# Lessons from the Great Financial Crisis in perspective

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## The Queen's question

On November 5, 2008, Queen Elisabeth, whose personal fortune just had an estimated loss of 25M pounds, paid her first visit to the London School of Economics and blindly said "It's awful – Why did nobody see it coming?". A follow up letter, signed by a group of leading UK economists and historians, concluded by saying:

> "In summary, Your Majesty, the failure to foresee the timing, extent and severity of the crisis and to head it off, while it had many causes, was principally a failure of the collective imagination of many bright people, both in this country and internationally, to understand the risks to the system as a whole."

In fact, one of the brightest, Nobel Laureate Robert Lucas had said in his Presidential Address of the American Economic Association: "My thesis in this lecture is that macroeconomics in this original sense has succeeded: Its central problem of depression prevention has been solved," (Lucas 2013). He was not alone, regarding asset bubbles, 'benign neglect' was the general attitude, among academic macroeconomists, while central banks were simply focusing on inflation, based on the 'divine coincidence' argument, according to which, to maintain a stable inflation would suffice to keep economic activity close to its potential (Blanchard et al. 2014).

In sum, under closer scrutiny, there is nothing unique or wrong with Lucas' statement, nor the financial crisis proved him to be wrong. The 'original sense' referred to the design and implementation of fiscal and monetary stabilization policies in economies facing business cycle fluctuations and possible inflationary pressures. On this, independent central banks, following macroeconomists' advice, have done their job: price stability stability has been a feature of advanced economies at the end of the 20th Century, as well as the first two decades of the 21st Century, financial crisis included.

However, in the fall of 2008 the period known as 'the great moderation' suddenly ended with a financial crisis at the core of the financial system of the advances economies and rapidly spread through them. That is,

> Lesson #1: In an integrated global financial market, a country's financial crisis is likely to become a global financial crisis and very fast if it is at the core of the international financial market[1].

Wasn't macroeconomic policy supposed to prevent it? Actually not, since a financial crisis was, by definition, a finance issue. Finance theory is one of the main achievements of economic science: it is behind billions of daily financial transactions that use its pricing formulas, designed instruments, etc., supporting a better allocation of risks and investments, in sum it is

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[1] Note that this lesson also follows from Network Theory.

behind the growth of developed and developing countries, but no engine of growth is flawless. Even if finance theory had been developed in universities and business-schools hand-in-hand with modern macroeconomic theory, at the beginning of the twenty-first century, it remained a different field. A highly leveraged financial sector (in US) or a highly indebted private sector (in some European countries) were not in the radar of macroeconomic policy, nor their stability was a central banks' target. In sum, they were not part of Lucas' 'original sense'. Yet,

> Lesson #2: A developed financial sector tends to be pro-cyclical, exacerbating the euphoria in good times and rushing away – as financial runs -- to safer heavens, in bad times.

The pro-cyclical nature of developed financial systems has aggregate macroeconomic effects; in particular, nourished the seeds of the financial crisis during 'the great moderation'. As Acharya and Richardson (2009) said "there is almost universal agreement that the (2007 - 2008) fundamental cause of the crisis was a combination of a credit boom and a housing bubble.[2]" Money and Credit had been at the core of macroeconomics since its beginnings, but the complementarity, and explosive combination, between credit booms and housing bubbles, had been at the margins of macro. Unfortunately, it is true, there were no macro-financial instruments, or policies, that could have prevented the financial crisis from happening. Nevertheless, when the 2007 – 2008 crisis happened, lessons from the past, from the 1930s crisis and recession, came, in part, to the rescue.

## The financial and monetary side: lessons from the past and the new era of Central Banking

In 'finance and banking' the lesson from the past was 'the role that regulation and regulatory institutions can play in preventing banking and financial crises'. A truly regulatory revolution – if this can be said – took place in the US in the 1930s, with its two main pillars being the Securities Act of May 1933, regulating the offering of securities and creating the Federal Trade Commission (to later became the SEC), and the Banking Act of June 1933 (the so-called Glass-Steagall Act) creating the Federal Deposit Insurance Corporation (FDIC), to prevent bank-runs, and separating commercial and investment banking. However, "regulation and supervision failed to keep up with developments" leading to the financial crisis. This was due, in part, to deregulations – for example, the just mentioned functional separation of banking activities – but mostly due to expansion of the unregulated non-banking financial sector,

> "With the benefit of hindsight, we can say with confidence that the US and European financial systems in 2007 lacked two key shock absorbers – adequate capital to meet falls in asset values and defaults, and adequate holdings of high-quality liquid assets to meet a temporary liquidity shortfall." (Cecchetti and Schoenholtz: 2017)

In the 2007 – 2009 crisis, there was a regulatory response, not a revolution. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, setting the Systemic Risk Council which allowed the regulation of the nonbank financial firms, in the US. The Basel III agreement of 2010, which the US Federal Reserve endorsed in 2011 and the European Union in 2013,

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[2] Acharya and Richardson (2009: 12). Claenssens *et al.* (2014) add two features to Acharya and Richardson's list: "the 2007 – 2009 crisis (…) shares at least four major features with earlier [crises] episodes: rapid increases in asset prices, credit booms, a dramatic expansion in marginal loans, and regulation and supervision that failed to keep up with developments" (p. xiii). That the housing bubble was not an exogenous event has been forcefully argued by Rajan (2010).

addressed capital requirements and liquidity concerns, as well as regulatory and supervision procedures to reduce systemic risk.

Unfortunately, the Dodd-Frank Act, would have not discouraged the fragility of a highly leveraged financial system to common asset shocks, nor would have prevented "the enormous lending bubble specific to subprime mortgages in the United States" (Acharya *et al.* 2011: 22-23); Basel III, specifically designed to avoid excessive risk-taking, has been a long and unfinished process of implementation.

In 'macroeconomics and central banking' the main lesson from the past was: 'the need to avoid the errors of the 1930s – in particular, the central bank must accommodate to the liquidity needs of the economy in times of crisis'. In fact, Bernanke (1983) further develops the pioneer work of Friedman and Schwartz (1963) and concludes:

> "Institutions which evolve and perform well in normal times may become counterproductive during periods when exogenous shocks or policy mistakes drive the economy off course. The malfunctioning of financial institutions during the early 1930's exemplifies this point."

These concerns became the drivers of Bernanke's research career (e.g. Bernanke 1995 and 2004). Two of his contributions are particularly relevant for the financial crisis. One is conceptual: to characterize a financial crisis as a period of unusual financial distress, which he identifies with the "cost of credit intermediation". Romer and Romer (2017) have developed a new measure of financial distress based on Bernanke's characterization of a financial crisis. They use real-time narrative sources to examine the 2007 – 2009, and other, financial crises. Figure 5.1 shows how the crisis evolved in different countries, according to their measure; in particular, shows how for some European countries the crisis did not end in 2009 (we come back to this).

[Figure 5.1]

His other contribution was in monetary policy, and it can be paraphrased as:

Lesson #3: If inside-money collapses, outside-money should quickly come to the rescue.

The end of the 'great moderation' was also a sudden-stop of a large expansion of different forms of financial intermediation, which provided liquidity (inside-money) to a very active, and creative, financial sector. Not only the "cost of credit intermediation" skyrocket – e.g. the cost of short-term borrowing in US increased in 500 basis points in the last months of 2008[3], but also there was an effective asset-run on previously perceived safe (AAA) assets (Figure 5.2); in other words, assets that were liquid suddenly became illiquid.

[Figure 5.2]

Fortunately, Ben S. Bernanke himself, as Chair of the Federal Reserve Bank (2006 – 2014), applied his policy lessons and, in doing so, started a 'revolution' in central banking. Not only adapted the basic policy instrument – the interest rate – to the crisis situation (Figure 5.3), but also started an unprecedented expansion of the Federal Reserve Bank (FRB) balance sheet, corresponding to an increase of the (outside) money supply and a range of non-conventional (Quantitative Easing, *et al*.) monetary policies. A battery of policies aimed at getting the

[3] See, for example, Bernanke (2013: Lecture 3).

economy back in track, when the interest rate policy had already used its power; i.e. the reference interest rate was close to its zero lower-bound. The other main central banks followed suit, and their intervention played a major role in preventing a much deeper recession, as it happened in the 1930s. Nevertheless, as Figure 5.4 shows, the expansion of central banks' balance sheets did not end with the end of the financial crisis; indeed, a new era of central banking started in 2008.

[Figures 5.3 & 5.4]

Other central banks followed suit because by the end of 2008 the crisis had already spread through the developed economies, as Figure 5.5 shows. In other words, rephrasing our Lesson #1, the US financial crisis had a major immediate effect across advanced economies. However, the financial crisis was novel in two respects. First, for being a crisis originated in the most advanced economy, not in a developing economy. Second, because is the first crisis that spreads from an established monetary union, the US, to a recently formed monetary union, the euro area (EA).

[Figure 5.5]

As we have seen, macroeconomists, who had extensively studied the fiscal–monetary link, underestimated the link financial–monetary–fiscal. Nevertheless, there were germs in the academic literature that accounted for this link and became the theoretical foundation of the new monetary policies[4]; although, in general, these policies preceded their theoretical foundations.

Most 'unconventional monetary policies' aimed at managing expectations and/or a disruption in a specific market. For example, in economies where the reference interest rate was close to its zero lower-bound, 'forward guidance' policies where attempts of coordinating private expectations on future inflation to determine the when and how the economy would exit the zero lower-bound. Central banks 'asset purchase' policies where targeted to specific sectors of the economy that could benefit from monetary injections and such benefit had social value (e.g. keeping the market active and/or replacing inside money with outside money). There was an interesting example of a policy that had both objectives – the *Term Asset-Backed Securities Lending Facility* (TALF) of 2009 – which is illustrative of these new central bank policies.

Beginning of mid-2007, the number of defaults started to rise in US, investors started to fear that more defaults were coming and either could not or did not want to continue buying ABS. The whole ABS market started to collapse at the end of 2007, with yields spreads skyrocketing in 2008 (Figure 5.6). The Fed decided to step in with TALF, which provided buyers of newly generated ABS with a subsidy contingent on ex-post realized losses, *with the backing of the US Treasury*. Being a subsidy (which eventually amounted to $71.1 billion) to the unpopular crowd of financial intermediaries, it was highly criticized, but at the end TALF fulfilled its objectives at no cost; in fact, with a large benefit for taxpayers[5].

