

THE EURO AREA IN CRISIS
LA ZONE EURO EN CRISE

edited by Catherine Mathieu and Henri Sterdyniak

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Contact

OFCE, 69 quai d'Orsay 75340 Paris cedex 07
Tel. : +33(0)1 44 18 54 87
mail : revue@ofce.sciences-po.fr
web : www.ofce.sciences-po.fr

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The opinions expressed by the authors are their own and do not necessarily reflect the views or positions of the institutions to which they belong.

THE EURO AREA IN CRISIS

Catherine Mathieu and Henri Sterdyniak

The 9th EUROFRAME¹ Conference on economic policy issues in the European Union was held in Kiel on 8 June 2012. The Conference topic was: “The euro area in crisis: challenges for monetary and fiscal policies and prospects for monetary union”. Twelve of the papers given at the Conference are released in this issue of the *Revue de l’OFCE/Debates and Policies*.

In 2012, the euro is a failure from many aspects: the euro area is unable to recover the nine percentage points of GDP lost because of the financial crisis; GDP will fall slightly in 2012 and is expected to be stagnant in 2013. In recession times, Member States (MS) are constrained to run austerity policies. Three countries have had to request support from the IMF and Europe, and must implement drastic adjustment plans under the supervision of the Troika (the Commission, the ECB and the IMF). Euro area MS public debts are no longer considered as safe assets; euro-denominated debts have become heterogeneous with financial markets requesting high risk premia on Southern MS government debts. MS economic policies are under permanent financial markets pressure.

The single currency suffers from six original sins, which are difficult to correct:

— According to economic theory, there cannot be a single currency between countries with different economic situations and who wish to keep independent economic policies. The single currency entails introducing economic policy coordination or solidarity mechanisms. Otherwise how to prevent the emergence and persistence of imba-

1. EUROFRAME is a network of ten independent European research institutes: WIFO (Austria), ETLA (Finland), OFCE (France), DIW and IFW (Germany), ESRI (Ireland), PROMETEIA (Italy), CPB (Netherlands), CASE (Poland), NIESR (United Kingdom).

lances between countries running large external deficits and other countries running large surpluses? How to handle these situations?

— These mechanisms cannot consist in rigid numerical rules enshrined in a Treaty (such as: public deficits should not exceed 3% of GDP, public debts should not exceed 60% of GDP, structural budgets should be run in balance in the medium term). These mechanisms must be flexible (objectives should be agreed between countries accounting for the economic context) and binding (everyone must comply with commonly agreed decisions). But how may governments with different interests and analyses reach agreement on economic policy strategies?

— There cannot be unconditional solidarity between countries with different social and economic systems. For example, Northern countries may refuse to support Southern countries, blaming them for not having undertaken the necessary reforms, for having let imbalances grow and for being unable to meet their commitments.

— The ECB is not entitled to finance directly governments (Article 123, TFEU); financial solidarity between MS is forbidden (Article 125, TFEU). Thus, each MS has to borrow on financial markets without any guaranteed support from a central bank acting as a “lender of last resort”. This raises the risk that some MS may not be able to fulfil their commitments and may default. MS public debt is no longer a safe asset. Financial markets started to realise this from mid-2009. Today, after the experience the Greek default, they request unsustainable interest rates to lend to the most fragile countries, increasing thereby the difficulties of the latter.

— Euro area MS are now under financial markets’ judgement and they do not control anymore their interest rates unlike Anglo-Saxon countries or Japan. But financial markets have no macroeconomic expertise, they are, and know that they are, self-fulfilling. However, Northern countries refused a collective guarantee of MS public debts. They consider that the discipline imposed by financial markets is necessary. But disparity among interest rates is arbitrary and costly. In the long term, for instance, a country like Italy should pay on financial markets a premium of around 3% of its GDP as a guarantee to an alleged default risk.

— The 2007-2012 crisis is a deep crisis of financial capitalism, which was calling for a strong policy response from governments to lower the weight of finance and the reliance on public and private debts, to implement a macroeconomic strategy aiming at a return to full employment. But European authorities have denied any questioning of the pre-crisis strategy.

A number of divergences of analyses and policy recommendations emerged during the conference:

— According to some authors, euro area imbalances are due to unwise policies in Southern countries; the latter allowed housing and wage bubbles to rise, while northern countries were carrying out virtuous policies of wage moderation and structural reforms. Southern countries should adopt Northern countries' strategies and implement prolonged austerity policies. For other authors, the single currency allowed for the emergence of twin imbalances: it led to under-valuation of Northern economies, which enabled them to offset excessive fiscal, wage and social domestic austerity by excessive external account surpluses and allowed for the persistence of external deficits in the South; what is needed now is a convergence within the euro area where economic stimulus in the North will facilitate the reduction of external imbalances in the South.

— For some authors, each country should implement policies combining strong fiscal consolidation through public spending cuts and structural reforms (liberalisation of goods and services markets, labour market deregulation), which will offset its depressive effect. For other authors, public deficits should be maintained as long as needed to support output, MS public debts should be guaranteed by the ECB so as to entail a downward convergence of domestic interest rates and to implement a EU-wide growth strategy (in particular through financing environmental transition).

— Some authors even consider that EU solidarity should not be strengthened since it would allow some countries to postpone the necessary reforms and would lead to persistent imbalances, which would induce money creation and inflation. The euro area should implement the Maastricht Treaty more strictly, without solidarity between countries and without government bonds' purchases by the ECB. Germany is already at full employment and hence cannot stimulate its economy. Moreover, it would be of little use to the South, which would not be in a position to sell much more in Germany, given the weakness of their industries. Germany cannot provide a guarantee or finance the whole area. Other authors consider that economic policies errors have been made since the inception of the euro area, generating large disparities within the area, which policy makers should try to reduce today by a coherent strategy embedding solidarity. Europe is a big family, which should show solidarity and accept compromises to continue to live together.

— For some authors, a fiscal union is a prerequisite to the end of the euro area debt crisis, which implies implementing the binding rules enshrined in the Fiscal Pact and some degree of fiscal federalism,

where the Commission and the European Council would control MS fiscal policies. For other authors, MS should keep a large degree of autonomy to run the fiscal policy of their choice, for both democratic and economic efficiency reasons: MS economic situations are too diverse to allow a single fiscal policy. The euro area needs open economic policy coordination, without pre-designed and rigid public finance rules, with the objective of reaching a satisfactory growth, leading to full employment and reducing external imbalances.

Real exchange rate imbalances

The single currency has led to the emergence of permanent exchange rates misalignments within Europe and to the polarisation of external balances. The article by Virginie Coudert, Cécile Couharde and Valérie Mignon: **“Currency misalignments within the euro area”** compares real exchange rates in euro area countries with econometrically estimated equilibrium levels depending on relative labour productivity and external assets. The article shows that in 2010 Greece was overvalued by 20%, Portugal by 14%, Spain by 10%, Italy and 6.5%. Conversely, the real exchange rate was undervalued by 7% in Finland, and by 0.5% in France and Germany. Currency misalignments have widened and become more persistent since the launch of the single currency. They are particularly large in peripheral countries. However, the theoretical basis of this method can be questioned: it does not account for growth and employment needs, especially as concerns the unemployment rate. It takes into account the stock of foreign assets and not the current account balance. This may explain the somewhat surprising result for France.

The article by Vincent Duwicquet, Jacques Mazier and Jamel Saadaoui: **“Exchange Rate Misalignments, Fiscal Federalism and Redistribution: How to Adjust in a Monetary Union”** estimates the real exchange rates variations which would allow simultaneously to reach full employment and a current account in balance. The paper finds that in 2010, Portugal was overvalued by 25%, Greece by 18%, Spain by 15%, France by 12%, while the Netherlands were undervalued by 9%, Austria by 11%, Germany by 22%. One may argue that the equilibrium described by the authors does not take account of requirements from Northern countries who wish to run external surpluses to accumulate foreign assets and finance their pension system in the future. This highlights an economic policy coordination problem: how to manage a monetary system where some countries wish to own large external assets, while financial markets deny that the other countries run high debts. The authors propose to facilitate adjust-

ments in the euro area either by a transfers system from countries in a better situation to countries in a difficult situation, either by increasing the EU budget, which would introduce automatic transfers to countries in difficulty. Of course imbalances would be smaller after an asymmetrical shock. But Northern countries refuse a system where they may be permanent contributors, they refuse that countries having made adjustment efforts are forced to subsidise countries which they blame for not having undertaken similar efforts. Another strategy would be to finance by Eurobonds productive investments in the countries in recession. This would not, however, reduce durably imbalances resulting from competitiveness gaps.

Indicators of the crisis

The article by Jasper Lukkezen and Hugo Rojas-Romagosa: “**Stochastic debt sustainability indicators**” reminds us that the public debt-to-GDP ratio remains stationary if GDP growth is higher than the interest rate paid on debt or if the government responds to the increase in debt by reducing the public deficit. Until 1980, nominal interest rates were low relatively to the inflation rate and the growth rate; debt sustainability was not an issue. Since then, the UK, the US, Belgium and the Netherlands have accounted for the debt level in the conduct of their fiscal policy; this would not be the case for Spain and Portugal, where debt has therefore become unsustainable. However, the econometric estimations are run on a very long time period (1946-2010), which weakens the conclusions on Spain: until recently, GDP growth was higher than the interest rate in Spain; debt sustainability has become an issue only since 2009-2010.

The article by Christophe Van Nieuwenhuyze: “**Debts, assets and imbalances in the euro area: An aggregate view**” provides an analysis of assets and liabilities of public and private agents in the euro area. It appears that the area as a whole is in balance. Since the beginning of the crisis, rising public deficits have only offset households’ and firms’ rising surpluses. On the whole, the euro area suffers from rising disparities of external balances and net external positions rather than from public debt problems. The author proposes a policy consisting in the short term to finance these imbalances by financial flows organised by the ESCB and by budgetary transfers; in the medium term to undertake structural policies (increasing Southern countries’ competitiveness, ...).

Fiscal rules

The sovereign debt crisis has led the European Commission and Northern countries to advocate the strengthening of the Stability and Growth Pact (SGP) and to adopt a fiscal pact, which obliges MS to target medium-term structural budgets in balance (or, at least, structural deficits of below 0.5% of GDP) and in the short term to cut their public deficits and debt ratios, if the latter exceed 60% of GDP.

The article by Achim Truger and Henner Will: **“Open to manipulation and pro-cyclical: A detailed analysis of Germany’s debt brake”** makes a critical assessment of the German “debt brake” which inspired the European fiscal pact. According to the authors, the 0.35% of GDP limit for structural deficits is arbitrary and will lead public debt to amount to 11.7% of GDP only in the long-term which is neither credible nor optimal. The rule prevents to finance public investment by borrowing. Above all, the rule is neither simple nor transparent, due to the difficulty in assessing structural balances: the Commission is constantly revising its calculation method. Finally, this method underestimates the output gap. It may therefore lead to run pro-cyclical fiscal policies in times of recessions.

The article by Catherine Mathieu and Henri Sterdyniak: **“Do we need fiscal rules?”** addresses the arguments put forward justify fiscal rules. The concern about excessively expansionary fiscal policies advocates for the introduction of a “true” golden rule of public finances, where the structural deficit should be equal to public investment. Macroeconomic stabilisation concerns suggest a rule such as: “public balance must ensure the level of maximum demand, consistent with price stability and an interest rate equal to the rate of growth.” According to the authors, there is no evidence that deficits were on the whole excessive, before and since the beginning of the crisis. Most of the proposed fiscal rules are not satisfactory from an economic point of view, since they do not allow to run optimal policies after a shock. The article analyses the experiences of the “golden rule” in the UK and of the SGP in Europe: the UK abandoned the rule during the crisis; the SGP created unnecessary tensions before the crisis, it did not prevent the rise in imbalances in the euro area since it was taking account of external balances and private debts. The article criticises the European fiscal Treaty, based on potential GDP and structural balance concepts, which are theoretically and empirically questionable. The Treaty imposes too rigid medium-term constraints, not allowing public investment to be financed by borrowing, which may impose pro-cyclical fiscal policies and prohibits discretionary fiscal policies needed for full stabilisation. The Treaty requires MS to establish independent

fiscal policy councils, as if economic policy should be run out of the democratic debate.

Monetary and banking issues

Banking regulation is a particularly acute issue today. Here too, there are two opposing views. Does Europe need to “return to the past”, where banks would have to focus their activities in their countries of origin and reduce their activities on financial markets in the benefit of credit distribution, under close supervision of their national authorities? Should Europe instead establish a banking union, where banks would be encouraged to diversify across the EU to spread risks, where supervision would be at the European level, where prudential rules based on balance sheet ratios would be implemented? The first solution draws lessons from the losses suffered by European banks in developing their activities outside their country of origin and in financing speculative activities, but it is not consistent with the Single Market. The second solution induces the risk of a lack of control of the banking system, which would keep large leeway to accommodate prudential standards regardless of the financing needs of the real economies.

The article by Dominique Perrut: “**Global and European Financial Reforms: Assessment and perspectives**” describes and makes a critical assessment of the reforms introduced by the G20 and the EU to improve financial stability after the crisis. Drawing lessons from the financial crisis, their goal is to develop a new prudential model both a macro and micro levels. They include the Basel III ratios, the counter-cyclical prudential norms, some separation between retail banking and market activities, the establishment of clear procedures to solve banking crises and closer supervisions. The author is concerned with the margins of interpretation left to financial institutions, by the complexity of the system put in place in Europe, by the risk of competition between institutions subject to regulation and those who can escape from it, between banks established in the euro area, in the UK or in the US.

Exit strategies

The article by John FitzGerald: “**Financial crisis, economic adjustment and a return to growth in the EU**” analyses the experience of some EU countries having implemented crisis exit strategies in the 1980-1995. The paper shows that growth was often driven by foreign trade through exchange rate depreciation and buoyant economic

environment, both of which are lacking today. The article then analyses the situation of the countries most affected by the crisis. Countries with a largely foreign owned banking sector (Hungary, Estonia) have not experienced the rise in debt experienced by countries where the banking sector was largely domestically owned (Ireland, Spain). The crisis has shown that large external deficits were a source of weakness, even they could be easily financed before 2007. Countries in crisis experienced huge falls in consumption and investment. The collapse of the construction sector strongly increased the unskilled workers' unemployment rate. Public finance improvement is very slow as restrictive policies lower GDP growth and therefore tax revenues. According to the author, consolidating public finances is the priority but the author also recognises that a significant growth rebound is needed, which seems inconsistent with widespread austerity policies. The author estimates that countries must improve their competitiveness by reducing their wages level. The author warns against moving back to a purely national banking system; he considers that an integrated banking system in Europe provides significant efficiency gains. In the long term, the lack of human capital is the main obstacle to growth, particularly in Southern countries where unskilled unemployment is already high, where a strong rebound in the construction sector is not desirable, where generations arriving on the labour market are not sufficiently educated. A huge training effort seems necessary.

Kari Alho's article: "**How to restore the sustainability of the euro zone?**" builds a two-country model with a monetary union and the rest of the world. It determines conditions under which the monetary union is stable in the event of asymmetric shocks. Theoretically, stability is ensured by the price/competitiveness dynamic: the less competitive country sees a fall in domestic output, which lowers domestic wages and restores competitiveness. However, this requires that it does not run simultaneously expansionary fiscal or credit policies. If markets do not discriminate between national debts, a pseudo-equilibrium can be reached where the less competitive country constantly borrows from his partner. In case of markets' discrimination, unstable episodes may take place where a country's debt increases permanently as well the interest rate on government bonds. It is therefore necessary to impose a fiscal rule such as a country must run a restrictive policy when its public debt increases. This may have pervasive effects if the rise in debt is due to a fiscal policy aiming at offsetting the weakness in domestic demand or if a restrictive fiscal policy induces a sharp drop in output leading to an increase of the debt ratio. In case of unsustainable external deficits, the solution lies

in internal devaluation (tax reform improving competitiveness at the expense of lower wages) or in structural reforms (expected to increase competitiveness). The article shows that it is necessary to rethink the euro area functioning rules. However, it does not propose new rules: should they bear on public balances or on external balances? In case of imbalances, should adjustment bear only on the deficit country or should not we consider the responsibility of the surplus country too?

The article of the German Council of Economic Experts: **“The European redemption pact: An illustrative guide”** proposes to establish a fund to guarantee the repayment of public debt above 60% of GDP. Countries with debts above this limit (Austria, Belgium, Cyprus, Spain, France, Malta and the Netherlands), with the exception of countries under an adjustment programme (Greece, Ireland, Portugal), would put together in a fund the share of their debt that exceeds 60% of GDP and, in return, would permanently transfer fiscal resources for repayment in 25 years. Financial markets, reassured, would agree to hold this debt at a rate lower than current rates (the authors consider a rate of 4%, which is pessimistic since France borrowed at 2% in mid-2012). In addition, countries should commit to the fiscal Pact, hence should quickly bring their structural deficit below 0.5% of GDP. Thus, the debt ratio would fall quickly: in 2035, it would reach 58.5% in Belgium (against 97% today), 53.5% in France (instead of 88%), 50% Germany (instead of 82%), 60% in Italy (instead of 120%). However, countries should run strongly restrictive fiscal policies in 2012-2015, which according to the authors' calculations amount to 7 percentage points of GDP for Spain, 5.6 percentage points for France, 4 for the Netherlands, 3 for Italy and Belgium. The article does not analyse the impact of such restrictive policies on activity, making the implicit assumption that the fiscal multiplier is zero. Similarly, it does not consider that Europe may experience episodes of economic downturn over the next 25 years, which may require a softening in the fiscal stance. It does not question the factors which led public debts to rise. Were they a sin that MS should expiate? Or were the rises in public debts necessary in the economic context?

The article by Pier Carlo Padoan, Urban Sila and Paul van den Noord: **“Good and bad equilibria: What can fiscal (and other) policies do?”** builds an analytical model with two equilibria: a good one with high growth, low interest rates and low debt/GDP ratios; a bad one, with low growth, high interest rates and high debt ratio. After a financial shock (such as a sharp increase in public debt), a country may experience a race to the bad equilibrium: the increase in debt worries financial markets and causes a rise in interest rates, it reduces growth, which further increases public debt, where a new interest rate

increases... The authors propose to escape from this spiral by three ways: introducing structural reforms that would boost growth (but do such miraculous reforms really exist?), undertaking an expansionary monetary policy to keep interest rates at a low level, but the case of Southern countries in the euro area, victims of speculation should be distinguished from the case of other countries (Germany, France, UK, US, Japan) which do not suffer from high interest rates; and finally restrictive fiscal policies. The fiscal policy impact is ambiguous in the model. If the fiscal multiplier is high, expansionary policy supports growth, reduces the debt ratio and thereafter interest rates. On the contrary, if the multiplier is low, fiscal consolidation is expansionary as it reduces debt and interest rates. The authors have chosen a multiplier of 0.1, substantially lower than the 0.8 to 1.2 range which can be found in recent works (this evaluation should be increased in the case of policies implemented simultaneously throughout the area). This leads the authors to support current consolidation fiscal policies, which may have depressive effects in the short term but become expansionary in the medium term. According to us, the risk is that this cure will kill the patient before being effective. This is what the examples of Greece, Spain and Portugal in 2012 suggest. Austerity does not reassure financial markets and structural policies have little impact in a situation of economic and social distress.

The article by Stephan Schulmeister: **“The European Monetary Fund: A systemic problem needs a systemic solution”** explains the current crisis by the expansion of financial capitalism which led public debts to rise by imposing higher interest rates than GDP growth rates; companies prefer financial investments to productive investment; they refuse to be more indebted in net terms while households continue to save; hence governments must accept higher public debt; financial instability and speculation increase simultaneously. Fiscal austerity policies lead to recession and cannot reduce the public debt burden. Monitoring by the financial markets is currently contra-productive and self-fulfilling. The paper proposes to launch a European Monetary Fund (EMF) lending to MS by issuing euro-bonds guaranteed by MS and by the ECB. The EMF would have to maintain long-term interest rates slightly below the long-term growth rate. Each country’s financing would not be subject to a numerical constraint, but would be agreed within the EMF by the MS finance ministers. According to simulations with a macro-econometric model, this agreement would lead to higher growth and lower debt ratios than current austerity policies. But can long-term interest rates be stabilised at a low level, independently of monetary policy? Finance ministers would have the responsibility to agree on deficit targets for each country,

which is problematic (what to do in case of diverging interests or macroeconomic strategies between countries?), not democratic (each finance minister would have to impose to the national Parliament the fulfilment of an objective set at the European level), difficult to implement (what to do in case of a specific or global shock?).

Is the crisis over?

In late 2012, two contrasting assessments can be made of the crisis. On the one hand, the euro survived. Of course, European Institutions and MS policy answers have been slow and hesitant; their hesitation often fed speculation. But European Institutions have gradually managed to develop solidarity mechanisms, such as the EFSF and the ESM, they succeeded to impose MS a strong fiscal discipline (strengthening of the Stability Pact, adjustment programmes, fiscal Treaty). MS have agreed to implement austerity policies and structural reforms. From the beginning of the crisis, the ECB has agreed to implement unconventional monetary policies and has supported public debt in countries in difficulty by intervening in secondary markets. Later on, the ECB made a commitment to support without limit troubled countries accepting to implement the requested policies, which helped to reassure financial markets and lowered risk premia.

On the other hand, the euro area is unable to find a satisfactory growth, unable to recover the nine percentage points of activity lost because of the crisis. MS have been forced to implement austerity policies during a recession. According to the Commission's own forecasts, the unemployment rate will remain at 11.8% in 2013. Imbalances between countries persist, even if they are somewhat reduced by the huge depression in Southern countries. Rigid rules lacking economic foundation imposed on MS cannot replace real economic policy coordination. Solidarity is conditional to the loss of domestic autonomy and to the implementation of drastic austerity plans in helped countries. In the future, national policies will be paralysed by European constraints and financial markets' threats. Social Europe does not make any progress. Even worse, Europe imposes countries in difficulty to undermine health insurance universality, to reduce unemployment and family benefits and pensions. Tax competition continues. The crisis has not been an opportunity to question tax havens and tax evasion. Certainly, Europe is at the forefront of the fight against climate change, but it does not clearly move forward in terms of environmental transition. Many MS suffer from deindustrialisation without any EU industrial policy strategy being implemented. A banking union will be established, without being democratically

debated. European authorities persist in a strategy (paralysing national policies, imposing liberal structural reforms) which has so far failed to boost growth and have made Europe unpopular. Europe is missing a social project, a clear economic strategy and a democratic functioning.

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LA ZONE EURO EN CRISE

Catherine Mathieu et Henri Sterdyniak

Le 8 juin 2012, s'est tenue à Kiel la 9^e Conférence EUROFRAME¹ sur les questions de politique économique de l'Union européenne. Son sujet était : « La zone euro en crise : quelles perspectives pour la politique monétaire et les politiques budgétaires ? ». Le présent numéro de la collection « Débats et Politiques » de *la Revue de l'OFCE* regroupe douze des communications présentées.

La conférence a été dominée par la question de la crise des dettes publiques de certains pays de la zone euro. Comment est-on arrivé à cette situation ? Faut-il incriminer des erreurs des politiques économiques nationales ? Faut-il mettre en cause la mauvaise organisation de la zone euro ? Comment sortir de cette crise ?

En 2012, il est difficile de ne pas considérer que l'expérience de l'euro se solde par un échec : la zone est incapable de récupérer les 9 points d'activité perdus du fait de la crise financière ; sa croissance a été légèrement négative en 2012 ; elle devrait être nulle en 2013. En situation de récession, les pays de la zone sont contraints de pratiquer des politiques d'austérité. Trois pays membres ont dû faire appel à l'assistance de l'Europe et du FMI et doivent mettre en œuvre de drastiques plans d'ajustements sous la surveillance de la troïka (la Commission, la BCE et le FMI). Les dettes publiques des pays membres ne sont plus considérées comme des actifs sans risque ; l'homogénéité des dettes libellées en euro est rompue puisque les marchés financiers imposent de fortes primes de risques aux dettes des pays du Sud. Les politiques économiques des pays membres sont en permanence sous la surveillance des marchés financiers.

1. EUROFRAME est un réseau d'instituts économiques européens qui regroupe : DIW et IFW (Allemagne), WIFO (Autriche), ETLA (Finlande), OFCE (France), ESRI (Irlande), PROMETEIA (Italie), CPB (Pays-Bas), CASE (Pologne), NIESR (Royaume-Uni).

La monnaie unique souffre de six péchés originels, auxquels il est difficile de remédier :

— Selon la théorie économique, il ne peut y avoir de monnaie unique entre des pays qui ont des situations économiques différentes et qui veulent garder des politiques économiques autonomes. La monnaie unique suppose de mettre en place des mécanismes de coordination des politiques économiques ou des mécanismes de solidarité. Sinon comment éviter l'apparition et la persistance de situation de déséquilibres où certains pays sont fortement déficitaires, d'autres fortement excédentaires ? Comment gérer ces situations ?

— Ces mécanismes ne peuvent consister en des règles numériques rigides inscrites dans un traité (comme le déficit budgétaire ne doit pas dépasser 3 % du PIB ; la dette publique ne doit pas dépasser 60 % du PIB ; le solde structurel doit être équilibré à moyen terme). Ils doivent être à la fois souples (les objectifs doivent être négociés entre pays compte tenu de la conjoncture) et contraignants (chacun doit se plier aux décisions prises en commun). Mais comment aboutir à un accord sur la stratégie de politique économique entre des gouvernements dont les intérêts et les analyses diffèrent ?

— Il ne peut y avoir de solidarité inconditionnelle entre des pays dont les systèmes économiques et sociaux diffèrent. Par exemple, les pays du Nord peuvent refuser d'aider les pays du Sud, leur reprochant de n'avoir pas fait les réformes nécessaires, d'avoir laissé gonfler leurs déséquilibres, d'être incapables de tenir leurs engagements.

— La BCE n'a pas le droit de financer directement les États (article 123 du TFUE) ; la solidarité financière entre les États membres est interdite (article 125 du TFUE). Ainsi, chaque État membre doit se financer sur les marchés financiers sans recours garanti à une banque centrale « prêteuse en dernier ressort ». Le risque existe alors qu'il ne puisse tenir ses engagements et fasse défaut. Sa dette n'est plus sans risque. Les marchés financiers n'en avaient pas pris conscience jusqu'à la mi-2009. Aujourd'hui, échaudés par le défaut de la Grèce, ils imposent des taux insoutenables aux pays en difficulté, ce qui augmente encore leurs difficultés.

— Les pays de la zone euro sont maintenant soumis à l'arbitrage des marchés financiers et, contrairement aux pays anglo-saxons et au Japon, ils ne contrôlent plus leur taux d'intérêt. Or les marchés financiers n'ont pas de compétence macroéconomique, sont auto-réalisateurs et savent qu'ils le sont. Pourtant, les pays du Nord refusent que les dettes publiques des pays membres soient collectivement garanties. Ils estiment que la discipline imposée par les marchés financiers est nécessaire. Or, la disparité des taux d'intérêt est d'un coût élevé et arbitraire. À terme, par exemple, un pays comme l'Italie devrait payer aux marchés financiers un tribut de l'ordre de 3 % de son PIB pour les garantir contre un présumé risque de défaut.

— La crise de 2007-2012 est une crise profonde du capitalisme financier qui aurait demandé une riposte forte de la part des gouvernements pour réduire l'importance de la finance et la dépendance à l'endettement public ou privé, pour élaborer une stratégie macroéconomique de retour au plein emploi. Or les instances européennes se sont refusées à toute remise en cause de leur stratégie.

Plusieurs lignes de fracture sont apparues au cours du colloque :

— Pour les uns, ce sont les politiques irresponsables des pays du Sud qui sont la cause des déséquilibres : ceux-ci ont laissé se développer des bulles immobilières et salariales tandis que les pays du Nord pratiquaient des politiques vertueuses d'austérité salariale et de réformes structurelles. Les pays du Sud doivent donc adopter la stratégie des pays du Nord et accepter une longue cure d'austérité. Pour les autres, la monnaie unique a permis le développement de déséquilibres jumeaux et opposés : elle a conduit à la sous-évaluation des économies des pays du Nord, ce qui les a autorisés à compenser leurs politiques excessives d'austérité salariale et sociales par des excédents extérieurs excessifs ; elle a autorisé la persistance de déficits extérieurs au Sud ; il faut une convergence contrôlée où la relance au Nord facilite la résorption des déséquilibres extérieurs au Sud.

— Pour les uns, chaque pays doit mettre en œuvre des politiques alliant une forte réduction des dépenses publiques – afin de résorber les déficits budgétaires et réduire le poids de la dette publique – et des réformes structurelles (libéralisation des marchés des biens et des services, déréglementation du marché du travail)

qui en compenseraient l'effet dépressif sur le marché du travail. Il faut laisser les marchés financiers imposer aux pays la discipline nécessaire. Pour les autres, il faut maintenir les déficits publics tant qu'ils seront nécessaires pour soutenir l'activité, faire garantir les dettes publiques par la BCE afin de faire converger les taux d'intérêt nationaux vers le bas et mettre en œuvre une stratégie de croissance à l'échelle de l'UE (en particulier par le financement des investissements nécessaires à la transition écologique).

— Certains estiment même qu'il faut éviter l'extension de la solidarité européenne qui permettrait à certains pays de retarder les réformes nécessaires, qui rendrait persistants les déséquilibres, qui induirait de la création monétaire et donc de l'inflation. Il faut revenir à une application plus stricte du traité de Maastricht, sans solidarité entre pays, sans achat de titres publics par la BCE. L'Allemagne, déjà au plein emploi, ne peut relancer son économie. D'ailleurs, cela serait de peu d'utilité pour les pays du Sud qui ne vendraient pas beaucoup plus à l'Allemagne, compte tenu de la faiblesse de leur secteur industriel. L'Allemagne ne peut jouer le rôle de garantie ou de financeur pour l'ensemble de la zone. D'autres jugent que des erreurs de politiques économiques ont été commises depuis la création de la zone euro, qu'elles ont abouti à de fortes disparités dans la zone, qu'il faut essayer de résorber aujourd'hui par une stratégie solidaire et cohérente. L'Europe est une grande famille ; il faut manifester de la solidarité et accepter des compromis pour continuer à vivre ensemble.

— Pour les uns, la fin de la crise des dettes des pays de la zone euro suppose la mise en place d'une union budgétaire, ce qui signifie la mise en place de règles contraignantes inscrites dans le Pacte budgétaire et un certain fédéralisme budgétaire ; la Commission et le Conseil européen doivent avoir un droit de regard sur les politiques budgétaires des États membres. Pour les autres, il faut laisser aux États membres un degré d'autonomie nécessaire pour pratiquer la politique budgétaire de leur choix ; c'est à la fois une question de démocratie et d'efficacité économique : les situations économiques des pays sont trop diverses pour qu'une politique budgétaire uniforme soit possible ; il faut une coordination ouverte des politiques économiques, sans normes préétablies et rigides de finances publiques, ayant pour objectif une croissance satisfaisante et la résorption des déséquilibres extérieurs.

Les déséquilibres de taux de change réels

L'existence de la monnaie unique a conduit à l'apparition de désajustements permanents des taux de change intra-européens et à la polarisation des soldes extérieurs. L'article de Virginie Coudert, Cécile Couharde et Valérie Mignon : « **Les mésalignements de taux de change à l'intérieur de la zone euro** » compare les taux de change réels des pays de la zone euro avec des niveaux d'équilibre estimés économétriquement qui dépendent de la productivité du travail et du stock d'avoirs (ou de dettes) extérieurs. Il apparaît que la Grèce connaissait en 2010 une surévaluation de 20 %, le Portugal de 14 %, l'Espagne de 10 %, l'Italie de 6,5 %. En sens inverse, le taux de change réel de la Finlande était sous-évalué de 7 %, celui de la France et l'Allemagne de 0,5 %. Les mésajustements des taux de change sont plus prononcés et plus persistants durant la mise en place de la monnaie unique ; ils sont particulièrement forts pour les pays périphériques. Cependant, les fondements théoriques de cette méthode sont discutables : elle ne prend pas en compte le besoin de croissance et d'emploi, et en particulier le taux de chômage. Elle prend en compte le stock d'actifs étrangers et non le solde courant. Ceci peut expliquer le résultat plutôt surprenant pour la France.

L'article de Vincent Duwicquet, Jacques Mazier et Jamel Saadaoui : « **Désajustements de change, fédéralisme budgétaire et redistribution : Comment s'ajuster en union monétaire** » évalue les modifications de taux de change réel qui permettraient d'obtenir simultanément le plein emploi et l'équilibre du solde extérieur. Il obtient, pour l'année 2010, que le Portugal est surévalué de 25 %, la Grèce de 18 %, l'Espagne de 15 %, la France de 12 % tandis que les Pays-Bas sont sous-évalués de 9 %, l'Autriche de 11 %, l'Allemagne de 22 %. Le problème est que les pays d'Europe du Nord souhaitent avoir un excédent pour accumuler des avoirs extérieurs pour financer leurs retraites futures ; l'équilibre décrit par les auteurs ne tient pas compte de ces souhaits. Ceci met en évidence un problème de coordination des politiques économiques : comment gérer un système monétaire où certains pays souhaitent avoir de forts avoirs extérieurs tandis que les marchés financiers refusent que les autres aient de fortes dettes. Les auteurs proposent de faciliter les ajustements dans la zone euro soit par un système de transferts des pays en meilleure situation que la moyenne vers ceux en situation difficile, soit par un élargissement du budget européen, qui introduirait des transferts automatiques vers les pays en difficulté. Certes, les déséquilibres, après un choc dissymétrique, seraient moins importants. Mais les pays du Nord refusent un système où ils risquent d'être en permanence contributeurs ; ils refusent que les pays qui ont fait des efforts d'ajustement soient obligés de

subventionner des pays qu'ils accusent de n'avoir pas fait d'efforts équivalents. Une autre stratégie également délicate à mettre en œuvre serait de financer par des euro-obligations des investissements productifs dans les pays en récession. Ceci ne règle cependant pas durablement les déséquilibres induits par le creusement des écarts de compétitivité.

Des indicateurs de la crise

L'article de Jasper Lukkezen et Hugo Rojas-Romagosa : « **Indicateurs stochastiques de la soutenabilité de la dette** » rappelle que le ratio dette publique/PIB reste stationnaire si le taux de croissance est supérieur au taux d'intérêt payé sur la dette ou si le gouvernement réagit à la hausse de la dette en réduisant le déficit public. Jusqu'en 1980, les taux d'intérêt nominaux étaient faibles relativement au taux d'inflation et au taux de croissance ; la soutenabilité de la dette ne posait pas de problème. Depuis, si le Royaume-Uni, les États-Unis, la Belgique et les Pays-Bas tiennent compte du niveau de dette dans la conduite de leur politique budgétaire, ce ne serait pas le cas de l'Espagne et du Portugal, dont la dette serait donc devenue insoutenable. Cependant, les estimations économétriques sont conduites sur très longue période (1946-2010), ce qui fragilise le diagnostic sur l'Espagne : l'Espagne avait naguère une croissance supérieure à son taux d'intérêt ; ce n'est qu'à partir de 2009-2010 que la question de soutenabilité de sa dette se pose.

L'article de Christophe Van Nieuwenhuyze : « **Dettes, actifs et déséquilibres dans la zone euro, une vue globale** » propose une analyse des actifs et des dettes des agents publics et privés de la zone euro. Il apparaît que la zone est globalement équilibrée ; durant la crise, le gonflement des déficits publics n'a fait que compenser la hausse des excédents des ménages et des entreprises. Au total, la zone euro souffre du creusement des disparités des soldes extérieurs et des situations nettes vis-à-vis de l'extérieur plutôt que d'un problème de dettes publiques. L'auteur propose donc une politique consistant, à court terme à financer ces déséquilibres par des flux financiers organisés par le SEBC et par des transferts budgétaires ; à moyen terme par des politiques structurelles (hausse de la compétitivité des pays du Sud,...).

Les règles budgétaires

La crise des dettes souveraines des pays du Sud a conduit la Commission européenne et les pays du Nord de l'Europe à prôner le

renforcement du Pacte de Stabilité et de Croissance (PSC) et à faire adopter un Pacte budgétaire, qui impose aux pays membres de se donner l'objectif de moyen terme d'équilibrer leur solde structurel (ou, du moins, d'avoir un déficit structurel inférieur à 0,5 % du PIB) et à court terme de réduire chaque année leur déficit et leur ratio de dette, si ce dernier dépasse 60 % du PIB.

L'article d'Achim Truger et Henner Will : « **Manipulable et pro-cyclique, une analyse détaillée du « frein à l'endettement » allemand** » critique le « frein à l'endettement » allemand qui a inspiré le Pacte budgétaire. Selon les auteurs, la limite de 0,35 % du PIB pour les déficits structurels est arbitraire et conduirait à long terme à une dette publique de 11,7 % du PIB, ce qui n'est ni crédible, ni optimal ; elle ne permet pas de financer les investissements publics par l'emprunt. Surtout, la règle n'est pas simple et transparente, en raison de la difficulté à évaluer le solde structurel : d'ailleurs, la Commission change en permanence sa méthode de calcul. Enfin, cette méthode sous-évalue l'écart de production. Elle risque donc d'obliger à pratiquer des politiques budgétaires pro-cycliques en période de récession.

L'article de Catherine Mathieu et Henri Sterdyniak : « **Faut-il des règles de politique budgétaire ?** » discute des justifications mises en avant pour instaurer des règles de politique budgétaire. La préoccupation d'éviter des politiques budgétaires trop expansionnistes milite pour l'introduction d'un « vraie » règle d'or des finances publiques, où le déficit public structurel serait égal à l'investissement public. Les préoccupations de stabilisation macroéconomique militent plutôt pour une règle du type : « le solde public doit assurer le niveau de demande maximum, compatible avec la stabilité des prix et un taux d'intérêt égal au taux de croissance ». Selon les auteurs, rien ne prouve que les déficits publics aient été globalement trop importants, avant et depuis la crise. La plupart des règles budgétaires proposées ne sont pas économiquement satisfaisantes, puisqu'elles ne permettent pas de suivre la politique optimale après un choc. L'article analyse les expériences de la « règle d'or » au Royaume-Uni et du PSC dans la zone euro : le Royaume-Uni a abandonné sa règle durant la crise ; le PSC a créé des tensions inutiles avant la crise ; il n'a pas permis d'éviter la croissance des déséquilibres dans la zone puisqu'il ne tenait pas compte du solde extérieur et de l'endettement privé. L'article critique le traité budgétaire européen, qui repose sur les concepts théoriquement et empiriquement vagues de production potentielle et de solde structurel, qui impose une contrainte de moyen terme trop rigide ne permettant pas de financer les investissements publics par de l'endettement, qui risque d'imposer des politiques budgétaires pro-cycliques, qui interdit les politiques budgétaires discrétionnaires pourtant indis-

pensables pour une stabilisation complète, qui oblige à mettre en place des conseils indépendants de politique budgétaire, comme si la politique économique devait échapper aux débats démocratiques.

Questions bancaires et monétaires

La question de la régulation des banques se pose avec acuité à l'heure actuelle. Là-aussi, deux points de vue s'opposent. Faut-il un « retour vers le passé », où les banques seraient appelées à concentrer leurs activités dans leur pays d'origine et à réduire leurs activités de marché au profit de leur rôle de distribution du crédit, sous la surveillance étroite d'autorités nationales ? Faut-il, au contraire, une union bancaire, où les banques seraient incitées à se diversifier à l'échelle de l'UE pour se répartir les risques, où le contrôle serait européen, où des normes prudentielles basées sur des ratios de bilan seraient mises en place ? La première solution tire les leçons des pertes qu'ont subies les banques européennes en se développant à l'extérieur de leur pays d'origine et en finançant des activités spéculatives, mais n'est guère conforme au Marché unique. La seconde fait courir le risque d'un manque de contrôle du système bancaire, qui conserverait de grandes marges de manœuvre pour s'accommoder des normes prudentielles sans tenir compte des besoins de financement des économies nationales.

L'article de Dominique Perrut : « **Les réformes financières européennes et mondiales : bilan et perspectives** » décrit et critique les réformes que le G20 et l'UE mettent en place pour améliorer la stabilité financière après la crise. Tirant les leçons de la crise financière, leur objectif est de mettre en place un nouveau modèle prudentiel, tant au niveau macro que microéconomique. Elles comportent ainsi les ratios de Bâle III, des normes prudentielles contra-cycliques, une certaine séparation entre les activités bancaires de détail et les activités de marché, la mise en place de procédures explicites de résolution des crises bancaires, une supervision plus étroite. L'auteur s'inquiète des marges d'interprétation laissées aux institutions financières ; de la concurrence entre les institutions soumises à la régulation et celles qui y échapperaient, de la complexité du dispositif mis en place en Europe, du risque de concurrence par le moins-disant réglementaire entre l'Union bancaire mise en place dans la zone euro, le Royaume-Uni et les États-Unis.

Les stratégies de sortie de crise

L'article de John FitzGerald : « **Crise financière, ajustement économique et retour de la croissance dans l'Union européenne** » analyse les expériences de sortie de récession qu'ont connues certains pays européens dans les années 1980-1995 ; il montre que la croissance a souvent été impulsée par le commerce extérieur grâce à des changements de parité et au dynamisme de l'environnement économique, deux facteurs qui manquent aujourd'hui. L'article analyse ensuite la situation des pays les plus touchés par la crise. Il remarque que les pays qui avaient un secteur bancaire dominé par des banques étrangères (Hongrie, Estonie) n'ont pas connu l'alourdissement de dettes qu'ont connu des pays dont le secteur bancaire était national (Irlande, Espagne). La crise a montré que des déficits extérieurs importants étaient une source de fragilité, même s'il était possible, avant 2007, de les financer sans difficulté. Les pays en crise ont connu des baisses impressionnantes de leur consommation et de leur investissement. La chute du secteur de la construction a fortement augmenté le taux de chômage des travailleurs non qualifiés. L'amélioration des finances publiques est très lente puisque les politiques restrictives réduisent l'activité et donc les rentrées fiscales. Selon l'auteur, la priorité est de consolider les finances publiques ; mais, il reconnaît en même temps que cela demande une nette reprise de la croissance, ce qui nous semble peu compatible avec des politiques généralisées d'austérité. Il estime ensuite que les pays doivent améliorer leur compétitivité en réduisant le niveau des salaires. L'auteur met en garde contre la tendance actuelle de reconcentration des banques sur leur marché national ; il considère qu'un système bancaire intégré en Europe fournit des gains importants d'efficacité. À long terme, il considère que c'est le manque de capital humain qui est le principal obstacle à la croissance, en particulier dans les pays du Sud où le chômage des non qualifiés est déjà élevé, où une forte reprise de l'activité dans la construction n'est pas souhaitable, où les générations qui arrivent sur le marché du travail ne sont pas assez formées ; un effort de formation continue lui semble indispensable.

L'article de Kari Alho : « **Comment restaurer la soutenabilité de la zone euro ?** » construit un modèle comprenant deux pays en union monétaire et le reste du monde. Il cherche les conditions sous lesquelles la zone monétaire est stable face à des chocs dissymétriques. Théoriquement, la stabilité est assurée par la dynamique prix/compétitivité : le pays le moins compétitif voit sa production baisser, ce qui fait diminuer ses salaires et restaure progressivement sa compétitivité. Cependant, ceci suppose qu'il ne pratique pas simultanément des politiques budgétaires ou de crédit expansionnistes. Si les marchés ne

discriminent pas entre les dettes nationales, on peut aboutir à un pseudo-équilibre où le pays peu compétitif s'endette en permanence auprès de son partenaire. En cas de discrimination, on peut aboutir à des enchaînements instables où la dette d'un pays augmente sans cesse comme les taux d'intérêt qu'il supporte. Il faut donc imposer une règle budgétaire où un pays doit pratiquer une politique restrictive quand sa dette publique augmente, mais ceci peut induire des effets pervers si la hausse de la dette provient d'une politique budgétaire visant à compenser la faiblesse de la demande interne ou si la politique restrictive induit une forte baisse de la production qui entraîne une hausse du ratio de dette. En cas de déficit extérieur insoutenable, la solution réside dans la dévaluation interne (une réforme fiscale améliorant la compétitivité au prix de la baisse des salaires) ou dans des réformes structurelles (censées augmenter la compétitivité). L'article montre donc qu'il faut repenser les règles de fonctionnement de la zone. Toutefois, il ne propose pas de nouvelles règles : doivent-elles porter sur le solde public ou sur le solde extérieur ? En cas de déséquilibres, l'ajustement ne doit-il porter que sur le pays déficitaire ou ne faut-il pas examiner s'il y a une responsabilité du pays excédentaire ?

L'article du Conseil des experts économiques allemands : « **Un Pacte européen de rachat : mode d'emploi** » propose de constituer un fonds pour garantir le remboursement de la part de la dette publique supérieure à 60 % du PIB. Les pays dont la dette dépasse ce montant (Allemagne, Autriche, Belgique, Chypre, Espagne, France, Malte et Pays-Bas), à l'exception des pays soumis à un programme d'ajustement (Grèce, Irlande, Portugal), mettraient en commun dans un fonds la part de la dette qui dépasse 60 % du PIB et, en contrepartie, y transfèreraient irrémédiablement des ressources fiscales permettant un remboursement en 25 ans. La France pourrait ainsi se faire financer une dette de 27 % de son PIB en transférant des recettes d'un montant de 1,3 % du PIB. Les marchés financiers, rassurés, accepteraient de détenir cette dette à un taux plus bas que les taux actuels (les auteurs envisagent un taux de 4 %, ce qui est pessimiste puisque la France s'endettait à la mi-2012 à 2 %). Par ailleurs, les pays devraient s'engager dans le Pacte budgétaire, donc ramener rapidement leur déficit structurel à 0,5 % du PIB. Ainsi, le ratio de dette diminuerait-il rapidement : en 2035, il serait de 58,5 % en Belgique (contre 97 % aujourd'hui), de 53,5 % en France (au lieu de 88 %), de 50 % en Allemagne (au lieu de 82 %), de 60 % en Italie (au lieu de 120 %). Cependant, les pays devraient engager des politiques budgétaires fortement restrictives en 2012-2015, qui représenteraient, selon le calcul des auteurs, 7 points de PIB pour l'Espagne, 5,6 points pour la France ; 4 points pour les Pays-Bas ; 3 points pour l'Italie et la Belgique.

L'article n'analyse pas les conséquences de ces politiques restrictives sur l'activité, faisant l'hypothèse implicite que le multiplicateur budgétaire est nul. De même, il n'envisage pas que l'Europe puisse connaître des épisodes de ralentissement économique dans les 25 prochaines années, qui pourraient nécessiter d'infléchir les politiques restrictives. Il ne s'interroge pas non plus sur les facteurs qui ont provoqué ces hausses des dettes publiques. Sont-ce des péchés dont les États membres doivent se racheter ? Ou ces hausses étaient-elles nécessaires compte tenu de la situation économique ?

L'article de Pier Carlo Padoan, Urban Sila et Paul van den Noord : « **Éviter les pièges de la dette, cran de sécurité monétaire et réformes structurelles** » propose une maquette analytique qui présente deux équilibres : un bon avec une forte croissance, un faible taux d'intérêt et un bas ratio dette/PIB ; un mauvais, avec une croissance médiocre, un taux d'intérêt élevé et un fort niveau de dette. À la suite d'un choc financier (comme une forte hausse de la dette), un pays peut connaître une spirale vers le mauvais équilibre : la hausse de la dette inquiète les marchés et provoque une hausse des taux d'intérêt, celle-ci pèse sur la croissance, ce qui augmente encore la dette, d'où une nouvelle hausse des taux... Les auteurs proposent d'échapper à cette spirale de trois façons : introduire des réformes structurelles qui permettraient d'impulser la croissance (mais ces réformes miracles existent-elles vraiment ?) ; pratiquer une politique monétaire expansionniste pour maintenir les taux d'intérêt à un bas niveau, mais, il faudrait distinguer le cas des pays du Sud de la zone euro, victimes de la spéculation du cas des autres pays (Allemagne, France, Royaume-Uni, États-Unis, Japon), qui ne souffrent pas de taux d'intérêt élevés, enfin des politiques budgétaires restrictives. L'impact de la politique budgétaire est ambigu dans la maquette. Si le multiplicateur budgétaire est élevé, une politique expansionniste soutient la croissance et permet une sortie vers le haut : la croissance réduit le ratio de dette et les taux d'intérêt. Au contraire, s'il est bas, la consolidation budgétaire est expansionniste puisqu'elle réduit la dette et les taux d'intérêt. Les auteurs ont pris un multiplicateur de 0,1 beaucoup plus bas que la fourchette 0,8-1,2 sur laquelle s'accordent les travaux récents (évaluation qui devrait encore être augmentée pour des politiques mises en œuvre simultanément dans toute la zone). Ceci les amène à soutenir les politiques actuelles de consolidation budgétaire qui, selon eux, peuvent avoir des effets dépressifs à court terme, mais deviendraient expansionnistes à moyen terme. Le risque, selon nous, est que le remède tue le malade, avant d'être efficace. C'est ce que semblent montrer en 2012 les exemples de la Grèce, de l'Espagne et du Portugal. L'austérité ne rassure pas les marchés financiers et les poli-

tiques structurelles ont peu d'impact dans une situation de détresse économique et sociale.

L'article de Stephan Schulmeister : « **Pour un Fonds monétaire européen, un problème systémique requiert une solution systémique** » explique la crise actuelle par le développement du capitalisme financier qui a fait gonfler les dettes publiques en imposant des taux d'intérêt supérieurs au taux de croissance ; les entreprises préfèrent les placements financiers aux investissements productifs ; elles ne s'endettent plus en termes nets alors que les ménages épargnent ; les gouvernements doivent alors accepter un gonflement de leur dette ; l'instabilité financière et la spéculation se nourrissent l'une de l'autre. Les politiques d'austérité budgétaire mènent à la récession et ne permettent pas de réduire le poids des dettes publiques. La prétendue surveillance effectuée par les marchés financiers est actuellement contre-productive et auto-réalisatrice. L'article propose de créer un Fonds Monétaire Européen (FME) qui financerait les pays membres en émettant des euro-obligations garanties par les pays et la BCE. Le FME maintiendrait un taux d'intérêt de long terme légèrement inférieur au taux de croissance. Le financement de chaque pays ne serait pas soumis à une contrainte numérique, mais serait décidé, au sein du FME, par les ministres des Finances des pays membres. Selon des simulations réalisées avec un modèle macroéconométrique, cet accord permettrait d'aboutir à une croissance plus forte et à des ratios de dette plus faibles que la politique d'austérité actuelle. Mais, est-il possible de stabiliser les taux d'intérêt de long terme à un bas niveau, indépendamment de la politique monétaire ? Ce projet confie aux ministres des Finances la responsabilité de s'entendre sur les objectifs de déficit public pour chaque pays, ce qui est problématique (que faire en cas de divergences d'intérêt ou de stratégie macroéconomique entre pays ?), peu démocratique (le ministre des Finances devrait imposer au Parlement le respect de l'objectif ainsi fixé), difficile à mettre en œuvre (que faire en cas de choc spécifique ou global ?).

La crise est-elle finie ?

À la fin 2012, deux bilans contrastés peuvent être tirés de la crise. D'un côté, l'euro a survécu. Certes, les réactions des institutions européennes et des pays membres ont été lentes et hésitantes ; leurs réticences ont souvent nourri la spéculation. Mais les institutions européennes ont progressivement réussi à mettre en place des mécanismes de solidarité, comme le Fonds Européen de Stabilité Financière puis le Mécanisme Européen de Stabilité ; elles ont réussi à imposer aux États membres une forte discipline budgétaire (renforcement du

PSC, programmes d'ajustement, traité budgétaire). Les États membres ont accepté de mettre en œuvre des politiques d'austérité et de réformes structurelles. Dès le début de la crise, la BCE a accepté de mettre en place des politiques non-conventionnelles ; elle a soutenu les dettes publiques des pays en difficulté en intervenant sur les marchés secondaires. Puis, elle a pu s'engager à venir en aide sans limite aux pays en difficulté qui mettaient en œuvre des politiques satisfaisantes, ce qui a permis de rassurer les marchés financiers et de faire baisser les primes de risques.

De l'autre côté, la zone euro est incapable de retrouver une croissance satisfaisante comme de récupérer les neuf points d'activité perdus du fait de la crise. Les pays membres ont été contraints de mettre en œuvre des politiques d'austérité en période de récession. Selon les perspectives de la Commission elle-même, le taux de chômage devrait rester à 11,8 % en 2013. Les déséquilibres entre pays persistent, même s'ils sont quelque peu atténués par la dépression profonde dans laquelle sont plongés les pays du Sud. Les normes rigides et sans fondements économiques imposées aux États membres ne remplacent pas une vraie coordination des politiques économiques. Les solidarités mises en place sont conditionnelles à la perte de toute autonomie et à l'instauration de politiques d'austérité drastiques. À l'avenir, les politiques nationales seront paralysées par les contraintes européennes et les menaces des marchés financiers. L'Europe sociale ne progresse pas ; pire, l'Europe impose aux pays en difficulté de mettre en cause l'universalité de l'assurance-maladie, de réduire les prestations de retraite, de chômage, de famille. La concurrence fiscale persiste ; la crise n'a pas été l'occasion pour mettre en cause les paradis fiscaux et l'évasion fiscale. Certes, l'Europe est à la pointe du combat contre le changement climatique, mais elle peine à s'engager résolument dans la transition écologique. De nombreux pays de la zone souffrent d'une désindustrialisation persistante, sans qu'une stratégie européenne de politique industrielle ne soit mise en œuvre. L'Union bancaire va être mise en place, sans que son contenu soit démocratiquement décidé. Les instances européennes persistent dans une stratégie – paralyser les politiques nationales, imposer des réformes structurelles libérales – qui jusqu'à présent n'a pas réussi à impulser la croissance et qui ont rendu l'Europe impopulaire. L'Europe manque cruellement d'un projet social fédérateur, d'une stratégie économique et d'un fonctionnement démocratique.

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**REAL EXCHANGE RATES
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LES MÉSALIGNEMENTS DE TAUX DE CHANGE RÉELS À L'INTÉRIEUR DE LA ZONE EURO¹

Virginie Coudert²

Banque de France, CEPII et EconomiX-CNRS, Université Paris Ouest

Cécile Couharde

EconomiX-CNRS, Université Paris Ouest

Valérie Mignon

EconomiX-CNRS, Université Paris Ouest et CEPII

Malgré les parités fixes à l'intérieur de la zone euro, les taux de change effectifs réels des pays membres ont suivi des trajectoires divergentes en raison des écarts d'inflation, conduisant notamment à une forte appréciation réelle dans les pays périphériques. Dans cet article, nous évaluons les mésalignements de taux de change sur la période 1980-2010 en recourant à l'approche BEER (*Behavioral Equilibrium Exchange Rate*). Les résultats montrent que les pays périphériques de la zone euro souffrent d'un taux de change surévalué depuis le milieu des années 2000, leur appréciation réelle ne provenant pas d'une amélioration de leurs fondamentaux tels que la productivité ou la position extérieure nette. En moyenne au sein de la zone euro, les mésalignements de taux de change se sont accrus depuis la mise en place de l'union monétaire et sont devenus plus persistants. Plus fondamentalement, nos résultats montrent des trajectoires divergentes selon les pays membres, les mésalignements étant plus larges et plus persistants dans les pays périphériques que dans les pays du cœur de la zone euro.

