

## MIT Sloan School of Management

MIT Sloan School Working Paper 5197-17

# THE FISCAL-MONETARY POLICY MIX IN THE EURO AREA: CHALLENGES AT THE ZERO LOWER BOUND

Athanasios Orphanides

This work is licensed under a Creative Commons Attribution-  
NonCommercial License (US/v4.0)



<http://creativecommons.org/licenses/by-nc/4.0/>

May 8, 2017

# **The Fiscal-Monetary Policy Mix in the Euro Area: Challenges at the Zero Lower Bound**

Athanasios Orphanides\*  
MIT

May 2017

Abstract

This paper explores the reasons for the suboptimal fiscal-monetary policy mix in the euro area in the aftermath of the global financial crisis and ways in which the status quo can be improved. A comparison of fiscal and monetary policies and of economic outcomes in the euro area and the United States suggests that both fiscal and monetary policy in the euro area have been overly tight. Fiscal policy has been hampered by the institutional framework which constrains individual states and lacks instruments to secure an appropriate aggregate stance. ECB monetary policy has been hampered by the distributional effects of balance sheet policies which needed to be adopted at the zero lower bound, and by discretionary decisions taken before the crisis such as the reliance on credit rating agencies for determining collateral eligibility for monetary operations. The compromising of the “safe asset” status of euro area sovereign debt during the crisis complicated fiscal and monetary policy. Changes in the discretionary decisions governing the implementation of monetary policy in the euro area can potentially reduce the distributional effects of policy and improve the fiscal-policy mix and longer-term prospects for the euro area.

Keywords: Quantitative easing, zero lower bound, euro crisis, ECB, loss sharing, collateral eligibility, sovereign debt, safe assets, redenomination risk, credit risk.

JEL Classification: E52, E58, E61, E62, G01.

\* I would like to thank Joaquin Almunia, George Alogoskoufis, Lorenzo Bini Smaghi, Stephen Cecchetti, Vitor Gaspar, Marvin Goodfriend, Charles Goodhart, Patrick Honohan, Otmar Issing, Jean-Pierre Landau, Mickey Levy, Christian Noyer, Hal Scott, George Szapary, Paul Tucker, Angel Ubide, as well as participants at presentations at the DG ECFIN Annual Research Conference and the Banque de France for helpful discussions, suggestions and comments. This paper was prepared in the context of the DG ECFIN Research Fellowship Initiative 2016-17. Correspondence: MIT Sloan School of Management, E62-481, 100 Main Street, Cambridge, MA 02142. Tel.: +1-617-324-4051. E-mail: [athanasios.orphanides@mit.edu](mailto:athanasios.orphanides@mit.edu)

## I. Introduction

Following the global financial crisis, the euro area suffered a much deeper and protracted slump than the United States. The difference in the evolution of per capita real GDP is striking (Figure 1). An important reason for this difference is that both fiscal and monetary policies have been more restrictive in the euro area, despite the similar nature of the initial macroeconomic shock. What explains this difference in the policy response?

On the fiscal side, the weak policy response was due to institutional constraints: The fiscal framework of the euro area constrains the policy of individual member states and contains no instruments to ensure that the aggregate fiscal stance of the euro area can be appropriately countercyclical. As a consequence, the overall stance of fiscal policy in the euro area was insufficiently expansionary over 2008-2009 and inappropriately contractionary over 2011-2014. On the monetary policy side, the institutional framework of the ECB allows, in principle, the adoption of the monetary policy stance most appropriate for the euro area as a whole, taking into account the fiscal policy stance for the euro area as a whole. If contractionary fiscal policy contributes to disinflationary concerns, monetary policy can compensate with additional policy accommodation. Nonetheless, conventional monetary policy easing was constrained by the zero lower bound and ECB policy was hampered by the unique challenges associated with the fiscal implications of quantitative easing (QE) policies in the euro area.

In addition to sub-optimal fiscal and monetary policies, some decisions taken by governments and the ECB in the past several years have induced fragility in the euro area and have generated concerns about the long-term viability of its current construction.<sup>1</sup> These decisions reflected gaps and ambiguities in the institutional framework of the euro area that European Union (EU) political bodies were unable to bridge in a satisfactory manner during the crisis.<sup>2</sup> EU institutions and political bodies have recognized the dire need to improve the economic governance of the euro area but insufficient progress can be identified so far.<sup>3</sup> Sensible arrangements for risk-sharing and risk-pooling, which are essential parts of a well-functioning monetary union, remain elusive. An unresolved issue is the extent to which euro area sovereign debt can continue to serve the role of a safe asset, as was presumed to be before the crisis and continues to be implied by the EU bank regulation framework. The ongoing ambiguity has contributed to the difficulties in formulating fiscal and monetary policy as well as the malaise of the euro area banking system.

---

<sup>1</sup> See Bluestein (2016), Brunnermeier, James and Landau (2016), Eichengreen (2015), Orphanides (2014a), Wolf (2014), Wyplosz (2014) and references therein.

<sup>2</sup> Gaps in the institutional framework, and the risks associated with the Economic and Monetary Union (EMU) had been identified well before the decision to launch the euro, e.g. Dornbusch (1996) and Feldstein (1997). However, related warnings went unheeded.

<sup>3</sup> The so-called five presidents report (Juncker et al, 2015) offers an overview and recommendations. This report superceded the so-called four presidents report (Van Rompuy, 2012).

The objective of this paper is to highlight the interaction of fiscal and monetary policy in the euro area, taking into account institutional constraints and the complexities introduced by the zero lower bound on nominal interest rates. The aim is twofold: First, to explain how the unique structure of the euro area, in particular the contrast of a common monetary policy with an uncoordinated and decentralized fiscal policy, has constrained the overall policy actions away from the policy mix that was required to counteract the initial shock associated with the global financial crisis; Second, to discuss how policy could be adapted within the existing framework of the EU Treaties, to improve policy effectiveness and outcomes going forward.

At the zero lower bound, the distinctions separating fiscal and monetary policy become blurred. An important transmission channel for QE policies is depressing premia and lowering long-term real yields. The purchases of long-dated government securities eases monetary conditions in the private sector but also, importantly, reduces the cost of refinancing government debt, thereby easing the fiscal burden on the government.<sup>4</sup> As with other monetary policy operations, the implementation of QE has consequences on the risks the central bank takes on its balance sheet. In the euro area, the single monetary policy necessarily pools some risks associated with its implementation. The ECB assumes such pooled risks when it pursues policies in line with its mandate which is governed by the EU Treaty. However, the ECB has shown aversion to assume the balance sheet risks necessary for the effective implementation of QE, with consequences on the effectiveness of the policy.

The discussion identifies two specific aspects of the implementation of QE as particularly relevant for the effectiveness of the program. The first relates to eligibility criteria and the second to the arrangement of profit and loss sharing from QE. Both of these aspects have important distributional consequences inside the euro area and are potentially destabilizing. They tend to reduce the cost of financing for governments with fiscal fundamentals perceived to be relatively strong and tend to raise the cost of financing for governments with fiscal fundamentals perceived to be relatively weak.

The paper also examines the broader issue of the eligibility of sovereign debt in the ECB's collateral framework. It identifies the discretionary decision that was taken before the crisis to rely on credit ratings for determining collateral eligibility as inadvertently contributing to instability during the crisis. ECB reliance on credit ratings facilitated the compromising of the "safe asset" status of euro area sovereign debt. Given the critical importance of safe assets in a market economy, it is argued that it would be advisable to revisit this discretionary decision. Progress should be made towards improving the supply of safe assets in the euro area, either through the provision of a common safe asset, which would benefit all euro area member states

---

<sup>4</sup> Orphanides and Wieland (2000) and Clouse et al (2003) review policy easing options and interactions at the zero lower bound. Sims (1999, 2012, 2016), Corsetti et al (2016) and Orphanides (2016) discuss fiscal-monetary interactions in the context of the euro area. Gaspar et al (2016) stress the coordination of fiscal, monetary and structural policies.

in an equitable manner, or by reversing the ECB's reliance on credit ratings in evaluating sovereign debt instruments and the compromising of their safe asset status.<sup>5</sup>

The rest of the paper is organized in 6 sections. Following this introduction, section 2 provides an overview of the fiscal and monetary policy response to the crisis in the United States and the euro area. Section 3 discusses the distributional aspects of ECB policies, which are largely responsible for the complexity faced by the ECB in formulating its QE policy. Section 4 examines implementation aspects of QE in the euro area. Section 5 focuses on the interaction of ECB policies with perceptions of credit risk and redenomination risk in sovereign debt in the euro area. Section 6 discusses alternatives that could improve upon the current policies and procedures that induce fragility and section 7 concludes.

## **II. The policy reaction to the crisis: A comparison of the euro area with the United States**

The global financial crisis of 2008 was a massive recessionary and deflationary shock. The shock required decisive fiscal and monetary policy easing in most developed economies, in addition to the policy response needed to maintain stability in the financial sector. The initial policy reaction to the crisis, both in the euro area and the United States, was to ease fiscal and monetary policy. However, the response was not equally decisive in the two economies.

Countercyclical easing was more prompt and more aggressive in the United States and this has been a factor in the subsequent recovery. A comparison of the government primary balance, shown in Figure 2, summarizes the fiscal policy response. In the US, the primary deficit increased by about 10 percentage points over 2008-2009 and declined slowly in subsequent years to about 2 percentage points of GDP, where it has stayed since 2013. In the euro area, the fiscal easing was considerably smaller and reversed more quickly. The primary deficit increased to just about 4 percentage points of GDP in 2009, kept at that level in 2010, and unwound in 2011 and 2012. Since 2013, the primary balance in the euro area has been close to zero.

A crucial limitation of the European Union fiscal framework, which governs euro area fiscal policy, is that it offers no meaningful instrument to coordinate fiscal policy among member states. No existing mechanism can ensure that the fiscal stance of the euro area overall is appropriately managed. The Stability and Growth Pact, which was in effect before the crisis, placed upper limits on the deficits of individual member states. The fiscal stance of the euro area overall simply reflected the resulting aggregation of policies in the individual member states. The EU budget is too small to be used in a countercyclical manner.

---

<sup>5</sup> See Holmstrom and Tirole (1998) and Caballero and Farhi (2014) for the critical role of safe assets in market economies. See also Brunnermeier et al (2016), van Riet (2017) and references therein for analysis focusing on the euro area, including proposals for creating common safe assets.

In its recent communication *Towards a Positive Fiscal Stance for the Euro Area*, The European Commission (2016) has acknowledged that this limitation in the fiscal policy framework leads to “sub-optimal” policy which continues to have detrimental effects for the euro area as a whole. When fiscal recommendations that may appear reasonable for individual member states are aggregated, the sum may not correspond to the appropriate fiscal policy stance for the euro area as a whole. In the aftermath of the crisis, this has led to policy being too tight overall. The Commission also noted distributional consequences from this weakness. Member states experiencing weak aggregate demand may not have the fiscal space to adopt more expansionary fiscal policy while states with fiscal space may not want to use that, ignoring the positive spillover effects to other member states and the euro area as a whole.

Regarding monetary policy, both the ECB and the Federal Reserve initially eased policy aggressively following the 2008 crisis. By early 2009, overnight interest rates had been brought close to zero by both central banks, as shown in Figure 3. Additional policy accommodation was necessary to diffuse disinflationary measures but conventional policy was constrained by the zero lower bound.

Even though short-term interest rates may be constrained at the zero lower bound, monetary policy remains supremely effective as additional monetary policy accommodation can be achieved by expanding the central bank’s balance sheet. Policies that expand the central bank balance sheet—quantitative easing—can depress longer-term yields, raise the prices of other assets and weaken the exchange rate, thus providing monetary accommodation despite an unchanged overnight interest rate. The canonical form of quantitative easing, proposed by Keynes (1930) right after the 1929 crash, involves the purchase of long-term government debt by the central bank. The central bank can create as many reserves as necessary to purchase assets in this fashion so policy easing is potentially unlimited. Balance sheet easing can also be achieved in other ways, such as the provision of multi-year liquidity to the banking system at favorable terms, which can be used for asset purchases and/or lending at favorable terms. Some of the crisis management measures adopted in late 2008 also increased the size of the balance sheets of the ECB and the Federal Reserve, thus also providing monetary accommodation.

At the zero lower bound, the size of the balance sheet of the central bank becomes a useful summary indicator of the degree of additional policy accommodation, beyond interest rate easing. Other things equal, the more assets purchased the more accommodative policy becomes.<sup>6</sup> Figure 4 presents a comparison of the balance sheet of the Federal Reserve and the ECB that shows their evolution since the crisis. After September 2008, a substantial increase in

---

<sup>6</sup> To be sure, factors beyond policy rates and the size of the balance sheet play a role in determining the overall monetary policy stance. In the context of an empirical model, such factors may be captured in a monetary conditions index. The size of the balance sheet is not a sufficient indicator of policy accommodation at the zero lower bound, much like the overnight interest rate is not a sufficient indicator for monetary policy conditions under normal circumstances.

the size of the balance sheets can be seen for both institutions. However, the increases were not sustained for both institutions in subsequent years. The balance sheet of the ECB increased similarly to the balance sheet of the Federal Reserve only until the summer of 2012. A critical policy divergence was subsequently observed, from the summer of 2012 until the end of 2014. During this period the ECB tightened policy by shrinking its balance sheet from about 3 trillion euro to about 2 trillion euro while the Fed continued to expand, raising its balance sheet from about 3 trillion dollars to 4.5 trillion dollars. Subsequently, the ECB reversed direction and started easing again, a policy that continues to the present.

