any sense. This brisk pace of growth was ushered in by easy access to credit, sustained high public spending (particularly on infrastructural projects), strong wage growth, high FDI, and general business confidence following Greece's adhesion to the euro in 2001.

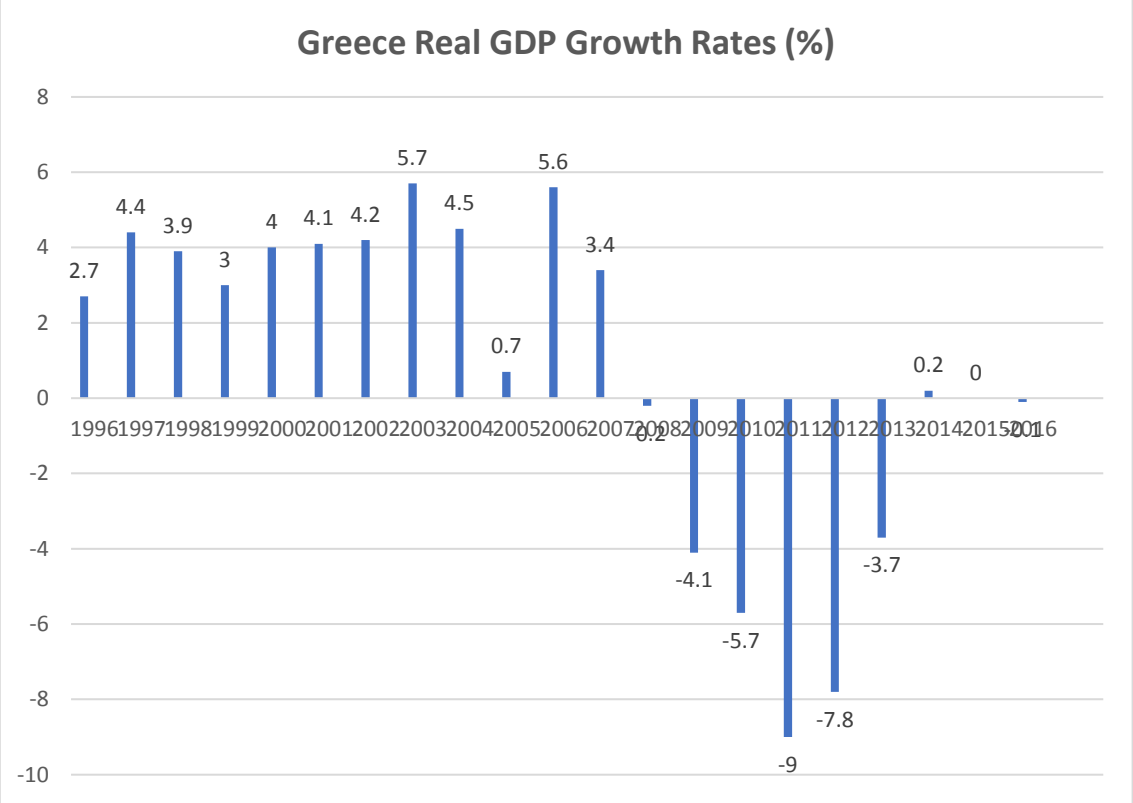


Fig. 11: Greek Real GDP Growth Rates, 1996–2016

Data Source: OECD.

4.4 Continued surge in Government spending, contributing to the unsustainability of the crisis:

The Greek government was very proactive in its efforts to encourage a strong economy, at least in terms of growth rates, so that it can woo investors. There were also political purposes, to bring about convergence in accordance to the high standards of living which was being enjoyed by the most developed of the Eurozone's countries, such as France, Germany, and the Netherlands.

Growth at this rate was unfeasible, however; it was more like to a repetitive loop, particularly with respect to credit growth, wage growth, and the large increases in public spending. Rather than creating the conditions for sustainable growth, the government was promoting a bubble to develop.

As represented in the corresponding graph, between 2006 and 2009, government spending in Greece arise from 45% to 54% of GDP, despite the considerable growth of the Greek economy at an annual 4% pace in the earlier part of the period. The failure of government revenues as a % of GDP to improve was troubling.

Generally, in a strong cyclical upswing with booming credit demand and strong wage growth, government revenues as a % of GDP increase because of the boost to incomes and profits and, therefore, tax revenues. That this was not happening should have served as a warning sign to investors of the possibility of widespread fraud and tax evasion.