Mots-clés : Zone euro, Taux de change réel d'équilibre, Mésalignements, Cointégration en panel.

La zone euro dans son ensemble présente un compte extérieur équilibré, mais cette situation masque de profonds déséquilibres

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2. Cet article reflète les idées personnelles des auteurs, mais ne rend pas compte de la position de la Banque de France.

entre les pays. Les performances en matière de commerce extérieur sont en effet très divergentes entre l'Allemagne qui accumule des excédents et les pays du Sud comme l'Espagne, le Portugal et la Grèce dont les déficits sont persistants.

Au début des années 2000, la plupart des économistes pensaient que l'union monétaire faciliterait le financement des pays déficitaires, en supprimant le risque de change à l'intérieur de la zone. Les déficits extérieurs seraient ainsi financés sans douleur, au taux d'intérêt commun (Blanchard et Giavazzi, 2002). L'intensification des mouvements de capitaux entre les pays membres permettrait à la zone euro de remplir automatiquement le critère d'intégration financière, nécessaire pour former une zone monétaire optimale selon Mundell (1961) ; la zone euro deviendrait alors une zone monétaire optimale de manière endogène (Frankel et Rose, 1998 ; Rose et Engel, 2000). À cette époque, l'approfondissement de l'intégration financière était censé aplanir les difficultés de financement des pays périphériques mais aussi faciliter leur convergence réelle. Non seulement, la contrainte extérieure des pays déficitaires allait être assouplie, mais les entrées de capitaux dont ils bénéficieraient viendraient renforcer leur productivité et accélérer leur rattrapage économique.

La première décennie de l'union monétaire a donné raison aux optimistes quant à l'approfondissement de l'intégration financière : les flux de capitaux transfrontaliers à l'intérieur de la zone se sont beaucoup accrus et les pays déficitaires ont pu s'émanciper de la pression des marchés des changes qu'ils subissaient de plein fouet auparavant. Cependant depuis 2010, la crise de la dette a révélé la fragilité financière des pays déficitaires et montré que leur appartenance à une union monétaire ne leur garantissait nullement de pouvoir se financer à un taux d'intérêt commun. Non seulement, les taux d'intérêt sur la dette souveraine des pays du Sud se sont fortement accrus, mais ils ont emporté avec eux l'ensemble des taux d'intérêt débiteurs pour les agents privés de ces pays. Un processus de fragmentation est donc maintenant à l'œuvre dans l'espace financier européen.

Comment expliquer ce retournement soudain ? En réalité, la crise a révélé des disfonctionnements à l'œuvre depuis le début de l'union monétaire, mais qui étaient restés masqués jusqu'alors par un climat de confiance excessive. Premièrement, les entrées de

capitaux vers les pays périphériques n'ont pas servi à améliorer leur productivité relative, mais plutôt à soutenir leur demande, notamment en consommation et logement, contribuant à alimenter les pressions inflationnistes, mais aussi des bulles immobilières (Giavazzi et Spaventa, 2010). Cette situation s'est trouvée aggravée par les taux d'intérêt réels négatifs – résultant des taux d'intérêt nominaux assez bas communs à la zone euro – et de l'inflation plus élevée dans les pays du Sud. Deuxièmement, le risque de défaut souverain était considéré comme négligeable pour la plupart des pays développés avant la crise de 2010. Par conséquent, il y avait peu de différences entre les taux d'intérêt sur les obligations souveraines des pays de la zone euro, ce qui a contribué à faciliter l'endettement de ces économies. Les renflouements successifs de l'Etat grec, puis la restructuration de sa dette en début d'année 2012, ont montré que le défaut d'un Etat développé à l'intérieur même de la zone euro était tout-à-fait possible. Ce risque devait donc être compensé par des taux d'intérêt plus élevés dans les pays risqués. Pire encore, un pays à l'intérieur d'une union monétaire avait une probabilité de défaut plus élevée qu'un pays ayant conservé sa monnaie, puisqu'il n'y avait ni mécanisme coercitif pour contraindre ses finances publiques, ni renflouement automatique prévu en cas de difficultés. En l'état actuel du fonctionnement de la zone euro, la dette souveraine des pays peut être assimilée à une dette en monnaie étrangère, traditionnellement moins bien notée par les agences de notation qu'une dette en monnaie nationale, puisque le pays en risque de défaut ne peut pas utiliser directement la création monétaire pour rembourser (Boone et Johnson, 2011 ; Gros, 2011 ; de Grauwe, 2011 ; Pisani-Ferry, 2012). Le risque de défaut souverain à l'intérieur de l'union monétaire, maintenant pris en compte par les marchés, a conduit à creuser profondément les écarts de taux d'intérêt entre les pays.

Cependant, cette montée des *spreads* a été tellement violente, que l'on peut se demander si elle ne reflète pas davantage qu'un risque de défaut des États. En effet, une partie des *spreads* pourrait aussi être destinée à compenser les investisseurs contre le risque d'investir dans un pays qui abandonnerait ensuite l'euro. La prime de risque de change qui était censée être éradiquée par l'union monétaire serait ainsi réapparue, avec les mêmes conséquences « désagréables », c'est-à-dire des taux d'intérêt nettement

plus élevés pour les pays déficitaires. Avant l'union monétaire, cette prime de risque de change venait alourdir les taux d'intérêt des pays déficitaires, pour compenser les pertes des investisseurs en cas de dévaluation. La prime de change était liée au fait que les pays déficitaires, notamment les pays du Sud, ayant davantage d'inflation que l'Allemagne, se trouvaient régulièrement avec des monnaies surévaluées si le taux de change était maintenu fixe trop longtemps. Or cette situation pourrait se retrouver en union monétaire.

En effet, bien que les taux de change soient complètement fixes entre les pays membres depuis l'adoption de l'euro, les taux de change réels continuent d'évoluer tant que l'inflation diffère d'un pays à l'autre. Ils se sont appréciés dans les pays du Sud, sous l'effet d'une inflation plus forte, entraînant une perte de compétitivité et une dégradation du commerce extérieur. Une question importante est de savoir si cette appréciation a conduit à une surévaluation des taux de change réels dans cette partie de la zone euro. Plusieurs études se sont penchées récemment sur cette question en utilisant une approche de taux de change d'équilibre fondamental (*Fundamental Equilibrium Exchange Rate*) ; leur conclusion révèle une grande divergence des pays membres quant aux mésalignements de leurs taux de change réels (Jeong *et al.* 2010 ; Cline et Williamson, 2011 ; Carton et Hervé, 2012).

Notre but dans cet article est de déterminer si les mésalignements des taux de change réels des pays membres se sont aggravés depuis l'union monétaire. Pour y répondre, nous évaluons les taux de change d'équilibre pour l'ensemble des pays membres en recourant à une approche de taux de change d'équilibre comportementale (*Behavioral Equilibrium Exchange Rate*) introduite par Clark et MacDonald (1998) et suivie par exemple par Alberola *et al.* (1999, 2002), Alberola (2003) et Bénassy-Quéré *et al.* (2009, 2010). Plus précisément, nous estimons leur valeur d'équilibre par une méthode de cointégration en panel reliant les taux de change à leurs fondamentaux économiques sur la période 1980-2010. Nous calculons ensuite les mésalignements comme la différence entre les parités observées et les parités estimées par le modèle. Cette méthode nous permet de comparer les mésalignements entre pays membres en termes d'ampleur et de persistance.

Dans la suite de cet article, nous fournissons une brève revue de la littérature sur la question des taux de change réels et des déséqui-

libres à l'intérieur de la zone euro dans la partie 1. La méthode d'estimation ainsi que les données sont présentées en partie 2. Nous commentons les résultats trouvés en termes de mésalignements des taux de change réels pour l'ensemble des pays membres dans la partie 3. Nous comparons ensuite les mésalignements avant et après l'union monétaire en termes d'ampleur et de persistance dans la partie 4.

1. Revue de la littérature

1.1. Les divergences d'inflation et de taux de change réels dans la zone euro

Comme les parités nominales sont fixes à l'intérieur d'une union monétaire, une inflation plus forte dans un pays génère nécessairement une appréciation du taux de change réel de ce pays, qui peut susciter une perte de compétitivité et un creusement du déficit extérieur. Le critère d'inflation du Traité de Maastricht était destiné à éviter ce biais en faisant de la convergence des taux d'inflation un préalable à l'union monétaire. La politique monétaire commune était aussi censée compléter ce processus de convergence nominale. Cependant, les écarts d'inflation entre les pays ont persisté après l'union monétaire.

Premièrement, l'union monétaire elle-même pourrait être à l'origine des divergences d'inflation et de croissance entre les pays. En effet, durant la première décennie de l'union monétaire, les pays du sud de la zone euro ont connu une forte baisse de leur taux d'intérêt liée à la disparition de leur prime de change. Cette situation favorable à l'endettement a renforcé la demande et les pressions inflationnistes. Les différentiels d'inflation seraient ainsi imputables aux écarts des cycles économiques, comme le montrent Andersson *et al.* (2009) en utilisant un panel de 12 pays membres sur la période 1999-2006. Ils pourraient aussi avoir été aggravés par des différences dans la transmission de la politique monétaire liées à la structure du marché des biens (Bulir et Hurnik, 2008). Plus fondamentalement, l'inflation a été tirée par les augmentations de salaires et les hausses de prix immobiliers dans les pays en rattrapage, alors qu'elle est restée très contenue en Allemagne, notamment grâce aux réformes structurelles du gouvernement Schröder visant à limiter les salaires.

Deuxièmement, au début de l'union monétaire, les pays du Sud avaient encore des niveaux de revenus et de prix plus bas que ceux des pays du cœur de la zone euro. Par conséquent, il était logique d'attendre une inflation plus forte et une appréciation du taux de change réel dans ces pays tant que durerait leur rattrapage économique, ainsi que le prévoit l'effet Balassa-Samuelson. Cette convergence attendue des niveaux de prix expliquerait les écarts d'inflation dans les toutes premières années de l'union monétaire (Honohan et Lane, 2003). Cependant, l'effet Balassa-Samuelson n'est pas corroboré dans les années suivantes. Il n'expliquerait qu'une petite partie des écarts d'inflation, la productivité relative des biens échangeables ayant peu progressé dans les pays du Sud (Bulir et Hurnik, 2008). De même, la relation négative entre l'inflation et le niveau de prix initial est difficile à établir (Beck *et al.*, 2009). L'effet Balassa ne semble pas décisif non plus pour expliquer l'inflation dans les pays pris individuellement, comme l'Espagne (Rabanal, 2009), ou l'Irlande (Honohan et Lane, 2003).

1.2. Les déséquilibres extérieurs dans la zone euro

Toujours dans cette première décennie de l'union monétaire, l'intégration financière accrue ainsi que le bas niveau des taux d'intérêt nominaux et réels dans les pays périphériques ont favorisé l'endettement et stimulé la demande dans les pays périphériques tout en décourageant l'épargne. Cette situation était alors perçue comme salutaire car les flux de capitaux étaient censés financer de « bons déséquilibres », dans le sens où ils permettraient une allocation efficiente des ressources à l'intérieur de la zone. Il semblait en effet normal que des pays en phase de rattrapage, avec un plus faible revenu par tête, aient des balances courantes déficitaires. C'était le cas en zone euro, davantage que pour l'ensemble des pays de l'Union européenne (UE) ou de l'OCDE (Blanchard et Giavazzi, 2002). Ces résultats sont confirmés par Schmitz et von Hagen (2009) qui ont estimé une relation entre balances commerciales et niveaux de revenu par tête pour un échantillon de 15 pays de l'UE sur la période 1981-2005. Les flux de capitaux ont été davantage orientés vers les pays à plus faibles revenus à l'intérieur de la zone euro, en comparaison avec l'ensemble des pays de l'UE — même s'il existe des différences entre les pays du Sud et les pays d'Europe centrale et orientale.

Ainsi les balances courantes ont été très divergentes à l'intérieur de la zone, allant de -14 % du PIB dans certains pays à 8 % dans d'autres. Leur valeur absolue atteignait 6 % du PIB en moyenne après l'union monétaire contre 3 % sur la période précédente (Barnes *et al.*, 2010). Les différences de conjoncture et de compétitivité expliquent ce phénomène. La dérive des coûts salariaux unitaires dans les pays en rattrapage s'est traduite par une détérioration de leur commerce extérieur puisque les pays les plus avancés, notamment l'Allemagne, menaient dans le même temps une politique visant à maîtriser les salaires afin de gagner en compétitivité. Selon Berger et Nitsch (2010), les déséquilibres courants des pays de la zone euro se sont accrus au début de l'union monétaire tout en devenant plus persistants.

Ainsi, peu à peu s'est insinuée l'idée selon laquelle l'union monétaire pourrait aussi favoriser la formation de « mauvais déséquilibres », les entrées de capitaux dans les pays périphériques apparaissant excessifs par rapport à l'allocation optimale des ressources entre les pays membres. Pour le vérifier, il est possible de s'appuyer sur la méthode proposée par Chinn et Prasad (2003) qui expliquent les comptes courants en fonction de variables fondamentales au moyen de régressions en panel sur un grand ensemble de pays. Toutes les variables étant prises en moyenne sur 5 ans pour éviter les effets cycliques, l'estimation du modèle fournit une norme pour un compte courant compatible avec les fondamentaux structurels du pays. Cette norme fournit une indication utile, bien qu'elle dépende des fondamentaux retenus dans le modèle et de l'échantillon choisi. En appliquant cette méthode sur un ensemble de pays de l'OCDE de 1969 à 2008, Barnes *et al.* (2010) montrent que les soldes courants à l'intérieur de la zone euro ont eu une ampleur bien plus importante que ceux prévus par le modèle entre 2004 et 2008, qu'il s'agisse des excédents allemands, néerlandais ou bien des déficits grecs, portugais ou espagnols. Ce résultat est confirmé au moins pour les pays déficitaires par l'introduction dans le modèle d'une variable muette représentant les pays périphériques de la zone euro qui s'avère significativement négative. Jaumotte et Sodsriwiboon (2010) concluent aussi que les déficits courants des pays du sud de la zone euro dépassent leur valeur estimée, même s'il y a de fortes différences entre les pays. Tous ces

résultats soulèvent la question d'une éventuelle surévaluation des monnaies des pays périphériques.

2. Estimation des mésalignements : aspects méthodologiques

Nous calculons d'abord des taux de change réels d'équilibre pour les pays de la zone euro en estimant une relation de long terme entre leurs taux de change effectifs réels et les fondamentaux économiques. Nous déduisons ensuite les mésalignements – c'est-à-dire les surévaluations ou sous-évaluations – comme les écarts entre les taux de change réels observés et leurs valeurs estimées par le modèle.

2.1. La relation de long terme entre taux de change réels et fondamentaux

Nous suivons ici une approche comportementale du taux de change d'équilibre (*Behavioral Equilibrium Exchange Rate*) et utilisons un modèle semblable à celui proposé par Alberola *et al.* (1999, 2002) et Alberola (2003). Le taux de change réel effectif dépend de deux variables : (i) la productivité du secteur échangeable par rapport au secteur non échangeable – exprimée en termes relatifs par rapport aux partenaires – qui représente l'effet Balassa-Samuelson ; une hausse de cette variable est censée améliorer la compétitivité extérieure du pays et faire s'apprécier son taux de change d'équilibre ; (ii) la position extérieure nette du pays, qui en s'améliorant augmente les revenus des capitaux entrant dans le pays, permettant ainsi une appréciation du taux de change réel sans dégradation de la balance courante. Nous retenons ces deux variables fondamentales car leur effet à long terme sur le taux de change réel est attesté par de nombreuses études empiriques (voir par exemple Bénassy-Quéré *et al.*, 2009, 2010), ce qui nous conduit à estimer l'équation suivante :

$$r_{it} = \alpha_i + \beta_1 y_{it} + \beta_2 NFA_{it} + \varepsilon_{it} \quad (1)$$

où r_{it} désigne le taux de change réel effectif du pays i à la période t (pris en logarithme), y_{it} représente la productivité relative du secteur échangeable (en logarithme) et NFA_{it} sa position extérieure nette en pourcentage du PIB. α_i est un coefficient destiné à capter des effets fixes et ε_{it} désigne le terme d'erreur de la régression.

Les données utilisées concernent la période allant de 1980 à 2010 pour onze pays de la zone euro (Allemagne, Autriche, Belgique, Espagne, Finlande, France, Grèce, Irlande, Italie, Pays-Bas, Portugal) ainsi que pour la zone euro elle-même prise dans son ensemble. Les taux de change effectifs réels, extraits de la base de données fournie par la Banque des Règlements Internationaux (BRI), sont des moyennes pondérées de 27 taux de change bilatéraux déflatés par les prix à la consommation ; les pondérations reflètent le poids du commerce bilatéral ainsi que la concurrence exercée sur les marchés tiers (Klau et Fung, 2006). La productivité relative du secteur échangeable est approximée par le PIB par tête rapporté à celui d'une moyenne pondérée des partenaires commerciaux (source : WEO, FMI)³. Les positions extérieures nettes sont extraites de la base de Lane et Milesi-Ferretti (2007) pour la période 1980-2007, actualisées ensuite en cumulant les comptes courants en dollars et rapportées au PIB en dollars (source : WEO, FMI).

L'application de divers tests de racine unitaire et de cointégration en panel montre qu'il existe bien une relation de long terme entre nos variables. Nous estimons ensuite le vecteur de cointégration, qui nous fournit les coefficients β_1 et β_2 sur les variables explicatives de l'équation (1). Les constantes α_i sont calculées de façon à ce que la moyenne des résidus estimés soit nulle. Une fois la relation de long terme établie, nous effectuons des tests afin de vérifier que ces coefficients sont stables sur la période et notamment n'ont pas été affectés par l'union monétaire elle-même. Les détails et l'ensemble des résultats de ces tests sont fournis dans le document de travail (Coudert *et al.*, 2012).

2.2. Le calcul des mésalignements

La méthode repose sur l'hypothèse que le taux de change réel estimé par le modèle correspond bien à l'équilibre de long terme compatible avec les fondamentaux économiques du pays. Les mésalignements sont calculés comme les écarts entre les valeurs

3. Les statistiques disponibles ne permettent pas d'appréhender précisément la variable de productivité adéquate, qui nécessiterait de connaître l'évolution des heures travaillées et de la valeur ajoutée par secteur pour tous les pays de l'échantillon. En conséquence, nous choisissons de retenir ici le PIB par tête en PPA comme mesure de la productivité d'un pays. Bien que n'étant pas exempt de biais dus aux effets demande, cet indicateur apparaît comme l'un des plus fiables.

observées des taux de change réels effectifs et les valeurs estimées par le modèle. Un signe positif (négatif) indique une surévaluation (sous-évaluation). Ainsi, par construction, le taux de change réel d'un pays peut devenir surévalué pour deux catégories de raisons : soit simplement parce qu'il s'est apprécié, soit parce que le taux de change d'équilibre s'est déprécié sous l'effet d'une dégradation des fondamentaux du pays. La surévaluation d'un pays peut donc provenir de quatre facteurs : les deux premiers sont les causes d'appréciation du taux de change réel à l'intérieur d'une union monétaire : (i) l'appréciation de l'euro contre les monnaies tierces, (ii) ou bien une inflation plus élevée dans le pays par rapport aux partenaires ; les deux suivants sont liés à la dépréciation du taux de change d'équilibre d'un pays : (iii) une baisse de sa productivité relative, (iv) ou bien une dégradation de sa position extérieure nette résultant généralement de l'accumulation de déficits extérieurs.

Par construction aussi, notre méthode impose de fixer un point d'équilibre au cours de la période sous revue. Nous avons choisi ici d'imposer que le taux de change observé soit égal au taux de change d'équilibre en moyenne sur l'ensemble de la période pour chacun des pays de l'échantillon. Ce choix se justifie par le fait que cette moyenne est calculée sur une période suffisamment longue, plus de trente ans. En effet, en raison de la relation de cointégration que nous avons mise en évidence, le taux de change réel observé ne peut s'écarter durablement de son équilibre. Plus la période est longue, plus l'équilibre sera atteint souvent au cours de la période, le taux de change réel alternant périodes de sur-évaluation et sous-évaluation. C'est pourquoi considérer que l'équilibre est atteint en moyenne sur longue période est sans doute une hypothèse plus satisfaisante que de choisir arbitrairement une période, où cet équilibre serait réalisé.

3. Les résultats

Les résultats de nos calculs de mésalignements sont représentés dans le graphique 1 en ce qui concerne les pays du cœur de la zone (Allemagne, Autriche, Belgique, France et Pays-Bas). Le mésalignement du taux de change réel de l'euro figure aussi sur le graphique pour fournir un élément de comparaison. Les mésalignements calculés pour ces pays ont évolué parallèlement à ceux de l'euro,

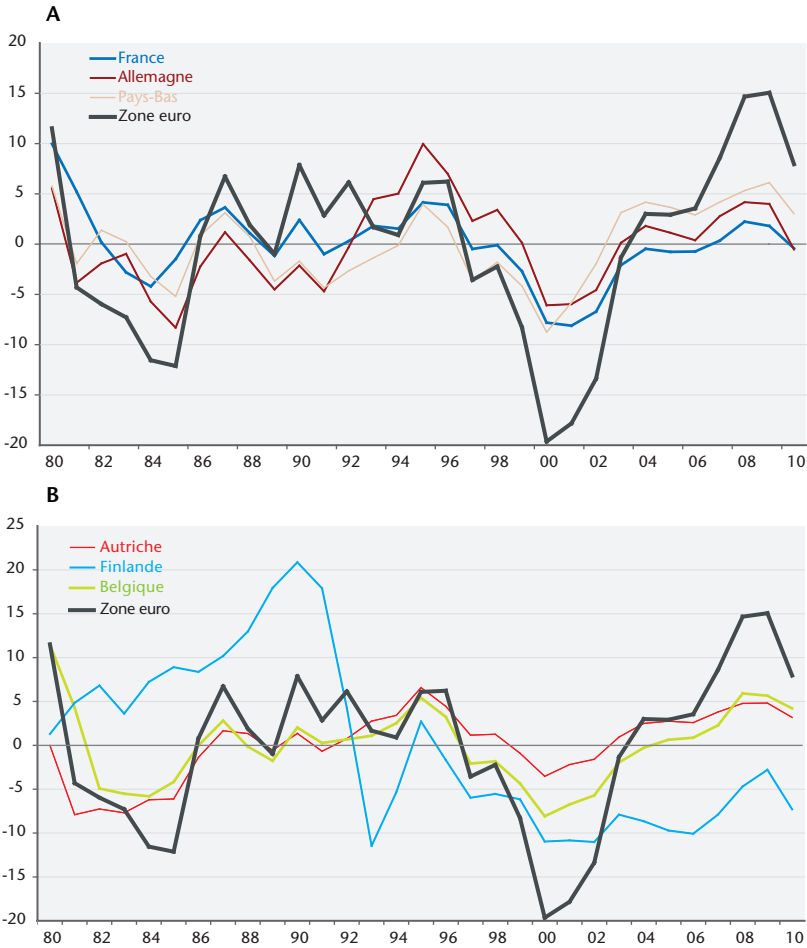
mais avec des fluctuations de moindre ampleur. Ceci n'est pas surprenant car, par construction, le taux de change effectif réel des pays de la zone euro est beaucoup moins volatil que celui de l'euro lui-même. En effet, il est calculé par rapport à des partenaires commerciaux dont la majorité est aussi à l'intérieur de la zone euro et donc en change nominal fixe, alors que le taux de change effectif de l'euro lui-même est calculé par rapport à des pays extérieurs à la zone euro dont les monnaies sont pour la plupart en changes flexibles. Par exemple, quand l'euro s'est déprécié de 16 % entre 1998 et 2000 en termes effectifs réels, la dépréciation n'a excédé 8 % dans aucun des pays membres, en termes effectifs réels. Cependant, alors que le taux de change effectif réel observé de l'euro est plus volatil que ceux des pays membres, son taux de change d'équilibre est plus stable puisqu'il est estimé par le modèle sur la base de la moyenne des données des pays membres pour la productivité et la position extérieure nette. Cette situation explique pourquoi les mésalignements que nous calculons pour l'euro sont plus importants que ceux des pays membres.

Au début des années 2000, les pays ont bénéficié de la dépréciation de l'euro, leurs taux de change réels devenant sous-évalués. La situation s'est inversée ensuite, lorsque l'euro s'est fortement apprécié contre les devises tierces (de 41 % de 2000 à 2009, avant une dépréciation de 7 % en 2010). En fin de période, l'euro est surévalué d'environ 15 % en 2009 et 8 % en 2010. Pourtant, les pays du cœur de la zone euro n'en sont guère affectés : les taux de change réels sont à peu près à l'équilibre en France et en Allemagne, tandis que l'Autriche, la Belgique et les Pays-Bas ne connaissent qu'une très faible surévaluation (moins de 5 %) ; la Finlande bénéficie même d'un taux de change réel sous-évalué, du fait de l'amélioration continue de ses fondamentaux depuis le début de l'union monétaire⁴.

La situation est bien différente dans les pays périphériques (Espagne, Grèce, Irlande, Portugal) dont les taux de change réels sont fortement surévalués en fin de période (graphique 2).

4. La forte surévaluation de la monnaie finlandaise au début des années 1990 provient de la crise financière violente qui a frappé le pays à cette époque.

Graphique 1. Mésalignements des taux de change réels effectifs de l'euro et des pays du cœur de la zone euro, en %

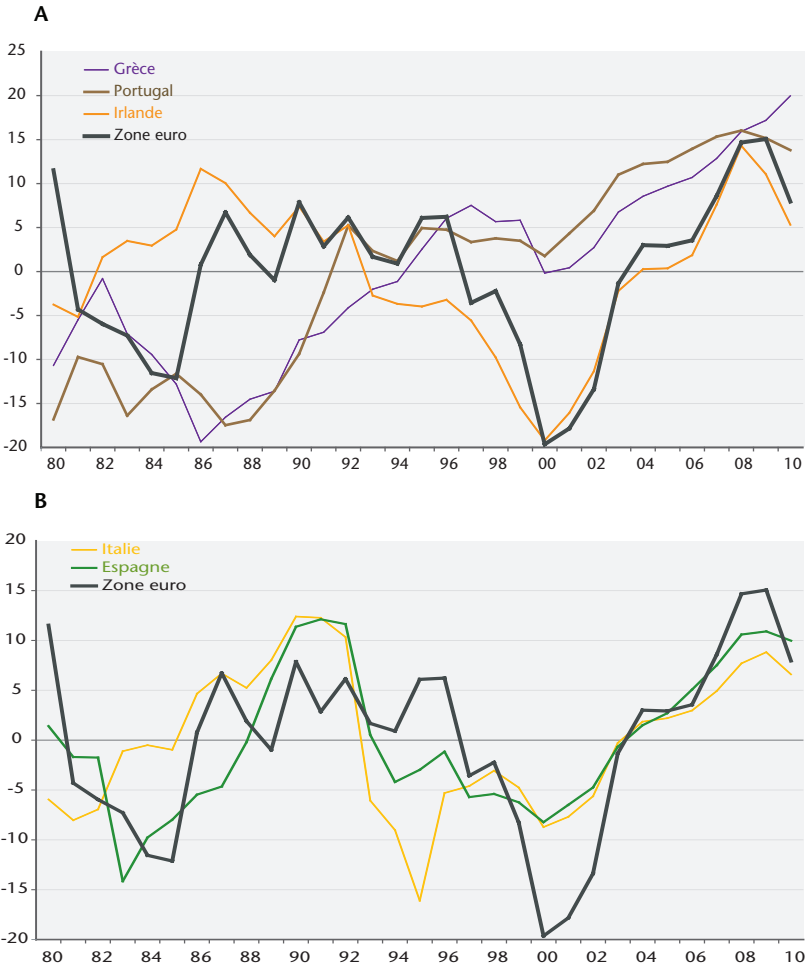


Source : Calculs des auteurs. Un mésalignement positif indique une surévaluation, un mésalignement négatif, une sous-évaluation.

Les deux pays les plus affectés par ce phénomène, la Grèce et le Portugal, bénéficiaient pourtant de monnaies très sous-évaluées en début de période mais la surévaluation a été continue et croissante depuis 2000. La trajectoire est un peu différente pour l'Espagne et l'Italie, même si le résultat est similaire en fin de période. Ces deux pays pâtaient déjà d'une certaine surévaluation au début des années 1990 lorsque leurs monnaies adhéraient au système monétaire européen. La dévaluation de leurs monnaies en 1992-1993

leur a fourni un gain de compétitivité durable, leur permettant d'entrer dans l'union monétaire avec des taux de change réels sous-évalués. Cependant, comme pour la Grèce et le Portugal, la persistance d'une inflation légèrement supérieure à celle des autres pays de la zone euro et la dégradation des fondamentaux ont peu à peu érodé cet avantage et conduit de nouveau à la surévaluation des monnaies.

Graphique 2. Mésalignements des taux de change réels effectifs de l'euro et des pays périphériques, en %

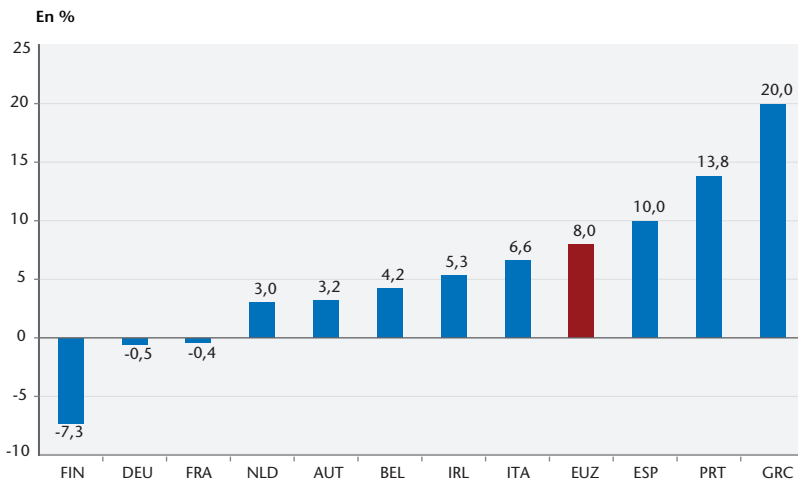


Source : Calculs des auteurs. Un mésalignement positif indique une surévaluation, un mésalignement négatif, une sous-évaluation.

La surévaluation des taux de change dans les pays périphériques n'a pas vraiment été corrigée après la crise de 2008 malgré la dépréciation de l'euro en fin de période. La position extérieure des pays périphériques a continué à se dégrader, la productivité ne s'est pas améliorée et, au moins jusqu'en 2010, fin de notre échantillon, l'inflation est restée supérieure dans les pays périphériques à l'exception de l'Irlande. Les surévaluations restent importantes pour la Grèce (20 %), le Portugal (14 %), l'Espagne (10 %) et l'Italie (7 %). Seule l'Irlande a réussi à résorber sa surévaluation pendant la crise (de 14 % en 2008 à 5 % en 2010) au prix d'une politique de rigueur drastique qui a fait baisser les salaires et les prix.

Lorsque l'on compare les pays à l'intérieur de la zone euro en 2010, la surévaluation apparaît particulièrement forte dans le groupe des pays du Sud (Espagne, Portugal et Grèce) (graphique 3). Leur taux de change réel est davantage surévalué que celui de l'euro lui-même, alors que les taux de change fixes à l'intérieur de la zone euro devraient amortir les mésalignements de l'euro par rapport au reste du monde.

Graphique 3. Mésalignements des taux de change réels effectifs de l'euro et des pays membres, en 2010



Source : Calculs des auteurs. Un mésalignement positif indique une surévaluation, un mésalignement négatif, une sous-évaluation.

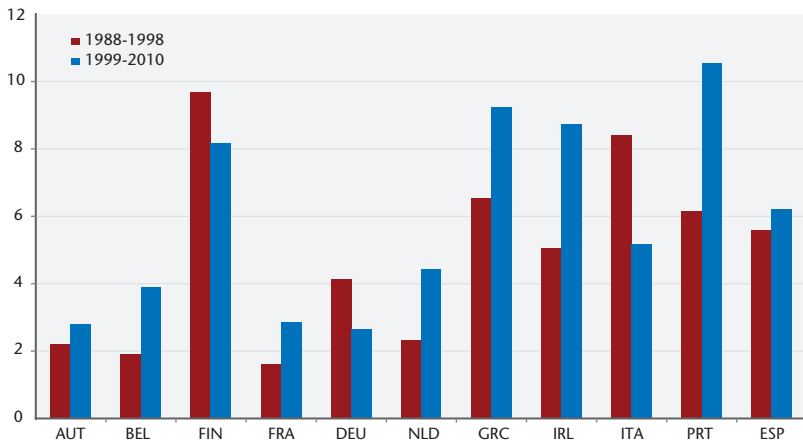
4. Comparaison avant et après l'union monétaire

4.1. Les mésalignements se sont-ils amplifiés ?

Nous comparons maintenant les deux périodes avant et après l'union monétaire, de façon à déterminer si les mésalignements se sont réduits ou amplifiés après l'adoption de l'euro. D'un côté, l'union monétaire aurait pu stabiliser les parités effectives réelles puisque la majeure partie des partenaires sont en changes fixes. D'un autre côté, les changes fixes pourraient avoir suscité une surévaluation dans les pays du sud de l'Europe où l'inflation est restée plus forte.

Le graphique 4 compare la moyenne des mésalignements en valeur absolue pour les deux sous-périodes avant et après l'union monétaire : 1988-1998 et 1999-2010. Trois résultats ressortent de ce graphique. Premièrement, les mésalignements sont plus élevés depuis l'union monétaire pour 8 pays sur 11. Deuxièmement, les mésalignements sont plus grands en moyenne pour les pays dits périphériques et la Finlande dans les deux périodes considérées par rapport aux pays du cœur de la zone euro.

Graphique 4. Mésalignement moyen en valeur absolue avant et après l'union monétaire



Source : Calculs des auteurs.

4.2. Les mésalignements sont-ils devenus plus persistants ?

Un autre élément important à considérer est la vitesse à laquelle ces mésalignements se résorbent. Une surévaluation est certainement plus néfaste pour le commerce extérieur et l'économie du pays si elle persiste pendant de nombreuses années par rapport à une situation où elle serait rapidement corrigée. Or, avant l'union monétaire, la surévaluation pouvait être rapidement effacée par une dévaluation. Il faut donc se demander si la fixité des taux de change nominaux à l'intérieur de la zone euro a ralenti l'ajustement.

Pour mesurer la persistance, nous considérons les coefficients d'auto-corrélation du premier ordre de la série des mésalignements au cours des deux périodes (tableau 1). Plus l'auto-corrélation est forte, plus les mésalignements ont tendance à persister dans le temps. Deux conclusions ressortent de la comparaison de ces coefficients. Premièrement, les mésalignements sont plus persistants après l'union monétaire qu'ils ne l'étaient auparavant. Le coefficient d'auto-corrélation pour l'ensemble de l'échantillon est en effet supérieur sur la dernière période (0,78) à sa valeur sur la période précédente (0,64). Ceci est le cas pour les pays du cœur et les pays périphériques. Deuxièmement, les mésalignements sont plus persistants dans les pays périphériques que dans les pays du cœur de la zone. En d'autres termes, les déséquilibres de taux de change réels sont plus lents à être corrigés dans ces pays. Il faut plus de 4 ans pour résorber la moitié d'une surévaluation dans ces pays (coefficient d'autocorrélation 0,85), contre un peu plus d'un an seulement dans les pays du cœur (coefficient de 0,54).

Tableau 1. Coefficient d'auto-corrélation du premier ordre pour les mésalignements

	1980-2010	1980-1998	1999-2010
Total de l'échantillon	0,8050	0,6447**	0,7817**
Pays du cœur	0,6510	0,4034*	0,5410*
Pays périphériques	0,8668	0,7512*	0,8510*

Note : ** (resp. *) : les coefficients sont significativement différents entre les deux périodes, au seuil de 5 % (resp. 10 %).

Source : Estimations des auteurs.

5. Conclusion

L'union monétaire était censée stabiliser le taux de change effectif des pays membres en fixant leurs parités nominales bilatérales. Cependant, les taux de change réels ont continué à diverger en raison des écarts d'inflation entre les pays et de leur exposition différente aux pays tiers. Leurs divergences s'expliquent surtout par les taux d'inflation plus élevés dans les pays périphériques.

Nos résultats montrent que les taux de change effectifs réels sont surévalués pour les pays périphériques depuis la seconde moitié des années 2000. Cette situation tient à plusieurs facteurs : (i) l'inflation plus forte dans ces pays qui a provoqué une appréciation de leur taux de change réel ; (ii) l'appréciation de l'euro contre les pays tiers qui a aggravé les problèmes de compétitivité ; (iii) la dégradation de la position extérieure nette de ces pays qui a conduit à une dépréciation de leur taux de change réel d'équilibre ; (iv) leur productivité relative qui n'a pas progressé suffisamment pour enrayer cette dépréciation du taux de change d'équilibre.

Selon nos estimations, l'ampleur des mésalignements a augmenté depuis l'adoption de l'euro et ce phénomène est particulièrement marqué dans les pays périphériques. Les déséquilibres de taux de change réels sont aussi plus lents à se résorber en union monétaire par rapport à la période précédente, où les dévaluations nominales étaient encore pratiquées. Les ajustements par les prix et les salaires sont bien plus longs à mettre en œuvre et difficiles à accepter par les populations.

Les trois pays membres les plus frappés par la crise en 2010-2011, la Grèce, l'Irlande et le Portugal, sont ceux qui présentent aussi la plus forte surévaluation de leur taux de change réel effectif en 2010. Les problèmes de la dette souveraine et bancaire, qui ont concentré tous les regards ces dernières années, ne sont donc pas les seuls défis auxquels la zone euro doit maintenant faire face. Les écarts de compétitivité à l'intérieur de la zone constituent aussi un enjeu majeur pour sa pérennité. Une meilleure surveillance des écarts de conjoncture et d'inflation entre les pays membres est nécessaire pour éviter de nouvelles dérives.

Références bibliographiques

- Alberola E., 2003, « Misalignment, liabilities dollarization and exchange rate adjustment in Latin America », *Banco de España documento de trabajo*, 0309, Banco de España, Madrid.
- Alberola E., S.G. Cervero, H. Lopez et A. Ubide, 1999, « Global equilibrium exchange rates: Euro, Dollar, 'ins', 'outs' and other major currencies in a panel cointegration framework », *IMF Working Paper WP/99/175*, International Monetary Fund, Washington, D.C.
- Alberola E., S.G. Cervero, H. Lopez et A. Ubide, 2002, « Quo vadis euro? », *The European Journal of Finance*, 8(4) : 346-351.
- Andersson M., K. Masuch et M. Schiffbauer, 2009, « Determinants of inflation and price level differentials across the euro area countries », *ECB Working Paper*, 1129, European Central Bank, Frankfurt, décembre.
- Barnes S., J. Lawson et A. Radziwill, 2010, « Current account imbalances in the euro area: a comparative perspective », *OECD Economics Department Working Paper*, 826, Organisation for Economic Co-operation and Development, Paris.
- Beck G.W., K. Hubrich et M. Marcellino, 2009, « Regional inflation dynamics within and across euro area countries and a comparison with the United States », *Economic Policy*, 24(57) : 141-184.
- Bénassy-Quéré A., S. Béreau et V. Mignon, 2009, « Robust estimations of equilibrium exchange rates within the G20: A panel BEER approach », *Scottish Journal of Political Economy*, 56(5) : 608-633.
- Bénassy-Quéré A., S. Béreau et V. Mignon, 2010, « On the complementarity of equilibrium exchange-rate approaches », *Review of International Economics*, 18(4) : 618-632.
- Berger H. et V. Nitsch, 2010, « The Euro's Effect on Trade Imbalances », *IMF Working Paper WP/10/226*, International Monetary Fund, Washington, D.C.
- Blanchard O. et F. Giavazzi, 2002, « Current Account Deficits in the Euro Area. The End of the Feldstein Horioka Puzzle? », *Brookings Papers on Economic Activity*, 2.
- Boone P. et S. Johnson, 2011, « Europe on the Brink », *Policy Brief*, 11-13, Peterson Institute for International Economics, Washington, D.C.
- Bulir A. et J. Hurnik, 2008, « Why has inflation in the European Union stopped converging? », *Journal of Policy Modeling*, 30 : 341-347.
- Carton B. et K. Hervé, 2012, « Désajustements des taux de change effectifs réels dans la zone euro », *La Lettre du CEPII*, 319, avril.
- Chinn M. et E. Prasad, 2003, « Medium Term Determinants of Current Accounts in Industrial and Developing Countries: An Empirical Exploration », *Journal of International Economics*, 59(1) : 47-76.

- Clark P.B. et R. MacDonald, 1998, « Exchange Rates and Economic Fundamentals - A Methodological Comparison of BEERs and FEERs », *IMF Working Papers* WP/98/67, International Monetary Fund, Washington, D.C.
- Cline W. et J. Williamson, 2011, « The current currency situation », *Policy Brief*, PB11-18, Petersen Institute for International Economics, Washington, D.C.
- Coudert V., C. Couharde et V. Mignon, 2012, « On currency misalignments within the euro area », *Document de Travail CEPII*, 12-07, avril.
- De Grauwe P., 2011, « Governance of a Fragile Eurozone », *CEPS Working Document*, 346, Centre for European Policy Studies, Brussels, mai.
- Frankel J. A. et A. K. Rose, 1998, « The endogeneity of the optimum currency area criteria », *Economic Journal*, 108 : 1009-1025.
- Giavazzi F. et L. Spaventa, 2010, « Why the Current Account Matters in a Monetary Union: Lessons from the Financial Crisis in the Euro Area », *CEPR Discussion Paper* n°8008, Centre for Economic Policy Research, London, Septembre.
- Gros D., 2011, « External versus Domestic Debt in the Euro Crisis », *CEPS Policy Brief*, 234, Centre for European Policy Studies, Brussels, mai.
- Honohan P. et P.R. Lane, 2003, « Divergent inflation rates in EMU », *Economic Policy*, 18(37) : 357-394.
- Jaumotte F. et P. Sodsriwiboon, 2010, « Current Account Imbalances in the Southern Euro Area », *IMF Working Paper* WP/10/139, International Monetary Fund, Washington, D.C.
- Jeong S., J. Mazier et J. Saadoui, 2010, « Exchange Rate Misalignments at World and European Levels: A FEER Approach », *CEPN Working Papers*, 2010-03, University of Paris Nord, France.
- Klau M. et S.S. Fung, 2006, « The new BIS effective exchange rate indices », *BIS Quarterly Review*, 51-65.
- Lane P. et G. Milesi-Ferretti, 2007, « The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004 », *Journal of International Economics*, 73, 223-250. <http://www.philiplane.org/EWN.html>.
- Mundell R.A., 1961, « A Theory of Optimum Currency Areas », *American Economic Review*, 51 : 657-665.
- Pisani-Ferry J., 2012, « The euro crisis and the new impossible trinity », Bruegel policy Contribution, Issue 2012/01, Bruegel, Brussels, January. <http://www.bruegel.org/publications/publication-detail/publication/674-the-euro-crisis-and-the-new-impossible-trinity/>
- Rabanal P., 2009, « Inflation differentials between Spain and the EMU: A DSGE perspective », *Journal of Money, Credit, and Banking*, 41(6) : 1142-1166.

Rose A.K. et C. Engel, 2000, « Currency Unions and International Integration », *NBER Working Papers*, 7872, National Bureau of Economic Research, Cambridge, Massachusetts.

Schmitz B. et J. von Hagen, 2009, « Current Account Imbalances and Financial Integration in the Euro Area », *CEPR Discussion Papers*, 7262, Centre for Economic Policy Research, London.

DÉS AJUSTEMENTS DE CHANGE, FÉDÉRALISME BUDGÉTAIRE ET REDISTRIBUTION

COMMENT S'AJUSTER EN UNION MONÉTAIRE¹

Vincent Duwicquet

CLERSÉ-CNRS, Université de Lille 1

Jacques Mazier et Jamel Saadaoui

CEPN-CNRS, Université Paris Nord

La crise de la zone euro illustre les carences des mécanismes d'ajustement dans une union monétaire caractérisée par une forte hétérogénéité. Cette situation reflète un diagnostic simple. Au niveau de l'ensemble de la zone, l'euro est proche de son taux d'équilibre. Mais l'euro est fortement surévalué pour les pays d'Europe du Sud, y compris la France, et largement sous-évalué pour les pays d'Europe du Nord, en particulier l'Allemagne (Jeong *et al.*, 2010). Dans un premier temps, cet article donne une évaluation de ces mésalignements de change au sein de la zone euro, en utilisant une approche FEER. De plus, en utilisant des données de panel sur la période 1994-2010, nous confirmons que les mésalignements de taux de change ont divergé, reflétant des évolutions insoutenables. Enfin, nous estimons les augmentations ou les réductions de coûts en pourcentage du PIB induits par ces désajustements pour les différents pays européens. Dans un second temps, nous utilisons une modélisation « stock-flux cohérente » à deux pays d'une union monétaire dans la lignée de Godley et Lavoie (2007) et de Duwicquet et Mazier (2010). Un budget fédéral est introduit avec des dépenses fédérales et des transferts sociaux financés par des impôts fédéraux et par l'émission d'euro-obligations. Le rôle stabilisateur d'un tel budget fédéral est confirmé face à des chocs asymétriques au sein de l'union. Parallèlement, le rôle stabilisateur d'euro-obligations destinées à des projets d'investissement est illustré.

Mots-clés : Mésalignements de taux de change, Ajustements, Union monétaire, Crise de la zone euro.

1. Nous tenons à remercier tous les participants et les organisateurs de la 9^e conférence EUROFRAME.

La crise de la zone de la zone euro illustre les carences des mécanismes d'ajustement dans une union monétaire caractérisée par une forte hétérogénéité. Les mécanismes d'ajustement sont définis au sens large comme des mécanismes qui permettent à un pays à la suite d'un choc de retourner à la situation initiale.

Les ajustements de taux de change étant impossibles, il existe peu de mécanismes alternatifs. La politique budgétaire commune pourrait jouer un rôle actif dans le cadre d'un Etat fédéral mais elle est inexistante actuellement dans le cas européen. Des marchés de capitaux mieux intégrés, avec une diversification accrue des portefeuilles et des crédits intra-zone, ont été proposés comme un mécanisme d'ajustement puissant par l'approche du *risk sharing* international. Le crédit intra-zone et les revenus de capitaux tirés des portefeuilles internationaux auraient des coefficients de stabilisation de l'ordre de 20 à 30 % chacun (Asdrubali et Kim, 2004). Ces résultats ont été utilisés dans les années 2000 par les partisans d'une politique économique libérale dans l'Union européenne afin de promouvoir une intégration financière accrue sans développer de budget fédéral (Commission européenne, 2007 ; Trichet, 2007). Néanmoins, les fondements théoriques et les résultats empiriques apparaissent très contestables (Clévenot et Duwicquet, 2011).

Reste la flexibilité des prix et des salaires afin de remplacer, au moins en partie, les ajustements de taux de change. En fait, celle-ci permet uniquement un retour très lent et partiel vers l'équilibre avec d'importants coûts en termes de croissance et d'emploi et de grandes différences entre pays, en raison de fortes spécificités structurelles. Elle est moins efficace lorsqu'elle est mise en œuvre dans des pays interdépendants, comme c'est le cas dans la zone euro et plus particulièrement pour les pays d'Europe du Sud (Mazier et Saglio, 2008). Un diagnostic simple peut être porté sur les déséquilibres actuels. Au niveau de l'ensemble de la zone euro, la balance courante est proche de l'équilibre et le déficit budgétaire est plus faible que dans plusieurs autres pays de l'OCDE. L'euro est proche de son taux d'équilibre. Mais les déséquilibres intra-européens sont très importants. L'euro est fortement surévalué pour les pays d'Europe du Sud, y compris la France, et largement sous-évalué pour les pays d'Europe du Nord, en particulier l'Allemagne (Jeong *et al.*, 2010).

Ces mésalignements de change freinent la croissance et induisent des déficits courants au Sud alors que la croissance est accélérée au Nord par les exportations, en particulier vers le reste de la zone euro. Cette situation est équivalente à des réductions de coût en faveur du Nord et à des augmentations de coût au détriment du Sud, ce qui est largement ignoré dans le débat public.

Cet article est organisé de la manière suivante. Dans un premier temps, nous estimons ces mésalignements de change au sein de la zone euro, en utilisant une approche FEER, et nous les comparons avec d'autres estimations. En utilisant des données de panel sur la période 1994-2010, nous confirmons que les désajustements de taux de change dans la zone euro ont divergé, reflétant des évolutions insoutenables.

Dans un second temps, nous utilisons une modélisation « stock-flux cohérente » à deux pays d'une union monétaire dans la lignée de Godley et Lavoie (2007) et de Duwicquet et Mazier (2010). Un budget fédéral est introduit avec des dépenses fédérales et des transferts sociaux financés par des impôts fédéraux et par l'émission d'euro-obligations. Le rôle stabilisateur d'un tel budget fédéral est confirmé face à des chocs asymétriques au sein de l'Union. Parallèlement, le rôle stabilisateur d'euro-obligations destinées à des projets d'investissement est illustré.

1. Désajustements de change intra-européens et modifications des coûts

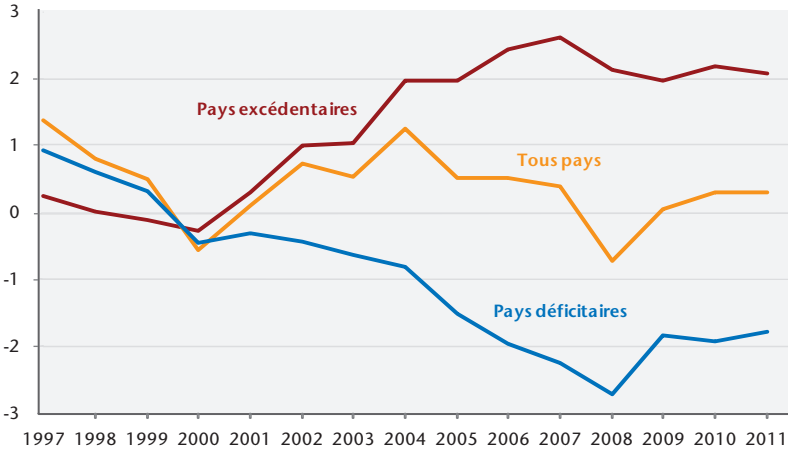
1.1. Hétérogénéité des désajustements au sein de la zone euro

Depuis le milieu des années 2000, on observe un accroissement marqué des déséquilibres de balance courante dans la zone euro en dépit d'une balance courante proche de l'équilibre pour l'ensemble de la zone. D'une part, les pays d'Europe du Nord ont accumulé de larges excédents courants et d'autre part, les pays d'Europe du Sud ont connu d'importants déficits courants (graphique 1). Ces évolutions reflètent, au moins en partie, une hétérogénéité croissante des mésalignements de taux de change au sein de la zone euro.

En utilisant une approche FEER introduite par Williamson (1994), Jeong *et al.* (2010) montrent que les taux de change des

pays d'Europe du Nord sont de plus en plus sous-évalués et que ceux des pays d'Europe du Sud sont de plus en plus surévalués.

Graphique 1. Déséquilibres courants en pourcentage du PIB de la zone euro



Pays excédentaires : Allemagne, Pays-Bas, Autriche, Finlande. Pays déficitaires : France, Italie, Espagne, Portugal, Irlande, Grèce.

Sources : *Perspectives de l'économie mondiale*, FMI, avril 2012. Calculs des auteurs.

Dans cette section, nous estimons des FEERs pour dix pays européens (Allemagne, Autriche, Espagne, Finlande, France, Grèce, Italie, Irlande, Pays-Bas, Portugal) sur la période 1994-2011. Le FEER² est défini comme le taux de change d'équilibre qui prévaut lorsque l'économie mondiale atteint simultanément les équilibres internes et externes pour tous les partenaires commerciaux. Cette mesure est obtenue à l'aide d'un modèle de commerce international. On calcule les taux de change qui seraient nécessaires pour que tous les pays puissent atteindre l'équilibre externe (une balance courante égale à un niveau objectif) et l'équilibre interne (la pleine utilisation du potentiel productif). Pour chaque pays, l'objectif de balance courante est fonction de déterminants fondamentaux tels que les actifs nets extérieurs (en pourcentage du PIB) ou le ratio de dépendance démographique (part de la population âgée de moins de 15 ou de plus de 65 ans rapportée à la population

2. Taux de change d'équilibre fondamental, « Fundamental Equilibrium Exchange Rate » en anglais. La méthode utilisée est présentée d'une manière détaillée dans Jeong *et al.* (2010). C'est une synthèse de travaux précédents sur le FEER (Borowski et Couharde, 2003 ; Jeong et Mazier, 2003) et de la méthode d'inversion des matrices symétriques, SMIM (*Symmetric Matrix Inversion Method*) proposée par Cline (2008).

âgée de 15 à 64 ans)³. L'objectif est estimé économétriquement sur données de panel pour les pays industrialisés. L'équilibre interne est défini comme un écart de production nul.

Les taux de change d'équilibre sont d'abord calculés pour les principales devises (dollar, euro, yuan, yen, livre sterling, reste du monde) à l'aide du modèle de commerce international. Les taux de change d'équilibre sont ensuite calculés pour chaque pays européen en utilisant un modèle de commerce extérieur propre à chaque pays. La cohérence des taux de change d'équilibre de chaque « euro national » avec le taux de change d'équilibre de l'euro est obtenue en répartissant au prorata (du poids du PIB du pays dans celui de la zone) le faible résidu existant.

Tableau 1. Désajustements en termes effectifs réels

En %

	EUZ	AUT	FIN	FRA	DEU	IRL	ITA	NLD	PRT	ESP	GRC
1994	-3,4	-5,9	-4,6	0,3	-13,4	0,9	6,3	-2,1	6,7	3,8	16,8
1995	1,2	-5,8	9,7	3,9	-6,9	6,3	13,7	3,3	17,1	13,4	9,0
1996	4,2	-3,6	14,9	9,5	0,9	6,4	15,0	6,1	0,8	7,1	0,5
1997	3,5	-6,5	19,2	17,4	-1,0	2,8	10,5	4,0	-13,8	5,5	-5,0
1998	0,6	-3,0	18,0	15,9	-4,7	-0,2	5,6	-1,6	-19,7	0,5	-2,3
1999	2,0	0,3	20,7	22,7	-4,9	3,6	5,0	2,5	-25,0	-4,7	-8,6
2000	0,1	6,7	27,1	13,0	-2,8	3,4	5,0	1,9	-29,9	-7,4	-11,7
2001	6,9	8,6	34,3	19,6	8,6	6,6	10,9	5,6	-28,6	-4,6	-5,7
2002	6,6	19,9	33,1	12,4	13,5	3,9	5,9	1,9	-20,7	-5,1	-6,1
2003	2,2	8,8	17,9	2,9	8,1	-0,9	-1,0	3,0	-14,5	-9,8	-8,1
2004	6,6	9,7	21,4	1,6	17,8	1,3	6,8	7,8	-22,7	-16,1	3,5
2005	1,8	9,2	11,2	-7,0	17,3	-1,8	4,6	7,4	-36,1	-30,3	-5,1
2006	0,3	10,6	12,2	-7,4	19,3	-2,5	2,1	9,0	-37,3	-40,0	-20,9
2007	0,1	15,4	16,7	-9,0	23,6	-6,2	4,9	8,4	-31,5	-48,3	-31,4
2008	-2,6	20,3	12,0	-13,9	22,2	-7,6	1,9	7,8	-41,9	-48,8	-33,4
2009	0,6	12,2	4,4	-9,6	21,4	0,3	2,9	6,3	-30,8	-17,1	-20,7
2010	1,6	10,9	4,8	-11,8	21,8	7,6	-1,2	9,1	-25,1	-15,2	-18,5
2011	3,3	14,4	1,5	-13,0	23,1	7,0	3,1	11,5	-7,9	-5,5	-21,8

Estimations pour 2011 basées sur les *Perspectives de l'économie mondiale*, FMI, avril 2012. Taux de change effectifs réels basés sur les prix à la consommation.

