

European Debt Crisis and Debt Sustainability in the New Monetary Era

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Abstract

This paper examines the severity of European Debt Crisis and its effects to Eurozone member states alongside the policies implemented to overcome recession and rescue overindebted countries from default. Unconventional monetary policies such as Quantitative Easing (QE) and Negative interest rates (NIR) were major tools used by EU institutions to enhance growth to the economy signalling the beginning of the New Monetary Era. We use a robust policy rule to forecast how interest rates will perform in coming years and we stimulate a model of debt sustainability for different Eurozone countries based on our estimation. Different debt-to GDP ratios, fiscal priorities and monetary conditions highly affect how debt will perform in the future.

Key words: European Debt Crisis, unconventional, public debt, sustainability, austerity, negative interest rates, growth, debt monetisation, Modern Monetary Theory (MMT), secular stagnation, inertial Taylor rule

JEL Classification: C2, C3, C5, E52, E58, E62, H6

1. Introduction

This year we commemorate 20 years since the official introduction of the euro and no matter how much economics' "Hercule Poirot" has tried to solve the mystery of Eurozone collapse our case, as Gourinchas, Phillipon and Vayanos (2016) put it, is rather similar to the "Murder on the Orient Express". Many forces contributed to the "murder" of EU economy and many have started the blame game since day one. For the most powerful ones the "PIGS" - an acronym for Portugal, Ireland/Italy, Greece and Spain- and their reluctance to reform their fiscal structures were the cause of the crisis. For everyone else, Brussels as the "capital" of the EU turned into scapegoat and ordinary people around the Union started blaming EU institutions as a whole for their problems and the euro suddenly became "the whip" to discipline those needing consolidation.

Many economists, especially US based and educated, have foreseen the collapse of the euro before it has even started. Milton Friedman (1997) two years before the euro was put into circulation described the monetary union as an attempt deriving from political, rather than economic, incentives which will eventually lead to internal political disunity. The EU 20 years ago was consisted only by 15 members and right now it has almost double that number, this sudden expansion of the EU gave policymakers a great opportunity to broaden their goals and their horizons, but at the same time it also raised serious doubts over the social, political and economic convergence of EU member states.

Post-communist countries enforced necessary labour market reforms on early 90's due to the collapse of the Soviet Union and Germany during those years was labelled as the sick man of Europe. After the unification East Germany had to converge with the West and circumstances were

no favourable at all. The determination of three consecutive German chancellors to modernise the economy and synchronise productivity rates between East and West cured the sick patient of Europe. Southern European countries never took those difficult decisions, so when the Great Recession erupted and most of them were bailed-out a few years later they were forced to take all required remedies available to cure the neo-sick men of Europe.

European debt crisis proved many US economists right. Although, the vast majority of policymakers and politicians in the EU believed that their countries were immune to political and economic disruption the crisis showed how distorted the reality was. The collapse of Eurozone economies triggered mass unemployment, with an average of double digits for several years after the crisis, an outstanding decrease of output and most importantly the rebirth and rise of nationalism and populism among Eurozone countries.

Experts tried really hard 20 years ago, to create a monetary union under the criteria of Mundell (1961) but they have failed miserably to overcome the difficulties of such an ambitious plan. Our aim in this paper is to examine both the causes of the European Debt Crisis and its political and also economic consequences. In addition, we will emphasise to the use of unconventional monetary policies as a valuable tool to overcome crisis and examine how the consequences of the crisis and monetary policies can affect public debt sustainability in the future.

2. European Debt Crisis: Overview

Economists all over the Eurozone were extremely confident that countries would eventually comply with the rules of the “Growth and Stability Pact” concerning public deficits and debts. Unfortunately, many member states were unwilling to adjust their fiscal budgets and in 2010 Ireland’s deficit skyrocketed to 32 percent of GDP, just months after the Irish government had agreed on a bail-out deal. Other bailed-out countries had similar budget performance like Ireland only with a much more moderate level of around 10 percent, still very high from the 3 percent target of the Maastricht Treaty.

Eurozone countries faced an external debt crisis since they were

borrowing in an external currency, the euro. Arellano, Atkeson and Wright (2016) present evidence that external debt crisis affected seriously both public and private borrowers with dramatic reduction in net volume of capital flows. Greece was the first Eurozone country which defaulted on its debt on May 2010 when the Greek Prime Minister had asked for the assistance from the IMF. Ireland, on the contrary, has not collapsed due national sovereigns but because of the bust in its “irrational exuberant” banking sector. Cyprus asked for assistance having similar problems as Ireland while Spanish and Portuguese cases were closer to Greece.

The common currency made it easier for countries to be rescued with huge loans- Greece has received around €200bn from the ESM/EFSF- but at the same time made countries more vulnerable to financial externalities. Rajan and Zingales (2003) acknowledged that although continental Europe has a financial system more based on banks and institutional relationships than the US, Eurozone developed arm's-length financial system endorsing free market economy. Unfortunately, Eurozone financial system incrementally increased derivatives outstanding on the secondary market, with \$2.4tn in 2001 while in 1986 they were only \$2.7bn. Derivatives were the primary cause of the 2008 collapse and although the financial system worldwide had evolved rapidly during the Great Moderation era the evolution led to even greater distress and fragility. Diamond and Rajan (2009a) described the misallocation of resources as the primary cause of the crisis, alongside investments largely financed with short-term debt. Irish and Spanish banks were among those misallocating investment, endorsing this culture of excessive risk taking, leading to even higher housing prices to both countries.

Mortgage-backed securities (MBS) became the new norm of borrowing and banks all around the US were issuing them in the early 2000's. Many eurozone governments took advantage of the low interest rates that the European Monetary Union (EMU) offered them and started issuing sovereigns irrationally and with no supervision. Those sovereigns were mostly sold to non-Eurozone investors creating an even larger bubble than this of the MBS deriving from toxic sovereign-backed securities. Lower interest rates led to increased bond prices and value. Sovereigns and mortgages are extremely illiquid loans and the financial collapse

deteriorated even further because these illiquid assets were spread to financial markets. Diamond and Rajan (2009b) describe how the post 2000 environment of exuberance pressured for current consumption, which the economy was too illiquid to provide and how illiquidity and ultra-low interest rates encompassed economic destruction.