[4] Two key elements of this link are: 1) the role of collateralized credit, since a shock to asset prices can be amplified when assets are also used as collateral; 2) the, already mentioned, change in the relative liquidity of assets vs money (inside vs outside money). Kiyotaki and Moore (1997) pioneered a literature on (1), but their (2019) was also a frontrunner of (2) (the paper was first presented in the *Society for Economic Dynamics* 2001 meeting!).

[5] On 30 September 2010, the Fed announced that more than 60% of the TALF loans had been repaid in full, with interest, ahead of their legal maturity dates. The Fed finally announced that "as of May 2011, there has not been a single credit loss. Also, as of May 2011, TALF loans have earned $1.2 billion in interest income for the US taxpayer" (Gaetano and Marimon 2019).

[Figures 5.6 & 5.7]

The AAA-ABS collapse, and recovery with the introduction of TALF (Figure 5.7)[6], is an example of the capacity of a central bank, acting as lender of last resort, to intervene in a situation, where there are multiple equilibria, and move with its policy the economy from an inefficient equilibrium to a more efficient equilibrium. For example, the introduction of the FDIC in 1933 helped to prevent bank-run equilibria, where depositors fearing a bankruptcy would recall their deposits provoking the bankruptcy. Asset-runs, during the financial crisis (resulting in fire sales and runs to perceived safer assets), resulted in *Self-Fulfilling equilibria*; that is, investors *believe* that an asset or a bank is not as safe as it was supposed to be, sell the asset– possibly, forced by regulation – or withdraw their deposits and, if many investors share the same belief, the asset, or the bank, is indeed not as safe as it was supposed to be: *beliefs have been self-fulfilled*. The investor had no other rational option than 'to run'.

The case of the AAA-ABS collapse is slightly different, in this case 'to run' meant selling at high interest rates, since default losses were expected to be high. However, a seller could issue a new AAA-auto-ABS at a lower interest rate and find out that the fear of widespread car loan defaults was unfounded. Nevertheless, given his beliefs, he may never try this, and if it is the same for other sellers, their beliefs are, at the end, *self-confirmed* (i.e. the AAA-auto-ABS market is in an inefficient *Self-Confirming equilibrium*). The TALF intervention broke this pessimistic loop. TALF was also a case of economic policy action being ahead of economic theory, which came much later (Gaballo and Marimon: 2019).

For the record, there is one more element, already noted, that makes TALF specially interesting:

> "Unlike our other lending programs, this facility [TALF] combines Federal Reserve liquidity with capital provided by the Treasury, which allows it to accept some credit risk" (Bernanke 2009)

However, possibly the best example, during the financial and euro crisis, of the ability of a central bank to avoid an inefficient self-fulfilling crisis – in particular, a debt crisis – was 'just' an announcement (the 'just' is qualified below):

> "within our mandate the ECB is ready to do whatever it takes and, believe me, it will be enough" (Mario Draghi, July 26, 2012[7])

Lesson #4: A Central Bank – possibly, in coordination with the fiscal authority, – if it can commit to a 'lender of last resort' policy, can change and coordinate private agents' beliefs and prevent an inefficient equilibrium outcome.

As we have seen, in the case of the FRB often acted in explicit coordination with the Treasury. Was there a similar counterpart initiative on the fiscal side?

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[6] Figure 5.7 (from Gaballo and Marimon: 2019) shows, at the micro level of the AAA-Auto ABS, the differential impact of TALF on interest rate spreads, as well as the persistence of this effect after TALF, comparing the behavior of interest rates on new issued AAA-Auto ABS with the interest on Minimal Risk Loans of private banks.

[7] At the Global Investment Conference at the British Business Embassy: https://www.youtube.com/watch?v=hMBI50FXDps

## The fiscal side (debt and stimulus packages)

Figure 5.8 shows one fiscal counterpart to the monetary response: the increase in sovereign debt 2009 – 2011, both in the US and the EA (with an important component being the primary deficit), mostly due to the need to cover for the loss of tax revenues, the cost of financing the debt and to finance fiscal stimulus packages. However, Figure 5.8 also shows that -- as it has happened with central banks' expanded balance sheet (Figure 5.4), – both, in the US and the EA, the increase in sovereign debt does not stop, or recede, with the end of the financial crisis, on the contrary the crisis seems more the start of a trend, particularly in the US.

[Figures 5.8a & 5.8b]

With some small, but relevant, differences, monetary responses to the crisis where similar across developed economies. However, fiscal responses – in particular, fiscal stimulus packages – were substantially different. Figure 5.9 shows that, while across OECD countries the size of stimulus packages is positively related to the loss of GDP in the crisis, there are important differences. In comparison to other counties, US – and, to a lesser extent, Germany and Spain – had a relatively generous package. Italy and Japan experienced a similar GDP loss (-6,2% and 6,5%, respectively, 2007 - 2009), but Italy had a negligible stimulus package, while Japan had one of the largest packages (4,5% of GDP).

A prime candidate to explain the relative higher generosity, or stinginess, of different stimulus packages is the different fiscal capacity of countries; in particular, that more indebted countries may not be able to afford to be generous. Figure 5.10 vindicates this, if one excludes Japan. However, according to this metric, France, and even more UK, had the fiscal capacity, but didn't fully exploited with a larger stimulus package. Japan stands out (and distorts the line in Figure 5.10) with the highest level of debt and, as we have seen, one of the largest stimulus packages.

[Figures 5.9 & 5.10]

The level of sovereign debt only partially reflects the fiscal capacity of a country. For two reasons, first, because it is only one of the liabilities of a country; for example, countries with a relatively large social welfare states usually have large additional liabilities (e.g. pensions). Alternatively, countries' assets may also be very different. The IMF has recently done such broader accounting. Figure 5.11 (from IMF 2018) shows how Japan's large sovereign debt is almost compensated by its 'sovereign assets', while Spain, and specially Italy, have a fairly negative liabilities-to-assets balance. Similarly, both France and UK, seen in this comprehensive optic, do not seem to have large fiscal capacity. In sum, Figure 5.11 can explain Japan's capacity to implement a large stimulus package[8], as well as US capacity to increase its debt in the decade following the crisis – particularly, if one accounts for the intangible asset of having the dollar as the international preferred 'safe asset' for trade and financial transactions.

[Figures 5.11]

Furthermore, there are government implicit liabilities which do not show up as 'government liabilities' (i.e. in the IMF government fiscal accounting), those are national private liabilities that eventually may become government liabilities. For example, Spain was a model member of the euro area, in terms of fulfilling 'the EU government fiscal constraints' in 2008 (sovereign

[8] Note that Figure 5.11 is 2018 data, but these balances may have not been very different ten years before.

debt to GDP ≤ 60% and government deficit ≤ 3%, in 2008) but the private sector was highly indebted and the banking sector -- in particular, the 'liberalized' savings & loans institutions – was weaker than it was thought in 2008, both resenting the legacy of a crashed real estate boom. As a result, Spain swung from a government budget surplus of 2% of GDP in 2007 to a deficit of 11, 2% in 2009. A similar reversal experienced Ireland, as a result of their banking crisis. Banks where, effectively, bailed-out by the government and their crisis was the main responsible of Ireland's loss of GDP. These two factors, together with their ambitious stimulus package, resulted in the Irish being the largest upsurge of sovereign debt in Europe.

[Figures 5.12 & 5.13]

Ireland was the exception, the debt legacy of Greece, Italy, Portugal and Spain -- the 'GIPS' -- was not due to their stimulus packages (Figure 5.12), even if their stimulus packages contributed to their debt legacies. Neither it can be said that they had a significative growth-stimulus effect (Figure 5.13). More specifically, US, Japan and the rest of the euro area – the 19 non-GIPS[9] -- recovered from 2009 to 2011 while the GIPS did not (Figure 5.5), but, within both groups, their growth experiences are not correlated with the size of their stimulus packages.

Lesson #5: The effect on growth of stimulus packages was mixed. However, most had two components: as 'pain killers' (i.e. limit the economic damage) and as 'recovery pills' (i.e. positive multiplier effects on consumption and/or investment). The fact that, for some packages, the second effect was not present does not exclude the effect of the first[10].

As we have seen, private liabilities often become public liabilities, this means that both need to be accounted for. In fact, their joint cyclical behavior must be accounted, since, for example, it is more efficient to save in good times. In this perspective, a sound fiscal behavior of a country can be measured by the 'positiveness' of the correlation between the Primary Surplus (PS): Output (Y) minus private (C+I) and public spending (G)[11]. Table 5.1 provides this perspective and reinforces what has been said regarding the fiscal capacity of Japan, the non-GIPS and GIPS[12].

[Table 5.1]

**MAIN LESSON #1: Fiscal capacity determines the ability of a government to react in a crisis and it is, in turn, determined by the explicit and implicit assets and liabilities of a country and their cyclical behavior; a sound fiscal capacity position must be procyclical.**

[9] For the historical perspective we use the 2020 euro area membership of 19 countries.
[10] With the financial and euro crises there has been a new generation of studies on fiscal multiplier effects, showing their larger effect in times of crisis, as well as when the effect on the lower groups of the income distribution – with larger marginal propensities to consume – is accounted for; see (Marimon and Cooley 2018: Introduction) .
[11] That is, PS= Y- (C+I+G) – i.e. PS is also the Current Account of the country – and the closer Corr(PS/Y,Y) is to +1 the more the country 'saves in good times and is able to react in bad times' – i.e. the more procyclical the fiscal position of the country is (and countercyclical the corresponding fiscal policy).
[12] Note that a low, or negative, correlation does not necessary mean that a country is not saving enough in good times it may also mean that it is simply not able to spend in bad times. Fiscal consolidation (austerity) programmes in times of crisis have this effect, although they may be the necessary result of past debt accumulations in good times.