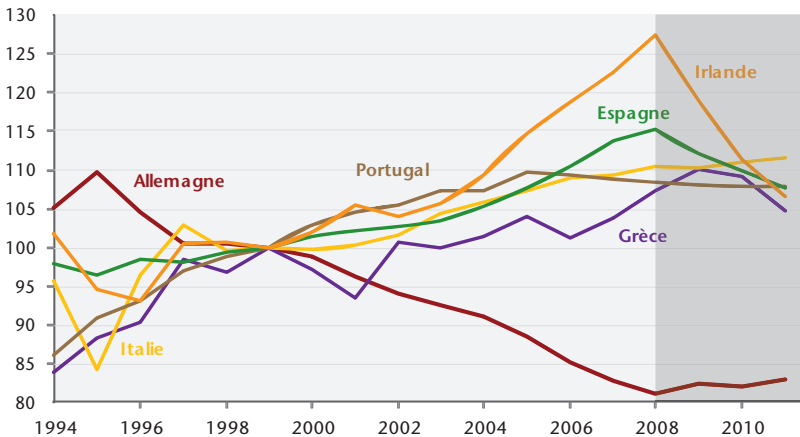
Source : Calculs des auteurs.

3. En fait, les objectifs de balance courante peuvent ne pas être cohérents à l'échelle mondiale si leur somme n'est pas égale à zéro. Cette cohérence devrait être assurée par un processus mondial de coordination. La méthode d'inversion des matrices symétriques utilisée ici fait jouer, à tour de rôle, à chaque pays, le rôle du pays résiduel. Pour ce pays résiduel, le taux de change d'équilibre n'est pas associé à sa balance courante d'équilibre. La valeur moyenne des taux de change d'équilibre pour chaque pays est calculée en excluant la valeur du taux de change du pays traité comme résiduel. Cette méthode a l'avantage d'être symétrique. Au final, la balance courante de chaque pays s'écarte un peu de son niveau désiré pour que la cohérence mondiale soit assurée, le processus de négociation qui aboutit à cet accord n'est pas modélisé.

Depuis le début des années 2000, nous assistons à une augmentation importante de l'hétérogénéité des désajustements dans la zone euro (tableau 1). Nous pouvons observer une scission entre certains pays qui sont de plus en plus sous-évalués (comme l'Allemagne, l'Autriche, les Pays-Bas et la Finlande) et les autres qui sont de plus en plus surévalués (comme la Grèce, le Portugal, l'Espagne et la France). En moyenne depuis 2005, l'Allemagne, l'Autriche, les Pays-Bas et la Finlande ont été sous-évalués de 13 % alors que la Grèce, le Portugal, l'Espagne et la France ont été surévalués de 23 %. Cette hétérogénéité structurelle est au cœur des problèmes actuels de l'euro.

Depuis 2008, nous observons une réduction des désajustements pour certains pays du Sud de l'Europe (Portugal, Irlande et, dans une certaine mesure, Grèce). Ces mouvements ont été induits principalement par de larges dévaluations effectives réelles en Irlande, Espagne et Grèce, comme le montre l'évolution des taux de change effectifs réels basés sur les coûts unitaires de la main-d'œuvre dans le graphique 2. Ces politiques de dévaluations internes sont très coûteuses en termes de croissance et d'emploi et ont mené à une aggravation de la crise en Europe du Sud. Ce point important sera discuté dans la troisième partie de cette section.

Graphique 2. Taux de change effectifs réels relatifs à la zone euro (base 100 en 1999)



Taux de change effectifs réels basés sur les coûts unitaires de la main-d'œuvre. Base de données de la Commission européenne sur les prix et la compétitivité-coût.

Données disponibles sur ec.europa.eu/economy_finance/db_indicators/competitiveness/documents/areea17.xls

Source : Calculs des auteurs.

1.2. Comparaison avec d'autres estimations de désajustements de change

Premièrement, nous comparons nos résultats avec ceux de Cline et Williamson (2011b). Ces auteurs utilisent une approche FEER basée sur la méthode d'inversion des matrices symétriques décrite dans Cline (2008). Les principales différences avec notre approche sont, d'une part, un traitement plus simple du commerce extérieur (pour chaque pays, la balance courante ne dépend que du taux de change réel), et d'autre part, une cible de balance courante *ad hoc*. Dans le cas des pays de la zone euro du tableau 2, Cline et Williamson proposent deux estimations. Dans la première, ils calculent la variation de taux de change effectif réel nécessaire pour atteindre une cible de balance courante qui stabilise la position extérieure nette en 2011. Dans la deuxième, ils calculent la variation de taux de change effectif réel nécessaire pour atteindre une cible de balance courante de -3 % du PIB pour les pays déficitaires qui dépassent ce niveau et de +3 % du PIB pour les pays excédentaires qui dépassent ce niveau ; cette norme de 3 % est arbitraire. Dans l'ensemble, les résultats sont largement similaires aux nôtres, la Grèce et le Portugal montrent de larges surévaluations. L'Allemagne est plus sous-évaluée dans nos résultats, principalement en raison d'un vieillissement marqué de sa population. Dans notre approche, nous estimons les objectifs de balances courantes à l'aide de données de panel avec des variables explicatives parmi lesquelles figurent les ratios de dépendance démographique. Une part plus importante de population dépendante réduit l'épargne nationale désirée et donc l'objectif d'excédent de balance courante⁴.

Deuxièmement, nous comparons nos résultats obtenus avec une approche FEER avec des désajustements obtenus avec une approche BEER⁵ (Coudert *et al.*, 2012). Cette approche introduite par Clark et MacDonald (1998) consiste à estimer l'impact des déterminants de long terme sur la dynamique du taux de change à

4. La prise en compte dans le calcul de la balance courante d'équilibre d'un ratio de dépendance anticipé (et non plus actuel) conduirait toutes choses égales par ailleurs à une moindre sous-évaluation de l'« euro allemand ». Mais le même phénomène jouerait pour les pays du Sud aux populations vieillissantes (Espagne, Italie) ce qui accroîtrait leur surévaluation.

5. Taux de change d'équilibre comportemental, « Behavioral Equilibrium Exchange Rate » en anglais.

l'aide de techniques économétriques. Plusieurs auteurs ont sélectionné des spécifications parcimonieuses avec des variables telles que la position extérieure nette et la productivité relative. Une accumulation d'actifs extérieurs induit une appréciation du taux de change ; une augmentation de la productivité dans le secteur des biens échangeables relativement au secteur des biens non-échangeables implique une appréciation du taux de change (cette variable capture le fameux effet Balassa-Samuelson). Après l'estimation de la relation de cointégration, les mésalignements sont obtenus par la différence entre le taux de change observé et le taux de change d'équilibre (*i.e.* le produit du vecteur de cointégration et des valeurs observées des variables explicatives). Cette approche a le défaut de faire l'hypothèse implicite que le taux de change réel effectif était à l'équilibre en moyenne sur la période observée.

Tableau 2. Comparaison avec les estimations de Cline et Williamson pour 2011

En %

	Allemagne	Italie	Espagne	Irlande	Portugal	Grèce
2011 ^a	23,1	3,1	-5,5	7,0	-7,9	-21,8
2011 ^b	10,8	-11,2	-3,2	0,0	-22,0	-27,0
2011 ^c	5,4	-2,0	-3,5	0,0	-20,7	-27,0

Sources : a. Nos estimations sont basées sur les *Perspectives de l'économie mondiale* du FMI, avril 2012.

b. Prévisions de Cline et Williamson basées sur les *Perspectives de l'économie mondiale* du FMI, avril 2011 (Cline et Williamson 2011b). Les balances courantes stabilisent la position extérieure nette de 2011.

c. Prévisions de Cline et Williamson basées sur les *Perspectives de l'économie mondiale* du FMI, avril 2011 (Cline et Williamson 2011b). Les balances courantes ne dépassent pas 3% du PIB en valeur absolue.

Les désajustements BEER sont, principalement, des écarts par rapport à une valeur moyenne du taux de change effectif réel sur la période étudiée. Les pays ayant des taux d'inflation élevés, dans une union monétaire, vont subir une plus forte appréciation effective réelle. Si cette appréciation ne provient pas d'une amélioration de la position extérieure nette ou de la productivité relative, ces pays seront de plus en plus surévalués. À l'inverse, les désajustements FEER sont, principalement, des écarts à une valeur moyenne de la balance courante sur la période étudiée. Dans une union monétaire, un accroissement du déficit de balance courante va produire une surévaluation croissante.

Dans l'approche BEER, la France et l'Allemagne sont proches de l'équilibre en raison de taux d'inflation inférieurs à ceux des pays périphériques (tableau 3). Dans l'approche FEER, la France est de

plus en plus surévaluée depuis le milieu de la dernière décennie (de 7 % en 2005 à 13 % en 2011) en raison de déficits courants persistants. À l'inverse, l'Allemagne est de plus en plus sous-évaluée (de 8 % en 2003 à 23 % en 2011) à cause de larges excédents courants, même durant la crise (autour de 6 % depuis 2008). De notre point de vue, la divergence entre les approches FEER et BEER reflète le fait que le FEER prend en compte des évolutions structurelles qui sont largement ignorées dans l'approche BEER. En particulier, le déclin de la compétitivité française contraste avec les bonnes performances allemandes, comme en témoigne l'évolution des balances courantes observées et d'équilibre. L'approche BEER semble ne pas être adaptée pour décrire des problèmes structurels de balance courante dans la zone euro en raison de son horizon temporel (López-Villavicencio *et al.*, 2012).

Tableau 3. Comparaison avec les estimations de Coudert *et al.* pour 2010

En %		
	2010 ^a	2010 ^b
Zone euro	1,6	-8,0
Autriche	10,9	-3,2
Finlande	4,8	7,3
France	-11,8	0,4
Allemagne	21,8	0,5
Grèce	-18,5	-20,0
Irlande	7,6	-5,3
Italie	-1,2	-6,6
Pays-Bas	9,1	-3,0
Portugal	-25,1	-13,8
Espagne	-15,2	-10,0

Sources : a. Nos désajustements effectifs réels obtenus par une approche FEER.

b. Désajustements effectifs réels obtenus par une approche BEER (Coudert *et al.*, 2012).

Pour les pays périphériques, les résultats sont plus convergents. Ils indiquent des surévaluations à deux chiffres lors des années 2000. Pour l'Espagne (surévaluée de près de 10 %), le Portugal (surévalué de près de 15 %) et la Grèce (surévaluée de près de 20 %), les deux mesures de taux de change d'équilibre sont proches en raison de déficits courants qui s'écartent de leurs valeurs moyennes et de fortes appréciations effectives réelles qui écartent les taux de change réels effectifs de leurs valeurs moyennes.

1.3. Divergence des désajustements de change dans la zone euro

Dans certaines approches de taux de change d'équilibre comme le BEER ou la PPA, les désajustements sont nécessairement stationnaires sur la période étudiée. En effet, dans ces approches, les désajustements sont des résidus d'une relation de long terme entre le taux de change effectif réel et ses déterminants, ce qui rend le désajustement stationnaire par définition. Dans le cas des pays européens sur la période 1994-2010, l'hypothèse de taux de change à l'équilibre sur la période étudiée (*i.e.* d'un désajustement stationnaire) semble irréaliste puisque ces pays ont suivi des trajectoires divergentes concernant leur compétitivité, comme le montrent les évolutions des déséquilibres courants (graphique 1).

Dans le long terme et au niveau mondial, les FEERs et les taux de change effectifs réels sont intégrés et cointégrés. En d'autres termes, les désajustements sont stationnaires pour un panel de pays industrialisés et émergents sur la période 1982-2007 pour des raisons de soutenabilité de la dette extérieure (Saadaoui, 2011). Néanmoins pour les pays européens sur la période 1994-2010, il semble improbable que les désajustements aient été stationnaires.

Dans un premier temps, nous effectuons plusieurs tests de racine unitaire en panel sur les séries de FEERs et de taux de change effectifs réels (TCER)⁶. Cette étape nous permet de déterminer si les FEERs et les TCERs sont des séries non stationnaires de type I(1). Une série est non stationnaire de type I(1) si elle devient stationnaire après avoir été différenciée une fois. Comme dans les études empiriques précédentes (Zhou, 1993 ; Barisone *et al.*, 2006 ; Saadaoui, 2011), nous détectons la présence de racines unitaires dans les séries de FEERs et de TCERs.

Comme nous pouvons le voir, dans le tableau 4, les séries de FEERs et de TCERs sont non stationnaires en niveau puisque nous acceptons la présence de racine unitaire dans tous les tests (excepté le test LLC à 5 % pour les séries de FEERs). En outre, les séries de FEERs et TCERs sont stationnaires en première différence puisque nous rejetons l'hypothèse nulle de présence de racine unitaire dans tous les tests.

6. Nous utilisons les logarithmes naturels des séries dans les tests. Les taux de change effectifs réels proviennent de la BRI et sont en base 100 en 2000.

Une importante limite des tests précédents réside dans l'hypothèse d'indépendance inter-individuelle. Cette hypothèse est clairement trop restrictive pour un panel de pays européens qui partagent la même monnaie. Pour s'assurer de la robustesse des résultats, nous appliquons le test CADF introduit par Pesaran (2007) en soustrayant les moyennes inter-individuelles retardées aux équations ADF usuelles, ce test est robuste aux dépendances inter-individuelles (*i.e.* l'existence de chocs communs).

Tableau 4. Tests de racine unitaire en panel

Test:	LLC	Breitung	F_ADF	F_PP	LLC	Breitung	F_ADF	F_PP
Différence :	Non	Non	Non	Non	Oui	Oui	Oui	Oui
Variable exogènes :	Aucune	Aucune	Aucune	Aucune	Aucune	Aucune	Aucune	Aucune
Hypothèse nulle :	RU	RU	RU	RU	RU	RU	RU	RU
RU commune :	Oui	Oui	Non	Non	Oui	Oui	Non	Non
TCER	0,77	0,87	8,60	9,02	-1,90**	-2,97***	36,53**	49,38***
FEER	-1,75**	-0,57	22,48	21,68	-6,07***	-2,95***	49,32***	84,14***

«RU» indique l'hypothèse nulle de présence de racine unitaire. Les symboles **, *** indiquent la stationnarité au sens statistique à 5 % et à 1 %, respectivement. Le tableau présente différents tests de racine unitaire en panel : Levin, Lin, et Chu (2002) (LLC); Breitung (2000); Maddala et Wu (1999) et Choi (2001) pour les tests de racine unitaire en panel de type Fisher (F_ADF et F_PP).

Source : Calculs des auteurs.

Comme nous pouvons le voir dans le tableau 5, les séries de FEERs et de TCERs sont non stationnaires en niveau et stationnaires en première différence. Nous pouvons conclure que les séries sont non stationnaires de type I(1). Après avoir établi ces premiers résultats, la seconde étape consiste à tester s'il existe une relation de long terme entre ces deux variables (*i.e.* si le désajustement est stationnaire) durant la période étudiée.

Tableau 5. Intégration des TCERs et des FEERs

CADF	Niveau	Première différence
TCER	-0,505 (0,307)	-5,211*** (0,000)
FEER	3,069 (0,999)	-2,755** (0,003)

Les p-values sont entre parenthèses. Les symboles **, *** indiquent la stationnarité au sens statistique à 5 % et à 1 %, respectivement.

Source : Calculs des auteurs.

Afin de tester l'existence d'une relation de long terme divergente sans hypothèse sur le vecteur de cointégration, nous utilisons les tests de cointégration de Pedroni (1999).

Dans le tableau 6, nous acceptons l'hypothèse nulle d'absence de cointégration dans la plupart des tests (à l'exception des tests panel ADF et group ADF à 5 %). Les résultats indiquent, clairement une divergence sur la période étudiée pour ces pays européens. Pour s'assurer de la qualité des résultats, nous appliquons des tests de cointégration qui autorisent les dépendances inter-individuelles (Westerlund, 2007). L'existence d'un terme à correction d'erreur négatif et significatif est considérée comme une preuve de cointégration. En cas de dépendances inter-individuelles entre les membres du panel, les valeurs critiques peuvent être obtenues par la méthode du « bootstrap ».

Les statistiques en panel et « group mean » suggérées par Westerlund (2007) indiquent clairement que l'hypothèse nulle d'absence de cointégration est rejetée, même en présence de dépendances inter-individuelles (tableau 7).

Les tests de racine unitaire et de cointégration en panel montrent que les désajustements de change ont divergé au sein de la zone euro. Nous ne détectons pas de relation de long terme entre TCERs et FEERs (les désajustements sont non stationnaires). Ce résultat indique que les pays européens ont connu des évolutions insoutenables de leur compétitivité sur cette période. Ceci soulève la question des ajustements nécessaires à la restauration de la compétitivité des pays surévalués.

Selon Belke et Dreger (2011), une réduction du coût relatif du travail est une priorité pour les pays surévalués. Une dégradation de la compétitivité pour les pays excédentaires serait nécessaire pour réduire les déséquilibres intra-européens mais elle serait difficile à faire accepter par ces pays. Dès lors, la seule voie possible consiste en une réduction des coûts unitaires du travail des pays d'Europe du Sud afin de réduire les déséquilibres au sein de la zone euro.

Une telle proposition soulève plusieurs types de questions (Mazier et Saglio, 2008). En réduisant la demande interne, elle est coûteuse en termes de croissance et d'emploi, particulièrement dans les pays de taille relativement grande comme l'Espagne ou l'Italie. Elle est peu efficace dans les pays peu ouverts sur l'exté-

rieur, comme la Grèce et le Portugal, mais plus efficace dans les pays plus largement ouverts, comme l'Irlande ou, plus encore, comme les pays baltes ou la Slovaquie. Elle est d'autant moins efficace qu'elle est mise en œuvre simultanément dans un ensemble de pays interdépendants. Du fait de son impact négatif sur la croissance dans les pays surévalués, l'effet total d'une telle mesure sur les ratios dette extérieure ou dette publique sur PIB est ambigu puisqu'une croissance plus lente tend à augmenter ces ratios.

Tableau 6. Tests de cointégration en panel

Test de cointégration en panel	
Hypothèse nulle : absence de cointégration	
Nombre d'observations	170
Nombre d'individus	10
Hypothèse alternative : Coefficients autorégressifs communs	
Panel-v	-0,59 (0,72)
Panel-rho	0,37 (0,64)
Panel-PP	-0,20 (0,42)
Panel-ADF	-2,04 (0,02)
Hypothèse alternative : Coefficients autorégressifs individuels	
Group rho	1,62 (0,94)
Group PP	0,48 (0,68)
Group ADF	-2,13 (0,02)

Les p-values sont entre parenthèses.

Source : Calculs des auteurs.

Tableau 7. Cointégration entre TCERs et FEERs

	$G\tau$	$G\alpha$	$P\tau$	$P\alpha$
TCER, FEER	-1,711 (0,308)	-4,551 (0,530)	-3,834 (0,445)	-3,277 (0,466)

Les p-values pour les tests de cointégration sont basés sur des méthodes de « bootstrap », Persyn et Westerlund (2008).

Source : Calculs des auteurs.

Depuis les dix dernières années, l'évolution des désajustements de change dans la zone euro a reflété des trajectoires divergentes en termes de compétitivité. Ces évolutions sont une des causes majeures de la crise actuelle de la zone euro. Afin de faire face à ces évolutions asymétriques, un budget fédéral important pourrait

aider les pays surévalués à compenser les handicaps de coûts et à aller vers des nouvelles activités en améliorant leur spécialisation internationale.

1.4. Réduction et accroissement des coûts liés aux désajustements de change

Le désajustement de change est un concept pertinent au niveau intra-européen si on admet qu'un taux de change d'équilibre peut être déterminé pour chaque pays membre.

Dans une telle hypothèse le désajustement de change génère un gain (une réduction des coûts) ou une perte (un accroissement des coûts) en termes de compétitivité pour chaque pays concerné. Sur cette base, un équivalent transfert associé au désajustement de change et correspondant à cette réduction ou à cet accroissement des coûts peut être calculé dans une union monétaire. Une politique de sous-évaluation de la monnaie (ou de maintien d'un taux de change déprécié) est formellement équivalente à une combinaison de taxes sur les importations et de subventions à l'exportation. Pour évaluer ces réductions et accroissements de coûts liés aux désajustements de change, on se limite au cas simple d'un taux de change bilatéral avant de donner une évaluation empirique⁷.

1.4.1. Variations de coûts dans le cas bilatéral

Le désajustement de change est exprimé en écart relatif entre le taux de change observé E et le taux de change d'équilibre E_e :

$$\frac{Ep^*}{p} = (1+e) \cdot \frac{E_e p^*}{p}$$

Avec E , taux de change bilatéral observé⁸, E_e , taux de change d'équilibre bilatéral nominal, e , désajustement bilatéral, p , prix domestiques, p^* , prix étrangers.

Comme nous pouvons le voir dans l'équation ci-dessus, la surévaluation ($e < 0$), se traduit par une compétitivité prix plus faible ; une sous-évaluation ($e > 0$) par une compétitivité-prix plus élevée.

7. Le cas de deux pays de la zone euro face au reste du monde est présenté dans le *Document de travail du CEPN* n° 2012-04.

8. Une augmentation de E correspond à une dépréciation bilatérale nominale.

Le coût unitaire supplémentaire T ou la réduction de coût associé au désajustement de change peut être obtenu en égalisant le niveau observé de compétitivité (E_p^*/p) et le niveau de compétitivité associé au taux de change d'équilibre ($E_e p^*/p$), corrigé des variations de coût T , soit $E_e p^*/p(1+T)$. Nous obtenons :

$$\frac{E_e p^*}{p} \cdot \frac{1}{(1+T)} = \frac{E_p^*}{p} = (1+e) \cdot \frac{E_e p^*}{p}$$

$$T = \frac{-e}{(1+e)}$$

La surévaluation ($e < 0$, $T > 0$) provoque un coût unitaire additionnel ($p(1+T)$). Le pays souffre d'une perte de compétitivité. La sous-évaluation ($e > 0$, $T < 0$) induit une réduction du coût unitaire et une subvention pour les entreprises. Le pays bénéficie d'une amélioration de sa compétitivité.

En niveau, *ex ante*, la surévaluation impose un coût additionnel pour les exportations ($T \cdot pxX$) et, de manière symétrique, un coût additionnel pour les producteurs locaux en compétition avec les produits importés ($T \cdot pmM$). Pour le pays surévalué, le coût additionnel total, en pourcentage du PIB est égal à $[T \cdot (pxX + pmM)]/pY$. En pratique, une part importante de produits importés n'est pas en compétition avec les producteurs locaux (matières premières, biens non produits localement). Cette part dépend de la spécialisation internationale de chaque pays. En première approximation nous supposons dans l'évaluation empirique que seulement la moitié des importations est en compétition avec les produits domestiques. Cela donne un coût additionnel en pourcentage du PIB égal à $[T \cdot (pxX + 0,5pmM)]/pY$. Il est important de noter que le coût supplémentaire est une fonction positive du taux d'ouverture. Pour un même désajustement de change, un pays très ouvert comme l'Irlande va souffrir d'un accroissement de coût plus marqué en cas de surévaluation qu'un pays moins ouvert comme la Grèce ou le Portugal.

À titre d'illustration, une surévaluation de 10 % ($T=1/9$), avec un degré d'ouverture « corrigé » de 30 % ($(pxX + 0,5pmM)/pY = 30\%$) donne un prélèvement de 3,3 % du PIB ($1/9 \cdot 0,3 = 0,033$).

1.4.2. Évaluation empirique des variations de coûts liées aux désajustements

Les variations de coûts entre pays européens engendrées par les désajustements de change intra-européens estimés ci-dessus peuvent être calculées en utilisant la formule précédente. Deux évaluations sont données, la première par pays en moyenne pour trois sous-périodes entre 2000 et 2011, compte tenu des désajustements de change observés et des degrés d'ouverture des pays (tableau 8), la deuxième, en agrégeant, pour les deux groupes de pays de l'Europe du Nord et du Sud les coûts supplémentaires qui ont été enregistrés au cours des années 2000 (graphique 3).

Tableau 8. Variations des coûts liées aux désajustements de change observés

En % PIB	2000-2004	2005-2008	2009-2011
Allemagne	-4,2	-11,2	-12,1
Pays-Bas	-3,7	-8,0	-9,3
Autriche	-6,8	-10,1	-8,7
Irlande	-3,7	5,7	-6,8
Finlande	-12,0	-7,5	-2,0
Italie	-2,0	-1,4	-0,6
France	-3,6	4,3	5,1
Espagne	4,1	31,9	5,7
Grèce	2,6	12,9	9,2
Portugal	14,6	29,8	13,9

Coûts moyens par sous-périodes exprimés en % du PIB de chaque pays.
Source : Calculs des auteurs.

La sous-évaluation de l'euro pour les pays du Nord de la zone euro (Allemagne, Finlande, Autriche et Pays-Bas) se traduit *ex ante* par des réductions de leurs coûts unitaires pour des montants de grande ampleur (de l'ordre de 10 % du PIB en moyenne par an au milieu des années 2000). Les pays du Sud de la zone euro (Portugal, Espagne et Grèce) se trouvent dans la situation opposée. Du fait de la surévaluation de leurs monnaies, ils supportent des coûts de production additionnels ayant atteint des montants considérables pour l'Espagne et le Portugal au milieu des années 2000. La France, bien que moins touchée, n'en subit pas moins des coûts supplémentaires de l'ordre de 5 % de PIB depuis le milieu des années

2000. Il en a été de même pour l'Irlande mais celle-ci a pratiqué, depuis l'ouverture de la crise, une politique drastique de dévaluation réelle qui a inversé la situation. L'Italie n'a pas été pénalisée par la surévaluation de l'euro et est demeurée en matière de change et de compétitivité dans une situation plus proche de l'équilibre.

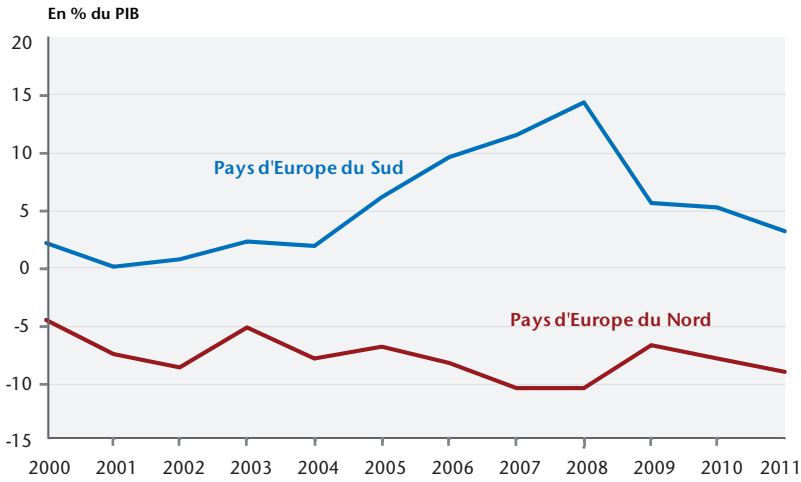
Les coûts supplémentaires effectivement observés au cours des années 2000 entre pays européens ont été calculés en sommant d'une part, les pays surévalués de l'Europe du Sud et d'autre part, les pays sous-évalués de l'Europe du Nord, compte tenu des désajustements de change estimés pour chaque année et des degrés d'ouverture de chaque pays⁹. Pour des raisons institutionnelles l'Italie a été laissée dans l'Europe du Sud bien qu'elle soit moins affectée par le phénomène de surévaluation. Depuis l'introduction de l'euro, les coûts supplémentaires au sein de la zone euro ont été favorables aux pays du Nord et de plus en plus défavorables aux pays du Sud (graphique 3).

Entre 2000 et 2004, les pays du Sud étaient déjà surévalués et ont été pénalisés par des surcoûts équivalents à 2 % de leur PIB chaque année. Inversement les pays du Nord sous-évalués ont bénéficié de réductions de leurs coûts équivalents à 6 % du PIB en moyenne à la même période. Depuis 2005, nous observons une augmentation brusque de la surévaluation des pays du Sud qui atteint en moyenne 25 % en 2008. Ces désajustements de change intra-européens ont eu un impact considérable avec des surcoûts équivalents à 14 % du PIB pour les pays du Sud en 2008 tandis que les pays du Nord bénéficiaient d'une situation inverse avec des réductions de leurs coûts de l'ordre de 10 % de leur PIB à cette même date. Depuis 2009, ces surcoûts ont diminué du fait de la réduction des désajustements de change, partiellement induite par la compression des coûts unitaires du travail en Irlande, Espagne et Grèce. Néanmoins les pays du Nord bénéficient toujours d'importantes réductions de leurs coûts (autour de 6 % du PIB) alors que les pays du Sud subissent des surcoûts pour des montants similaires (graphique 3). Cette situation de déséquilibres persistants entre pays du Sud et pays du Nord provient de l'hétérogénéité structurelle en termes de compétitivité. Les mécanismes de stabilisation

9. Comme les désajustements de change sont inversement reliés au degré d'ouverture du pays, les deux effets se compensent en partie dans le calcul de l'impact des modifications de coût.

mis en œuvre à travers les politiques d'austérité et de compression des coûts sont à la fois peu efficaces et très pénalisants en termes de croissance et d'emploi.

Graphique 3. Accroissement ou réduction des coûts induits par les désajustements



Source : Calculs des auteurs.

Il importe de rappeler que l'évaluation de l'impact de ces modifications de coûts liées aux désajustements de change entre pays européens est de nature *ex ante*. Évaluer leur impact *ex post* supposerait l'utilisation d'un modèle décrivant explicitement les échanges intra et extra-européens. Cette question ne pourra être que partiellement traitée dans la section suivante. Nous nous limiterons à ce stade à une remarque. Selon le théorème des élasticités critiques, un pays qui subit une appréciation réelle de sa monnaie voit son solde commercial en valeur se détériorer car les effets volume l'emportent sur les effets prix, à condition que la somme des élasticités prix à l'exportation et à l'importation soit supérieure à 1 en valeur absolue, ce qui est le cas dans les estimations utilisées (Jeong *et al.*, 2010). Un pays surévalué, pénalisé par un accroissement de ses coûts de production, voit son commerce en valeur se détériorer et sa croissance en volume freinée.

1.5. Transferts et système d'assurance budgétaire

Ces modifications de coûts dues aux désajustements de change ont un impact sur les niveaux d'activité qui pourrait être compensé

par un système d'assurance budgétaire tel que celui proposé dans les années 1990 par la Commission européenne elle-même. Pour simplifier, nous retenons le mécanisme suggéré par Italianer et Pisani-Ferry (1992)¹⁰. En cas d'augmentation du taux de chômage plus élevée dans un pays que dans le reste de l'Union, ce pays bénéficie de transferts *via* un budget européen. Ces transferts sont calculés de la manière suivante :

$$T_i = 0,01(dU_i - dU_{iUE}) * GDP_i \quad \text{si } 0 < dU_i - dU_{iUE} < 2$$

$$T_i = 0,02 * GDP_i \quad \text{si } dU_i - dU_{iUE} > 2$$

$$dU_i = U_i(t) - U_i(t-12)$$

Avec U_i , le taux de chômage en pourcentage du pays i , U_{iEU} , le taux chômage du reste de l'Union.

Les estimations effectuées sur les années 1980, avec des transferts plafonnés à 2 % du PIB, donnaient un coût moyen annuel modeste (de l'ordre de 0,23 % du PIB européen). Les calculs ont été repris sur les années 1996-2011. Ils donnent des résultats assez proches : un coût moyen de 0,21 % du PIB avec plafonnement des transferts à 2 % du PIB, 0,26 % du PIB sans plafonnement pour les pays membres de la zone euro ; 0,26 % et 0,28 % du PIB (avec ou sans plafonnement) lorsque le mécanisme concerne tous les pays de l'UE, y compris le Royaume-Uni. Le tableau 9 donne les calculs pour l'Europe à 27 sans plafonnement¹¹. Les transferts sont en moyenne plus importants pour les pays de l'Europe du Sud (Grèce, 0,75 %, Portugal, 0,71 %, Espagne, 1,05 %, Irlande, 0,87 %), à l'exception de la France et de l'Italie, ainsi que pour les pays baltes. L'Allemagne est également bénéficiaire (0,27 % en moyenne, concentré au début des années 2000). Certaines années les transferts non plafonnés peuvent atteindre des montants importants de l'ordre de 4 à 5 % du PIB.

En cas d'un choc négatif de 1 % du PIB, l'effet stabilisateur (et redistributif) de ce Fonds de stabilisation de l'emploi serait de l'ordre de 0,18 % du PIB, c'est-à-dire comparable à l'effet obtenu

10. Une version voisine a été récemment proposée par le ministre français de l'Économie et des Finances (*The Economist*, 2012).

11. Les autres calculs sont disponibles avec plafonnement et en se limitant à la zone euro. Ils donnent des résultats avec les mêmes ordres de grandeur. Il faut souligner qu'il s'agit de transferts bruts. Le calcul des transferts nets supposerait la définition des modalités de financement de ces transferts au niveau européen.

aux États-Unis par l'intermédiaire du budget fédéral. Ce mécanisme d'assurance budgétaire ne peut fonctionner qu'en cas de chocs négatifs n'affectant qu'une minorité de pays.

Bien que proposé de longue date, ce mécanisme d'assurance budgétaire n'a jamais reçu beaucoup d'échos favorables pour plusieurs raisons. Ce mécanisme n'a été présenté qu'à titre d'illustration et devrait être amélioré dans sa formulation. Tel qu'il est spécifié avec une dépendance à la hausse relative du taux de chômage, l'impact ne peut être que transitoire. Ce mécanisme est

Tableau 9. Estimation des transferts associés au mécanisme d'assurance budgétaire

T/GDP	AUT	BEL	CYP	EST	FIN	FRA	DEU	GRC	IRL
2001	0,20	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
2002	0,30	0,60	0,00	0,00	0,00	0,00	0,50	0,00	0,30
2003	0,00	0,50	0,40	0,00	0,00	0,40	0,90	0,00	0,00
2004	0,50	0,10	0,40	0,00	0,00	0,30	0,60	0,70	0,00
2005	0,50	0,30	0,90	0,00	0,00	0,20	1,00	0,00	0,00
2006	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,80
2007	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,20
2008	0,00	0,00	0,00	0,90	0,00	0,00	0,00	0,00	1,80
2009	0,00	0,00	0,00	6,40	0,00	0,00	0,00	0,00	3,70
2010	0,00	0,00	0,20	2,40	0,00	0,00	0,00	2,40	1,10
2011	0,00	0,00	1,60	0,00	0,00	0,00	0,00	5,10	0,70
Moyenne	0,14	0,14	0,32	0,88	0,00	0,08	0,27	0,75	0,87

T/GDP	ITA	LUX	MLT	NLD	PRT	SVK	SVN	SPN	BGR
2001	0,00	0,00	1,10	0,00	0,30	0,70	0,00	0,00	3,30
2002	0,00	0,40	0,00	0,30	0,80	0,00	0,00	0,60	0,00
2003	0,00	1,00	0,10	0,90	1,20	0,00	0,20	0,00	0,00
2004	0,00	1,10	0,00	0,80	0,30	0,50	0,00	0,00	0,00
2005	0,00	0,00	0,30	0,40	1,30	0,00	0,40	0,00	0,00
2006	0,00	0,70	0,00	0,00	0,70	0,00	0,00	0,00	0,00
2007	0,00	0,00	0,00	0,00	1,40	0,00	0,00	0,00	0,00
2008	0,70	0,80	0,00	0,00	0,00	0,00	0,00	3,10	0,00
2009	0,00	0,00	0,00	0,00	0,20	0,60	0,00	4,80	0,00
2010	0,00	0,00	0,00	0,10	0,70	1,70	0,70	1,40	2,70
2011	0,00	0,20	0,00	0,00	0,90	0,00	0,90	1,60	1,00
Moyenne	0,06	0,38	0,14	0,23	0,71	0,32	0,20	1,05	0,64

T/GDP	CZE	DNK	HUN	LVA	LTU	POL	ROU	SWD	GBR
2001	0,00	0,40	0,00	0,00	0,30	2,40	0,00	0,40	0,00
2002	0,00	0,00	0,00	0,00	0,00	1,40	0,60	0,00	0,00
2003	0,30	0,60	0,00	0,00	0,00	0,00	0,00	0,40	0,00
2004	0,40	0,00	0,10	0,00	0,00	0,00	1,10	0,70	0,00
2005	0,00	0,00	1,30	0,00	0,00	0,00	0,00	0,50	0,30
2006	0,00	0,00	1,00	0,00	0,00	0,00	0,80	0,00	1,30
2007	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
2008	0,00	0,00	0,50	1,60	1,60	0,00	0,00	0,20	0,40
2009	0,40	0,70	0,30	7,70	6,00	0,00	0,00	0,20	0,10
2010	0,00	0,80	0,50	0,90	3,40	0,70	0,00	0,00	0,00
2011	0,00	0,10	0,00	0,00	0,00	0,10	0,10	0,00	0,20
Moyenne	0,10	0,24	0,34	0,93	1,03	0,42	0,24	0,22	0,21

Les transferts sont exprimés en % du PIB et ne sont pas plafonnés.

Sources : Eurostat, BIT, calculs des auteurs.

en outre biaisé car il pénalise les pays qui mènent une lutte plus active contre le chômage, comme l'Allemagne avec sa politique de chômage partiel.

Plus généralement, les adversaires de ce type de mécanisme considèrent que celui-ci encourage les mauvaises pratiques puisqu'en cas de dérapage de chômage, le reste de l'Union intervient pour limiter les effets négatifs. Cet argument ne doit pas être ignoré mais n'est pas essentiel.

Ce type d'assurance peut en fait jouer en permanence en faveur des mêmes pays si ceux-ci enregistrent durablement des performances plus médiocres. Il s'agit alors d'un mécanisme de transfert permanent et non plus d'assurance budgétaire. L'argument est plus important mais n'est pas justifié au vu des calculs effectués.

Cette question est cependant sensible dans le contexte de crise de la zone euro où les pays du Sud sont affectés structurellement par un problème de surévaluation et de perte de compétitivité. Dans ce cas le coût peut effectivement être plus élevé et pose la question de la prise en charge par les autres pays de l'union monétaire de ces déséquilibres structurels, surtout si le plafond de 2 % envisagé initialement est levé. Les transferts auraient pu atteindre 3 à 5 % du PIB en Grèce, en Espagne et en Irlande à la fin des années 2000. Ces résultats ne sont pas sans rapport, en termes d'ordre de grandeur, avec les calculs effectués plus haut qui montraient

l'ampleur des coûts supportés par les pays du Sud du fait de leurs surévaluations¹². Il n'est dès lors pas choquant que de tels transferts soient supportés par le reste de l'Union monétaire pour éviter que les pays du Sud ne s'enferment dans une ou deux décennies de récession ou de croissance zéro. Ceci a en outre l'avantage de préserver la croissance de la zone et de faciliter la résolution des problèmes d'endettement public. Ces transferts sont préférables aux crédits intra-zone (seule forme d'aide pratiquée au sein de la zone euro, à l'exception de l'annulation partielle de la dette grecque) qui ne font que reporter les problèmes dans le temps, en les augmentant de plus de la charge de la dette.

Mais un tel mécanisme pose le problème de sa durée et de son efficacité. Les expériences passées montrent que si ces transferts sont bien un gain net pour les bénéficiaires, ils ne suffisent pas à résoudre les problèmes structurels. Les expériences de l'Allemagne de l'Est et du Mezzogiorno sont mitigées de ce point de vue. Ces transferts doivent être complétés par des politiques structurelles dans les domaines de la recherche et de l'innovation, de l'industrie et des infrastructures. L'effet des transferts fédéraux va maintenant être examiné à l'aide d'un modèle SFC d'une union monétaire pour avoir une estimation de leur impact macroéconomique et de leur rôle stabilisateur.

2. Modélisation SFC avec budget fédéral et euro-obligations

Un modèle stock-flux cohérent (SFC) d'une union monétaire à deux pays permet une description cohérente des actifs et passifs ainsi que de tous les flux réels et financiers associés. L'union monétaire est composée de deux pays (N et S) de taille asymétrique. Le pays N est cinq fois plus grand que le pays S . Cette configuration facilite l'analyse des mécanismes d'ajustement du pays S face au reste de l'union. Nous introduisons un budget fédéral avec des transferts sociaux fédéraux, des dépenses publiques fédérales et des euro-obligations. Cela permet d'étudier l'effet stabilisateur du budget fédéral.

12. À l'exception de la France et du Portugal, très pénalisés par la surévaluation de leurs euros mais qui bénéficient peu du mécanisme proposé du fait d'une évolution plus moyenne de leur taux de chômage, ce qui pose la question du type d'indicateurs à retenir.

Tableau 10. Matrice des stocks

	Ménages N	Firmes N	Gouvernement N	Banques N	Budget fédéral	BCE	Ménages S	Firmes S	Gouvernement S	Banques S
Capital		$+K^N$						$+K^S$		
Dépôts	$+BD^N$			$-BD^N$			$+BD^S$			$-BD^S$
Monnaie	$+H_h^N$			$+H^N$		$-H$	$+H_h^S$			$+H^S$
Crédits		$-L^N$		$+L_N^N$				$-L^S$		$+L_S^N$
				$+L_N^S$						$+L_S^S$
Refinancement				$-RF^N$		$+RF^N$				$-RF^S$
						$+RF^S$				
Obligations	$+P_b^N \cdot B_N^N$		$-P_b^N \cdot B^N$				$+P_b^N \cdot B_S^N$			
	$+P_b^N \cdot B_N^S$						$+P_b^S \cdot B_S^S$		$-P_b^S \cdot B^S$	
Euro-obligations	$+BT_{Nh}^E$			$+BT_{Nb}^E$	$-BT^E$		$+BT_{Sh}^E$			$+BT_{Sb}^E$
Bons du Trésor			$-BT^N$	$+BT_N^N$						$+BT_S^N$
				$+BT_N^S$					$-BT^S$	$+BT_S^S$
Actions		$-p_e^N \cdot E^N$					$+p_e^N \cdot E_{hs}^N$	$+p_e^N \cdot E_{es}^N$		
	$+p_e^N \cdot E_{hN}^N$	$+p_e^N \cdot E_{eN}^N$						$-p_e^S \cdot E^S$		
	$+p_e^S \cdot E_{hN}^S$	$+p_e^S \cdot E_{eN}^S$					$+p_e^S \cdot E_{hs}^S$	$-p_e^S \cdot E_{es}^S$		
Richesse	$-VH^N$	$-V^N$	$-D^N$	$-VB^N$	$-D^E$		$-VH^S$	$-V^S$	$-D^S$	$-VB^S$
Total	0	0	0	0	0	0	0	0	0	0

Ce modèle est inspiré par Godley et Lavoie (2006, 2007), Lavoie (2003), Duwicquet et Mazier (2010, 2011). Les prix sont fixes. Les firmes accumulent à la fois du capital réel et financier. Elles peuvent financer leurs investissements avec des profits non-distribués, des crédits bancaires ou des actions. Les banques commerciales distribuent les crédits en fonction des besoins des firmes et la banque centrale assure le refinancement. Les ménages détiennent des dépôts bancaires, des obligations et des actions. Les deux gouvernements émettent des obligations et des bons du Trésor. Les taxes sur les revenus du capital (profit des firmes et des banques commerciales et de la banque centrale, revenus du capital des ménages) financent le budget fédéral.

Le tableau 10 décrit la matrice des stocks en termes d'actifs (écrits avec un signe positif) et de passifs (écrits avec un signe négatif) de chaque secteur : ménages, firmes, gouvernements nationaux, banques commerciales, une banque centrale unique et un budget fédéral¹³. Au-delà du capital fixe (K), huit types d'actifs sont distingués¹⁴ : les dépôts bancaires (BD) détenus par les ménages, les obligations émises par les gouvernements ($p_b.B$) et détenues par les ménages des deux pays, les prêts (L) offerts par chaque banque commerciale aux firmes des deux pays, les actions émises par les firmes ($p_e.E$) et détenues par les ménages et les firmes des deux pays, les bons du Trésor émis par chaque Etat (BT) et détenus par les banques commerciales des deux pays, la monnaie banque centrale (H) détenue par les ménages ainsi que par les banques commerciales (réserves obligatoires), le refinancement offert aux banques commerciales par la banque centrale (RF) et, finalement, les euro-obligations (BT^E) émises par le gouvernement fédéral et détenues par les banques et les ménages.

Une description détaillée du système monétaire et financier est retenue pour étudier les comportements de diversification avec primes de risque sur les obligations et les bons du Trésor lorsque celles-ci seront introduites. Cette version avec taux d'intérêt endogènes a été examinée dans une publication antérieure, mais sans

13. La matrice des flux ainsi que l'ensemble des équations sont disponibles dans le *Document de travail du CEPN* n° 04-2012.

14. Lorsqu'il y a deux symboles (N et S), l'indice indique où l'actif est détenu, l'exposant indique où l'actif est émis. Par exemple, BT_N^S représentent les bons du Trésor détenus par le pays N et émis dans le pays S .

budget fédéral (Duwicquet et Mazier, 2011). Elle sera reprise ultérieurement pour étudier le rôle des euro-obligations dans la mutualisation des dettes publiques.

Ménages

Les ménages ont un comportement de consommation traditionnel avec un effet richesse qui prend en compte les plus-values sur les obligations et actions détenues. Les choix de portefeuille des ménages suivent l'approche développée par Godley (1999) et Tobin (1969) avec un arbitrage entre monnaie (H_h), dépôts bancaires (BD), obligations ($p_b.B$), actions ($p_e.E_h$), et euro-obligations (BT_h^E) selon les taux de rendement relatifs de chaque actif : r_b , taux d'intérêt des obligations de chaque pays ; i_d , taux d'intérêt sur les dépôts bancaires qui est le même dans les deux pays ; r_{ee} , taux de rendement sur les actions de chaque pays et r_e , taux d'intérêt des euro-obligations. La demande de monnaie suit un simple motif de transaction. La demande de dépôts bancaires n'est pas écrite et est déterminée comme un résidu en utilisant l'équation comptable du bilan des ménages. Les ménages paient des impôts au niveau national (T) et au niveau fédéral (T_h^E). De plus, les ménages reçoivent des transferts sociaux nationaux (ST) et fédéraux (FT).

Équations des ménages pour le pays N

Consommation

$$C^N = a_0^N + a_1.YHS_h^N + a_2.VH_{-1}^N$$

(VH^N = richesse des ménages, YHS_h^N = revenu disponible avec les gains en capital)

Revenu disponible

$$YD_h^N = W^N + i_d.BD_{-1}^N + B_{N-1}^N + B_{N-1}^S + r_e.BT_{Nh-1}^E + DIV_{hN}^N + DIV_{hN}^S + ST^N - T^N - CL^N + FT^N - T_{Nh}^E$$

$$YHS_h^N = YD_h^N + CG_h^N$$

(YD = revenu disponible, W = rémunération des salariés, $i_d.BD$ = intérêts sur les dépôts bancaires, B_{N-1}^N = intérêt sur les obligations domestiques et étrangères, $r_e.BT_{Nh-1}^E$ = intérêts sur les euro-obligations, DIV_{hN}^N, DIV_{hN}^S = dividendes reçus sur les actions domestiques et étrangères, ST = transferts sociaux nationaux, T = impôts natio-

naux, CL = contributions sociales nationales, FT = transferts fédéraux, T^E = impôts fédéraux sur les revenus du capital, CG_h = gains en capital des ménages)

Impôts payés par les ménages

$$T^N = \theta^N \cdot W^N$$

$$T_{Nh}^E = \theta_{Nh}^E \cdot (B_{N-1}^N + B_{N-1}^S + id \cdot BD_{-1}^N + DIV_{hN}^N + DIV_{hN}^S)$$

(avec $\theta^N = 12,5$ % et $\theta_{Nh}^E = 10$ %)

Transferts sociaux et contributions

$$\Delta ST^N = \Delta T^N + \Delta T_f^N$$

$$CL^N = \tau \cdot W^N$$

(avec $\tau = 36$ %)

Transferts fédéraux

Les transferts fédéraux FT sont entièrement financés par des impôts fédéraux TE (impôts sur les ménages, les firmes, les banques et la banque centrale) et représentent 3 % du PIB de la zone euro.

$$FT = TE$$

L'allocation des transferts entre le Sud et le Nord est réalisée en fonction des écarts de PIB :

$$FT^S = \frac{1}{5} \cdot FT + \beta \left[\frac{Y^N}{Y_{baseline}^N} - \frac{Y^S}{Y_{baseline}^S} \right]$$

$$FT^N = FT - FT^S$$

(FT^S = transferts fédéraux reçus par les ménages du Sud, FT^N = transferts reçus par les ménages du Nord)

Demande d'obligations des ménages

$$\frac{p_b^N \cdot B_N^N}{VH^N} = v_0 + v_1 \cdot r_b^N - v_2 \cdot r_b^S - v_3 \cdot i_d - v_4 \cdot r_{ee}^N - v_5 \cdot r_{ee}^S - v_6 \cdot r_e$$

$$\frac{p_b^S \cdot B_N^S}{VH^N} = v_0 + v_1 \cdot r_b^S - v_2 \cdot r_b^N - v_3 \cdot i_d - v_4 \cdot r_{ee}^N - v_5 \cdot r_{ee}^S - v_6 \cdot r_e$$

($p_b^N \cdot B_N^N$ = obligations du gouvernement N détenues par les ménages du pays N , $p_b^S \cdot B_N^S$ = obligations du gouvernement S détenues par les ménages du pays N)

nues par les ménages du pays N , r_b = taux d'intérêt des obligations, i_d = taux d'intérêt sur les dépôts bancaires, r_{ee} = taux de rendement sur les actions, r_e = taux d'intérêt des euro-obligations)

Demande d'euro-obligations des ménages

$$\frac{BT_{Nh}^E}{VH^N} = v_0 - v_1 \cdot r_b^N - v_2 \cdot r_b^S - v_3 \cdot i_d - v_4 \cdot r_{ee}^N - v_5 \cdot r_{ee}^S + v_6 \cdot r_e$$

(BT_{Nh}^E = euro-obligations émises par le gouvernement fédéral et détenues par les ménages)

Demande d'actions des ménages

$$\frac{p_e^N \cdot E_{hN}^N}{VH^N} = v_0 - v_1 \cdot r_b^N - v_2 \cdot r_b^S - v_3 \cdot i_d + v_4 \cdot r_{ee}^N - v_5 \cdot r_{ee}^S - v_6 \cdot r_e$$

$$\frac{p_e^S \cdot E_{hN}^S}{VH^N} = v_0 - v_1 \cdot r_b^N - v_2 \cdot r_b^S - v_3 \cdot i_d - v_4 \cdot r_{ee}^N + v_5 \cdot r_{ee}^S - v_6 \cdot r_e$$

($p_e^N \cdot E_{hN}^N$ = actions émises par les entreprises du pays N et détenues par les ménages du pays N , $p_e^S \cdot E_{hN}^S$ = actions émises par les entreprises du pays S et détenues par les ménages du pays N)

Demande de monnaie

$$H_h^N = \lambda_0 \cdot C^N$$

Firmes

Les firmes accumulent du capital réel et financier selon un cadre théorique post-keynésien (Clévenot *et al.*, 2010). Leur investissement désiré (I^d) dépend positivement du taux de profit ($r_f = UP / K_{-1}$) et négativement de la structure de la dette (L / K_{-1}) et du coût du crédit (r_i) avec un effet demande positif possible. Leur accumulation financière, c'est-à-dire leur demande d'actions ($p_e \cdot E_e$), est principalement déterminée par le taux de rendement des actions détenues (r_e) avec un arbitrage entre les actifs domestiques et étrangers et un effet positif du taux de profit reflétant l'environnement global. Les firmes peuvent financer leurs investissements par des profits non-distribués (UP), du crédit bancaire ou par l'émission de nouvelles actions. Les émissions d'actions nouvelles des firmes ($p_e \cdot \Delta E$) sont déterminées comme un pourcentage de l'investissement total (réel et financier), avec des effets positifs à la fois du coût du crédit et du ratio de dette dont les augmentations respec-

tives conduisent les firmes à émettre plus d'actions. Le taux de rendement des actions est déterminé par les dividendes et les gains en capital. La répartition des revenus est analysée de manière simple avec une part des salaires constante. Les firmes paient des impôts nationaux et fédéraux sur leurs profits. Les profits non-distribués sont déterminés par un taux constant d'épargne des entreprises (s_f). Les dividendes distribués entre actionnaires (ménages et firmes des deux pays) sont reliés à la structure des actions détenues.

Salaires

$$W^N = \rho \cdot Y^N$$

(W = salaires)

Dividendes distribués

$$DIV^N = (1 - s_f) \cdot (Y_{-1}^N - W_{-1}^N - r_l \cdot L_{-2}^N)$$

Impôts

$$T_f^N = \theta_f^N \cdot (Y_{-1}^N - W_{-1}^N - r_l \cdot L_{-2}^N - DIV^N + DIV_{eN}^N + DIV_{eN}^S)$$

$$T_{Nf}^E = \theta_{Nf}^E \cdot (Y_{-1}^N - W_{-1}^N - r_l \cdot L_{-2}^N - DIV^N + DIV_{eN}^N + DIV_{eN}^S)$$

(avec $\theta_f^N = 35\%$ et $\theta_{Nf}^E = 5,5\%$)

Banques

Les banques accordent tous les crédits demandés par les firmes. Le partage entre crédit domestique et étranger est fonction du taux d'ouverture de l'économie. Les réserves obligatoires en monnaie banque centrale représentent une part fixe des dépôts bancaires et ne donnent pas lieu à intérêt. La banque centrale fournit des avances (RF) aux banques commerciales en fonction de leurs besoins. Ces avances sont faites au taux d'intérêt directeur (i_b) qui est l'instrument central de la politique monétaire. La banque centrale reverse au budget fédéral la totalité de ses profits sous forme d'impôt ($T\in B$).