At this time, the Greek government was concerned about economic equity and social cohesion and wanted to increase public spending selectively in such areas as pensions and salaries of public-sector employees. Revenue was held back by planned reductions in income taxes, especially on middle-income earners, although part of the loss of revenues was clawed back from increases in excise duties. Finally, the corporate tax rate was planned to be reduced from 35% in 2004 to 25% in 2007.

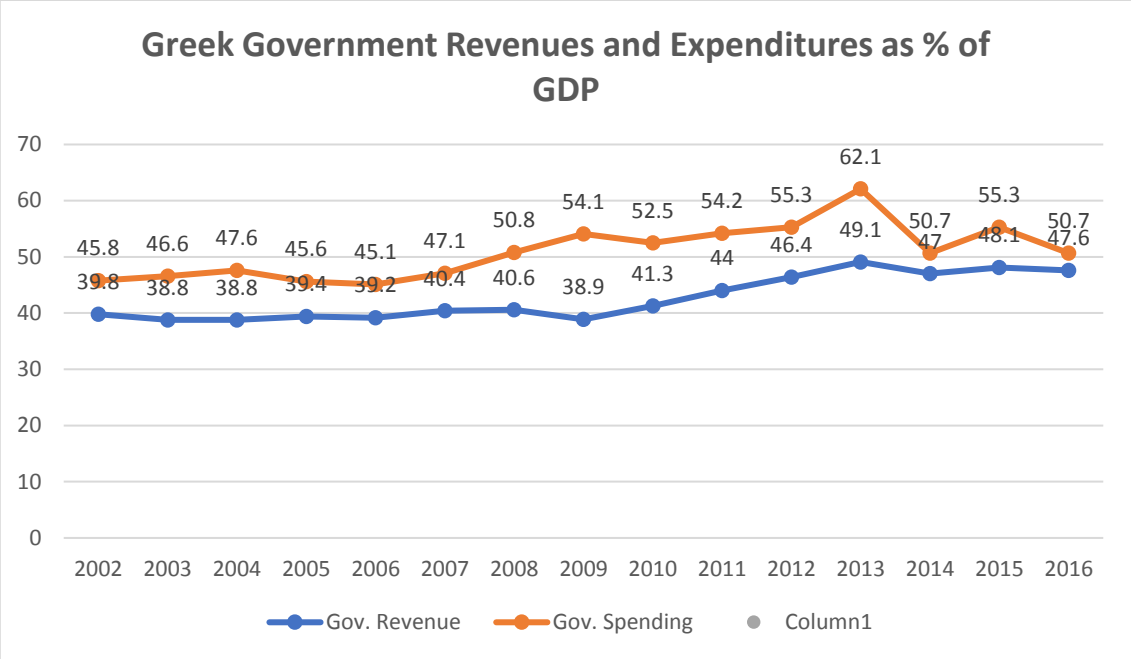


Fig. 12: Greek Government Revenues and Expenditures as % of GDP, 2002–2016

Data Source: European commission, Eurostat.

4.5 Significant Government data revisions prompting sharp increases in spreads:

As the global financial crisis evolved in mid-2008 with the collapse of Lehman Brothers, perception and sentiment of risk increased and lenders required more collaterals for taking on the debt of struggling Eurozone countries. As a result, Greece's interest rate spreads broadened relative to core Eurozone countries and interest payments on government debt began increasing.

The Greek crisis causes were not brought about more by events in Greece, but more because of, than changes in risk perception by international investors. In mid-2009, a year after the collapse of Lehman Brothers, the Greek government announced substantial upward revisions in the government budget deficit, initiating a flight of investors from Greek government debt and a gradual increase in credit spreads back to the dizzy levels associated with the period well before Greece joined the Eurozone.

In October 2009, the newly elected Greek government, revealed that "The 2008 government budget deficit was 7.7% of GDP, an upward revision from an earlier 5.0% filing. Even more significantly, the estimate for the 2009 budget deficit was revised from a forecast of 3.7% of GDP made earlier in the spring to a startling 12.5% of GDP, nearly 9 percentage points more."

As a result, Fitch Ratings downgraded Greece's credit rating to A–, the first time in a decade that the country's debt was rated less than A. Ironically, the final 2009 budget deficit was even worse than the initial dramatically revised estimate—namely, 15.2% of GDP.

The financial impact of these revisions was striking. The corresponding graph highlights the huge increase in credit spreads between Greek and German government debt. (Germany being considered as a standard because of its strong position in the Eurozone).