The Arellano, Atkeson and Wright (2016) paper made a clear distinction between the US and European case describing the debt crisis of US federal states as public debt crisis while Eurozone's member states defaulted on external debt. The other major difference between the US and European case comes from Romer and Romer (2016) paper in which they evaluate the aftermath of financial crises of many advanced economies based on credit disruption. All European economies faced minor or moderate crises under their evaluation, similar to the 1990's recession of the US or the currency collapse of the UK and Sweden in 1992-1993. In their sample the worst performing countries are the US and Iceland with extreme crisis in 2008 and also Japan in early 1998 after the collapse of other Asian tigers. Romer and Romer (2016) provide useful evidence admitting that the situation could have easily been much worse once credit was not secularly affected thanks to the bail-out programs.

Nonetheless, the stabilisation of credit was not enough to stabilise EU economy in general. Strict austerity measures were implemented to many Eurozone countries and the economy was, in many cases, unprepared to pay this price. Fiscal consolidation was seen as the only alternative – or to be precise EU institutions alleged that there was no alternative- and simple Keynesian economics were utterly rejected. The cost for the bailed-out economies were intolerable not only political but also economical and social. Reinhart and Rogoff (2014), despite the role they played to the crisis with “Growth in a Time of Debt” paper which we will comment in another section of this paper, examined the recovery from financial crises for 100 different episodes. On average the bailed-out economies in the sample lost 10 percent of their GDP- Greece lost more than 20 percent of its GDP from peak to trough- and they would need 12 years to fully recover from crisis. The 12-year period ends next year, and we are not yet sure how fully recovered these countries are.

The most striking fact on Reinhart and Rogoff (2014) paper is the use of a “severity index” to describe financial crises. The crisis in Greece was almost as severe as the Great Depression in the US, with the index being 36 for Greece and 38.6 for the US. It is also astonishing that in Europe there were only three cases of more severe crises, Italy in 1921 before the formal prevail of Mussolini, Spain in 1931 during the civil war and the Netherland in 1939 just months before the Nazi invasion to the country. The model of Gourinchas, Phillipon and Vayanos (2016) when stimulated with an emerging market sudden stop and also initial debt levels (government, private, external) of an advanced economy, the result is a Greek crisis. Paraphrasing Reinhart and Rogoff “magnum opus”, the time of the Greek crisis was definitely different.

The common sense of old and simple economics was replaced by intellectual failing models and the need to promote internal devaluation. Governments had to enforce adjustment concerning their fiscal position, but at the same time the entire economic system had to adjust to “pioneering” and essential neoliberal doctrines as well. The simple way to overcome recession is exchange rate devaluation, enhancing growth and increasing competitiveness. Mundell (1961) accepts that countries should still focus on devaluation but when there is a currency union under a flexible exchange rate regime, countries cannot control the devaluation of their currency, so the only possible alternative is for wages to adjust to this downward trend. Several Eurozone member-states have liberated their labour markets in the 90's constructing flexible wage regimes instead of flexible exchange rate regime. The countries more severely affected by the crisis were obliged to reform their economic structures so as to create a favourable environment for efficient internal devaluation.

The conditions in the Eurozone were no favourable at all. Firstly, countries had delayed for many years those reforms so the people were unwilling to risk so much for theoretical benefits they could not see. They have only seen lower wages, higher taxes, rising lending interest rates and higher prices to their daily products. Secondly, the monetary union, as it was mentioned before is flawed in its core. Although policymakers tried to make a bumblebee able to fly, as Mario Draghi once described the common currency, the circumstances have only gotten worse once they have neglected basic theoretical background. Even if our bumblebee

eventually graduates into a bee the monetary union will be much more vulnerable and Krugman (2013) finds evidence that the Eurozone has neither increased labour and capital mobility nor integrated fiscally.

Those fiscal imbalances among member states would not raise serious concerns during asymmetric shocks, but when the entire Eurozone was on the verge of collapse the variance of deficits and current account balances among the countries could not simply be underestimated. Policymakers have urged for the creation of fiscal union, but there has been no constructive resolution and popular demands on governments for social services have caused at the end of the last century a secular increase in public debt-to-GDP ratios in a variety of countries in conjunction not with wars and crises as it was normally done in the past as Eichengreen et al. (2019) find out. It's very interesting that despite austerity measures in many G20 countries, such as Spain, Italy, France and the UK, in order to reduce deficits and debts, debt-to-GDP ratio increased by 40 percent in the Great Recession versus 24 percent in the Great Depression while advanced economies in the 30's dealt with median unemployment rates of 25 percent.

Eurozone governments had to be disciplined and EU institutions should have made an example of them so as to prevent irrational fiscal behaviour in the future. Fiscal consolidation should not be seen as a poison, Stiglitz (2016) describes the combination of the straitjacket rule of the euro, the complete rejection of Keynesian economics and the strict policy measures that countries implemented gradually poisoned the sick patients of Europe. The problem is, that every time the system breaks down, people doubt its effectiveness with a backlash against the systemic norms of liberal democracy and globalisation. Feinman (2016) tested the similarities of the Great Recession backlash with the post-WWI era and the Great Depression when countries had enjoyed the benefits of free trade for almost 40 years before the beginning of WWI and when the world ended and the global financial system collapsed people supported nationalists and fascists while "liberal" governments had raised the barriers of protectionism.

People in an abundance of EU member states endorsed nationalist parties focusing on a xenophobic and racist anti-EU agenda. Those

leaders, in the words of Donald Trump, wanted to make their “countries great again” and the only way to do so is by reviving the idea of nation state. Rodrik (2011) in his attempt to explain the paradoxes of globalisation he issued a trilemma of democratic policies, economic integration and nation state. Countries in the EU, especially after the introduction of the euro, have abolished to some extent their national sovereignty and it’s true that they have endorsed for many years, economic federalism and the norms of liberal democracy. Since the European debt crisis erupted people started to feel angry at the EU and they felt abandoned by their conventional governments and nationalism, an unconventional idea of the past, simply became the new conventional form of parliamentary democracy. It was either the case of governing conservative parties endorsing extreme right-wing ideology as it has happened in Hungary, Spain and Greece or ultra nationalist parties gaining unprecedented popularity and parliamentary support as it has happened in Germany, France, Italy and to almost any other EU member state.