Équations des banques pour le pays N

Réserves obligatoires

$$H^N = \varepsilon \cdot BD^N$$

(H = réserves obligatoires en monnaie banque centrale, BD = dépôts bancaires)

Impôts payés par les banques commerciales au gouvernement fédéral

$$T_{Nb}^E = \theta b \cdot \begin{pmatrix} r_l \cdot L_{N-1}^N + r_l \cdot L_{N-1}^S + r \cdot BT_{N-1}^N + r \cdot BT_{N-1}^S + r_e \cdot BT_{Nb}^E - i_d \cdot BD_{-1}^N \\ -i_b \cdot RF_{-1}^N \end{pmatrix}$$

(avec $\theta_b = 18\%$)

Profits bancaires

$$PB^N = (1 - \theta b) \cdot \begin{pmatrix} r_l \cdot L_{N-1}^N + r_l \cdot L_{N-1}^S + r \cdot BT_{N-1}^N + r \cdot BT_{N-1}^S + r_e \cdot BT_{Nb}^E \\ -i_d \cdot BD_{-1}^N - i_b \cdot RF_{-1}^N \end{pmatrix}$$

Impôts payés par la banque centrale au gouvernement fédéral

$$T \in B = i_b \cdot (RF_{-1}^N + RF_{-1}^S)$$

Taux d'intérêt

$$r_l = i_b + m_{1b}$$

$$i_d = i_b - m_{2b}$$

$$r = r_l = r_b^N = r_b^S$$

$$r_e = r - 0,005$$

$$p_b^N = 1/r_b^N$$

(i_b = taux d'intérêt directeur de la banque centrale, exogène, r_l = taux d'intérêt sur les crédits, r = taux d'intérêt sur les bon du Trésor, r_e = taux d'intérêts sur les euro-obligations, r_b = taux d'intérêt sur les obligations, p_b = prix des obligations)

Gouvernement national

Les finances publiques sont décrites d'une manière simple avec des dépenses exogènes et des impôts sur les revenus payés par les ménages et les firmes. Les bons du Trésor sont achetés par les banques commerciales sans restriction pour financer le solde

budgétaire après émission des obligations. La répartition entre bons domestiques et étrangers est fonction du taux d'ouverture.

Solde budgétaire du gouvernement du pays N

$$\Delta BT^N = G^N + r_n \cdot BT_{-1}^N + B_{-1}^N - T^N - T_f^N - p_b^N \cdot \Delta B^N + ST^N - CL^N$$

(BT = bon du trésor, G = dépenses publiques exogènes, T = impôts sur le revenu des ménages, T_f = impôts sur les revenus des firmes, r = taux d'intérêt sur les bon du Trésor, B = taux d'intérêt sur les obligations, $p_b \cdot \Delta B$ = obligations nouvelles émises par le gouvernement, ST = transferts sociaux, CL = Contributions sociales)

Gouvernement fédéral

Le budget fédéral est alimenté en impôts fédéraux (TE) payés par les ménages, les firmes, les banques commerciales et la banque centrale. Ces impôts fédéraux représentent environ 3 % du PIB de l'union monétaire. L'État fédéral finance des investissements européens (GE) en direction des deux pays qui représentent une fraction constante du PIB de ces pays. Les transferts fédéraux (FT) sont financés par les impôts, ce qui implique l'équilibre du budget courant avant paiement des intérêts. Des euro-obligations (BT^E) sont émises pour financer le déficit du budget européen. Ces euro-obligations sont achetées par les ménages des deux pays (BT_{Nh}^E) et le solde intégralement souscrit par les banques commerciales des deux pays (BT_{Nb}^E), le partage entre les deux pays se faisant au *pro rata* du poids de leur PIB.

Solde budgétaire du gouvernement fédéral

$$\Delta BT^E = FT + GE^N + GE^S + r_e \cdot BT_{-1}^E - TE$$

(FT = transferts fédéraux, GE^N = investissement européen au Nord, GE^S = investissement européen au Sud, $r_e \cdot BT_{-1}^E$ = service de la dette fédérale, TE = impôts fédéraux)

Euro-obligations

$$BT_{Nb}^E = BT^E - BT_{Nh}^E - BT_{Sh}^E - BT_{Sb}^E$$

(BT^E = émission totale d'euro-obligations, BT_b^E = euro-obligations achetées par les banques, BT_h^E = euro-obligations achetées par les ménages)

La répartition de la dette fédérale détenue par les banques entre Nord et Sud dépend du poids du PIB relatif.

$$BT_{Nb}^E = BT_b^E \left(Y^N / (Y^N + Y^S) \right)$$

Commerce extérieur et balance courante

Équations de balance courante

Commerce extérieur

$$\log(IM^N) = \mu_0 + \mu_1 \ln \log(Y^N)$$

$$X^N = IM^S$$

(IM = importations, X = exportations)

Équilibre des biens et services

$$Y^N = C^N + I^N + G^N + GE^N + X^N - IM^N$$

Dans l'ensemble, le modèle comporte 107 équations pour 107 variables endogènes. G^N , G^S (dépenses publiques) et i_b (taux directeur de la banque centrale) sont exogènes.

Calibrage

Le modèle a été calibré en utilisant les comptes nationaux en stock et en flux d'Eurostat pour les pays européens. Le calibrage retient une part importante des actions (350 % du PIB comme en France en 2010) qui reflète un haut degré de financiarisation. Le scénario de base suit un taux de croissance de 2 % et un taux d'accumulation brut de 7 %.

3. Ajustements en union monétaire et coefficients de stabilisation

Les mécanismes d'ajustement en union monétaire face à des chocs asymétriques d'offre ou de demande peuvent être analysés en s'intéressant au rôle joué par le budget fédéral ou les euro-obligations et en calculant dans chaque cas de figure des coefficients de stabilisation. Les résultats sont présentés avec une version simplifiée du modèle où les taux de croissance du prix des actions sont exogènes et où les euro-obligations sont entièrement détenues par les banques.

Nous utilisons quatre versions successives du modèle afin d'identifier les effets de stabilisation spécifiques à chaque facteur :

- Le modèle 1 comporte ni budget fédéral, ni euro-obligations ;
- Le modèle 2 inclut un budget fédéral d'environ 3 % du PIB de la zone euro. Ce modèle est divisé en deux sous-modèles selon la valeur du paramètre β dans l'équation suivante qui retrace les transferts fédéraux en faveur du petit pays S :

$$FT^S = \frac{1}{5} .FT + \beta \left[\frac{Y^N}{Y_{baseline}^N} - \frac{Y^S}{Y_{baseline}^S} \right]$$

— Dans le modèle 2-a, $\beta = 0$. Dans ce cas, l'ajustement est réalisé simplement par des transferts fiscaux de nature fédérale. Si le petit pays S est affecté négativement par un choc sur sa production, il paiera moins d'impôts et le reste de l'union (pays N) paiera plus d'impôts.

— Dans le modèle 2-b, $\beta = 50$. L'ajustement du choc est réalisé, ici, par des transferts du pays N vers le pays S , c'est-à-dire par des transferts de revenus de type fédéraux, en plus des transferts fiscaux.

- Le modèle 3 ne comporte pas de budget fédéral, mais contient des euro-obligations destinées à financer des projets européens d'investissement GE^N et GE^S dans les deux pays. Ces euro-obligations sont achetées par les ménages et le solde par les banques commerciales avec refinancement auprès de la banque centrale.

Simulations : Perte de compétitivité due aux désajustements de change

Nous comparons les modèles 2 et 3 au modèle 1 (modèle sans budget fédéral, ni euro-obligations) face à un choc de perte de compétitivité due à un désajustement de change intra-européen au détriment du petit pays S . Ce désajustement de change se traduit, comme nous l'avons vu dans la partie précédente, par des coûts unitaires additionnels pour le pays S surévalué et, inversement, par des coûts réduits pour le reste de l'union (pays N) qui est sous-évalué. En conséquence, dans les équations de commerce extérieur (à prix constants, rappelons-le), nous introduisons un effet exogène d'une augmentation des coûts unitaires de production (ici

uniquement les coûts salariaux) dans le pays du Sud relativement au pays du Nord. Le terme TI est égal à zéro dans le scénario de base. Pour illustrer la perte de compétitivité, le terme TI est égal à 10 entre les périodes 10 et 50. Il s'agit d'un choc reflétant un désajustement de change réel sans impact direct sur les salaires.

$$\log(IM^N) = \mu_0 n + \mu_1 n \cdot \log(Y^N) + \mu_2 \cdot \log\left(\frac{W^N - TI}{Y^N}\right) - \mu_2 \cdot \log\left(\frac{W^S + TI}{Y^S}\right)$$

$$\log(IM^S) = \mu_0 s + \mu_1 s \cdot \log(Y^S) + \mu_2 \cdot \log\left(\frac{W^S + TI}{Y^S}\right) - \mu_2 \cdot \log\left(\frac{W^N - TI}{Y^N}\right)$$

Ce choc détériore la balance courante du pays du Sud et améliore celle du Nord, entraînant une diminution du PIB dans le Sud et une hausse au Nord. Nous comparons les effets du choc dans les trois variantes du modèle. Le graphique 4 décrit la variation relative du PIB du pays S, en écart par rapport au cheminement de base, pour ces trois variantes du modèle.

Le rôle stabilisateur joué par les transferts fédéraux ou les euro-obligations face à la dégradation de la compétitivité, c'est-à-dire l'ampleur des ajustements permis par ces mécanismes fédéraux, peut être résumé par le calcul d'un coefficient de stabilisation. Ce coefficient de stabilisation s'obtient en comparant, pour un même choc et à un même moment, la variation relative du PIB par rapport au cheminement de référence, dans la version du modèle avec mécanismes fédéraux et dans la version sans mécanismes fédéraux (mais identique pour tout le reste). Ces coefficients de stabilisation sont donnés dans le tableau 11 et le graphique 4.

Coefficient de stabilisation des mécanismes fédéraux :

$$1 - \frac{(\Delta YN / YN^r) \text{ avec mécanismes fédéraux}}{(\Delta YN / YN^r) \text{ sans mécanismes fédéraux}}$$

où $(\Delta YN / YN^r) = (YN - YN^r) / YN^r = (YN \text{ après le choc} - YN \text{ avant le choc}) / YN \text{ avant le choc}$ est la variation relative du PIB par rapport au cheminement de référence avant le choc.

De manière logique, le coefficient de stabilisation dépend positivement de l'ampleur des mécanismes fédéraux. Dans le modèle 2-a, la stabilisation est faible dans le court terme (2,9 % en $t=13$) et la baisse de la production n'est que faiblement atténuée. Après le choc, le pays S paie moins d'impôts fédéraux et le pays N en paie

plus mais cet effet correcteur est limité en raison du faible poids du budget fédéral (de l'ordre de 3 % du PIB de la zone). Dans le modèle 2-b, la stabilisation est plus importante que dans le modèle 2-a. Après le choc, les pays du Sud reçoivent des transferts de revenus financés par le budget fédéral. Ce montant est réparti entre les deux pays en fonction de leur rythme de croissance.

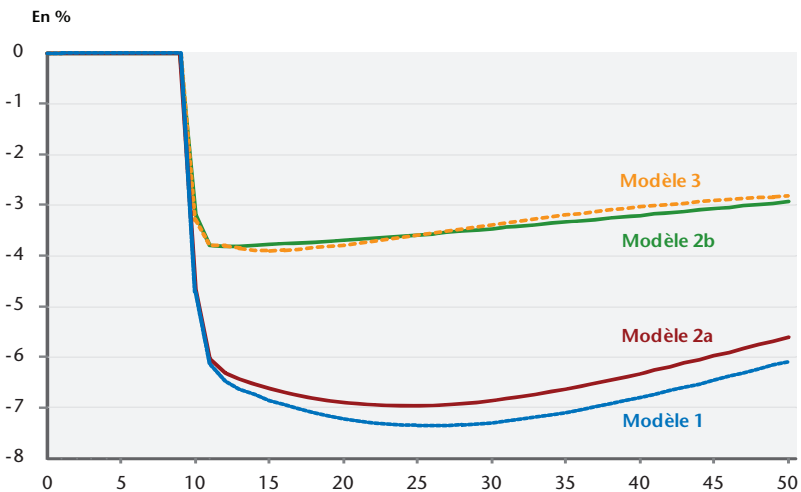
Tableau 11. Coefficients de stabilisation après une perte de compétitivité due à une surévaluation du pays S

En %	t=10	t=13	t=20	t=40	t=50
Modèle 2-a avec de simples transferts fiscaux	1,3	2,9	4,5	7,0	7,8
Modèle 2-b avec transferts fédéraux	32,5	42,5	48,8	52,9	51,7
Modèle 3 avec euro-obligations et dépenses publiques	30,3	41,9	47,5	55,3	53,6

Calculs par rapport au modèle 1 sans budget fédéral.
Source : Calculs des auteurs.

La diminution relative du PIB dans le pays S induit des transferts en provenance du Nord. Chaque année, en moyenne, le pays N transfère environ 0,4 % du PIB. En termes de PIB du pays S, les transferts représentent près de 2 % du PIB. Cette redistribution peut stabiliser 40 % du choc à court terme et 52 % à long terme.

Graphique 4. Effet sur le PIB du pays S d'une perte de compétitivité due à une surévaluation



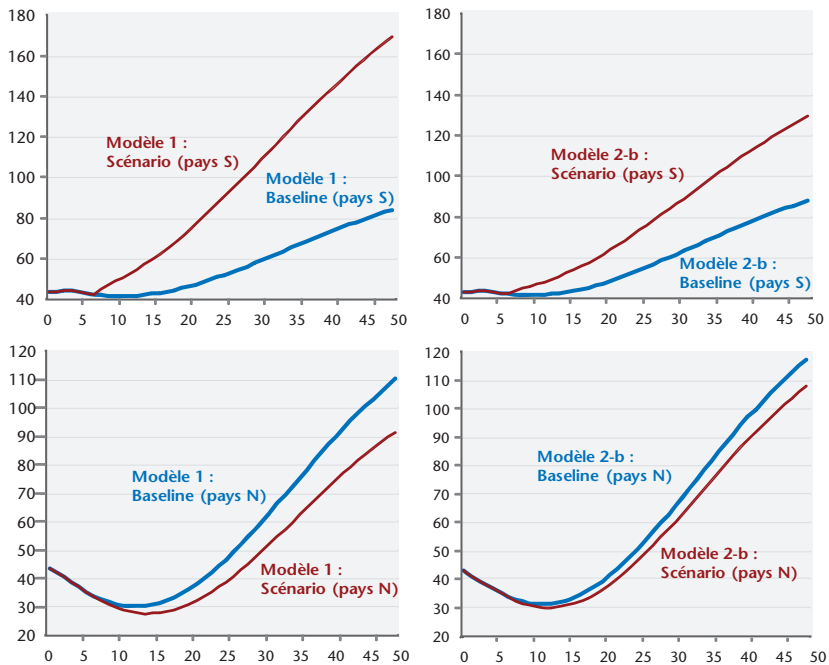
Modèle 1 : sans budget fédéral, Modèle 2a : avec de simples transferts fiscaux, Modèle 2b : avec des transferts fédéraux, Modèle 3 : avec euro-obligations et dépenses publiques.

Source : Calculs des auteurs.

Dans le modèle 3, des euro-obligations permettent de financer des investissements européens d'un montant en moyenne annuelle de 0,9 % du PIB dans les deux pays de la zone euro. Ce mécanisme permet d'obtenir un effet de stabilisation comparable à celui observé en cas de transferts fédéraux (modèle 2-b). Pour contrer la perte de compétitivité du Sud, de grands projets européens sont mis en œuvre. Ce « choc de croissance » pourrait être mutuellement avantageux, la relance intervenant dans les deux pays à la fois. Mais de tels projets européens sont complexes à mettre en œuvre, ce qui peut réduire leur impact macroéconomique.

L'établissement d'un budget fédéral possède également l'avantage de limiter l'augmentation des dettes publiques des pays du Sud. Le graphique 5 montre l'évolution de la dette publique dans le modèle 1 et dans le modèle 2-b. Dans le scénario de base avant politique d'ajustement, la dette publique tend à augmenter. En

Graphique 5. Évolution de la dette publique nationale en pourcentage du PIB : scénario de base (Baseline) et scénario (surévaluation du Sud)



Source : Calculs des auteurs.

$t = 50$, la dette publique représente près de 80 % du PIB au Sud et 110 % au Nord. Dans le scénario de surévaluation du Sud entre les périodes 10 et 50, la dette publique des pays du Sud augmente fortement en raison du ralentissement économique causé par le choc et atteint 170 % du PIB en 2050. Mais avec un mécanisme de redistribution basé sur un budget fédéral, le PIB est moins affecté et la dette publique augmente beaucoup moins et dépasse à peine 130 % du PIB. Sans budget fédéral, la dette des pays du Sud augmente de 90 points de PIB sur une période de 40 ans. Alors que son augmentation relative est de 50 points avec un budget fédéral.

4. Conclusion

La zone euro repose sur un modèle fondamentalement déséquilibré. Les changements de parité étant impossibles, peu de mécanismes d'ajustement permettent de corriger les évolutions divergentes qui affectent les différents pays de la zone euro en raison de leur grande hétérogénéité. Aucun fédéralisme budgétaire n'a été mis en place. Restent les mécanismes d'ajustement par les prix relatifs, c'est-à-dire la compression des prix et des salaires et les réductions d'effectifs. Ces mécanismes entraînent un freinage de la croissance et une montée du chômage. Un diagnostic simple peut être porté sur les déséquilibres actuels. Au niveau de la zone euro dans son ensemble, la balance courante est proche de l'équilibre et les déficits publics sont plus faibles que dans d'autres pays de l'OCDE. L'euro, pris globalement, est proche de sa parité d'équilibre. Mais l'euro est fortement surévalué pour les pays de l'Europe du Sud, dont la France, et, au contraire, fortement sous-évalué pour les pays d'Europe du Nord, en particulier pour l'Allemagne. L'ampleur de ces désajustements de change intra-européens, ainsi que leur caractère structurel, sont confirmés par nos estimations.

Ces désajustements de change freinent la croissance et creusent les déficits publics et courants au Sud tandis que la croissance au Nord est soutenue par les exportations, facilitant la réduction des déficits publics. Les coûts unitaires sont réduits au Nord tandis qu'ils sont alourdis au Sud pour des montants considérables, de l'ordre de 5 à 6 % du PIB de chaque zone en moyenne par an en faveur du Nord et au détriment du Sud depuis les années 2000. Ces variations de coûts ont un impact important sur les niveaux d'acti-

tivité. Ces déséquilibres pourraient être compensés par un mécanisme d'assurance budgétaire tel que celui proposé par la Commission européenne pour lutter contre les évolutions asymétriques. En moyenne au cours des années 2000, les transferts induits par ce mécanisme d'assurance budgétaire sont faibles (de l'ordre de 0,8 à 1 % du PIB en faveur des pays de l'Europe du Sud) mais les transferts ainsi mobilisés peuvent atteindre à certaines périodes 4 à 5 % du PIB des pays affectés par un choc négatif.

Dans une dernière partie, une modélisation « stock-flux cohérente » d'une union monétaire à deux pays a permis d'étudier les effets stabilisateurs de différents mécanismes budgétaires de type fédéral pour corriger les effets d'une perte de compétitivité induite par la surévaluation d'un des pays. Trois résultats ont été obtenus. Un budget fédéral (d'une taille réduite à 3 % du PIB) n'a qu'un effet stabilisateur des plus modestes. L'introduction de transferts à caractère redistributif en fonction du niveau relatif d'activité économique du pays permet de réduire plus efficacement la perte d'activité engendrée par la surévaluation, tout en restant inscrit dans un budget fédéral de taille réduite. Enfin des euro-obligations finançant des programmes d'investissement européens exercent un effet de stabilisation voisin du précédent. Ce sont des illustrations possibles de mécanismes permettant de faire cohabiter au sein d'une union monétaire des pays subissant des désajustements de change durables, tout en évitant des chutes d'activité prononcées. Les mécanismes proposés présentent l'inconvénient d'être purement redistributifs ou de simplement soutenir la demande sans comporter de volet visant à améliorer l'offre compétitive des pays affectés par la surévaluation. Question complexe mais bien réelle si l'on a en mémoire les cas de l'Italie du Sud ou de l'Allemagne de l'Est.

Références bibliographiques

- Asdrubali P. et S. Kim, 2004, « Dynamic risk sharing in the United states and Europe », *Journal of Monetary Economics*, 51 (4) : 809-836.
- Barisone G., R. Driver et S. Wren-Lewis, 2006, « Are our FEERs justified? », *Journal of International Money and Finance*, 25 (5) : 741-759.
- Belke A. et C. Dreger, 2011, « Current account imbalances in the euro area: Catching up or competitiveness? », *Discussion Papers* 1106, DIW Berlin.

- Borowski D. et C. Couharde, 2003, « The exchange rate macroeconomic balance approach: New methodology and results for the euro, the dollar, the yen and the pound sterling », *Open Economies Review*, 14 (2) : 169-190.
- Breitung J., 2000, « The local power of some unit root tests for panel data », In *Advances in Econometrics. Non stationary Panels, Panel Cointegration, and Dynamic Panels*, 15 : 161-178, JAI Press.
- Choi I., 2001, « Unit root tests for panel data », *Journal of International Money and Finance*, 20 (2) : 249-272.
- Clark P. et R. MacDonald, 1998, « Exchange rates and economic fundamentals – a methodological comparison of BEERs and FEERs », *IMF Working Papers* 98/67.
- Clévenot M. et V. Duwicquet, 2011, « Partage du risque interrégional. Une étude des canaux budgétaires et financiers aux États-Unis et en Europe », *Revue de l'OFCE*, 119 (4) : 5-33.
- Clévenot M., Y. Guy et J. Mazier, 2011, « Investment and the rate of profit in a financial context: the French case », *International Review of Applied Economics*, 24 (6) : 693-714.
- Cline W., 2008, « Estimating Consistent Fundamental Equilibrium Exchange Rates », *Working Paper* 08-6, Peterson Institute for International Economics.
- Cline W. et J. Williamson, 2011a, « Estimates of Fundamental Equilibrium Exchange Rates, May 2011 », *Policy Brief* 11-5, Peterson Institute for International Economics.
- Cline W. et J. Williamson, 2011b, « The Current Currency Situation », *Policy Brief* 11-18, Peterson Institute for International Economics.
- Commission européenne, 2007, *Quarterly report on the euro area*, 3.
- Coudert V., C. Couharde et V. Mignon, 2012, « On currency misalignments with in the euro area », *Working Paper* 2012-07, CEPII. En français : 2013, « Les mésalignements de taux de change réels à l'intérieur de la zone euro », *Revue de l'OFCE / Debates and policies*, 127.
- Duwicquet V. et J. Mazier, 2010, « Financial integration and macroeconomic adjustments in a monetary union », *Journal of Post Keynesian Economics*, 33 (2) : 333-370.
- Duwicquet V. et J. Mazier, 2011, « Financial integration and stabilization in a monetary union without or with bank rationing », in *Contributions in stock-flow modeling: essays in honor of Wynne Godley*, 197-234. Palgrave Macmillan.
- Felipe J. et U. Kumar, 2011, « Unit Labor Costs in the Eurozone: The Competitiveness Debate Again », *Working Paper* 651, Levy Economics Institute.

- Godley W., 1999, « Money and Credit in a Keynesian Model of Income Determination », *Cambridge Journal of Economics*, 23 (4) : 393-411.
- Godley W. et M. Lavoie, 2006, « Comprehensive accounting in simple open economy macroeconomics with endogenous sterilization or flexible exchange rates », *Journal of Post Keynesian Economics*, 28 (2) : 241-276.
- Godley W. et M. Lavoie, 2007, *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth*, Palgrave Macmillan.
- Italianer A. et J. Pisani-Ferry, 1992, « Systèmes budgétaires et amortissement des chocs régionaux: implications pour l'Union économique et monétaire », *Économie Internationale*, 51 (3) : 49-69.
- Jeong S.-E. et J. Mazier, 2003, « Exchange Rate Regimes and Equilibrium Exchange Rates in East Asia », *Revue économique*, 54 (5) : 1161-1182.
- Jeong S.-E., J. Mazier et J. Saadaoui, 2012, « Exchange Rate Misalignments at World and European Levels: a FEER Approach », *Économie Internationale*, 121(3) : 25-58.
- Lavoie M., 2003, « A Fully Coherent Post-Keynesian Model of the Euro Zone », In *Globalisation, Regionalism and Economic Activity*, Edward Elgar Publishing.
- Levin A., C.-F. Lin et C.-S. J. Chu, 2002, « Unit root tests in panel data: asymptotic and finite-sample properties », *Journal of Econometrics*, 108 (1) : 1-24.
- López-Villavicencio A., J. Mazier et J. Saadaoui, 2012, « Dimension temporelle et taux de change d'équilibre. Une application au cas des États-Unis », *Revue économique*, 63 (3) : 535-544.
- Maddala G. S. et S. Wu, 1999, « A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test », *Oxford Bulletin of Economics and Statistics*, 61 : 631-652.
- Mazier J. et S. Saglio, 2008, « Interdependency and adjustments in the European Union », *International Review of Applied Economics*, 22 (1) : 17-44.
- Pedroni P., 1999, « Critical Values for Cointegration Tests in Heterogeneous Panels with Multiple Regressors », *Oxford Bulletin of Economics and Statistics*, 61 : 653-670.
- Persyn D. et J. Westerlund, 2008, « Error-correction based cointegration tests for panel data », *Stata Journal*, 8 (2) : 232-241.
- Pesaran M. H., 2007, « A simple panel unit root test in the presence of cross-section dependence », *Journal of Applied Econometrics*, 22 (2) : 265-312.
- Saadaoui J., 2011, « Exchange Rate Dynamics and Fundamental Equilibrium Exchange Rates », *Economics Bulletin*, 31 (3) : 1993-2005.

Tobin J., 1969, « A General Equilibrium Approach to Monetary Theory », *Journal of Money, Credit and Banking*, 1 (1) : 15-29.

The Economist, 2012, « Autumn renewal ? », September 15th.

Trichet J.-C., 2007, « Le processus d'intégration européenne », *President Speeches*, BCE.

Westerlund J., 2007, « Testing for Error Correction in Panel Data », *Oxford Bulletin of Economics and Statistics*, 69 (6) : 709-748.

Williamson J., 1994, *Estimating Equilibrium Exchange Rates*, Peterson Institute for International Economics.

Zhou S., 1993, « Fundamental equilibrium exchange rates and exchange rate dynamics », *Open Economies Review*, 4 (2) : 189-209.

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STOCHASTIC DEBT SUSTAINABILITY INDICATORS¹

Jasper Lukkezen

CPB Netherlands Bureau for Economic Policy Analysis and Utrecht University

Hugo Rojas-Romagosa

CPB Netherlands Bureau for Economic Policy Analysis

This paper proposes indicators to assess government debt sustainability in the medium and long term. We follow the methodological approach by Bohn (2008) and distinguish three channels that contribute to sustainable government finances: economic growth, real interest payments and fiscal responses. We combine the estimated fiscal response with a stochastic debt simulation to create two indicators. The first captures the probability of debt-to-GDP ratios rising by more than 20 percentage points during a 10-year period. A government will fail on this indicator if its fiscal response to an increase in debt is not sufficient to control the swings in debt caused by shocks to real growth and interest payments. The second indicator captures the probability of debt levels being above 90% of GDP in 10 years. We estimate these indicators using historical data for nine OECD countries. We find that the probability of debt-to-GDP ratios rising by more than 20 percentage points in the next decade clearly identifies countries that have sustainability concerns: Italy, Spain, Portugal and Iceland, from those that do not: US, UK, Netherlands, Belgium and Germany.

Keywords: Fiscal policy, Public debt, Sustainability.

1. This paper is based on Lukkezen and Rojas-Romagosa (2012). We thank Nico van Leeuwen for excellent research assistance and participants at the EUROFRAME conference and two anonymous referees for their comments. All errors are our own.

1. Medium/long term debt sustainability assessment

Currently, being able to assess debt sustainability seems very relevant to European policy makers and the financial markets alike. These assessments are at the center of the debate and moreover, they also motivate changes in the direction of short-term economic policies as well as structural reforms. We contribute to this discussion by proposing two indicators for medium/long-term debt sustainability.

Fiscal policy is defined as the set of government policies that involve taxation, transfer payments and government investment and expenditure to promote growth, smooth the business cycle and redistribute income. Government debt is the accumulation of past fiscal deficits (negative surpluses), plus the interest payments on past debt. Hence, fiscal policy co-determines these deficits in conjunction with other macroeconomic factors and short-term shocks. Changes in the direction of current fiscal policies are usually motivated in part by the sustainability of this debt-to-GDP ratio as high government debt may lead to externalities. Economic actors experiencing these externalities may force the policy maker to change its fiscal policy.

Debt sustainability is formally defined as debt-to-GDP ratios that are stationary and mean-reverting (Bohn, 1998). In practical terms, debt is sustainable if increases in this ratio are reverted in the medium and long term. Thus, debt sustainability reduces the risk of default and avoids the negative externalities associated with high debt levels. The risk of default depends on expected future debt levels. With high expected debt levels the probability of ending up in a self-fulfilling vicious circle increases (Padoan *et al.*, 2012)—*i.e.* high government debt leads to an increase in risk premia, implying a higher discount rate for future government surpluses which justifies these higher risk premia. Given higher interest rates, current cash flow becomes more important relative to future cash flow limiting the sovereign's options to increase its surplus. When the market anticipates these rates will become so high that the government is no longer willing to take the actions necessary to repay its debt, the country will be excluded from the

international capital market altogether: a liquidity crisis, possibly followed by a default, emerges.

Defaults not only have a large negative impact on the economy of the defaulter², with integrated financial markets default causes contagion across national borders (Arezki *et al.*, 2011).³ Adding to that, in a monetary union the common central bank may need to deviate from its optimal policy in response to an unsustainable debt level in one member state, either to ensure monetary transmission or to prevent deflation. This may lead to suboptimal monetary outcomes for the other member states (Cooper *et al.*, 2010). Both reasons amplify the need for an indicator capturing the probability that future debt-to-GDP ratios are on an ever increasing path.

Furthermore, high debt levels themselves, and not only their anticipation, have empirically well-established detrimental effects on the economy: they lower future economic growth (Reinhart and Rogoff, 2010; Kumar and Woo, 2012; Baum *et al.*, 2012), may crowd-out private investment (Kumar and Woo, 2012) and increase the interest payments necessary to service the debt (Bayoumi *et al.*, 1995; Schuknecht *et al.*, 2009). Lower growth and higher interest rates also spill-over across borders via real economic and financial channels (Lejour *et al.*, 2011 and references therein). An indicator should therefore also capture the probability that debt will remain high over time. Caution is advised when deriving policy implications from this indicator. The debt level at which detrimental effects on the economy manifest is country-specific and depends on economic arrangements. Several countries have recently combined high debt-to-GDP levels with low interest rates. Nevertheless on average higher debt levels have yielded lower growth and higher interest rates.

2. How to assess debt sustainability?

Examining the evolution of the debt-to-GDP ratio given the current state of the economy and trends in growth, interest rates

2. See Sturzenegger and Zettelmeyer (2007), De Paoli *et al.* (2009) and Furceri and Zdzienicka (2011) for quantification.

3. There can also be negative cross-border wealth effects if the defaulted debt is held by foreigners.

and fiscal policy is necessary for our two debt sustainability indicators. We answer this question by extending Bohn's debt sustainability approach with a stochastic simulation on future real growth and real interest rates.⁴ Combining both methodologies we obtain two sustainability indicators. The first assesses upward volatility by providing the probability of a debt-to-GDP ratio increase of 20 percentage points, while the second provides the probability of breaching a given level (90% of GDP) after a 10-year period.

Bohn (1998, 2008) combines the accounting equation for the debt-to-GDP ratio with a behavioural equation for fiscal policy. The accounting equation describes the evolution of the debt-to-GDP ratio given shocks to the economy and the response of fiscal policy to the current debt-to-GDP ratio. The response of fiscal policy to the debt-to-GDP ratio is estimated by the behavioral equation and is referred to as the fiscal response. The accounting equation allows us to disentangle the channels that contribute to the evolution of the debt-to-GDP ratio ($d_t = \text{debt}/\text{GDP}$):⁵

$$d_{t+1} = \left(\frac{1 + r_{t+1}}{1 + g_{t+1}} \right) (d_t - s_t).$$

There are three main channels that impact debt sustainability: real growth (g_{t+1}), real interest rates (r_{t+1}) and the fiscal response (s_t).

1. Real growth of GDP (g_{t+1}) increases the denominator of the debt-to-GDP ratio, and thus, directly reduces the size of debt relative to GDP. When real GDP growth is positive and sustained over time, the debt-to-GDP ratio is steadily reduced over time. Real growth rates are determined by several factors. These include demand evolution, firm anticipations, financial booms and crises, governmental policies—such as structural reforms—and external factors—such as

4. It is possible to assess the stationarity of the debt-to-GDP ratio time series directly using unit root or cointegration tests. See Afonso (2005) for a survey of these types of studies. However, these test results are both unreliable and not informative (Bohn, 1998). They are unreliable because unit root tests have very low power in distinguishing unit root from near unit root alternatives and not informative as the test outcomes does not inform via which channels stationarity is not achieved. Finally, unit root tests provide a stationary picture and no indication on how future debt levels may evolve. For this purpose a simulation exercise is needed.

5. Here d is real debt over real GDP, r the real interest rate and s the primary surplus (government revenue minus non-interest government expenditure) over real GDP ratio. See section 2 of Lukkezen and Rojas-Romagosa (2012) for details.

foreign demand and technological progress—which have a medium to long-term effect on real growth rates.

2. The real interest payments equal the real interest rate (r_{t+1}) times the level of debt. This is the amount of funds the government needs to service its debt. Governments can use monetary and financial policy instruments to erode the real value of government debt by traducing into negative or low real interest rates on government bonds. Reinhart and Sbrancia (2011) coin these policies as financial repression. However, in a monetary union these instruments can hardly be implemented by individual countries. Only the union as a whole can do so.
3. The fiscal response is contained in the primary surplus ($s_t = \text{surplus}/\text{GDP}$). A positive primary surplus, meaning government revenue is bigger than non-interest government expenditure, reduces outstanding debt. The response of the primary surplus to the debt ratio is referred to as the fiscal response and must be estimated.

We estimate a behavioural equation for the government $s_t = \alpha + \rho d_t + \beta Z_t + \varepsilon_t$ to obtain the fiscal response to the debt ratio. The fiscal response (ρ) tells us if the medium/long term country-specific government commitment to stabilise debt levels is significant. A positive and significant response coefficient (ρ) denotes a country that has been committed to reduce or maintain steady debt-to-GDP ratios (d_t) conditional on short-term economic fluctuations and temporary government expenditures (Z_t). It can be interpreted as a government that engages in fiscal austerity to reduce debt levels even when markets are not specifically concerned about those debt levels, nor is there international pressure (e.g. EU institutions) to reduce them. Note that these responses are based on estimations from ex-post realizations which incorporate the effect of the business cycle. We thus abstract from a debate on whether the increase in debt is due to a demand or supply shock. These fiscal reactions turn out to be persistent over time. Larger re-election probabilities of fiscally responsible politicians at the national level in advanced economies (Brender and Drazen, 2005, 2008) probably contribute to this just as the quality of fiscal institutions does (Calmfors, 2010 and references therein).

The average contribution of real growth, real interest payments and the fiscal response shows whether and through which channels the debt-to-GDP ratio has been stationary in the past, meaning whether past monetary and financial arrangements and fiscal policy implementation is consistent with debt sustainability. In our set-up debt is stationary if $\delta = \gamma(1 - \rho)$ with $\gamma = (1 + r)/(1 + g)$. This condition is usually stated as: if the interest rate on debt minus the growth rate of GDP minus the fiscal response coefficient is smaller than zero, debt will stabilise.

This does not imply sustainability, because the debt-to-GDP ratio can be stationary on average while high debt-to-GDP ratios, which are considered unsustainable, are still probable outcomes provided adverse shocks occur. We apply the stochastic debt simulation method proposed by Budina and van Wijnbergen (2008) to assess this. They obtain shocks to interest and growth rates⁶ and combine these with the estimated fiscal response. This analysis combines the institutional attitude towards fiscal sustainability from the fiscal response coefficient, with the historic volatility of interest and growth rates from the simulation. The intuition works as follows: After an *adverse* interest or growth shock debt increases. A government that has a sustainable fiscal policy will respond to this shock by increasing its primary surplus over time to counter the increase in debt-to-GDP ratios. The opposite effect is in place after a *positive* interest or growth shock.

We generate a stochastic distribution of simulated debt paths yielding a distribution of probable debt-to-GDP ratios in the future. Plotting these debt distributions graphically easily illustrates debt sustainability. Moreover, we can employ the stochastic distribution of future simulated debt-to-GDP ratios to obtain our two sustainability indicators:

1. Our upward volatility indicator denotes the probability that the debt-to-GDP ratio increases by more than 20 percentage points within the next 10 years. This indicator, denoted as $X_{+20,10}$, takes the current debt level as a base line and examines the probability of a significant debt increase—hence non-sustainability—from this base line. It captures

6. This method simulates interest and growth rates using a vector autoregression model, see equation (8) in Lukkezen and Rojas-Romagosa (2012).

whether the fiscal response is sufficient to control the debt-to-GDP ratio given volatility in interest and growth rates.

2. Our debt level indicator $X_{90,10}$ denotes the probability that simulated future debt-to-GDP ratios exceed a threshold of 90% after a period of 10 years. This captures the idea that above a certain debt-to-GDP ratio negative externalities could occur even if debt-to-GDP ratios are stable. We take this particular threshold from Reinhart and Rogoff (2010), who find that above this debt level real growth decreases. The empirical literature is not conclusive, so using debt thresholds for policy purposes is debatable.⁷

Our analysis is based on ex-post outcomes and hence includes past monetary, financial and fiscal policies⁸ implicitly. In the short-run primary surplus, real growth and effective interest rates are all determined endogenously and possibly have multiple equilibria. These equilibria may depend on the debt level (De Grauwe, 2011; Corsetti *et al.*, 2012). Evaluating this endogenous mechanism is beyond the scope of our analysis.⁹ However as we know the *ex post* outcome, we know the end result of this endogenous mechanism. This assumption allows us to estimate ρ and contrast it with interest and growth rates. A precondition for these estimations then is that long time series covering at least 40 years should be available. Time series should span several business cycles and contain periods of high and low debt to prevent misinterpretation.

7. Kumar and Woo (2012) and Checherita-Westphal and Rother (2012) doubt whether a clear threshold exists. Furthermore, this particular debt level is only indicative of what—in a wide sample of countries and time periods—Reinhart and Rogoff (2010) found to be the threshold level where negative externalities began. The actual threshold level, if it exists, is country specific and unknown. Alternatively a politically-defined debt threshold, like the 60% limit from the Maastricht Treaty could be used.

8. Our fiscal policy measure takes the business cycle into account and therefore implicitly incorporates the effect that too restrictive fiscal policies also negatively affect growth (even more in deep recessions and/or when the economy is in a liquidity trap) and have a negative (instead of a positive) effect on debt levels.

9. In particular, short term endogenous mechanisms can include regime-switching processes and/or changes on the fiscal multiplier that will directly affect short-term outcomes. By using historical data in our estimations our data already contains the *ex post* outcome, which means that we are taking the end-result of the endogenous mechanism as given. Hence, we are also assuming that in the medium term there are no structural changes in the economy (*i.e.* no regime-switching or significant changes in the fiscal multiplier).

3. Estimation and simulation

We have data for nine OECD countries: United States (USA), United Kingdom (GBR), Netherlands (NLD), Belgium (BEL), Germany (GER), Italy (ITA), Spain (ESP), Portugal (PRT) and Iceland (ISL).¹⁰ The number of countries is limited due to the requirement of long time series spanning at least 40 years.

Figure 1 presents the debt-to-GDP levels for all the countries in our sample.¹¹ For a group of countries—US, UK, the Netherlands and Spain—we observe that they begin with high debt levels after the Second World War, which sharply decreased afterwards, but have increased in the later period—especially in the last decade. Another set of countries: Germany, Italy, Portugal and Iceland have experienced steady debt increases, even though these countries began the period with relatively low debt levels.

In Figure 2 we show the real growth rates.¹² Here we observe that most countries have experienced a steady decline in real growth in the post-war period. This means that the real growth channel to reduce debt levels has become less important over time. Accordingly, Figure 3 presents the smoothed series on effective nominal interest rates and inflation.¹³ When inflation is larger, real interest rates are often negative and thus, for these periods we have financial repression. For most countries (with the exceptions of Belgium and Germany) we observe financial repression periods between the 1950s and the 1980s. However, after the 1980s real interest rates are positive, and thus, the financial repression channel was no longer a source of debt reduction. Therefore, after the 1980s, with declining real growth rates and positive real interest payment, positive fiscal responses became the main channel to reduce debt levels.

We estimate econometrically a fiscal response function and relate the estimated fiscal response coefficient with the average interest and growth rates to determine whether debt converges towards a steady state. Table 1 shows that for the US, the UK, the

10. Description of the data and data sources in Lukkezen and Rojas-Romagosa (2012). Due to consistency with the pre WWII analysis in this work we use only net data for the US.

11. Note that the vertical scale can be different for each country.

12. The series have been smoothed in Figure 2 and the left-hand (y-axis) scale is the same for each country.

13. Effective nominal interest rates are calculated as government interest payments over debt.

Netherlands, Belgium, Germany and Italy the fiscal response to increases in the debt-to-GDP ratio has been robust and positive in the post-war period. On top of that the US, the Netherlands and Italy have a positive non-linear response, indicating that the primary surplus responds more strongly to debt at high levels. On the other hand, Spain, Portugal and Iceland have non-significant fiscal responses in the post-war period (and Spain and Portugal have even a negative non-linear response), which creates doubts about their capacity to reduce debt by implementing fiscal austerity.

Table 1. Debt sustainability summary

	USA 1948- 2009	GBR 1946- 2009	NLD 1948- 2010	BEL 1955- 2010	DEU 1970- 2011	ITA 1945- 2010	ESP 1946- 2010	PRT 1945- 2010	ISL 1946- 2007
r	0.020	0.018	0.022	0.044	0.034	0.004	-0.002	-0.044	-0.073
y	0.029	0.023	0.035	0.028	0.025	0.037	0.042	0.039	0.058
γ	0.991	0.995	0.987	1.016	1.009	0.968	0.958	0.920	0.869
$\rho(\text{debt})$	0.090***	0.045***	0.074***	0.038***	0.026*	0.066***	0.048	0.003	0.014
$\rho(\text{debt}^2)$	+ *	0	+ ***	0	0	+ ***	- ***	- ***	0
ρ	0.090	0.045	0.074	0.038	0.026	0.066	—	—	—
δ	0.902	0.950	0.914	0.978	0.983	0.904	0.958	0.920	0.869

* = significant at 10% level,

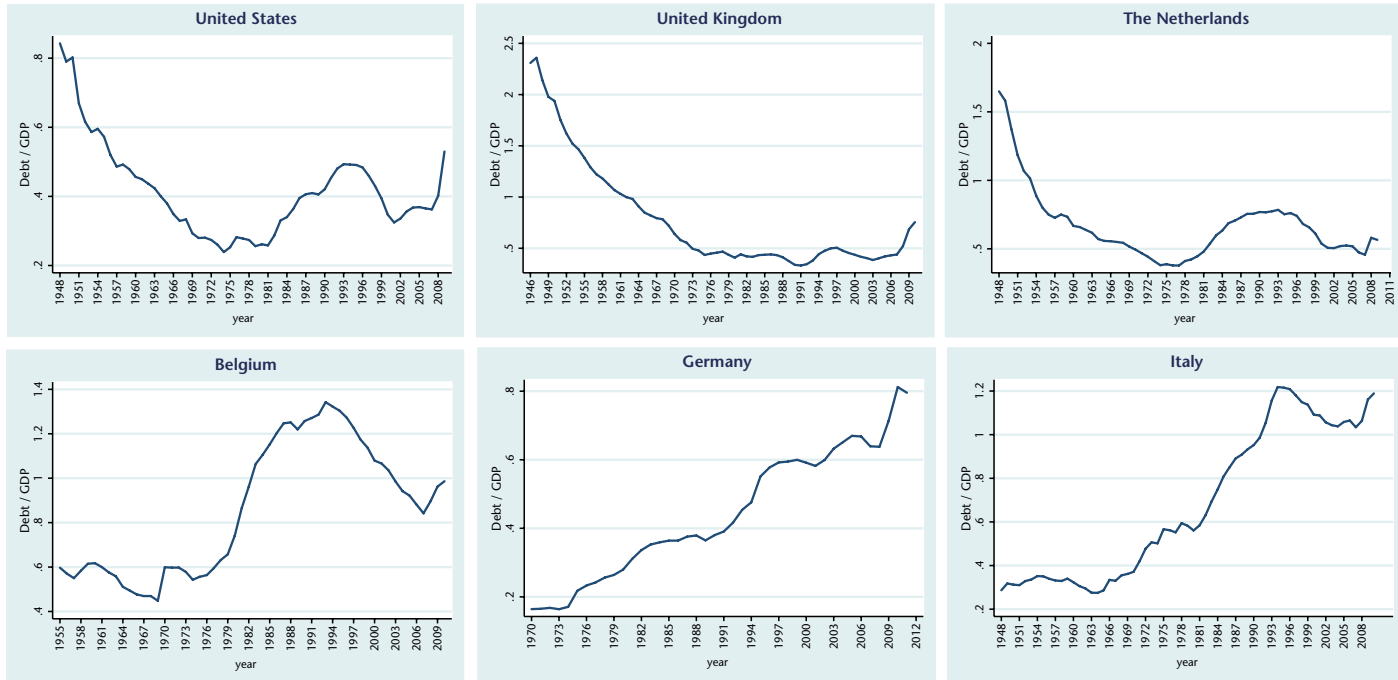
*** = significant at 1% level

Source : Lukkezen and Rojas-Romagosa (2012).

Of course, if these countries experience beneficial shocks (*i.e.* higher than expected growth rates or lower than expected interest rates), debt sustainability will be easier to achieve. As soon as a country that does not have a significant and strong fiscal response record—and has in addition insufficient real growth or cannot use financial repression instruments—is exposed to an adverse shock, debt will increase and may do so without bound. We capture exactly this effect in our simulation of future debt levels in Figure 4. The left part of the figure shows the simulation without a fiscal response whereas the right part shows the simulation with the estimated fiscal response.¹⁴ The yellow area contains 90% of stochastic debt paths, the red area the next 5%, the black line denotes the median, and the 60% and 90% thresholds are highlighted by blue horizontal lines.

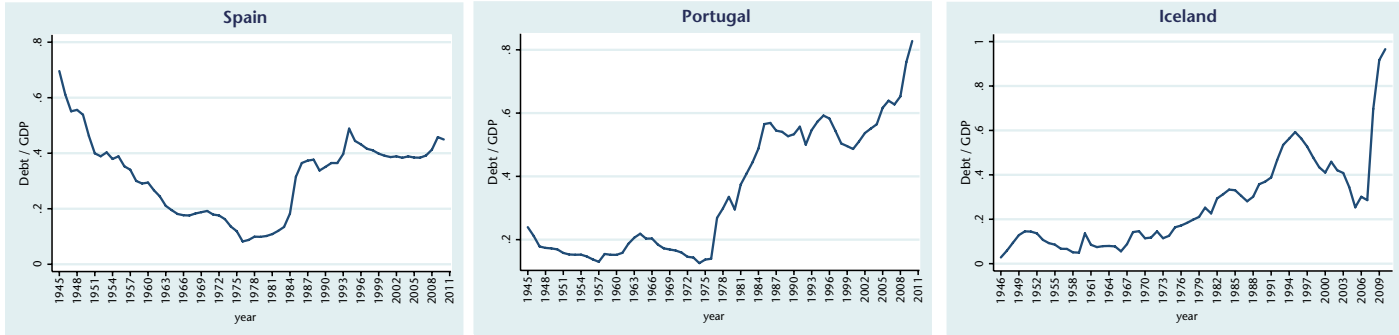
14. As mentioned before, for Spain, Portugal and Iceland the estimated fiscal response coefficient is not significant. However, for illustrative purposes we artificially set their fiscal response coefficient to $\rho = 0.04$.

Figure 1. Debt-to-GDP ratios in the post-war period



Source: Lukkezen and Rojas-Romogosa (2012).

Figure 1. Debt-to-GDP ratios in the post-war period



Source: Lukkezen and Rojas-Romagosa (2012).

Figure 2. Smoothed real growth rates in the post-war period

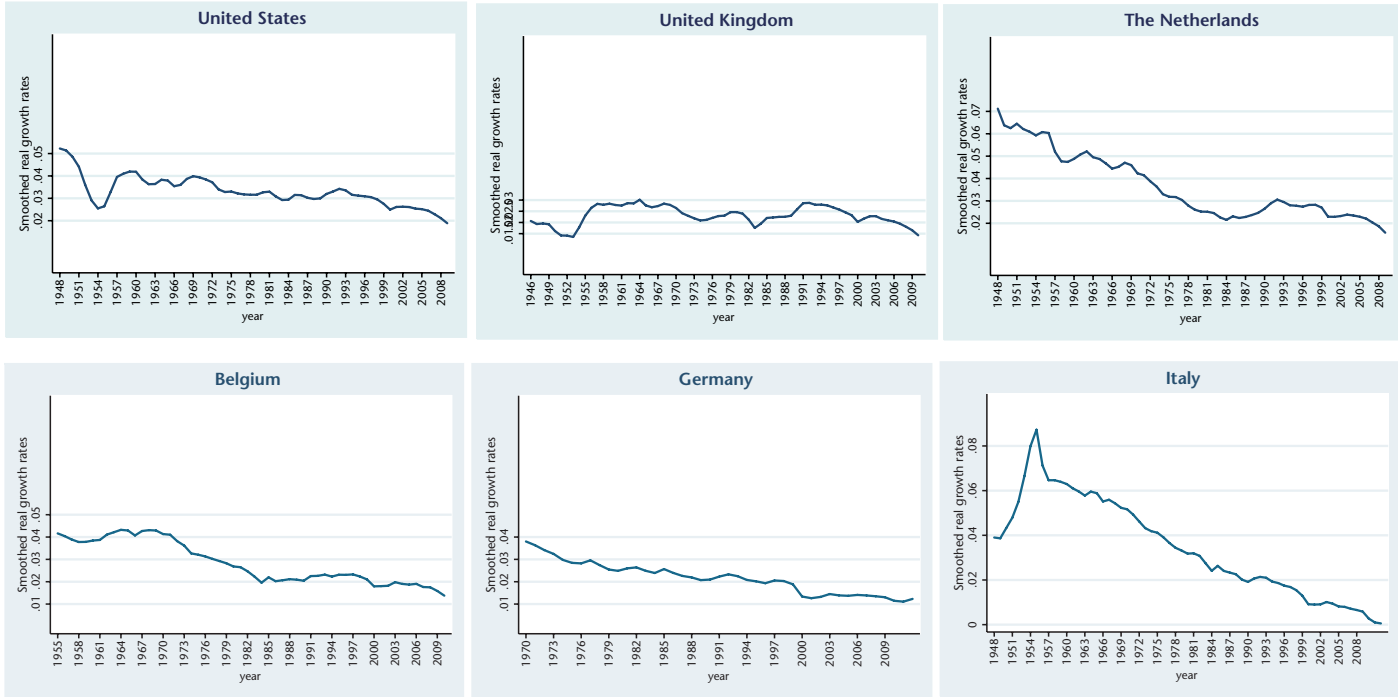
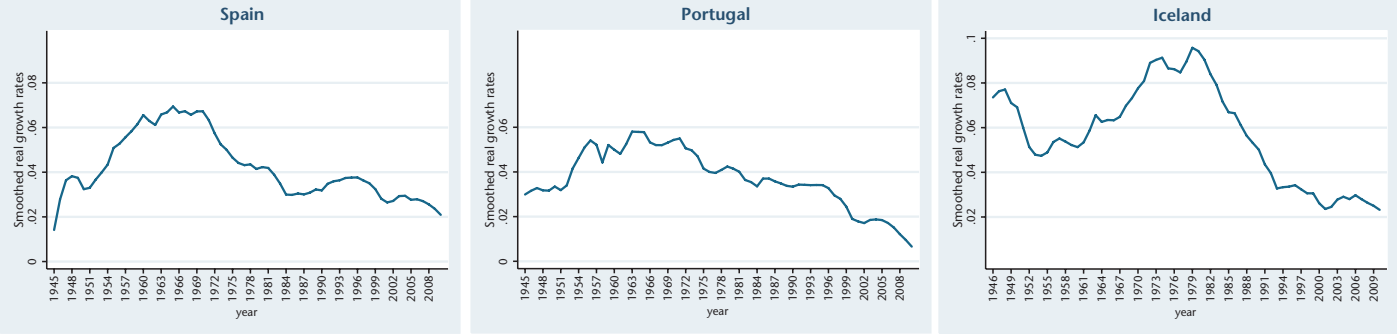
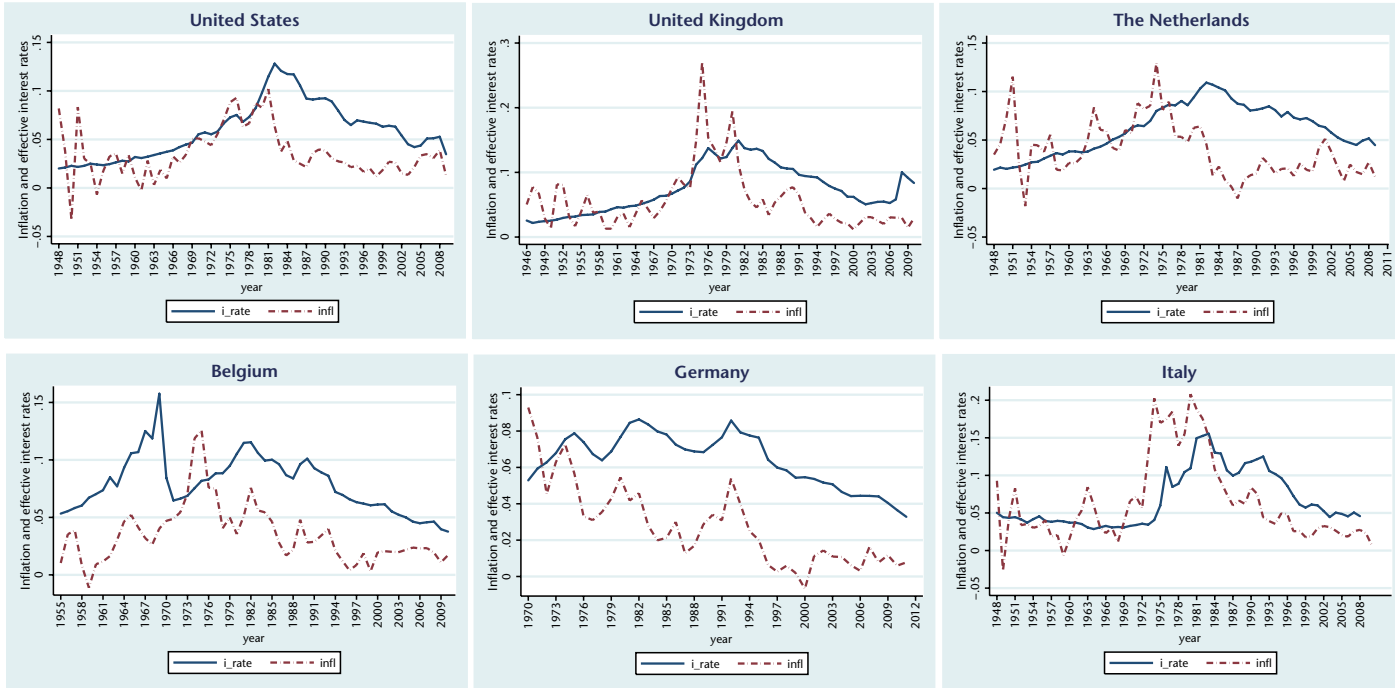


Figure 2. Smoothed real growth rates in the post-war period



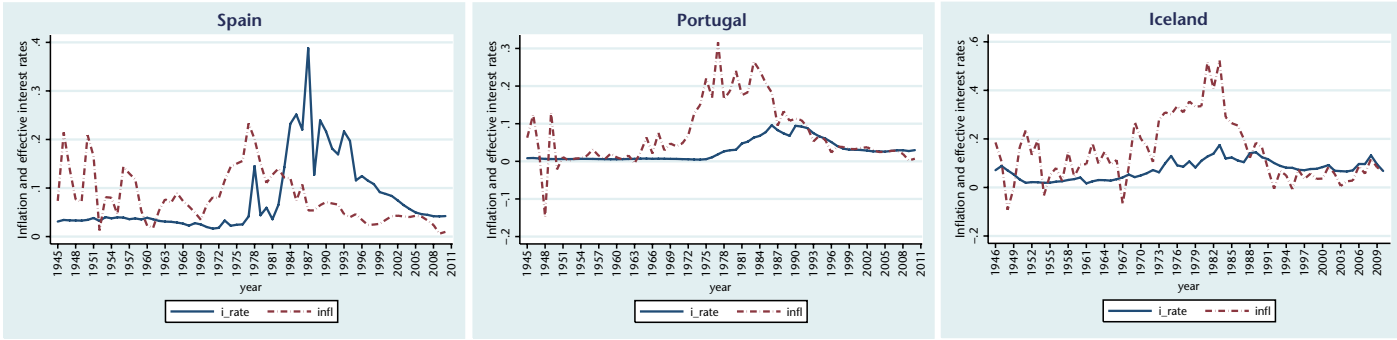
Source: Lukkezen and Rojas-Romagosa (2012).

