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* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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Reforming the architecture of EMU: Ensuring stability in Europe*

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Abstract

This paper analyses the reforms in the architecture of EMU since the eruption of the euro crisis in 2010. We describe major weaknesses in the original set-up of EMU, such as lack of fiscal discipline, diverging financial cycles and competitiveness positions, and a lack of crisis instruments. These weaknesses appeared against the background of a strong increase in financial integration and financial imbalances since the Maastricht treaty was signed. European policymakers have addressed all weaknesses in the EMU architecture in some way or the other, which is a major achievement. Yet, the effectiveness of the new framework will crucially depend on strict implementation. We discuss whether in the longer run the current balance between policy coordination and risk sharing can be improved upon.

Keywords: Economic and Monetary Union, Financial Cycles, Financial crisis, European debt crisis.
JEL classification: E44, E58, F36, G15, G21.

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1. Introduction

During the 1990s, sceptics perceived plans for Economic and Monetary Union (EMU) as an ambitious project that would never fly, just like the emu, the large Australian bird.[1] Critics referred to the absence of political union (Feldstein, 1997) and heterogeneity among EMU countries due to which the euro area was not considered an optimal currency area (Bayoumi and Eichengreen, 1993; De Grauwe, 2012). It was argued that Europe fell far short of the United States, for example, in terms of labor mobility and fiscal integration (Gibson et al., 2014).

Still, as most European political leaders at the time were strongly committed to further European integration, EMU started in 1999. EMU was based on three mainstays. First, monetary policy was delegated to a strictly independent European Central Bank (ECB) with the primary objective of price stability. Second, fiscal policy remained a national responsibility, although fiscal policies had to comply with relatively strict rules. Third, except for trade and competition policies, macro-economic and financial policies (such as bank supervision) were left to the responsibility of Member States.

As pointed out by Buti and Carnot (2012: 900), the rationale for the constraints on national fiscal policy was that "unsustainable fiscal dynamics in one country may eventually entail costs borne by all EMU participants. This could happen either *via* inflationary debt monetization or through large fiscal transfers between countries". By contrast, the potential spillover effects related to national economic policies were thought to be much smaller. This is why the Treaty contained no provisions in this area with the exception of the obligation for countries to "regard their economic policies as a matter of common concern and […] coordinate them within the Council" (Article 121).

This original setup of the monetary union appeared to function successfully in its first ten years, at least on the surface. In 2008, only months before the collapse of Lehman Brothers that marked the start of the global financial crisis, then European Commissioner Almunia wrote: "A full decade after Europe's leaders took the decision to launch the euro, we have good reason to be proud of our single currency. The Economic and Monetary Union and the euro are a major

[1] Notably in the US, there was a lot of skepticism, summarized by Jonung and Drea (2009) as: "It can't happen, It's a bad idea, It won't last."

success." (European Commission, 2008a, p. iii). However, in 2010 several important fault lines that had existed under the surface since the launch of the euro, notably weak public finances and persistent imbalances in some countries, unexpectedly became clearly visible in what is generally referred to as the euro crisis (Drudi et al., 2012).[2]

The euro crisis started in Greece. After several revisions of previously published deficit figures (even going back to the time of Greece's admission in the euro area) had been published it became clear that public finances in Greece were unsustainable. On 10 May 2010, the ten-year yield spread between Greek and German government bonds reached about 1,000 basis points. Similar concerns arose in Ireland, Portugal and, later, Spain and Italy. The interest spreads on government bonds of countries that came to be known as GIIPS did not only reflect increased credit risk, but also doubts about the sustainability of EMU.

A special feature of the crisis was what came to be known as the doom loop: the reinforcing relationship between the creditworthiness of sovereigns and banks. Concerns about the solvency of sovereigns fuelled concerns about the solvency of banks, given their large holdings of government bonds. In turn, this further fuelled concerns about the sovereigns' solvency, given the likelihood that they will have to bail out their relatively large banking systems.

Between 2010 and 2012, the ECB took several steps to combat the crisis. For instance, it continued the unlimited access to refinancing operations that started during the global financial crisis and decided to purchase public and private debt securities under the Securities Markets Programme (SMP), starting in May 2010. In December 2011, the ECB decided to conduct refinancing operations that significantly extended the horizon at which credit institutions could obtain liquidity from the Eurosystem. In particular, two three-year refinancing operations ('longer term refinancing operation', LTROs) have been conducted in December 2011 and February 2012 providing banks with potentially unlimited amounts of three-year loans. At the same time, the ECB announced more generous rules regarding the type of collateral it would require. The LTROs are widely considered as having achieved their aims: they ensured that no bank would face

[2] There are numerous papers on the crisis. Excellent overviews are provided by Shambough (2012) and Lane (2012). See also the collection of papers in Gibson et al. (2014).

a liquidity squeeze for the next three years and this allowed the inter-bank market to start functioning again.

In these years, European political leaders took several steps to enhance the governance of EMU. For instance, the Stability and Growth Pact (SGP) has been revised as part of a set of reforms known as the 'Six-Pack', 'Two-Pack' and the 'Fiscal Compact', while the Macroeconomic Imbalance Procedure (MIP) has been introduced to prevent the emergence of macro-economic imbalances (see section 3 for details). Despite these steps, financial market volatility remained, not least because progress on several important political issues, notably support to Greece, was extremely slow, leading to doubts about the commitment of European leaders to the euro.[3]

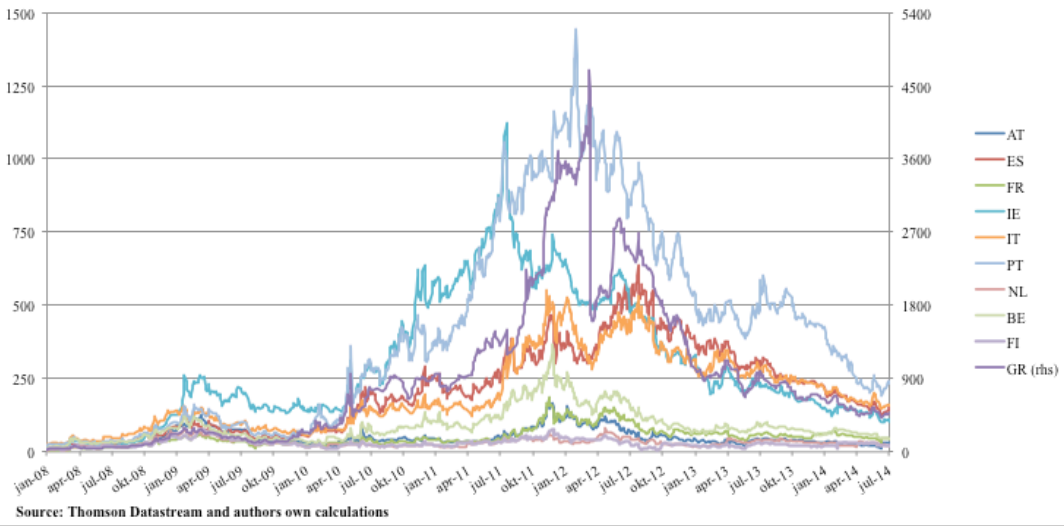
It was only after ECB President Draghi told an investment conference in London in July 2012 that: "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough" that bond spreads of GIIPS countries started to decline substantially.[4] To live up to those words, the ECB introduced the Outright Monetary Transactions (OMTs) programme in September 2012.[5] With this instrument, the ECB made clear that scenarios involving the collapse of monetary union are out of the question. After European political leaders finally showed their commitment as well by agreeing on further support to Greece and the establishment of a banking union, financial markets calmed down.[6] Interest rate spreads between the core countries and the periphery, which had to that point reflected increased risk of a euro break-up, narrowed sharply in the second half of 2012 (see Figure 1). Whether this development will continue, arguably will also depend on how credible the improvements in the architecture of EMU will turn out to be.