## The role of linkages in crises

Going back to Figure 5.5., a closer look to 'the crisis-cascade year' (2008-Q1 – 2009-Q1) shows the effect of having strong linkages among advanced economies. But the role of linkages, and interdependence, is pervasive in crises. In fact, Bernanke's 'definition' of a financial crisis, as an abrupt increase of the "cost of credit intermediation", is about the malfunction of a basic link in an advanced economy: financial intermediation. Similarly, the 'benign neglect', of the financial and macroeconomics link, kept most of the academic economic profession oblivious of the crisis, until it happened. On the policy side, understanding the link between outside and inside money and the role that a central bank should play in times of a financial crisis, played a major role in preventing the 2007 – 2009 from becoming a sequel to the 1930's crisis. In summary,

**MAIN LESSON #2: Linkages are at the root, and characterize, socio-economic crises.**

This can be because: 1) links work and, therefore, contagion is easy and, with contagion, the linked-weak are likely to suffer more (e.g. the rapid internationalization of the financial crisis and its ultimate consequences for the GIPS); 2) links do not work properly, when subject to shocks (e.g. financial intermediation), 3) links are more important than previously perceived (e.g. the financial – macro link), or 4) links are weaker than they should.

Treatments also differs across this classification, since: for 1) contagion may need to be prevented, but links cannot be destroyed since they must work properly to get out of the crisis (e.g. international trade, value chains, free capital movements); for 2) they need repair, but the repair should not be disruptive for normal, after the shock, times (a major trade-off for regulation); for 3) policies and institutions must be designed accounting for links, active or inactive, that become relevant in exceptional states of the economy (e.g. when private liabilities become public liabilities and vice versa), and for 4) to strengthen them (e.g. the Treasury backing the FRB on TALF or Draghi's speech making clear the ECB commitment with the euro area).

## The financial-monetary-fiscal linkages: a short tale of two monetary unions

The financial crisis rapidly crossed the Atlantic, but while it was relatively short in the established US monetary union it was long – becoming the euro debt crisis -- in the young EA monetary union. The contrast between the crises, across the Atlantic reflects, in part, the differences between the two unions.

Both unions can be characterized by having, with differences of forms or development, the following elements: a single market, as a 'level playing field', with internal free movement of goods, people, etc., a legal and political structure and an architecture of the union in three-unions: i) the Monetary Union; ii) the Economic and Fiscal Union, and iii) the Capital and Banking Union. United States has historically followed the sequence (ii) – (i) – (iii), with the last step being done last century, staring with the, already mentioned, federal deposit insurance (FDIC) in the aftermath of the 1930s crisis. Instead, at the outset of the financial crisis, the European Union only counted with: for the euro area (i), and for the European Union: elements of (ii) (e.g. the Stability and Growth Pact) and only with the free movement of capital and Basel regulations for (iii).

Modern macroeconomic theory defines three basic fiscal-monetary links. First, in a country – as well as in a monetary union – there is unique government budget. Even if there are separate monetary and fiscal authorities and, possibly, multiple fiscal authorities with specific budgets, ultimately, they all share the same budget. Second, this, country or union, budget is always satisfied in expected present value terms (i.e. external balances should cancel-out in the long-run). Third, the current sovereign debt position of a government (i.e. current liabilities minus assets) reflects the past history of accumulated primary deficits, as well as, the expected discounted value of future primary surpluses[13]. The third is a corollary of the second and it is also known as the 'fiscal theory of the price level'[14].

These are basic links over which a more or less complex political-economy structure operates. In the case of the United States, it is relatively simple: the U.S. Department of the Treasury and the Federal Reserve Bank are the institutions responsible for fiscal and monetary policy, respectively[15]. Albeit the independence of the FRB, there is a fluid connection among the two, based on the understanding that they share a common U.S. budget. We have already seen that the FRB needed, and had, the backup of the Treasury to play the role of 'buyer of last resort' in TALF, but coordination and complementary has been the norm. It can be seen, for example, in the Treasury expansion of its deposits in the F.R. Banks, starting with the financial crisis (Figure 5.14). Finally, States have also their part in the integrated budget, but self-imposed 'balanced budget', or similar, rules, as well as the Federal no-bailout to States rule, severely limits their contribution to the value of U.S. debt.

[Figure 5.14]

The European Union is very different. A first difference is that the member states of the euro area are a subset of those forming the EU (out of 27, 15 in 2008 and 19 in 2020). For the euro area, the European Central Bank (ECB), with the European System of Central Banks, is relatively akin to the FRB, with its Federal Reserve System, but there is no euro area (or European Union) Treasury, since fiscal policy is conducted by member states, with their own Treasuries, and the EU has a minimal budget (of the order of 1% of EU GDP) and, more importantly, has no sources of revenue. In other words, the euro area debt position of Figure 5.8b, reflects past history of accumulated primary deficits, as well as, the expected discounted value of future primary surpluses, of the Member States. One can argue that the euro area level of debt, of Figure 5.8b, is a statistical construct, but not a reflection of 'the EA budget', which, in fact, does not exists[16]. While this defeats the above first link -- i.e. the 'unique budget' -- the link is real and one cannot understand the euro crisis, as the European second part of the financial crisis, without accounting for this link. In fact, the fiscal entry rules of the euro area (i.e. the Maastricht criteria setting a cap for the debt and deficit levels, 60% and 3% of GDP, respectively), as well as the fiscal rules inside the euro area (mainly, the Stability and Growth Pact) are designed to isolate national fiscal policies within the, implicit, euro area budget. If the latter would not exist, and needed to protect the budget, such rules would be redundant.

[Figure 5.15]

[13] To simplify, I am abstracting from the external position (reserves) of a country.
[14] For an account of these links see (Sargent 2012) and (Cochrane 2019).
[15] Ultimately, it is the Federal Government who is responsible for fiscal policy and, in different forms, both institutions are accountable to Congress and Senate, but the focus here is on the economic architectural design.
[16] It is expected that with the 2021 – 2027 EU budget, there will be an EA budget (the BICC) as part of the EU budget; i.e. without revenue sources.

Figure 5.15 is possibly the best summary of the euro debt crisis, showing how financial markets – represented by the 'stressed countries' sovereign debt spreads over the ten-year Bund yield – anticipated and reacted to the main events of the crisis. It is also a summary of how the perception, and political economy, of the implicit euro area budget changed with, and through, the crisis.

To start, it shows that the direct immediate effect of the financial crisis on EA debt liabilities was small. The 2009 spreads broke the euro history of full convergence of EA country's sovereign debts, but seen in perspective the spreads were small. The spread was significant for Ireland's sovereign debt which, as we had already mentioned, was the result of the government's bailing-out their banking system in default. Nevertheless, since, aside from its excessively leveraged banking system, the Ireland economy was relatively sound, it seemed that with just the intervention of the ECB things will go back to normal and the implicit euro area budget safe[17].

However, the 2009 spreads were the seeds of uncertainty. First, regarding the state of the EA economies; second, regarding whether the ECB intervention in Ireland was proof that it acted, and will act, as 'lender of last resource', or the commitment to the no bailout clause' of the European treaty (TFEU) was, and will be, maintained[18].

On 6th of October 2009, George Papandreou took office as Prime Minister of Greece and soon after declared that Greece, with a yearly deficit of 12,7%, was out of range regarding the EA fiscal limits. Furthermore, with a yearly -4,3% GDP growth rate, Greece was in a deep economic crisis, and, with already a 126,7-sovereign debt to GDP ratio, in dire straits regarding its future. The seeds of uncertainty were being nourished and tested from the outset. ECB action was not enough and, in May 2010, the First Greek Economic Adjustment Programme started, with Greece agreeing to the conditions of the First EU/IMF debt relief programme with a €110 billion loan (41,5% of its GDP). Many economists argued then the Greek debt was unsustainable and, therefore, debt rescheduling was more appropriate than debt relief. In retrospect, they were right, but the issue was whether the infant monetary union could, and was willing to, do it. Debt rescheduling would have been more consistent with the 'no default clause'. However, there were two reasons for not doing it, which at the end prevailed. First, as in any debt rescheduling, lenders needed to be accounted for and, possibly, compensated; the main ones being German banks. Again, in hindsight, it may had been cheaper and may have partially spared Greece from a two year drop of their income per capita of 7,15% (and an increase of its Debt/GDP of 45,4%). However, legally and politically it may have not been easy to implement a debt rescheduling. More importantly, there was a second reason: contagion; would other euro area sovereign debts follow?

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[17] As Jörg Asmussen, Member of the Executive Board of the ECB, said in 2012: "Before the EU/IMF programme was agreed, the total Eurosystem loan support for Ireland (combining monetary policy operations to all eligible banks and emergency liquidity assistance from the Central Bank of Ireland) amounted to about 100% of Irish GDP". https://www.ecb.europa.eu/press/key/date/2012/html/sp120412.en.html

[18] Article 125 TFEU reads: "The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project". Therefore, Art. 125 is usually known as the 'no bailout clause'.

Ireland and Greece were not the only euro area 'stressed countries', spreads were starting to raise in Portugal, Spain and Italy, not because they had special links with Ireland and Greece. They had their own weaknesses but were subject to the same euro area (implicit) budget and, hence, subject and feeding its increasing uncertainty. The fears of contagion were grounded and, therefore, a need for political EA action, but by who?

There is another idiosyncrasy of the euro area: its governing body is the Eurogroup "an informal body where the ministers of the euro area member states discuss matters relating to their shared responsibilities related to the euro"[19]. Nevertheless, the 'informal body' – conscious that a 'Greek loan facility' was not going to calm the financial markets and a firewall was needed --, after an intense weekend (May 7 – 9, 2010) of negotiations, acted: the *European Financial Stabilisation Facility* (EFSF) was created, as a €500 billion euro area rescue fund[20], which in 2012 became the *European Stability Mechanism* (ESM).

"Default is out of the question. It is as simple as that" (Jean Claude Trichet, May 6, 2010)[21]

Unfortunately, neither the declaration of the President of the ECB, nor the creation of the €500 billion euro EFSF, resolved the uncertainty of the euro area budget. Two equilibrium paths were still possible: the no-default path, that Trichet vindicated, and the bail-in with Private Sector Involvement (PSI). While the Eurogroup was moving ahead along the first path, on October 18, 2010, Sarkozy and Merkel surprised them and almost everyone else, financial markets included, with a press release from the seaside resort town of Deauville in Normandy, endorsing the bail-in & PSI path[22]. Financial markets understood what they said accentuating an increase of sovereign spreads already underway – starting with Ireland. Nevertheless, Ireland did not follow the bail-in and PSI path, instead, pressured by the ECB, accepted the EU/IMF conditions for what became the first EFSF programme; a €85 billion loan, in which Sweden, UK and the IMF also participated.