Figure 3. Nominal interest rates and inflation in the post-war period



Source: Lukkezen and Rojas-Romgosa (2012).

Figure 3. Nominal interest rates and inflation in the post-war period



Source: Lukkezen and Rojas-Romagosa (2012).

Figure 4. Simulated debt paths, without (left) and with (right) fiscal response

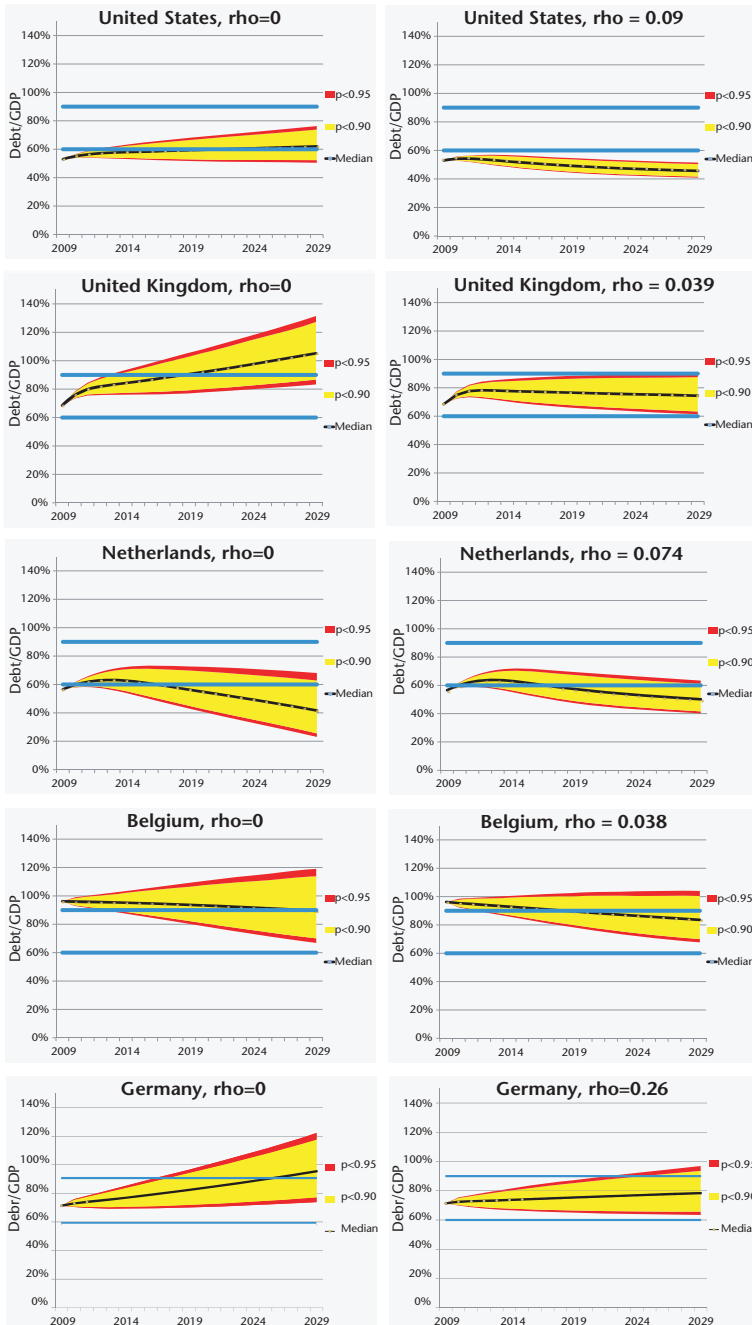
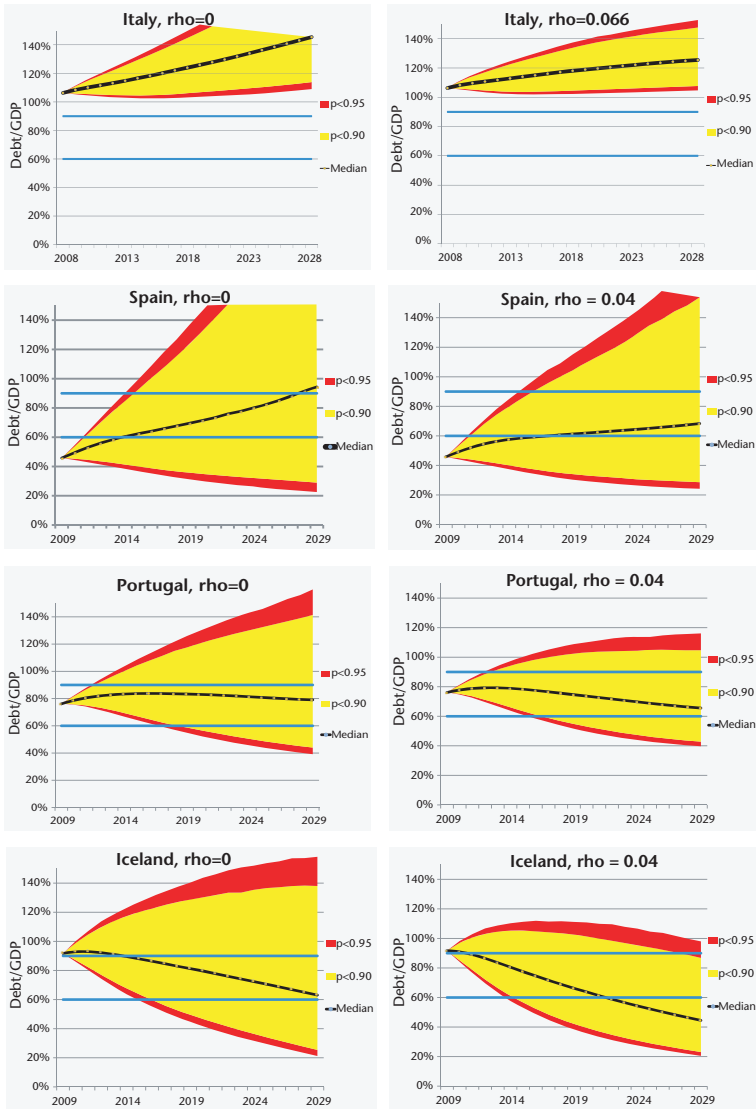


Figure 4. Simulated debt paths, without (left) and with (right) fiscal response



How do these distributions look like?

- **Steady state:** From the accounting equation it follows that debt is stationary if $\delta = \gamma(1 - \rho) < 1$. In this case the debt series has a steady state, which equals:

$$\frac{-\alpha(1+r)}{1+g - (1-\rho)(1+r)}$$

- **Slow convergence:** r , g and ρ are a few percentage points in magnitude, thus small compared to 1. This means that convergence towards the steady state is slow. As there is significant volatility in interest and growth rates, this volatility will be dominant in the debt developments, not the convergence towards the steady state. Also this volatility will determine the width of the bandwidth around the steady state.
- **Skewed distribution:** As a shock changes the debt-to-GDP ratio by a percentage of that ratio, an adverse shock necessitates a larger response than a positive shock. This means that the effect of adverse shocks will be visible longer and the debt distribution will be skewed.

The debt distribution plots in Figure 4 show all the characteristics mentioned. Slow convergence towards some steady state, a width of the debt distribution which increases with interest and growth rate volatility and decreases with the size of the fiscal response and a skewness in the debt distribution—the median debt path lies below the average debt path.

The shocks in our simulations depend on the historic volatility of interest and growth rates. That means they do not contain unexpected exogenous events (e.g. war, natural disasters). In any case, the results of our simulation exercise are not informative on debt sustainability under such conditions as other concerns will receive higher priority than debt sustainability concerns. Nevertheless, under a business as usual scenario, it is still very useful to know the probability that debt could increase above a certain threshold or by a certain number of percentage points. From Figure 4 it becomes clear that the probability of being on an unsustainable debt path is non-zero for some countries: Italy, Spain, Portugal and Iceland.

This means that there is a reasonable chance that these countries have unsustainable debt levels.

Table 2. Summary table showing the debt sustainability indicators in % of GDP

	2009	2019, $\rho > 0$				2019, $\rho = 0$			
	debt	debt	95 % width	$X_{90,10}$	$X_{+20,10}$	debt	95 % width	$X_{90,10}$	$X_{+20,10}$
USA	53	50	10	0	0	59	15	0	0
GBR	68	77	21	1	3	89	26	53	56
NLD	57	58	21	0	0	58	28	0	1
BEL	96	90	23	47	0	94	26	69	0
DEU	71	75	22	1	1	82	26	14	11
ITA	106	118	35	100	20	124	47	100	43
ESP	46	60	78	12	46	67	94	23	58
PRT	76	76	55	16	11	84	66	35	25
ISL	92	69	72	100	5	83	92	36	18

Table 2 presents the debt sustainability indicators proposed in the last section. Specifically the indicator that the debt level increases by 20 percentage points in the next decade ($X_{+20,10}$) distinguishes countries with no or only small debt sustainability issues (US, UK, Netherlands, Belgium and Germany) from countries with serious debt sustainability issues (Italy, Spain, Portugal, Iceland).

4. How to use debt sustainability indicators?

From the Second World War up until the early eighties, the fiscal response was not important for debt sustainability, since in most developed economies real growth rates were relatively high and real interest payments were low (and even negative for some countries). This is not the case anymore: with relatively low real growth rates and positive real interest payments, strong fiscal responses are crucial for debt sustainability. Thus, by estimating historical fiscal responses using Bohn's approach we can test for current debt sustainability.

Our estimated fiscal response (ρ) is an institutional variable that measures how over medium and long-time periods, the govern-

ment of a particular country deals with medium/long term changes in debt levels. In particular, it measures how fiscal policy reacts to changes in debt levels, once policy is adjusted to take into account the country-specific fiscal policy changes to unexpected increases in temporary expenditure and to the business cycle. As we need to correct for these variables in our estimate of the country-specific fiscal response, we need time series that encompass several business cycles.

Our simulated stochastic debt distributions and the indicators capture whether current fiscal policy generate sustainable future debt levels. They relate expected fiscal responses to expected economic shocks under current monetary and financial arrangements starting from the current state of the economy. Our preferred indicator, $X_{+20,10}$, shows the probability of an increase of debt of 20 percentage points in the next decade. A country that ‘fails’ on this indicator has a non-zero probability of a substantial debt increase in the coming decade. The debt level indicator, $X_{90,10}$, shows the probability of debt exceeding the 90% threshold.

It is important to note that our indicators provide information on medium and long-term debt sustainability. They are not suitable to analyze short-term debt sustainability. For instance, they cannot provide information on whether—for example—Spain will be able to roll over its debt in the coming months. On the other hand, our sustainability indicators—together with the estimated fiscal response—do provide information on whether it is reasonable for a country to join a monetary union. In such a union, the use of financial and monetary policies is limited for individual countries, making it unlikely for them to achieve debt reductions through policies that yield very low or negative real interest rates. This leads to an increased dependence on fiscal policy to tackle debt sustainability. It is precisely this medium—to long term institutional relation between fiscal policy and debt sustainability that is captured by our indicators.

For medium to long-term fiscal policy assessments, our indicators have several advantages over the current available indicators. The original sustainability norms envisaged at the creation of the European Monetary Union (EMU) were to follow the Maastricht Treaty criteria: ceilings of 3% and 60% on government deficits and debt-to-GDP ratios, respectively. They are static and are not able to

capture volatility in the economy and the government's fiscal response to that. It is now clear that several countries were able to violate these criteria without consequences, while others that met the criteria have nonetheless been hit by the crisis. Sustainability indicators related to ageing (European Commission, 2009) can take volatility into account but have another drawback: they assume no fiscal response and project how government debt levels will explode *unless* the government enacts reforms. As such, they are valuable in putting this issue on the policy agenda. Whether these issues actually get solved, depends on the quality of the political process and the strength of fiscal institutions. Finally, cyclically adjusted budget balances (CABB) are dependent on projections of future growth, which are known to have an upward bias (Larch and Salto, 2005). This can distort the identification of actual fiscal policy. Furthermore, these estimates are vulnerable to endogeneity problems, since it becomes difficult to disentangle the effects of expected growth on the CABB from the effects CABB has through the fiscal multiplier on growth.

References

- Afonso A., 2005. "Fiscal Sustainability: The Unpleasant European Case", *FinanzArchiv*, 61(1): 19–44.
- Arezki R., B. Candelon and A. Sy, 2011. "Sovereign Rating News and Financial Markets Spillovers: Evidence from the European Debt Crisis", *IMF Working Paper*, 11/69, March.
- Baum A., C. Checherita-Westphal, and P. Rother, 2012. "Debt and Growth: New Evidence for the Euro Area", *ECB working paper*, 1405.
- Bayoumi T. A., M. Goldstein and G. Woglom, 1995. "Do credit markets discipline sovereign borrowers? Evidence from US states," *Journal of Money, Credit, and Banking*, 27: 1046-1059.
- Bohn H., 1998. "The Behavior of U.S. Public Debt and Deficits", *Quarterly Journal of Economics*, 113 (3): 949–963.
- Bohn H., 2008. "The Sustainability of Fiscal Policy in the United States", in R. Neck and J. Sturm (eds.), *Sustainability of Public Debt*, MIT Press, 15–49.
- Brender A. and A. Drazen, 2005. "Political budget cycles in new versus established democracies", *Journal of Monetary Economics*, 52(7): 1271–1295.

- Brender A. and A. Drazen, 2008. "How Do Budget Deficits and Economic Growth Affect Reelection Prospects? Evidence from a Large Panel of Countries", *American Economic Review*, 98(5): 2203–20.
- Budina N. and S. van Wijnbergen, 2008. "Quantitative Approaches to Fiscal Sustainability Analysis: A Case Study of Turkey since the Crisis of 2001", *World Bank Economic Review*, 23(1): 119–140.
- Calmfors L., 2010. "The Role of Independent Fiscal Policy Institutions," *Seminar Papers*, 767, Stockholm University, Institute for International Economic Studies.
- Checherita-Westphal C. and P. Rother, 2012. "The impact of high government debt on economic growth and its channels: An empirical investigation for the euro area", *European Economic Review*, 56: 1392–1405.
- Cooper R., H. Kempf and D. Peled, 2010. "Regional debt in monetary unions: Is it inflationary?", *European Economic Review*, 54, (3): 345–358.
- Corsetti G., K. Küster, A. Meier and G. Müller, 2012. "Sovereign Risk, Fiscal Policy, and Macroeconomic Stability", *IMF Working Paper*, 12/33.
- De Paoli B., G. Hoggarth and V. Saporta, 2009. "Output costs of sovereign crises: some empirical estimates", *Bank of England working papers*, 362, Bank of England.
- De Grauwe P., 2011. "Governance of a fragile Eurozone", *CEPS Working Document*, 346.
- European Commission, 2009. "Sustainability Report 2009", *European Economy*, 9 / 2009, Directorate-General for Economic and Financial Affairs.
- Furceri D. and A. Zdzienicka, 2011. "How Costly Are Debt Crises?", *IMF Working Papers*, 11/280, International Monetary Fund.
- Kumar M. S. and J. Woo, 2012. "Public debt and growth", *IMF mimeo*.
- Larch M. and M. Salto, 2005. "Fiscal rules, inertia and discretionary fiscal policy," *Applied Economics*, 37 (10): 1135–1146.
- Lejour A., J. Lukkezen and P. Veenendaal, 2011. "Sustainability of government Debt in the EMU", in: *Meeuwen W. (eds.), The economic crisis and European Integration*, Edward Elgar (Cheltenham, UK, 2011): 35–54.
- Lukkezen J. and H. Rojas-Romagosa, 2012. "When is debt sustainable?" *CPB discussion paper*, 212.
- Padoan P., U. Sila and P. van den Noord, 2012. "Avoiding debt traps: financial backstops and structural reforms", *OECD mimeo*.
- Reinhart C. M. and K. S. Rogoff, 2010. "Growth in a Time of Debt", *NBER Working Paper*, 15639, National Bureau for Economic Research.
- Reinhart C. M. and M. B. Sbrancia, 2011. "The Liquidation of Government Debt", *NBER Working Paper*, 16893, National Bureau for Economic Research.

- Schuknecht L., J. von Hagen and G. Wolswijk, 2009. "Government risk premiums in the bond market: EMU and Canada," *European Journal of Political Economy*, 25(3): 371–384.
- Sturzenegger F. and J. Zettelmeyer, 2007. *Debt Defaults and Lessons from a Decade of Crises*, 1 edn, The MIT Press.

DEBT, ASSETS AND IMBALANCES IN THE EURO AREA AN AGGREGATE VIEW

Christophe Van Nieuwenhuyze¹

National Bank of Belgium

The recent developments in the euro area have shown how important it is that the various economic sectors pay attention to their financial positions. In the literature, the approach to analyse these positions is often partial, focusing on the government sector or just on the gross debt, as in the case of Reinhart and Rogoff (2010) and Cecchetti *et al.* (2011). This paper conducts an aggregate analysis of the debt positions of the euro area countries, taking account not only of the public debt but also of private sector debt and the financial assets of the various sectors (net debt). On the basis of this analysis, it emerges that euro area countries differ extensively in terms of their total net debt. In a context of hampered financial integration, the euro area might benefit from a reduction of these differences.

Keywords: Euro, financial crisis, Debt, Imbalances, Balance of payments, Net international investment position, Flow-of-funds, Economic governance.

The recent developments in the euro area have shown how important it is that the various economic sectors pay attention to their financial positions and particularly to the sustainability of their debt levels. The attention usually focuses on the government sector. Despite the Maastricht Treaty and the Stability and Growth

1. The views expressed in this paper are those of the author and do not necessarily reflect those of the National Bank of Belgium. I am particularly grateful for comments from and helpful discussions with Hugues Famerée, Hans Geeroms, Ivo Maes, Marc Maréchal and Vincent Périlleux. The paper furthermore benefited from presentations of earlier drafts at the ECB flow-of-funds workshop in November 2011, a LIME workgroup meeting at the European Commission in January 2012 and the 9th EUROFRAME Conference in June 2012.

Pact provisions, many euro area governments have not succeeded in reducing their gross debt to a level that can be considered sustainable, *inter alia* in the light of the financial crisis and the rising costs of population ageing.

In response, the euro area authorities have reformed and strengthened economic governance at the European level. Under the impetus of the new Treaty on Stability, Coordination and Governance (“Fiscal Compact”) and the “Six Pack”, not only public finances will be monitored more closely, but also general macroeconomic imbalances within the so-called macroeconomic imbalance procedure (MIP), in which debt indicators relating to both the public and private sector have an important weight.

In this context, this paper takes an aggregate view at the size of debt and compares the euro area countries' total indebtedness, that is the total of the public sector's debt and that of the other non-financial sectors, namely households and non-financial corporations. Furthermore, aggregate net debt indicators are constructed, in which the financial assets held by the various sectors also are taken into account.

Such an analysis shows that the euro area can be divided in two types of countries, on the one hand “deficit countries”, which have a high net debt level, and on the other hand “surplus countries”, where the gross debt is largely counterbalanced by the domestic sectors' financial assets and, as a result, the debt level is less problematic. On the basis of this aggregate net debt, also known as the net external assets (or net international investment position) with the sign reversed, the paper illustrates the connection between debt and competitiveness issues. Whereas a partial approach to the debt problem, by focusing on government gross debt only, is currently giving rise to a series of measures in order to reduce the public debt level, this aggregate analysis rather puts the euro area shortcomings down to the balance of payments of the Member States.

This view relates to a recent but growing literature citing other reasons than just public debt as the cause of the euro area crisis, such as Lane and Pels (2011), who point to current account imbalances, or Sinn and Wollmershäuser (2011), who likewise mention the current account differences, but who furthermore draw atten-

tion to a stagnating flow of funding from the “northern” to the “southern” EMU countries. Werner (2011) highlights bank lending to non-productive projects and Pisani-Ferry (2012) focuses on both fiscal and monetary economic policy constraints in the euro area. Finally, De Grauwe (2011) points to poor economic governance that focuses too much on the consolidation of public finances, and calls for more coordination and cooperation between the Member States. The latter point is also raised by Geeroms *et al.* (2011), along with a policy proposal for the issuance of debt instruments in the EMU backed by all Member States. This paper seeks to contribute to this literature by outlining a macroeconomic framework in which, taking indebtedness as a starting point, the link between debt and balance of payments imbalances is shown.

The paper is structured as follows. In Section 1, the various sectors' indebtedness in the euro area countries is compared. However, since debt levels vary greatly according to the definition used, this part begins with an overview of several debt definitions at the macroeconomic level. Section 2 looks at the relevance of these debt concepts for macroeconomic performances and/or financial stability. In Section 3, the link is established between debt and balance of payments problems by using a country's aggregate net debt; this part also divides the euro area into deficit and surplus countries. Section 4 focuses on the recent adjustments of these positions by using the sectors' financial balances, these being the difference between their revenue and expenditure. Within the euro area, a number of relationships can be identified for the development of these financial balances, both between the public and private sector and between the so-called surplus and deficit countries. Based on these findings, policy conclusions are drawn in Section 5. Section 6 concludes.

1. Sectoral debt positions in the euro area countries

1.1. Macroeconomic debt concepts

At the macroeconomic level, the national financial accounts are the best source for calculating the debt ratio of the various sectors, because these accounts present an overview of all financial assets

and liabilities for each institutional sector². However, the debt level is very dependent on the debt definition used. Various debt indicators can be calculated on the basis of the national financial accounts. So, the following concepts can be considered:

— Non-consolidated *versus* consolidated debt: on a consolidated basis, the calculation does not include financial transactions conducted within the same sector (for example lending between non-financial corporations);

— Gross *versus* net debt: financial assets are deducted from gross debt to calculate net debt.

Of course, the debt level also depends on the financial instruments regarded as debts. In line with the definition used by the European Commission (2012) in the context of the macroeconomic imbalance procedure (MIP), this paper defines a sector's gross debt as the funding obtained *via* "loans" (AF.4, in accordance with the financial accounts terminology) and *via* "securities other than shares" (or debt securities) (AF.3)³.

This definition applies the broadest possible debt concept taking account of the current quality of the underlying data. Narrower definitions are limited to the more accurately measured bank credit (taken from statistics provided by monetary financial institutions), but omit a substantial part of the funding of the sectors, particularly that of non-financial corporations. Conversely, broader definitions also include trade credit, for example, though the estimate is of lesser statistical quality.

As already stated, this paper analyses a country's aggregate debt position, taking account not only of the public debt but also of the debt of the non-financial private sectors, namely households (including non-profit institutions serving households) and non-

2. The national financial accounts (also known as the flow-of-funds accounts) form part of the national accounts and show the financial flows and corresponding stocks of an economy, broken down by institutional sector and financial instrument. Helped by recent improvements in their statistical quality and availability, they form a rich data source for analysing the causes and developments of the financial crisis in the euro area. They are published jointly by the European Central Bank (ECB) (quarterly basis) and the European Commission (annual basis). For a description of their use and applications, see Winkler (2010) and ECB (2011). For the United States, experience with such data goes back to Copeland (1952).

3. In the case of the government sector this definition also includes funding *via* "currency and deposits (AF.2)" and excludes "financial derivatives (AF.34)", following the terms of the Maastricht Treaty. However, these two categories are often negligible in relation to total debt.

financial corporations. The financial sector's debts are disregarded, because including them would lead to double counting; the debt of the financial corporations sector (S.12 in the statistical standards), which consists largely of financial intermediaries, is ultimately held by a domestic or external non-financial sector.

1.1.1. Non-consolidated versus consolidated debt

In contrast to the analysis of the public debt, the analysis of the private sector's debt position is less developed. For example, in the case of the private sector there is no accurate reference value such as the Maastricht Treaty's 60 per cent of annual GDP for public (or more precisely general government sector) debt. There is also much less of a consensus on the calculation of the private sector's debt ratio. In the case of the public debt, again in accordance with the Maastricht Treaty, the consolidated gross debt concept is used. In the case of the non-financial private sector there is less unanimity, and different concepts are often used simultaneously, sometimes owing to the absence of data. For instance, the "scoreboard" which the European Commission (2012) uses for its macroeconomic imbalance procedure refers to the non-consolidated gross debt for the private sector, partly because the consolidated debt concept is at this moment not available for each country.

Nonetheless, it is possible to draw up consolidated figures for most EU Member States on the basis of the specifications of the financial accounts, which provide information on the counterpart of each financial transaction. For that purpose, the financial transactions conducted within each resident sector are disregarded.

While non-consolidated data are primarily useful for getting an overview of the sectors' funding structure, consolidated data seem more suitable for assessing a sector's financial soundness. Indeed, lending between corporations—particularly between members of the same group—is generally more stable than bank lending and can be regarded as less risky in that respect. Moreover, it is difficult to make an international comparison of the estimated lending between non-financial corporations, *inter alia* because the classification of some finance companies (for example multinationals' treasury centres) is not always consistent, so that they are sometimes included in the non-financial corporations sector and sometimes not.

The difference between the consolidated and the non-consolidated data relates to a country's financial structure. For most sectors, the difference is generally small; the national financial accounts are actually compiled on the assumption that no financial transactions take place between households, so that—for this sector—the non-consolidated data are equal to the consolidated data, by definition. The biggest differences are usually recorded for non-financial corporations, since, as noted above, these may include certain finance companies which are not part of the financial sector.

1.1.2. Gross debt versus net debt

Up to now, our focus has been on gross debt, so that no account is taken of any holdings in the form of financial or non-financial assets, possibly counterbalancing those debts. The focus on gross debt is in many respects strange, certainly since policy makers concentrate on the sustainability of the debt positions, or in other words the associated insolvency risk. Sustainability studies are conducted almost exclusively for public debt, but they could equally be applied to the debt of the private sector. Although sustainability is a very popular and widespread concept among economists to underpin an economic policy that leads to a future economic environment which is stable and sound, there is no consensus on exactly how sustainability should be measured. In most cases “the law of motion of government debt” is used, according to which future changes in the debt ratio can be ascribed to movements in the primary balance, interest rate, growth rate and inflation⁴. However, there is a consensus that a projected exponential increase in the debt ratio can be regarded as unsustainable, and that many macroeconomic variables, including assets, must be taken into account in such a sustainability study. Although the assets are not explicitly mentioned in the law of motion of government debt, various public debt sustainability studies take them implicitly into account, for example by deducting them in advance from gross debt⁵, to arrive in fact at a net debt figure.

4. For an overview of various sustainability studies concerning public finances, see Balassone *et al.* (2011).

5. Technically they form part of the so-called “stock-flow adjustments” (European Commission, 2011).

For the government, the debate over whether or not the assets should be taken into account could be somewhat overstated, because the government's assets, particularly its financial assets, are often small (see also Hartwig Lojsch *et al.*, 2011). As such, the difference between gross and net debt may in fact not be very relevant. However, nothing could be further from the truth for the private sector, which normally holds more assets than it has debts. A risk analysis of the private sector's financial position based solely on gross debt may therefore be very misleading, because the assets form a buffer which can—to a varying extent—be used to meet repayments. Nevertheless, certain assets, such as owner-occupied residences, can be less readily used than other more liquid assets, such as savings account balances. This paper will therefore only deduct financial assets from total financial liabilities for the purpose of calculating net debt, which corresponds to net financial liabilities or net financial assets with the sign reversed⁶.

Our preference for net debt rather than gross debt is also supported by the “financial accelerator mechanism” (Bernanke and Gertler, 1989), which can be considered as the workhorse of modern macroeconomic models analysing the mutual relationship between financial and real developments. This mechanism assumes an inverse relationship between the external finance premium (the difference between the cost of external and internal funds) and the net wealth of the borrower in a context of asymmetric information. To the extent that net wealth is procyclical (for example owing to rising financial asset prices or profits during a boom phase), the extra interest cost will consequently fall (rise) in a boom (recession), further stimulating (curbing) economic growth. In their seminal study of the impact of sectoral balance sheet positions on macroeconomic activity, Bernanke and Gertler thus also attribute a crucial role to net debt or net wealth.

6. Within the system of national accounts, a distinction is made between net debt and net financial liabilities (*i.e.* liabilities—financial assets), with the latter also including non-debt instruments such as equities. However, for simplicity, this paper treats net debt as being identical with net financial liabilities by calculating net debt as the difference between total liabilities and total financial assets, including equities in both. The transition from gross to net debt in this paper is therefore given by: net debt = gross debt + equity financing - total financial assets including equities.

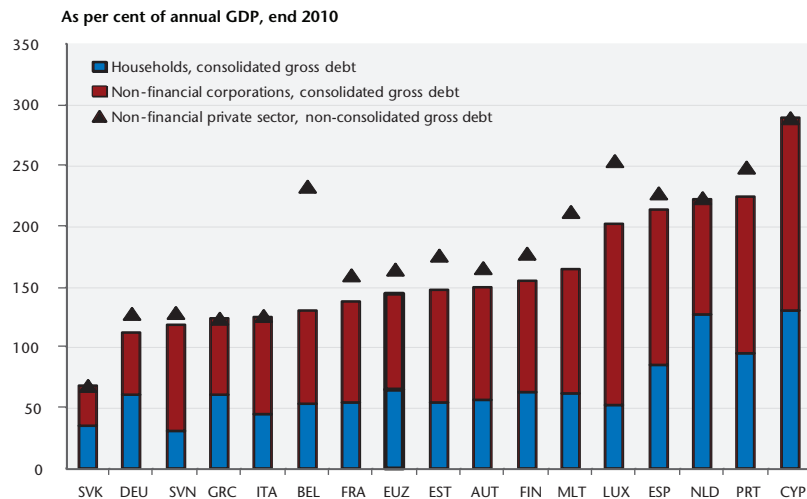
However, net wealth may present an optimistic picture of the financial situation if the asset price valuation is high or uncertain. Moreover, the capacity of the assets to be used as a basis for financing debts in times of crisis may be called into question, certainly in the event of a liquidity crisis or fire sales (Tirole, 2011). In that context, gross debt positions or other leverage indicators may become more important as a risk indicator. However, as already stated, this paper takes only financial assets into account, which in the case of the portfolio of the non-financial private sector are often highly liquid (for example savings accounts), even in the event of a liquidity crisis. As such, the error incurred by taking all financial assets fully into account, as in net debt or net wealth, is undoubtedly smaller than the error made when disregarding these assets, as in the case of gross debt.

1.2. Comparison between euro area countries

A comparison of the sectoral debt positions of the various euro area countries immediately shows that, in order to obtain an accurate assessment of the debt positions, it is necessary to be aware of the sometimes considerable differences between the various debt concepts (Table appendix).

The difference between consolidated and non-consolidated gross debt (Figure 1) may be substantial, in particular in the case of non-financial corporations. Thus, at the end of 2010 the non-consolidated gross debt ratio of non-financial corporations in Belgium stood at 179.7 per cent of GDP, compared to a consolidated figure of 77.5 per cent. Also in Luxembourg the non-consolidated debt is much higher than the consolidated debt. These differences are mainly attributable to lending between non-financial corporations, which is substantial in Belgium and Luxembourg. That may be due to the presence of corporate treasury centres which conduct financial transactions primarily for multinationals; the dividing line between these entities—classified as non-financial corporations—and financial corporations is thin. Their presence is often motivated by tax reasons, and/or the proximity of major financial centres. Their lending, which inflates their assets and liabilities to the same degree, and is in a second step also recorded as a liability of the final borrower, distorts the debt ratio of non-financial corporations.

Figure 1. Consolidated and non-consolidated gross debt of the non-financial private sector



Source: European Commission.

It therefore makes more sense to base an international comparison on the consolidated debt ratio, certainly since the estimation of financial transactions between non-financial corporations is statistically uncertain and may present some methodological differences, as indicated by the fact that lending between non-financial corporations in Slovakia and Greece is zero according to the national financial accounts.

A comparison of the consolidated gross debt ratio of the non-financial private sector (households and non-financial corporations) reveals widely divergent values. Countries such as Slovakia and Greece have a relatively low debt ratio (68.8 per cent and 124.1 per cent of GDP respectively at the end of 2010). The euro area average is 144.2 per cent of GDP. Conversely, in Cyprus, Portugal, the Netherlands, Spain and Luxembourg, the debt ratio exceeds 200 per cent of GDP.

There are also differences in the distribution of this private debt between firms and households. As in the euro area as a whole, the household debt ratio is lower than that of non-financial corporations in most countries. In the Netherlands, Germany and Slovakia, however, household debts exceed those of non-financial corporations.

The household debt ratio also exhibits large differences across countries. In the euro area, the average debt ratio at the end of 2010 was 65.3 per cent of GDP. Households in Slovenia, Slovakia and Italy have a relatively low debt ratio, of less than 50 per cent of GDP. At the other end of the spectrum are the Netherlands, Cyprus and Ireland where the debt ratio exceeds 100 per cent of GDP.

These significant differences can often be linked to institutional and fiscal factors. For instance, the high debt ratio of Dutch households is due partly to a favourable tax regime for first-time home buyers, whereby the interest charges on a mortgage loan are tax deductible for a maximum period of 30 years. Moreover, the Dutch mortgage market, just like that in Ireland, offers the option of home equity withdrawal, making it possible to borrow against an increase in the value of the home due to rising house prices to serve consumption or investment purposes. In addition, in 2010 more than half of the outstanding mortgage loans in the Netherlands were interest-only loans (De Nederlandsche Bank, 2011), which means that the borrower pays only the interest charges during the term of the loan and does not repay the principal until the loan expires. These conditions result in a higher household debt level, which should however be put into perspective. It is important to understand that such a tax climate also alters household behaviour on the assets side. For instance, it is usual for Dutch households to build up assets with a view to redeeming the principal at the end of the loan. Consequently, as a corollary to the high debt ratio in the Netherlands, the level of household assets is also high⁷ and should thus be taken into account when assessing the sustainability of the debt position.

An assessment of the debt position of the private sector as a whole on the basis of net rather than gross debt reveals a totally different picture: the Netherlands and Luxembourg top the ranking of the countries with the smallest debt burden. In their case, the private sector's assets far exceed its debts, so that on a net basis there is actually no longer a debt; instead, there are net financial assets. At the end of 2010 these stood at 154.0 per cent and

7. Note that a large part of the financial assets of Dutch households consist of pension fund reserves (around 60% of their total financial assets at the end of 2010), given the capitalization pension system. However, even when those assets are excluded, their financial assets still averaged some 120% of GDP.

106.2 per cent of GDP, respectively, in Luxembourg and the Netherlands. Also in Belgium, Italy, Germany, Malta, France and Austria the private sector's assets exceeded its debts. In the other euro area countries the assets fall short of the outstanding gross debt, so that the private sector in those countries still has debts on a net basis, the highest figures being recorded in Ireland and Estonia (around 110 per cent of GDP at the end of 2010). For the private sector of the euro area as a whole, net financial assets amounted to 43.7 per cent of GDP.

Whereas—in the context of the financial crisis and the debt crisis—the ranking of the countries on the basis of the private sector's gross debt looked somewhat surprising, with Greece and Slovakia among the stronger countries, and the Netherlands and Luxembourg among the countries with the highest gross debt, a ranking based on net debt provides a better indication of the resilience which the various euro area countries have displayed during the crisis.

The same analysis can be applied to the general government sector, although as already stated, the role of the assets here is generally less important. Also the difference between non-consolidated and consolidated gross debt is generally small for the government sector. In most countries, the government sector holds only 10 per cent of its own paper. In Belgium and Austria this fraction is somewhat higher, probably on account of the federal structure of these countries.

Countries with a high public debt are well known. In the euro area, Greece, Italy and Belgium had the highest debt ratio at the end of 2010. The euro area's average government consolidated gross debt ratio stood at 85.3 per cent of GDP. Only five of the 17 Member States (namely Estonia, Luxembourg, Slovenia, Slovakia and Finland) had a debt ratio below the Maastricht criterion of 60 per cent of GDP.

As in the case of the private sector, it is also possible to calculate a net debt ratio for the government sector. Since public financial assets are generally small, a classification of the countries on the basis of net government debt produces a similar outcome to a classification based on gross debt. Once again, Greece, Italy and Belgium have the highest government debt ratio. In contrast to the

situation for the private sector, the public sector only succeeds in recording net financial assets in a small minority of cases⁸; this applies to Estonia, Luxembourg and Finland. In the case of Estonia and Luxembourg, this positive position is primarily attributable to their governments' low gross debt, rather than to the size of their assets. Finland is an exception, with government financial assets amounting to 113.4 per cent of GDP at the end of 2010. However, Finland is a special case, because as a consequence of a national decision in 1993, government assets also include the pension assets built up with private employment pension institutions under the second pillar (OECD, 2010). While this creates a distortion for the net concept between the private and public sector, that is no longer the case if one considers the aggregate net position for the total economy (public and private sector together). This position will be discussed in the next section.

2. Link to economic growth and financial stability

The increased focus of economic policy on debt positions can be primarily attributed to a concern that a high debt level is detrimental to macroeconomic performances such as GDP growth. The events in the euro area have shown that excessive debt may also undermine financial stability, which in turn risks hampering economic growth.

Indeed, leading studies recently have confirmed that a high debt ratio is associated with lower economic growth. Reinhart and Rogoff (2010) demonstrate this negative relationship for public debt on the basis of a dataset covering 20 advanced economies over the period 1946-2009. Cecchetti *et al.* (2011) generalize this conclusion to the debt ratio of the total economy on the basis of a smaller dataset of 18 countries over the period 1980-2006. Both studies assume that the relationship is non-linear, and that the debt ratio only becomes detrimental for economic growth above a specific threshold value. Reinhart and Rogoff (2010) conclude that a public debt ratio of more than 90 per cent of GDP is associated

8. These net financial assets may be only temporary in view of the rising costs of population ageing. The latter costs can be seen as an implicit government liability which is not at present recorded on the government's balance sheet in the national accounts. If these costs were to be included in its liabilities, all governments would probably have net financial liabilities.

with lower GDP growth than if the public debt is smaller⁹. Cecchetti *et al.* (2011) confirm this threshold and furthermore put the threshold for the debt of both households and non-financial corporations separately, also in the region of 85-90 per cent of GDP¹⁰. However, the results for the private sector, particularly for households, are found to be less significant. Note that also the results of Reinhart and Rogoff (2010) for the public debt are debatable as shown in Nersisyan and Wray (2010).

The importance of these thresholds and the associated conclusions should furthermore be taken with caution in view of the differences between the various debt concepts illustrated in this paper. The threshold rules are formulated in very general terms and may in our view lead to inappropriate policy conclusions. First, both studies concentrate solely on the gross debt ratio. Furthermore, in Reinhart and Rogoff (2010) certain debt concepts are used alternatively. For instance, in their study the public debt ratio of European countries is the consolidated debt ratio, while in the case of the United States it is the non-consolidated debt ratio. At the end of 2009 the consolidated debt ratio in the United States was only 53 per cent of GDP, while the non-consolidated ratio stood at 84 per cent of GDP; this means that, in reality, the United States was much further away from the threshold than Reinhart and Rogoff assumed¹¹. Moreover, our analysis showed that the debt ratios for both the public and the private sector differ widely between countries. For some countries, it would thus imply an unrealistic effort to respect a general defined threshold value¹², whereas in the past those countries have not necessarily produced

9. In practice, GDP growth is roughly 1 per cent lower for the median of the group of countries with debts in excess of 90 per cent of GDP, compared to the group of countries with debts of less than 30 per cent of GDP (and 4 per cent for the average of these groups).

10. This study examines the effect on the growth of GDP per capita. A 10 per cent of GDP higher public debt ratio would cut the growth rate of GDP per capita by 0.1 per cent. The effect on this growth rate caused by an excessive private debt ratio would amount to roughly half of that figure.

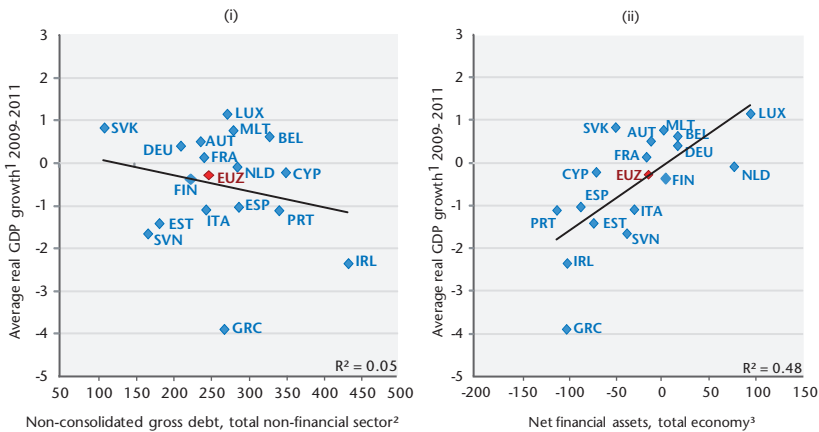
11. Note that Reinhart and Rogoff use central government debt, *i.e.* debt of the federal state, opposed to general government debt used in this paper, which includes apart from the debt of the federal state also the debt of the states and the local level.

12. These threshold values also found their way to economic policy. For example, in its MIP, the European Commission uses a threshold of 160 per cent of GDP for aggregate non-consolidated private debt. However, according to the Commission, this threshold should be seen as a warning signal and not as a target.

the growth performance which, in theory, they should have obtained on the basis of these papers' findings.

To arrive at a more nuanced view, we analyse in this paper the link between the debt level and GDP growth for both the non-consolidated gross debt and net debt ratios¹³ of the economy as a whole¹⁴. A scatter plot linking the average real GDP growth over the period 2009-11 and the level of first the gross debt ratio and second the net financial assets, *i.e.* net debt with the sign reversed (Figure 2), allows the following conclusions to be drawn.

Figure 2. Gross debt (i) and net financial assets (ii) versus GDP growth



1. Average annual real GDP growth over the period 2009-11.

2. As per cent of annual GDP, end 2010.

3. Difference between total financial assets and financial liabilities of the domestic sectors, as per cent of GDP, end 2010.

Sources: European Commission, ECB.

For the euro area, there is no significant relationship between a country's gross debt ratio and its real GDP growth over the most recent period (2009-11). For example, the total gross debt ratio of the Greek economy is close to the average, whereas its growth performance is the weakest in the euro area. On the other hand,

13. The results for the consolidated gross debt ratio are not commented on here, but the conclusions are broadly the same as those for the non-consolidated gross debt ratio.

14. Aggregate gross debt at the level of the total economy corresponds to the gross debt of the non-financial sectors. Net debt includes the financial sector, but the latter's contribution to net debt is generally close to zero owing to the definition used (liabilities—financial assets) and the virtual equality between both sides of the balance sheet of the financial sector in the national financial accounts.

Luxembourg's debt ratio is similar to that of Greece, but its growth performance during the crisis was far stronger. The gross debt ratio is therefore not sufficiently discriminating to separate the weak from the strong growth countries over the most recent period in the euro area.

The situation is different for net financial assets (or net debt with the sign reversed). The link between net financial assets and the recent growth performance is remarkably strong and positive. The higher the ratio of net financial assets, the higher was economic growth over the period 2009-11; the lower the net financial assets ratio, the weaker the growth performance was. Again, the conclusion is that net debt is more significant for explaining macroeconomic performances than the gross debt ratio. The policy conclusions which can be drawn from this relationship may be at odds with those of Reinhart and Rogoff (2010) and Cecchetti *et al.* (2011), as argued in the rest of this paper.

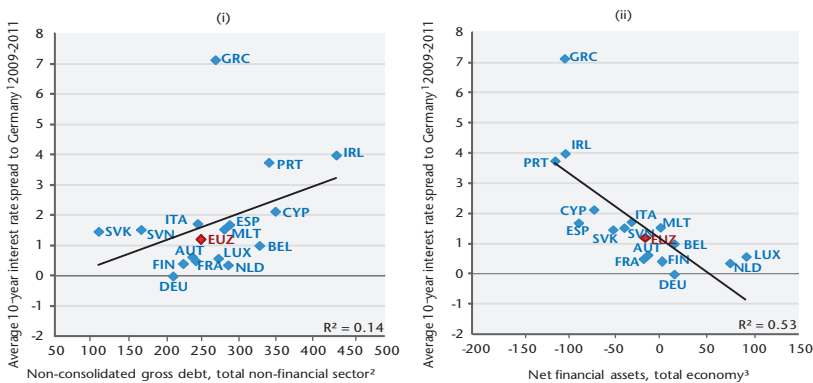
Like these two leading studies, we do not demonstrate any causal relationship between the debt ratio and economic growth, but at most a correlation. It should be noted that there might be a reverse causality, in which lower growth leads to a higher debt ratio (*via* lower government revenues or lower GDP). The same argument can be applied to net debt. Moreover, our analysis is confined to the most recent period. It is not our intention to generalize this relationship, since we believe that the broader economic context may influence it¹⁵.

The same exercise also illustrates the link between the debt positions of the countries and financial stability in the euro area. In the light of the sovereign debt crisis, we measure the financial instability of the countries on the basis of their average interest rate spread against Germany on benchmark government bonds with a maturity of 10 years over the period 2009-11 (Figure 3). Again, there is no clear link with the total gross debt ratio for this variable (Reinhart *et al.* (2012) largely confirm the absence of a clear link between, in their case, the level of gross public debt and the level of real interest rates), whereas the link with net financial assets is highly significant. Consequently, during the sovereign debt crisis,

15. The analysis by Cecchetti *et al.* (2011, see footnote 39) does not produce the same results as Reinhart and Rogoff (2010) regarding the impact on economic growth. They attribute these divergent results to a different sample period, which implies that the conclusions are indeed sensitive to the chosen time period and are difficult to generalize.

net financial assets were a robust indicator of countries with a vulnerable financial position. That finding is all the more powerful, given the general focus on the gross debt ratio, which also prevails among financial market participants. It shows that the financial markets, whether consciously or not, rightly take other factors into account to determine the financial soundness of a country, such as net financial assets.

Figure 3. Gross debt (i) and net financial assets (ii) versus 10-year interest rate spread



1. Average monthly 10-year government bond interest rate spread to Germany over the period 2009-11 in per cent. No data available for Estonia.

2. As per cent of annual GDP, end 2010.

3. Difference between total financial assets and financial liabilities of the domestic sectors, as per cent of GDP, end 2010.

Sources: European Commission, ECB.

3. Debt and balance of payments imbalances

As shown in Section 1 and 2, a country's net financial assets are a much more comprehensive debt indicator than gross general government debt, for example, or the gross debt of the private sector. The latter two indicators adopt a very partial approach to the debt issue, considering only one sector of the economy and disregarding the assets possibly offsetting the debts. In contrast, a country's net financial assets combine all sectors and take account of their financial assets as well as their debts. The total net financial assets, which—like the other debt indicators in this paper—are taken from the national financial accounts, correspond in conceptual terms to the net international investment position, compiled

on the basis of balance of payments information¹⁶. Although the two are conceptually the same, there may be differences between them in practice, owing to different valuation rules for outstanding assets and liabilities.

In addition, net financial assets illustrate the link between debt and competitiveness, as they indicate a country's aggregate net debt, namely its net creditor (+) or debtor (-) position relative to the rest of the world. Leaving aside valuation effects, an improvement in that position is only possible if the country records a surplus on its current account¹⁷. This illustrates the connection between debt and competitiveness which, at aggregate level, are closely interlinked. Indeed, in the end, the only way for a country to repay its national debt is to generate current account surpluses, which may require an improvement in competitiveness. The competitiveness position is therefore one of the elements which determines the sustainability of the debt position.

On the basis of net financial assets, the differences between the euro area countries are striking (Figure 4). Only a few countries have net financial assets (at the end of 2010 this was the case for Luxembourg, the Netherlands, Belgium, Germany, Finland and Malta). The other countries have net financial liabilities relative to the rest of the world; in Portugal, Greece and Ireland these liabilities exceed their GDP. Ranking the countries according to their net financial position clearly reveals the euro area countries perceived as risky during the crisis (Portugal, Ireland, Italy, Greece and Spain). Except for Italy, these countries are at the bottom of the ranking.

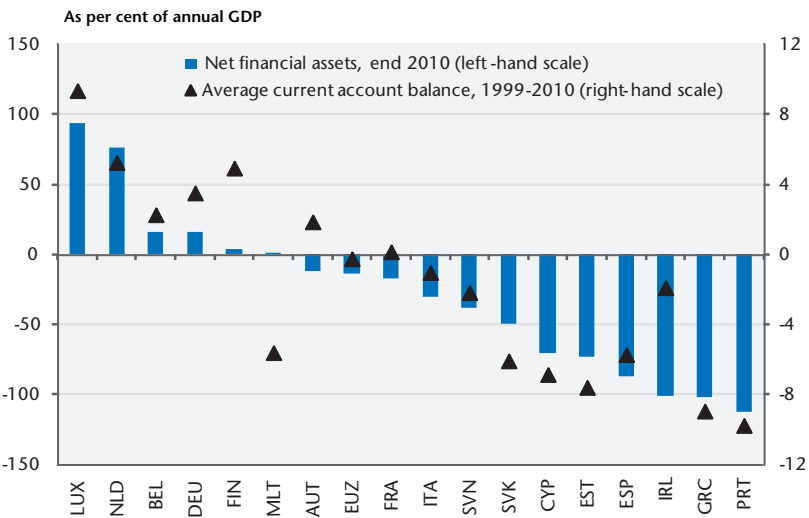
Another striking point is that the euro area as a whole has a fairly balanced external position. At the end of 2010, the net financial liabilities of the euro area came to only 13.9 per cent of a year's GDP. It can therefore be argued that the euro area as a whole, like the countries with net financial assets, is financially sound. These figures also put a different perspective on the debt problem of the

16. We base the analysis on net financial assets from the national financial accounts, and not on the net international investment position, primarily in view of the consistency of net financial assets with the calculated gross debt indicators.

17. To be precise, on the total of the current and capital account. Apart from valuation effects, net financial assets correspond to the cumulative balances on the current and capital accounts. In most cases, however, the capital account balance is negligible compared to the current account balance.

euro area and of certain countries. Rather than a debt problem, the euro area's difficulties can be defined as a deviation between balance of payments positions. Some countries have accumulated considerable debt positions relative to the rest of the world, notably to other euro area members, while other have accumulated assets. In the end, the euro area's difficulties could best be described as reflecting the heterogeneity of the Member States in that respect (as such, while the situation is sustainable for the euro area as a whole, this is not the case at the level of the Member States).

Figure 4. Net financial asset position and current account balance



To analyse the dynamics of these net asset positions and their possible correction, it is useful to divide the euro area countries into surplus and deficit countries. Since the size of the net financial assets is determined partly by volatile valuation effects—which are beyond the scope of this paper—we base our criterion for the division into deficit and surplus countries also on the average current account balance of the Member States over the period 1999-2010 (Figure 4). If the latter is positive while the country has a negative net asset position, the country is nevertheless classified among the surplus countries. In the opposite case, if the current account balance is negative while the net asset position is positive, the country is classified among the deficit countries. On the basis of

this criterion, the euro area counts six surplus countries (Luxembourg, the Netherlands, Belgium, Germany, Finland and Austria) and eleven deficit countries (Ireland, Portugal, Greece, Spain, Estonia, Cyprus, Slovenia, Slovakia, Italy, France and Malta)¹⁸. The classification of Austria and Malta is due to their current account. Note that the classification is by no means fixed, and also depends on the chosen period. In particular, the current account balance of some countries has recorded a trend over the years, which is in contrast to their classification. For instance, since 1999 the current account balance of Belgium and Finland declined considerably, although the balance was still positive at the end of 2010. Conversely, Estonia's current account has improved notably since 1999 and even records a positive balance since the end of 2009.

The fact that the classification is by no means fixed is in itself a sign that corrections are possible. In view of the relationship demonstrated in Section 2 between these net asset positions and macroeconomic performances, the deficit countries would benefit from eliminating their negative position. That would also lead to a more stable euro area, with more balanced external positions. This may require some coordination at the European level, whereby the surplus countries also might have to undergo some changes in their external position. The new macroeconomic imbalance procedure offers a useful tool to achieve such adjustment.

4. Adjustment of debt positions *via* the financial balances of the sectors

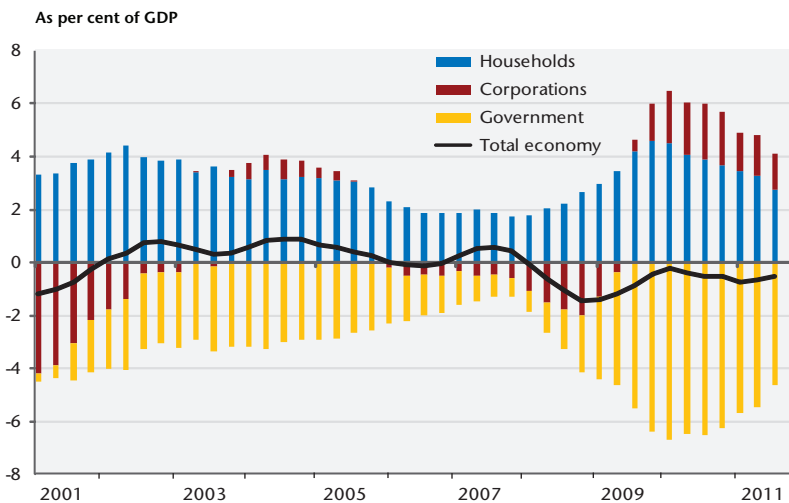
Changes in the stock of net financial assets take place *via* the aggregate net lending or borrowing of the domestic sectors, also known as their net lending to (+) or borrowing from (-) the rest of the world. These financial balances result from movements in income and expenditure. Leaving aside valuation effects, a positive financial balance leads to an improvement in net financial assets, and a negative balance leads to a deterioration. The development of the financial balances therefore offers a picture of the changes in net financial asset positions, for which, as previously argued, a

18. A similar breakdown of the euro area countries in two groups in the context of the sectoral financial accounts has been carried out by the ECB (2012).

reduction of the differences between the euro area countries would be desirable. In practice, this means that the deficit countries need to increase their net savings. The surplus countries can also help to reduce this difference. That might entail some coordination of economic policy at European level, since the policy choices of the various countries in a currency union have a significant impact on one another, as the pattern of financial balances in the euro area has shown.