Even though the euro crisis as it unfolded was not fully foreseen even by the critics of EMU, it made some serious shortcomings in the architecture clearly

[3] According to Lane (2012: 60), "it may be fair to characterize Europe's efforts to address its sovereign debt problem as makeshift and chaotic, at least through the middle of 2012."
[4] See https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html.
[5] The ECB announced its intention to intervene on a large scale in the event of disruptions in the bond markets of countries that duly implemented an adjustment programme. These interventions will not be aimed at a particular interest rate or spread level, but at countering expectations of a monetary union break-up that were reflected in interest rate movements. OMT interventions differ from the SMP: OMT interventions are in principle unlimited, do not enjoy privileged creditor status and are explicitly linked to sound policy. The conditionality attached to OMT interventions resolves coordination issues between the fiscal and monetary authorities. OMT interventions are sterilised.
[6] See http://ec.europa.eu/economy_finance/assistance_eu_ms/greek_loan_facility/ for details.

visible. Section 2 outlines what went wrong and why events unfolded so differently than expected. Section 3 discusses the improvements in the architecture of EMU. Even though substantial progress has been made, section 4 discusses how the current balance between policy coordination and risk sharing can eventually be improved.

Figure 1. Ten-Year Government Bond Spreads Against German Bunds



Source: Thomson Datastream and authors own calculations

2. Shortcomings in the architecture of EMU

Especially during its first stages, the euro crisis was often primarily attributed to a lack of budgetary discipline. As hypothesized by Lane (2012), this probably reflects that the initial phase of the crisis was dominated by Greece, whose budgetary troubles could indeed be clearly attributed to a lack of budgetary discipline (and even deliberate statistical misreporting). Spain and Ireland, however, had stellar fiscal records when the crisis erupted before they too ran into budgetary problems. So a lack of budgetary discipline was not the only issue at play. Diverging financial cycles played a major role.[7] In several Member States, macroeconomic and financial imbalances built up in the years prior to the crisis were a major factor behind the deterioration of public finances. When the euro crisis

[7] The academic debate about EMU focused instead on diverging business cycles. Some authors argued that countries in the euro area would become more similar over time, as monetary union increases trade intensity and business cycle synchronization (Frankel and Rose, 1998). Initial studies on the trade effect indicated that currency unions lead to large increase in international trade (Rose, 2000). Since then, estimates of the trade effect of EMU have become much smaller (see, e.g., Berger and Nitsch, 2008), while Inklaar et al. (2008) find that the trade effect on business cycle synchronization is smaller than previously reported.

erupted, problems were amplified by the fact that the architecture of EMU did not contain provisions for the resolution of a major sovereign debt crisis.

Financial factors played an important role in the crisis. Before the eruption of the global financial crisis in 2008, financial factors were largely missing from macroeconomic paradigms, such as the theory of optimum currency areas, and they also hardly figured in the Maastricht treaty. Yet the start of EMU coincided with a period of very loose financial conditions. Many advanced economies experienced a strong growth of credit, house prices and the size of their financial sectors. Rapid financial integration induced a global surge in net and cross-border capital flows. The average size of foreign assets and liabilities in advanced economies increased from 70% of GDP in 1995 to over 210% of GDP in 2007. It even ran up to almost 300% of GDP in the euro area, as the euro further stimulated financial integration (Forbes, 2012). These financial factors amplified some of the vulnerabilities that already existed within EMU, and also created new ones that had not been anticipated (Lane, 2013; Obstfeld, 2013).

2.1 Non-compliance with the Stability and Growth Pact

Even though several academics had argued against the need to restrain national fiscal policies in a monetary union (cf. Buiter et al., 1993), the prevention of possible fiscal crises was a central preoccupation in the design of the single currency (Buti and Carnot, 2012). The Stability and Growth Pact (SGP), adopted in 1997, defined the restrictions on national fiscal policy as provided in the Maastricht Treaty in greater detail. Under its 'preventive arm' countries were required to achieve and maintain fiscal positions that are close to balance or in surplus, thereby ensuring sustainability while allowing room for cyclical stabilization without breaching the deficit limit of 3% of GDP. Under its 'corrective arm' procedural steps to be followed once deficits were considered excessive were delineated in the so-called Excessive Deficit Procedure (EDP), specifying conditions and deadlines and the ultimate possibility of financial sanctions as foreseen by the Treaty.[8] The amendments of the SGP as introduced in 2005 brought more

[8] For detailed discussions of the SGP, see Amtenbrink and de Haan (2003; 2006), Heipertz and Verdun (2010) and Schuknecht et al. (2011).

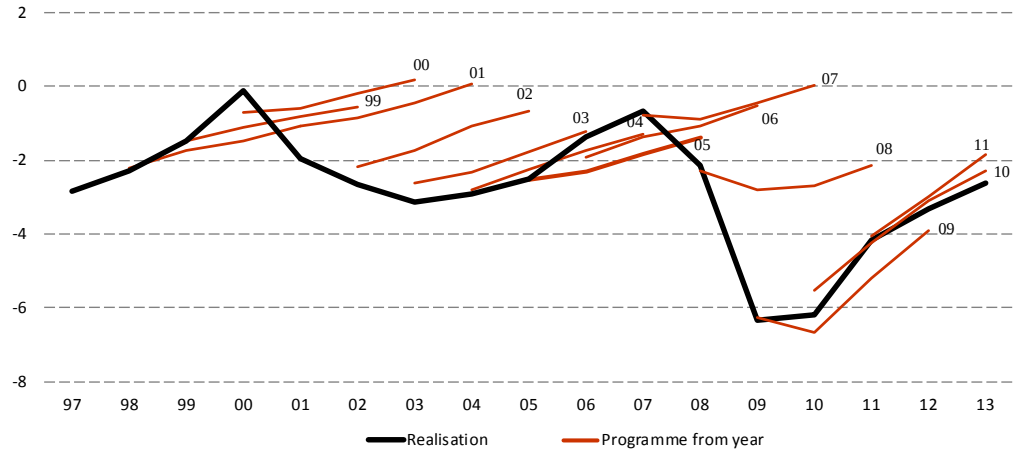
discretion and flexibility into the corrective arm, although the preventive arm became slightly more stringent (Amtenbrink and De Haan, 2006).

As we have shown elsewhere (de Haan et al., 2012; 2013), the major shortcoming of the SGP has been weak enforcement. There were no strong incentives for Member States to prevent other Member States from deviating from the objective to strive for a balanced budget in the medium term. Furthermore, Member States had no other means than peer pressure in the 'preventive arm' of the SGP.

As a result, the preventive arm of the SGP was a dire failure. This is clearly illustrated in Figure 2, which is taken from Wierts (2006) and updated. Whereas EMU Member States submitted Stability Programs to the European Commission in which they outlined how they would reach a (cyclically adjusted) balanced budget, the budgetary adjustments that were implemented in practice were much less ambitious (Beetsma et al., 2009). Large countries, in particular, did not bring down their deficit sufficiently in economic good times (de Haan et al., 2004; Schuknecht et al., 2011). As a consequence, deficits exceeded the 3 per cent threshold once the economic downturn set in 2000/2001. It then became clear that the 'corrective arm' of the SGP was also weak. The European Council of Economics and Finance ministers (ECOFIN), was responsible for enforcing the rules. Based on a proposal of the European Commission, the ECOFIN had to decide whether an excessive deficit exists in a Member State, and if so which steps would then be taken. If a Member State did not take (sufficient) action to redress an excessive deficit, sanctions could be imposed. However, the ECOFIN would not automatically impose sanctions, as each step required a discretionary decision by the Council. And the same ministers who were responsible for drafting national budgets and who could therefore be accused of breaking the rules also had to decide whether one of their colleagues breached the same rules.

Financial markets did not discipline governments either, in contrast to the prediction of Buiter et al. (1993), as they hardy differentiated between sovereign bonds treating them all as (almost) risk-free (see Figure 1).[9] General risk aversion was very low before the crisis and financial markets apparently did not consider the no-bail out clause as credible, expecting that the Union would renege on the no-bailout clause, if needed, to avert a financial crisis. When market discipline eventually came by the end of the decade, it took the form of a 'sudden stop' (Buti and Carnot, 2012).

Figure 2: Weigthed average Euro-12 budget deficit, plans vs outcome (% of GDP)



Source: EC and national stability plans of the respective countries. Figure based on Wierts (2006)

Table 1: Budgetary starting situation in 2007 (% GDP)

	GR*	PT	FRA	ITA	EMU	GER	NL	IRL	SP
Budget balance	-6,4	-3,1	-2,7	-1,5	-0,7	0,3	0,2	0,1	1,9
Cyclically adjusted budget balance	-7,1	-2,6	-2,6	-1,3	-0,8	-0,1	0,1	0	2,1
Government debt	105	68,3	63,9	104	66,2	64,9	45,3	25	36,1

Source: EC Spring Forecast 2009. *For Greece numbers from after the revision of budgetary aggregates in 2009 are reported. See Gilbert and Hessel (2013).