The relatively tight monetary policy pursued by the ECB over 2012-2014, combined with restrained fiscal policy, imparted a disinflationary pressure on the euro area economy and hampered growth. The result has been “lowflation,” an environment where inflation is sustained below the central bank’s price stability objective for a considerable period. This can be seen in Figure 5, which compares headline and core measures of inflation for the US and the euro area. The top panel plots PCE for the US and HICP for the euro area, while the bottom panel shows the corresponding core indexes that capture the underlying trends without the sharp but short-lived fluctuations due to energy that have been observed in the past several years. The Fed’s definition of price stability corresponds to a 2% rate of inflation using the PCE index. The ECB’s definition corresponds to a rate “close to but below 2%” using the HICP index, which is similar, though better approximated as a 1.9% rather than a 2% inflation goal.<sup>7</sup> As can be seen in the figure, for both central banks, inflation in the past several years has generally stayed below their goals. However, as a result of its more aggressive policy easing, the Fed has managed to keep inflation considerably closer to its 2% goal. In contrast, the policy mix in the euro area has kept inflation too low. Core inflation has been below 1% systematically for the past three years, considerably below the ECB’s definition of price stability. This is the longest period the ECB has failed to meet its primary objective since it started setting policy for the euro area as a whole in 1999.<sup>8</sup>

---

<sup>7</sup> The interpretation of the ECB price stability objective as corresponding to a 1.9% inflation goal followed a clarification communicated by the ECB in May 2003. Before May 2003, lower inflation rates were considered compatible with the ECB’s objective. Following an evaluation that highlighted the ZLB and dangers of too low inflation goals, this was corrected in May 2003 and the ECB clarified that its aim would be to maintain inflation rates “close to 2%” over the medium term. A press seminar on May 8, 2003, which included a briefing by ECB Executive Board Member Otmar Issing, provided the rationale for the decision (ECB, 2003). Following this decision, model-based policy analysis, e.g. using the ECB’s New-Area-Wide Model (NAWM), included an inflation goal of 1.9% as the operational definition of price stability (Christoffel, Coenen and Warne, 2008).

<sup>8</sup> This deviation does not represent unforeseen errors. ECB forecasts and other analysis suggested that ECB policy was overly tight at least as early as 2014. (See e.g. Ubide, 2014, and Orphanides, 2014b). For example, during 2014, the ECB projection for inflation for 2016 was revised downward, from 1.5% in March to 1.3% in December. This is in contrast to another tightening episode that proved unfortunate in retrospect—the increase in policy rates in 2011. On that occasion, the decision could have been potentially justified (ex ante) on the basis of forecasts, but proved unwise (ex post) as the forecasts were optimistic.

The ECB's policy reversal in 2015 managed to contain disinflation in the euro area and policy has been more supportive of growth during 2016.<sup>9</sup> According to the estimates in recent work by Andrade et al (2016), Mouabbi and Sahuc (2016), Priftis and Vogel (2016), and Wieladek and Pascual (2016), the 2015-2016 ECB accommodation program raised inflation notably relative to where inflation would have been without the program. The estimates vary from about 0.4% to about 0.9%. Other things equal, these estimates suggest that if the ECB had continued to increase its balance sheet from 2012 on (for example being closer than it has been to shadowing the Fed, euro for dollar), the additional accommodation that would have been provided would have kept inflation closer in line with the ECB's price stability goal. Such a policy would also have supported more growth and improved debt dynamics. Depending on the estimated dynamic multipliers of quantitative easing policy on inflation, an additional trillion euro of quantitative easing or more would have averted the persistent "lowflation" experienced in the euro area.

In the event, the ECB policy reversal came after a notable decline in core inflation. The "lowflation" environment, has led to a partial disanchoring of longer-term inflation expectations that has not yet been checked.<sup>10</sup> Figure 6 plots related information from the Survey of Professional Forecasters, administered every quarter by the ECB. It shows three alternative measures of the consensus five-year inflation expectation derived from the survey: The mean and median of the individual point forecasts, as well as the mean of the probability distribution of inflation outcomes suggested by the probabilistic questions in the survey. The data are plotted for all surveys since May 2003, when the ECB adopted its current definition of price stability. As can be seen, until 2013 the long-term forecasts were centered on 1.9%, as would be desired, given the ECB's definition of price stability. Over the past three years, however, all three proxies of long-term inflation expectations have drifted down. The drift in the density mean has been the most notable. This suggests that in addition to revising the modal forecasts downward, forecasters have increasingly assessed that the distribution of outcomes is skewed to the downside.

Undesirably low inflation has been very costly to the euro area economy. At the ZLB, the macroeconomic risks associated with undesirably low inflation can be particularly high, as shown by Arias, Erceg and Trabandt (2016). With low inflation and the ZLB, other policy options may become difficult or detrimental for the economy. For example, as Eggertsson, Ferrero and Raffo (2014) show, structural reforms that ordinarily could support growth, when they could be accompanied by interest rate reductions, may instead be unwise and prove contractionary at the ZLB when short-term rates cannot adjust.

---

<sup>9</sup> HICP inflation is projected to remain notably lower than 2% in the medium term, suggesting that an accommodative policy stance continues to be necessary for some time. The projection that was published by the ECB in March 2017 projects annual rates of inflation of just 1.6% and 1.7% for 2018 and 2019, respectively.

<sup>10</sup> Nautz, Pagenhardt and Strohsal (2017) and Lyziak and Paloviita (2016) present evidence of disanchoring in recent years. Coenen and Schmidt (2016) argue that the ECB has succeeded in limiting this disanchoring as a result of the easing measures since 2015.

### III. Fiscal implications of ECB decisions

To appreciate the complexity of ECB policy during this period, including the ECB's reluctance to implement decisive quantitative easing, it is instructive to take a closer look at two issues: the fiscal implications of QE in the context of the euro construction; and the criticism and legal challenges the ECB has faced while contemplating policy actions.

The ECB is responsible for the single monetary policy of the euro area. In general, monetary policy decisions have direct and indirect fiscal consequences for governments. The main challenge related to the fiscal implications of ECB policy emanates from the lack of a corresponding single euro area fiscal authority. As a result, in addition to fiscal consequences for the euro area as a whole, the distribution of fiscal consequences among the euro area member states becomes a potentially important aspect of ECB policy. While before the crisis the fiscal consequences of ECB policy tended to be seen as relatively minor and escaped close scrutiny, since the crisis started they have taken center stage. During the crisis, the ECB has found itself with the discretionary authority to take decisions with immense distributional effects among euro area member states. This has been challenging for the ECB and has raised questions about the institutional division of responsibility between the ECB, other European Institutions and the elected governments of the member states in pursuing the objectives of the European Union, as those are spelled out in the Treaty.<sup>11</sup>

Two channels of fiscal implications of ECB policy are important for this discussion. The first channel relates to the effect of monetary policy decisions on the cost of financing of government debt. This is a key feature of monetary policy: The monetary policy transmission mechanism depends crucially on the influence of policy actions along the term structure of interest rates. Before the crisis, government debt of all member states was considered a safe asset in the euro area. As a result, before the crisis, yields on euro-denominated government debt in all member states were essentially similar and reflected virtually no credit risk. ECB policy had the usual fiscal consequences through this channel: Longer-term yields would be affected by current and future expected short-term rates, as determined by the ECB. Importantly, the effects were the same for all member states: ECB policy had no distributional fiscal consequences across member states through the cost of financing of government debt.

Since the crisis this has changed dramatically due to the appearance of credit risk and redenomination risk in euro area sovereign debt. The risks are related but each represents a different manifestation of the mismanagement of the euro crisis. Fears of a euro breakup created redenomination risk in the sovereign debt of member states perceived to be weak—states whose currencies would be expected to depreciate upon exit from the euro. If a member state exited the

---

<sup>11</sup> See Tucker (2015, 2016) and Orphanides (2016) for related discussions on the legitimacy and accountability challenges for independent central banks.

euro, its local currency debt would be expected to be repaid in the state's new depreciated currency, suggesting capital losses for foreign investors even if the debt was repaid in full. Such concerns rose sharply in late 2011 and 2012, following decisions by member state governments that were interpreted as highly destabilizing for the euro.<sup>12</sup> Redenomination risk largely dissipated following the ECB announcement of its OMT program and has remained relatively small since then, though not unimportant.<sup>13</sup> In contrast to redenomination risk, credit risk has persisted. For member states perceived to be weak, the perceived probability of sovereign debt default has increased drastically since the crisis and has remained elevated even in the past two years, compared to advanced economies outside the euro area.<sup>14</sup> The injection of credit risk has had a first order effect on the relative cost of financing of government debt within the euro area that has persisted ever since: The debt of most member states is no longer considered safe, and only few member states effectively face no credit risk. The result is evident in Figure 7 which plots the 2- and 10-year government bond yields for the United States, Germany, Italy and Spain. As is evident from the relative yields of government bonds in the common currency, Germany is perceived to be a relatively strong state, while Italy and Spain are perceived to be relatively weak.

As a result of the injection of credit risk in euro area government debt, if two advanced economies have similar economic fundamentals but one is outside the euro area while the other is one of the relatively weak states inside the euro area, the state inside the euro area is saddled with an additional premium on its debt that was not present before the crisis.<sup>15</sup> This development has important distributional consequences, benefiting states perceived to be relatively strong inside the euro area. The rationale is straightforward: By injecting risk in euro-denominated debt issued by the governments of member states perceived to be relatively weak (debt that was considered safe before the crisis), the global demand for euro-denominated safe assets was diverted away from these states towards the debt of the states perceived to be relatively strong.

The total effect of injecting risk in euro area sovereigns has been detrimental for the euro area overall, but its most critical consequence has been the distributional effect across member states. The shift in relative demands had a predictable sizeable effect on relative prices, inducing a windfall gain in the form of a lower premium on government debt for states perceived to be

---

<sup>12</sup> A trigger was the decision at a summit meeting of euro area governments on October 26, 2011 (European Union, 2011). Elements of that decision are discussed later on.

<sup>13</sup> See De Santis (2015) for more details on the measurement of redenomination risk and its evolution in this episode. The OMT program, was formally introduced by the ECB in September 2012. It was foreshadowed by a statement by ECB President Draghi in July 2012, which was interpreted as an indication of the ECB's commitment to preserve the euro.

<sup>14</sup> The Franco-German agreement in Deauville in October 2010 was a key turning point, leading to the substantial increase in the perceived credit risk of debt of other states, such as Italy and Spain (Pill and Reichlin, 2014, Orphanides, 2014a). This is further discussed later on.

<sup>15</sup> This issue was highlighted by De Grauwe (2011). His insightful comparison of Spain and the U.K. was particularly illuminating because both Spain and the U.K. are members of the European Union and their most critical difference was that Spain had adopted the euro before the crisis while the U.K. had not.

relatively strong, such as Germany, and an implicit tax in the form of a higher premium on government debt for states perceived to be weak, such as Italy and Spain.<sup>16</sup> Although this may have been unintended, the injection of risk in sovereign debt during the crisis effectively constituted an indirect fiscal transfer from Italy and Spain to Germany.

The size of the implicit subsidy/tax in euro area sovereign debt due to the injection of credit risk, is not independent of the actions of the ECB. The disparity observed since the crisis partly reflects ECB policy decisions and the ECB's reluctance or unwillingness to support member states similarly to independent central banks of other economies, such as the Federal Reserve and the Bank of Japan. As will be discussed shortly, specific aspects of the implementation of ECB monetary policy decisions have important effects on the implicit subsidy/tax that is now embedded in euro area government debt.

The second channel of fiscal implications of ECB policy relates to the distribution of potential profits and losses resulting from monetary policy operations. This includes potential profits and losses associated with refinancing operations and direct holdings of assets, net of interest paid on reserves and other expenses. Before the crisis, the norm followed by the ECB was to share profits and losses on its operations roughly proportionately to the size of the member states, according to the capital key of the National Central Banks (NCBs) of the member states. The policy framework in effect before the crisis recognized the essential nature of mutualization of risks associated with the implementation of policy for ensuring the effectiveness of the *single* monetary policy in the euro area. This norm continued to be respected when the financial crisis started. For example, in late 2008, losses associated with the provision of liquidity to Lehman Brothers were shared by all NCBs. Losses were realized when Lehman collapsed and the value of the collateral that had been posted proved insufficient to recover the value of the liquidity that had been extended to the firm. The losses that resulted from Lehman's failure were pooled. They were not assumed by the specific NCB that had extended the liquidity to Lehman right before the firm's collapse. Similarly, in May 2010, when the ECB decided to embark on purchases of government debt for *selected* member states as part of its Securities Markets Programme (SMP), risks were again pooled.<sup>17</sup>

As the euro crisis unfolded, however, purchases of government debt proved controversial in some member states and this appears to have influenced ECB decisions. Starting with the SMP, the ECB has been subjected to multiple lawsuits that disputed its authority to purchase government debt. Even though purchases of government debt have long been recognized as a legitimate monetary policy instrument, the ECB faced dubious accusations that it was engaging in some form of monetary financing, which is prohibited by the Treaty.

---

<sup>16</sup> Dany et al (2015) present estimates of the associated benefits accruing to Germany in the form of a lower cost of refinancing German government debt.

<sup>17</sup> The SMP was initiated in May 2010. It entailed limited purchases of government debt of Italy, Spain, Portugal, Ireland and Greece with the stated aim of restoring the monetary policy transmission mechanism.