However, the Irish path did not resolve the uncertainty either, even if Portugal joined the same path on May 16, 2011[23]. Greece was ahead on this path and, as Figure 5.15 shows, its troubles had not been solved with the first debt relief EU/IMF programme. Months of financial turmoil and, mostly behind the curtains, preparation work and political discussions in the euro area, resulting in both paths crossing in 2012. The preparation work was to strengthen the EA firewall, transforming the temporary EFSF into a permanent European Stability Mechanism (ESM) – which was launched October 8, 2012 – with more firing power (a combined ceiling of EFSF and ESM of 700 billion; EU Council, March 30, 2012). The main Eurogroup political discussion regarded the second assistance package for Greece, which at the end involved private sector involvement (PSI) in a historical debt restructuring of Greek debt on March 9, 2012[24]. In sum, the promise of a strengthened firewall was not used to deter default – with the,

[19] https://www.consilium.europa.eu/en/council-eu/eurogroup/

[20] More precisely, the EFSF was agreed by the Council of the European Union, on May 9, 2010, as a 'special purpose vehicle that the euro area member states would guarantee,' to provide financial assistance to euro area countries in difficulties and, in parallel, the Council Regulation (EU) No 407/2010 of May 11 2010 established the European Financial Stabilisation Mechanism (EFSM) for all EU countries. The €500 billion included €60 billion for rapid-reaction (corresponding to the EFSM) and the euro area backed €440 billion (of the EFSF); the latter vehicle 'would expire after three years.' See, European Stability Mechanism (2019) for a more in-depth account.

[21] https://www.ecb.europa.eu/press/pressconf/2010/html/is100506.en.html

[22] For a more detailed account of the Deauville's shock see Brunnermeier *et al.* (2016) and Tooze (2018).

[23] A €78 billion loan, with equal €26 billion contributions from the EFSF, the EFSM and the IMF.

[24] "Out of a total of €206 billion in bonds eligible for the offer, approximately €199 billion, or 96,9%, were exchanged (…) for a package of new Greek bonds, short-dated EFSF securities and extra securities linked to

soon to be, ESM joining the ECB as lenders of last resort – but to orchestrate a 'once-and-for-all' bail-in with PSI[25]. The no-default path crossed the bail-in path; just 'once-and-for-all'?

This question was heating financial markets in the Spring and early Summer of 2012, until Draghi gave the, already cited, famous speech on July 26, 2012. But his were not just words. First, the ECB was ready to lower again its interest rates (Figure 5.3) and shift from a 'passive' policy of liquidity provision, accommodating to banks' demands, to an 'active' policy of using its balance sheet as a policy instrument to provide liquidity and, through the banking system, reinforce its interest rate policy and stabilise the economy (Figure 5.4)[26]. Second, preparations for the ESM were being finalised and those for Banking Union were soon to be started[27]. Draghi's speech is said to have avoided a 'self-fulfilling' debt crisis. Certainly, it was a key element, but one must also account that work was being done to pave the no-default path.

In sum, the financial crisis started in the mature US fiscal and monetary union, where monetary and fiscal authorities reacted relatively fast with innovative central bank policies and in coordination when needed. Historical rules preventing states from accumulating high debts guaranteed that the financial and fiscal crisis did not translate into state debt crisis. Nevertheless, US debt started a decade of debt accumulation and the FRB of balance sheet expansion (backed by the Treasury). The US crisis was short and it did not bring any institutional changes, just new central bank policies. In contrast, the fiscal rules of the euro area (the SGP) proved to be weak for the challenge and the financial crisis rapidly became a debt crisis. The ECB maintained its price stability mandate and, with some delay, applied the new unconventional monetary policies, but there was no Treasury counterpart, not an EU, of EA, fiscal stimulus. Yet, with the euro debt crisis the young monetary union has developed institutionally with the ESM and important steps have been done to develop a European Banking Union. Nevertheless, the (3-Unions) European Union is far from complete and the GIPS - Non-GIPS divide has widened with the financial and euro crises (Figure 5.5).

### MAIN LESSON #3: In historical perspective, what is most important of a crisis is how a country exits from it.

Given the GIPS Non - GIPS divide, it is also been said that the euro itself was the cause of the euro debt crisis, that without the Economic and Monetary Union (EMU) things would had been different. The latter is an oxymoron and the counterfactual are neither trivial not necessarily better. Figure 5.16 provides a broader historical perspective, showing that the roots of the euro area divide are deeper[28].

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Greece's GDP growth"; exchanged for write-downs of 53,5% of the principal amount of the existing bonds. In sum, "the biggest sovereign write-down in history reducing Greece's outstanding debt by about €107 billion" (European Stability Mechanism 2019: 192). Nevertheless, given the drop of GDP, the sovereign debt to GDP ratio was only reduced by 12,5 (from 172,1 in 2011 to 159,6 in 2012).

[25] Time, from 2010 to 2012, was also used by German and other banks to reduce their holdings of Greek debt, an important fraction of this debt went to Cyprus!

[26] The 2012 Outright Monetary Transactions (OMT) programme was a powerful—but, hardly used -- tool that opened the door to several programmes that effectively applied the new policy from 2014 onwards, was called the *"combined arms* approach comprising three main elements: the introduction of a negative interest-rate policy (NIRP); a series of targeted long-term refinancing operations (TLTROs); and a large-scale Asset Purchase Programme (APP) encompassing public and private sector securities" (Rostagno *et al.* 2019:2).

[27] Of the three key elements of the Banking Union, two would see the light in 2014: the *Single Resolution Mechanism* (SRM) was agreed by the European Council and the Parliament on March 20 and the *Single Supervisor Mechanism* (SSM) already entered in operation in November 2014; while the *European Deposit Insurance Scheme* (EDIS) will be in definitively delayed.

[28] The same argument has been made by Sanbu (2015) and others.

[Figure 5.16]

## Epilogue

The final version of this chapter has been written during the COVID-19 crisis. It has been often argued that this crisis, being an exogeneous shock affecting all the global economy, has nothing to do with the financial and euro crises of a decade ago. On the one hand, it minimizes the severity of those crises and, on the other hand, being exogenous, no specific sector or country is to blame, which should help the recovery. Nevertheless, I think at least the three MAIN LESSONS apply. Unfortunately, COVID-19 exacerbates the GIPS Non - GIPS divide: Italy and Spain have been the most COVID-damaged EU countries; how GIPS came out of the euro crisis has made them less resilient to this one, and tourism, one of the most COVID-damaged sectors, is more than 10% of the GIPS GDP. Fortunately, the ECB has been an experienced active player from the start of the crisis and, this time, there will be an EU stimulus package. Hopefully, further institutional EMU development too.

# Lessons from the Great Financial Crisis in perspective

**Ramon Marimon**

## FIGURES

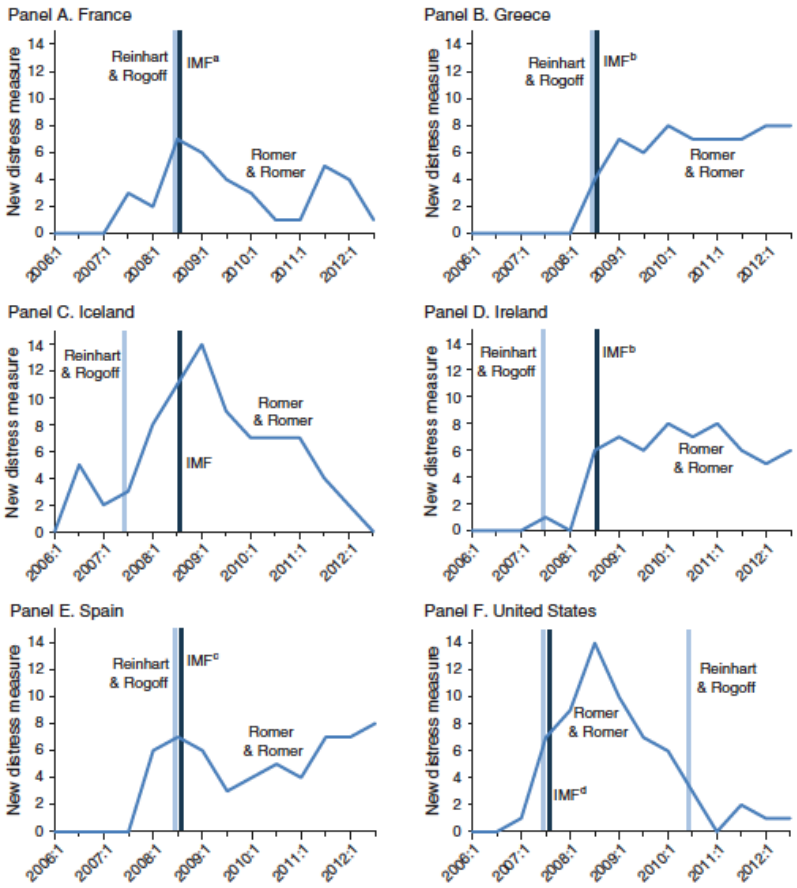



**Figure 5.1. The evolution of the financial crisis in different countries** with Romer and Romer 'distress measure' (Romer and Romer (2017)).