[9] De Grauwe and Ji (2012) argue that in the 2000–08 period spreads were very close to zero even though underlying fundamentals different widely. The dramatic increase in the spreads since 2008 were, according to De Grauwe and Ji (2012), significantly larger than the changes in the underlying fundamentals.

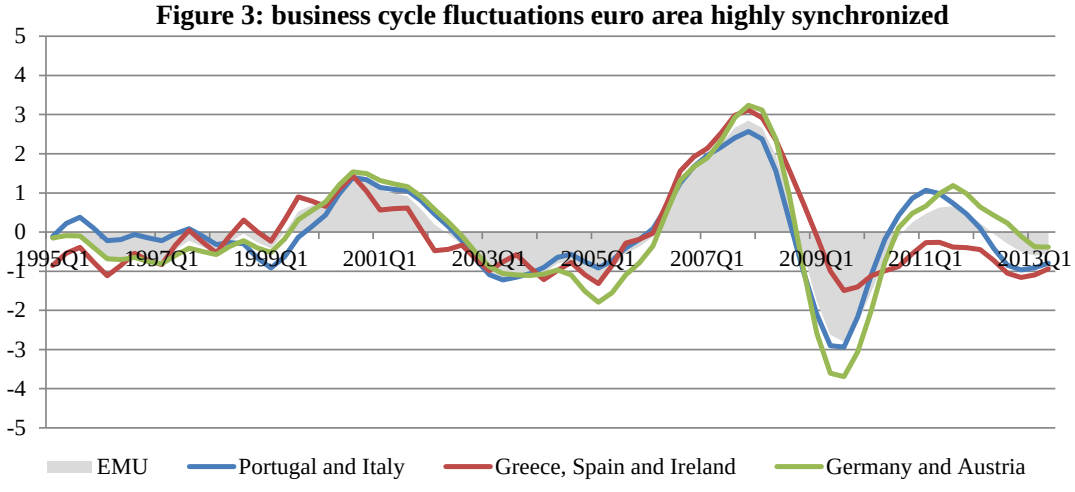
As a result of this combination of factors, at the outset of the worldwide financial crisis in 2008 budget deficits and government debts were higher than they would have been if the rules of the SGP had been adhered to (see Table 1, which is based on numbers from the European Commission Spring Forecast 2008, and thus provides a real-time estimate of the budgetary situation).

2.2 The role of the financial cycle

Although the euro crisis has some characteristics of a sovereign debt crisis, it was not only caused by unsustainable fiscal policies. In fact, at the outset of the global financial crisis nobody expected that European public finances would become a problem. The European Commission (2008b: 37) even stated that structural deficits were at "the lowest level on record since the early 1970s".

This begs the question *why* the economic downturn following the financial crisis could cause such a large swing in the budgetary position of Member States. This seems related to the fact that the nature and size of divergences in EMU were different than expected. In line with the theory of optimum currency areas, divergence is frequently measured as business cycle synchronization.[10] Yet, business cycles were very synchronized since the start of EMU, even during the crisis period (see Figure 3).

Figure 3: business cycle fluctuations euro area highly synchronized

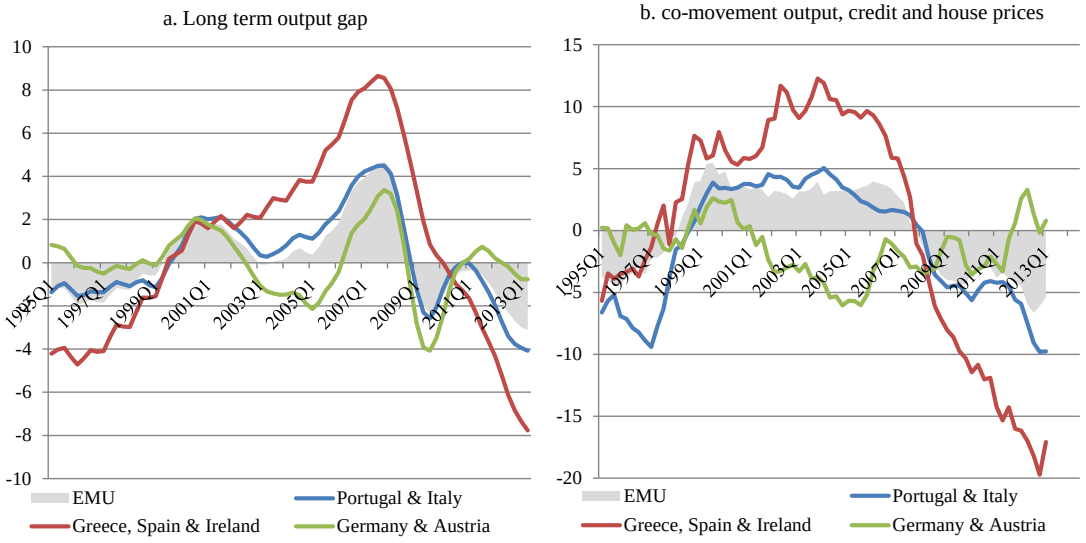


Source: Authors' calculations. Quarterly data for GDP filtered with HP-filter with $\lambda = 1600$.

[10] This is also reflected in the original setup of EMU. The balanced budget requirement in the Stability and Growth Pact would, for instance, enable countries to let automatic fiscal stabilizers work over the course of the (asymmetric) business cycle.

Instead, the divergences in the euro area were much more related to the financial cycle than to the normal business cycle. Characteristics of the financial cycle are that i) it is driven by growth in credit and house prices, ii) it has a much longer duration than business cycles: 16-20 years instead of up to 8 years, and iii) it has a wider amplitude while the correction of the financial cycle is often accompanied by a financial crisis (Drehmann et al., 2012; Borio, 2012a,b). As the financial cycle was largely neglected before the financial crisis, this may explain why these large and long lasting divergences in the euro area were not sufficiently recognized. Just like financial imbalances like housing bubbles were not recognized in advanced countries outside EMU either.

Figure 4: Financial cycle fluctuations within the euro area highly asymmetric



See Comunale and Hessel (2014). Inspired by Alessi and Detken (2009) and Drehmann, Borio, Gambacorta, Jimenez and Trucharte (2010). Calculated as quarterly GDP filtered with an HP-filter with λ = 100.000 (frequency of the financial cycle).

See Comunale and Hessel (2014). Inspired by Borio, Disyatat and Juselius (2013, 2014). Calculated as principal component of the output gap (HP-filter λ = 1600), real credit growth and real house price growth.

The upturn of the financial cycle in the decade before the global financial crisis was a worldwide phenomenon. Many advanced economies witnessed very rapid credit and house price growth (Borio, 2012b). Yet within the euro area, this financial cycle was asymmetric (see Figure 4, based on calculations in Comunale and Hessel, 2014). The upswing was strongest in a number of countries in the periphery, notably in Ireland, Spain and to a lesser extent Greece. In the run up to the financial crisis several countries had experienced strong credit booms, in part because joining the euro zone meant that their banks could raise funds from international sources in their own currency. Also, these countries were – at least initially – experiencing a process of real convergence, while lower

interest rates related to EMU-membership fuelled consumption-related and property-related borrowing (Obstfeld, 2013). By contrast, the financial cycle was much more contained in Germany and Austria. This is partly because interest rates in these countries had already been low before EMU-membership. Germany was also recovering from a building boom induced by the reunification, while structural characteristics of the German housing market have likely also played a role. As a result, Germany is one of the very few advanced economies that managed to contain credit and house prices growth before the financial crisis (Hessel and Peeters, 2011).

The credit boom in some peripheral countries was fuelled by capital inflows. When cross-border financial flows dried up, countries with the greatest reliance on external funding were disproportionately affected. This applies especially to Ireland and Spain, where the resulting decline in construction was a major shock to domestic economic activity, while abandoned projects and falling property prices indicated large prospective losses for banks that had made too many property-backed loans (Lane, 2012).