Francis Fukuyama (2007) described the EU as the utopia in which the world will live after the end of history. Unfortunately, this utopia has collapsed both politically and economically creating what Fukuyama describes as “identity politics”. One social or racial group believes in its superiority over any other creating in this way its common “identity” which will eventually determine this group’s political decisions. From our perspective, and frankly from historical perspective, this is the exact belief coordinating nationalists all over Europe and the world, but politicians have demonised words and terms avoiding the demonization of obsolete ideas, like nationalism and fascism. People have not supported these beliefs because they necessarily believed that their nation is superior among others but because they were dissatisfied with the ideas of multilateralism and federalism.

Many advanced EU economies have asked to regain their national sovereignty once again and although they have not doubted free trade, they have mostly emphasised, as Bolle and Zettelmeyer (2019) have measured, on immigration restrictions, industrial policy and macroeconomic populism. The dynamics of German industrial sector was a vital aspect of how the economy fully recovered after the unification and

austerity measures, but countries like Ireland and Cyprus have no industrialised economies on the contrary they have emphasised on financialization of their economies while Greece, Portugal and Spain never had a powerful and sustainable industrial sector. It was the auto industry that gave Germany this cushion of protection, it's the industrialised North of Italy that prevented Italy from being bailed-out and the domestic importance of French industry that has restricted French presidents to take all vital reforms to liberalise the economy.

The Eurozone, undoubtedly, has survived from one of the most severe economic crises in modern history. But as Benguria and Taylor (2019) pointed out all financial crises throughout the years are very clearly a negative shock to demand and politicians' reluctance to increase demand via expansionary fiscal policies, the extremely low propensity to invest and the lack of consumption due lower wages fuelled an unprecedented political crisis much worse than the financial collapse. In the next section we will discuss how monetary policy played its role as "the only game in town" despite its initial mistakes and how the new monetary era of unconventional tools supported economic growth and healed the banking sector.

3. The New Monetary Era of the Euro

For many years after the Great Depression economists have characterised monetary policy as irrelevant and the only role it should play was to retain peg exchange rates under the Bretton-Woods system. In late 1940's, Friedman (1948) published a paper describing the fiscal and monetary framework necessary to sustain equilibrium in the economy and the importance of flexible nominal values, concerning both exchange rates and wages. Twenty years later, Friedman (1968) returned in the spotlight with his presidential address to the American Economic Association praising Keynes for his valuable contribution to monetary economics, in spite of raising concerns over its long run effectiveness, explaining past mistakes of monetary authorities and providing feedback on how monetary policy can prevent money itself from being a major source of economic disturbance. Friedman's speech changed economics fundamentally establishing a new school of thought, monetarism.

Friedman believed that monetary authorities should target to stable monetary growth to stimulate growth and at the same time guiding themselves by magnitudes that they can control. Europeans have always been afraid of inflation- they suffer from “inflatiophobia”- because of hyperinflation phenomena in the 1920’s and in the 1940’s. Thus, Friedman’s proposals about a stable and productive monetary authority overwhelmed them with euphoria and when stagflation occurred, monetarist experiment was the pill needed to heal the economy. Of course, the Bundesbank, the German Central Bank, was the first to enforce monetarist theories. Bernanke and Mihov (1996) tested Bundesbank’s decisions, and since 1974 Bundesbank has conducted monetary policy framework that is officially designated as money-targeting although they have noted that these money targets are tied to projections of inflation and potential output growth- plainly Taylor rule. Alesina and Summer (1993) a few months after the Maastricht Treaty acknowledged the correlation between central bank’s independence and low inflation. Under Alesina and Summer’s characterised the Bundesbank and the Central Bank of Switzerland are the most politically independent central banks in the world. That widely perceived assumption led to the famous Jacques Delors’ phrase “Not all Germans believe in God, but they all believe in the Bundesbank”.

European policymakers in 1999 faced difficult decisions and they had to chose how they wanted to conduct monetary policy and frankly both their “inflatiophobia” and their need to create a politically independent ECB led them to the so-called Deutschemark regime. Ilzetzki, Reinhart and Rogoff (2017) stimulated a model on how the ECB conducted monetary policy and they found that the Deutschmark regime lasted until 2009, when the crisis starts and interest rates enter the Zero-Lower Bound, even if in 2014 they turned negative.

In 2011, during the peak of the European debt crisis, ECB’s Governing Council completely forgot what monetarists have advocated concerning the stabilising role of monetary policy and they decided to increase interest rates twice that year, contracting monetary policy and escalating the extent of the recession. Many blame asymmetric shocks for this mistake, but throughout his lifetime Friedman used to refer to the Great Depression as the Great Contraction because of the contractionary

measures the Fed took during the crisis and thought that these measures where the reason why the US and consequently the world economy collapsed. Europeans easily forget, they have totally forgotten how nationalism and fascism has destroyed our continent twice in 1900, and the Governing Council thought that the only way to avoid rising inflation was through contractionary decisions even if the crisis further deteriorated.

In 2012, Mario Draghi as the President of the ECB decided to take this crisis seriously making the commitment that they would do “whatever it takes” to save the euro. Draghi was prepared to learn the monetarist lesson, but most importantly learn from other central banks. Japan only a year after the 1997 distress of the Asian Tigers suffers from an extremely hazardous banking collapse and Krugman (1998) famously wrote back then that the idea of “Liquidity Trap”, a phenomenon first described by Hicks (1937), was “baaaack” in the game and Japanese authorities should move both fiscally and monetarily to confront the downturn. Liquidity trap refers to a period in which nominal interest rates are near zero, but persistently low inflation leads to rising real interest rates. When an economy enters “Liquidity Trap” the famous LM Hicks’ curve turns horizontal and conventional monetary policies cannot increase output. The only alternative was fiscal policy, or in 1933 terms a “New Deal”.