With balance sheet policies becoming far more important for monetary policy than the setting of the policy rate, this aspect of fiscal implications has acquired greater importance. The criticism and various lawsuits faced by the ECB can be understood as aiming to limit the risk that the ECB can take on its balance sheet and thus shift the possible distributional effects of policy.

An important side-effect of quantitative easing is that it creates the risk of potentially large temporary accounting losses or gains for the central bank over time. If quantitative easing is too successful in restoring economic growth and reflation of the economy, the yields on the long-term government debt purchased by the central bank may return to normal earlier than anticipated and the central bank may face losses when it normalizes the size of its balance sheet.<sup>18</sup> From the perspective of the economy as a whole such profits and losses for the central bank may be inconsequential: What should matter is the overall health of the economy and the overall balance sheet combining the central bank and the fiscal authority. After all, as a public institution, the central bank is effectively owned by the government and most profits and losses of the central bank are passed on to the government eventually. This is easy to see with a single central bank and a corresponding fiscal authority (e.g. the Federal Reserve). However, in the context of the euro area, the lack of a corresponding fiscal authority presents a challenge, especially for the operations that entail taking unusual risks on its balance sheet. Individual member states may object to the possibility that with some probability, however small, they may have to share any possible losses resulting from the additional risk associated with expansionary balance sheet policies. The objections may be particularly forceful from member states where additional accommodation may not be ideal from a macroeconomic perspective and a tightening of monetary conditions would have been preferred.

In this environment, the ECB first attempted to find ways to ease policy by expanding its balance sheet without assuming risks that could prove controversial in some member states. From 2008 to 2014, the ECB avoided the outright purchase of government debt of all member state governments. Although such purchases would have been the most natural form of easing policy at the ZLB, as advocated already in 1930 by Keynes, the ECB adopted other methods for expanding its balance sheet, importantly the long-term provision of liquidity to the banking sector at favorable terms so that banks could purchase government bonds and other assets. The balance sheet expansion from 2008 to 2012 was mainly through such operations. During 2013 and 2014, however, euro area banks started unwinding some of their liquidity holdings and the ECB had to decide whether to engage in the outright purchase of assets, including government debt, to ensure that the size of the balance sheet would remain appropriately expansionary.

---

<sup>18</sup> Goodfriend (2014) stresses that the central bank is well advised to retain profits when it expands its balance sheet so that it has sufficiently strong capital buffers to counteract potential losses associated with the subsequent normalization of policy.

The decision to embark on purchases of government debt came in January 2015, but only after the balance sheet had been let to shrink dramatically over the previous two years resulting in an unwelcome decline in inflation well below the ECB's definition of price stability.

#### **IV. ECB QE**

The ECB QE decision appears to have been a compromise. Some aspects of the decision are difficult to reconcile as reflecting the best available policy options for the euro area as a whole. The decision started a program of outright purchases of government debt of the member states, but the pace of purchases has been too small to restore inflation close to 2%. In addition, the purchases have been subject to eligibility conditions and a significant deviation from the ECB's established principle of pooling risks relating to monetary policy operations. The implementation of ECB QE has had major distributional consequences across member states, along the lines of the implicit subsidy/tax on the cost of refinancing of government debt described above.

Two aspects of ECB QE, in particular, deserve attention. First, the ECB decided against the common purchases of government debt, deviating from the prevailing practice for its common monetary policy operations. Instead, it instructed the National Central Bank in each state to assume the responsibility for such purchases. The Bundesbank has been purchasing German debt, Banco d'Espana has been purchasing Spanish debt, Banca d'Italia has been purchasing Italian debt, and so on. The ECB also decided to purchase some non-government bonds for which risks would be pooled. This allowed the ECB to communicate a policy of "partial" loss-sharing but those purchases are not as important as the purchases of government debt for which the critical decision was taken to have absolutely no loss sharing.

Deviating from the norm of full loss sharing had side effects with predictable distributional consequences. One implication of the decision to avoid pooling the balance sheet risk associated with purchases of government debt is that it protected the ECB from complications arising in the event a state is forced to exit the euro area. In the extreme scenario of a break-up of the euro, for example, Banca d'Italia would be holding Italian debt, Banco d'Espana would be holding Spanish debt and the Bundesbank would be holding German debt. The perceived probability of such scenaria may be small but the ECB decision made such scenaria more salient as it served as an implicit acknowledgement of contingency planning about such scenaria. This weakens the perceived commitment of the ECB to preserve the euro and makes these scenaria more likely. As a result, this decision has effectively widened the spreads in yields of states considered strong vs those considered to be weak, relative to where they would have been if QE was implemented under the normal loss sharing arrangements. Specifically, the ECB policy decision against common purchases raised the premium on weak states, whose currency would be expected to

depreciate upon exit, and increased the safe-haven subsidy on states considered stronger, whose currency would be expected to appreciate upon exit.<sup>19</sup>

The second element of ECB QE implementation with major distributional consequences is the decision to effectively restrict purchases of government debt on the basis of ratings provided by private credit-rating agencies. This decision parallels key decisions taken before the crisis regarding collateral eligibility for open market operations, an issue that will be discussed in the next section. It effectively restricted the QE policy to apply only to member states that maintain an investment-grade rating. The ECB retained the option to suspend the restriction when the rating became binding. If the ECB deemed government debt of a member state as ineligible in this manner, it could have conceivably provided compensating accommodation to monetary conditions with the purchase of other assets in the same state. But no provision was made for such substitutions in asset purchases. The decision thus implied that ineligible states would have to do without the additional monetary policy accommodation that QE was meant to provide. Weak states that currently qualify for the QE program but have a rating close to the threshold face the risk of being excluded from the program in the event of an adverse shock. In effect, this self-imposed restriction skews the distribution of future bond purchases away from the government debt of states with lower ratings, which are the ones perceived to be weaker.<sup>20</sup>

The net effect of these QE implementation decisions is to reinforce monetary conditions that are relatively more accommodative for states perceived to be strong, such as Germany, and less accommodative for state perceived to be weak, such as Italy or Spain. Arguably, this is inconsistent with what would have been desirable to promote stability in the euro area. In effect, while ECB QE has broadly reduced the level of longer-term sovereign yields, the spreads among euro area government bond yields, as shown in Figure 7, have remained wider than they would have been with alternative discretionary decisions relating to the implementation of QE.

The ECB account of the January 2015 meeting provided details of the discussion and the arguments relating to the loss-sharing decision. The discussion acknowledged the benefits of full risk sharing, given the single monetary policy of the ECB: “On the one hand, arguments were made in favour of full risk sharing so as to counter perceptions of a lack of unity. Full risk sharing would also underline the singleness of monetary policy.” (ECB, 2015.) It also explained why this was not adopted. The reason provided was concern about moral hazard: “On the other hand, in view of concerns about moral hazard it was argued that a regime of partial loss sharing

---

<sup>19</sup> The presumption is that for debt issued under local law, exit from the euro would be accompanied with the automatic conversion of debt obligations to the new local currency. This process would mirror that associated with entry to the euro. When the euro was adopted, existing debt obligations were automatically converted from the legacy local currency to the new local currency—the euro. However, the possibility of a credit event in case of a breakup of the euro cannot be excluded, raising the potential cost of such a scenario.

<sup>20</sup> This restriction also has the peculiar implication that a private entity based outside the euro area, e.g. a rating agency based in Canada or the United States, can potentially determine how QE is implemented in the euro area.

would be more commensurate with the current architecture of Economic and Monetary Union and the Treaties under which the ECB operates.” (ECB, 2015.)

The stated justification for this policy decision raises a difficult legitimacy question. It suggests that the ECB decided to use its discretionary authority to deviate from QE implementation modalities best suited for its single monetary policy in order to induce improved behavior by elected euro area governments that in the ECB’s view may be prone to moral hazard. This reasoning would be difficult to justify on the basis of the ECB mandate.

These implementation decisions, and the resulting distributional effects, have also adversely impacted the fiscal/monetary policy mix for the euro area member states where additional accommodation would have been most desirable. The implicit tax imparted by ECB policies on the cost of financing sovereign debt of member states perceived to be weak has been a key reason why the fiscal space available to the governments of these member states has been limited during the crisis. Through this channel, ECB’s policies have contributed to the tighter than desirable fiscal policy conditions in some member states as well as the overly tight fiscal policy for the euro area as a whole. Figure 8, which compares the primary fiscal balance of the US, Germany, Italy and Spain, is illustrative. Although relative macroeconomic conditions, such as cyclical conditions in employment and aggregate demand, would have called for tighter fiscal policy in Germany rather than in Italy, the fiscal stance of the two states has been comparable when measured in terms of their primary fiscal balance. Italy’s fiscal policy has been severely constrained by the relatively high cost of refinancing its debt.

The resulting unbalanced policy mix has had important distributional consequences across member states and has contributed to the divergence in the performance of the real economy across member states since the crisis started. Figure 9 provides one relevant metric by comparing the evolution of real GDP per person in the US, Germany, Italy and Spain. Figure 10 presents a comparison of the interest-rate-growth differential that summarizes the consequences of the unbalanced policy mix on debt dynamics. The four panels show information, respectively for Germany, Italy, Spain and the United States. Each panel shows the growth of nominal GDP and the nominal yield on long-term debt, serving as a proxy of the financing cost for each government. The difference between the two summarizes the snowball effect on debt dynamics. When ECB policies unnecessarily raise the cost of financing of government debt to be higher than the growth rate of the economy, debt dynamics deteriorate even with tight fiscal policy—as has been the case in Italy, for example. To the extent alternative implementation of monetary policy could avoid such adverse consequences without compromising the ECB’s price stability goal, these alternatives would be preferable to current procedures.

A quantitative assessment of the magnitude of the distributional effect introduced in sovereign markets by the implementation procedures of ECB monetary policy is not straightforward. Expected future policy rates, liquidity premia, term premia as well as redenomination and default

premia together determine the level of sovereign yields. A detailed model of the joint determination of the sovereign term structures of the euro area member states would be required to identify the implicit tax/subsidy reflected in sovereign spreads resulting from discretionary ECB decisions. However, a straightforward comparison of the evolution of sovereign yields with comparable nearly-safe rates, such as Overnight Indexed Swaps (OIS) rates, is indicative. The variation over time in the spread between a sovereign yield and the OIS rate at the corresponding maturity can serve as a proxy of the variation over time of the risk premium/safe haven subsidy embedded in the sovereigns of different member states.<sup>21</sup> Figure 11 plots these spreads for Germany, Italy and Spain for the 2- and 10-year horizons. As can be seen, while these spreads were very small and stable before the crisis, they have exhibited substantial variation since 2008. As would be expected, the spreads for Italy and Spain capture the contours of the default/redenomination fears embedded in the levels of sovereign yields in recent years. The decline in the German spread during the most intense episodes of the crisis, as well as since ECB QE started, is indicative of the distributional benefit accruing to Germany from the compromising of the safe asset status of other sovereigns and the implementation procedures of monetary policy. As is evident from the figure, the distributional effect is highly asymmetric. The benefit accruing to Germany from the safe haven subsidy has been smaller than the implicit tax imposed on Italy and Spain in the form of an excess premium. On net, compromising the safe asset status of euro area sovereigns has been costly for the euro area as a whole. The figure also suggests that the benefit accruing to Germany has become larger since ECB QE started. In 2017, the 2-year German spread has reached a historic low of about minus half a percentage point.

Overall, monetary policy in the euro area since the crisis, including the implementation of QE, appears to have had major distributional effects across euro area member states. In part, these effects reflect discretionary ECB decisions. While the discretionary nature of these decisions may be defended on the basis of the authority given to the ECB by the EU Treaty, it is far from clear that the decisions reflect the best use of discretion towards achieving the mandate of the ECB.

## **V. The special role of sovereign debt and its backstop**

A major cause of the distributional consequences of ECB policies can be attributed to the ECB's unwillingness to support all the member states it serves in a manner similar to the support other independent central banks provide to the economies they serve. The difficulty reflects gaps and ambiguities in the institutional framework of the euro area due to the absence of a single fiscal

---

<sup>21</sup> To be sure, this is an imperfect proxy. An OIS contract contains some residual risk which is likely to vary over time. In addition, since the liquidity premium on government bonds varies over time, the time variation of the spread will not reflect only the changes in the credit risk/safe haven premium. Pericoli and Taboga (2015) suggest a more elaborate methodology for identifying credit and liquidity premia in 10-year sovereign spreads using information from credit default swaps (CDS) and OIS.

counterpart for the ECB. Given the inexorable fiscal implications of monetary policy, the absence of a single fiscal counterpart creates distributional challenges. The severity of these distributional effects depends on discretionary ECB decisions relating to the implementation of monetary policy. An important gap regards the role of an independent central bank in serving as a temporary backstop that can rule out self-fulfilling sovereign default equilibria.<sup>22</sup> When the central bank provides proper support, the sovereign debt of states with sufficiently sound fundamentals can serve the important welfare enhancing role of a safe asset in the economy. When the central bank fails to provide proper support, the safe asset status of sovereign debt may be compromised even with sound fiscal fundamentals.

In the aftermath of a crisis, the deterioration of the fiscal position of a sovereign may raise questions of long-term sustainability and the fear of default. However, a default is unnecessary when the fiscal deterioration is not extreme and the fear is not allowed to become self-fulfilling. Within a range, the fiscal deterioration of a sovereign may be such that self-fulfilling default equilibria are likely in the absence of a backstop but can be ruled out if the central bank serves as a proper backstop. To prevent unnecessary stress, the central bank must be willing to accept government debt as collateral even when market participants express fear of default, recognizing that failing to do so will allow the fear to become self-fulfilling. In this manner, within limits, the presence of a backstop can rule out self-fulfilling default equilibria without compromising price stability or otherwise providing monetary financing to the sovereign. However, serving as a backstop introduces risks to the central bank balance sheet associated with the extreme possibility that the fiscal position of the sovereign might subsequently deteriorate further.