2.3 Diverging competitiveness

The credit boom fuelled by capital inflows in much of Southern Europe facilitated another development that would come back to haunt EMU: diverging competitiveness positions. In the run up to the crisis, several countries saw their competitiveness deteriorate. Between 2001 and 2011 per unit labour costs in Greece rose by 33 per cent, 31 per cent in Italy, 27 per cent in Spain and 20 per cent in Ireland. By contrast, they grew by only 0.9 per cent in Germany (Lin and Treichel, 2012), partly because the country needed to restore its price competitiveness after reunification. Although the large current-account deficits of some countries signaled competitiveness problems, the deficits were relatively easy to finance as financial integration increased the availability of foreign funding (Obstfeld, 2013; Reis, 2013). In fact, capital inflows continued pushing up money and credit growth, which, in turn, increased inflation and caused competitiveness to deteriorate further (Gibson et al., 2014).[11] Growing current account deficits in

[11] Furthermore, Fernández-Villaverde et al. (2013) argue that capital inflows reduced the pressure for reforms by relaxing the budget constraints that the countries in question faced.

the periphery were accompanied by increasing surpluses in core countries like Germany and the Netherlands.

As countries in the euro area no longer have the possibility to devalue their currency or to use national monetary policy, external imbalances can only be restored by improving competitiveness.[12] However, relative price adjustments without a change in the nominal exchange rate will be difficult when average euro area inflation is low; it will be a rather slow and painful route to rebalancing (Shambaugh, 2012), especially in the absence of further improvements in labour productivity.

The conventional wisdom before the crisis was that balance-of-payments of individual euro-area countries would become as irrelevant as among regions within a country (Blanchard and Giavazzi, 2002). Yet the euro crisis has challenged the wisdom of this view (Merler and Pisani-Ferry, 2012). Still, it took a while before this was realized. In fact, the financing of national external positions in a supranational monetary union could be interpreted as proof of successful integration of capital markets and of real convergence within a monetary union. However, if capital inflows fuel investments that have little effect on future productivity growth (such as real estate) and delay adjustment to structural shocks they pose risks (Giavazzi and Spaventa, 2011).

This is not to say that competitiveness was not on the agenda of the EU. In 2000, the EU declared that it wanted to "become the most competitive and dynamic knowledge-based economy in the world". However, as argued by Wyplosz (2010), this so-called Lisbon strategy was a failure, as the mechanism of peer pressure on which it was based upon simply did not work (see also Kok, 2004). In addition, the recommendations were not always directly related to the emerging divergences described above (Fischer and Hobza, 2013). Therefore, the so-called Macroeconomic Imbalance Procedure (MIP) that was introduced aims to deal with monitoring competitiveness and where necessary redressing lack of competitiveness (see section 3.3).

When the financial crisis triggered a correction of these macro-financial imbalances, the budgetary impact was much larger than expected (Gilbert and

[12] Although some authors argued that EMU increased the need for labour market flexibility and therefore the incentives to undertake labour market reform (Bean, 1998; Gibson et al., 2014), empirical evidence does not suggest that EMU led to significant labour market reforms (Bednarek et al., 2010).

Hessel, 2012, 2013). The average budget deficit in the euro area in 2009 was 5.2% of GDP larger than the European Commission had forecasted in March 2008, just months before the collapse of Lehman Brothers. The deterioration was even considerably larger in most of the countries in southern Europe, with the exception of Italy. In Portugal, Ireland, Greece and Spain, the budget deficit for 2009 increased by a staggering 11.2% of GDP on average.[13] Contrary to popular belief, these budgetary reversals can be mainly attributed to a large decline in public revenue, while the direct costs of financial sector bailouts played a more limited role in most countries.[14]

The worsening fiscal positions were caused by the turn of the financial cycle. Recent research shows that a turn of the financial cycle has a much larger negative impact on public finances than a turn of the normal business cycle (Borio, 2012b, Bénétrix and Lane, 2013). This is mostly due to their effect on government revenues (Eschenbach and Schuknecht, 2004; Dobrescu and Salman, 2011; Lendvai et al., 2011). Rising asset prices increase revenues in capital gains and transaction taxes. In addition, high wage growth increases income tax revenue, especially when the system is progressive. Finally, wealth effects stimulate domestic demand and thereby the revenues from indirect taxes. All these factors reverse when the financial cycle turns, resulting in a large budgetary deterioration.

This points to an important omission in the SGP, as the macroeconomic, financial, and fiscal risks associated with the expansion in external imbalances, credit growth, sectoral debt levels, and housing prices were not taken into account in assessing Member States' fiscal policies (Lane, 2012; Buti and Carnot, 2012).

2.4 No crisis instruments

[13] The situation in Greece differs in one important aspect from the situation in the other countries, as the deterioration of the (actual) deficit is partly driven by an upward revision of the deficit figures for previous years.

[14] See Gilbert and Hessel (2013), who find that only in Ireland the direct costs associated with costs of financial sector bailouts played a serious role in the deterioration of public finances. These results are in line with the findings of Reinhart and Rogoff (2009) that financial crises usually lead to a large increase in government debt, caused primarily not by financial sector bailouts but by the deep and prolonged economic downturn.

When the upward revision of the Greek deficit drew attention to the fragility of public finances in Europe, market discipline returned with a vengeance. It had an on/off-nature: while spreads hardly reacted before the crisis, they reacted very strongly afterwards (Knot and Verkaart, 2013). Strikingly, bond spreads in the euro area reacted much stronger to the fiscal deterioration than in other advanced economies (De Grauwe and Yi, 2012, Dell'Erba et al., 2013). This was partly a rational reaction to specific vulnerabilities in the euro area, such as the lack of the nominal exchange rate to facilitate adjustment (Gilbert et al., 2013). But it is also related to the exceptionally high level of financial integration. While financial integration is often seen as a way to stabilize asymmetric shocks (Asdrubali et al., 1996), it also exposes countries to pro-cyclical capital flows (European Commission, 2008a). Highly integrated EMU countries are therefore more vulnerable to contagion than other advanced economies (Forbes, 2012), also because the euro may have increased the elasticity of capital flows (Lane, 2013).[15] Indeed, the share of foreign-owned government debt has a large upward effect on bond yields in EMU countries (Dell'Erba et al., 2013).

In such an environment, it was unfortunate that the architecture of EMU did not contain provisions for the resolution of a major sovereign debt crisis. No doubt, this contributed to the "makeshift and chaotic" character of the decision-making process to deal with the crisis (Buti and Carnot, 2012). Initially, the Member States had created the (temporary) European Financial Stability Facility (EFSF) to provide financial assistance to euro area Member States (Greece, Ireland, and Portugal[16]) within the framework of a macro-economic adjustment programme. In October 2010, it was decided to create a permanent rescue mechanism, the European Stability Mechanism (ESM), which entered into force on 8 October 2012. In order to decouple weak banks from their national governments, it was agreed that, where necessary, banks could be recapitalised directly through this mechanism.

The ESM is now the sole and permanent mechanism for responding to new requests for financial assistance by euro area Member States. It has a lend-

[15] According to Forbes (2012), another reason for the larger susceptibility to contagion is that euro area countries share the common institutional framework of the monetary union. It is therefore much more likely that decisions concerning one country will also affect the others.
[16] See http://www.efsf.europa.eu/about/operations/index.htm for details.

ing capacity of €500 billion.

Several authors have argued that lack of crisis instruments is problematic in view of the inherent instability in case of highly indebted sovereigns due to the lack of a lender of last resort for sovereign debt. As pointed out in section 1, the ECB is explicitly prohibited to purchase sovereign bonds in the primary market. According to Drudi et al. (2012: 893) this "prevents the ECB and Eurosystem central banks from becoming a kind of lender of last resort for governments and, more broadly, for any public sector bodies. It is precisely these limits which protect the integrity of the Eurosystem's balance sheet and thus preserve the independence and credibility of monetary policy in the eurozone." However, as pointed out by several authors (De Grauwe, 2011; Gros, 2012; Buiter and Rahbari, 2012), financing a high national public debt may become problematic in a supranational monetary union.[17] Here essentially the same mechanism is at work as in a bank run. If all depositors withdraw their money at the same time, the bank will not be able to liquidate immediately its loan portfolio. This is the main reason why central banks act as Lender of Last Resort (LoLR) for banks. Likewise, a solvent sovereign could be tripped into a fundamentally unwarranted payments default if the market were to adopt the 'self-fulfilling fear equilibrium belief' that the government is not solvent (Buiter and Rahbari, 2012). As long as market confidence is high the government can pay interest payments, because its borrowing cost will be low. However, if market confidence is low the government may face a problem because the high-risk premium requested will make the debt service so expensive that it will not be able to find the necessary resources. Doubts about the ability of a government to service its debt could thus become self-fulfilling (Gros, 2012).