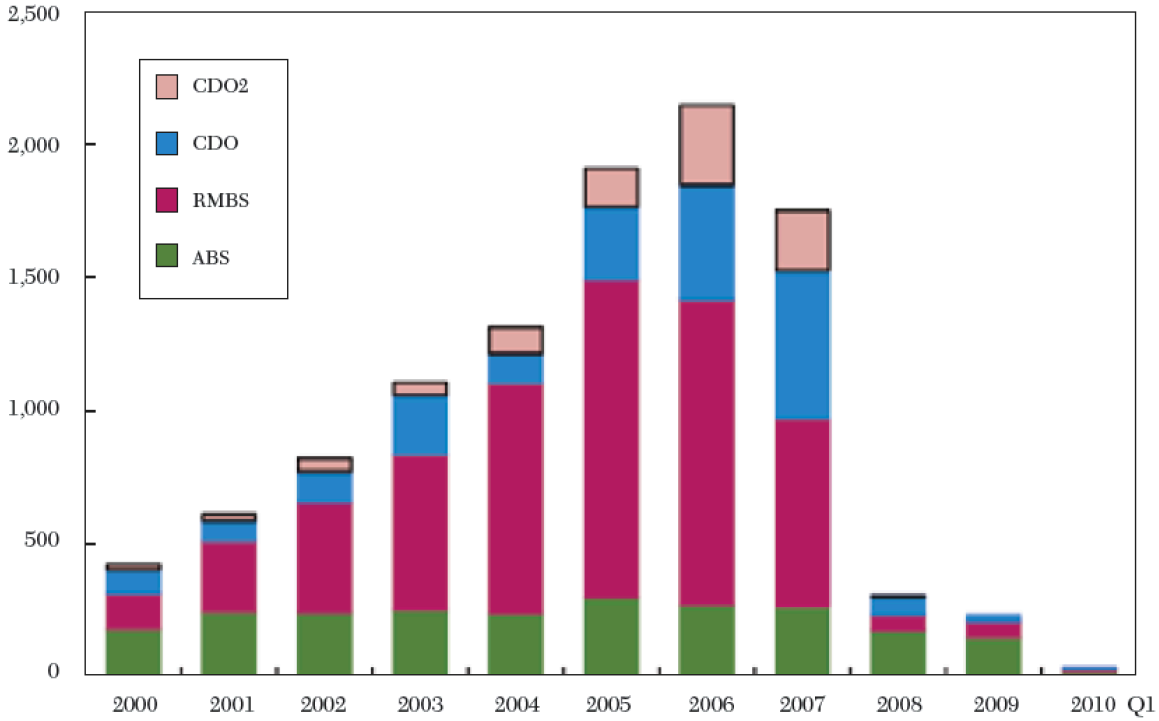
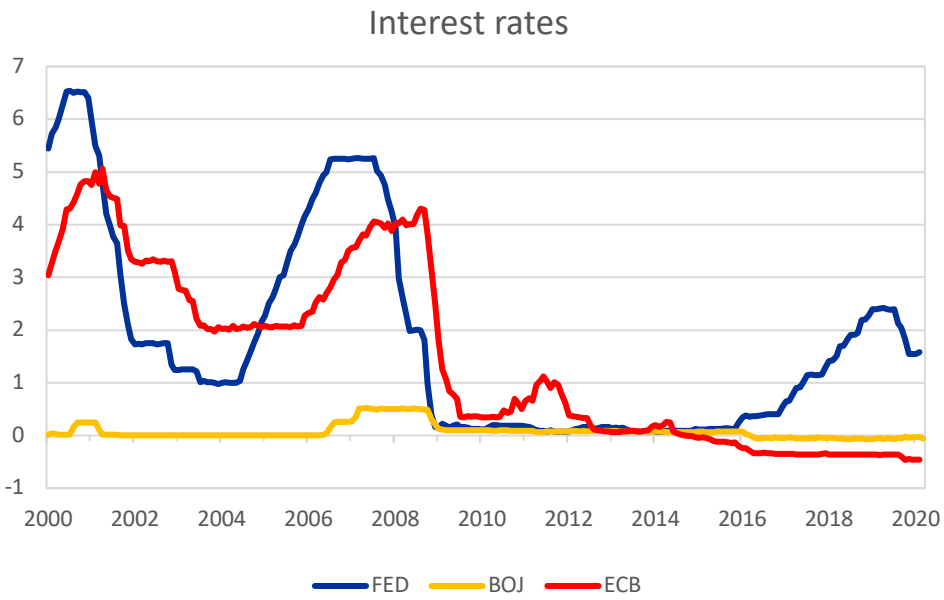



*Figure* 2. U.S. Private-Label Term Securitization Issuance by Type
(*In billions of U.S. dollars*)

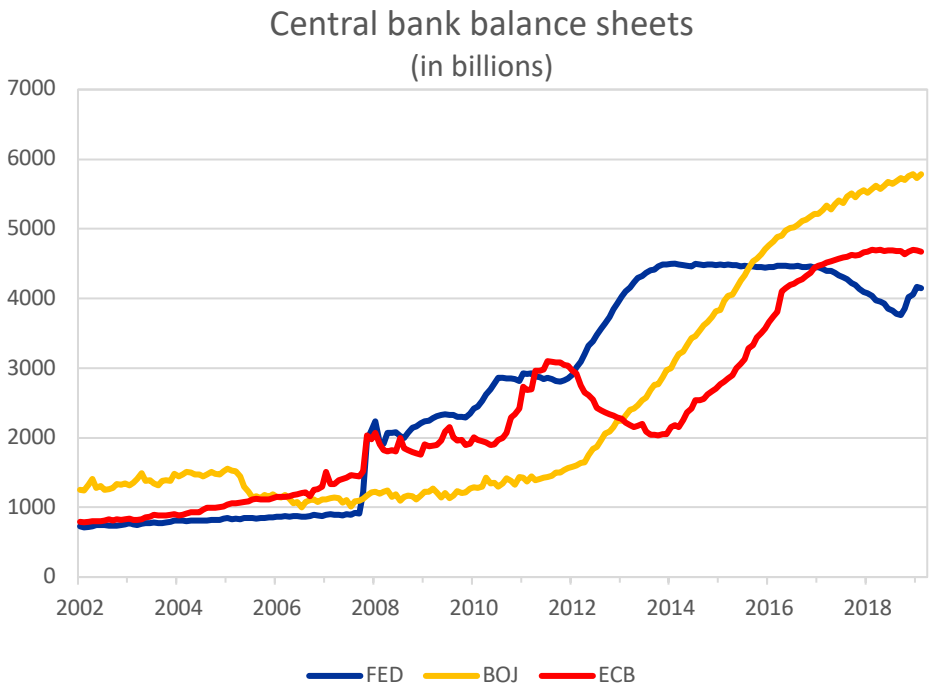
*Source:* International Monetary Fund (2010).

**Figure 5.2. The U.S. 2007 – 2008 asset-run in Private-Label Term Securitization Insurance market** (billions of dollars).



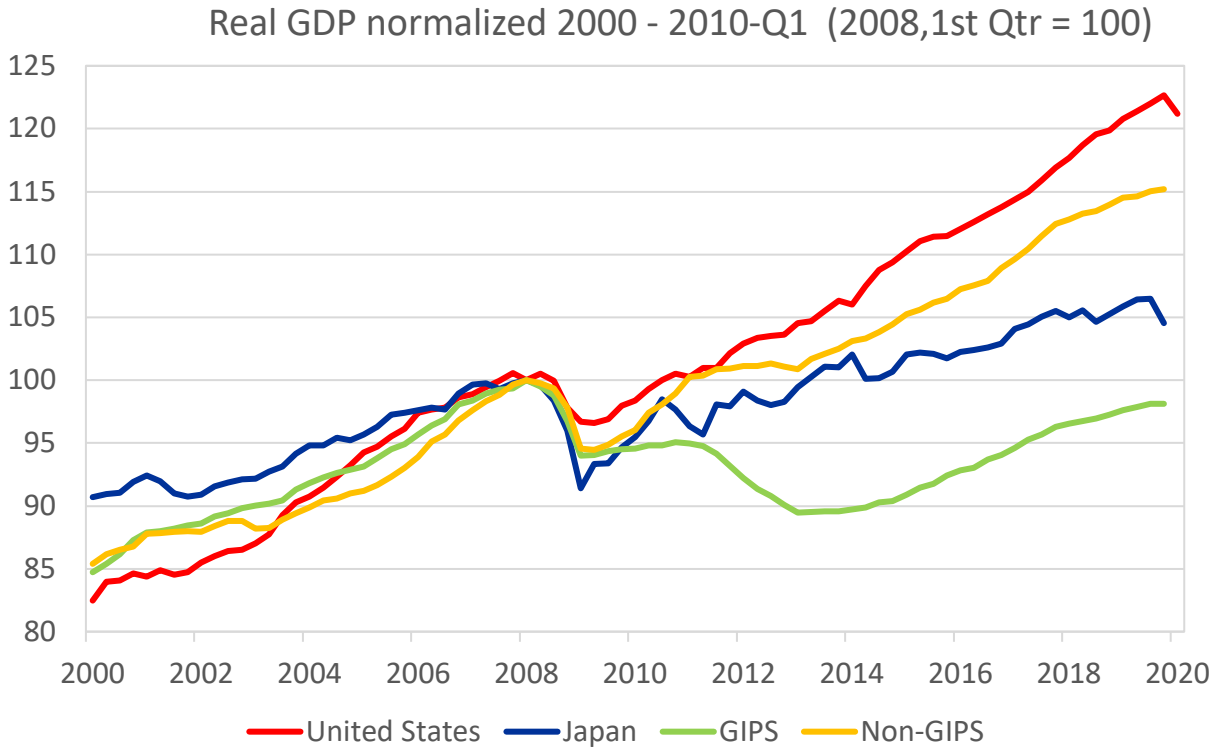

**Sources**: FRED, ECB, Central Bank of Japan

**Figure 5.3. Central Banks' fighting the financial crisis (and beyond) with their traditional instrument: the interest rate.**




**Sources**: FRED, ECB, Central Bank of Japan

**Figure 5.4. Central Banks' expansion of their balance sheets since the start of the financial crisis.**




**Source:** OECD. **Notes:** Quarterly data. Data for 2020-Q1 not available for GIPS and Non-GIPS.

**Figure 5.5. The financial crisis in perspective**. GIPS: Greece, Italy, Portugal & Spain; Non-GIPS: the (2020) 15 Euro Area countries, which are not GIPS.