In the case of the ECB, the Treaty prohibits the provision of monetary financing to the government of a member state. The ECB is not permitted to purchase government bonds of a member state that the ECB knows will not repay its debt. Obviously, this does not preclude assuming *any* balance sheet risk associated with monetary operations involving government debt. Nonetheless it has led to questions about the ECB's authority to assume such risks and serve as a backstop that could prevent the materialization of unnecessary self-fulfilling stress episodes.

The presence of a backstop is critical for ensuring that government debt denominated in the local currency can serve the role of a safe asset in an advanced economy, especially during a crisis. The determination of what constitutes a safe asset falls squarely on the central bank which controls the issuance of reserves in the currency of the safe asset. A safe asset is one which can be expected to be acceptable by the central bank in exchange for reserves in the future, barring extreme circumstances. In the event of an adverse shock, such as observed with the Global Financial Crisis, the backstop provides flexibility to fiscal authorities to adjust the intertemporal profile of fiscal policy so that it can be appropriately countercyclical in the short run while

---

<sup>22</sup> Calvo (1988) demonstrated the presence of multiple expectational equilibria and the possibility of self-fulfilling default in government debt markets. De Grauwe (2011) and Corsetti and Dedola (2016) highlighted the problem of self-fulfilling default equilibria in the context of the euro area.

remaining sustainable in the long run. While the possibility of a default can never be completely ruled out, the presence of a backstop provides the assurance that in an advanced economy a default would only materialize under extreme circumstances.

Before the adoption of the euro, the government debt of all member states was considered a safe asset in the euro area. The NCBs provided a backstop for their respective sovereigns. After the adoption of the euro, and until the crisis, the government debt of all member states continued to be considered a safe asset. This consideration was reinforced by the governments of the member states in two ways. First, through the mutual monitoring of fiscal policy by euro area governments, in the context of the fiscal framework of the euro area. Second, through EU directives relating to the implementation of the Basel framework for bank supervision, which had been agreed upon and adopted by governments before the crisis. Specifically, the Capital Requirements Directive (CRD) excluded the government debt of all member states from exposure limits and required zero capital to be held by banks against their holdings of any euro area government debt. Before the crisis, this arrangement promoted large holdings of euro area sovereign debt by euro area banks and helped keep the cost of financing of government debt relatively low. The coherence of this framework presupposed that government debt would be treated as a safe asset, implying that the possibility of sovereign default should be considered as an extreme event and that such defaults would be avoided when not absolutely necessary.

The extent to which the ECB would be willing to serve as a backstop to sovereigns, when fiscal stress materialized in a member state, had not been clarified before the crisis. In the event, the ECB did not serve as a backstop during the crisis, with adverse consequences for numerous member states and the euro area as a whole. This set apart the ECB from central banks of other advanced economies, a point noted by ECB President Draghi in his widely read remarks at the 2014 Jackson Hole Symposium:

Turning to fiscal policy, since 2010 the euro area has suffered from fiscal policy being less available and effective, especially compared with other large advanced economies. This is not so much a consequence of high initial debt ratios—public debt is in aggregate not higher in the euro area than in the U.S. or Japan. It reflects the fact that the central bank in those countries could act and has acted as a backstop for government funding. This is an important reason why markets spared their fiscal authorities the loss of confidence that constrained many euro area governments' market access. (Draghi, 2014.)

With this statement, the ECB President acknowledged that the ECB did not serve as a backstop to euro area governments, and that the euro area “suffered” as a result. In addition, by noting that the Federal Reserve and the Bank of Japan “could” act as a backstop, it implied that the ECB did not act as a backstop because of the belief that it could not. This implication, however, is unclear as it depends on the interpretation of the limits of the ECB’s discretionary power towards meeting its mandate, as specified in the Treaty.

The main question regards the interpretation of the prohibition of monetary financing in the Treaty. The ECB is not permitted to *knowingly* assume the obligations of the governments of member states. However, this prohibition does not preclude the ECB from serving as a backstop during a crisis. It may be recalled from the analysis about the elimination of adverse self-fulfilling equilibria that a central bank backstop may succeed in preventing a range of undesirable outcomes without compromising price stability or otherwise providing monetary financing to the sovereign.

An alternative argument could be that the ECB should not take *any* risks associated with monetary policy operations involving government debt, and perhaps this is why it cannot serve as backstop. However, the ECB has been routinely taking such risks on its balance sheet, as this is an integral part of its single monetary policy. Why would this not apply when it matters most, when it could eliminate adverse self-fulfilling equilibria?

What explains the ECB's reluctance to serve as a backstop to euro area governments during the crisis? One factor appears to be a decision taken before the crisis, relating to the role of credit rating agencies in determining the eligibility of government debt as collateral for the ECB's single monetary policy.

After the formation of the euro area, the ECB faced the challenge of devising rules for collateral eligibility that could be applied in a simple manner to a large universe of private assets, in addition to government securities. To address this challenge, the ECB decided to effectively defer the determination of eligibility to private rating agencies: The ECB would decide on a threshold rating and consider an asset eligible as long as one of the rating agencies recognized for this purpose assigned a rating that met this threshold. Thus, as a rule, collateral eligibility was determined by private credit ratings, with the understanding that the ECB could always invoke an exception to suspend the application of the rule.<sup>23</sup> Although the reliance on credit rating agencies could be justified by the need to evaluate the eligibility of the many thousands of potentially eligible instruments in the private sector, the same need not apply to the evaluation of sovereign debt. The treatment of sovereign debt was not clarified until 2005, when the ECB faced a second challenge relating to its collateral framework.

The second challenge was associated with the weakening of the Stability and Growth Pact (SGP), following a Franco-German initiative in 2003-04. When France and Germany failed to respect the fiscal rules that had been in place when the euro was created, rather than adopt corrective action they opted to change the rules. The result, was the weakening of the SGP,

---

<sup>23</sup> This description is meant to capture the salient characteristics of the framework pertinent for this discussion, abstracting from many details. The complete framework may be found in the ECB's General Documentation, which has been subject to modification from time to time. ECB (2006) describes the procedures in effect before the Global Financial Crisis. Nyborg (2017) offers a detailed description of the ECB's collateral framework, and its evolution during the crisis.

despite strong warnings to the contrary by the ECB.<sup>24</sup> Following the weakening of the SGP, which was the main mechanism for ensuring sound fiscal policy by the member states governments, the ECB was criticized for insufficient differentiation of government debt in its collateral policy and was encouraged to change its framework to enforce fiscal discipline.<sup>25</sup> The threat to declare the government debt of a member state ineligible collateral could be used for such enforcement.

In November 2005, the ECB communicated its discretionary decision to rely on credit rating agencies to determine the eligibility of sovereign debt as collateral—the same criterion it applied to private collateral. The precise rationale for the decision is not available as minutes for the decision have not yet been published, but it cannot be excluded that the weakening of the SGP was a factor. The decision to communicate a minimum credit rating for sovereign debt was interpreted as a warning directed at member state governments (Atkins and Schieritz, 2005). Regardless of the rationale, this might have appeared to be of limited significance when the decision was taken since euro area sovereigns were sufficiently highly rated. Arguably, it might have been as difficult to foresee that this decision could have threatened euro area sovereign signatures with ineligibility from the ECB’s monetary policy operations as it would have been to assess the severity of the Global Financial Crisis before it happened.

As concerns about the fiscal stress on sovereigns increased in the aftermath of the Global Financial Crisis, the mechanical reliance on private credit ratings for eligibility generated a dynamic that guided markets towards the adverse self-fulfilling equilibrium that the presence of a backstop would have averted.

This dynamic became intense in the spring of 2010, when questions arose regarding the fiscal sustainability of Greece. In May 2010, the rating of Greek sovereign debt fell below the eligibility threshold, as a result of action by credit rating agencies. Using its discretion, the ECB temporarily suspended its eligibility criterion for this case. However, the temporary and exceptional nature of the suspension also reaffirmed the general rule that euro area government debt could be denied eligibility on the basis of action by private credit rating agencies.

Inadvertently, the ECB’s reliance on credit ratings created a highly destabilizing cliff effect. Fear that downgrades of sovereign credit ratings by private firms would trigger the loss of ECB eligibility reinforced pressures on sovereigns perceived to be weak and became self-fulfilling. The adverse dynamic became more acute following the October 2010 Franco-German agreement that deliberately injected credit risk in government bonds of most other euro area member states. The Deauville agreement implied that if a euro area sovereign faced short-term liquidity

---

<sup>24</sup> The ECB expressed serious concerns about the proposed changes in the *corrective arm* of the SGP with a statement issued on March 21, 2005 (ECB, 2005). The proposed changes also included improvements in the *preventive arm* of the SGP which were not controversial.

<sup>25</sup> See e.g. Buiters and Sibert (2005) for pertinent analysis.

difficulties, capital losses would be forced on investors as a condition for allowing the member state to seek temporary liquidity assistance even when the debt dynamics of the member state were sustainable. This represented a major deviation from international norms, turning on its head the widely held principle that sovereign default should be avoided when unnecessary.

The ECB's predicament in dealing with euro area government debt over the past few years can be largely attributed to the combination of the cliff effect and the Deauville agreement. Without the cliff effect, the self-fulfilling fears of credit-rating downgrades would have been checked. Prior to Deauville, the ECB could have undertaken monetary policy operations with the assurance that euro area governments would discourage sovereign default in the euro area. Since Deauville, and in combination with the ECB's reliance on credit rating agencies, fear of default has become a feature of most euro area sovereign markets.

The combined effect of the ECB's aversion to serve as a backstop and the deliberate injection of credit risk following Deauville resulted in a severe overstatement of the risk embedded in euro area sovereigns perceived to be weak, compared to advanced economies with similar fundamentals outside the euro area.<sup>26</sup> Although euro area governments subsequently retreated from the Deauville agreement and attempted to diffuse concerns regarding possible future sovereign defaults in the euro area, the episode highlighted the economic costs and distributional effects associated with the ECB's aversion to serve as a backstop for euro area governments, even when this did not compromise price stability nor otherwise provide monetary financing to a member state. As a result, the debt of euro area sovereigns perceived to be relatively weak, continues to be considered significantly riskier relative to the debt of non-euro area sovereigns with similar or worse economic fundamentals.

The euro area as a whole has suffered from the injection of unnecessary credit risk in the sovereign signatures of euro area member states perceived to be weak. The ECB's unwillingness to serve as a backstop has been detrimental to the euro area as a whole. As noted earlier, however, this development has benefited selected member states perceived to be relatively strong by directing the global demand for euro denominated safe assets to these states. These outcomes may have reflected unintended consequences of discretionary decisions taken before the crisis and the institutional gaps in the construction of the euro. Regardless of the original cause, the end result remains: The ECB's discretionary decisions on the treatment of sovereign debt during the crisis have had immense distributional consequences in the euro area.

This raises the question whether alternative approaches can result in improved outcomes for the euro area as a whole.

---

<sup>26</sup> This phenomenon was documented by a diverse set of studies including Aizenman, Hutchison and Jinjarak (2013), De Grauwe and Ji (2012, 2013), Gartner, Griesbach and Jung (2011), and Vernazza and Nielsen (2015). Delatte, Fouquau and Portes (2016) document an increased sensitivity to fundamentals from 2010 to 2012, and a partial reversal following the introduction of the OMT by the ECB.

## VI. Alternative ways forward

Numerous paths could lead to an improvement in the functioning of the euro area. From an institutional design perspective, improvements could eliminate the current sources of fragility and allow for better macroeconomic policies, including a more appropriate fiscal-monetary policy mix. Examples of such proposals include the grand plans embedded in the five presidents report (Juncker, 2015), aiming for a “deep, genuine and fair economic and monetary union”; more modest proposals for a proper crisis management framework such as the options discussed in Corsetti et al (2016); and basic improvements in policy coordination, such as the proposal put forth by the European Commission (2016) or a euro area ministry of finance as proposed by Trichet (2011). A common thread in many proposals involves plans that would result in better coordination, risk-pooling and risk-sharing, which constitute elements towards a Fiscal Union in Europe.<sup>27</sup>

These paths towards escaping the current malaise involve either changes in the Treaties, which presupposes unanimous support by all EU member states, or the voluntary consent by the governments of all euro area member states. Neither of these conditions is likely to be met in the foreseeable future. The reason is simple. Although the current dysfunction has harmed the euro area overall, the distributional effects have been uneven. While most member states have suffered, a few member states have benefited from the crisis and continue to benefit from the persistent fragility. In this light, the political feasibility constraints required for advances that require unanimous support cannot be met. Member state governments that have been experiencing short-term benefits from the status quo do not have an incentive to accept changes that would be against their short-term interest.<sup>28</sup>

A more promising approach would be to focus on smaller changes that can be decided and implemented by the European Union’s independent institutions using their discretionary authority, in accordance with the *existing* Treaty. In accordance with the Treaty, independent institutions have the responsibility to adopt policies that are in the best interest of the European Union and the euro area as a whole. The improvement that could be achieved in this manner may be less than ideal, but does not need not be limited by the political feasibility constraints that have prevented reasonable progress requiring Treaty changes.

The ECB is uniquely placed to contribute positively along these lines. According to the Treaty, ECB decision making bodies are obliged to take decisions in the best interest of the euro area as a whole and no government has the authority to interfere with such decisions. On the basis of

---

<sup>27</sup> The IMF has explored numerous promising options along these lines. See e.g. Allard et al (2013), Obstfeld (2016) and IMF (2016a).