The implication of this analysis is that without a proper lender of last resort, bond yields in the euro area may display a higher risk of overshooting than yields in countries with their own currency. Yet, there is no consensus on the size and nature of this overshooting in the fast-growing literature on this topic.[18] According to De Haan et al. (2014), this in part reflects modelling uncertainty. While these authors do not find support for consistent and massive mispricing

[17] It is important to point out that this problem may occur even if the government has a balanced budget. If the government is highly indebted, every year a part of the debt matures and requires refinancing.
[18] See de Haan et al. (2014) for an overview of this literature.

for the all countries in the periphery of the euro area, they do identify periods with misalignments for Greece, Portugal and Ireland.

2.5 The doom loop

The funding problems of sovereigns were reinforced by a negative feedback loop with the banking sector. The banking system in the euro area is large.[19] Total assets of the banking system were equivalent to over 300 per cent of euro-area GDP in 2007, compared with less than 100 per cent in the United States (Shambaugh, 2012). The largest banks in the euro-area are large in proportion to their home economies. Furthermore, most banks heavily invested in government bonds with a home bias which is particularly strong for banks of troubled sovereigns (Greece, Ireland, Italy, Portugal, and Spain).[20] In Spain, Portugal and Italy domestic banks owned around 25% of the outstanding stock of government debt (Pisani-Ferry, 2012). This is the basis for what came to be known as the 'doom loop'. Drawing on Acharya et al. (2012), the essence of the problem can be described as follows.[21] During the financial crisis, governments in several euro area countries engaged in large-scale, sometimes blanket, financial sector bailouts. Such bailouts require immediate issuance of additional debt by the sovereign causing an increase in the sovereign's credit risk. This has two possible consequences. First, the government runs the risk that this debt-overhang will affect the private sector. Households and corporations may anticipate that the high level of government debt will require higher taxes in the future, thereby diluting long-run returns on real-sector and human-capital investments. The resulting under-investment in the economy can cause economic growth to slow down, thereby further increasing the sovereign's credit risk. Second, the deterioration in the sovereign's creditworthiness may feed back adversely onto its financial sector through four channels (Mink and de Haan, 2013).[22] In the first place, the

[19] Banks in the euro area heavily depend on the interbank money market for their funding and notably the non-domestic component of the inter-bank market has been particularly volatile during the crisis (Reichlin, 2014).
[20] One of the main reasons for this is that the Capital Requirements Directive (CRD), allows for a 0% risk weight to be assigned to government bonds issued in domestic currency. Moreover, the CRD exempts government debt issued in domestic currency from the 25% limit on large exposures that applies to all other asset holdings (Popov and van Horen, 2013). This was exacerbated by the fact that these bonds could be used as collateral in ECB operations (Reichlin, 2014).
[21] See Acharya et al. (2014) and Farhi and Tirole (2014) for formal analyses. See also Obstfeld (2013).
[22] Mody and Sandri (2012) present evidence on the joint dynamics of sovereign spreads and measures of banks' financial health.

market value of the government debt on the balance sheet of the financial institutions reduces causing the financial sector's creditworthiness to decline. In the second place, higher sovereign risk reduces the value of collateral that financial institutions can use for funding purposes. In the third place, if sovereigns are downgraded by credit rating agencies this normally translates into lower ratings for banks located in the downgraded country. Finally, as the sovereign's creditworthiness declines, the value of the explicit and implicit government guarantees to the financial sector also declines, and this adversely impacts the financial sector's credit quality (Acharya et al., 2014; Obstfeld, 2013).

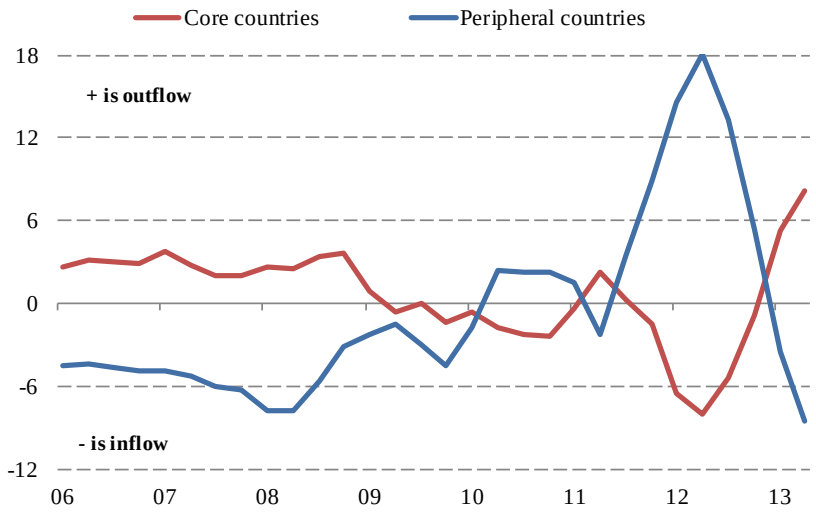
One of the consequences of financial institutions' exposure to impaired sovereign debt is that they may reduce their lending (Shambaugh, 2012). Popov and van Horen (2014) provide evidence for this. Lower credit growth may further reduce economic growth, thereby reinforcing the doom loop.

During the course of the euro crisis the exposure of foreign banks on sovereign debt of the GIIPS reduced, whereas the exposure of domestic banks increased. Whereas, for instance, in December 2010 domestic banks held 67% of Greek sovereign debt, in June 2013 this percentage had risen to 99 (EBA, 2013).[23] This made the problem of the doom loop even more pressing. A proper banking union would break this deadly embrace between sovereigns and financial institutions (see section 3.4).

Due to the doom loop, funding problems on sovereign bond markets in the periphery went hand in hand with funding problems for banks in these countries. As a result, many countries in the periphery at some point experienced an outflow of capital which constituted a sudden stop in external financing (Merler and Pisani-Ferry, 2012). Most of the capital fled to so-called core countries that were considered a safe haven (see Figure 5). It made banks in vulnerable countries very dependent on ECB funding, which was also reflected in growing imbalances in the Target2 settlement system. Target2 liabilities (and assets) reached around 1000 billion euro in the summer of 2012 (DNB, 2013). This financial fragmentation was at least partly driven by "unfounded fears on the reversibility of the euro" (Draghi, 2012).

[23] For the other GIIPS countries these percentages were as follows: Ireland from 66 to 84%, Italy from 66 to 84%, Portugal from 54 to 71% and for Spain from 78 to 89%. Source: EBA (2013).

Figure 5: Net capital flows within the euro area
Percentage of GDP



Explanation: figures corrected for changes in TARGET2-balances.
Source: IMF and DNB.

3. The move towards a "genuine" monetary union

Over the last couple of years, important steps have been taken to repair the design flaws in EMU, under the guidance of blueprints by Van Rompuy (2012) and the European Commission (2012). Significant progress has been made in a relatively short time period. Fear that the euro crisis would spread further, thereby undermining the stability of the euro area and perhaps even the sustainability of the currency union, created the political willingness to take these steps.

3.1 Improved fiscal discipline[24]

In view of the compelling need for a reform of the fiscal policy governance framework, European policymakers have taken several steps, including the introduction of the 'Six-Pack', 'Two-Pack' and the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG).

The 'Six-Pack', consisting of five Regulations and one Directive, hence its name, entered into force on 13 December 2011. It does not only cover fiscal policy surveillance, but also macroeconomic surveillance under the new Macroeconomic Imbalance Procedure (see next section). In the fiscal field, the 'Six-Pack'

[24] This section heavily draws upon De Haan et al. (2012; 2013).

reinforces both the preventive and the corrective arm of the SGP. For instance, it defines quantitatively what a 'significant deviation' from the medium term objective (MTO) or the adjustment path towards it means. Moreover, it enables that an EDP may be launched if a country does not meet the rule for the government debt ratio (i.e. the ratio is above 60% of GDP and does not diminish towards the Treaty reference value at a satisfactory pace). Financial sanctions are imposed in a gradual way, from the preventive arm to the latest stages of the EDP, and may eventually reach 0.5% of GDP. Most importantly, the 'Six-Pack' introduces reverse qualified majority voting (RQMV) for decisions on most sanctions. RQMV implies that a recommendation or a proposal of the Commission is considered adopted by the Council unless a qualified majority of Member States votes against it, thereby bringing some automaticity in the procedure.

The 'Two-Pack' added two more Regulations, entering into force on 30 May 2013. Its main contribution lies in the preventive arm of the SGP: it obliges governments to submit their (draft) budgetary plan for the coming year to the European Commission. It allows the European Commission to check *beforehand* whether the budgetary plan is in line with its recommendations. If the Commission detects serious shortcomings, it can require a revision of the budget (EC, 2012b).