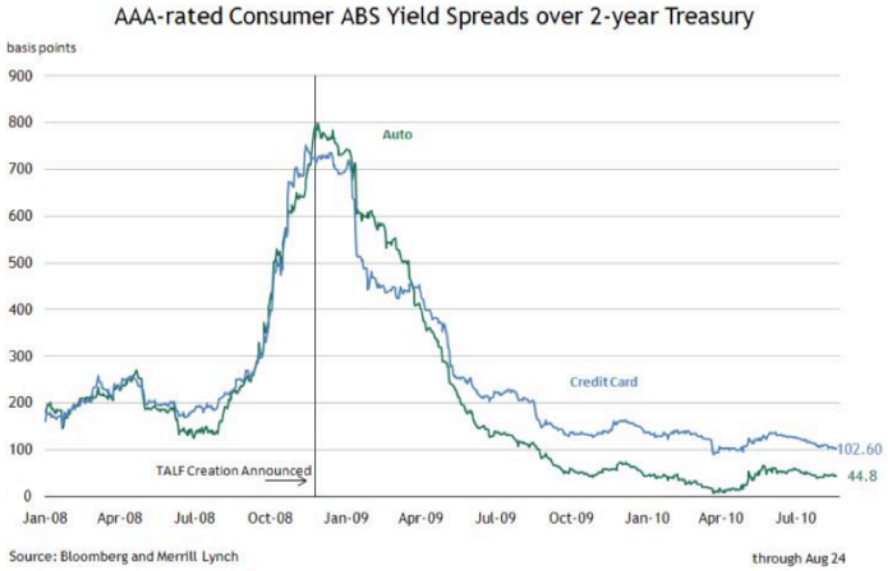



**Figure 5.6. The collapse of the ABS market in 2007 – 2008.**

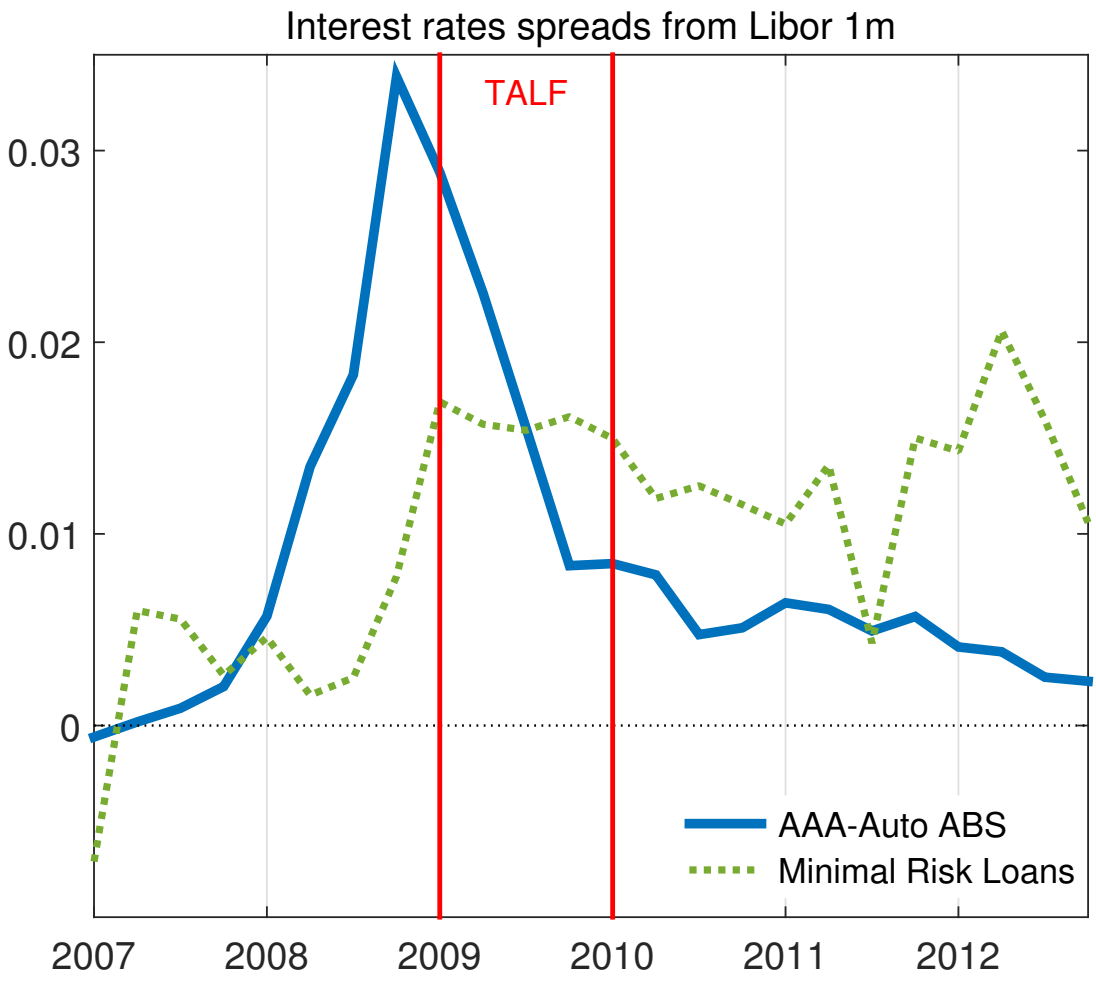
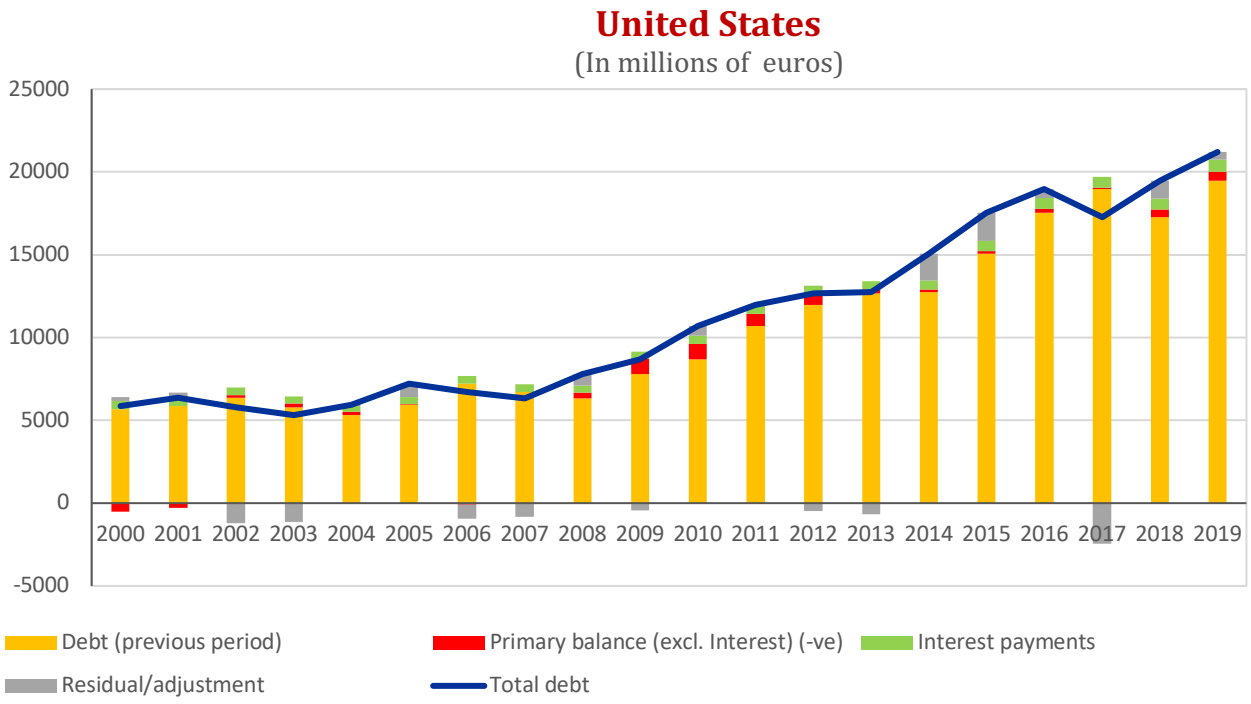
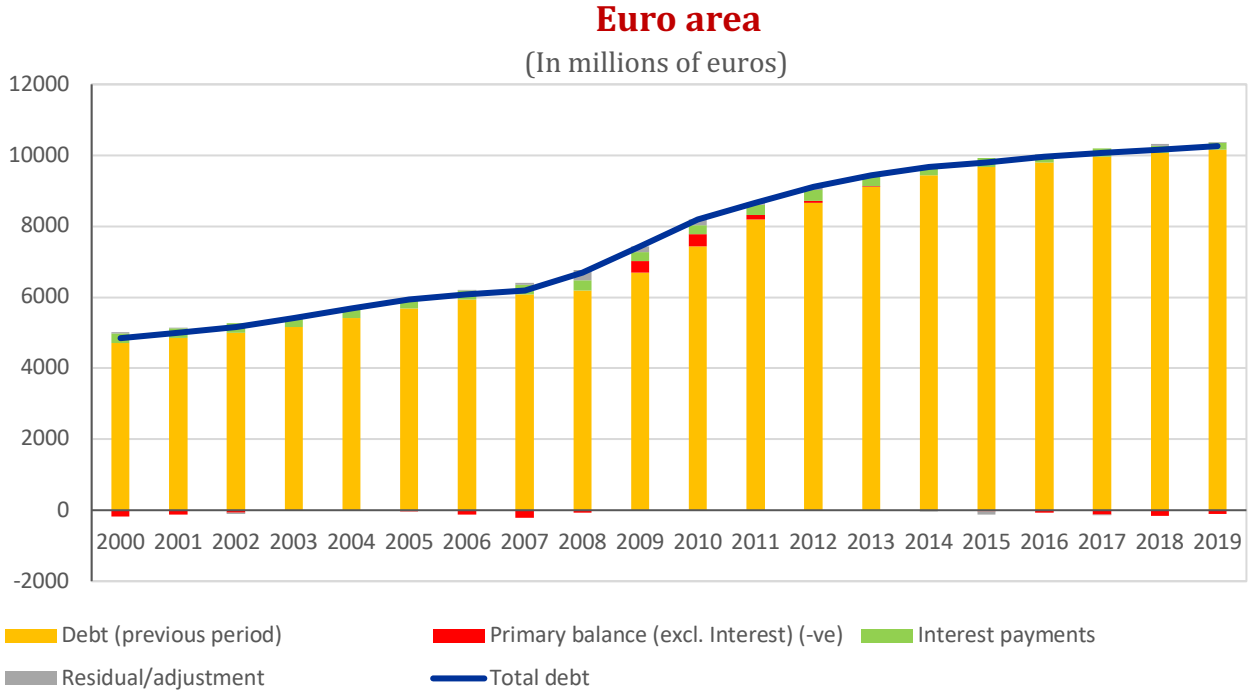