The pattern of the financial balances over the first ten years in the euro area implies a number of relations, both between the behaviour of the private and government sectors and between the deficit and surplus countries. These relations follow in accounting terms from the quasi-equilibrium recorded by the euro area as a whole relative to the rest of the world. Since the start of EMU, the net savings of the euro area have been extremely stable. Since 1999 the financial balance has fluctuated between -1.5 per cent and +1.0 per cent of GDP (Figure 5). The euro area recorded small net savings from 2002 until 2007, while in other years there were slight net dissavings. The modest financial balances are directly linked to the absence of substantial deficits or surpluses on the current account of the euro area as a whole.

Figure 5. Financial balances: sectoral net lending (+) / net borrowing (-) in the euro area*



* Four-quarter cumulated sum.

Source: ECB.

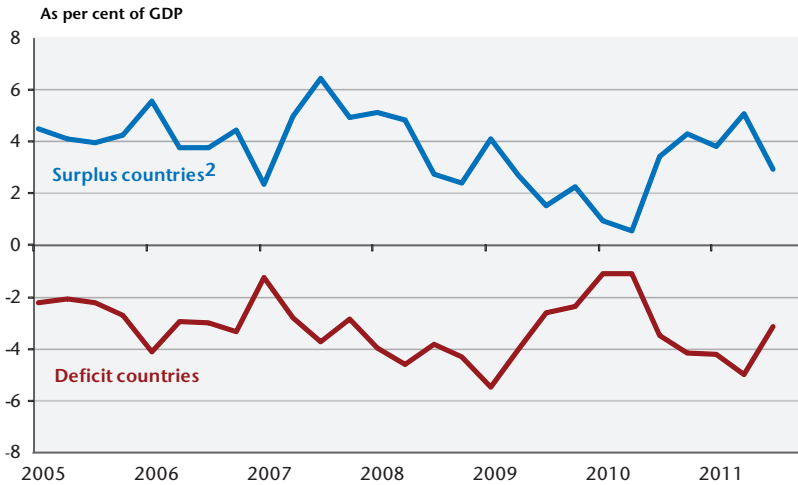
Given the external equilibrium at the level of the euro area, financial balances of the private and government sectors are the mirror image of one another, as are the balances of the surplus and deficit countries. In the past, increases in private sector savings, have partly offset in the euro area increases in government deficits. Likewise, improvements of the government balance have been associated with a fall in private net savings. However, the connection between these balances does not indicate any causal direction. The opposing movements can be attributed to Ricardian effects, according to which the private sector increases its savings when public finances weaken, or to an active role for fiscal policy in stabilising economic activity (“leaning against the wind”). In the past, this offsetting behaviour has avoided excessively negative effects on GDP growth of rising savings in either the private or the public sector. At the level of the economy, this compensatory behaviour turned out to be feasible since the aggregate net financial balance did not record any significant deficit.

There exists a similar relationship between the deficit and surplus countries (Figure 6). That relationship is best viewed in accounting terms from the angle of the external equilibrium recorded by the euro area as a whole. To the extent that this external balance remains unchanged, for example in the absence of an external demand stimulus due to a euro depreciation, this means that the scope for net savings in the deficit and surplus countries is given. For given net exports of the euro area, rising net savings in one group of countries must be associated with declining net savings in the other group of countries. The economic interpretation of this is that competitiveness improvements and hence rising net savings in one group of countries trigger a fall in net savings in the other group. Or that improvements in net exports of one group of countries can only be achieved if the other group of countries increases its net imports. If net exports of the euro area are unchanged¹⁹, improvements in some Member States’ financial balance (by increases in net exports) thus necessarily

19. In a way, EMU and the associated fact that Member States cannot devalue their currency has made it more difficult to manipulate net financial assets. A devaluation could lead to a sudden rise in net exports and thus in net savings (leaving aside valuation effects). In the absence of that option, countries with a problematic net financial position cannot rectify it as readily as in the past.

imply that other euro area countries will increase their net borrowing more strongly (by rising net imports).

Figure 6. Financial balances: net lending (+) / net borrowing (-) of surplus and deficit countries¹



1. Four-quarter cumulated sum.

2. Netherlands, Belgium, Germany, Finland, Austria and Luxembourg.

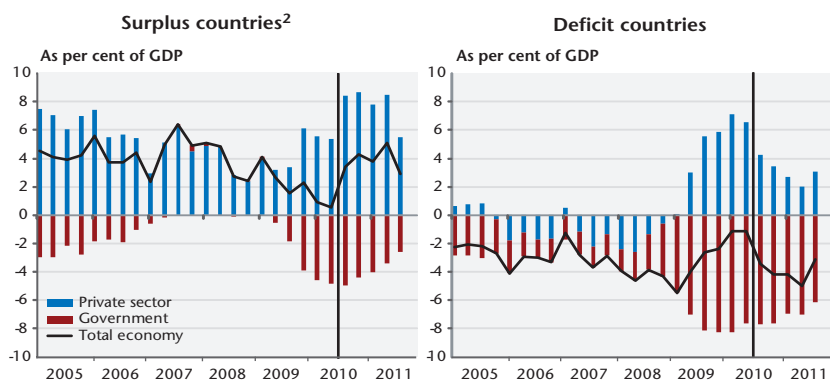
Source: ECB.

Dividing the euro area into deficit and surplus countries provides a picture of the link between the financial balances of the euro area countries, and thus of their recent saving results. For simplicity, the breakdown of the economies is limited to the private and government sectors, with no breakdown between households and non-financial corporations (Figure 7).

Over the period from 2009 to mid-2010, the financial crisis led to a substantial deterioration in public finances in both country groups. The deficit countries in particular recorded a sharp rise in budget deficits. By mid-2010, the average came to around 8 per cent of GDP in the deficit country group; in the surplus countries, the budget balance deteriorated from a pre-crisis balanced budget to a deficit of almost 5 per cent of GDP. However, in accordance with the historical pattern, these rising deficits were accompanied by an increase in private savings. The expansion in private savings was most marked in the deficit countries and actually led to a less negative aggregate financial balance. By contrast, the aggregate

financial balance of the surplus countries declined, though it remained positive. The reason for the sharp improvement in the financial balance of the private sector in deficit countries is mainly due to the position of corporations, which in turn may be linked to the various measures taken to promote competitiveness, including a relatively more favourable development of unit labour costs. Up to mid-2010 a rebalancing between the countries seems thus to have been initiated, with the deficit countries increasing their aggregate net savings and the surplus countries reducing them.

Figure 7. Financial balances: sectoral net lending (+) / net borrowing (-) of surplus and deficit countries¹



1. Four-quarter cumulated sum.

2. Netherlands, Belgium, Germany, Finland, Austria and Luxembourg.

Source: ECB.

However, the sovereign debt crisis and the ensuing general focus on reducing debt positions may have turned the attention away from rebalancing needs. Since mid-2010 both surplus and deficit countries have cut their government deficit. At the end of 2011, the average budget deficit had fallen to below the Maastricht Treaty's reference value of 3 per cent of GDP in the surplus countries; in the deficit countries, an average budget deficit of 6 per cent of GDP still looked problematic. However, unlike in the past, in the surplus countries, this was not accompanied by a net dissaving of the private sector. On the contrary, probably with a view to reduce their own debts, the private sector maintained a substantial level of savings. The aggregate net savings of the surplus countries thus increased further. Again, the deficit

countries presented a mirror image, with higher net borrowings from the rest of the world²⁰. The improvement in public finances was more than compensated by a considerable fall in private savings. Although this could point to a positive Ricardian effect, this nevertheless seems rather unlikely in view of the state of public finances. It seems more likely that the reduction in net savings in these deficit countries is due to the harsh economic situation which in some cases even led to a fall in GDP.

5. Policy conclusions: net financial assets as the yardstick

On the basis of an aggregate analysis of the debt positions of the euro area countries, taking account not only of government debt but also of private sector debt and the financial assets of the various sectors, this paper has shown that the aggregated net debt or the net financial asset position is an interesting policy variable, particularly for evaluating a country's financial stability. Corroborating the empirical and theoretical evidence described in Section 2, some additional evidence for that conclusion is presented in this section.

Although it is common to focus on the sustainability of government finances, partly as a result of the convergence criteria outlined in the Maastricht Treaty, this paper wants to stress that a country's solvency may also be determined by the financial position of the private sector. This aggregate financial position of an economy is summarized in a country's net financial assets, defined as the difference between the financial assets and financial liabilities of the domestic sectors. The theoretical and empirical evidence described in Section 2 already illustrated that this aggregate position is important to determine an economy's solvency. Note the distinction between a country's solvency and the government's solvency, which is in fact not always made²¹. The behaviour of the private sector may cause major differences between the two. For instance, the government often has net debts while in some cases

20. Sinn and Wollmershäuser (2011) draw attention not only to these differences, which are also reflected in the current account balance, but also to the existence of capital flight from the 'southern' to the 'northern' countries. In case of capital flight the underlying imbalances (that is those on the current account) tend to become less sustainable since they can no longer be financed privately.

the country has net financial assets. The total net financial assets seem to be crucial for assessing a country's solvency, although they might be equally decisive to determine a government's solvency.

The reason for this is that the domestic private sector is able to finance the government in case the economy is characterised by net financial assets. The government therefore does not necessarily need to depend on the international capital market to finance its deficits. It might rely on an extensive tax base which it can use, by a tax increase, at least to partly fund its deficits. The room for such a strategy is of course limited due to its repercussions on competitiveness and—depending where the ideal Laffer-taxation rate is situated—also on taxation revenues. Apart from taxation, the government can also draw on a voluntary basis on domestic savings for debt financing. A funding operation conducted by the Belgian government at the end of 2011 demonstrates that such a mechanism is not purely theoretical. As well as applying to the international capital market, the Belgian government regularly calls on private savings *via* its “State notes” (financial instrument specifically for retail savers resident in Belgium). At the end of 2011, these State notes were issued at a time when financial markets were experiencing severe tensions, and were charging the Belgian government a very high interest rate. The Belgian government offered private investors the possibility to subscribe to government paper on the same terms. The issue was a great success and the Belgian Treasury raised a total of €8.6 billion *via* this instrument in 2011, enough to cover 20 per cent of its total gross borrowing requirement in that year (National Bank of Belgium, 2012). This illustrates the point that a transfer of private savings to the public sector is not purely theoretical. Although this funding flow was partly due to the relatively high interest rate offered on State notes, it shows that the government of a country with net financial assets may be less dependent on the international capital market, and thus can tolerate a higher debt. The aggregate net

21. Since the Maastricht Treaty, a public deficit has often been associated with an external imbalance, and consequently a deterioration in net financial assets of a country. This explains why government deficits are often the reason why the financial markets impose a risk premium on the country or on its ‘currency’, although that risk premium should, in principle, depend on a currency's total supply and demand, namely the net lending (+) / borrowing (-) relative to the rest of the world, or in cumulative terms, its net financial assets.

financial assets are therefore a key solvency indicator, for both the country and the government, as already illustrated in Section 2.

The net financial assets are also relevant in constructing a solution for the euro area, certainly in view of the balanced position of the euro area as a whole. This equilibrium indicates that the euro area countries are capable of resolving the Member States' funding problems themselves, provided that capital flows take place between Member States. Countries with international (private and public) reserves, that is the surplus countries, can use those reserves to finance the deficit countries. That puts the European Union (2012) initiatives concerning possible recourse to the international reserves of countries such as China to finance the euro area countries in another light. These plans aim to set up a special purpose vehicle funded by China and other growth countries, which would then grant loans to the euro area Member States. This implies a recourse to China's international reserves, which would in principle be the same as resorting to the international reserves of the surplus countries in the euro area.

Finally, the net financial assets can be used as a guide for the assessment of euro area exit costs and thus the feasibility of such an event. An exit country would immediately have to cope with a devaluation. Such devaluation would mean a revaluation of the external debt so that, expressed in the devalued currency, it would further increase. As shown in Section 2, the net external debt already exceeds GDP in a number of Member States, making it unlikely for such an exit country to meet its liabilities, and will thus be forced into default. Since much of this debt is owed to the other euro area countries, this would also imply substantial losses for the remaining Member States, making an exit less likely.

6. Conclusion

This paper presents an aggregate analysis of the debt positions of the euro area countries. It takes account not only of government debt but also of private sector debt and the financial assets of the various sectors. Taking account of financial assets to assess the financial position is in line with the approach of Bernanke and Gertler (1989) and complements the analyses of gross debt positions by Reinhart and Rogoff (2010) and Cecchetti *et al.* (2011).

On the basis of this analysis, it emerges that euro area countries differ extensively in terms of their total net (external) financial assets. In a context of hampered financial integration, the euro area might benefit from a reduction of these differences in external financial positions (by rebalancing current accounts). This implies that the deficit countries (countries with a negative net financial asset position or an aggregate net debt) should increase their net savings, preferably by improving their competitiveness. The surplus countries (countries with net financial assets) can help to reduce this difference by taking account of the need for the deficit countries to become more competitive.

Reducing the differences between external financial positions in the EMU seems to be crucial since current account imbalances in the Member States of a currency union can only be maintained if there is close financial integration. However, the experience of the financial crisis has shown that the financing of current account deficits in the euro area cannot be taken for granted. In that context, the EU's new macroeconomic imbalance procedure, which also monitors the external position of a country, for example by means of the net international investment position, is warmly welcomed.

This paper's findings open up various avenues for future research. In particular, there is a need for a better understanding of the causes of the external imbalances in the euro area, their recent development and the appropriate ways of correcting them—for example by closer coordination of economic policy between the various countries—and the contribution of the new EU economic governance in that regard. For assessing the financial position it is preferable to take account of assets as well as liabilities. In addition, there is a need to know more—within the limits imposed by data availability—about the characteristics of those assets and liabilities (maturity, liquidity) and how they relate to the various sectors. Microeconomic data can be useful here. Finally, the impact of valuation effects on the net asset position and the composition of the assets could also be examined, in view of their importance illustrated in this paper, for example in assessing the costs of a country's potential exit from a monetary union.

References

- Balassone F., J. Cunha, G. Langenus, B. Manzke, J. Pavot, D. Prammer and P. Tommasino, 2011. "Fiscal Sustainability and Policy Implications: a Post-crisis Analysis for the Euro Area", *International Journal of Sustainable Economy*, 3 (2): 210–34.
- Bernanke B.S. and M. Gertler, 1989. "Agency Costs, Net Worth, and Business Fluctuations", *American Economic Review*, 79 (1): 14–31.
- Cecchetti S.G., M.S. Mohanty and F. Zampolli, 2011. "The Real Effects of Debt", *BIS Working Paper* 352.
- Copeland M., 1952. *A Study of Money Flows in the United States*, New York: National Bureau of Economic Research.
- De Grauwe P., 2011. "The Governance of a Fragile Eurozone", *CEPS Working Document* 346.
- De Nederlandsche Bank, 2011. "Overview of Financial Stability in the Netherlands." Spring, 17-19.
- ECB, 2011. "The Financial Crisis in the Light of the Euro Area Accounts: A Flow-of-Funds Perspective", *Monthly Bulletin*, October, 99–120.
- ECB, 2012. "A Sectoral Account Perspective of Imbalances in the Euro Area." *Monthly Bulletin*, February, 37–43.
- European Commission, 2011. "Public Finances in EMU", *European Economy* 3.
- European Commission, 2012. "Scoreboard for the Surveillance of Macroeconomic Imbalances", *European Economy, Occasional Paper*, 92.
- European Union, 2012. "Factsheet EU-China Summit", *EU memo*, 14 February .
- Geeroms H., W. Moesen and S. De Corte, 2011. "The EU at a Crossroads: An Action Plan", *CES Policy Brief*.
- Hartwig Lojsh D., M. Rodriguez-Vives and M. Slavik, 2011. "The size and composition of government debt in the euro area", *ECB Occasional Paper* 132.
- Lane P.R. and B. Pels, 2011. "Current Account Imbalances in Europe", Working paper prepared for the XXIVth Moneda y Credito Symposium, Madrid.
- National Bank of Belgium, 2012. *Annual Report 2011*, Brussels.
- Nersisyan Y. and L.R. Wray, 2010. "Does Excessive Sovereign Debt Really Hurt Growth?", A Critique of *This Time Is Different*, by Reinhart and Rogoff, Levy Economics Institute of Bard College, *Working Paper*, 603.
- OECD, 2010. *OECD Economic Surveys: Finland 2010*.
- Pisani-Ferry J., 2012. "The Euro Crisis and the New Impossible Trinity", *Bruegel Policy Contribution*, Issue 2012/01.

- Reinhart C.M., V.R. Reinhart and K.S. Rogoff, 2012. "Public Debt Overhangs: Advanced-Economy Episodes Since 1800", *Journal of Economic Perspectives* 26 (3): 69–86.
- Reinhart C.M. and K.S. Rogoff, 2010. "Growth in a Time of Debt." *American Economic Review*, 100 (2): 573–78.
- Sinn H.-W. and T. Wollmershäuser, 2011. "Target Loans, Current Account Balances and Capital Flows: The ECB's Rescue Facility", *NBER Working Paper*, 17626.
- Tirole J., 2011. "Illiquidity and All its Friends", *Journal of Economic Literature*, 49 (2): 287–325.
- Werner R., 2011. "Economics as if Banks Mattered: A Contribution Based on the Inductive Methodology", *The Manchester School*, 79, supplement 2, 25–35.
- Winkler B., 2010. "Cross-checking and the Flow of Funds", in L.D. Papademos and J. Stark (eds) *Enhancing Monetary Analysis* (Frankfurt am Main: European Central Bank), 355–80.

Appendix

Table. Debt ratios, euro area
(As per cent of annual GDP, end 2010)

	Non-financial corporations		Households	Total private sector ¹	General government		
	Non-consolidated, gross	Consolidated, gross	Gross ²	Net ³	Non-consolidated, gross	Consolidated, gross	Net ³
Euro area	99.3	78.9	65.3	-43.7	92.3	85.3	57.6
Belgium	179.7	77.5	53.1	-96.5	109.7	96.2	80.2
Germany	66.5	50.2	61.6	-71.0	87.4	83.2	50.6
Estonia	121.6	93.3	54.5	109.2	7.1	6.7	-36.5
Ireland	222.4	n.a.	118.9	111.1	n.a.	92.5	50.5
Greece	63.4	63.4	60.7	15.6	n.a.	144.9	89.4
Spain	141.6	128.2	85.7	46.1	67.8	61.0	39.8
France	104.7	82.3	55.1	-41.9	93.3	82.3	58.8
Italy	81.4	80.4	45.0	-69.0	124.7	118.4	99.1
Cyprus	159.2	158.9	130.1	n.a.	104.9	61.5	n.a.
Luxembourg	201.6	149.3	52.3	-154.0	20.1	19.1	-49.9
Malta	149.3	102.0	62.7	-58.0	74.4	69.0	51.8
Netherlands	96.3	94.9	127.1	-106.2	71.7	62.9	34.4
Austria	109.0	93.0	56.8	-31.8	84.9	71.8	43.7
Portugal	153.1	128.8	95.5	48.6	104.0	93.3	63.5
Slovenia	97.7	87.3	31.1	36.9	47.0	38.8	0.8
Slovakia	32.9	32.9	35.9	34.6	45.7	41.0	24.7
Finland	114.8	92.1	62.9	65.1	53.0	48.3	-65.1

1. Including the financial sector.

2. For households, the consolidated concept equals the non-consolidated concept since the financial transactions between households in the financial accounts are assumed to be zero.

3. Net debt calculated as the difference between total financial liabilities and total financial assets. A negative sign indicates that assets exceed liabilities.

n.a. = data not available.

Sources: European Commission, ECB.

FISCAL RULES
RÈGLES BUDGÉTAIRES

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THE GERMAN “DEBT BRAKE”: A SHINING EXAMPLE FOR EUROPEAN FISCAL POLICY? ¹

Achim Truger

Berlin School of Economics and Law, Berlin, Germany

Henner Will²

Macroeconomic Policy Institute (IMK) at Hans-Boeckler-Foundation, Duesseldorf, Germany

Many observers consider the German “debt brake” beyond criticism. In the current crisis, many European countries have difficulties refinancing their budgets, while the German Treasury’s funding conditions are most favourable. The “fiscal compact’s” call for the introduction of German-style “debt brakes” in the constitutions of other countries in order to rebuild their credibility on financial markets therefore might seem reasonable. However, there are several reasons to doubt the underlying (macro-) economic reasoning. Two specific problems of the German debt brake are analysed in greater detail: Firstly, the German rule is neither simple nor transparent. The calculation of structural deficits is a complex matter highly sensitive to specification and therefore open to political manipulation. Secondly, the debt brake will ultimately have a procyclical effect because of the way the commonly used cyclical adjustment method works. This will, as a result, destabilise the economy. The German debt brake can therefore hardly serve as a good example for other countries.

Keywords: Germany, Debt brake, Euro zone, Euro crisis, Sovereign debt.

1. This paper builds on a German paper published as “Gestaltungsanfällig und pro-zyklisch: Die deutsche Schuldenbremse in der Detailanalyse”, in: Clemens Hetschko, Johannes Pinkl, Hermann Pünder, Marius Thye (eds.): *Staatsverschuldung in Deutschland nach der Föderalismusreform II—Eine Zwischenbilanz*, Hamburg, Bucerius Law School Press, 2012, which was translated into English by Hugh Keith. We would like to thank Daniel Zeng for most valuable research assistance. We benefitted from very helpful comments and suggestions by Catherine Mathieu, Henri Sterdyniak, Trevor Evans and Eckhard Hein. We are also grateful to the participants of the session “Fiscal rules” at the 9th EUROFRAME Conference in Kiel on 8 June 2012—especially to our discussant Wim Suyker—and the participants of the conference “Financial Crisis and the Politics of Economics” at the Berlin School of Economics and Law on 10 May 2012 for valuable comments on an earlier version of the paper. The usual disclaimer applies.

2. Henner Will died in a traffic accident on 18 November 2011, shortly after the calculations and a preliminary German version of this paper had been completed.

When most EU governments pledged at the end of 2011 to introduce stricter limits on public debts and deficits, where possible incorporating them into the Constitution, this resulted primarily from an acute sense of panic in the face of the continuing escalation of the Euro crisis. For the first time, even the bonds of hitherto unaffected countries had come under pressure in the financial markets. But the fact that European governments resorted to the German approach of constitutionally fixed debt brakes certainly also has something to do with the allegedly easily demonstrable success of the German example. Germany incorporated the debt brake into its Constitution back in the summer of 2009, just before the onset of the Euro crisis. In 2010, the federal government introduced a sizeable package of cuts for the following years in order to steadily reduce the structural deficit in the transition phase to the target figure of 0.35% of gross domestic product (GDP) permissible from 2016 onwards. The federal budget for 2011 was already drawn up to comply with the new transitional regulations. The results appear impressive: The federal government claims that it has clearly over-fulfilled the requirements, and the entire government budget deficit for 2011 was only 0.8% of GDP. Therefore, it might seem logical to regard the German debt brake as a tried and tested instrument of a successful and solid fiscal policy and declare it a shining example to all of Europe. The inclusion in Germany's "Basic Law", or Constitution, of stringent limits on sovereign debt, it is argued, enhances the country's credibility on the financial markets, leading to lower risk premiums and, hence, easier public sector financing (see Heinemann *et al.*, 2011). This logic suggests that exporting the German debt brake or similar fiscal rules to the euro zone countries currently in crisis would be a major contribution to solving the euro crisis (see also GD 2011, p. 51).

In contrast to the views just sketched, we consider that logic and the economic policy currently implemented at the European level to be fundamentally flawed and believe that it would jeopardise the survival of the euro for three major reasons. First, it is misleadingly reductive in tracing the cause of the euro crisis back to unstable fiscal policy in the countries currently experiencing difficulties. Second, it almost completely ignores the effect of imbalances in foreign trade and the responsibility of the euro zone

countries that are (still) currently strong in economic terms. Third, it remains bizarrely attached to the long-discredited assumption that financial markets are rational (for all three points see Horn *et al.*, 2010; IMK/OFCE/WIFO, 2011, 2012). We also believe that a debt brake is not, in principle, a rational (macro-) economic tool for limiting sovereign debt (see e.g. Horn *et al.* 2008).

In this paper, however, we do not intend to broaden this fundamental criticism but, instead, to look in greater depth at two key aspects of it: Firstly the problem of intransparency and openness to manipulation of the notion of a structural deficit and secondly that of an inherent tendency towards pro-cyclical fiscal policies. Assuming that financial markets are even partly rational in economic terms, these problems raise serious doubts about the claimed ability of the German debt brake to boost confidence and bring stability to market expectations. The existing economic literature on fiscal rules suggests that certain “quality requirements” go hand in hand with sound and adequate rules. A rule should, by these criteria, be simple and transparent (see Kopits and Symanski, 1998). The assumption is clear: the primary aim of a rule is to protect electorates and financial markets against what may sometimes be self-serving behaviour on the part of politicians. If, however, neither electorates nor markets are able to understand the rule, then that rule does not seem particularly useful. As we shall set out in this paper, the rule currently being applied by the German government is neither simple nor transparent. Calculating structural deficits is a highly complex process, and since the German government withheld important information, there was a period when not even experts were able to replicate the government’s calculations. Such calculations are also extremely sensitive to changing specifications, so outcomes are open to political manipulation. The inherently pro-cyclical nature of the German rule, and the concomitant risk of a policy that will exacerbate a crisis, are unlikely to secure the long-term confidence of the financial markets.

The paper is structured as follows. Section 1 begins with a short account of the debt brake and some of the principal conceptual problems of a debt brake from fiscal policy and macroeconomic points of view. Sections 2, 3 and 4 comprise the technical detailed analysis and use the authors’ own simulations to demonstrate that the methodology used by the government of the Federal Republic

(the *Bund*) on the basis of the European Commission's cyclical adjustment method is very much open to manipulation and will produce pro-cyclical outcomes. Section 2 shows the enormous scope for interpretation opened up by the method. Section 3 then provides an overview of how the German government has actually been using the resulting margins to give itself budgetary leeway in the transitional period up to 2016. Section 4 illustrates in detail the problem of the pro-cyclical susceptibility to revision of the European Commission's method. A dynamic simulation provides the first explicit illustration of the budget balancing method for two economic scenarios explicitly linked to the authors' own tax revenue estimates, to demonstrate the impact of the debt brake on budget targets during the transitional period up to 2016. It shows that the margins that appear currently to exist will be progressively eroded by a (not too large) downturn in the economy. Ultimately, further discretionary consolidation measures beyond the government's plan to cut spending and raise taxes—its so called Future Package—will then be required to meet the targets set out under the debt brake. Finally, section 5 draws some economic policy conclusions.

1. Introduction to the debt brake and its fundamental problems

1.1. The key characteristics of Germany's debt brake

The debt brake written into Germany's Constitution in 2009 is essentially comprised of three elements. The **structural component** imposes strict limits on structural government deficits—0.35% of GDP for the federal level (the *Bund*) and 0.0% for the federal states (the *Länder*). The **cyclical component** increases or decreases these limits in accordance with the country's economic situation. An **exception clause**, finally, permits the rules to be broken in exceptional circumstances. The *Bund* also has an "adjustment account", which ensures the debt brake applies not only when the country's budget is drawn up but also when it is implemented. Transitional periods for complying with these limits on structural deficits are written into the constitution: 2016 for the *Bund* and 2020 for the *Länder*. The legislation also provides for consolidation aid for five *Länder* (Berlin, Bremen, Saarland,

Saxony-Anhalt, and Schleswig-Holstein) under strict conditions. The debt brake targets, in fact, even go a little further than is necessary to enable Germany to meet its medium-term national budget targets: under the preventive arm of the European Stability and Growth Pact, Germany is allowed a structural deficit equivalent to 0.5% of GDP.

1.2. Fundamental problems with the debt brake from a fiscal policy and macroeconomic perspective³

We cannot go into the details of Germany’s fiscal policy before the introduction of the debt brake. It is sufficient to say that this policy has been traditionally pro-cyclical for more than 30 years and that between 2000 and the crisis in 2008/2009, its dangerous mix of continual tax cuts and the rigid pursuit of a balanced budget caused severe damage to growth and employment, substantially widened existing inequalities in the income distribution, and weakened the country’s public finances (Hein and Truger, 2005, 2007; Jacoby and Truger, 2002; Truger, 2004, 2009, 2010). There was, therefore, good reason for a change of course. However, the change of course represented by the debt brake can be criticised on at least five grounds.

Firstly, the capping—now anchored in the German Constitution – of structural government net borrowing at 0.35% of GDP for the *Bund* and the banning of all structural deficits by the *Länder* is, economically speaking, completely arbitrary. It means that with an average annual growth in nominal GDP of 3%, the national debt-to-GDP ratio will converge to just 11.7% in the long run. We do not contest that there are arguments for some ceiling on the debt ratio, but—if anything—recent empirical research indicates that the critical threshold beyond which a government deficit might harm growth is 80% or even 90%.⁴ We fear that by imposing artificial limits on what is traditionally the safest form of financial investment, the debt brake will instead deprive capital markets of a

3. For a more thorough and detailed analysis of the shortcomings of the debt brake approach in the European context see the contribution by Mathieu and Sterdyniak in this issue.

4. See for example Caner *et al.* (2011); Cecchetti *et al.* (2011); Checherita and Rother (2010); Kumar and Woo (2010); Ostry *et al.* (2010); Reinhart and Rogoff (2010). However, as Nersisyan and Wray (2010) have convincingly demonstrated, such studies suffer from serious methodological shortcomings and should, therefore, hardly be taken as a guideline for economic policy.

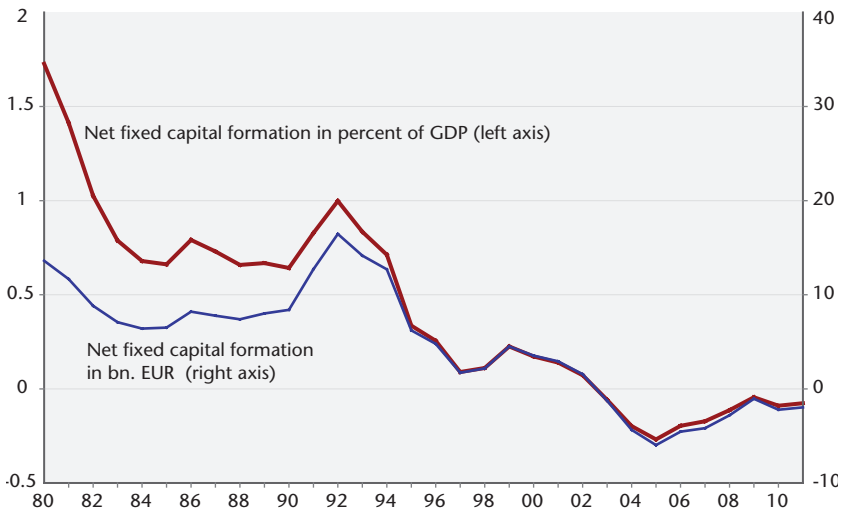
crucial stability factor and a vital benchmark. It is unclear into which forms of investment, and to which countries, the traditionally high excess savings of the German private sector (including the assets of private pension schemes) will be diverted in the future, but it is likely that this measure will render the financial markets considerably less stable in the long term.

Secondly, by using a debt brake, Germany's fiscal policy is ignoring a broadly accepted economic yardstick for the scale of national deficits—the “Golden Rule”—and thus turning its back on 60 years of theoretical common sense. This Golden Rule, or the “pay-as-you-use” principle, is a growth-oriented rule for government deficits that permits structural deficits beyond the cycle equivalent to net public investment. The idea behind the rule is to involve several generations in financing public capital accumulation, since future generations will benefit in terms of greater prosperity from the productive investments made now (see Musgrave, 1959). It is true that the old rules governing borrowing by both the *Bund* and the *Länder* in the German constitution were imperfect: they were unable to distinguish between gross and net investment and, moreover, they failed to include all forms of economically relevant investment. However, there was no discussion around a more workable definition or an estimate of depreciation—just as there was not with the Maastricht criteria or the European Stability and Growth Pact—and the government ignored recommendations made by the Council of Economic Experts (SVR 2007), a body not exactly known to endorse runaway sovereign debt. Moreover, the lamentable trend in net public investment both in absolute terms and relative to GDP shows the urgency of writing into the country's constitution a rule to promote public investment. Net government investment has almost continuously fallen in Germany over the last 30 years—in recent years the public capital stock has, in effect, been shrinking (Figure 1).

Thirdly, possibly the most serious problem associated with the debt brake is that it was introduced at a time when public budgets were markedly underfinanced in structural terms, as they have for many years come under repeated strain from tax cuts. The long-term tax reductions adopted in the wake of the global economic and financial crisis and Germany's “Growth Acceleration Act”

were in the dimension of almost EUR 30 billion a year (Truger and Teichmann, 2011). Where governments are expected to balance their budgets in structural terms—or to come very close to doing so—on a given date without already having closed the revenue gap, their budget policy faces years of stringent pressure on spending. In macroeconomic terms, this is an extremely risky course of action with potentially negative impact on growth and employment as adjustments are made, particularly against the backdrop of the precarious economic situation in the euro zone as a whole, and it will unquestionably go hand in hand with substantial cuts in the provision of public goods, services and welfare. And if this then leads (as it almost inevitably will) to the necessary public investment being scrapped or cut in future years, the much-vaunted principle of “generational fairness” will be greatly damaged. Moreover, substantial spending cuts are difficult to justify with the argument that expenditure policy in the past has been wasteful: On the contrary, the debt brake affects German public sector budgets after a period of extremely moderate expenditure growth (Truger and Teichmann, 2011). The decision to implement the debt brake and couple it with generous, long-term tax relief was, therefore, worse than negligent in terms both of economic impact and of national policy.

Figure 1. Government net investment in billion EUR and in % of GDP, Germany (1980-2011)



Source: AMECO (spring 2012).

Fourthly, the impact of the debt brake is also, of course, critically dependent on its precise technical design and on how the underlying cyclical adjustment method and the applicable budget sensitivities are selected. Although the *Bund* has already opted for the method used by the European Commission as part of its own monitoring of member states' budgets, the decision as to the details of implementation is taken by the Ministries for Finance and Economics, so the mechanism is anything but transparent and is open to manipulation. As far as the *Länder* are concerned, for many of them detailed implementation is still an open question. And since, under Article 109 of the constitution, there is considerable scope for local input, Germany could by 2020 have no fewer than 17 different debt brakes, one for the *Bund* and one for each of the *Länder*, all with widely differing designs and effects.

Fifthly, and finally, the debt brake will ultimately have a pro-cyclical effect because of the way the commonly used cyclical adjustment method works and will, as a result, destabilise economic development. During times of downturn, too much consolidation will be required while, conversely, too little will be required during periods of recovery.

The last two areas of criticism will be explored in greater detail in this paper.

2. Vulnerability to manipulation in theory: the problem of determining structural deficits

2.1. Introduction to determining structural deficits

The debt brake is supposed to let public sector budgets breathe with the economy; in other words, the automatic stabilisers are supposed to operate freely. A calculation therefore needs to be made as to which changes in the deficit can be attributed solely to cyclical factors and, hence, the automatic stabilisers, and which part of the deficit is structural and must, therefore, be capped under the debt brake. When a cyclical adjustment method is used, this usually determines the notional economic situation (potential or trend output). The mismatch between this notional situation and the actual situation is known as the "output gap". Where this is positive, the state of the economy dictates that surpluses are

achieved, but where it is negative, economic deficits are permitted. The calculation of the scale of the permissible deficit or surplus is then based on the product of the output gap and the so called “budget sensitivity”. The latter reflects the impact of changes in the economic cycle on the government budget and is calculated empirically (see Girouard and André, 2005). The structural deficit is then determined after deducting the previously calculated cyclical deficit.

Germany’s Ministry of Finance employs the following formula in calculating the structural deficit under the debt brake:

The structural deficit d_t^{STRUK} as a percentage of potential nominal GDP (Y_t^{POT}) is, therefore, the total deficit (revenue minus expenditure: $E_t(Y)_t - A_t$) set against potential nominal GDP minus the cyclical deficit, which in turn is the product of the sum of the semi-elasticity of revenue (ε_E) and the semi-elasticity of expenditure (ε_A) of the automatic stabilisers (budget sensitivity) and of the nominal output gap ($(Y_t - Y_t^{POT})/Y_t^{POT}$).

$$d_t^{STRUK} = \frac{E_t(Y_t) - A_t}{Y_t^{POT}} - (\varepsilon_E + \varepsilon_A) \frac{Y_t - Y_t^{POT}}{Y_t^{POT}} \quad (1)$$

However, there are many possible ways of calculating output gap and budget sensitivity, and these produce radically divergent results in terms of calculating the structural deficit and, hence, determining budgetary policy. Determining potential output has already proved both difficult and unreliable (Horn *et al.*, 2007). As well as univariate methods, such as the Hodrick-Prescott filter—proposed by the German Council of Economic Experts—and the modified Hodrick-Prescott filter, which is used in Switzerland (Bruchez, 2003), a wide range of diverse multivariate estimation methods are also available, such as the one used by the European Commission.

2.2. The European Commission’s method for determining potential

Germany’s legislation implementing the debt brake—the Article 115 Act—has opted “by means of a statutory instrument and without the consent of the *Bundesrat*, [to] stipulate the details of the procedure for determining the cyclical component in conformity with the cyclical adjustment method applied within

the framework of the European Stability and Growth Pact. The procedure shall be reviewed and developed further on a regular basis taking the current state of knowledge into account.”⁵

The European Commission estimates potential output by means of a Cobb-Douglas-production function. This is derived from potential labour input (the product of the working age population, the participation rate and per capita hours of work minus structural unemployment), capital input (the product of gross fixed investment in relation to potential output and potential output minus a constant depreciation) and total factor productivity or TFP (in the former method, this was expressed as a Solow residual with Hodrick-Prescott filtering, while in the new process, it is expressed as Kalman-filtered capacity utilisation) (see D’Auria *et al.*, 2010). The individual elements can be portrayed formally as follows:

$$Y_t^{POT} = (L_t^{POT})^\alpha (K_t)^{1-\alpha} TFP_t \quad (2)$$

$$L_t^{POT} = \left(BEA_t \frac{E_t + U_t}{BEA_t(1 - NAWRU_t)} \right) \frac{H_t}{E_t} \quad (3)$$

$$K_t = \frac{I_t}{Y_t^{POT}} Y_t^{POT} + (1 - \delta_t) K_t \quad (4)$$

with Y^{POT} as the potential output, L^{POT} as the labour potential, K as capital accumulation, TFP as the total factor productivity, BEA as working age population, E as employees, U as the unemployed, $(E+U)/BEA$ as the participation rate, $NAWRU$ as the non-accelerating wage rate of unemployment, H/E as per capita hours of work, I/Y^{POT} as the gross fixed investment in relation to potential output, and δ as the rate of depreciation.

The estimate of potential output is a medium-term projection based on short-term forecasts (one to two years). All the elements in the formulae used are forecast separately: demographic trends, the participation rate, structural unemployment, per capita hours of work, the investment ratio, the rate of depreciation (usually a

5. Para. 5(4) of Article 115 of the law of 10 August, 2009 (German Federal Gazette (BGBl.) I, pp.2702 and 2704).

constant), and the TFP, either as a filtered Solow residual or as Kalman-filtered capacity utilisation. The model solution is derived using statistical software. The estimate is calculated for all EU Member States using semi-standardised specifications but with different details. The specifications are normally adjusted every six months.

2.3. The “current state of knowledge” allows for substantial margins of interpretation⁶

The formulation “in conformity with” used in the Article 115 Act suggests at first glance that the German government is applying the European Commission’s method very precisely. Comparison with the “current state of knowledge” shows, that the government has in fact left itself a generous margin for interpretation. However, even if it were to comply with the letter of the European Commission method, this would not shed much light on what is actually happening: in 2010, the Commission itself amended its calculation method twice in twelve months (Table 1). First, in its spring forecast, it outlined a modified method (III – new TFP, spring), which identifies total factor productivity as less sensitive to cyclical factors than under the old method (I – old TFP, spring). However, in its autumn forecast, the European Commission made a further modification to the new method (IV – new TFP, autumn), in which the variables represented by the participation rate and per capita hours of work were adjusted. Despite this, it also reflected the old method in its autumn modifications (II – old TFP, autumn). This means that for 2010, a key year in terms of determining the adjustment path to the final structural deficit target in 2016, there were no fewer than four different EU methods for cyclical adjustment. Accordingly, for any given budget sensitivity, four cyclical components and correspondingly four structural deficits could be calculated, each with a markedly different impact on budget policy.

The impact of these four different methods of calculation should not be underestimated. With actual federal net borrowing of EUR 44.8 billion, and assuming a budget sensitivity of 0.248, the

6. The analysis below is based on calculations similar to those already outlined in Horn *et al.* (2011).

2010 structural component ranges from EUR 19 billion to EUR 35 billion, depending on the method and the version applied (Table 3b, reference scenarios).

Table 1. Descriptions of the EU Commission methods 2010

EU Commission Methods		
No.	Description	Changes from I
I	Old method, spring version	—
II	Old method, autumn version	Per-capita-working hours with slightly decreasing trend, slight decrease in participation
III	New method, spring version	Exogenous estimation of total factor productivity
IV	New method, autumn version	Exogenous estimation of total factor productivity; Per-capita-working hours with slightly decreasing trend, slight decrease in participation (changes from II and III combined)

Source : EU Commission.

The output gap and cyclical component values calculated by the German government in formulating its 2011 budget do not match any of these values, even though the assumptions relating to growth were compatible with those of the European Commission. Without providing detailed data concerning its assumptions, the German government announced an output gap for 2011 of -0.6% of GDP (using the old EU method) and a cyclical component of EUR -2.5 billion. These figures were, thus, outside the range of estimates produced by the four versions of the European Commission method, showing that the government did not slavishly apply any version of the European Commission method(s).

In fact, there is considerably greater scope for further modification. The Joint Economic Forecast in autumn 2010 did exactly that, making explicit reference to the European Commission method, though unfortunately not applying it transparently (GD, 2010, p.44). Although the Joint Economic Forecast results cannot be reproduced because some data have been withheld, the changes that have been published can be interpreted as in line with the “current state of knowledge”. Thus, we introduce similar modifications and the estimates calculated for output gap and structural

deficit can be regarded as permissible under the German debt brake. Table 2 contains details of the modifications, while Table 3a reproduces the output gaps and Table 3b the structural deficits. First, the data for the four reference ranges from Table 1 are listed, with a distinction made between two different datasets (spring and autumn). Then each reference is modified in accordance with the changes in Table 2 and the new calculation—again, differentiated according to dataset—is presented. This produces a total of eight modifications, four calculation methods and two datasets ($4 \times 2 \times 8$), or 64 different figures for output gap and structural deficit. To these must be added the eight unmodified reference ranges ($4 \times 2 = 8$), resulting in a total of 72 different structural deficits. Figure 2, finally, illustrates the distribution of the structural deficits. These calculations show that, assuming the actual budget balance to be EUR 44.8 billion in 2010, the structural component of the balance ranges from EUR -44 billion to EUR -13 billion, with a mean of EUR -30 billion. Obviously, this is anything but a precise method.

Table 2. Sensitivity analysis based on variations of joint forecast, autumn 2010 (“state of scientific knowledge”)

No.	Description	Further changes from I
V	Population growth	Annual decrease of 0.4% from 2009 onwards
VI	Participation rate	Annual increase by +0.4% from 2009 onwards
VIIa	Working hours per capita	Annual decrease of 0.4% from 2009 onwards
VIIb	Working hours per capita	Constant 2008 value (1426 hours) from 2011 onwards
VIII	“Structural” unemployment	Hodrick-Prescott-Filter of unemployment rate
IXa	Investment ratio (2009)	Constant from 2009 onwards
IXb	Investment ratio (2011)	Constant from 2011 onwards
X	Total factor productivity	Annual increase by +0.4% from 2009 onwards
XI	Sum of potential increasing effects	VI + VIIb + X
XII	Sum of potential increasing effects	V + VIIa + VIII + IXa

Source: Authors' calculations of the basis of data from the Joint Economic Forecast Project Group's autumn 2010 forecast.

Table 3a. Output gap estimates for 2010

In % of potential GDP

	I - Old TFP Spring	II - Old TFP Autumn	III - New TFP Spring	IV - New TFP Autumn
Reference, spring data	-2.65	-2.40	-3.86	-3.62
Reference, autumn data	-1.47	-1.34	-1.82	-1.69
Modification V spring data	-2.65	-2.40	-3.86	-3.62
Modification V autumn data	-1.21	-1.08	-1.57	-1.44
Modification VIa spring data	-2.65	-2.66	-3.86	-3.87
Modification VIa autumn data	-1.47	-1.48	-1.82	-1.83
Modification VIb spring data	-2.37	-2.36	-3.59	-3.58
Modification VIb autumn data	-1.12	-1.11	-1.48	-1.47
Modification VII spring data	-2.52	-2.26	-3.74	-3.48
Modification VII autumn data	-1.56	-1.44	-1.92	-1.80
Modification VIII spring data	-2.12	-1.87	-3.34	-3.09
Modification VIII autumn data	-0.57	-0.44	-0.93	-0.80
Modification IX spring data	-2.65	-2.40	-3.86	-3.62
Modification IX autumn data	-1.47	-1.34	-1.82	-1.69
Modification X spring data	-1.84	-1.83	-3.06	-3.05
Modification X autumn data	0.04	0.04	-0.32	-0.32
Modification XI spring data	-3.52	-3.28	-4.74	-4.49
Modification XI autumn data	-1.94	-1.81	-2.61	-2.48

Source : EU Commission, authors' calculations of the basis of data from the Joint Economic Forecast Project Group's autumn forecast.

Table 3b. Structural budget balance in 2010

In % of GDP

	I - Old TFP Spring	II - Old TFP Autumn	III - New TFP Spring	IV - New TFP Autumn
Reference, spring data	-27.1	-28.8	-19.1	-20.7
Reference, autumn data	-34.8	-35.6	-32.5	-33.4
Modification V spring data	-27.1	-28.8	-19.1	-20.7
Modification V autumn data	-36.4	-37.2	-34.1	-35.0
Modification VIa spring data	-27.1	-27.1	-19.1	-19.1
Modification VIa autumn data	-34.8	-34.7	-32.5	-32.5
Modification VIb spring data	-29.0	-29.0	-20.9	-21.0
Modification VIb autumn data	-37.0	-37.0	-34.7	-34.8
Modification VII spring data	-28.0	-29.7	-19.9	-21.7
Modification VII autumn data	-34.2	-35.0	-31.9	-32.6

Table 3b (continued). Structural budget balance in 2010

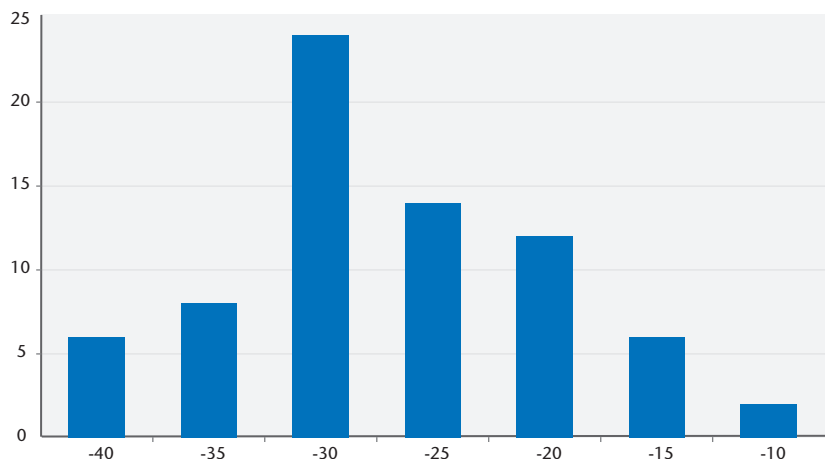
In % of GDP

	I – Old TFP Spring	II – Old TFP Autumn	III – New TFP Spring	IV – New TFP Autumn
Modification VIII spring data	-30.6	-32.2	-22.6	-24.3
Modification VIII autumn data	-40.4	-41.3	-38.2	-39.0
Modification IX spring data	-27.1	-28.8	-19.1	-20.7
Modification IX autumn data	-34.8	-35.6	-32.5	-33.4
Modification X spring data	-32.4	-32.5	-24.4	-24.5
Modification X autumn data	-44.2	-44.2	-42.0	-42.0
Modification XI spring data	-21.4	-23.0	-13.2	-14.9
Modification XI autumn data	-31.7	-32.6	-27.4	-28.2

Source: EU Commission, authors' calculations of the basis of data from the Joint Economic Forecast Project Group's autumn forecast.

Figure 2. Histogram of estimated structural budget balances for 2010

Number of scenarios with structural budget balances in the dimension of -10 to -40 billion euros



Source: EU Commission, authors' calculations of the basis of data from the Joint Economic Forecast Project Group's autumn forecast.

3. Vulnerability to manipulation in practice: The Federal German government's use of margins

As the discussion above has demonstrated, there is broad scope for judgement in the loosely defined framework for how “the” European Commission method may be interpreted. When contextualised against the impact of individual modifications, this can be

instrumentalised for political ends without the need for justification by reference to the legislation. For example, the method can be selected, or modified at intervals, so as to expand budgetary margins at a given time. During the 2011 budget process, this gave rise to accusations from various quarters that the German government was “playing tricks” with the debt brake. In fact, the procedure followed by the government appears to have been entirely correct from a formal legal perspective; what the accusers were objecting to was the lack of clarity and scope for manipulation that automatically resulted from the method.

From a transparency and credibility perspective, however, the government’s failure to clarify the specific cyclical adjustment method it was using was highly problematic. The original justification for the draft budget and funding plan contained graphic representations showing the permissible structural deficits and cyclical components calculated for 2011 and subsequent years of the transition period on the basis of the 2010 structural deficit as a starting point. However, there were no concrete data relating to the method used; not even the term “budget sensitivity” featured, let alone explanations of how it was determined. The government belatedly, and at the urging of some of the MPs on the Budget Committee, provided some additional information, yet even here—as Section 2 makes clear—the information was decidedly thin on detail.

The conversion of the funding to the German Labour Agency (*Bundesagentur für Arbeit*), from a loan to a direct, non-repayable grant in 2010 was a deliberate manipulation to widen the budgetary scope, originally with the aim of implementing as fully as possible the tax cuts set out in the coalition agreement. A loan would have been deficit-irrelevant under the debt brake, since the payment to the agency would have been offset by a corresponding asset—the claim on the agency. However, converting that loan into a grant increased the actual 2010 deficit and, hence, also increased the structural deficit for the year. This structural deficit was then used to calculate the permissible deficit for each year in the transitional period, during which the deficit must be reduced by equal stages of one sixth of the initial value each year until, in 2016, the deficit has been reduced to the permissible maximum of 0.35% of GDP (around EUR 10 billion). This adroit increase in the

base value for the deficit increased the starting point for this chain of reductions, also allowing higher permissible structural deficits during the transitional period (something referred to by some critics as the “ski jump effect”). Meanwhile, the higher 2010 deficit then disappeared automatically in 2011 because of the way the funding was designed and without any real measures to balance the budget being necessary.

The margins created by this manipulation have now all but disappeared for two reasons. First, favourable employment trends mean that the *Bundesagentur für Arbeit*'s funding requirement has fallen from more than EUR 16 billion to just EUR 6.9 billion. Second, the government has designed its measures to reflect budget sensitivities very consistently by setting a higher value of 0.248 for 2010, which also included that part of the cyclical components accounted for by the *Bundesagentur für Arbeit*, whereas for subsequent years, the value was a lower 0.16, which related solely to the budget of the *Bund*. The resulting higher cyclical component for 2010 reduced the initial structural deficit by just over EUR 4 billion, so the residual higher base value is minimal. Moreover, the government reduced that higher base value by using the permissible—but unconventional—statistical device of recording one-off revenue from auctions of mobile telephony licences (over EUR 4 billion) as a “structural deficit reduction”. This, at least, was not a repeat of the “ski jump effect”, although this does not change the fact that the German government originally tried to use exactly that device and other accounting tricks to create budgetary margins for its planned fiscal policy.

In fact, the “ski jump effect” did then operate in another context. In its 2011 budget, the government set its tax revenue estimates and the overarching calculation of cyclical components and structural deficits against the upturn in the economy—but not the corresponding estimates for 2010. In strict legal terms, it was not required to, but this is a loophole in the rules, which omit to specify how, when, and on the basis of precisely which data the initial structural deficit for 2010 is determined. This trick enabled the government not just to comply fully with the debt brake in its 2011 targets but actually to overshoot it by just under EUR 5 billion.

One further curious fact was that, by its own admission, the government had used the old EU method for its 2011 budget calculations, since—it claimed—it was unable to move to the new method for technical reasons. That is more than improbable, given that the new method had been in the public domain since spring 2010, and once the European Commission had put the details online, moving over to the autumn version of it would have taken a few hours or one working day at most. Following identification of the basic parameters for the 2012 national budget, the government then gained further room for manoeuvre by belatedly moving its calculation of the output gap to the new EU method, resulting in an increase in the estimated negative output gap for 2011 from 0.6% of GDP to 1.0% of GDP, even though at the same time the 2011 GDP growth forecast was itself increased from 1.8% to 2.3%. This switch of method meant, paradoxically, that the upturn in the economy produced a marked increase in that part of the deficit permissible on cyclical grounds.

Overall, then, the past conduct of the German government clearly confirms suspicions that using such a technically complex method virtually inevitably produces a lack of transparency and scope for manipulation. Although the Ministry of Finance (BMF) eventually published its data and results following persistent criticism in spring 2011⁷, it still falls well short of achieving the transparency demonstrated by the European Commission, which publishes the entire scheme for its calculations, including datasets, online. As far as exploiting the “ski jump effect” is concerned, the government failed to make a retrospective correction, despite massive protests by influential institutions including the Council of Economic Experts and the *Bundesbank* (see SVR, 2010; *Deutsche Bundesbank*, 2011), an apparently justifiable decision, given the associated negative macroeconomic and public finance effects (IMK/OFCE/WIFO, 2011 and 2012), although not exactly a model of transparent and credible implementation of fiscal rules.