On 1 January 2013, the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG) entered into force. The articles in Title III of the Treaty referring to fiscal policy are referred to as 'Fiscal Compact'. The two most important elements are a balanced budget rule, including an automatic correction mechanism, and a further strengthening of the excessive deficit procedure. The contracting parties commit to implementing in their national legislation a fiscal rule, which requires the general government structural budget balance to be in line with the country-specific MTO with a lower limit of a deficit of 0.5% of GDP (this limit is 1% if the government debt-to-GDP ratio is significantly below 60% and risks to long-term fiscal sustainability are low). The balanced budget rule must include a correction mechanism, which is automatically triggered in the event of significant deviations from the MTO or the adjustment path towards it. This balanced budget rule must be introduced in the national

law of the countries concerned in a binding and permanent way, preferably at the constitutional level.

The 'Fiscal Compact' also further strengthens the EDP of the SGP, in particular by increasing its automaticity if a euro area Member State is in breach of the deficit criterion. Most importantly, at each stage of the EDP euro area Member States will support the Commission's proposals or recommendations in the Council if a euro area Member State is in breach of the deficit criterion, unless a qualified majority of them is against it. Unfortunately, reverse qualified majority voting will not be applied following a breach of the debt criterion by a euro area Member State. As argued by De Haan et al. (2012), it seems that European policymakers still have to learn the lesson from the euro crisis that debt levels are more important than deficits when it comes to the sustainability of the currency union. Furthermore, as pointed out by the ECB (2012), for the new rules to work it is crucial that the Commission uses its increased influence by taking a rigorous approach when assessing fiscal deficits and avoids politically influenced decisions. One of the remaining weaknesses is that the new framework has become rather complicated. There are, for instance, still too many exceptional situations that can be taken into account when deciding on whether a deficit or debt-to-GDP ratio is excessive, or on whether a Member State has taken effective action.

3.2 Macroeconomic Imbalance Procedure

European policymakers have also enhanced the possibilities to monitor and prevent large macroeconomic and financial imbalances within the euro area. Particularly important is the introduction of the Macroeconomic Imbalance Procedure (MIP). The MIP is based on a continuous monitoring of a 'scoreboard', consisting of a set of eleven indicators covering the major sources of macroeconomic imbalances. These include the current account balance, price competitiveness as measured by the change in the real effective exchange rate, as well as the growth of credit and house prices. For each indicator, thresholds have been defined to identify potential imbalances. According to the European Commission, the scoreboard and the thresholds are not applied mechanically, as the scoreboard is complemented by an economic interpretation. The aim of the scoreboard is to identify countries that warrant in-depth analysis in order to determine whether

the potential imbalances identified in the early-warning system are benign or problematic. In analogy with the SGP, the MIP has a preventive arm and a corrective arm. Under the preventive arm policy recommendations can be issued by the Council to tackle imbalances early on. Under the corrective arm an Excessive Imbalance Procedure (EIP) may be opened for a Member State if it is deemed to experience excessive imbalances. In that case, the Member State concerned will have to submit a corrective action plan with a clear roadmap consisting of concrete policy measures and deadlines for implementing corrective action. Non-compliance with the Council recommendations may lead to financial sanctions that could eventually reach 0.2% of GDP. All decisions on sanctions are made in the Council via Reversed Qualified Majority Voting (RQMV) in order to increase automaticity.

In addition to the MIP, several other measures should reduce the risk of financial imbalances in the future. One is the establishment of the European Systemic Risk Board (ESRB), which may issue non-binding recommendations to Member States when risks to financial stability emerge. Another improvement is the (upcoming) introduction of macro-prudential policy frameworks in EMU Member States, including the possibility for European coordination. The Capital Requirements Regulation and Directive (CRR/CRDIV) allows national central banks (NCBs) to decide on the countercyclical capital buffer for banks. If necessary, the ECB Governing Council may overrule these decisions and decide on a stricter buffer.

Although these are important steps in the right direction, their effectiveness is not established yet, and will crucially depend on the actual implementation. Especially the MIP contains several potential weaknesses. First, the discretionary room of manoeuvre is relatively large. There are, for instance, no clear criteria to establish whether an imbalance exists and whether it is excessive or not. Second, the decision in the Council on the existence of an excessive imbalance is not made with RQMV. Third, there is a lot of discussion possible on the necessity and the effects of specific policy measures to contain the imbalances. Giavazzi and Spaventa (2010) point out that it is difficult to conceive of enforceable corrective actions. This increases the risk that recommendations are diluted in the Council. Furthermore, the approach is of much less use for prevention, as

the recommendations in the preventive stage of the procedure are non-binding. Recommendations only start to become binding when imbalances are excessive, which means that they are already pretty large and difficult to reverse quickly.

3.3 Crisis mechanisms

As pointed out in section 2.2, backstop mechanisms have been set up to provide financial assistance to Greece, Ireland, Portugal, Spain and Cyprus. The most important tool to that effect is the European Stability Mechanism (ESM). However, the debate on whether enough has been done to ensure a robust crisis management system is not closed. Several observers have questioned whether sufficient funds are available. For instance, Lane (2012: 60) argues that "funding …was only enough to address the bailouts of Greece, Ireland, and Portugal—and thus not nearly sufficient to offer substantial support to Spain and/or Italy". Gilbert et al. (2013) argue that as an ESM-style rescue fund is inherently limited in size, it cannot by itself fully rule out contagion between EMU member states. In the current set-up of the ESM (with only a small proportion of pre-funding), this is further amplified by the fact that one country's (additional) borrowing is another country's (additional) lending (Bijlsma and Valleé, 2012).

The ECB has also taken on an important role, by means of especially the announcement of the Outright Monetary Transactions programme (OMT). The ECB is capable of providing an effective backstop. However, this is probably not an optimal long-run solution as using OMTs comes with a number of negative side effects in the longer run. The function of lender of last resort could interfere with the ECB's monetary policy mandate and might create inflationary risks. In addition, ECB intervention also comes with risks specific for a central bank in a currency union. Whereas other central banks interact with a single government, after the adoption of the euro by Lithuania in 2015 the ECB interacts with nineteen. When the ECB buys government bonds this inevitably has distributional consequences. Should the ECB incur losses on its bond portfolio, those losses are transferred to its shareholders – i.e. the euro area Member States. The ECB

thereby becomes a vehicle for fiscal transfers to countries benefiting from the purchases, for which it neither has the mandate nor the democratic legitimacy.[25]

3.4 Banking Union[26]

Until November 2014, national authorities were responsible for supervising the banking system and ensuring its stability. The crisis has made clear that this is not a viable arrangement. In line with the financial trilemma (Schoenmaker, 2011) a decentralized system of bank supervision and resolution is inadequate in an environment with a large banking sector and high interconnectedness among national banking systems as well as between banking systems and sovereigns (Obstfeld, 2013). Experience of the near failure of cross-border banks in Europe suggests that in times of crisis national authorities focus on preserving the national parts, while the integrated value of a bank is neglected. Furthermore, a banking union with a common safety can break the 'doom loop' between national governments and banks (Gros and Schoenmaker, 2014).[27]

The European Council therefore decided in June 2012 for a European Banking Union, which involves three elements. First, under the so-called Single Supervisory Mechanism (SSM) micro-prudential supervision of banks has moved from national supervisors to the ECB since November 2014.[28] Also non-euro area Member States may participate in the SSM. By giving non-euro area Member States full membership and voting rights in the Supervisory Board – the body responsible for the preparation of decisions on supervisory matters – they are placed on an equal footing with euro-area Member States. The role of the ECB Governing Council in the SSM is reduced to the possibility of accepting or reject-

[25] This is one of the reasons why support from OMTs is explicitly linked to the presence of an adjustment programme from the EFSF/ESM and to the requirement that the programme conditionality is fully respected. This reduces the financial risks for the ECB and ensures that the period of support is used to improve the underlying situation in the country concerned.

[26] This section draws on Cavelaars et al. (2013).

[27] Still, some further steps may be required to deal with this problem, notably with regard to the regulatory treatment of government bonds. According to Weidman (2014), "we need to end the preferential treatment afforded to sovereign debt. At present, sovereign bonds are treated by European regulators as being risk-free – an assumption that stands in contradiction both to the no bail out clause and to recent history. We should therefore put this regulatory fiction to rest. Hence, sovereign bonds should be adequately risk-weighted, and exposure to individual sovereign debt should be capped, as is already the case for private debt."