**Figure 5.7. The recovery of the AAA-Auto ABS market after TALF.** (newly issued AAA-Auto ABS interest rates vs interest rated on private banks' Minimal Risk Loans)



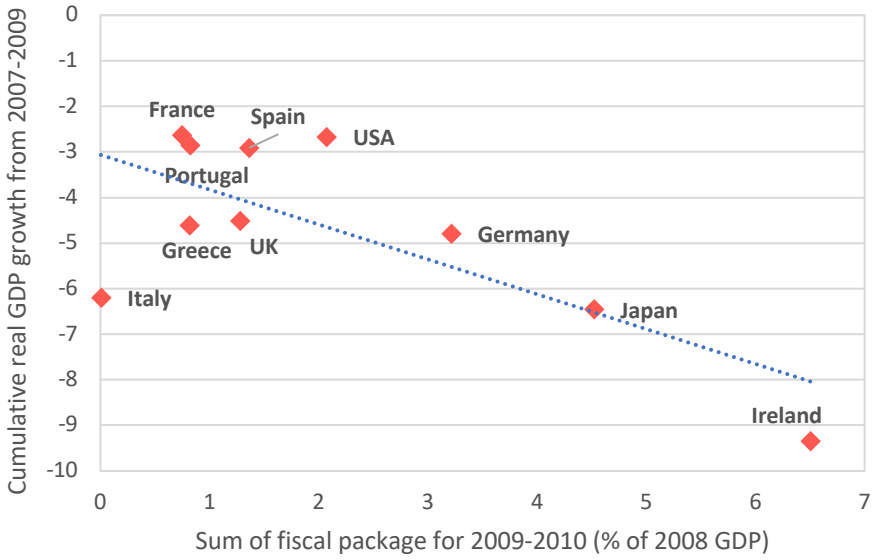

**Source**: AMECO.

**Figure 5.8a. The evolution of sovereign debt in the 21st Century: United States.**




**Source**: AMECO.

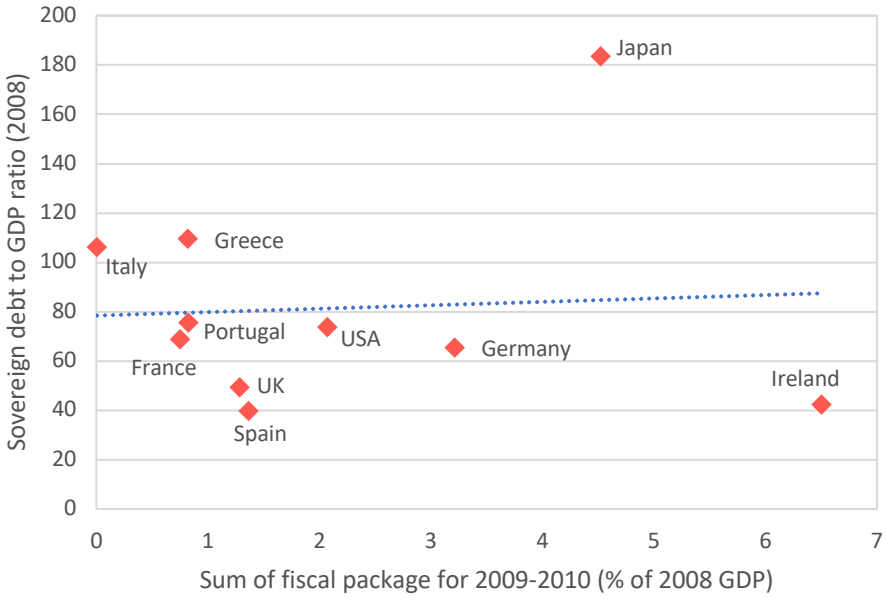
**Figure 5.8b. The evolution of sovereign debt in the 21st Century: euro area.**




**Sources:** fiscal package (OECD), GDP (AMECO)

Sources: fiscal package (OECD), GDP (AMECO).

**Figure 5.9. Fiscal stimulus relative to loss of GDP**




**Sources:** fiscal package (OECD), sovereign debt to GDP (AMECO)

**Figure 5.10. Fiscal stimulus vs fiscal capacity (sovereign debt)**

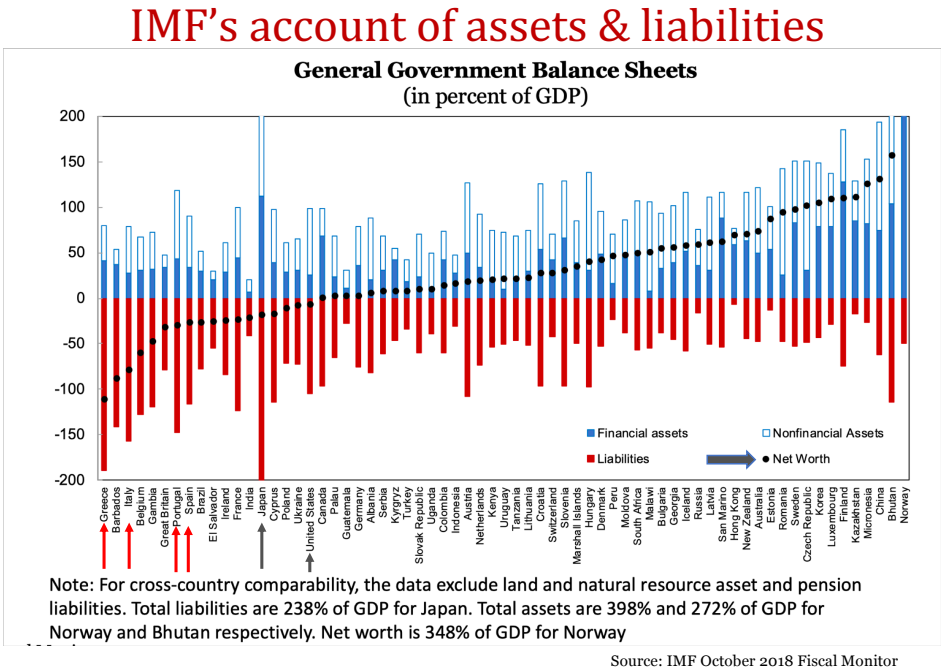
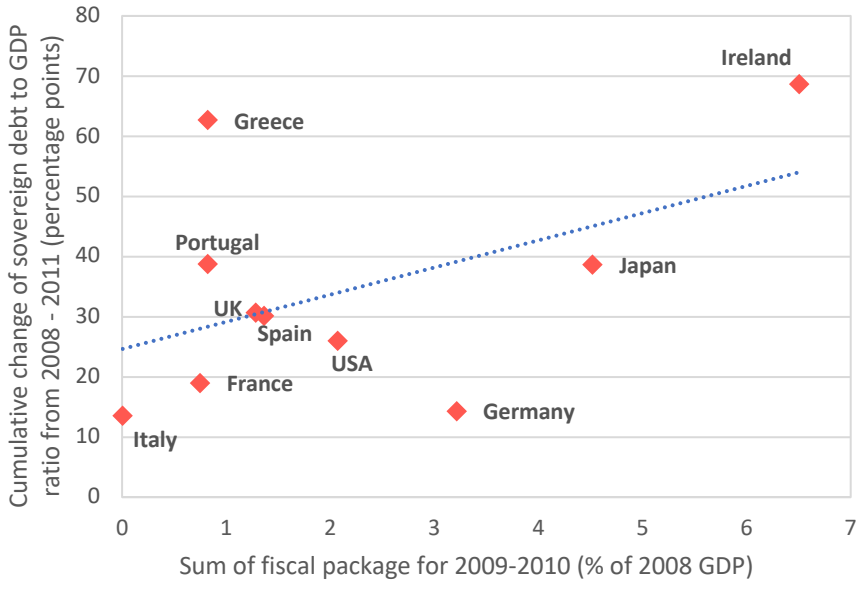
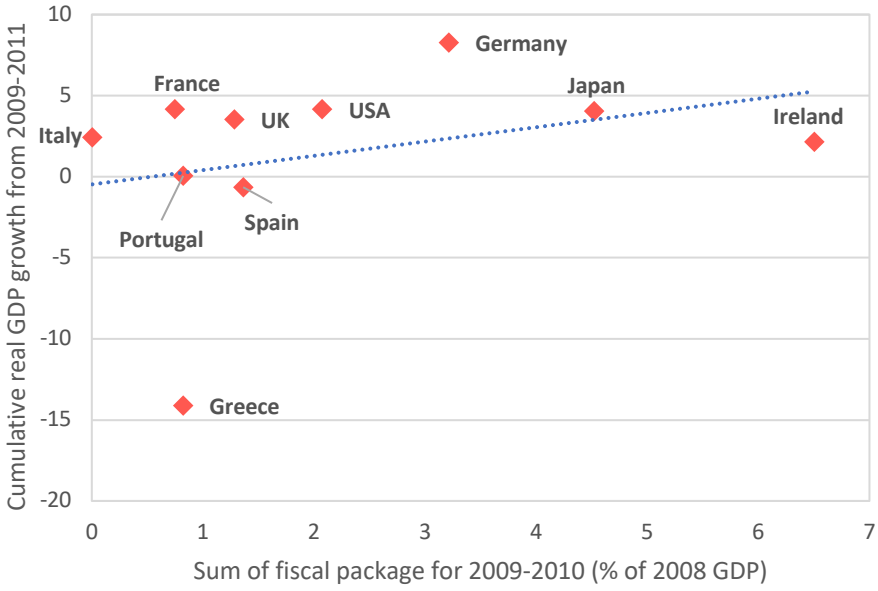