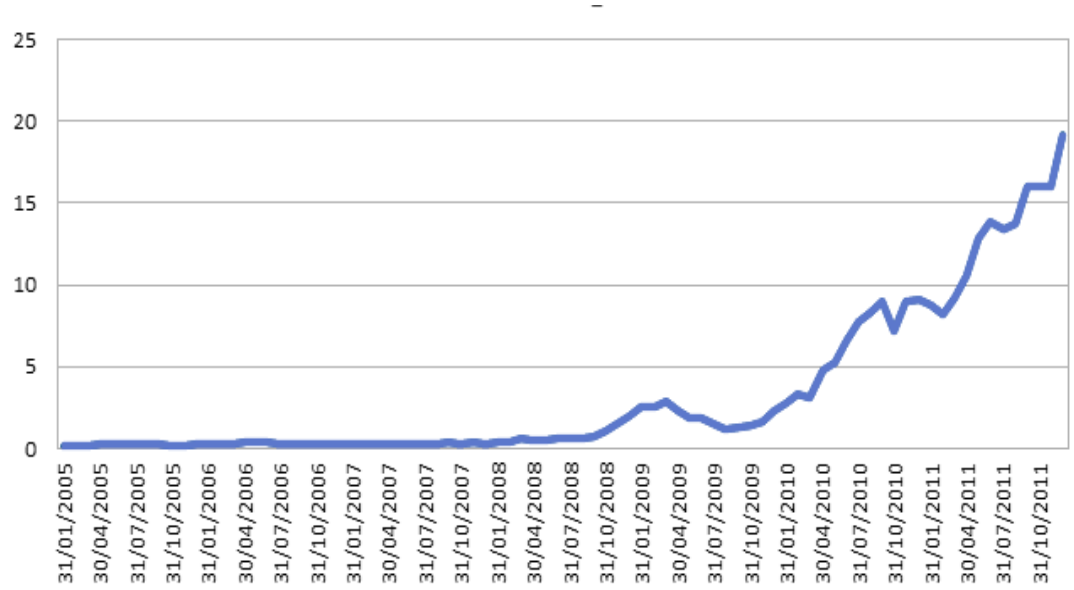


Fig. 13: Greek 10-Year Bond Spreads vs. German Bonds, 2005–2011

Source: ECB Statistical Data Warehouse. Scale measured in percentage terms.

From under 200 basis points at the time of the announcement of the budget deficit revisions in October 2009, spreads widened to 900 basis points a year later. Then, as the full implications hit home with investors two years later, the spread hit 1,600 basis points.

A revision on this scale is extremely rare, but it had happened on several occasions with Greek debt, signaling to investors the poor quality and unreliability of statistics published by the Greek government. According to a report by the European Commission, the extent of the revisions was a result of:

1. Incorrect data.
2. Failure to observe accounting rules.
3. Poor bookkeeping.
4. Lack of accountability and cooperation among different government bodies.

The combined length of period during which Greece was in default in the modern era totaled 90 years, or approximately 50% of the total period that the country has been independent.

The significant revisions served as a further wake-up call for investors in late 2009, just when there were signs that the worst had passed for the rest of the world and the global economy was poised to enter a recovery. Greece was thus out of sync with the rest of the global economy; its financial crisis was just beginning when signs of economic recovery were visible in major economies around the world.

Moreover, Greece concealed the true amount of its budget deficit as well as its sovereign debt outstanding, by use of cross-currency swaps.

- The Greek government formulated a plan with investment bank Goldman Sachs in early 2002 for government debt issued in yen and US dollars to be swapped for euro debt for a certain time.
- The government then converted back into the original currencies at a later date.
- The swap was performed at a fictional exchange rate unrelated to spot or future rates, which hid the true extent of the debt obligation.
- This tactic paved the way for Greece to sell more bonds without the alarming nature of the situation becoming too apparent to investors.
- As a result of this ploy, some 2% of Greece's debt magically disappeared from its accounts.

As corresponding graph shows, the interest payments on government debt soared as interest spreads widened when the financial crisis took place and when they were calculated on the significantly increased amounts of government debt.

The increase in interest payments further increased the budget deficit, so there was a risk that Greece would enter a vicious downward spiral of higher debt levels leading to higher interest rates leading to increases in the budget deficit.