Japan was afraid to perform such an ambitious fiscal plan in 1998 although the government increased expenditures, the US in 2008 offered a fiscal package equals to almost \$600bn with a large deficit around 8 percent of GDP and European leaders, utterly afraid of deficits and committed to austerity chose decreased deficits and even budget surpluses. The only way for the Eurozone to escape this trap was to start the experiments of unconventional monetary tools, and Draghi’s commitment to do “whatever it takes” was the first step on rebuilding trust. Trust has been the driving force of our financial system and in order to regain trust policymakers should better understand the “New Abnormal” described by Cliffe (2014) as an environment of weak growth as a source of volatility and unconventional policies as the tool to transform investment landscape.

Apart from the commitment the ECB was ready to enter the “New

Monetary Era" as the Fed, the Bank of Japan and the Bank of England have already done. The first step was the introduction of nominal negative interest rates in 2014 as an attempt to support investment and decrease people's propensity to saving. In times of recession people tend to consume and invest less, while saving an even bigger amount of money in order to spend them in the future. Rachel and Summers (2019) examine the effects of secular stagnation, the phenomenon that Summers thought was the result of the Great Recession, causing extremely low interest rates, lower than desirable inflation and sluggish economic growth. The only way to overcome secular stagnation is by using extraordinary policies and apparently negative interest rates were such a policy. In September, Mario Draghi in his press conference after the Governing Council meeting said that Eurozone's central bankers had voted unanimously in favour of decreasing interest rates further, to minus 50bp.

That decision definitely was not a blast for the markets once everybody was expecting for lower rates, but those further dovish policies of the ECB will eventually doubt the institution's credibility to perform independently monetary policy. Researcher have not very extensively tested negative interest rates, mostly because their afraid to make projections they cannot control, but a cross country work with more than 50.000 data conducted by Lopez, Rose and Spiegel (2018) has shown that despite negative interest rates, and their extent, bank profitability has not been harmed in the past 7 years once non-interest income improved and banks made significant capital gains and gains on securities and insurance. The banking sector has been regulated much more closely since Basel Accord III and many banks are much more resilient now than 10 years ago. The negative interest rates policy was not enough to let inflation reach its target, although it expanded monetary base offering indirectly more money to the market.

Bernanke (2017) wrote a paper on how monetary policy should be conducted in the new era and once he was the first ever Chairman of the Fed introducing Quantitative Easing (QE) programs he emphasised on the importance of QE as a new way to do "monetarist" experiments. QE has operated either via signalling channel, keeping short-term interest rates lower for longer or portfolio balance sheet channel by changing

term and risk premiums. Bernanke admits that QE has generated assets bubbles and inevitably there will be a downward correction in asset prices but as Kohn and Sack (2018) pointed out on their analysis of the Great Recession and the effectiveness of monetary policy, the situation would have been much worse absent the aggressive easing.

Expanding open market operations have been a common strategy for many Central Banks during downturns, and Laeven and Valencia (2018) examining evidence of systemic banking crises worldwide wrote that advanced economies had mostly used recapitalisation programs and guarantees on banks' liabilities and to lesser extent nationalisation-during the Great Recession only a few British banks were nationalised-and asset purchases. QE changed all these with the amount of assets purchased by Central Banks, the ECB has quadrupled its balance-sheet purchasing assets of more than €2.5tn, and the vast majority of its monthly purchases included government bonds. The extension of ECB balance sheet was an attempt to spread liquidity to the markets, through the famous "helicopter drop" procedure, to reach the inflation target of "below but close" to 2percent and most vitally reduce the borrowing of Eurozone member states lowering interest rates and yields into negative territory.

Although, policymakers have prevented the ECB to uncontrollably print more money to increase growth and prices, the QE that Eurozone implemented and the fact that in November the ECB will restart purchasing €20bn of assets per month is an example of the expansionary role that a Central Bank can play under "Modern Monetary Theory" (MMT). MMT advocates allege that monetarily sovereign central banks can print more money to finance fiscal deficits once inflation remain low. Nonetheless, the Eurozone has no common budget, so the ECB cannot directly finance fiscal deficits, and members states have abolished their monetary sovereign by creating the EMU so it is quite interesting when one of the founding fathers of MMT, Wray (2019), described QE as an indirect implementation of MMT with trillions as payment for large asset purchases.

Policymakers found QE as the only monetary tool that could work in practice, proving past theory wrong. The only thing that QE failed to do

effectively was to affect inflation expectations and named a “too little-too late” measure. The ECB, committed to do “whatever it takes”, used a less famous macroprudential instrument to manage inflation expectations, forward guidance. Credible and independent Central Banks can very easily determine the way markets react to their decisions and it is fundamental for the ECB to make decisions within its mandate focusing on the inflation target. Forward guidance explains how policymaking decisions now, can determine future performance and frankly the first example of forward guidance was Draghi’s 2012 speech and how his determination to overcome “inflatiophobia” and break down past doctrines gave the EU economy the opportunity to manage people’s expectations. When the ECB states clearly that they are ready to do “whatever it takes” to preserve the euro and increase inflation, then higher inflation expectations will lead to the need of higher nominal wages and in the end increased supply. That’s how the neoclassical synthesis works.

Inertial Taylor Rule

$$i_t = \rho_1 i_{t-1} + \rho_2 [r^* + \pi_t + 0.5(\pi_t - \pi^*) + \hat{y}_t], \text{ 1999Q1-2019Q2} \quad (1)$$

$$itr_t = r^* + \pi_t + 0.5(\pi_t + \pi^*) + \hat{y} \quad (2)$$

Forward guidance has been the most important tool to increase growth and by all means support the real economy, despite the fact that it only represents central bank’s trust. Apparently what Eurozone economy needed was to rebuild trust and Bernanke, Kiley and Roberts (2018) pointed out that lower-for-longer policies work reasonably well even if they are not fully credible with the public, but people have model consistent expectations. Lower for longer monetary policies have worked incredibly well for the past 10 years in the Eurozone but our aim is to examine how they will perform in the future as well. For our estimation of our model, we have used the Inertial Taylor Rule as described in the Bernanke, Kiley and Roberts (2019) paper. Equation 1, expresses the monetary rule, with i_{t-1} expressing a time lag for nominal interest rates, r^* expresses the natural rate of interest with data from the Federal Reserve Bank of New York deriving from the Holston, Laubach and Williams (2017), π_t is the four quarter inflation change of the Harmonised

Consumer Price Index (HCPI), π^* is the inflation target of 2 percent and \hat{y} is the calculated output gap of Eurozone GDP.