**Figure 5.11. IMF's account of General Governments' assets and liabilities.**




**Sources:** fiscal package (OECD), sovereign debt to GDP (AMECO)

**Figure 5.12. Fiscal stimulus relative to sovereign debt growth**




**Sources:** fiscal package (OECD), GDP (AMECO)

**Figure 5.13. Fiscal stimulus relative to subsequent growth**

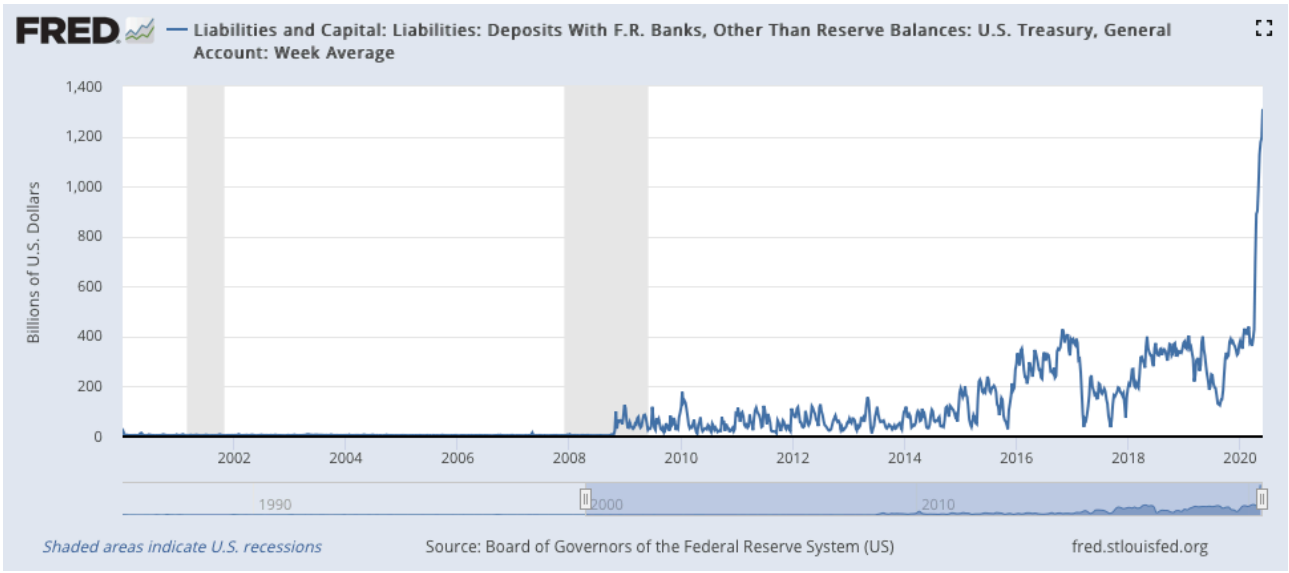
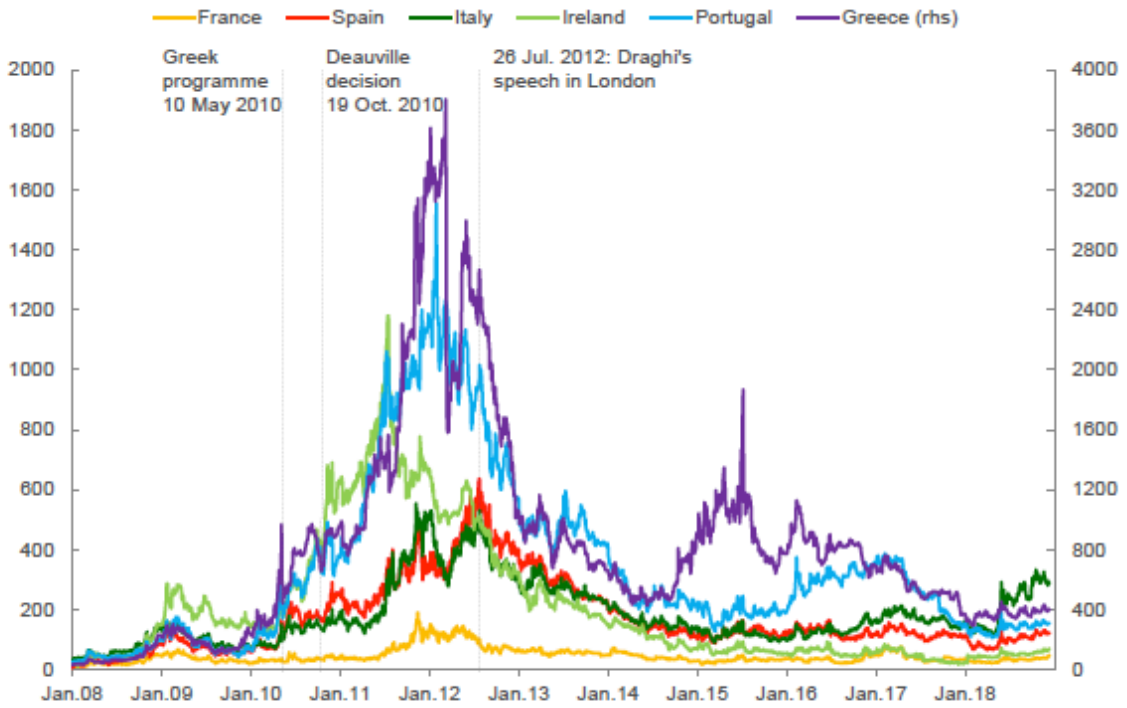
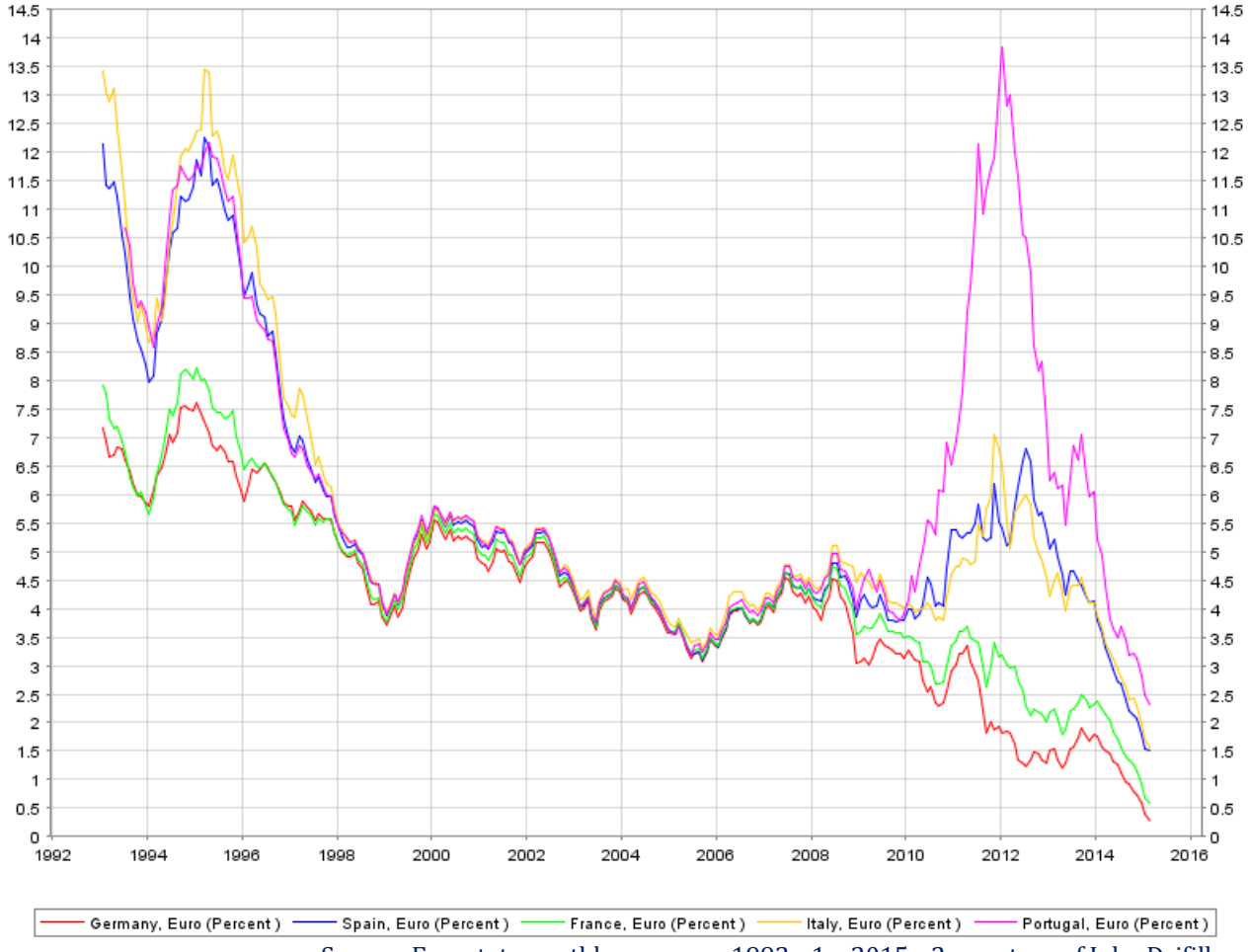



**Figure 5.14. The expansion of the U.S. Treasury deposits with the F.R. Banks**




Sources: Bloomberg and Rostagno *et al.* (2019)

**Figure 5.15. Ten-year sovereign spreads of selected euro area countries vis-à-vis the ten-year Bund yield**




Source: Eurostat, monthly averages, 1993m1 – 2015m2; courtesy of John Drifill.

**Figure 5.16. Ten-year government bond rates of selected euro area countries.**

## TABLE

| | Japan | US | UK | Euro area | Non-GIPS | GIPS |
|---|---|---|---|---|---|---|
| 1995-2019 | 0,77 | 0,52 | 0,43 | 0,30 | 0,44 | 0,07 |
| 2000-2019 | 0,93 | 0,55 | 0,53 | 0,44 | 0,66 | 0,11 |

| | Germany | France | Italy | Spain | Portugal | Greece |
|---|---|---|---|---|---|---|
| 1995-2019 | 0,46 | 0,40 | 0,12 | 0,08 | 0,01 | -0,19 |
| 2000-2019 | 0,71 | 0,50 | 0,22 | 0,09 | 0,00 | -0,19 |

**Table 5.1. Correlations between Primary Surplus over GDP and GDP; i.e. Corr(PS/Y, Y)**
(Yearly data with HP-filtered PS and Y; Data source: AMECO & OECD)

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