7. http://www.bundesfinanzministerium.de/nr_nn_4322/DE/Wirtschaft_und__Verwaltung/Finanz_und__Wirtschaftspolitik/Wirtschaftspolitik/1103311a7001.html?__nnn=true

4. The risk of pro-cyclical policy

4.1. The underlying problem of all deficit rules: budget deficits are endogenous and mostly immune to political control

The debt brake sets a ceiling on structural deficits of 0.35% for the *Bund* and of 0.0% for the *Länder*. As in the Stability and Growth Pact, these ceilings are tied to binding targets for deficits as a percentage of economic output. This can be summarised in the following simple mathematical formula:

$$\text{Deficit}_t = \frac{E_t(Y_t) - A_t}{Y_t} = \text{target deficit} = \text{const.} \quad (5)$$

We shall, for the moment, leave aside the question of whether this target deficit is a general one or a structural one—that is, whether it has been adjusted for cyclical factors or not. What is more important is the functional dependence of revenue (E) on economic output (Y), while expenditure (A) is less markedly dependent and, therefore, not portrayed as functionally dependent.

During an economic upturn (when Y increases), there are two main effects. First, the denominator of the fraction rises and so the deficit falls automatically when revenue and expenditure reach a certain level. Second, however, state revenue in particular rises, so when expenditure reaches a certain level, the deficit also falls in absolute terms as expressed in the numerator. Both effects reduce or increase the actual deficit in an upturn and a downturn respectively. If a government aims to reach its target deficit in each period, this means that during an upturn, expenditure may also rise, whereas it has to be cut during a downturn. This runs counter to the fundamental aim of a fiscal rule, which is to avoid pro-cyclical growth in expenditure. Moreover, estimates for both GDP and revenue are usually beset with uncertainty, with the result that it is very difficult to ensure compliance with the rule even when managing the current year’s budget. And even when the budget calculations are complete, there are still often major revisions of the data—such as the GDP figure—which bring further *ex-post* uncertainty. If the German debt brake calculations use potential, rather than actual, GDP data to determine the target deficit, then this reduces the problem of the pro-cyclical nature of the tool but

does not, as the next section explains, do away with it completely (for a fuller account see Anderson and Minarik, 2006).

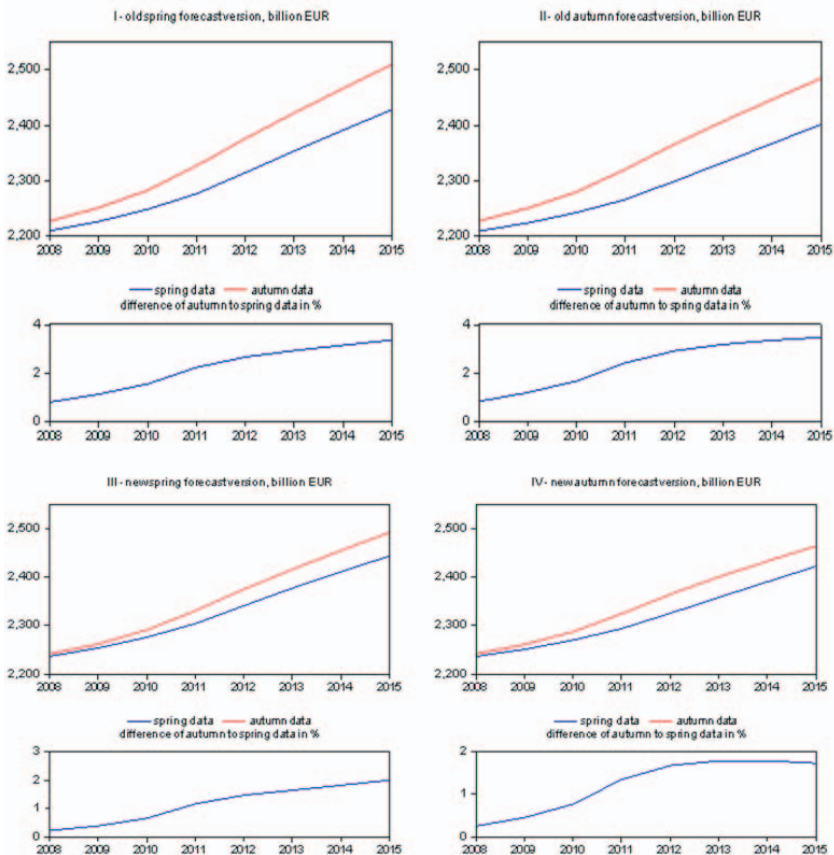
4.2. The issue of the marked susceptibility to revisions of “potential output”

The method used by the German government is not only highly imprecise and open to manipulation, but its use also tends by nature to produce a pro-cyclical fiscal policy that confounds the automatic stabilisers. In an upturn, the permissible deficit tends to be too large, causing additional overheating in the economy; in a downturn, deficit values are too small, placing a further brake on economic growth.

The pro-cyclical nature of the method is particularly well illustrated by the figures for 2010. There are two different datasets, those for the European Commission’s spring and autumn 2010 forecasts respectively. The data vary markedly between the Commission’s spring 2010 forecast and its autumn 2010 forecast, when the economic situation and outlook improved substantially: for example, the forecast for real GDP in 2010 was revised upwards by EUR 60.8 billion, while that for 2011 was also revised upwards, by EUR 75.5 billion (index values at constant prices). The modified database leads in all four versions of the EU Commission’s method to a significant increase of between 2% and 4% in potential output, as Table 4 illustrates. Figure 3 shows the effect of the modification of the database for the four different versions of the EU Commissions’ method over the whole time horizon from 2008 to 2015.

The method that is adopted has a substantial and quantifiable impact on the estimate for nominal GDP and potential output. The method that is least affected by cyclical factors is the spring version of the new method: in this version, the EUR 46.9 billion increase in the GDP forecast in 2010 and the EUR 73.1 billion increase for 2011 produce changes in the estimated potential of EUR -5 billion and EUR 18 billion respectively. The autumn version of the old method is, by contrast, the one most affected by cyclical factors: EUR 20.5 billion and EUR 49.7 billion respectively—that is, more than 50% and more than 70% of the increase in GDP respectively—are added to potential, meaning that potential itself rises markedly because the economy is doing better.

Figure 3. Effect of a change of data on potential output for the four different versions of the EU Commission’s method



The extent to which potential is reliant on cyclical factors is, however, not merely an academic detail but is of direct practical relevance for Germany’s budget policy in the context of the debt brake: on the basis of the new potential values, and in combination with the new GDP values, output gap values must be recalculated which, when multiplied by the relevant budget sensitivity figure (0.248 in 2010 and 0.16 in 2011), produce a further change in the cyclical components. This change ranges from EUR 6.6 billion (2010) to EUR 3.7 billion (2011) in the autumn version of the old method and from EUR 12.9 billion (2010) to EUR 8.8 billion (2011) in the spring version of the new method. Hence, the forecast

economic upturn produces radically different reductions in the permitted cyclical deficit, depending on the version used.

Table 4. Pro-cyclical revision and weakening of the automatic stabilisers

A revision of the GDP forecast of € 46.9 bn (2.4% nominal growth) in 2010 and € 73.1 bn (cumulated 3.4% nominal growth) in 2011 leads to...

		a change in potential GDP in bn. €	a change in output gap in bn. €	a change in the cyclical budget deficit in bn. €	a change in the cyclical budget deficit at constant potential GDP in bn. € ⁴	pro-cyclical deviation due to endogenous potential GDP revision in bn. €
I Old spring forecast version	2010	17.4	29.5	7.3	14.8	7.5
	2011	45.1	27.9	4.5	13.9	9.4
II Old autumn forecast version¹	2010	20.5	26.4	6.6	14.8	8.2
	2011	49.7	23.3	3.7	13.8	10.1
III New spring forecast version²	2010	-5.0	51.9	12.9	15.0	2.1
	2011	18.1	55	8.8	14.1	5.3
IV New autumn forecast version³	2010	-1.9	48.8	12.1	15.0	2.9
	2011	22.8	50.3	8.0	14.0	6.0

1. Changes in hours p.c. worked, participation rate

2. Changes in TFP

3. Changes in hours p.c. worked, participation rate and TFP

4. Product of percentage-point revision, budget sensitivity and potential GDP with spring data, at constant prices

Source: EU Commission. authors' own calculations

The cyclically determined figure for budget consolidation derived in this way does not, however, equate with the actual cyclically determined impact of the higher growth forecast on public budgets, which depends directly on the forecast growth in actual GDP against constant potential and is, therefore, markedly higher. In a period of economic recovery, this results in the cyclically determined budget consolidation varying according to the method and version used; fiscal policy prevents the automatic stabilisers from having their full effect and, for this reason, is too expansive in pro-cyclical terms or conversely, in a downturn, produces an excessively contractionary pro-cyclical effect.

In the simulations we have carried out, the effect is of a very significant magnitude. In the case of the pro-cyclical autumn version of the old method, the *Bund* would have excessive margins for 2010 and 2011 of EUR 17 billion, while in the case of the least pro-cyclical spring version of the new method, the margins would still be just under EUR 7.5 billion. This picture is reversed in the case of a downturn: in such a situation, the budget would have too

little economic room for manoeuvre and this would pro-cyclically strengthen the downturn, with the automatic stabilisers weakened by between 15% and 70%, depending on the version.

4.3. Simulating a future economic downturn⁸

The issue of the impact of such a debt brake on the future of federal budget policy becomes particularly significant in the event that Germany undergoes another period of weak economic growth, which is currently far from unlikely. To the best of the authors' knowledge, there are no *ex-ante* simulations of the impact such a scenario would have within the framework of a debt brake. The only simulations are at the European level and have been carried out in conjunction with simulations of the issue of estimating potential output (D'Auria *et al.*, 2010). It is incomprehensible that such research has been neglected in Germany when a constitutional rule is being introduced. From an economic perspective, it is particularly vital during a period of economic crisis that the automatic stabilisers can function appropriately, not least because it is otherwise impossible to take discretionary measures without invoking the “exception clause”.

The structural deficit for 2011 is markedly below the maximum permissible deficit under the government's deficit reduction course, but, as shown before, this can be attributed to two main factors. First, the German government has so far benefited from favourable economic growth conditions arising from the pro-cyclical bias in the cyclical adjustment process. Second, the initial deficit set out in the deficit reduction plan in spring 2010 was determined on the basis of a modest economic outlook and the old TFP method, which was very high at 2.2% (the “ski jump effect” as explained). Since then, the German government has not needed to make use of the credit line that would be permitted and, in fact, the resulting margins have widened consistently. Were there to be a further economic downturn, however, these positive trends could easily be reversed, as the simulation will demonstrate.

The simulation can be divided into various stages. First, the macroeconomic framework for a further downturn (IMK risk

8. The following analysis is based on calculations carried out as part of the IMK's estimate of tax revenues in May 2011: Truger *et al.* (2011).

scenario) compared to a reference scenario (IMK baseline scenario) was established, followed by a fiscal estimate, producing a required net borrowing value for the country's medium-term budgetary planning against a backdrop of otherwise identical expenditure and revenue conditions. Then the cyclical components according to the debt brake procedure were calculated dynamically, using the changing supporting periods, so that the cyclical elements could be deducted from the total deficit.

Table 5. Basic parameters for tax revenue estimates

Annual growth in %

	2011		2012		2013		2014		2015	
	IMK Basel.	IMK Risk	IMK Basel.	IMK Risk	IMK Basel.	IMK Risk	IMK Basel.	IMK Risk	IMK Basel.	IMK Risk
Nominal GDP	3.8	3.8	3.2	2.4	3.2	1.3	3.2	1.8	3.2	3.0
Real GDP	2.7	2.7	1.7	1.0	1.5	0	1.5	0.5	1.5	1.5
Gross wage bill	2.8	2.8	3.3	3.0	3.0	2	2.5	1.8	2.5	1.8
Profits and Capital income	8.2	8.2	4.8	1.8	5.0	0.8	5.0	2.0	5.0	4.0
Modified domestic use	2.7	2.7	2.0	1.9	2.0	1.3	1.9	1.4	1.9	1.7

Source: IMK fiscal estimates (Truger *et al.*, 2011).

Table 5 reproduces the assumptions relating to the risk scenario for the overall economic parameters by comparison with the basis scenario. It is assumed that, after a marked decline in economic performance in 2012, there will be a similarly marked slump beginning in the same year, culminating in a period of stagnation in 2013 and 2014 and further growth in real GDP only from 2015, as set out in the reference scenario. According to past experience the central economic parameters were modified: the most responsive factor is income from profits, while the gross wage bill is a lagging indicator and declines markedly less. Modified domestic use also lags and reacts less sharply, although its weakening effect is determined by the decline in consumer spending. By contrast, it is assumed that government spending and public investment are not adjusted—an optimistic assumption, given past experience.

Table 6 reproduces the fiscal revenue estimates generated by the Federal Ministry of Finance (BMF) and the IMK baseline and risk scenarios. In the interests of simplification, the risk scenario provides details of only the most important taxes shared by all

levels of government (tax on personal and corporate income, value added tax) and business tax: in the case of purely federal taxes (mostly indirect taxes) and local tax (excluding business tax) a 0.5 elasticity compared with nominal GDP has been assumed. Import duty figures assume a slight fall on the basis of an expected fall in imports.

Table 6. Outcome of tax revenue estimates for the Federal level in EUR billion

	Federal total tax revenue		
	IMK baseline	IMK risk	Federal ministry of Finance
	May 2011 estimations		
2010	226	226	226
2011	234	234	237
2012	244	241	247
2013	256	247	255
2014	265	252	265
2015	275	258	274

Source: Working Group on Tax Estimates; IMK tax revenue estimates.

As expected, this produces a significant drop in revenue for the *Bund* by comparison with the baseline scenario. In the first year of lower economic growth—2012—the drop in revenue is relatively modest, at EUR 3.3 billion, but then, as a result of a severe slump in the economy, it rises rapidly to EUR 13.5 billion in 2014 and EUR 17.0 billion in 2015. By 2015, the cumulative loss of revenue compared with the baseline scenario totals EUR 42.6 billion. This would dramatically worsen prospects for the *Bund*.

The basic parameters used by the German government to draw up the country’s budget and finance trends to 2015 and the calculations for debt brake targets produce an annual margin of about EUR 10 billion for the period from 2012 to 2014. On the basis of an assumed rise in expenditure and as yet inadequately quantified budget-balancing measures, the margin in 2015 falls to just under EUR 9 billion (Figure 4). It is important to stress that the resulting margins have not been “created” by, for example, particular additional discretionary budget consolidation measures by the government but, as already indicated, are the result particularly of an upturn in the economy and the legitimate exploitation of the scope for manipulation—the “ski jump effect” and the change of

method for calculating TFP. The resulting margins have led to radically differing proposals for fiscal policy. In some cases, there have been calls for additional tax cuts, while the opposition SPD in the *Bundestag*, the German Federal Audit Office (*Bundesrechnungshof*), and the *Bundesbank* have all called for the margins to be scrapped by means of a retrospective recalculation of the basic deficit and/or for the government to revert to the old EU method.

A different recommendation would be to use the margins as a buffer against the possible threat of a medium-term economic downturn—a strategy that the federal government by now seems to endorse. The justification for this can be illustrated perfectly by using the impact on the federal budget of the assumed risk scenario: this needs to take into account not only of the effects on the country's tax revenues of the assumed weakening in economic growth outlined above but also of the complex repercussions of economic developments on the permissible deficits under the debt brake.

In order to include these effects, we adopted the following methodology. First, baseline scenario calculations were made for potential output, output gap and cyclical components for the years 2012 to 2015, based as closely as possible on published BMF data.⁹ Then, using the same method, we made the same calculations for the risk scenario. This assumes that when it draws up its budget, the German government knows the likely economic trends for the year for which it is drawing up a budget and for the following year, in accordance with the rules set out in the risk scenario. The result is that the economic outlook worsens steadily compared with the baseline scenario and the estimates for potential output, the output gap and cyclical components are adjusted year by year. For the purposes of simplification, we have excluded possible forecasting errors and, hence, necessary posting to the control account.

9. The BMF publishes only time series, which do not enable meaningful conclusions to be drawn about the specifications. It is also unclear which values were generated during the estimating process and which were exogenous and added subsequently. The series published since the spring of 2011 represent progress compared with the BMF's approach in 2009 and 2010, when not even data series were published. It is unclear, however, why the BMF persists in refusing to publish the data and specifications on which its forecasts are based, as the European Commission does, and so make it possible to scrutinise its forecasts rigorously.

Table 7. Basic parameters for calculating potential output and changes compared with the EU method

	Hours per capita			Real GDP			Real investment			Harmonized unemployment rate			Labor force			Population working age		
	EC	Base-	Risk	EC	Base-	Risk	EC	Base-	Risk	EC	Base-	Risk	EC	Base-	Risk	EC	Base-	Risk
	line	line	line	line	line	line	line	line	line	line	line	line	line	line	line	line	line	line
2010	1.5	2.1	2.1	3.7	3.6	3.6	6.0	6.0	6.0	7.3	7.7	7.3	0.3	0.5	0.5	-0.2	-0.4	-0.4
2011	0.2	0.2	0.2	2.3	2.7	2.7	6.0	8.7	8.7	6.7	7.0	6.7	0.7	1.2	-0.2	0.2	-0.1	-0.1
2012	-0.1	-0.4	-0.6	2.0	1.7	1.0	5.0	4.4	0.4	6.3	6.5	6.3	0.4	0.3	-0.5	0.1	-0.2	-0.2
2013		-0.4			0.0			-1.4			6.6		-0.7			-0.2	-0.3	-0.3
2014		-0.2			0.5			2.2			6.9		0.1			-0.3	-0.4	-0.4
2015		0.4			1.5			1.2			6.8		0.1			-0.4	-0.5	-0.5

Source: European Commission. BMF. IMK tax revenue estimates.

Table 7 illustrates the basic parameters used by IMK to calculate potential output under the baseline and risk scenarios compared with the values used by the European Commission. An effort has been made under the IMK forecast to adhere as closely as possible to the BMF estimates, although they cannot, unfortunately, be reproduced entirely. Software for the European Commission method may be downloaded from the internet.¹⁰

To simulate the budget formulation process, each calculation period has been extended by one interval: in 2011, it covers the period up to 2012 for budget year 2012 and makes medium-term estimates up to 2015, while for budget year 2013, it covers the period up to 2013 and makes estimates up to 2016, and so on.

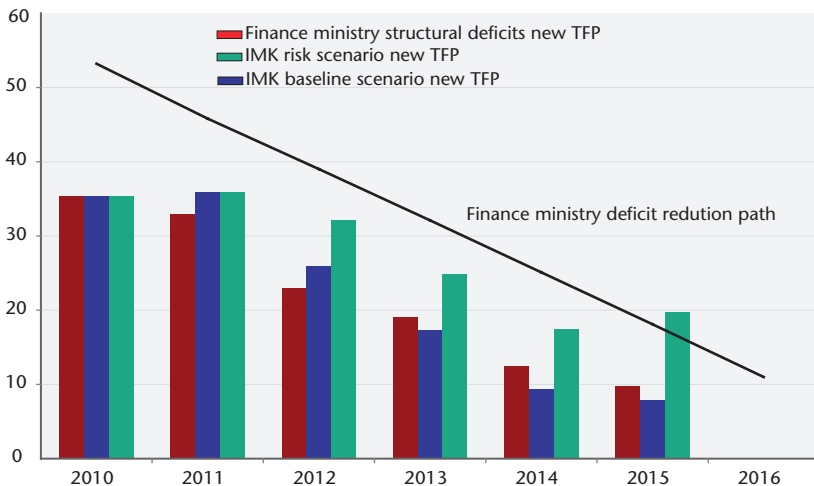
In addition to the discrepancies and extensions of the dataset noted in Table 7, we have assumed 5% depreciation in capital accumulation from 2013 and updated growth in the total factor productivity figure of 0.8%. The demographic forecasts underlying the EU’s approach and the BMF data also throw up marked discrepancies. To emulate the BMF data more closely, we have used its suggested update figures, even though it is not entirely clear how far these take account of growth in the working age population resulting from a higher retirement age. NAIRU and the total factor productivity estimate were factored in exogenously in order to modify the estimate as little as possible.

10. All specifications and data can be found at <http://circa.europa.eu/Public/irc/ecfin/outgaps/library>.

In the baseline scenario, the IMK estimate differs only slightly from the BMF figures, with potential output calculated at just 0.01% below the corresponding BMF figure (EUR 2 billion lower at 2000 prices). In the risk scenario, however, there is a substantial adjustment to potential compared with the European Commission's and the BMF's estimates: for 2015, it is some 2.7% lower than the Commission's and BMF's potential figures. The main reason for this is the slump in investments and lower real growth in GDP.

The question then is how these cyclically determined revisions to potential output, output gap and cyclical components affect the budget when combined with the cyclically determined drop in tax revenue linked to the risk scenario. The answer is illustrated in Figure 4. Assuming that the budget balancing measures announced in the German government's "Future Package" are implemented and financial transactions are not adjusted, the debt brake would give the Federal Republic a margin of EUR 16 billion in 2012, just over EUR 14 billion in 2013 and 2014, and just over EUR 9 billion in 2015. Under the IMK baseline scenario, this margin would, in fact, be even slightly higher.

Figure 4. Structural deficits and the deficit reduction course



Source: BMF, Working Group on Tax Estimates, IMK tax revenue estimates.

In the risk scenario, by contrast, lower revenue and revisions have greater impact: the pro-cyclical downward revision of potential does not increase the negative cyclical components proportionally to the actual scale of the economic downturn. In conjunction with the budget sensitivity figure, which is set too low for periods of marked economic upturn or downturn, the fiscal policy margin arising from the debt brake declines markedly stage by stage. Under the new EU method, the deficit target under the debt brake of EUR 10 billion in 2015 would be overshoot by EUR 1.9 billion, while in the case of the much more pro-cyclical former EU method, which we have not illustrated in Figure 4, the overshoot would rise to EUR 6.5 billion. In both cases, weaker economic growth would reduce the safety margin for the deficit target under the debt brake and, ultimately, result in its being exceeded. The government would then have to act pro-cyclically by making further cuts beyond those already set out in the “Future Package”. This is also clearly illustrated in Figure 4: the structural deficits assumed in the IMK risk scenario for 2015 (here, the new TFP method) exceed the deficit reduction course targets. If there were also to be tax cuts—as might be the case from 2013 onwards—then the discretionary adjustments and cuts would have to be correspondingly greater. Given the gathering economic gloom, that would be a serious mistake. The fact that the most recent tax revenue estimate (May 2012) still assumes a modest increase in revenue for the medium term is based on the assumption of prompt economic recovery in 2013. Were this not to materialise, or if the downturn in the following year were to be more marked than assumed, then revenue would rapidly drop.

5. Conclusions for European fiscal policy

This paper has considered in concrete terms the effect of the German federal government’s detailed debt brake, to show that the method chosen for calculating the structural deficit is extremely complex and, for that reason alone, highly opaque and open to manipulation. The German government has actually exacerbated the resulting lack of transparency by failing to provide proper information and has used the existing scope for intervention in a technically adroit way to broaden its margins in budgetary terms. Its satisfaction with this outcome may, however, be short-lived,

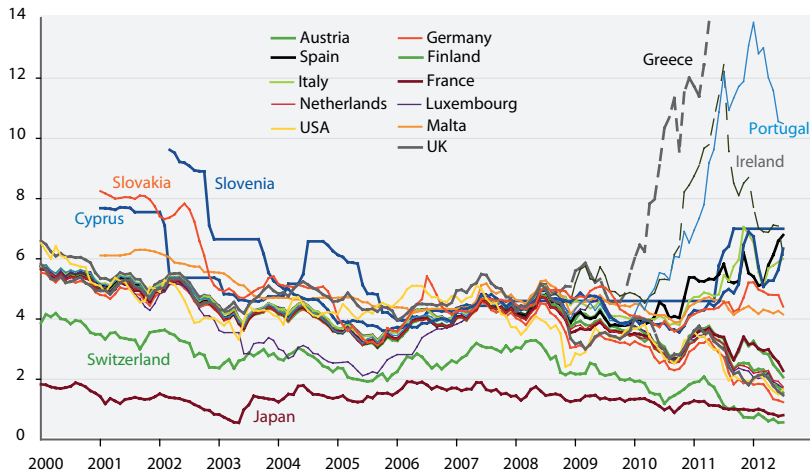
because on the basis of the pro-cyclical approach stipulated in the technical procedure, the margins would rapidly disappear again if there were to be a major economic downturn—and this would be a certainty if combined with further tax cuts. In the worst case, Germany's fiscal policy would then become even more restrictive right in the midst of a Europe-wide economic crisis. It is less than clear how a rule of this kind and the German government's initial concrete application of it will seriously boost the confidence of the financial markets in Germany's fiscal policy.

In fact, taking a closer look at the movement of government bond yields over time shows that financial markets do not seem to be too impressed by the German debt brake (see Figure 5). Whereas there have certainly been growing risk premia for most of the euro area countries' government bond yields as compared to the German benchmark since the onset of the crisis, the same is true as compared to the government bond yields of countries obviously not involved in the euro crisis as for example the U.S., the U.K., Japan and Switzerland. The Swiss example in a longer term perspective is especially telling: As far back as in 2003, the Swiss introduced a constitutional debt brake at the federal level. From 2003 to 2010 the Swiss public debt ratio fell by 15 percentage points—mainly because of favourable economic trends (just as in the recent German case)—from around 55 % to 40 % of GDP, whereas over the same period in Germany it rose by 20 percentage points from a good 60 % to over 80 % of GDP. However, the difference in yields between Swiss and German government bonds seems to have remained completely unaffected. Therefore, the whole premise of the European fiscal compact as a means to restore credibility and to reduce risk premiums on the financial markets becomes seriously undermined.

What else follows from the recent experience with the German debt brake as just analysed? First, it must be stressed that the debt brake is far from being a well tested economic instrument. On the contrary, Germany and its debt brake are currently in the middle of a major fiscal policy experiment and the outcome is far from certain. The successes noted for the time being are mainly due to an unexpectedly strong and lasting economic recovery and the technically successful manipulation of figures by the federal government, whereas the real test under more severe economic

conditions lies ahead. Second, the manipulations by the federal government to circumvent the debt brake—as beneficial as they were from a macroeconomic point of view, because they allowed the upturn to gather momentum—morally discredit any emphatic calls by the German government for stricter consolidation policies elsewhere in Europe.

Figure 5. 10 years government bond yields in %, euro area countries and selected other countries (1/2000 – 7/2012)



Source: ECB; SNB.

Thus on closer analysis the shining example loses all its lustre. It was obviously a serious mistake to accept a debt brake so similar to the German model so quickly at the European level. Given these basic errors, which are hard to reverse, and faced with the difficulties and problems of the German example, European fiscal policy should instead go its own way and investigate thoroughly all the ways in which it can be reshaped.

References

- Anderson B., and J. J. Minarik, 2006. “Design Choices for Fiscal Policy Rules”, *OECD Journal on Budgeting* 5, 4: 159–208.
- Bruchez P.-A., 2003. “A Modification of the HP Filter Aiming at Reducing the End-Point Bias”, *Swiss Financial Administration, Working Paper ÖT/2003/3*, Bern.

- Caner M., T. Grennes and F. Koehler-Geib, 2011. "Finding the Tipping-Point—When Sovereign Debt Turns bad", *World Bank Policy Research Paper*, 5391.
- Cecchetti S.G., M. S. Mohanty and F. Zampolli, 2011. "The real effects of debt", *BIS Working Paper*.
- Checherita C., and P. Rother, 2010. "The Impact of High and Growing Debt on Economic Growth. An Empirical Investigation for the Euro Area." *ECB Working Paper*, 1237, Frankfurt.
- D'Auria F., C. Denis, K. Havik, K. McMorrow, C. Planas, R. Raciborski, R. Röger and A. Rossi, 2010. "The Production Function Methodology for Calculating Potential Growth Rates and Output Gaps", *European Commission, Economic Papers*, 420, Brussels.
- Deutsche Bundesbank, 2011. "Anforderungen an die Konjunkturbereinigung im Rahmen der neuen Schuldenregel", *Monthly Report*, 59–64, January.
- GD (Projektgruppe Gemeinschaftsdiagnose: project group joint forecast), 2010. "Herbstgutachten. Deutschland im Aufschwung. Wirtschaftspolitik vor wichtigen Entscheidungen", Munich.
- GD (Projektgruppe Gemeinschaftsdiagnose: project group joint forecast), 2011. "Herbstgutachten. Europäische Schuldenkrise belastet deutsche Konjunktur", Munich.
- Girouard N., and C. André, 2005. "Measuring Cyclically-Adjusted Budget Balances for OECD Countries", *OECD Working Paper* 434, Paris.
- Hein E., and A. Truger, 2005. "What Ever Happened to Germany? Is the Decline of the Former European Key Currency Country Caused by Structural Sclerosis or by Macroeconomic Mismanagement?", *International Review of Applied Economics* 19 (2005): 3–28.
- Hein E., and A. Truger, 2007. "Germany's post-2000 stagnation in the European context – a lesson in macroeconomic mismanagement", in *Aspects of Modern Monetary and Macroeconomic Policies*, Arestis, P., E. Hein, E. Le Héron (eds.), Basingstoke, Palgrave Macmillan: 223-247.
- Heinemann F., M. D. Moessinger and S. Osterloh, 2011. "Nationale Fiskalregeln—Ein Instrument zur Vorbeugung von Vertrauenskrisen? Summary of a research study by the Centre for Economic Research Mannheim", *Monthly Report of the Germany Ministry of Finance (BMF)*, August: 58–66.
- Horn G., C. Logeay and S. Tober, 2007. "Estimating Germany's Potential Output", *IMK Working Paper*, 2/2007, Duesseldorf.
- Horn G., T. Niechoj, C. Proaño, A. Truger, D. Vesper and R. Zwiener, 2008. "Die Schuldenbremse—eine Wachstumsbremse?", *IMK Report* 29.
- Horn G., T. Niechoj, S. Tober, T. van Treeck and A. Truger, 2010. "Reforming the European Stability and Growth Pact: Public Debt is Not the Only Factor, Private Debt Counts as Well", *IMK Report* 51e.

- Horn G., F. Lindner, T. Niechoj, S. Sturn, S. Tober, A. Truger and H. Will, 2011. “Herausforderungen für die Wirtschaftspolitik 2011”, *IMK Report* 59.
- IMF (International Monetary Fund), 2011. “Modernizing the Framework for Fiscal Policy and Public Debt Sustainability Analysis”, *IMF Policy Papers*, Washington.
- IMK, OFCE, WIFO, 2011. “The euro area at the crossroads First joint analysis of the Macro Group”, *IMK Report* 61e.
- IMK, OFCE, WIFO, 2012. “Fiscal Pact Deepens Euro Area Crisis”, Joint analysis of the Macro Group. *IMK Report* 71e.
- Jacoby W., and A. Truger, 2002. “Tax Reforms and „Modell Deutschland” – Lessons from four Years of Red-Green Tax Policy”, *Working Paper on Political Economy of International Finance* 3, Institute of European Studies, University of California, Berkeley.
- Kopits G., and S. Symansky, 1998, “Fiscal Policy Rules”, *IMF Occasional Paper* no. 162, Washington.
- Kumar M. and S. J. Woo, 2010. “Public Debt and Growth”, *IMF Working Paper*, 10/174, Washington.
- Musgrave R. A., 1959. “The Theory of Public Finance. A Study in Public Economy”, New York *et al.*: McGraw-Hill.
- Nersisyan Y., and L.R. Wray, 2010. “Does Excessive Sovereign Debt Really Hurt Growth?”, A Critique of This Time Is Different, by Reinhart and Rogoff” *The Levy Economics Institute Working Paper* 603, New York.
- Ostry J. D., A. R. Ghosh, J. I. Kim, and M. S. Qureshi, 2010. “Fiscal Space.” *IMF Staff Position Note* 10/11, Washington.
- Reinhart, C. M., K. and S. Rogoff, 2010. “Growth in a Time of Debt”, *NBER Working Paper* 15639, Washington.
- SVR (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, German Council of Economic Experts), 2007. *Staatsverschuldung wirksam begrenzen. Study on behalf of the Federal Minister for Economics and Technology*. Wiesbaden.
- SVR, 2010. “Chancen für einen stabilen Aufschwung”, *Annual report* 2010/2011, Wiesbaden.
- Truger A., 2004. “Rot-grüne Steuerreformen, Finanzpolitik und makroökonomische Performance—was ist schief gelaufen?”, in *Finanzpolitik in der Kontroverse*, Hein, E., Heise, A. und Truger, A. (eds.), Marburg, Metropolis. 169–208.
- Truger A., 2009. “Ökonomische und soziale Kosten von Steuersenkungen.” *Prokla* 154 (39, 1): 27–46.
- Truger A., 2010. “Schwerer Rückfall in alte Obsessionen—Zur aktuellen deutschen Finanzpolitik”, *Intervention. European Journal of Economics and Economic Policies* 7, 1: 11–24.

- Truger A., and D. Teichmann, 2011. "Zur Reform des Einkommensteuertarifs. Ein Reader der Parlamentarischen Linken in der SPD-Bundestagsfraktion", Berlin / Düsseldorf.
- Truger A., and H. Will, 2011. "Eine Finanzpolitik im Interesse der nächsten Generationen Schuldenbremse weiterentwickeln: Konjunkturpolitische Handlungsfähigkeit und öffentliche Investitionen stärken", *IMK Study 24*, Düsseldorf.
- Truger A., H. Will and D. Teichmann, 2011. "IMK Steuerschätzung 2011-2015. Kräftige Mehreinnahmen: kein Grund für finanzpolitischen Übermut", *IMK Report 62*.

DO WE NEED FISCAL RULES?¹

Catherine Mathieu and Henri Sterdyniak

OFCE

The public finances crisis has brought binding fiscal rules proposals back to the forefront. The paper analyses their justifications and specifications, either in a classical or in a Keynesian framework. In the recent period there is no evidence that public deficits were caused by fiscal indiscipline and induced too high interest rates; there is no evidence that economically relevant rules can be designed. The paper provides an analysis of fiscal rules implemented either at country level (like the UK golden rule), or at the EU level (the Stability and Growth Pact). The paper shows that fiscal rules did not work before and during the crisis. The paper discusses the EU project, the “Fiscal Pact”, which risks to paralyse fiscal policies and to prevent economic stabilisation. The priority today is not to strengthen public finance discipline but to question economic developments which make public deficits necessary to support output.

Keywords: Fiscal policy, Fiscal rules.

In memory of Henner Will

The 2007-2012 crisis is first of all a banking and financial crisis, due to hazardous and unregulated financial innovations, in a context of financial liberalisation and globalisation. Markets

1. Preliminary versions of this paper were presented at the OFCE conference: “Public finances in the crisis”, Paris, May 2010, at the 15th Conference of the Research Network Macroeconomics and Macroeconomic Policies (FMM), Berlin, October 2011, and at the 9th EUROFRAME Conference, Kiel, June 2012. We would like to thank participants at the three Conferences and more especially Achim Truger for their comments and suggestions. A shorter version of an earlier draft was released in “From crisis to growth?, The challenge of debt and imbalances, *Series of the Research Network Macroeconomics and Macroeconomic Policies*, Vol. 15, H. Herr, T. Niechoj, C. Thomasberger, A. Truger and T. van Treeck (eds), Metropolis-Verlag, Marburg 2012. All remaining errors are ours.

were greedy, blind, and volatile. The crisis is also due to the huge increase in capital stocks coming from neo-mercantilist economies, raw material exporting economies, pension funds, or the wealthiest in emerging and advanced economies, tracking the most profitable financial opportunities. Monetary policies allowed private debts to rise, financial and housing bubbles, which supported output growth without higher wages or social incomes. Last but not least, the world economy became more fragile due to the strategies run by mercantilist countries (like China and other Asian emerging economies, Germany, and other Northern Europe economies) pursuing competitiveness gains and cumulating external surpluses (Mathieu and Sterdyniak, 2011).

But the crisis is not due to the rise in public debts and deficits. At the end of 2007, the public deficit for the OECD as a whole amounted to 1.3% of GDP only and was therefore below the level ensuring debt stability. Net public debt amounted to 39% of GDP only.

The crisis led to a huge rise in government debts and deficits. Initially this rise in debts and deficits was due to government measures implemented to support banks, later to the automatic fall in tax revenues resulting from lower output growth, and finally to measures implemented to support output. Starting from mid-2009, markets pretended to have doubts about public finance sustainability. They requested higher risk premia on government bonds issued by some euro area countries. Proposals aiming at imposing governments either fiscal policy rules or independent Councils in charge of assessing or even setting fiscal policies are back to the forefront.

The issue is especially acute in the euro area, where existing rules did not work (especially the Stability and Growth Pact, SGP), and where Member States (MS) having lost monetary sovereignty are under direct financial market pressure, where the Greek crisis has shown the implicit solidarity linking all euro area MS. The ECB and some of the countries having agreed to help Southern countries wish in counterpart the strengthening of binding rules on domestic fiscal policies.

The objective of monetary policy is rather clear: maintaining low and stable inflation, the equilibrium unemployment rate

theory ensuring that monetary policy will lead to the highest employment level. The issue is more delicate for fiscal policy: should it target full employment or the equilibrium of public finances, and how to define the latter? What is an optimal fiscal policy? Can rules allowing to run an optimal fiscal policy in permanence be defined?

The paper has four parts. Section 1 deals with the justifications for fiscal policy rules, either in a classical or in a Keynesian framework, trying to make a link between the justifications and the proposed rules. Section 2 describes different kinds of rules that may be implemented. Section 3 provides an analysis of fiscal rules experiences. Section 4 discusses recent EU proposals. Section 5 concludes.

1. Fiscal rules, from justifications to specifications

1.1. The classical model

Fiscal rules proponents argue that governments are not benevolent². Governments do not aim at optimising citizens' welfare but aim at being re-elected. Besides, each generation is selfish and does not care about the situation for future generations. Last, financial markets need to be reassured on the ability of governments to service debt. Each of these goals induces a specific rule.

According to the Leviathan-State theory or the Public Choice theory, each social group seeks to benefit from higher public spending without considering that this will imply higher taxes. In a non-cooperative equilibrium public expenditure are excessive. Each government agency aims at increasing the number of civil servants and means at their disposal, without accounting for efficiency and productivity. Governments tend to spend too much in order to please their voters, without correspondingly increasing taxes. They use fiscal policy for electoral purposes and not for stabilisation purposes. They do not make the appropriate budgetary efforts in good economic times. The social choice between public expenditure and taxes is biased because governments can run defi-

2. See, for instance, Alesina and Perotti (1995), Alesina and Tabellini (1990), Drazen (2004), Wyplasz (2011).

cits. No social or economic mechanism can ensure an optimal level of government debt or deficit. Thus public deficits are always excessive and this leads to excessive public debts.

Public deficits are therefore an autonomous cause of macroeconomic unbalances. According to the “crowding-out” effect theory, public deficits generate excessive demand, which induces higher interest rates and crowds-out private spending. Public deficits reduce savings available for investment. The current deficit level leads financial markets to expect large deficits to persist and hence further increases in government debts. Markets anticipate high future long-term interest rates, which immediately increases interest rates, and crowds-out private investment (Ducoudré, 2005). Public deficits are detrimental to capital accumulation and therefore to future growth.

Three objections can be made to this reasoning. The first objection is theoretical. The described mechanisms will not play if households are Ricardian. On the one hand, Ricardian households are aware that a deficit is equivalent to taxes: they cannot be fooled by the government strategy and they have a preference for governments who do not spend much. On the other hand, Ricardian households increase their savings in order to offset higher public deficits; public debt has no specific unfavourable effect: financing public expenditure through taxation or higher indebtedness will be similarly detrimental to output growth.

The second objection is empirical. Such mechanisms of higher interest rates and crowding-out effects have hardly been observed in reality. From 2002 to 2005 both short and long-term interest rates were historically low despite the rise in government deficits in Europe, like in the US and Japan. This has also been the case since 2008: large economies have run large government deficits and high public debts with low interest rates at the same time. The rise in government debts did not have any impact on interest rate levels or on inflation expectations. In 2009, long-term interest rates stood at 1.4% in Japan, 3.3% in Germany and the US, 3.6% in the UK, 3.7% in France, *i.e.* were similar to expected potential output growth (and were even clearly below it for the US). It is difficult to assert that such interest rates levels are detrimental to investment.

Last, this theory does not explain why all governments would have suddenly become demagogic and increased their deficits in 2002 or in 2009. In the recent past, the rise in government deficits was due to fiscal stabilisation rather than to a spontaneous rise in expenditure or a spontaneous decrease in tax revenues. It is not obvious that the OECD countries were characterized, in the recent period, by fiscal indiscipline (contrary to what Debrun and Kumar, 2007; and Wyplosz, 2011, 2012 pretend).

This theory omits that governments do not care only about median voters but also about leading classes requesting primarily lower taxation for companies or for themselves and trying to promote public spending cuts strategies.

In any case, this theory advocates the implementation of a “Golden rule of public finances” in order to reduce the governments’ bias for running excessive deficits: current expenditure must be financed through taxation, while investment which will benefit future generations may be financed through borrowing.³

It is however difficult to measure investment. How to account for education or research expenditure, even more since we have to measure net investment? Besides, it is fair to smooth exceptional public spending and tax revenues over all generations. Despite these limits, the rule, according to the classical theory, should be a golden rule and not a balanced budget rule.

This rule can be more precisely defined. Let us assume that a country wishes to maintain a public debt level equal to its public capital stock. Public debt in real terms varies as: $D = D_{-1}(1 + r - \pi) - S_p$, where $r - \pi$ stands for the real interest rate and S_p is the primary government balance. The public capital stock level varies as: $K = K_{-1} + I - \delta K_{-1}$. The equality between debt and capital stock requires that: $S = S_p - rD_{-1} = -(I - \delta K_{-1} + \pi D_{-1})$. Government borrowing should equal net public investment plus debt depreciation due to inflation.

The second argument is intergenerational fairness. A given generation should not consume too much at the expense of future generations. But such an “excessive consumption” is difficult to

3. This view was developed at the end of the 19th century by Von Stein (1885), Leroy-Beaulieu (1891) and Jèze (1896). It can also be found for instance in Musgrave (1939) or Eisner (1989).

assess, while accounting both for demographic developments, productivity growth, natural resources and environmental constraints. It is difficult to compare the well-being of successive generations. In this approach, the criterion cannot bear exclusively on the public deficit; private savings need also to be taken into account. According to the “golden rule of economic growth”, *per capita* consumption is maximised in a permanent regime if the interest rate equals GDP growth. As long as the interest rate does not exceed GDP growth, there is no evidence that fairness is not ensured. Intergenerational fairness may thus require a fiscal surplus (if the savings ratio is spontaneously too low) or a deficit (if the savings ratio is too high).

The third argument is public debt sustainability. Financial markets should not believe that a country may be a situation where sovereign default is the more profitable outcome. Let s_p stand for the primary government balance-to-GDP ratio, \tilde{r} , the interest rate on debt corrected from GDP growth, h , the debt-to-GDP ratio. At a given debt ratio, $s_p = \tilde{r}h$, one should avoid that h exceeds a critical value where the primary balance would be unbearable for the population. The difficulty is that \tilde{r} depends itself on sustainability perceived by markets. Countries like Greece, Italy, or Belgium, have been able to run primary surpluses of 5 percentage points of GDP. If $\tilde{r} = 1\%$, the limit for h is 500%. If $\tilde{r} = 5\%$, the limit comes down to 100%. An indebted country is at risk of being trapped in a self-fulfilling spiral if financial markets require high interest rates to offset an unsustainability risk.

Moreover, it is necessary to make a difference between countries with monetary sovereignty, borrowing in their own currency and able to ask for central bank financing (Nersisyan and Wray, 2011), and non-sovereign countries, borrowing in foreign currency or not able to benefit from central bank financing, like euro area countries.

The latter do not control their interest rate; they may have to pay risk premia; they may default. These countries may be trapped in a spiral: financial markets' doubts -> increases in interest rates -> unsustainable debt -> financial markets' doubts. Debt sustainability is a crucial issue for these countries.

The former may run very low interest rates and are not in danger of being insolvent since the Central Bank can provide

funding to the government. Coordination between fiscal and monetary policies can maintain full employment after a negative demand shock. The risk is that over-expansionary fiscal policies lead the central bank to raise interest rates to stabilise inflation, which may lead public debt to be unsustainable, or to abandon its inflation target (Sargent and Wallace, 1981, Leeper, 1991, Sterdy-niak and Villa, 1994). This cannot occur with the following rule: fiscal policy must maintain a satisfactory employment level, while enabling the interest rate not to be higher than the nominal growth rate, with stable inflation at a satisfactory level.

1.2. The Keynesian model

From a Keynesian perspective, a certain level of public debt and deficit is necessary to ensure that demand equals potential output. Public deficits result from the macroeconomic situation and are not at the origin of this situation. In times of economic uncertainty or entrepreneurs' pessimism, private demand may be insufficient to maintain full employment. The optimal policy consists in cutting the interest rate until the demand level is satisfactory. The advantage of this policy is that it does not increase public debt, it helps capital accumulation and lowers the profit rate requested by companies to invest. However, it may lead to excessive private companies' or households' debt accumulation. It may generate financial or housing bubbles. Conversely interest rates cuts may be inefficient in times of strong economic depression, when private agents are reluctant to borrow. It may be insufficient, especially because there is a floor to nominal and consequently to real interest rates: at the end of the 1990's, the daily interest rate was set at 0 in Japan, which led to a base rate of around 3% for commercial banks and to a real credit interest rate of 4.5% (accounting for a price deflation of around 1.5% per year). It may not be implementable in the euro area where the common interest rate cannot adjust to the different business cycle situations in the 17 MS. So the sharp rise in public debts must be related to decelerating inflation and growth (which prevents the authorities to cut sufficiently the real interest rate adjusted for growth) and to the introduction of the euro (which does not allow anymore MS to run appropriate interest rates and exchange rates).

In order to obtain a satisfactory demand level, the government must then accept some public deficit. Let us note y , the output gap, d , private demand, g public demand, r the interest rate, and h public debt-to-GDP ratio,

If $y = g + d + cy - \sigma r + kh$, the stabilisation fiscal policy is:
 $g = -d + \sigma r$

If this policy is implemented and if stabilisation is perfect, then there is no link *ex post* between the deficit and the output gap. g , government borrowing, is considered as structural according to the OECD or the EC methods, which makes no sense.

In the long run, $g = 0$ and $h = -(d - \sigma r) / k$.

The long-term public debt level is not arbitrary, but depends on private agents' wishes: debt must equal desired debt at the optimal interest rate, *i.e.* the rate equal to the growth rate.

This simple model shows that a fiscal rule like: $g = g_0 - \lambda y - \mu(h - \bar{h})$ should not be recommended, since it would not allow for full stabilisation and since the government cannot set a debt target regardless of private agents' saving behaviour. The public debt level desired by private agents has probably increased during the crisis since households wish to hold less risky financial assets and companies want to deleverage. In structural terms, the ageing of populations implies that safe public assets are increasingly desired.

Such a deficit necessary to support activity will not crowd out private spending: it will not raise the interest rate, since by definition the interest rate is as low as possible. It does not raise sustainability issues *a priori*: if the rise in public debt leads agents to increase their spending, the government will be able to cut its deficit accordingly. The government must be ready to cut its deficit when private demand resumes. This may require that some public expenditure or some tax cuts are explicitly defined as temporary.

This ideal scheme requires that the government cuts the public deficit when the economy comes close to full employment. The rule should be: the public deficit must be reduced when demand tends to become excessive, therefore when inflation tends to accelerate or when the central bank has to raise its interest rate above the output growth rate in order to slowdown inflation.

Box 1. A Keynesian fiscal policy rule?

Can a Keynesian fiscal rule be designed? Net public investment (NPI) must be financed through borrowing; public deficit should be corrected of debt depreciation induced by inflation (at least for a 2% inflation target and a 60% debt target); fiscal policy should be countercyclical: a 1% output gap justifies a 0.75% of GDP public deficit, *i.e.* slightly more than the automatic effect; fiscal policy should be restrictive when monetary policy is restrictive (a fiscal surplus is needed when the interest rate set by the ECB exceeds 4%, the “golden-rule” growth rate, according to Phelps). Therefore:

$$S = -NPI - 1.2\% + 0.75 \text{ output gap} + 0.5 (i - 4)$$

According to this sensible fiscal rule, which ensures that public debt does not exceed public capital stock in the long-term, and using the OECD output gap, the French public deficit should have amounted in 2011 to:

$1.2 + 1.2 + 0.75 * 3.3 + 1.25 = 6.2\%$ of GDP. The French public deficit amounted in fact to 5.2% of GDP.

But this rule does not allow for full stabilisation and does not take into consideration the link between the output gap and fiscal policy.

According to this approach, the rise in public debts is a macroeconomic phenomenon with two causes: insufficient private demand and too high interest rates. Weak demand may mirror households' desire to own more financial assets combined with companies refusing to increase their borrowing.

Pierre is 50 year-old and worries about his future pension. He decides to save 1,000 euros per month so as to have cumulated 120,000 euros at the age of 60. Hence he generates a demand deficit. If interest rates cannot be cut, the government must increase its deficit by 12,000 euros per year and the public debt by 120,000 euros after 10 years. Will this debt be a burden for Antoine, Pierre's son? The answer is no if Pierre donates 120,000 euros to his son. The answer is also no if Pierre spends this amount while Paul, Peter's cousin and 10 years younger saves money over this period. The 120,000 euros are a desired additional debt. In such a situation, government should allow public debt to rise. The government stabilises the economy through providing the desired public debt. Public deficits increase demand directly but also indirectly by raising public debt, owned by households, which tends to

increase their consumption. Public debt is not a burden for future generations since it has a counterpart in terms of assets owned by households. Public debt is only a way to make the economy more liquid. Households' savings have a counterpart in terms in public debt and deficit. One may of course regret that it has no counterpart in terms of private companies' investment and debt, but in the context we are considering, companies do not wish to borrow.

This scheme may come to a halt if households become Ricardian, if markets request risk premia, or if the government sets a public debt target (for simulations, see Ben Amar and Sterdyniak, 2011). Let us assume that households increase their savings' ratios because they wish to own more public debt as they get older. The government thus increases public debt, but households expect future tax increases (they are wrong, of course): they increase their savings further, which obliges the government to increase its deficit further. Another example is: households increase their savings ratio; the government has to increase its deficit to stabilise output, but markets request risk premia to offset the debt rise. Here also, the economy may enter into an infernal spiral: higher interest rates requested by markets will lead the government to increase its debt to maintain full-employment, which will worry markets, and increase debt again. In both cases, private agents' defiance towards public debt is a self-fulfilling prophecy; output cannot be stabilised (see Box 2).

Thus public debt can be cut only through higher companies' or households' borrowing or lower savings (owing to reduced uncertainty about the future). Public debt reduction requests interest rates to be kept as low as possible. When government borrowing is of a Keynesian type, it makes no sense to advocate a strong cut in government borrowing without explaining how the resulting demand deficit will be offset.

Hence, there are two views on public debts and deficits, like on the need for fiscal rules. Fiscal rules proponents may blame Keynesians for opening a Pandora's box. How to avoid government's demagogic choices, once debts and deficits are allowed? Fiscal rules opponents may reply that the fiscal policy adequacy criterion lies on both the employment level, inflation, and interest rates. They may request rules consistent with the macroeconomic stabilisation objective.

Box 2. Fiscal rules and multiplier

Let us consider the simplest model.

Public balance is: $s = ty - g$, where g stands for discretionary policy.

GDP is: $y = d + g + c(1-t)y + ny^* - ny$ where d is a private demand shock.

Let us assume that $t=0.5$; $c=0.5$; $n=0.25$.

The multiplier equals 1 for a specific shock; 1.33 for a EU wide shock. The public balance stabilisation constraint increases it to 2 for a specific shock, 4 for a EU wide shock. The economy is more unstable under a balanced budget constraint.

	Specific shock		EU shock	
	y	s	y	s
Full stabilisation of y	0	-1	0	-1
Automatic stabiliser	-1	-0.5	-1.33	-0.67
s stabilisation	-2	0	-4	0
Cost of reducing deficits	-2	-1	-4	-1

Let us now assume that households are Ricardian or that financial markets request risk premia for public deficits. This will translate through $(-hs)$ in the equation determining output: $y = d + g + c(1-t)y + ny^* - ny - hs$, where $h = 0.5$. Then fiscal policy is less efficient. The economy is here also more unstable in the event of a negative demand shock. It cannot be stabilised if h becomes equal to or higher than 1.

	Specific shock		EU shock	
	y	s	y	s
Full stabilisation of y	0	-1	0	-2
Automatic stabiliser	-1.33	-0.67	-2	-1
s stabilisation	-2	0	-1	0
Cost of reducing deficits	-0,667	-1	-1	-1

For neo-classical economists, the rise in deficits and public debts in recent years shows that rules are needed to avoid this drift. For Keynesians, this rise was necessary and fiscal rules are harmful if they prevent fiscal policy to play.

However, the fundamental question is: why are large public deficits necessary today at the world level in order to support demand? Prior to the crisis, four factors contributed to insufficient world demand:

— Many countries implemented neo-mercantilist strategies aiming at building current account surpluses: Asian countries

learnt the lesson from the 1997 crisis and wish to be free of financial markets' pressure; China's rapid growth model is based on exports; some countries wish to anticipate the implications of their ageing populations (Japan, Germany, Austria, the Netherlands, and Nordic countries). These surpluses add to oil exporting countries' surpluses.

— Trade globalisation increases the weight of international competitiveness. Each country has an incentive to exert downward pressure on their wages so as to raise domestic competitiveness. Countries like Germany, the Netherlands and Austria have succeeded in lowering substantially the wage share in value added since 2000. Consequently consumption has decreased as a share of GDP in these countries. Accounting for globalisation and for the interests of leading classes no country implements the relevant strategy: supporting output growth through higher wages and social benefits⁴.

— Anglo-Saxon economies have chosen a growth strategy based on wages and incomes stagnation for households as a whole and a rise in inequalities. This implies a declining consumption trend which was offset by higher households' borrowing and financial and housing bubbles, allowed by real interest rates maintained at low levels. When households' borrowing reaches a paroxysm and when bubbles burst, public debt has to support demand.

— The rise in public debt in France and in many countries does not result from rising public expenditure, since on the contrary the latter have decreased as a share of GDP (by 1.4 percentage point in the euro area between 1997 and 2007, 0.8 percentage point in France), but from lower tax receipts (by 1.5 percentage point in the euro area as in France over the same period) due to the tax counter-revolution implemented by most governments for 25 years. In the name of free movement of people and capital, EU institutions have forbidden countries to implement measures needed to protect their tax policies. Hence EU governments have used tax competition. Tax and contributions cuts have been intensified (on corporate taxation, higher-income households, wealth, employers'

4. Strangely, the European Commission and economists in the industrial economies recommend this strategy ... but for China.

contributions, etc...) with no positive growth impact. These tax policies have increased social inequalities and public deficits. Simultaneously the tax counter-revolution was a choice of EU institutions, liberal governments and leading classes as a way to cut tax revenues, and pretend afterwards that in view of the resulting deficit, public expenditure need to be cut.

2. Fiscal rules: lessons from experience

2.1. A typology for fiscal rules

A fiscal rule⁵ may be defined as a fiscal policy constraint which imposes limits on variables like deficit, public debt or public expenditure, either in absolute terms or depending on some economic variables. The introduction of fiscal rules has been strongly advocated by the IMF, in order to facilitate domestic fiscal policies discipline or surveillance by the IMF (see IMF, 2009).

There are different types of rules according to several criteria (see also EC, 2010):

— Some rules set permanently what fiscal policy should be: for instance, the structural deficit should be nil or equal to net public investment. Other rules set a ceiling: public deficit should not exceed 3% of GDP; debt should not exceed 60% of GDP. Such rules play in an asymmetrical and episodic way.