[28] Whereas the ECB's direct supervisory responsibility focuses on the largest banks, the national supervisors will remain responsible for supervision of the smaller banks. However, the ECB will be 'exclusively competent' regarding the supervision of all banks, setting the overall policy framework, guarding supervisory quality and consistency, and taking over supervision from national supervisors if it deems necessary.

ing the decisions of the Supervisory Board (Constâncio, 2013).

A crucial step towards the new supervisory regime was the large-scale health test of the top 130 banks in the euro area countries, which together account for some 85% of European bank assets. This so-called comprehensive assessment, consisting of an Asset Quality Review (AQR) and stress tests, aimed to reduce uncertainty on the state of bank balance sheets, which should increase confidence in the banking sector and encourage new lending. The comprehensive assessment should also ensure that the new banking union will not immediately be confronted with large losses from the pre-crisis period. [29]

Second, a Single Resolution Mechanism (SRM) has been introduced to deal with bank resolution, i.e. the orderly restructuring and/or liquidation of ailing financial institutions. A situation in which only supervision is delegated to the European level, but in which the resolution mechanism remains national could give rise to conflicts of interest. For example, supervisory decisions to withdraw the licence of a bank would be taken at a central level whereas the bill of such decisions would have to be footed at a national level. This would put tremendous pressure on the European supervisor not to pull the trigger but instead to exercise forbearance. The political agreement concluded in March 2014 about a SRM was therefore a major step. The SRM Regulation will be applicable from 2016, together with the bail-in provisions under the Bank Recovery and Resolution Directive (BRRD). Under this mechanism, losses are initially borne by shareholders and creditors. If necessary, temporary financing can be made available from the newly established Resolution Fund or – as the ultimate backstop – from public funds. The Resolution Fund composed of national compartments for a transitional phase of 8 years is built up over time by contributions from the banking sector raised at the national level by the national resolution authorities to a funding level of 1% of covered deposits. Its target size of €55 billion would

[29] The assessment found a capital shortfall of €25 billion at 25 banks. Twelve of the 25 banks have already covered their capital shortfall by increasing their capital by €15 billion in 2014. The comprehensive assessment also showed that a severe stress test scenario would deplete the banks' top-quality, loss-absorbing Common Equity Tier 1 (CET 1) capital by about €263 billion. This would result in the banks' median CET1 ratio decreasing by 4 percentage points from 12.4 to 8.3 per cent. Capital shortfalls should be covered within six months for those identified in the AQR or the baseline stress test scenario, and within nine months for those identified in the adverse stress test scenario. Shortfalls revealed by the AQR and the baseline stress test scenario may only be covered by Common Equity Tier 1 (CET1) capital instruments. The use of Additional Tier 1 (AT1) capital instruments to cover shortfalls arising from the adverse stress test scenario is limited, depending on the trigger point of conversion or write-down.

be enough to resolve all but the very largest banks in Europe (Gros, 2013). Resolution decisions will be prepared and monitored centrally by a Single Resolution Board (SRB).[30] The European Commission assesses the SRB's decision and can refer it to the Council if it wishes to depart materially from the Board's proposal.

According to Gros (2013), there are some weaknesses in the SRM, most importantly that there is as yet no explicit agreement on how to provide the SRF with a backstop. In the transition period, bridge financing will be available either from national sources, backed by bank levies, or from the ESM. The ECOFIN decided that a common backstop will be developed during the transition period. Such a backstop will facilitate borrowings by the SRF. The ECOFIN also decided that the banking sector ultimately will be liable for repayment by means of levies in all participating Member States. The backstop only will be fully operational (at the latest) after ten years. Another weakness is that it will take some time for the SRF to reach its target of €55 billion. But a long transition period was unavoidable as creditor countries were not willing to accept a mutualisation of the risks from the past (Gros, 2013).

Third, the introduction of a European deposit guarantee scheme. This has received a low priority as national schemes have been harmonized. However, Gros and Schoenmaker (2014: 537) argue for combining resolution and deposit guarantee at the European level as this "allows for swift decision-making. … By contrast, a myriad of national funds is difficult to activate during a crisis and may give rise to conflicts. Two separate European funds for deposit insurance and resolution may lead to inter-agency conflicts. Recognizing the interconnectedness, the functions of resolution and deposit insurance should be combined in Europe, as is done in the United States."

[30] The Board will operate in two sessions: an executive one and a plenary one. In its executive session, the Board consists of the Chairman, the Vice Chair, the four permanent members and the relevant national authorities where the troubled bank is established. The executive session will adopt individual resolution decisions which involve the use of the Fund below a € 5 billion threshold. The plenary session will be competent to decide in individual resolution cases if the support of the Fund in a specific case is required above the € 5 billion threshold.

4. The road ahead

As discussed in detail above, in recent years all major weaknesses in the set-up of the EMU have been addressed in some way or the other, which is a major achievement. However, the effectiveness of the new arrangements is not established yet, and will crucially depend on the implementation in practice. Zooming out, two main facts stand out. First, by and large national sovereignty is preserved, especially in the most visible and politically sensitive areas. Despite improved policy coordination, fiscal and economic policies largely remain national prerogatives. Therefore imposing fiscal and especially macroeconomic discipline on reluctant sovereign states remains challenging. The loss of national sovereignty is larger in banking supervision, but national influence remains relatively large in bank resolution. Second, the introduction of the ESM, the OMTs, and the banking union has significantly increased the degree of risk sharing between EMU Member States, but in a relatively non-transparent and piecemeal way (see Table 2). Explicitly visible risk sharing via governments (ESM) remains relatively small, while there is a relatively large role for more implicit risk sharing in case banks face problems (bail-in, resolution fund) and especially the ECB (VLTRO's and OMTs).

In our view, this has two consequences. First, in the longer run the way risk sharing is organized can be improved. Especially the currently large role of the ECB does not seem an optimal long-run solution. Second, an imbalance looms between the degree of risk sharing and the degree of national sovereignty (Weidmann, 2014). This is especially true if the current framework for policy coordination proves insufficiently effective, for instance, due to weak enforcement. If too much sovereignty is retained, this will also increase the risk of new budgetary, financial and economic imbalances and thereby the chance that risk sharing arrangements will be called upon. This in turn increases the risk that those risk sharing arrangements (like the ESM) turn out to be insufficient or turn out to have too large negative side effects. In this regard, EMU's current combination of a still relatively limited degree of policy coordination in combination with a significantly increased degree of risk sharing could be improved upon. Indeed, several authors claim that the current arrangements provide a half-build house, and that long-term solutions require either a move towards a full political union

(Glienicker Gruppe, 2013), or a credible return to the no-bailout clause so that markets can discipline governments (Von Hagen, 2013; Mody, 2013).[31]

TABLE 2. Verdict EMU-variants	Original set-up EMU		Enhanced EMU	Eurobonds (section 4.1)	No-bailout (section 4.2)
	Ex-ante	Ex-post			
Degree of coordination	-	-/-	+/-	+/+	+/-
• Fiscal policies	+/-	-	+	+/+	+/-
• Macro-economic policies	-	-/-	+/-	+	+/-
• Banking regulation	-/-	-/-	+	+	+
⇨ *Political feasibility*			+/-	-	+/-
Degree of risk sharing	-/-	+	+	+	+/-
• Via governments (explicit)	-/-	+/-	+/-	+/+	+/-
• Via banking union (explicit)	-/-	-/-	+/-	+	+
• Other (implicit)	-/-	+/+	+	-/-	-/-
⇨ *Political feasibility*			+/-	-	+/-
Balance between degree of coordination and risk sharing	+	-/-	+/-	+/+	+/+
Economic desirability			+/-	+/+	+

Notes: -/- indicates a complete absence of risk sharing/ policy coordination within EMU; +/+ indicates perfect risk sharing/ full coordination. In the enhanced EMU both the degree of policy coordination and the degree of explicit risk sharing via the banking union have increased compared to the original set-up; but in both cases questions remain (see section 3). As a result, it is yet unclear to what extent the degree of implicit risk sharing (e.g. via the ECB) can be reduced. In the "Eurobonds" scenario as suggested in section 4.1, the balance between coordination and risk sharing is restored by strengthening coordination and by making risk sharing more explicit. The balance between risk sharing and coordination can also be restored by limiting risk sharing ("strengthening no bail-out"). This, however, requires a strong banking union and the possibility of liquidity support for governments (section 4.2). It is therefore not self-evident that in this scenario policy coordination can be reduced compared to the current status quo.