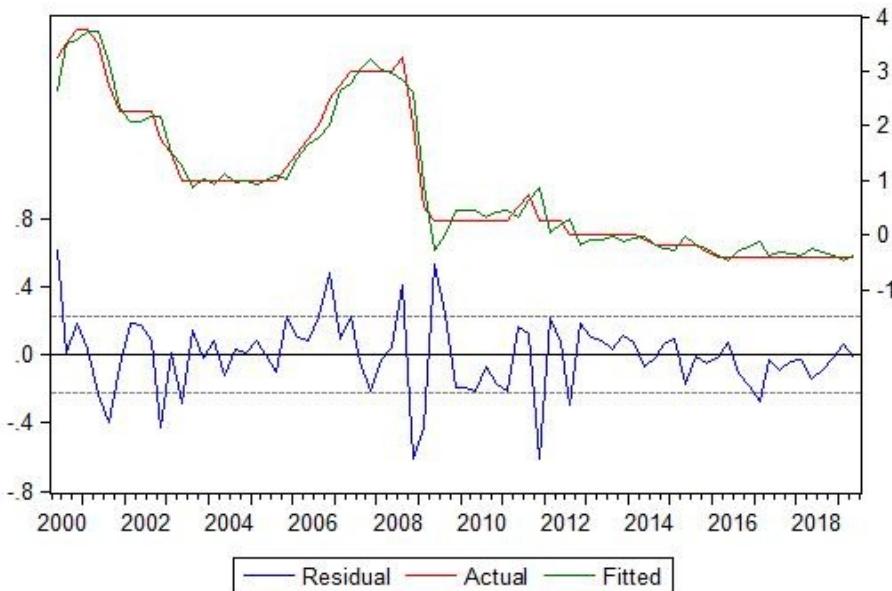
Equation 2 tries to simplify the second part of Equation 1 putting it equals to itr , an acronym used for “inertial Taylor rule”. We used the VAR method to estimate the model with the results of our estimation shown on Table 1. We have added a second lag of nominal interest rates and also a lag of itr , written as itr_{t-1} , representing the data of the previous quarter and how the economy performed then mostly because calculations always come with at least one quarter lag.

Table 1

	Coefficients	Std. Error	t-statistic	
i_{t-1}	1.291516	0.09334	13.8373	R-squared 0.971803
i_{t-2}	-0.354025	0.08816	-4.01550	Akaike-AIC 0.125925
itr_t	0.168898	0.03285	5.14185	Schwarz-SC 0.004169
itr_{t-1}	-0.15791	0.03439	-4.38415	Mean dependent 0.938312

The results of our estimation can be diagrammatically displayed by Chart 1, in which we have also estimated the same model not with a vector method, but by OLS with similar results with the VAR coefficients. This model can be used as a forecasting tool on how interest rates will perform in the future and ultimately that is our aim so as to examine how the entire economy will perform in the future. We have forecasted based on this model how interest rates will fluctuate in the future and we have added these fluctuations in to debt sustainability rule, that we will explain in the next section.

Chart 1



Source: The data used for the estimation of this model derived from the European Central Bank, the Federal Reserve Bank of St. Louis, Holston, Laubach & Williams (2017) and the OECD

4. Debt Sustainability in the New Monetary Era

The European Debt Crisis was mostly the result of irrational government borrowing more than what they could afford, and when their credibility collapsed, people doubted the credibility of the entire Eurozone. This year Eurobarometer found that almost 70 percent of Europeans think positively of the euro, but the austerity policies have affected people's everyday lives destructively. Keynes (1936/2001) in his "General Theory" did not only specify how money and financial markets operate but also made the case in favour of fiscal loosening in times of recession so as to increase demand and consequently output. One of Keynes' closest friends and colleagues, Joan Robinson, once advocated that the neoclassical synthesis that Hicks, Hansen and Samuelson presented was "bastard" Keynesianism.

Hicks and Hansen presented a simplified model of General Economic Equilibrium and many other New-Keynesian economists have presented this model as the only one accepted. Farmer (2010) explains that old-Keynesian model explains the crisis as a self-fulfilling drop in confidence- or animal spirits in Keynes words- and they move from a low to a high

unemployment equilibrium. On the contrary, business cycles are explained by New-Keynesians as the outcome of rigid prices and wages (Farmer (2006), Romer and Romer (2019) and Rachel and Summers (2019)) and by monetarists as the result of fluctuating Total Factor Productivity. Either way they both agree that liberating labour and insurance market will help Eurozone countries to overcome the crisis, because the New-Keynesians would agree that less rigid and more flexible wages would smooth business cycles in the future and monetarists believed that increased productivity and competitiveness in times of crisis can only be accompanied by lower wages.

Fiscal consolidation turned into a dogma and markets reforms were the necessary tool to impose this dogman in the real economy as the need of “internal devaluation”. Suddenly, economics of failed models, fractured macroeconomic theories and historic evidence transform into a religion in which policymakers only believe in divine doctrines. The Reinhart and Rogoff (2010) paper on growth and public debt became the “Bible” that policymakers used. Reinhart and Rogoff (2010) using a sample of more than 20 advanced economies- and almost 20 developing ones- found out that 90 percent debt-to GDP ratio was a threshold above which growth will be reduced by an average of 1 percent. We do not really think that Reinhart and Rogoff planned to become Eurozone’s “Gods” but back then at least half of Eurozone member states government debt had exceeded the Maastricht threshold of 60percent and a vast majority of them had debts higher or close to 90 percent.