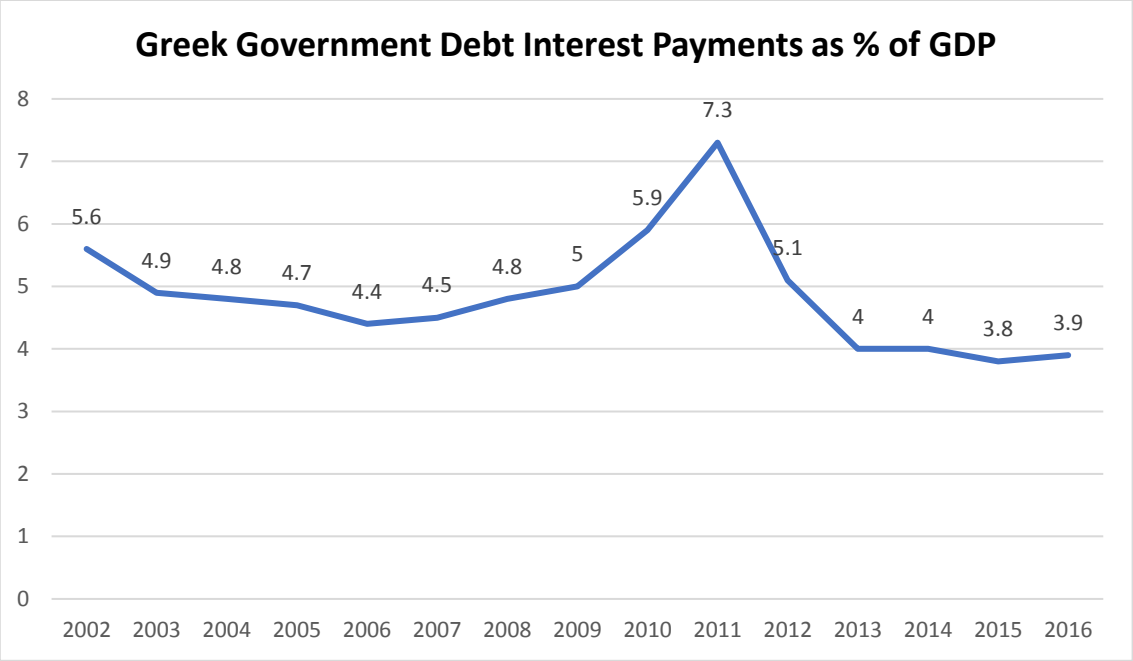


Fig. 14: Greek Government Debt Interest Payments as a Percentage of GDP, 2002–2016.

Data Source: European commission, Eurostat.

4.6 Downgraded prompt bailouts because of unfavorable credit ratings:

In December 2009, credit-rating agency Fitch downgraded Greece's credit ratings, which was followed by same actions taken from Moody's Investors Service and Standard & Poor's. The Greek government responded by introducing, early in 2010, the first of a series of austerity measures.

The measures involved a public-sector pay hold and even major pay cuts for some civil servants, a freeze on state pensions, coupled with an increase in the standard VAT from 19% to 21%, and increases in excise duties on fuel, alcohol, cigarettes, and luxury goods. The standard VAT rate was increased again later in 2010, to 23%.

In April 2010, the credit-rating agencies further downgraded Greek debt, signaling an elevated risk of a sovereign default.

- Fitch downgraded Greek government debt from BBB+ to BBB–, the lowest investment-grade rating.
- Standard & Poor's downgraded its rating by two notches to BB+, the highest junk-level rating.
- Moody's lowered its rating by four notches to A3, still investment grade.

The Greek prime minister at the time, George Papandreou, formally requested a bailout. Before any default could take place, in early May 2010, the European Commission, the ECB, and the IMF (collectively referred as "The Troika") agreed to bail out Greece with a €110 billion ($146 billion) loan for three years.

The loan was granted under conditions that Greece would implement a wide-ranging agenda of reforms in the following domains of

- Austerity measures.
- Structural reforms (including action against tax evasion).
- Privatization of state-owned assets.

This initial intervention was subsequently referred to as the first Greek bailout.

Just days after the bailout was agreed to, the Greek government announced its third austerity package, involving spending cuts and tax increases amounting to €30 billion over the next three years. This EUR10 billion of annual belt tightening amounted to around 4.4% of annual GDP in 2010, each year for three years, which is considerable.

The situation was more than an economic crisis; it became a humanitarian crisis. The statement could be justified on the basis of facts such as:

- Greek state was unable financially to support the most vulnerable people in society.
- The austerity measures squeezed the incomes of the poorest and created hikes in utility bills.
- State pensions and civil service salaries were significantly lowered.
- Higher taxes and duties.

The first bailout in May 2010 was followed by two more, —in February 2012 and July 2015. In 2011, Greece's creditors agreed to take a large haircut on their debt of 53.5% of the face value (up from a previous maximum of 50%) to avoid a disorderly default by Greece on its debt.