<sup>28</sup> This critique focuses on the likelihood of implementation of proposals such as reflected in the five presidents report, given political feasibility constraints. There are also criticisms that focus on the merits, e.g. Issing (2015).

the experience accumulated since the crisis, an alternative way forward could be based on the ECB adjusting its policies so as to reduce the immense distributional effects due to prior ECB discretionary decisions. An important step forward would be actions that reduce the distortions currently reflected in the relative cost of financing by different member states and restore the reasonable expectation that going forward the ECB will be serving as a proper central bank for member states in the euro area. The ECB has the legal independence and discretionary authority to suspend past decisions that do not reflect the best policy for the euro area as a whole, regardless of the original rationale for those decisions.

Several adjustments to the implementation of the ECB's single monetary policy could be made using the ECB's discretionary authority. A guiding principle should be the equitable treatment of all states that are members of the euro area in good standing. The ECB could abandon its reliance on private credit rating agencies for determining the eligibility of government bonds for open market operations. The ECB could remove its self-imposed eligibility criteria on QE. The ECB could restore full loss sharing on its QE operations, reflecting best policy practice for the implementation of its single monetary policy. The ECB could improve the supply of safe assets, either through a common safe asset that would benefit the euro area as a whole, or by restoring the safe asset status of euro area sovereign debt.

What procedures could replace the reliance on credit rating agencies for evaluating government debt? The main criterion ought to be fiscal soundness, assessed *independently* by the ECB. This could draw on debt sustainability analysis based on fundamentals, without regard to either credit ratings or distorted market prices on sovereign debt reflecting fears of default corresponding to an adverse self-fulfilling equilibrium.<sup>29</sup> As long as debt is deemed sustainable, on the basis of such an evaluation, it should be considered eligible collateral regardless of private credit ratings.

Sustainability evaluations may be sensitive to assessments of future fiscal policy by member states as reflected in projected primary deficits well into the future. Such assessments are therefore sensitive to the current or future perceived trustworthiness of the governments of the member states. The ECB should be careful not to overstep its mandate by expressing doubts about the future perceived trustworthiness of governments of member states that are in good standing.

---

<sup>29</sup> This would represent a critical methodological change compared to analysis published by the ECB during the crisis, such as the sustainability of government debt in Spain and Italy that was reported by the ECB in its September 2012 Bulletin (ECB, 2012). In that exercise, the ECB adopted for its analysis the prevailing market interest rates. These rates included an outsized credit risk premium reflecting an adverse self-fulfilling equilibrium which made sustainability appear unnecessarily tenuous. In July 2012, ten-year government bond yields for Spain and Italy were around 6-7%. For the baseline simulation the ECB stated: "It is assumed that nominal market interest rates at ten-year maturities will converge from their present levels to 5% by 2015." (p. 89.) By comparison, the average 10-year OIS rate in July 2012 was 1.4%; the corresponding German yield was merely 1.3%.

Rather than rely on credit rating agencies to judge member states, the ECB could use its discretion to perform its own independent analysis and treat any member state as in good standing unless a determination to the contrary is made by the euro area's highest political bodies. This would acknowledge that the ECB does not have the legitimacy to determine on its own whether a member state is *not* in good standing similarly to the acknowledgement that the ECB does not have the legitimacy to determine which EU member states are also members of the euro area.<sup>30</sup> It should be recalled that according to the Treaty, the task of monitoring member states falls on the European Commission, in its capacity as the independent guardian of the Treaty. The European Commission has the authority to propose to political bodies the examination of any concerns about particular member states. In the absence of an explicit political determination that a member state is no longer in good standing, the ECB should serve all member states in an equitable manner.

Eliminating the reliance on credit rating agencies for collateral eligibility would effectively end the adverse dynamics created during the crisis by the cliff effect, which continues to be reflected as an elevated credit premium in sovereign yields of euro area member states perceived to be weak. Since sovereign default can never be completely ruled out, however, it would be sensible to maintain some differentiation among sovereigns in the ECB collateral framework to properly reflect differences in fiscal fundamentals. This can be achieved with a graduated schedule of haircuts based on indicators of fiscal fundamentals. For example, the schedule of haircuts may be a continuous increasing function of a member state's current debt-to-GDP ratio.<sup>31</sup> As in the determination of eligibility, private credit ratings should not be a factor in determining haircuts for sovereign debt. The aim should be to acknowledge the possibly small differences in the probability of future fiscal challenges which ought to be appropriately accounted for in assessing collateral adequacy in credit operations.

What difference could adjustments along these lines have made during the crisis? Constructing counterfactuals is fraught with difficulties but a thought experiment is suggestive of the potential benefits. As an example, consider one of the worst episodes of the crisis, the summit of Heads of State or Government of the euro area that took place on October 26, 2011. At that summit, euro area governments took a decision to impose a default on Greek government debt which had been deemed unsustainable. The result was the immediate intensification of the crisis—an unwelcome substantial increase in credit risk and redenomination risk in numerous sovereigns that threatened the existence of the euro over the next several months. At the same meeting, the governments also communicated that:

---

<sup>30</sup> Implicitly, this policy adjustment would also protect the ECB from operating at the boundaries of its legitimacy, such as occasions when moral hazard had to be invoked to justify decisions or occasions when the ECB appeared to act as “the enforcer,” dictating terms to governments of member states (Economist, 2015).

<sup>31</sup> The simplest possibility would be to specify that the haircut be proportional to the current debt-to-GDP ratio. Additional indicators that influence long-term debt dynamics might also be included, for example, implicit future government liabilities that may not be reflected in the current stock of public debt.

All other euro area Member States solemnly reaffirm their inflexible determination to honour fully their own individual sovereign signature and all their commitments to sustainable fiscal conditions and structural reforms. The euro area Heads of State or Government fully support this determination as the credibility of all their sovereign signatures is a decisive element for ensuring financial stability in the euro area as a whole. (European Union, 2011.)

Had the ECB used its discretionary authority to serve as a backstop to all euro area member states that had communicated the “inflexible determination to honour fully their own individual sovereign signature,” the fear of default or break up of the euro would have been contained. In the summer and fall of 2012, the ECB took discretionary action to reduce some risks, but has not yet made adjustments to its operating procedures that could reduce the immense distributional effects that have resulted from other ECB discretionary decisions.

The adjustments to the implementation of the ECB’s single monetary policy suggested above would improve the effectiveness of the ECB’s single monetary policy and facilitate the achievement of the ECB’s mandate. It should be recalled that according to Article 127 of the Treaty, without prejudice to the primary objective of price stability, the ECB is obliged to contribute to the achievement of the objectives of the European Union as described in Article 3 of the Treaty which include sustainable development, balanced economic growth aiming at full employment, the promotion of economic cohesion and solidarity and the avoidance of discrimination.

These adjustments would also drastically reduce the effectiveness of ECB monetary policy as a device to control moral hazard and enforce fiscal discipline on governments of euro area member states. Some may view this as a drawback, along the lines of the criticism directed at the ECB before the crisis about insufficient use of its discretionary power to enforce fiscal discipline. How should moral hazard and fiscal discipline be addressed?

Ultimately, this is a question of legitimacy. The implementation of ECB monetary policy should be designed to fulfill the mandate of the ECB as effectively as possible, and not be determined by considerations that fall outside the ECB’s mandate. Returning to the debate following the weakening of the SGP, a warning communicated in May 2005 by Otmar Issing is highly pertinent:

It has been recently argued that the ECB should use its collateral policy as a sanction to exert fiscal discipline . . . Although superficially appealing, this suggestion would be misguided. . . . [I]t is clear that the design of the Stability and Growth Pact and its implementation are governmental responsibilities, to be controlled by parliaments. . . . [I]t is not and cannot be the ECB's role to enforce fiscal discipline and to correct shortcomings in the implementation of the Stability and Growth Pact. Attempting to do so would politicise the ECB's operations and ultimately threaten its independence . . . (Issing, 2005)

Using the ECB's discretionary authority to address moral hazard and fiscal discipline concerns regarding the governments of member states, rather than focus on achieving its mandate, would be encroaching on the responsibilities of the European Commission and the European Union's political bodies and would be inconsistent with democratic legitimacy.

## **VII. Concluding Remarks**

The euro area is failing. A comparison with the United States suggests that the euro area has suffered a much deeper and protracted slump following the global financial crisis and that it continues to remain fragile. Fiscal and monetary policy have been inappropriately tight and have been contributing to greater divergence across member states. To some extent, the failure can be attributed to institutional weaknesses, gaps and ambiguities in the construction of the euro. Fiscal policy has been hampered by the institutional framework which constrains individual states and lacks instruments to secure an appropriate aggregate stance. ECB monetary policy has been hampered by the distributional effects of balance sheet policies, which needed to be adopted at the zero lower bound. The ECB's reliance on private credit rating agencies and its reluctance to serve as a backstop to governments further contributed to instability overall, while benefiting some member states.

Numerous paths could lead to an improvement of the functioning of the euro area. A common thread in many proposals involves steps towards a Fiscal Union. Such plans require changes in the Treaty. However, proposals that require unanimous support of all governments do not meet political feasibility constraints. A more promising approach would be to focus on changes that can be decided by the European Union's independent institutions using their discretionary authority, in accordance to the existing Treaty.

The ECB is uniquely placed to contribute positively along these lines by adjusting the implementation of its single monetary policy to reflect the best interest of the euro area as a whole. In accordance to its mandate, the ECB can counteract the ongoing dysfunction by ensuring that monetary conditions are appropriately accommodative to achieve and maintain inflation close to 2% and by properly adjusting the implementation of its single monetary policy to reverse the distributional effects of prior discretionary decisions.

A guiding principle for ECB operations should be the equitable treatment of all states that are members of the euro area in good standing. The ECB could acknowledge that it does not have the legitimacy to determine whether a member state is no longer in good standing and instead use its discretion to treat any member state as being in good standing unless a determination to the contrary is made by the euro area's highest political bodies. The ECB could use its discretionary authority to abandon its reliance on private credit rating agencies for determining the eligibility of government bonds for open market operations; to remove its self-imposed eligibility criteria

on QE; and to restore full loss sharing, reflecting best policy practice for the implementation of its single monetary policy. The ECB could improve the supply of safe assets, by restoring the safe asset status of euro area sovereign debt or by promoting a common safe asset for the euro area as a whole.

European Institutions cannot solve the euro area's deep political problems. Ultimately, the viability of the European Project is in the hands of the elected governments of Europe. The ECB can use its discretionary authority to provide appropriate monetary accommodation and reduce distributional effects of prior discretionary decisions which have hampered the effectiveness of its monetary policy. Such action would improve the fiscal-policy mix in the euro area and positively contribute to the longer-term prospects for the euro area.

## References

Aizenman, Joshua, Michael Hutchison and Yothin Jinjark (2013). What is the risk of European sovereign debt defaults? Fiscal space, CDS spreads and market pricing of risk. *Journal of International Money and Finance*, 34, 37-59.

Allard, Celine, Petya Koeva Brooks, John C. Bluedorn, Fabian Bornhorst, Katharine Christopherson, Franziska Ohnsorge, Tigran Poghosyan, and an IMF Staff Team (2013). *Toward a Fiscal Union for the Euro Area*. IMF Staff Discussion Note SDN/13/09, September. <https://www.imf.org/external/pubs/ft/sdn/2013/sdn1309.pdf>

Andrade, Philippe, Johannes Breckenfelder, Fiorella De Fiore, Peter Karadi and Oreste Tristani (2016). The ECB's asset purchase programme: an early assessment. ECB Working Paper No 1956, December. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1956.en.pdf>

Arias, Jonas, Christopher Erceg and Mathias Trabandt (2016). The macroeconomic risks of undesirably low inflation. *European Economic Review* 88, 88-107. <http://dx.doi.org/10.1016/j.eurocorev.2016.03.005>

Atkins, Ralph and Mark Schieritz (2005). ECB to issue warning on cost of running deficits. *Financial Times*, November 9.

Bluestein, Paul (2016). *Laid Low. Inside the Crisis That Overwhelmed Europe and the IMF*. Centre for International Governance and Innovation.

Brunnermeier, Markus, Harold James and Jean-Pierre Landau (2016). *The Euro and the Battle of Ideas*. Princeton University Press.

Brunnermeier, Markus, Sam Langfield, Marco Pagano, Ricardo Reis, Stijn Van Nieuwerburgh and Dimitri Vayanos (2016). ESBies: Safety in the tranches. ESRB Working paper no. 21, September. <https://www.esrb.europa.eu/pub/pdf/wp/esrbwp21.en.pdf>

Buiter, Willem and Anne Sibert (2005). How the Eurosystem's Treatment of Collateral in its Open Market Operations Weakens Fiscal Discipline in the Eurozone (and what to do about it). CEPR Discussion Paper No. 5387, December.

Caballero, Ricardo and Emmanuel Farhi (2014). The Safety Trap. NBER Working Paper No. 19927, February.

Calvo, Guillermo (1988). Servicing the Public Debt: The Role of Expectations. American Economic Review 78(4): 647-661.