The policies they implemented failed to reduce debt in the short-run and even their long-run results are quite dubious, but the influential Alesina and Ardagna (2009) paper stated that tax based policies could not work effectively, so the only thing that policymakers had to do was to reduce spending. Incrementally, debt sustainability became a front run issue, and everyone was ready to face the consequences of austerity once the debt could be once again be called sustainable. But, frankly, there is no paper explaining what sustainability really means and how it can be attributed to the real economy. The 90 percent threshold does not refer to sustainable or unsustainable growth, it only projects that growth would be on average 1percent lower compared to lower debt ratios.

The most current work on debt sustainability and the importance of fiscal policy was that of Blanchard (2019) on his presidential address of the American Economic Association. In his paper examines how the US public debt had performed over the years since WWII and states that as long as growth rates remain higher than interest rates, or the borrowing cost of public debt, debt can be reduced even without fiscal consolidation. Of course, as Blanchard stated, debts should not be used without a purpose just to satisfy voters, but they have to stimulate growth and his final remark was “debt may not be that bad”. Policymakers in the Eurozone are equally afraid of debt and inflation at the moment but as Taylor and Williams (2010) and Kiley (2016) expressed in their papers, monetary policy alone in the zero lower bound cannot eliminate the deflationary steady state- only if it is expected to last for a finite period of future helping monetary policies to cushion adverse shocks- but still fiscal policies have a major role to play leading the economy to the desired steady state inflation.

The era succeeding the European debt crisis established the new economic environment of public borrowing, with negative short-term interest rates and in the case of Germany even negative interest rates of long term borrowing and yields. Secular stagnation refers to a period of stagnant economic growth but at the same time of near zero interest rates. In our attempt to examine debt sustainability, we have used the rule that Blanchard (2019) used in his paper and we will focus on 6 Eurozone member states, three bailed-out (Greece, Ireland and Portugal) and three non-bailed-out (Belgium, France and Germany).

Debt sustainability rule

$$r_{adj,t} = \alpha_t r_{1,t} + (1-\alpha_t)r_{10,t} + p r_{bo} (m/9) \quad (3)$$

$$\alpha_t = (10 - \text{average maturity in years})/9 \quad (4)$$

$$s_{adj,t} = r_{adj} - i, \quad s_{adj} = \alpha_t * s_{1,t} + (1-\alpha_t)s_{10,t} + p s_{bo} (m/9) \quad (5)$$

$$d_t = x_t + d_{t-1}(1 + r_{adj,1})/(1 + g_t) \quad (6)$$

Equation 3, displays adjusting interest rates based on bonds' maturities in which $r_{1,t}$ refers to the short-term interest rates and $r_{10,t}$ to the long term

ones. For the bailed-out economies we have also added the second part of the equation starting with p as the ratio of the ESM loans to the total amount of public debt, r_{bo} represents the interest rates of the ESM loans and m the average maturity of the ESM loans. For Greece the average maturity is 32 years, with p equals to 55percent, interest rate of 1.43percent and Ireland and Portugal the average maturity is 20.8 years, with p equals to 10percent for both countries with Ireland's interest rates on 1.71percent and Portugal's on 1.68percent. We have added this part concerning the ESM loans because their decision to extend the maturity of public debts, only shifts the burden in the future and eventually future generations will have to pay for past mistakes.

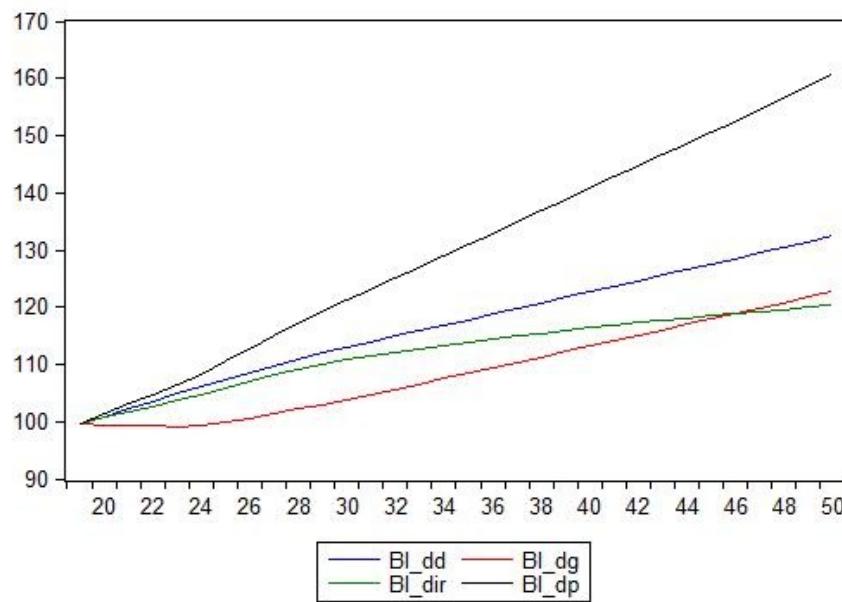
Equation 4 explains how factor α differs for the countries in our sample and equation 5 represents the spread between the government interest rates (r) and the nominal interest rates of the ECB (i). We have used the median spread of the last decade under the adjusting Blanchard's rule and we used the estimation of our previous section to stimulate how interest rates will fluctuate in the future. Equation 6 shows how debt, d , performs under certain growth rate, g , interest rates based on (3), r_{adj} and fiscal deficit levels, X . Growth and interest rates have been used as a weighting factor for the already existing debt and they are these two that can determine how debt will fluctuate in the future.