While we do not argue against intermediate solutions like the current arrangements, in our view further improvements are possible. It would in particular be beneficial to further optimize the balance between risk sharing and national sovereignty. Although many specific institutional settings are conceivable, this almost unavoidably requires a fundamental choice to move closer towards one of two broad solutions sketched in the literature. These are either a monetary union with a higher degree of (explicit) risk sharing and more curtailed sovereignty, or a union of the type referred to by Buiter and Rahbari (2011) as: "you break it, you own it", where insolvency of a sovereign is settled between the taxpayers of that sovereign and its creditors, without any permanent financial support from any other nation's taxpayers. In earlier work (De Haan et al., 2012; 2013, Gilbert et al., 2013) we have argued for Eurobonds, as this in our view is most desirable from a macro-economic viewpoint. It is, how-

[31] Regarding a political union: this idea stems from the fact that successful currencies have historically always been linked with successful nation states (Goodhart, 1998). Yet, as argued by Hoeksma and Schoenmaker (2011) and Van Riet (2014), the European Union is a supranational arrangement that already performs many tasks that traditionally were the prerogative of nation states. It therefore remains unclear how much more political integration would be necessary to keep the monetary union stable.

ever, highly politically sensitive. In the following, we will therefore also describe an alternative: a variant of the "you break it, you own it" Europe based on market discipline and a formal mechanism for debt restructuring.[32]

Yet, both alternatives will only become feasible after current vulnerabilities in the monetary union have been dealt with, in particular the high public debt overhang in many countries. Public debt now stands at 96% of GDP for the euro area as a whole, while five countries have debt levels above 120% of GDP. Such high levels of debt make Eurobonds costly, as it increases the risk of losses and may lead to a controversial "transfer union" (Gilbert et al., 2013). Likewise, these high debt levels make large-scale debt restructuring costly as well, as it may require unrealistically large write-offs and could lead to destabilizing contagion towards other Member States (Vihriälä and Weder di Mauro, 2014).

4.1 Eurobonds

Eurobonds are centrally issued, jointly guaranteed bonds for financing the euro area Member States' public debt. Eurobonds can protect individual Member States against contagion and speculation on financial markets in a more robust and fundamental way than emergency funds, by guaranteeing countries in fiscal difficulties access to market financing. This reduces the risk that liquidity problems turn into solvency problems via higher interest rates, as well as the risk that problems spread from one country to another (Boonstra, 2011; Gilbert et al., 2013).

Clearly, more explicit risk sharing and guaranteed access to finance have a flipside: countries face weaker incentives for keeping fiscal policies sustainable. This requires strict coordination of (fiscal) policy. In our view, Eurobonds can serve as an instrument to achieve this if countries can no longer enter the capital and money markets on their own initiative. All debt needs to be financed with

[32] A larger role for debt restructuring in the euro area does not necessarily require a formal restructuring mechanism. Such a formal mechanism has both advantages and disadvantages. An advantage is that it may prevent restructuring from occurring too late, which could have high costs. This would be the case if uncertainty about restructuring leads to prolonged market turbulence, or if restructuring only occurs once bailouts have already moved most of the debt towards public authorities like the ESM, IMF or ECB. A disadvantage is that a formal mechanism may provides government with an easy way out of a high debt situation, possibly causing debt restructuring to occur too early. It could also increase moral hazard and reduce the prevention of high deficits. There is no consensus on which of these two effects dominates, although Buchheit et al. (2013) believe that the Greek restructuring was too little, too late. In any case, the relative importance of these two effects also depends on the specific shape of a restructuring mechanism.

centrally issued Eurobonds. In our proposal (De Haan et al., 2012; Gilbert et al., 2013) the sole issuer of Eurobonds is an independent Budgetary Authority, which is also in charge of the enforcement of the European fiscal rules. It thereby has the exclusive authority over the granting of loans to Member States. As a general rule, access to Eurobonds will be limited to countries with debt levels below a "debt ceiling" of 60% of GDP (De Haan et al., 2012; Gilbert et al., 2013). Member States exceeding this ceiling should be placed in a form of receivership. They would be temporarily allowed to take on extra debt (not on their own, but via the Budgetary Authority) only if they set out a detailed budgetary adjustment program and stick to it. If the corrections proposed by the debtor nation were insufficient, the Authority would be able to impose corrections. Any country that failed to satisfy the requirements would be denied access to additional finance and would therefore have no choice but to immediately implement further austerity measures. In a system where Eurobonds would be the sole finance vehicle, such a sanction would be much more credible than anything that is currently imposed, because countries would have no access to finance except via the new Budgetary Authority, giving it maximum bargaining power.[33]

4.2 Minimising the degree of risk sharing

The alternative approach of minimising the degree of risk sharing within EMU and relying more on market discipline, requires a more credible commitment to the no-bailout clause and some form of explicit ex-ante debt restructuring mechanism for insolvent sovereigns within the euro area (Von Hagen, 2013; Mody, 2013; Buchheit et al., 2013). The proponents of this approach claim several advantages. First, it would reduce uncertainty as well as the cost of restructuring in case of clearly insolvent sovereigns (such as Greece). Second, it might enable a monetary union with significantly less policy coordination and hence constraints on national sovereignty (Mody, 2013).

In our view, the crisis has made it clear that eliminating all risk sharing within EMU is not feasible. A fully credible no-bailout is arguably not feasible in a highly financially integrated monetary union where Member States are vulnera-

[33] This is also because the Budgetary Authority is able to refuse financing of *additional* debt without putting in doubt the (re)financing of the remaining debt stock. That decision therefore comes with much smaller financial stability risks than in the current practice, where refusal to grant extra financial support may induce remaining (private) creditors to run for the exit.

ble to contagion and self-fulfilling liquidity crises (see section 2.4). In such an environment, relying only on market discipline and debt restructuring may cause debt restructuring to occur too soon and too much.[34] This would unnecessarily increase risk premia, borrowing costs and welfare.

One reason for this is that while a debt restructuring mechanism might be beneficial when sovereigns are clearly insolvent, a distinction between illiquidity and insolvency is often impossible to make in practice: there is a grey area where debt sustainability cannot be established with certainty. While countries in a monetary union are more vulnerable to liquidity problems than countries having their own currency, it is less clear whether they are also more vulnerable to solvency problems. On the one hand, EMU countries lack monetary policy and the exchange rate to absorb shocks, which – ceteris paribus – implies lower debt sustainability (Sims, 2012; Buchheit et al., 2013). On the other hand, higher inflation cannot reduce debt in the long run, as it will also affect nominal interest rates (Gross, 2012).[35] Therefore, the grey area may arguably be larger for EMU Member States than for other countries, making it harder to fully rely on market discipline and debt restructuring. It would make sovereign debt in the monetary union more explicitly risk-bearing than it other countries

The uncertainty surrounding debt sustainability would be reduced if EMU countries could agree on a clearly visible threshold above which debt restructuring becomes inevitable (Buchheit et al., 2013). Even then, the risk of self-fulfilling sovereign debt crises still requires the existence of liquidity support for governments (Buiter and Rahbari, 2011; Vihriälä and Weder di Mauro, 2014). A sufficiently large backstop therefore remains necessary.[36] Moreover, this also requires a certain degree of coordination of fiscal and macroeconomic policies, in order to prevent excessive reliance on liquidity support. Finally, as the possibility of debt restructuring will reinforce the doom-loop between banks and sover-

[34] Interestingly, Flandreau et al. (1998) show that also in previous decades market discipline had the tendency to overshoot. The problem was especially severe in fixed exchange rate regimes, such as the period of the gold standard.

[35] Gros (2012) reminds us that before the start of EMU, the monetary union was thought to increase debt sustainability in several countries, as it would reduce nominal interest rates thanks to more credible monetary policy and the absence of competitive devaluations.

[36] Although it can be argued that the required size of the backstop may be smaller than the current backstops. This is especially the case when a debt restructuring mechanism is only introduced once public debts have been reduced below the 60% of GDP threshold. The banking union and the possibility of debt restructuring may also reduce the required amount of liquidity support.

eigns, a well-functioning banking union is needed as well. This could include risk weights and concentration limits of sovereign bond portfolios. In our view, it is therefore not so evident that a debt restructuring mechanism will significantly reduce the required degree of policy coordination in EMU compared to the current status quo.

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