Christoffel, Kai, Günter Coenen and Anders Warne (2008). The New Area-Wide Model of the Euro Area: A Micro-Founded Open-Economy Model for Forecasting and Policy Analysis. ECB Working Paper 944, October. <http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp944.pdf>

Clouse, James, Dale Henderson, Athanasios Orphanides, David Small and Peter Tinsley (2003). Monetary Policy When the Nominal Short-Term Interest Rate is Zero. Topics in Macroeconomics 3(1). <http://dx.doi.org/10.2202/1534-5998.1088>

Coenen, Guenter and Sebastian Schmidt (2016). The role of the ECB's asset purchases in preventing a potential de-anchoring of longer-term inflation expectations. ECB Research Bulletin, July. <https://www.ecb.europa.eu/pub/economic-research/resbull/2016/html/rb160725.en.html>

Corsetti, Giancarlo and Luca Dedola (2016). The Mystery of the Printing Press: Monetary Policy and Self-fulfilling Debt Crises. Journal of European Economic Association, 14(6): 1329-1371, December.

Corsetti, Giancarlo, Luca Dedola, Marek Jarociński, Bartosz Maćkowiak and Sebastian Schmidt (2016). Macroeconomic stabilization, monetary-fiscal interactions, and Europe's monetary union. ECB Working Paper No 1988, December. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1988.en.pdf>

Dany, Geraldine, Reint E. Gropp and Gregor von Schweinitz (2015). Germany's Benefit from the Greek Crisis. IWH Online, 7/2015. [http://www.iwh-halle.de/d/publik/iwhonline/io\\_2015-07.pdf](http://www.iwh-halle.de/d/publik/iwhonline/io_2015-07.pdf)

- De Grauwe, Paul (2011). The Governance of a Fragile Eurozone. *Revista de Economía Institucional*, Vol. 13, No. 25, 13-41, July/December. (in Spanish).  
<http://www.scielo.org.co/pdf/rei/v13n25/v13n25a02.pdf>
- De Grauwe, Paul and Juemei Yi (2012). Mispricing of Sovereign Risk and Macroeconomic Stability in the Eurozone. *Journal of Common Market Studies* 50(6), 866-880.
- De Grauwe, Paul and Juemei Yi (2013). Self-fulfilling crises in the Eurozone: An empirical test. *Journal of International Money and Finance*, 34, 15–36, April.
- De Santis, Roberto (2015). A measure of redenomination risk. ECB Working Paper 1785, April.  
<https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1785.en.pdf>
- Delatte, Anne-Laure, Julien Fouquau and Richard Portes (2016). Regime-Dependent Sovereign Risk Pricing During the Euro Crisis. *Review of Finance*.
- Dornbusch, Rudiger (1996). Euro Fantasies. *Foreign Affairs*, September/October.
- Draghi, Mario (2014). Unemployment in the Euro Area. Address at the Federal Reserve Bank of Kansas City Jackson Hole Symposium, August 22.  
<https://www.kansascityfed.org/~media/files/publicat/sympos/2014/2014draghi.pdf>
- Economist (2015). The Enforcer. February 7. <http://www.economist.com/news/finance-and-economics/21642210-how-european-central-bank-can-dictate-terms-greek-government>
- Eichengreen, Barry (2015). *Hall of Mirrors: The Great Depression, the Great Recession, and the Uses – and Misuses – of History*. Oxford University Press.
- Eggertsson, Gauti, Andrea Ferrero and Andrea Raffo (2014). Can structural reforms help Europe? *Journal of Monetary Economics* 61, 2-22.
- European Central Bank (2003). Press seminar on the evaluation of the ECB's monetary policy strategy. May 8. [https://www.ecb.europa.eu/press/pressconf/2003/html/is030508\\_1.en.html](https://www.ecb.europa.eu/press/pressconf/2003/html/is030508_1.en.html)
- European Central Bank (2005). Statement of the Governing Council on the ECOFIN Council's report on Improving the implementation of the Stability and Growth Pact. 21 March.  
<https://www.ecb.europa.eu/press/pr/date/2005/html/pr050321.en.html>
- European Central Bank (2006). The implementation of monetary policy in the euro area: General documentation on eurosystem monetary policy instruments and procedures. September.  
<https://www.ecb.europa.eu/pub/pdf/other/gendoc2006en.pdf>

[European Central Bank \(2012\). Monthly Bulletin, September.](https://www.ecb.europa.eu/pub/pdf/mobu/mb201209en.pdf)  
<https://www.ecb.europa.eu/pub/pdf/mobu/mb201209en.pdf>

European Commission (2016). Towards a Positive Fiscal Stance for the Euro Area. November 16. [https://ec.europa.eu/info/sites/info/files/2017-european-semester-communication-fiscal-stance\\_en\\_1.pdf](https://ec.europa.eu/info/sites/info/files/2017-european-semester-communication-fiscal-stance_en_1.pdf)

European Union (2011). Euro Summit Statement. October 26.  
[https://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/125644.pdf](https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/125644.pdf)

Feldstein, Martin (1997). The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability. *Journal of Economic Perspectives*, 11(4), Fall.

Gartner, Manfred, Bjorn Griesbach, and Florian Jung (2011). PIGS or Lambs? The European Sovereign Debt Crisis and the Role of Rating Agencies. *International Advances in Economic Research*, 17, August.

Gaspar, Vitor, Maurice Obstfeld, and Ratna Sahay (2016). Macroeconomic Management When Policy Space Is Constrained: A Comprehensive, Consistent, and Coordinated Approach to Economic Policy. IMF Staff Discussion Note, SDN/16/09, September.  
<https://www.imf.org/external/pubs/ft/sdn/2016/sdn1609.pdf>

Goodfriend, Marvin (2014). Monetary Policy as a Carry Trade. *Monetary and Economic Studies*, Bank of Japan, November. <https://www.imes.boj.or.jp/research/papers/english/me32-3.pdf>

Holmström, Bengt and Jean Tirole (1998). Private and Public Supply of Liquidity. *Journal of Political Economy*, 106(1), 1-40.

International Monetary Fund (2016a). Options for a central fiscal capacity in the euro area. In *Euro Area Policies: Selected Issues*. IMF Country Report No. 16/220, July.  
<https://www.imf.org/external/pubs/ft/scr/2016/cr16220.pdf>

International Monetary Fund (2016b). *World Economic Outlook*. October.  
<http://www.imf.org/external/pubs/ft/weo/2016/02/>

Issing, Otmar (2005). One size fits all! A single monetary policy for the euro area. Speech at the International Research Forum, Frankfurt, May 20.  
<https://www.ecb.europa.eu/press/key/date/2005/html/sp050520.en.html>

Issing, Otmar (2015). Completing the Unfinished House: Towards a Genuine Economic and Monetary Union? *International Finance* 18(3), 361-372, December.

Juncker, Jean-Claude, Donald Tusk, Jeroen Dijsselbloem, Mario Draghi and Martin Schulz (2015). Completing Europe's Economic and Monetary Union. European Commission. [https://ec.europa.eu/priorities/sites/beta-political/files/5-presidents-report\\_en.pdf](https://ec.europa.eu/priorities/sites/beta-political/files/5-presidents-report_en.pdf)

Keynes, John Maynard (1930). *Treatise on money* (Vol. 2). London: MacMillan.

Lyziak, Tomasz and Maritta Paloviita (2016). Anchoring of inflation expectations in the euro area: recent evidence based on survey data. ECB Working Paper No 1945, August. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1945.en.pdf>

Mouabbi, Sarah and Jean-Guillaume Sahuc (2016). Evaluating the macroeconomic effects of the ECB's unconventional monetary policies. Banque de France, December.

Nautz, Dieter, Laura Pagenhardt and Till Strohsal (2017). The (de-)anchoring of inflation expectations: New evidence from the euro area. *The North American Journal of Economics and Finance* 40: 103-115. <http://dx.doi.org/10.1016/j.najef.2017.02.002>

Nyborg, Kjell (2017). *Collateral frameworks: The open secret of central banks*. Cambridge University Press.

Obstfeld, Maurice (2016). Fiscal Risk Sharing and Governance for the Euro Area: More Important than Ever. Presentation at DG ECFIN's Annual Research Conference, November 28. [http://ec.europa.eu/economy\\_finance/events/2016/20161128-arc2016/documents/obstfeld\\_en.pdf](http://ec.europa.eu/economy_finance/events/2016/20161128-arc2016/documents/obstfeld_en.pdf)

Orphanides, Athanasios (2004). Monetary Policy in Deflation: The Liquidity Trap in History and Practice. *North American Journal of Economics and Finance* 15: 101–124.

Orphanides, Athanasios (2014a). The euro area crisis: Politics over economics. *Atlantic Economic Journal* 42(3), September. <http://dx.doi.org/10.1007/s11293-014-9419-1>

Orphanides, Athanasios (2014b). ECB policy and Fed Normalisation. CEPR Policy Insight No. 75. [http://cepr.org/active/publications/policy\\_insights/viewpi.php?pino=75](http://cepr.org/active/publications/policy_insights/viewpi.php?pino=75)

Orphanides, Athanasios (2016). Fiscal implications of central bank balance sheet policies. MIT Sloan Research Paper No. 5168-16, July. <https://ssrn.com/abstract=2807249>

Orphanides, Athanasios and Volker Wieland (2000). Efficient Monetary Policy Design near Price Stability. *Journal of the Japanese and International Economies*, Vol. 14, No. 4 (2000): 327-365. <http://doi.org/10.1006/jjie.2000.0452>

Pericoli, Marcelo and Marco Taboga (2015). Decomposing euro area sovereign spreads: credit, liquidity and convenience. Banca d'Italia Working Paper no. 1021, July. [https://www.bancaditalia.it/pubblicazioni/temi-discussione/2015/2015-1021/en\\_tema\\_1021.pdf](https://www.bancaditalia.it/pubblicazioni/temi-discussione/2015/2015-1021/en_tema_1021.pdf)

Pill, Huw, and Lucrezia Reichlin (2014). Exceptional Policies for Exceptional Times: The ECB's response to the rolling crises of the euro area, and how it has brought us toward a new grand bargain. CEPR Discussion Paper Series, No. 10193.

Priftis, Romanos and Lukas Vogel (2016). The Portfolio Balance Mechanism and QE in the Euro Area. *The Manchester School*, 84(51), 84-105, September.

Sims, Christopher (1999). The precarious fiscal foundations of EMU. *De Economist*, 147(4), 415–436.

Sims, Christopher (2012). Gaps in the institutional structure of the euro area. *Public Debt, Monetary Policy and Financial Stability*, Financial Stability Review No. 16, Banque de France, April. [https://www.banque-france.fr/uploads/tx\\_bdfgrandesdates/FSR16-20-04.pdf](https://www.banque-france.fr/uploads/tx_bdfgrandesdates/FSR16-20-04.pdf)

Sims, Christopher (2016). Fiscal Policy, Monetary Policy and Central Bank Independence. Presented at the Federal Reserve Bank of Kansas City Jackson Hole Symposium, August. <https://www.kansascityfed.org/~media/files/publicat/sympos/2016/econsymposium-sims-paper.pdf?la=en>

Trichet, Jean-Claude (2011). Building Europe, building institutions. Aachen, June 2, 2011. <https://www.ecb.europa.eu/press/key/date/2011/html/sp110602.en.html>

Tucker, Paul (2015). The Pressing Need for More Complete Central Bank Policy Regimes. Paper presented at the BIS Research Conference in Lucerne on June 26, 2015.

Tucker, Paul (2016). The Political Economy of Central Bank Balance Sheet Paper. Paper presented at the Federal Reserve Bank of New York on May 4, 2016.

Ubide, Angel (2014). Is the European Central Bank Failing Its Price Stability Mandate? Peterson Institute for International Economics Policy Brief No. 14-5, February. <https://piie.com/publications/pb/pb14-5.pdf>

Van Rompuy, Herman, José Manuel Barroso, Jean-Claude Juncker, Mario Draghi (2012). Towards a Genuine Economic and Monetary Union. European Commission. December.  
[http://www.consilium.europa.eu/uedocs/cms\\_Data/docs/pressdata/en/ec/134069.pdf](http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/134069.pdf)

van Riet, Ad (2017). Addressing the safety trilemma: a safe sovereign asset for the Eurozone. ESRB Working Paper No 35, February.  
<https://www.esrb.europa.eu/pub/pdf/wp/esrbwp35.en.pdf>

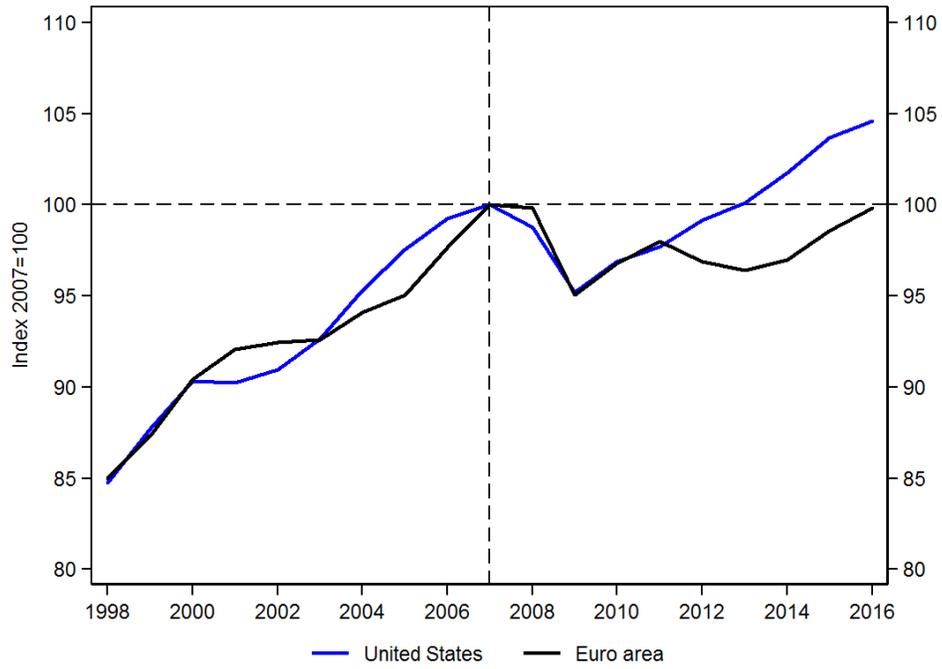
Vernazza, Daniel and Erik Nielsen (2015). The Damaging Bias of Sovereign Ratings. Economic Notes by Banca Monte dei Paschi di Siena, 44(2) 361-407.