Many economists when the Great Recession erupted thought that sovereign debt problems can be solved by fiscal consolidation and as Builter (2010) falsely predicted "most of the fiscally impaired nations will eventually opt for the fiscal pain exit from unsustainable public finances". Many countries who had irrational fiscal behaviours did not have to consolidate their deficits, with countries such as Portugal, Spain and Italy securing deficits up to 3percent, France increasing its deficit above 3 percent and the US \$1tn deficit, which was the highest ever non-recession peacetime deficit of all times. Countries have succeeded stabilising their fiscal position by retaining borrowing costs near-to-zero and as Galbraith (2011) noted "it's the interest rate stupid", describing how interest rates can highly affect debt in the future. In our stimulations we have used a pessimistic forecast (dp) and then we have stimulated the model with 1 percent increase in growth (dg) and 1 percent decrease

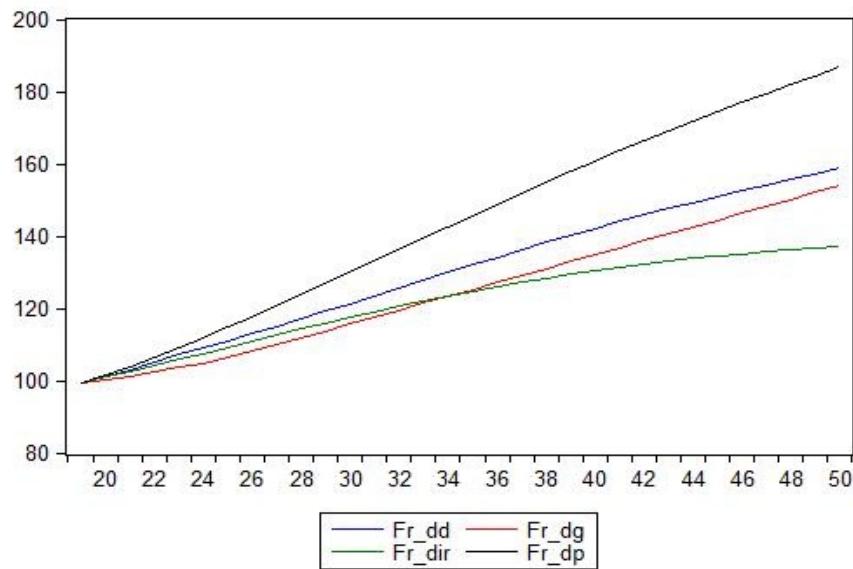
in deficits (dd) and interest rates (dir). In the case of Germany and Ireland- who had quite similar fiscal position- we have examined the most optimistic stimulation and then we changed our forecasting by decreasing growth and increasing deficits and interest rates.

Chart 1

Belgium



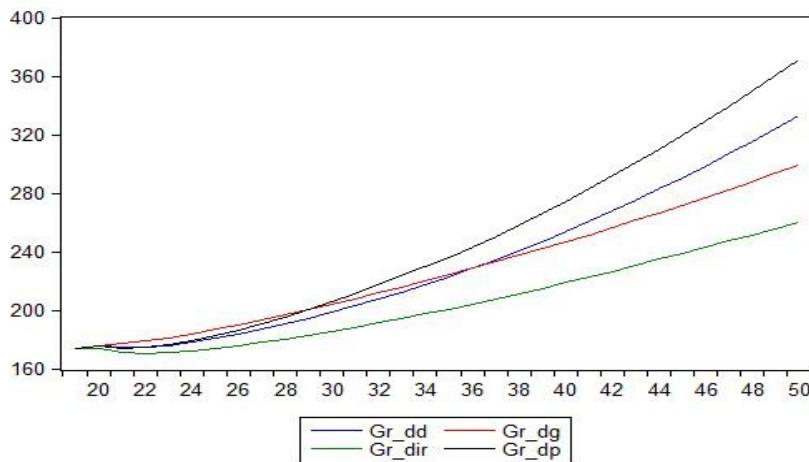
France



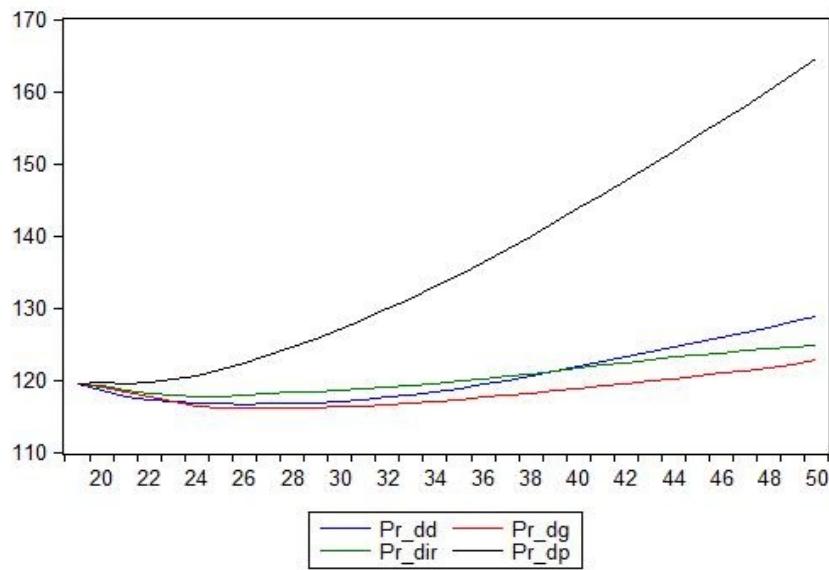
In chart 1 we have examined how Belgium and France debts will fluctuate into the future and they have both started from 99 percent and they had quite similar fiscal position- 2 percent deficit for Belgium and 3 percent for France. By the end of our sample, 2050, both countries will have increased deficits, but as it is shown reduced interest rates by 1 percent from what we have forecasted will create a concave function with a stagnating path in the future. Increased growth rates today, could possibly have better results in the long run but once interest gets more and more expensive the green line would increase constantly with a linear trend. The least essential tool would be fiscal consolidation which would end up with much higher debt ratios compared to the other two cases.