Greece had not had access to the capital markets since 2010 to raise funds. So, the second bailout, slightly larger than the first, was agreed to. It was to be paid in 2014 and included the funds for bank recapitalization to the tune of EUR48 billion.

Some signs of stabilization appeared in 2014, pace of contraction in real GDP had lessened in each successive year since 2011. There were predictions at this time that GDP growth would be positive in 2014. As corresponding graph shows, Greece attained a primary budget surplus (the budget deficit without the associated interest payments) in 2013.

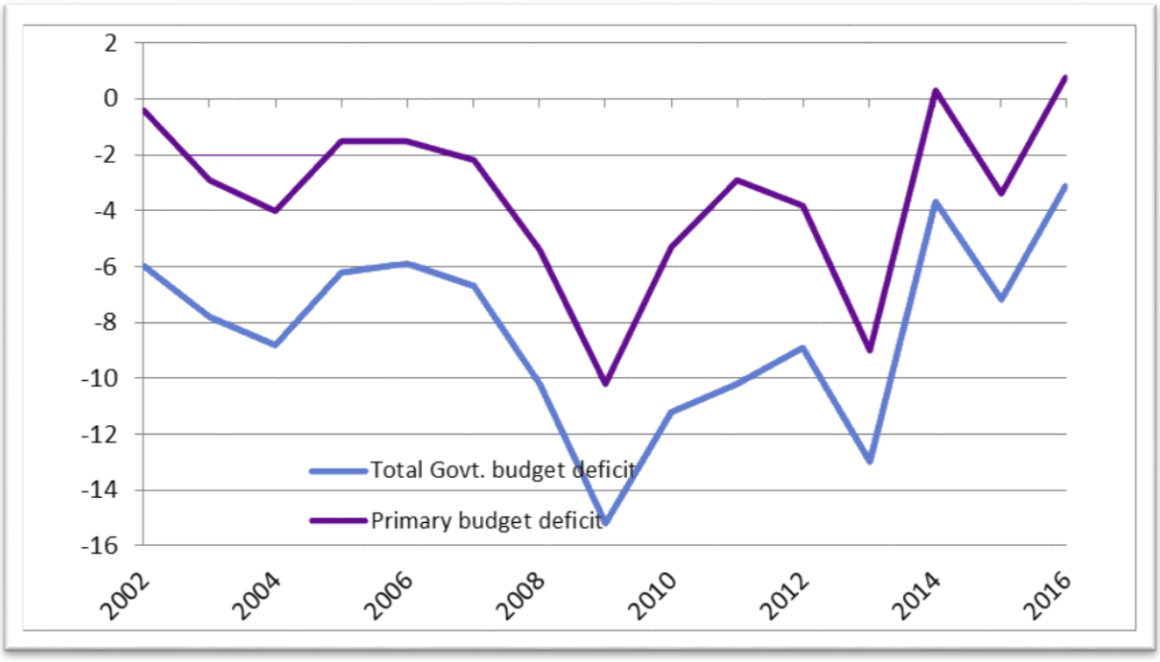


Fig. 15: Greek Government Budget Deficit as a Percentage of GDP, 2002–2016.

Data Source: European Commission, Eurostat

The primary budget deficit excludes interest payments on debt.

4.6 Findings and conclusion:

1. That Greece was able to join the EU's single currency area despite not qualifying in terms of the 1992 Maastricht Treaty was one of the major system flaws.
2. The extent of Greece's commitment to Europe can be judged by the country's abandonment of a 2,500-year-old currency, the drachma, in favor of the euro, which existed only when notes and coins were introduced across Eurozone countries in January 2002.
3. Government policy encouraging a strong but inflationary boom in the run-up to Greece joining the Eurozone, poor financial management, low accountability, excessive public spending, and massive tax fraud—all played a part in bringing about the Greek sovereign debt crisis.
4. Greece's membership in the Eurozone provided an additional shackle that severely restricted the country's options for a policy response—for example, a currency devaluation.
5. A devaluation, however, would have produced other problems, such as even higher sovereign debt levels and thus a longer repayment schedule.
6. To reintroduce its own currency would have been seen as isolationist and inward looking. Greece needed Europe and was not prepared to leave the Eurozone.
7. The cost of staying in the Eurozone meant externally imposed constraints and a severe austerity cure. Currency, therefore, could not play a part in the economic adjustment Greece had to undergo.
8. With incomplete information because of the Greek government's deceit and history of substantial revisions to the official economic data, investors were kept in blind sight.
9. A number of red flags were eminent: unsustainable debt levels, lax monetary policy with easy access to credit, massive tax evasion, surging government spending etc.

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