Wieladek, Tomasz and Antonio Garcia Pascual (2016). The European Central Bank's QE: A New Hope. CESifo Working Paper No. 5946, June.  
[https://ideas.repec.org/p/ces/ceswps/\\_5946.html](https://ideas.repec.org/p/ces/ceswps/_5946.html)

Wolf, Martin (2014). The Shifts and the Shocks: What We've Learned-and Have Still to Learn from the Financial Crisis. Penguin Press.

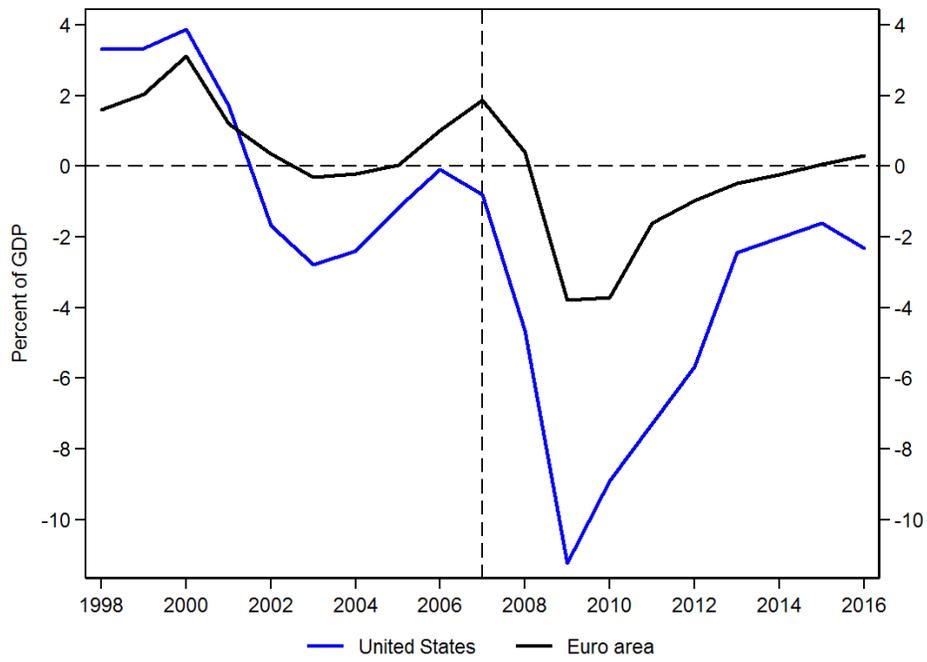
Wyplosz, Charles (2014). The Eurozone crisis: A near-perfect case of mismanagement. *Economia Marche Journal of Applied Economics*, XXXIII(1): 1-13.  
<http://economiamarche.univpm.it/index.php/em/article/view/38/35>

Figure 1  
The crisis: Real GDP per person



Notes: Annual real GDP per person. IMF WEO, April 2017. Euro area reflects EA12 aggregate.

Figure 2  
Government Primary Balance



Notes: General government primary lending/borrowing as a percent of GDP. IMF WEO, April 2017.

Figure 3  
Overnight interest rates

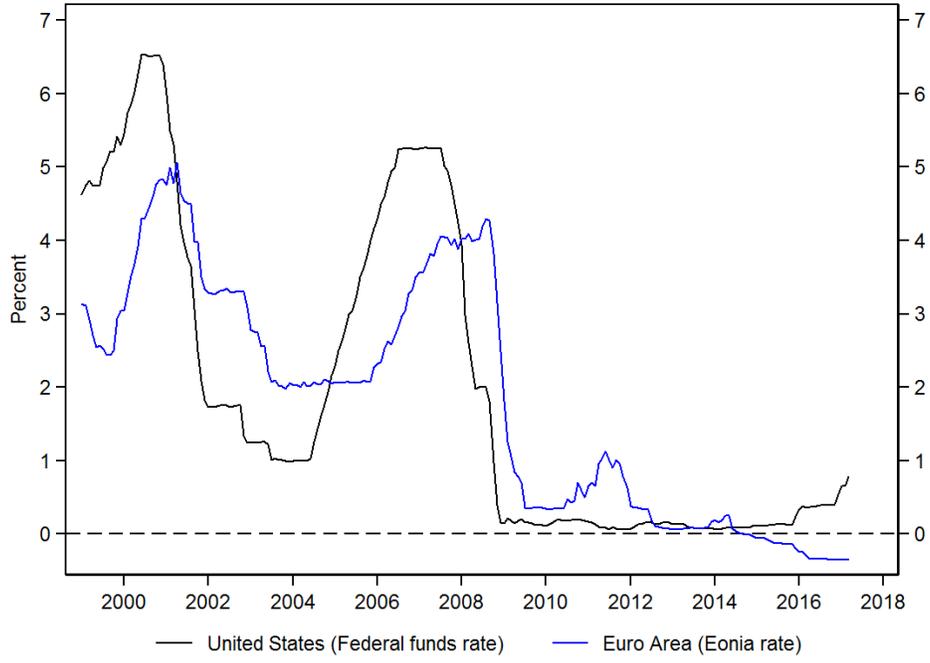


Figure 4  
Size of central bank balance sheets

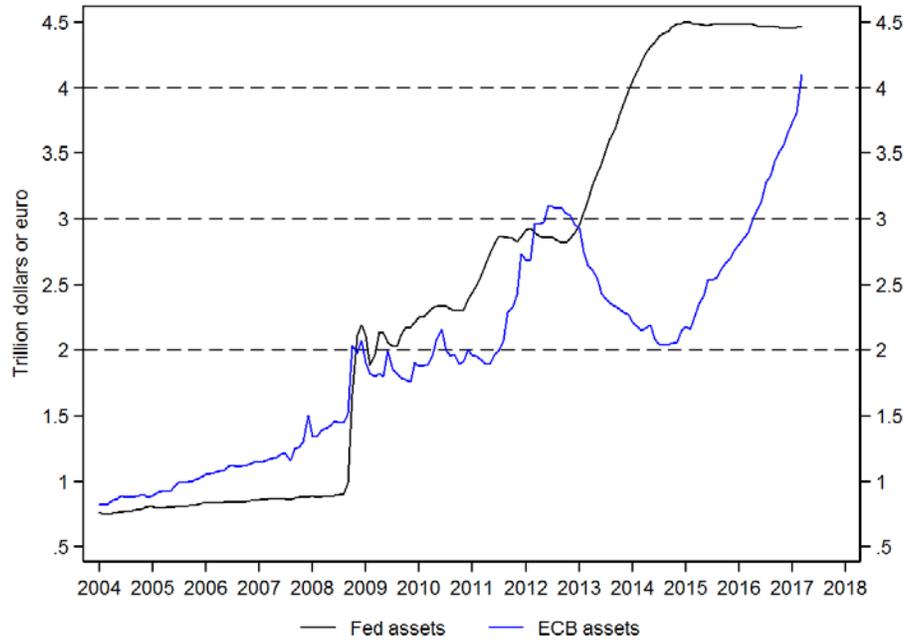
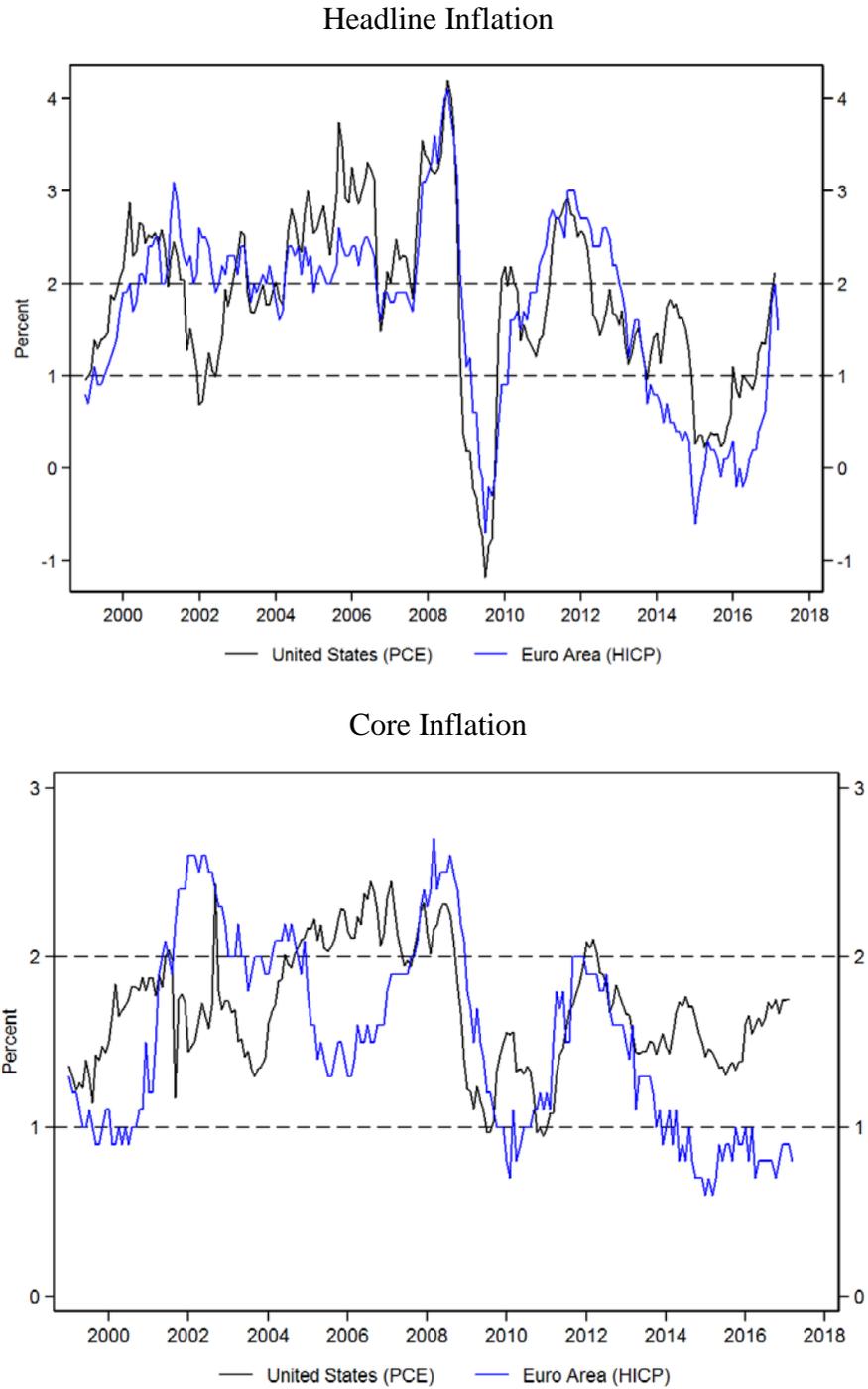
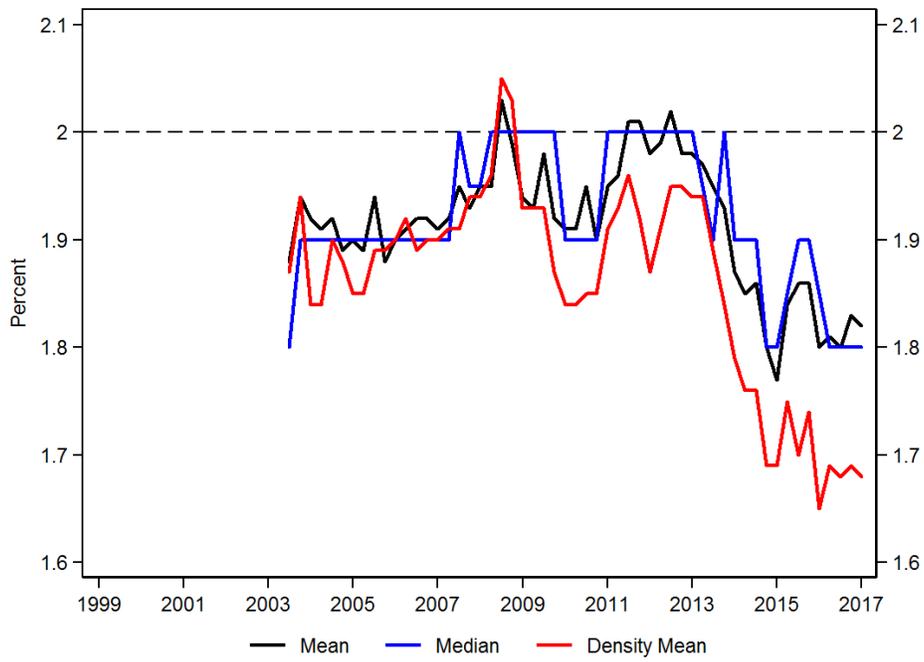


Figure 5  
Headline and Core Inflation



Notes: Year-on-year PCE and HICP inflation for the United States and the euro area respectively. Core inflation excludes food and energy for the United States; it excludes fresh food and energy for the euro area.