Chart 2

Greece



Portugal



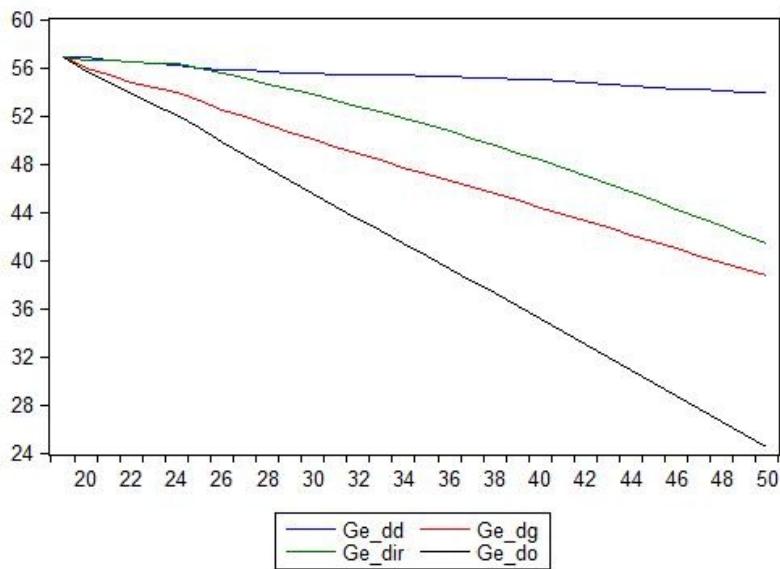
Contrary to the mostly linear and concave trend of the countries in Chart 1, Greece and Portugal offer convex functions. We have to make it clear that for our estimations of growth we have used the OECD projections, and Greece by these projections will only secure an average 1 percent annual growth, while the rest of the countries had 2 percent. Both countries will have decreased debts in the future- for Greece have predicted an annual deficit of 1percent while for Portugal we have predicted on average a balanced fiscal budget. Portugal, in the beginning

of our forecast had a declined trend for its debt, but after 2030 debt seems to rise again, once we have projected considerably increased interest rates after that period and all kinds of improvement will lead to almost similar results with the best one attributed to increased growth. Again, it is important to check the trend of the function once Pr_dir function follow a concave path after 2040 with minor changes while the other two functions follow an upward linear trend.

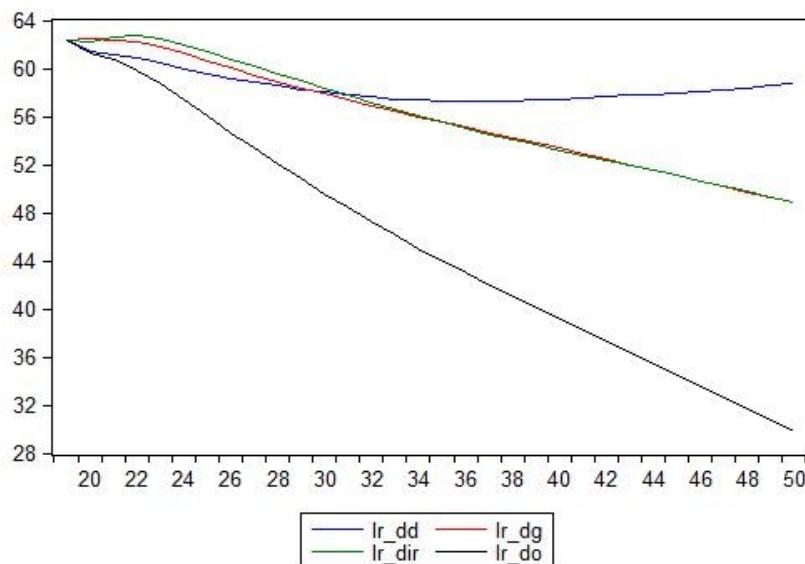
In Greece, undoubtedly, all results should be worrying for the sustainability of public debt and considering the stagnant projected growth, near 1 percent, the real economy could be seriously damaged. All four functions follow a convex path, but Greece will be better off by securing lower interest rates. The current borrowing cost is below 2 percent and it moves downward, and Greece could have very positive outcomes by sustaining this downward trend. Either way, our estimation projects that interest rates will remain near zero for a long time and will only be increased near to Effective Lower Bound levels, and that's the exact projection that Rogoff (2017) made in his paper, explaining that absolutely free interest rates will fluctuate even further to the negative territory and incrementally our interest rate policy will enter a constant period of monetary paralysis and with the Upper-Zero Bound in times of boom. This chart shows clearly that further austerity could not make things work better and the Greek government should also emphasise on growth and productivity.

Chart 3

Germany



Ireland



In Chart 3 we had our first case of decreased debt in our forecast. Both Germany and Ireland represent an example of sustained and organised fiscal position and in our forecast, we assume that the countries will have an average budget surplus of 1 percent and 1.3 and 2.4 percent growth respectively. Contrary to the two previous cases we have simulated worsening scenarios with growth and interest rates fluctuations resulting

to significantly improved debt ratios for the two countries. The only difference comes with fiscal consolidation which pays a much more important role to reduce debts.

Ireland performs equally in the case of reduced growth and increased interest rates while for Germany even lower growth rates will lead to a better result than the other two cases, weakening the determining role of GDP growth to Germany's public debt. Our finding shows that in case of higher debt, fiscal consolidation cannot support debt restructuring but when countries start from a lower debt ratio austerity determined to a much higher extent the debt path that the country will follow in the future. Growth and interest rates are generally used as the weighting factor, in the form of a multiplier, of lag debt. Frankly, debt and deficit are economic fundamentals, but as Jayaden and Konczal (2010) expressed in their paper the right time for austerity is during economic boom, so as to support the real economy with deficits in the slump. The only problem with austerity is when the economic fundamental, turns into a political that it is very hard to make.

5. Conclusion

Economists have been blindfolded by non-existing doctrines and no matter what they do, the lack of plurality in policymaking leads the world economy to even bigger and deeper crises. The last crisis decreased rapidly aggregate demand, but the next one will probably affect aggregate supply and economists have not yet discovered if its effects will be temporary. Summers and Stansbury (2019), quite recently explained how the old-Keynesian economics should be revived- in Skidelsky's words "the return of the master"- and the new-Keynesian dogma has failed miserably both for Keynesians and monetarists.

The Eurozone has created mechanisms to stabilise and efficiently regulate the banking sector and member states right now are much more resilient to economic disruption than they were 10 years ago. Unfortunately, our union is under threat from a political enemy within and as Paul Krugman said Germany is still sick and it is depressing for the rest of the Eurozone countries that this German disease is contagious spreading all over the EU. When the next crisis erupts people should not

be afraid of debt, they have to use it for a productive and constructive purpose but to do so governments should stop demonising and monetising as well.

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