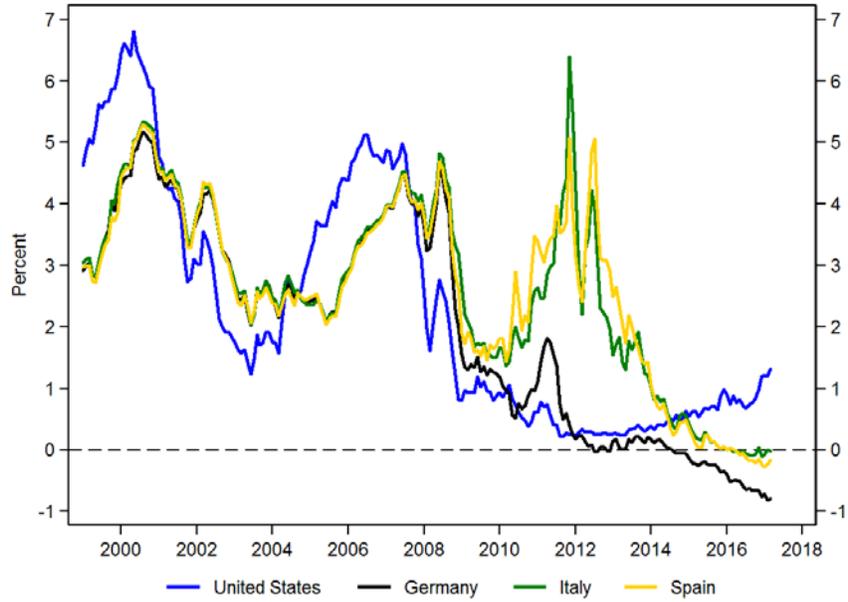
Figure 6  
Long-term inflation expectations in euro area



Notes: ESP SPF. Data since May 2003 clarification of ECB inflation objective.

Figure 7  
Government bond yields

Two-year maturity



Ten-year maturity

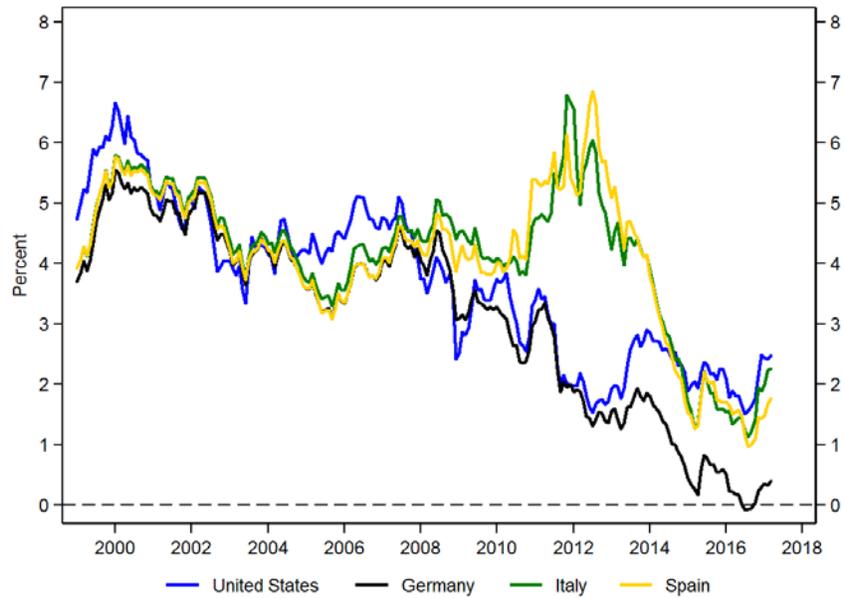
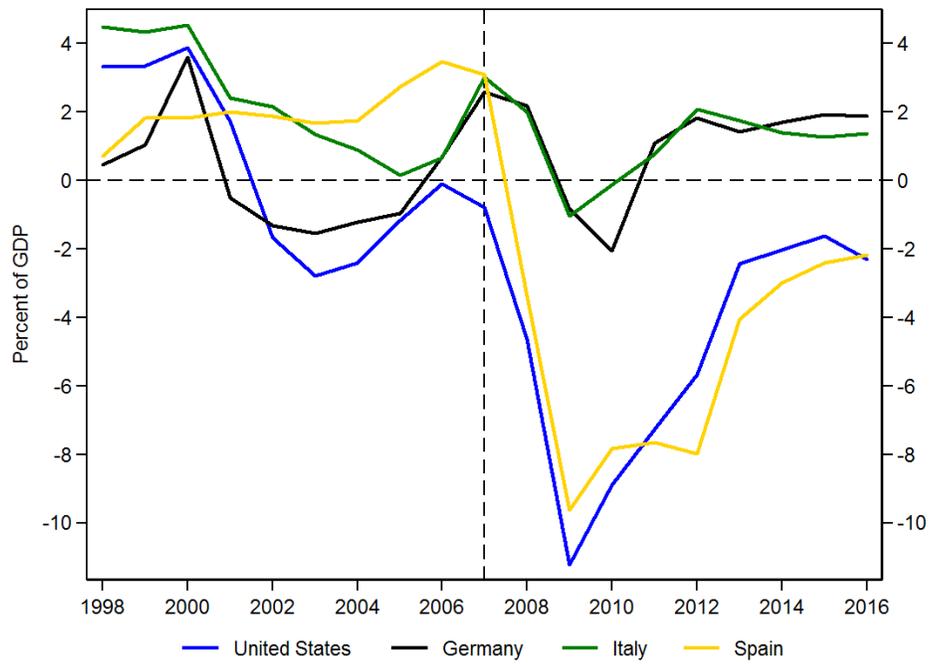
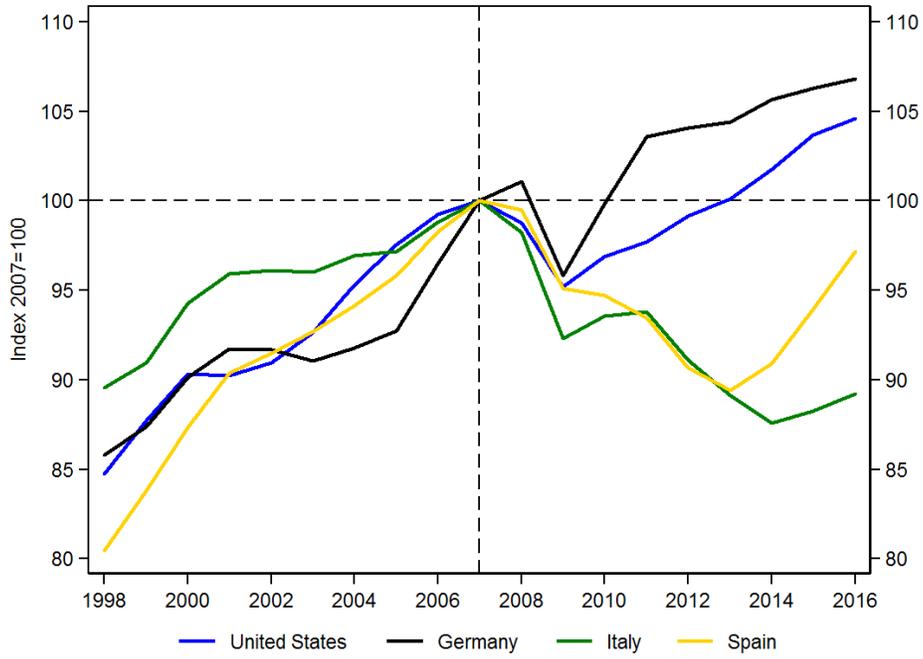


Figure 8  
Government Primary Balance



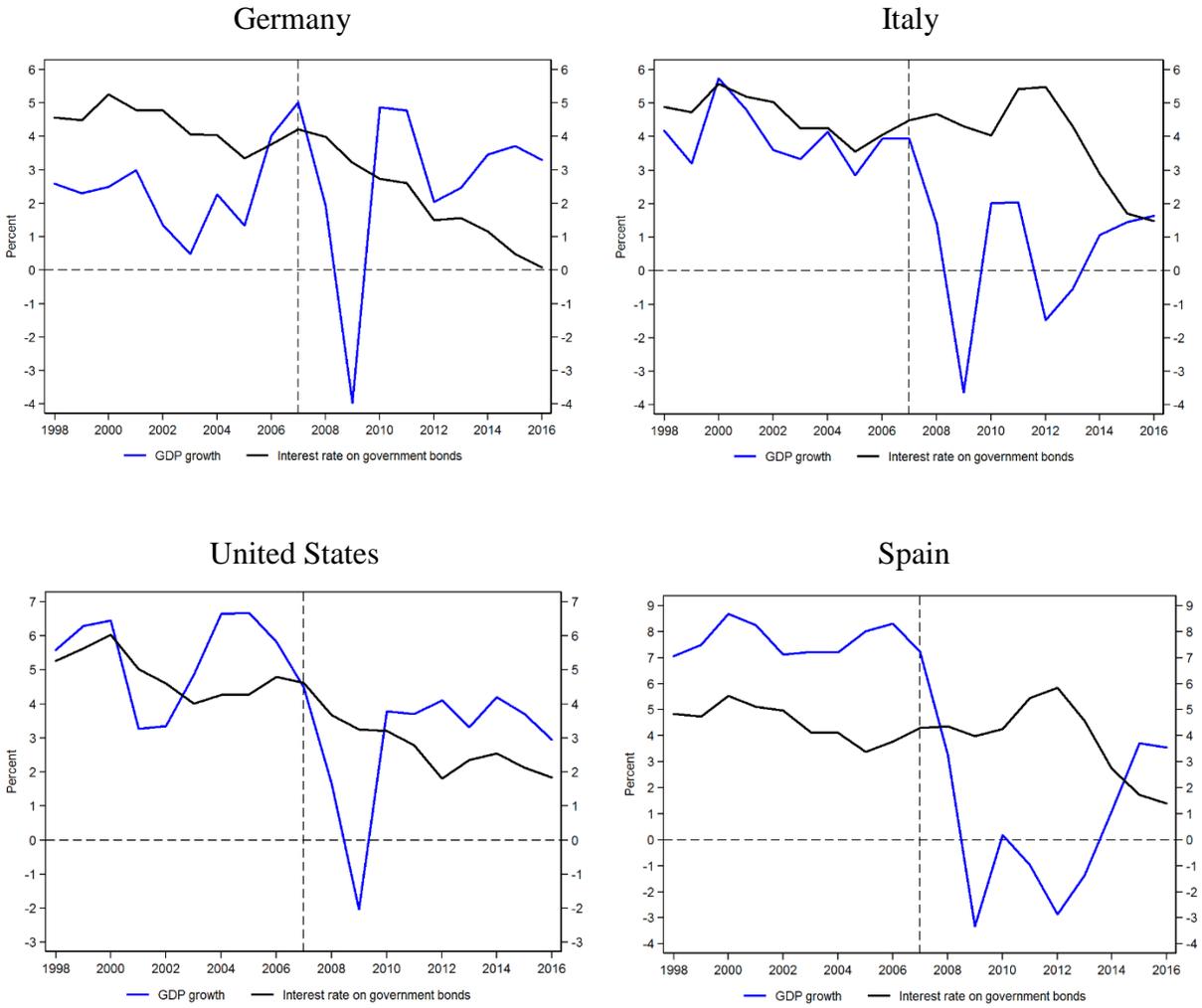
Notes: General government primary lending/borrowing as a percent of GDP. IMF WEO, April 2017.

Figure 9  
The Distribution of the Cost of the Crisis: Real GDP per person



Notes: Annual real GDP per person. IMF WEO, April 2017.

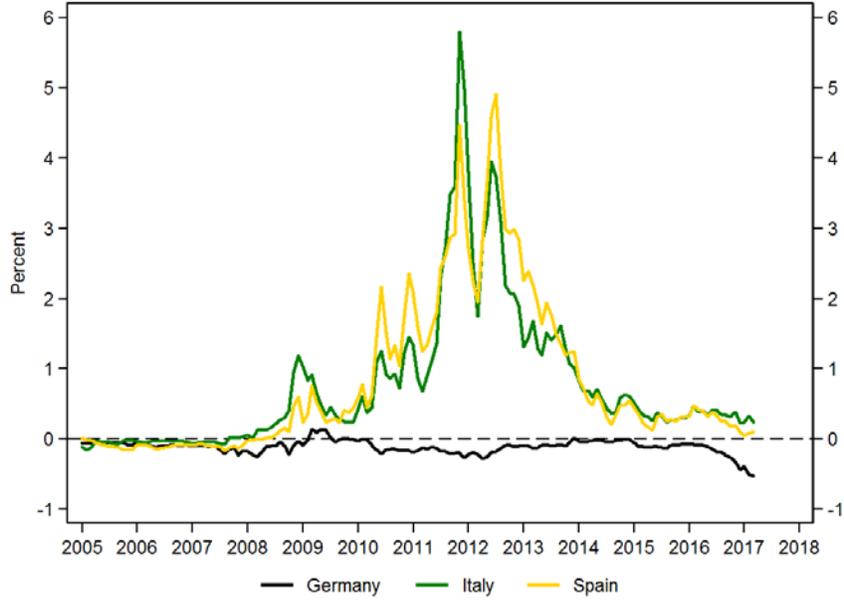
Figure 10  
The Snowball Effect



Notes: Annual nominal GDP growth and annual average yield on 10-year government bonds.

Figure 11  
Spreads between government bond yields and OIS rates

Two-year maturity



Ten-year maturity