In the first case, the difficulty is how to design a rule able to account for all situations. Generally, these rules are based on magic numbers (like budgetary positions in balance), unrelated with macroeconomic equilibrium constraints. The balanced government budget rule for instance has no economic justification once it is recognised that a certain level of public debt is necessary (because public debt is desired by private agents who wish to own safe assets), and that besides, it is justified to finance public investment through borrowing. Let us assume for instance that households wish to own public debt at 60% of GDP under a 4% interest rate and a 4% nominal growth. The equilibrium govern-

5. This paper addresses national rules only and does not discuss rules imposed on local governments.

ment deficit is 2.4%. It makes no sense to request a deficit at 0%, which could require an interest rate at below GDP growth.

In the second case, the rule bites in times of crisis, precisely when output needs fiscal policy support, and not in good times, when fiscal consolidation would possibly not be detrimental to growth. The ceiling is here also generally arbitrary.

— Rules can apply to government borrowing, structural balance, public debt, expenditure or taxes. But government borrowing depends on the cyclical situation: a norm on government borrowing is necessarily pro-cyclical. The structural balance is difficult to measure. The debt criterion is difficult to fulfil as, in the short run, a restrictive policy can increase the debt-ratio (see Box 3). Should a rigid rule constrain the social choice between public and private expenditure? This is not justified from a democratic point of view. Expenditure rules generate incentives to introduce tax expenditure. The rule in terms of tax revenues is often counter-productive: it leads governments to increase borrowing rather than raise taxes.

Box 3. The public debt criterion in the short term

Let us consider an economy in a Keynesian situation. Demand determines output, according to: $y = g + c(1-t)y$. Debt varies as: $h = h_0 + g - ty$. If g declines by 1, this leads y to fall by $1/1-c(1-t)$. A restrictive fiscal policy will lead the debt-to-GDP ratio to rise if:

$$h_0 / y_0 > (1-c)(1-t)$$

For instance: if $c=0.5$ and $t=0.5$, $h_0 = y_0 = 100$, cutting the deficit by 1 leads output to fall by 1.33 (from 100 to 98.67), *ex post* the deficit will fall by 0.33. Debt will decrease to 99.67. The debt-to-GDP ratio rises from 100% to 101%. In the short run, a restrictive policy cannot cut the debt-to-GDP ratio.

— Rules can have annual, medium-term (debt or deficit targets set at a five-year horizon) or long-term (ensuring public finance sustainability) horizons. But an annual rule often comes into conflict with the short-term economic context. A medium-term rule allows postponing efforts and may lack credibility; it implies commitments for the future while ignoring the future short-term situation. A long-term rule is not very useful: even if a country

anticipates a strong increase in its future pension expenditures, an immediate increase in social contributions is counterproductive when demand is insufficient.

Some economists recommend fiscal policy to be run at two horizons: in the short-run, expansionary fiscal policies would be allowed; in the longer-term the implementation of rigid fiscal rules or announcements of future pensions or health reforms would reassure financial markets (see for instance Schick, 2010). But this is probably an illusion: What is the credibility of such policies?

— Rules may consist in a simple objective set out by the government. This case has the advantage of being soft: the government may amend its objective or may not fulfil it if needed, possibly explaining why.

Rules may be supervised by an external authority (Committees of experts, Parliament, Constitutional court, EU Commission), which may be entitled to give advice only or to impose the fulfilment of the rule. But how should this authority be appointed: is fiscal policy a technical or a political issue? The supervising authority may be given the mandate to give advice, to dialogue with the government. Going beyond this is hardly consistent with democratic principles.

— Rules may be written into Law or into the Constitution. But all possible events cannot be written into the law. If the text is too vague (for instance: fiscal policy should target a balanced budget) it may be ineffective. If the text is too precise (for instance: a balanced structural balance), it is unenforceable.

Wyplosz (2002) proposed establishing a national fiscal policy committee of independent experts (how would they be appointed?). This Committee would have to regulate fiscal policy, *i.e.* to set the public deficit level, while public spending and receipts would remain under the responsibility of national governments and parliaments. After the ECB's independence, it would be a new step towards leaving economic policy entirely in the hands of a technocracy. The Committee's mandate would be to ensure public debt long-run sustainability, while output stabilisation would come in second.

But Wyplosz has difficulty in defining debt sustainability. He makes two suggestions: a balanced budget over the economic cycle

(which implies a public debt at 0% of GDP in the long run), or the stabilisation of the debt-to-GDP ratio in the medium run (*i.e.* cyclically adjusted), but he admits that it is impossible to set an appropriate level for this ratio.

As concerns monetary policy, the central Bank's objective is rather clear⁶: ensuring low and stable inflation rates, the equilibrium unemployment rate theory ensuring that monetary policy will lead to the maximal employment level. The fiscal policy objective is less obvious: should fiscal policy target full employment or public finances in balance, and how to define the latter? Should public debt be reimbursed or is public debt necessary for the macroeconomic equilibrium? This is a political choice which belongs to voters and not to experts (Murray and Wilkes, 2009). Wyplosz (2011) recognises that this committee should follow rules, but he does not define them: will rules bear only on public finance variables or will they account for the macroeconomic context?

Economic developments lead effective budget to differ from budget plans. The Committee would therefore have to control in permanence government policy measures and oblige the government to change taxes. What government would accept this?

Why would citizens be asked to vote for political parties' representatives if fiscal decisions are made by non elected independent experts? Can economic policy choices be made independently of a macroeconomic strategy and without democratic debate?

The crisis has clearly shown that fiscal policy cannot obey rules and must be run by determined and brave governments, which will never be the case with experts' committees. Can we imagine that a group of experts would have opposed to banks' financial support or to active stabilisation policies in 2008-2009 in the name of public finance sustainability?

Fatas *et al.* (2003) proposed a Sustainability Council, who would assess fiscal policies according to sustainability criteria. Their judgment would be made public, so as inform financial markets and the general public. The problem is that sustainability is a vague concept, which makes sense as a long-term constraint only. This

6. Although this objective has become less clear under the financial crisis' developments. Should the Central Bank ensure financial and banking system stability, supervise it, or rescue it?

means that it is difficult to use it to make a judgment on fiscal policy run in a given year. It would require judgements on the output gap level, on optimal debt, on the need for discretionary fiscal measures. Why would these experts be more qualified than others to have an opinion on so difficult issues? The risk is that these experts help markets to have a single opinion and that they exert excessive influence.

Calmfors and Wren-Lewis (2011) consider that a fiscal council could fight the deficit bias of governments. They recognise that fiscal rules are often too rigid. The fiscal council should induce governments to fulfil rules, but would also allow for flexibility and for possibly not fulfilling them. However, the fiscal council would have a consultative role only.

Others simply suggest setting an independent fiscal policy committee in charge of assessing macroeconomic projections' credibility and whether fiscal assessments are realistic. This is already the case in many countries. But should there be a single and official Committee? Would not this paralyse the democratic debate? There is a risk that such a Committee initiates a vicious circle: lower expected output growth and hence a higher deficit and hence a more restrictive fiscal policy in order to meet the deficit target at any cost, at the price of a further fall in output growth.

— How should the position of the economy in the business cycle be accounted for? Should the fiscal rule apply only to the structural balance (knowing all measurement difficulties)? Should discretionary fiscal policy be forbidden? What should a government do after a major depressive shock: give up the fiscal rule in order to support growth or try to meet the rule at the risk of slowing down the recovery?

— The non fulfilment of the rule may lead to no sanction (except by the general public), may be subject to fines (in the case of international commitments), may be impossible (if the surveillance authority is entitled to constrain the government or if the rule is automatic).

The last two cases raise feasibility and democratic issues. In the event of a deep depression, a rule may be unenforceable or may have disastrous macroeconomic consequences. Why could a group of experts oblige an elected government to run a given policy?

The German Council of Economic Experts suggested in 2009 that euro area Member States make commitments to bring their structural deficit in balance and thereafter maintain it in balance. Any deviation from the path would be corrected through an automatic rise in taxes. But this would prevent any stabilisation fiscal policy; this supposes that the structural balance can be available in real time, and that the structural balance equilibrium matches macroeconomic equilibrium.

Delpla (2010) suggests that the balanced budget rule is written into the Constitution. The rule would apply to the structural balance. An independent fiscal Committee (IFC) would be settled and requested to assess the structural balance. The rule would apply from 2018 only. Until then, the structural deficit, estimated at 8% of GDP in 2010, would have to be cut by 1 percent of GDP per year without accounting for the business cycle situation.

In a permanent regime, deficits (due to a deviation between effective and voted budgets) would be cumulated in a notional account and would have to be amortised in seven years. If the finance law project (PLF) deviates from this rule, it will be judged not in conformity with the Constitution by the Constitutional Council. In case of recession (to be defined by the IFC), the rule would be put aside for N years, but cumulated deficits would have to be offset in the following years. The rule would not be applied in case of exceptional circumstances, voted by the Parliament.

In case of structural reforms (raising output growth or reducing implicit debt) the IFC could allow for a certain level of deficit. This would open the door to drifts: 2% of deficit for the introduction of the “*Contrat Première embauche*” (Scheme for young employment), 5% for the abolition of the minimum wage, etc...

Thus, the rule would only apply when net public debt is higher than 40% of GDP. In France, it would have been applied only from 1996 to 1998, and since 2008.

This proposal lies on strong assumptions, lacking evidence:

1. The optimal level of net public debt is 40% of GDP.
2. Any level of deficit may be run, private demand or interest rates will adjust.
3. Discretionary deficits should be forbidden.
4. Structural government balances may be assessed in real time.

The difficulties mentioned above imply a need for a vague rule, with high flexibility. This is how rules worked until recently.

2.2. National rules

Many countries have introduced in their constitution rules with no real impact, either because these rules are vague and not really binding, or because they are abandoned when they become binding.

There is no fiscal rule **in the US**. There is a public debt ceiling, which can be raised when needed, which may be the opportunity to make medium-term fiscal commitments. Since 1974, the Congressional Budget Office (CBO) has played a significant role in producing reports on the medium-term fiscal outlook and on fiscal policy costs. The situation is similar in the Netherlands, where the Centraal Planbureau (CPB) plays an important expertise role, in Sweden (with a Fiscal Policy Council), in Belgium (High Council of Finance) and in Denmark (Economic Council).

In Germany under the Stability National Pact, the central and local governments are not allowed to run deficits exceeding the amount of their investments. They should target a budgetary position in balance.

In Spain, the Fiscal Stability Law from 2004 states that “all levels of government should aim at budgetary positions in balance”.

In the UK, the New Labour government introduced in 1998 a “Code for fiscal stability”, embedding two rules. The golden rule for public finances states that the government shall be allowed to borrow only to invest over an economic cycle. The sustainable investment rule states that net public debt should remain at a stable and prudent level, set at 40% of GDP.

The golden rule has an economic justification since it ensures in theory that public expenditure are financed by the generations which benefit from it. It is appropriate from a cyclical view point: in times of recession, government borrowing can increase both under the automatic deficit and under discretionary measures, as long as this higher borrowing is offset in good economic times. It allows governments to borrow to invest, which is particularly necessary for countries lagging behind in terms of public investment. The rule prevents governments from reducing their deficits

through lower investment, which is detrimental to growth. But this rule opens a Pandora's box on public investment definition: should the rule stick to the national accounts' concept or should all expenditure preparing for the future be included, like education and research expenditure? The rule implies a risk of excessive public investment in bad economic times.

The golden rule is probably one of the best fiscal rules. However it has three drawbacks: it is difficult to implement because it assumes that there is a "regular" economic cycle. What should be done if the economic cycle turns out to be irregular? The government has an incentive to change business cycle dating in order to have rooms for manoeuvre.

The UK golden rule is slightly too strict, since we have seen that the appropriate rule is that government borrowing equals net public investment augmented by debt depreciation.

Should we recommend the implementation of a *golden rule* correctly designed as structural government borrowing excluding net public investment and debt depreciation? Balassone and Franco (2002) reject this rule in the name of measurement difficulties. The rule requires in fact statisticians to assess the cyclical part of government borrowing (therefore the output gap and its impact on public finances), public investment and public capital stock depreciation, in other words four debatable measures. But is not it better to use a fair rule, estimated with some lack of precision than to follow a wrong rule, estimated with precision?

A more fundamental criticism is that this rule defines fiscal policy neutrality, cyclical neutrality (only automatic stabilisers are allowed to work) and structural neutrality (public savings equals public investment). But a government may choose not to be neutral. It may wish to run an expansionary fiscal policy (in times of deep recession) or a restrictive policy (in times of high inflation). It may wish to implement structural measures if it judges that savings are too high *ex ante* (which would require a too low interest rate) or too low (for instance in the light of demographic developments). The rule confuses a neutrality criterion with an economic policy norm. Nothing guarantees that the fiscal policy needed to reach a satisfying output level in a country which does not control its interest rate matches the golden rule.

The 40% limit for the debt ratio has no justification. The golden rule ensures on its own that net public debt stands below public capital stock.

No mechanism forces the UK government to fulfil the Code; the government simply needs to explain why he did not fulfil it and how he will fulfil it. The rule allowed the government to increase substantially public investment spending starting from 2002, which was necessary both for structural (public infrastructure was insufficient) and cyclical (to counterbalance the fall in private demand after the burst of the internet bubble) reasons.

In November 2008, in view of public finance deterioration, the UK government abandoned the Code for fiscal stability, announcing that it would restore public finances once the economy would recover. Government borrowing rose rapidly, together with net public debt (which reached 60.5% GDP in March 2011). This shows clearly that fiscal rules cannot be set as rules “for all seasons”.

Formally, **France** is already committed to a fiscal rule. Since July 2008, the Article 34 of the Constitution states that: “The public finance multiannual guidelines are defined by programming laws. They are part of the target of public finances in balance”. This article has had very little influence on fiscal policy implementation since then. In times of crisis, multiannual guidelines rapidly lose any influence (Table 1). This was the case in 2002 and 2009.

Table 1. Public balance targets according to the French stability programmes

	In % of GDP															
	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
J 99	-2.9	-2.3			-1.2											
J 00		-2.1	-1.7			-0.5										
J 01				-1.0	-0.6	-0.4	0.2									
J 02					-1.4	-1.3	-0.5	0.0								
J 03					-2.8	-2.6	-2.1	-1.6	-1.0							
J 04						-4.0	-3.5	-2.9	-2.2	-1.5						
J 05								-2.9	-2.2	-1.6	-0.9					
J 06								-3.0	-2.9	-2.6	-1.9	-1.0				
J 07									-2.7	-2.5	-1.8	-0.9	0.0			
J 08										-2.4	-2.3	-1.7	-1.2	-0.6	0.0	
J 09											-2.9	-3.9	-2.7	-1.9	-1.1	
J 10												-7.9	-8.2	-6.0	-4.6	-3.0
J 11													-7.0	-5.7	-4.6	-3.0
Obs.	-2.6	-1.8	-1.5	-1.6	-3.2	-4.1	-3.6	-3.0	-2.3	-2.7	-3.3	-7.5	-7.0	-5.2		

Source: Stability programmes, Updates (1999-2011).

Moreover, the target of public finances in balance is excessive, as the golden rule allows in the medium term a deficit of around 2.5% of GDP.

2.3. The Stability and Growth Pact

Euro area countries are committed to the SGP. This is a unique example of a fiscal rule enshrined in an international Treaty, which raises a delicate issue: can a Treaty resulting from a political compromise, necessarily with simple specifications, contain binding economic constraints which may come in contradiction with economic principles, and with the needs of relevant fiscal policy?

The Pact was based on the assumption that MS domestic fiscal policies could have negative impacts on partner countries. But only the risk of an over-expansionary policy was taken into consideration, and not the risk of too restrictive policies. The Pact was marginally revised in 2005, but its basic principles remained unchanged. MS should not run higher than 3% of GDP public deficits and higher than 60% of GDP public debts. MS must produce Stability programmes showing 4-year projections for public finances, bringing medium-term budgetary positions in balance (a 1% of GDP deficit is allowed for MS with high growth and low public debt). Budgetary efforts must reach at least 0.5% of GDP per year (measured in terms of primary structural balance, as estimated by the Commission). If debt exceeds 60% of GDP, debt should be brought down to this value at a satisfactory pace. Once the objective of the structural balance in equilibrium is reached then it must be maintained. Only automatic stabilisers are allowed to play, the structural balance being estimated by the Commission's method. The European Commission initiates an Excessive Deficit Procedure (EDP) when a country breaches the 3% of GDP limit for deficits (unless this excess is temporary) and sets a deadline for the country to bring its deficit below 3% of GDP. MS not fulfilling their commitments under an EDP may be subject to fines, but this has never been implemented.

The SGP drawbacks have often been analysed (see, for instance Mathieu and Sterdyniak, 2003, 2006):

1. The 3% limit makes no sense in times of economic depression. A country hit by a specific recession may need a higher than 3% of GDP deficit to counterbalance a large fall in domestic private demand. *A priori* this will have no negative impact on euro area inflation. Such a deficit will have a positive impact on partner countries since it will prevent spill-over effects of a fall in demand. In 2002, Germany was running a 3.5% of GDP public deficit but inflation was growing by 1.4% only and there was a 1.9% of GDP current account surplus: one cannot see how the German deficit could then have had a negative impact on his partners.
2. The Pact is blind for two reasons. It bites only at the trough of the cycle. But restrictive measures should be taken only when the economy is at the peak of the cycle. The Pact cannot bite for too virtuous countries (who induce other countries to be “sinner” countries).
3. The Pact does not take account for issues such as external imbalances, competitiveness, private indebtedness, financial or housing bubbles.
4. The Pact should allow sanctions for countries running excessive public deficits, inducing inflationary pressures and excessive deficits, which require the ECB to raise interest rates. In fact, countries under an EDP are often countries with low growth and low inflation, and which need public deficits to support their growth. Conversely, a country like Spain could enjoy strong and inflationary growth without any public deficit but with a large current account deficit.
5. The rationale for a medium-term budget in balance has no economic justification. It is tighter than the golden rule or debt stability. In a situation of weak private demand and interest rates already at a floor, a government budget in balance is inconsistent with a satisfactory demand level. A deficit kept in permanence at 0% of GDP would lead nominal public debt to be stable in level and declining as a percentage of GDP. Public debt would reach 0% of GDP at some point. But savers, in particular pension funds, need to own long-term, liquid and safe assets, in other words public assets.
6. In good economic times, the SGP induces cuts in structural government borrowing, but cannot exert pressure on

governments to do so. The 1999-2002 episode showed that the concept of a good economic situation is problematic: MS refused to accept the structural unemployment rate floor as calculated by the Commission. In times of depression, the rule becomes totally unenforceable. Besides, the distinction between a structural and cyclical balance is questionable: where should stimulus measures be placed? What about the large revenue falls due to the overreaction of corporate and income taxation? There is no justification for prohibiting discretionary fiscal policies.

7. Since the single interest rate cannot fit all domestic specific situations, each MS should be allowed to run fiscal policy in order to reach a satisfactory output level (corresponding to the natural rate of unemployment). Let us summarise the EMU functioning by: $y_i = d_i + g_i - \sigma r$, where y_i is the output gap, d_i : private demand and g_i : public spending (assumed to be equal to the public deficit), r is the common interest rate. Then we should have: $g_i = -d_i + \sigma r$. On the contrary, imposing $g_i = 0$ leads to an unsatisfactory output level.
8. The SGP implementation relies crucially on the potential output growth estimate. This is problematic in times of crisis. According to the Commission method, potential output deviates relatively little from observed output, so the deficit is estimated to be mostly structural.

As Table 2 shows, the 2009 crisis led the Commission to revise substantially its estimates of potential output before the crisis. For 2007, the structural deficit increased by 1.2 percentage points at the euro area level. The reduction in the deficit between 2006 and 2007 was revised downwards from 0.5 to 0.1 percentage point. In 2011, was the effort needed to bring the structural deficit back to 0 amounting to 3% or 0% of GDP?

The SGP implementation led to strong tensions within the area (Tables 3 and 4). In 1999-2000, the largest countries refused to run restrictive policies, despite strong growth, because they did not want to undermine growth while domestic unemployment was still high. Thus, in the 2003-2004 economic downturn, deficits rose above the 3% of GDP limit and governments refused to undertake restrictive policies which would have deepened the recession. This led to an open crisis between the Commission and the Council in

November 2003. From 2004 to 2007, fiscal positions improved thanks to the recovery and to consolidation policies undertaken in Portugal, Germany and Italy. In mid-2008, no country was under an EDP. However, six countries ran public debts exceeding 60% of GDP: countries cannot meet *a priori* fiscal rules. There are still economists however (see for instance, Calmfors 2012) who blame countries for not having strictly conformed with the rules of the Pact, as if these rules have any economic justification.

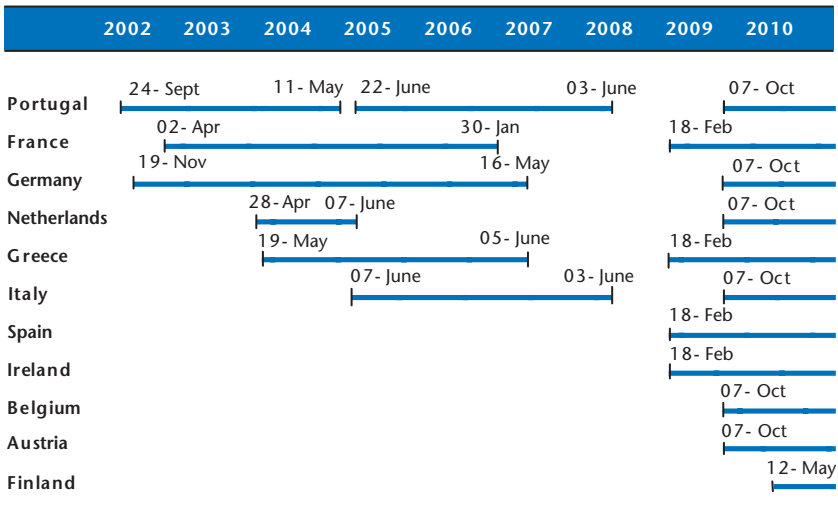
Table 2. Revision of the European Commission's structural balance estimates, 2005-2011

In % of GDP	2005	2006	2007	2008	2009	2010	2011
GDP growth, %	1.8	3.2	2.8	0.3	-4.2	1.9	1.5
Public balance	-2.5	-1.3	-0.7	-2.1	-6.4	-6.2	-4.1
Potential growth*	1.6	1.8	1.7	1.4	0.9	0.8	1.1
**	1.9	2.0	2.1	2.0	1.9		
Output gap*	0.0	1.4	2.5	1.4	-3.7	-2.6	-2.2
**	-0.9	-0.2	0.2	-1.2	-7.3	-7.3	-7.7
Structural balance*	-2.5	-2.0	-1.9	-2.8	-4.6	-5.0	-3.2
**	-2.0	-1.2	-0.7	-1.4	-2.6	-2.5	-0.1

* Autumn 2011 estimate; ** Spring 2008 estimate.

Source: European Commission (2008, 2011).

Table 3. Excessive deficit procedures



Source: European Commission.

Table 4. MS not fulfilling the rules

Public deficit/Public debt in % of GDP

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
PRT	4.3		3.1	3.4	5.9/63	4.1/64	3.2/68	3.6/72	10.1/83	9.2/93	5.9/108
FRA		3.2	4.1/63	3.6/65	3.0/66	/64	/64	3.3/68	7.5/78	7.0/82	5.6/85
DEU		3.6/60	4.0/64	3.8/66	3.3/68	/68	/65	/66	3.0/73	3.3/83	/84
NLD			3.2						5.5/61	5.3/63	3.7/66
GRC	4.4/104	4.8/102	5.7/97	7.4/99	5.3/103	6.0/106	6.7/105	9.8/111	15.6/ 127	10.4/ 143	7.5/153
ITA	3.1/109	3.0/106	3.6/104	4.4/104	3.3/106	/106	/104	/106	5.3/116	4.5/119	3.9/121
ESP								4.2	11.1	9.2/60	5.9/68
IRL								7.3	14.3/66	32.4/96	10.1/ 114
BEL	/107	/103	/98	/94	/92	/88	/84	/90	6.0/96	4.2/97	3.6/97
AUT	/67	/66	/66	/65	/64	/62	/61	/64	4.2/70	4.6/72	3.7/74

Source : European Commission (2011).

Over 1998-2007 the euro area government balance was however in surplus according to the OECD estimates (Table 5). From 1997 to 2007 the improvement in the structural euro area balance is due to decreasing interest payments and public expenditure (Table 6). Conversely it was limited due to lower tax revenues. The implementation of a tax harmonisation strategy in Europe would have prevented tax competition.

In 2007, debt was sustainable in all euro area countries (except in Greece and France, see Table 7). The gap was negative for the UK, the US, and even more for Japan. From a purely fiscal perspective, the assessment of the Pact is therefore mitigated. The Pact was probably binding, but less strongly that it intended.

Fiscal policy rules were not helpful during the crisis. The crisis destroyed the reliability of structural balance estimates (see Table 2); it appeared that governments were not controlling their deficit levels, due to the over-reaction of revenues (corporate taxation, income taxation, inheritance and transfers tax). Governments implemented discretionary policies; the Commission had to accept the latter and even pretend to co-ordinate them, forgetting its discourses on their inefficiency. The objective of structural budget in balance was entirely put aside. Government deficits rose, both in their structural and cyclical components: the Stability Pact had to be put aside.

Table 5. Euro area public finances

	GDP growth, %	Government balance, % of GDP	Interest pay- ments, % of GDP	Cyclical component*, % of GDP	Primary structural balance*, % of GDP
1998	2.7	-2.3	4.1	-0.2/-1.3	2.1/3.2
1999	2.8	-1.5	3.6	0.1/-0.8	2.3/3.2
2000	3.9	-1.1	3.5	0.8/0.0	0.7/1.5
2001	2.0	-2.0	3.3	0.6 /0.0	0.9/1.5
2002	0.9	-2.7	3.1	-0.1/-0.5	0.4/0.8
2003	0.7	-3.1	3.0	-0.6/-1.2	-0.1/0.5
2004	2.0	-2.9	2.8	-0.4/-1.2	0.3/1.1
2005	1.8	-2.5	2.7	-0.3/-1.3	0.4/1.4
2006	3.3	-1.4	2.6	0.6/-0.6	0.9/2.1
2007	3.0	-0.7	2.6	1.3/-0.1	0.9/2.3
2008	0.3	-2.1	2.6	0.6 /-1.0	-0.1/1.5
2009	-4.2	-6.4	2.5	-2.0/-4.1	-2.3/-0.2
2010	1.8	-6.3	2.5	-1.5/-4.2	-1.7/1.0
2011	1.6	-4.0	2.6	-1.3/-4.3	-0.3/2.7
2012	0.2	-2.9	2.8	-1.8/-5.2	1.3/4.7

*OECD estimate / OFCE estimate.

Source : OECD, *Economic Outlook*, May 2012.

Table 6. Public finances from 1997 to 2007 (cyclically adjusted)

Change, in % of GDP

	Revenues	Interest payments	Primary expenditure	Government balance
Euro area	-1.5	-1.6	-1.4	+1.5
Germany	-2.5	-0.5	-3.7	+1.7
France	-1.6	-0.6	-0.8	-0.2
Italy	-1.0	-3.9	+2.2	-0.7
Spain	+2.2	-3.1	+0.3	+5.1
Netherlands	0.0	-2.6	+0.8	+1.7
Belgium	-0.5	-3.4	+2.3	+1.7
Greece	+1.0	-3.1	+6.5	+2.4
Austria	-4.6	-1.2	-5.0	+1.5
Portugal	+3.8	-1.0	3.5	+1.2
Finland	-2.4	-2.4	-6.4	+6.4

Source : OECD, *Economic Outlook*, May 2012.

Table 7. Public finances in 2007

In % of GDP

	Government balance	Primary public balance	Net debt	Real interest rate corrected from growth	Debt stability gap	Change in debt, 2007/1997
Germany	0.2	2.6	42.9	1.6	1.9	+10
France	-2.7	0.2	34.0	0.2	-0.3	-8
Italy	-1.7	3.0	89.6	0.9	2.2	-18
Spain	1.9	3.0	18,7	-3.2	3.6	-35
Netherlands	0.2	1.8	28.0	0.3	1.7	-20
Belgium	-0.2	3.5	73.4	-0.2	3.6	-28
Austria	-0.7	1.3	30.7	-0.3	1.4	-6
Greece	-6.7	-3.0	80.4	-2.9	-0.7	+4
Portugal	-2.3	0.6	44.1	0.6	0.3	+17
Finland	5.2	4.6	-71.1	-0.3	4.4	-67
Ireland	0.2	0.9	-0.3	-3.4	0.8	-42
<i>Euro area</i>	-0.6	2.0	43.3	0.1	2.0	-10
United Kingdom	-2.7	-0.7	28.8	-0.3	-0.6	-2
USA	-2.8	-0.8	47.2	-1.1	-0.3	-6
Japan	-2.5	-1.9	80.4	0.7	-2.6	+45

Source : OECD, *Economic Outlook*, November 2011.

Public finances deteriorate in times of crisis when fiscal rules can no more play and are necessarily “forgotten”. Should fiscal rules be implemented, although they would not have allowed the policies run in 2008-2010? Is there a need for temporary fiscal rules to bring the economy out of the crisis? But how would such temporary rules make a trade-off between growth and public finances objectives? Between doing everything to bring deficits below 3% of GDP and debts below 60% of GDP and doing everything to support growth?

The strong deterioration of public finances during the crisis is not due to over-expansionary policies before the crisis (except for Greece). It results from the depth of the recession (which raises the issue of economic instability induced by financial globalisation), by banks’ recapitalisation in some countries (Ireland, which raises the issue of the regulation and supervision of the banking system), by the length of the crisis (which raises the issue of crisis exit strategies), by the bad functioning of the euro area which leads financial

markets to bet against Ireland, Portugal, Italy and Spain, where the situation of public finances is not worse than in the US.

The requested budgetary effort depends strongly on the estimate of the cyclical component of government borrowing; in 2011 it was nil at the euro area level according to us (since the primary structural balance was already in surplus), and amounted to 3% of GDP according to the European Commission (which aims at bringing structural deficits in balance).

As a fiscal rule, the SGP Pact therefore has a negative assessment. It was not met prior the crisis. It generated useless tensions. It did not allow to design an economic strategy before and during the crisis. It does not allow to define a crisis exit strategy.

3. Fiscal rules proposals

Although the rise in deficits and debts since the beginning of the financial crisis was not due to a drift in public finances, many economists and international institutions advocate exit strategies based on implementing fiscal rules in order to bring budgetary positions in balance. This raises two issues: how to define this new equilibrium? How to ensure that fiscal rules are consistent with macroeconomic equilibrium requirements?

Even if the crisis has shown the need for active fiscal policies, some countries blame inappropriate fiscal policies for current difficulties. Therefore, they wish more binding fiscal policy constraints. Should EU governments deprive themselves of weapons which were helpful during the crisis?

In the euro area, Germany, the Netherlands, and Finland demand more binding rules as a counterpart of the increased fiscal solidarity needed in face of speculation against public debts. The objective is also to *re-assure* financial markets who have understood that public debts in the euro area have become risky assets. But any rule raises credibility issues. Too rigid rules implemented simultaneously in Europe will reduce GDP growth which will have vicious effects: falling output growth generates lower tax receipts, and raises the debt-to-GDP ratio, public finance targets will not be reached; rising unemployment and political and social tensions will increase the fears that the country defaults and even leaves the euro area.

3.1. Domestic rules

3.1.1. Germany: The debt brake

Germany introduced a “debt brake” in its Constitution, which forbids higher than 0.35% of GDP structural deficits from 2016. The cyclical deficit is estimated according to the fragile Commission’s method. According to that estimate, Germany would have run excessive structural deficits (*i.e.* above 0.35% of GDP) each year since 1974 (except in 1985 and 1989). But can we consider that a country with higher than 6.5% of GDP current account surpluses in 2005-2007 and a 1.5% inflation rate was running excessive public deficits? In fact, the debt brake is not more rigid than the SGP rules. But Germany did not fulfil the SGP.

Deviations from the rule may be allowed in case of “natural disaster or exceptional economic circumstances”. They should be passed in a Parliament vote, with a 2/3 majority.

The law introduces a “notional adjustment account”, where deficits over the 0.35% ceiling (due to cyclical developments or a bad implementation of the budget) are recorded. These deficits will have to be cut either thanks to good economic times or to discretionary policies. The amount of this account cannot exceed 1.5% of GDP.

This rule is satisfactory neither in the short nor in the long term. In the short-term the definition of “exceptional situations” will be crucial. If growth decelerates, the fiscal policy constraint will depend strongly on the potential output estimate. In 2010, the German government deficit amounted to 4.3% of GDP. The structural deficit amounted to 3.5% of GDP according to the Commission or the OECD, to 1.3 % of GDP according to us.

In the long-term, if German potential output is assumed to grow by 3% per year in nominal terms, running a 0.35% of GDP deficit would bring the public debt down to 12% of GDP. Is this realistic?

With Germany having imposed on itself such a rule, the other EU countries are under market pressure to be as virtuous as Germany.

3.1.2. The UK: an independent office

In 2010, the UK introduced an independent *Office for Budget Responsibility* (OBR), in charge of producing macroeconomic and fiscal forecasts and of assessing the government patrimonial accounts. In 2011, the government set the objective of bringing the structural current government borrowing in balance in five years, *i.e.* to apply the golden rule with the problems we mentioned earlier. The OBR has to assess if the fiscal policy implemented will reach this objective (with a higher than 50% probability). What will the government do if active fiscal policy is needed in 2016? Fortunately, it will not be constrained by the 2011 programme. Hence, the medium-term commitment is not so binding.

3.1.3. A French-type rule?

In March 2010, a Commission was appointed with the mandate of recommending a rule for public finances in balance (see Camdessus, 2010). From the beginning, the Commission chose to exclude wise rules like the true golden rule or the stabilisation of the debt-to-GDP ratio, and suggested instead a rule of a structural budget in balance, which forbids discretionary measures and imposes a too strong constraint in the medium term. There was however no macroeconomist among the members of the Commission, and stabilisation issues were forgotten. The Commission suggested that each new government commits themselves by law on a programme of structural deficit cuts and on a date at which the structural balance will be reached.

The French government had proposed a complicated constitutional law project. Each government had to commit themselves in a multiannual public finance law⁷, which should cover at least 3 years and include, year by year, a public spending ceiling and an amount of new measures in terms of revenues (independently of the conjuncture). Higher than planned spending would be allowed only if associated with a similar rise in receipts. The government would have to commit initially on a fixed intangible scenario including each year structural deficits (public expenditure less receipts corrected from the conjuncture) cuts. The government

7. With a content to be specified in an Organic law.

would have to set a date at which the structural balance would be reached. The Constitutional Council would be entitled to amend a finance law if the latter was not in conformity with this multiannual public finance law, *i.e.* if it involved a lower than planned fiscal effort.

The experience of the SGP had however shown that it is useless to ask governments to announce a public finance trajectory independently of the cyclical context. In November 2007, the French government announced that the structural deficit would be cut down to 0.6% of GDP in 2011. In January 2010, the structural deficit target for 2011 had moved to 4% of GDP. Obviously, this rise in deficit was needed accounting for the crisis. But what would have happened if the budget had been constrained by a multiannual law passed in 2008? Does the French government consider it was wrong to support the economy in 2009, and that it should have been constrained to remain inactive?

Some economists (like Boone and Pisani-Ferry, 2011) were requesting France to make more budgetary efforts: they requested that the multiannual law passed at the beginning of the Parliament, sets “the fiscal policy main parameters over a five-year period”, as if a rigid economic policy could be run without accounting for cyclical or structural developments. They requested the “correction of past deviations”: in 2013 or 2014, excessive deficits from 2009 or 2010 should be corrected without accounting for the effective cyclical circumstances over these years. An “independent public finance council” should be settled, and would be in charge of evaluating implemented fiscal policy. But who would appoint these experts? What would be the judgement criteria of these experts?

This project was approved by a vote in the French National Assembly and the Senate, but not with a sufficiently large majority. It was therefore not adopted.

However, the French government had from then clearly committed to follow the deficit public reduction path enshrined in the budget law (6% of GDP in 2011, 4.6% in 2012 and 3% in 2013), independently of cyclical developments. Hence, the announcement of GDP growth 1 percentage point lower than anticipated for 2012 induces austerity measures which dampen GDP growth

further. As shown in Box 2, each time French GDP growth is 1 percentage point lower than anticipated, the government must implement measures amounting to 1 percentage point of GDP if it wishes to meet the *a priori* set target, which reduces *ex post* GDP growth by 2%.

3.2. The EU proposals

The European Commission's legislative proposals on the SGP strengthening and the "Euro Plus Pact" aim at constraining all euro area MS to introduce binding fiscal rules in their constitution. The EU authorities did not learn the lessons from the disastrous euro area management before the crisis. This management was focusing on rigid public finance rules and not on a precise coordination of macroeconomic strategies, which increased disparities in Europe in a weak growth context (Mathieu and Sterdyniak, 2011).

The debt crisis strengthened the weight of proponents of automatic and without economic rationale fiscal rules. These proponents can now rely on financial markets' threat, on the need to reassure financial markets, on the weight of Germany, which wishes increased EU solidarity to be paid by strengthened SGP rules. The Greek crisis is way to hide the financial crisis under the carpet.

The proponents of strict rules point to the threat of financial markets and rating agencies. If a country does not include such rules in their constitution they will lose their precious AAA. Financial markets would lend at reasonable rates only to countries committing not to have to borrow. On the one hand, countries cumulating huge foreign currency reserves (like China, and oil producing countries), pension funds, and insurance companies wish to own huge public assets amounts. On the other hand, they refuse to lend to countries which need to borrow, at least without high risk premia. They refuse to accept that their accumulation of liquid assets has a counterpart in terms of debt. Such contradictory demands can only paralyse the world economy.

On 29 September 2010, the Commission proposed a set of six legislative proposals aiming at "strengthening economic governance":

- The proposals keep the 3% of GDP limit for deficits, the medium term objective of budgetary positions in balance, and the constraint for countries running a structural deficit to cut it by at least 0.5% of GDP per year. No lesson is drawn from past experience.
- Countries will face sanctions if public spending increases more rapidly than *prudent* GDP growth (unless this is offset by a rise in taxation or if the country runs a fiscal surplus). This will prevent economic stabilisation through increased public spending. In times of economic depression, do we really need prudence? What would happen if by prudence households stop consuming or companies stop investing?
- Countries will face sanctions if they do not cut their structural deficit by at least 0.5 percentage point per year.
- Countries running a higher than 60% of GDP debt ratio will be under an excessive deficit procedure if the debt ratio does not fall by 1/20th per year of the gap between the effective debt and the 60% reference value. But it is almost impossible to prevent the debt ratio to rise in times of economic slowdowns. This new rule is pro-cyclical: it strengthens the constraint on deficits in slow growth periods. A country with a 90% debt-to GDP ratio and a 2% annual inflation rate, will have to keep a public deficit at below or 2% of GDP if domestic GDP grows by 2%; the deficit will need to be below or at 1% if GDP grows by 1% only.
- Guilty countries (countries with *too* rapid rises in public spending, countries not cutting their structural deficit, or not complying with an EDP) will have to make a deposit of between 0.2% and 0.5% of GDP, which will possibly be converted into a fine if the requested measures are not implemented.
- MS will have to introduce EU rules in their domestic fiscal frameworks (the 3% and 60% limits, the medium-term target of budgetary positions in balance) and to implement a surveillance of the fulfilment of these rules by an “independent budgetary institution”.
- A qualified majority will now be needed for the Council to oppose measures and sanctions recommended by the

Commission, this being expected to ensure the automaticity of sanctions.

The Commission's proposal undermines MS autonomy; forces them to fulfil strictly rules without economic rationale, and reduces their ability to stabilise their economies. It will increase further tensions between the Commission and the MS. Expert Committees are given the mandate of monitoring fiscal policy, although the crisis has clearly shown that strong and determined policy responses are needed.

The proposal was passed by the European Parliament while media remained silent and hence citizens entirely indifferent. The Parliament worsened the text: the Commission will be able sanction automatically a country not fulfilling the forecast path for deficits.

According to the Euro plus pact adopted in March 2011, each MS must introduce in their fiscal framework or their Constitution a fiscal rule similar to the SGP, the Commission being in charge of verifying this similarity.

In October 2011, the ECOFIN council specified that MS under an EDP, *i.e.* currently almost all euro area countries, will have to meet their budgetary targets independently of economic circumstances, in other words to implement pro-cyclical fiscal policies.

On 9 December 2011, the European Council proposed a "fiscal pact", which merely repeats the already adopted framework. It became the Treaty on Stability, Coordination and Governance (TSCG) and was signed on 2 March 2012. This text only recalls the six directives. Each country is requested to include in its Constitution a rule limiting the structural public deficit to 0.5% of GDP. It will have to converge rapidly towards this objective, according to a schedule given by the Commission. An automatic correction mechanism will have to be implemented in case of a deviation from this path. The EU Court of Justice will verify that the rule complies with the European rules. Countries will have to cut their deficit, according to a schedule proposed by the Commission. Countries under an EDP have to submit their budgets and structural reform programmes to the Commission and the Council, which will make recommendations and monitor budget implementation. A qualified majority of euro area governments will be

required to oppose sanctions decided by the Commission against countries breaching the 3% ceiling or not complying with instructions given by the Commission. MS will have to introduce independent fiscal committees in charge of verifying that the balanced budget rule is met and the adjustment path.

This project is dangerous from an economic point of view because it imposes an arbitrary public deficit rule; it imposes quasi-automatic fiscal policies; it prohibits any discretionary policy to support activity. But discretionary policies are needed to stabilise the economy. Let us assume that the tax-to-GDP ratio is 50% and propensity to consume is 1. Then the multiplier equals 2. If private spending falls by 10 *ex ante*, this will lead output to fall by 20 in the absence of any fiscal policy response, and the public deficit will rise by 10. Fiscal expansion raising public expenditure by 10 will lead to the same rise in deficit but will prevent output from falling. Such a policy would be forbidden according to the law proposal. The proposal is based on an implicit and wrong theory: automatic stabilisers should be allowed to work, but discretionary stabilisation fiscal policies should be forbidden. At the end of 2008, the IMF, the G20 and the European Commission requested countries to implement such discretionary policies. Should these policies have been abandoned two years later?

MS will lose fiscal autonomy. Implementing this Pact would be a serious setback for democracy in Europe.

In fact, the aim is to impose strong commitments to MS in order to convince Germany and the other Northern countries to accept more financial solidarity in Europe, to persuade the ECB to intervene more strongly by buying public debts, and more importantly to announce its intention to do it as long as necessary. But so far Germany and the ECB are not convinced that they should follow this strategy.

Last, some economists and even ministers in Germany or the Netherlands requested that a country not fulfilling the SGP may be condemned by the European Court of Justice. Fiscal policy would be submitted to the judiciary power. Jean-Claude Trichet, the then ECB President, and Wolfgang Schäuble, the German minister for finance, proposed that a Commissioner be responsible for euro area MS public finances, be allowed to supervise MS budgets, and

even have a veto right. The risk is that binding and absurd fiscal rules, inconsistent with macroeconomic governance needs are implemented. This is the ambiguity of current European construction: better economic policies coordination is needed, but a strictly numerical control of public deficits levels is neither economic policy coordination, nor an optimal rule.

3.2.1. A French-type rule? Bis

In October 2012, the French government has had the Parliament enact an “Organic law relating to the planning and governance of public finances” (*loi organique relative à la programmation et à la gouvernance des finances publiques, LPFP*), which translates into French law the European Fiscal pact (the TSCG). In fact, the government chose to take account *ad minima* of the Treaty, since the new fiscal procedure is not included in the constitution.

Article 1 of the Organic Law stipulates that: “In accordance with the objective of running government accounts in balance as set out in Article 34 of the Constitution, the LPFP sets the medium-term targets of the government administrations referred to in Article 3 of the TSCG.” But how can a Programming law “set a target” when the target derives from Article 3 of the Treaty, which clearly states that the target should be a structural deficit of below 0.5% of GDP and that an adjustment path to ensure a rapid convergence towards equilibrium will be proposed by the European Commission? The ambiguity of this article reflects an attempt to reconcile the irreconcilable: the sovereignty of Parliament in budgetary matters with France’s commitment to follow the recommendations of the Commission.

The programming law will cover 4 to 5 years, but will be voted again by the Parliament each year and so the constraint will possibly be amended with the vote of a new programming law, as this has been the case in France since the SGP was introduced. Thus the programming law as such does not introduce additional constraints to those already required by European treaties.

The organic law establishes a High Council of Public Finances, which will give advice on the macroeconomic forecasts underlying the finance law project, on the Stability programme which France has to submit to EU authorities, on the LPFP. The High Council

will verify that the Finance Law project is consistent with the trajectory announced in the LPFP. He will give his opinion on the existence of “exceptional circumstances”.

The High Council will be chaired by the President of the *Cour des comptes* (Court of audit) and will consist of 4 members of the *Cour des comptes* and four members appointed due to their expertise in public finances by the Presidents of the French National Assembly, the Senate and two Finance Commissions. The *Cour des comptes* will have a prevailing role, which is problematic. The *Cour des comptes'* judicial officers are not *a priori* macroeconomic experts, and because of their job position are often more concerned with public finances in balance than with output growth and employment. The latest *Cour des Comptes'* Reports have for instance underestimated the size of the output gap, they support the thesis according to which the fiscal multiplier is close to 0 and that public expenditure cuts are more relevant than increases in taxes. We would like to be sure that the *Cour des Comptes'* judicial officers will express their own views in full independence, and that the High Council's Reports will reflect a diversity of opinions; which is not currently the case in the *Cour des Comptes'* Reports.

More fundamentally, one may wonder whether there will be some flexibility in the High Council' assessments. Will the High Council be entitled to conclude that the adjustment path is too restrictive, and that the medium-term target is not realistic? What strategy will be advocated by the High Council in the event of an economic slowdown: an expansionary policy to support growth or an austerity policy to restore public finances?

Finally, a question needs to be raised: what will be the legitimacy of this High Council? Fiscal policy choices must be subject to democratic procedures. Economic policy assessment is part of a scientific, democratic debate. Should it be entrusted to a High Council, composed mainly of judicial experts, rather than economists on the one hand and representatives of the nation on the other hand?

The High Council will only give advice, which neither the government nor the Parliament are obliged to follow, but the risk is great that these recommendations influence financial markets

and the Commission and that it would be risky for the government not to fulfill them strictly.

To ensure that countries do indeed follow the adjustment path, the Treaty requires countries to provide an automatic correction mechanism if deviations are observed with respect to this path. In the spirit of the negotiators from Northern European countries and from the Commission, this mechanism should stipulate that in the event of 1% of GDP deviation in year N, the Constitution ensures that, automatically, some taxes (e.g. VAT) are raised by 0.5 percentage point of GDP and some expenditures (e.g. social benefits) are cut by 0.5 percentage point of GDP. As a matter of fact, Chapter 3 of France's Organic Law provides that the High Council reports such a deviation, that the government explains the reasons for this deviation and then takes them into account when elaborating the next finance law. Parliament's rights are respected, but fortunately the automaticity of the correcting mechanism is not guaranteed.

In the spirit of its founders, the fiscal treaty should put an end to the possibility of autonomous domestic fiscal policies. Fiscal policies should become automatic. Fiscal policy should aim at budgets in balance, just as monetary policy must be to prevent inflation; growth and employment shall be sought through free market structural reforms. The Organic Law seems to be an ambiguous compromise. France is ratifying the Treaty, but implements it only reluctantly. It's a safe bet that, as with the Stability Pact, there will be great tensions in the euro area between those who demand the strict enforcement of the Treaty and those who do not want to sacrifice growth to it.

3.3. Fiscal rules and markets

In 2011, most euro area economies ran close to primary structural balances, in other words their debt ratio would be stable if they could borrow at interest rates equal to output growth (Table 8). This is not the case for Japan, the US, and the UK. Besides, euro area countries suffer from a much higher interest rate than countries outside the euro area, although they have smaller imbalances. There is a specific cost for euro area countries.

Table 8. Selected indicators for countries' economic situation in 2011

	Current account, % of GDP	Public deficit, % of GDP	Public debt, % of GDP	Average growth, 2011 and 2012	Grade, Over 20*	Primary structural balance, % of GDP	10-year interest rate, 2011Q4
FIN	-0.6	-0.9	49	1.9	17.5	-0.7	2.5
DEU	5.7	-1.0	81	2.2	17.5	1.0	1.9
AUT	1.9	-2.6	72	1.9	16.1	0.1	3.1
NLD	9.2	-4.6	65	0.4	15.4	-2.4	2.4
BEL	-0.8	-3.9	98	1.2	12.5	-0.6	4.4
FRA	-2.1	-5.2	86	1.2	10.7	-1.6	3.2
US	-3.1	-9.7	103	2.1	9.6	-5.7	2.0
UK	-1.9	-8.4	83	0.6	9.6	-4.2	2.3
SPN	-3.5	-8.5	69	-0.5	8.6	-3.7	5.7
JPN	2.6	-9.5	206	0.7	8.2	-7.4	1.0
IRL	0.1	-13.0	108	0.7	7.5	-2.0	8.7
ITA	-3.1	-3.8	120	-0.6	7.5	1.4	6.6
PRT	-6.4	-4.2	108	-2.4	6.4	-1.5	12.2
GRC	-9.8	-9.2	165	-6.1	2.9	1.1	19.0

* This grade is the average of each country's rank according to four criteria: current account, public deficit, public debt and output growth.

Source: OECD, *Economic Outlook*, May 2012. Authors' calculations.

For euro area countries, these constraints come in addition to financial markets constraints. Since 1945, no industrial country defaulted on its public debt. Public debt was a safe asset, since governments were borrowing in their own currency and could always ask for central bank financing. Industrial countries benefited from “monetary sovereignty”. This is always the case today for Japan (where 10-year government bonds interest rates are at 1%, despite a government debt of 205% of GDP), the US (where 10-year government bonds interest rates are at 2%, despite a government debt of 100% of GDP) and the UK (where interest rates are also at 2% with a debt of 85% of GDP). It is a nonsense that rating agencies rate governments having monetary sovereignty, as if the latter could possibly default. Countries with monetary sovereignty should abandon their AAA: by nature, their debt is safe since it is guaranteed by the monetary power of their central bank.

Euro area countries have lost their “monetary sovereignty”: according the EU Treaty, the ECB is not allowed to finance governments; there is no solidarity between MS. Financial markets

realised this in mid-2009. Since then, an out-of-control speculation started on the more fragile euro area countries: Greece, Portugal, Ireland, and then by a domino effect, Italy, Spain, and even Belgium. In December 2011, Belgium had to pay an interest rate at 4.3%, Spain at 5.3% and Italy at 6.6% against 3.1% for France and 1.85% for Germany. Greece, Ireland and Portugal are brought back to a situation of developing economies in the past: their debts have become risky assets, facing substantial risk premia; they have to obey the caudine forks of the IMF.

Thus, fiscal policy may be entirely paralysed. In a country with monetary sovereignty, in times of recession the central bank may cut its interest rate down to the lowest level and be committed to keep it durably low; the government increases its deficit, but the low level of interest rates avoids public debt to increase under a “snowball effect”; this leads the exchange rate to fall, which supports output. The debt guarantees by the central bank implies that there is no default risk, hence no reason for being obliged to reassure markets in permanence. The central bank will keep interest rates low in times of depression and this will ensure fiscal policy effectiveness. Fiscal policy does not have to care about markets. This is still the strategy of the US.

In the euro area the risk is that a country may be unable to increase its deficit under the fear that government debt will be downgraded by rating agencies and that interest rates increase strongly. Countries have therefore no choice but to engage in beauty contests, in order to appear as virtuous as Germany in the markets’ eyes. Their fiscal policy becomes ineffective and hence their cyclical position cannot be stabilised. Public debt becomes a permanent risk factor, since governments are at the mercy of markets’ animal spirits. Any economic policy would have to be assessed accounting for markets’ opinion. But markets do not have any particular macroeconomic expertise. They demand austerity measures in depressed times and afterwards complain about insufficient output growth. This is how they proceed nowadays for the euro area in general, for Italy and Greece in particular. They favour free-market reforms, such as reducing social protection or the number of teachers. The default risk must be inexistent for countries to remain able to stabilise their economy.

The euro area therefore has to choose between disappearing or getting reformed in order to guarantee MS government debts; MS would find their “monetary sovereignty” again. EU public debts should become safe assets again, with low interest rates but fully guaranteed (by EU solidarity and fundamentally by the ECB). This is the only way to maintain domestic fiscal autonomy, which is necessary due to disparities in Europe and to the loss of the monetary instrument and of the exchange rate .

The euro area framework was not appropriately designed initially, especially as concerns the trade off between “fiscal policy autonomy/single currency/monetary sovereignty”. The joint guarantee creates a moral hazard problem, since each country may increase its debt with no limit, but the absence of guarantee leaves the door open to financial markets always ready to bet against some countries. The guarantee cannot be restricted to countries fulfilling the automatic fiscal rules of the SGP or the fiscal pact, which lack economic rationale. It cannot be restricted to countries committed to follow a pre-defined trajectory for public deficits, without accounting for the cyclical situation (as propose Doluca *et al.*, 2013). Such a commitment would oblige countries to implement simultaneously restrictive policies in times of economic slowdown, multiplying by almost 4 the size of the shock *ex ante* (see Box 2).

Contrary to what several economists propose (and among them even de Grauwe, 2012), this guarantee cannot be limited to 60% of GDP. The 60% of GDP figure is arbitrary, and does not fit with the needs of macroeconomic equilibrium. The non-guaranteed debt would be considered as highly risky and markets would require high interest rates. Since almost all euro area countries run government debts of more than 60% of GDP, they would have to borrow at high interest rates. The interest rate spread between the two types of debt would allow financial markets to speculate in permanence.

Euro area countries would not have to reassure markets anymore. They could implement differentiated but coordinated strategies, setting themselves a main target of bringing their economy to a satisfactory employment level, consistent with moderate inflation.

4. Conclusion

Due to the crisis, there is probably a need for a more transparent fiscal policy management: governments should set out clearly their output growth target, temporary expansionary measures should be clearly announced as such, the structural balance should not include temporary expansionary measures; the public deficit target should be explicit, but this target can only be the true golden rule and should be assessed accounting for the macroeconomic context.

But fiscal rules proponents forget that fiscal policy cannot be managed on its own, under arbitrary criteria. Fiscal policy should set itself the objective of maintaining (or reaching) a satisfactory employment level albeit allowing inflation and interest rates to remain at satisfactory levels. Government deficit and debt should be derived from this objective.

The emergency today is not to strengthen public finance discipline by cutting deficits blindly but to question economic developments (financial globalisation, the wish of many countries to build surpluses, the change in incomes distribution), which make these deficits necessary to support output (Mathieu and Sterdyniak, 2011).

References

- Alesina A. and R. Perotti, 1995: "The Political Economy of Budget Deficits", *IMF Staff Papers*, March.
- Alesina A. and G. Tabellini, 1990. "A Positive Theory of Fiscal Deficit and Government Debt", *Review of Economic Studies*, 57.
- Anderson B. and J. J. Minarik, 2006. "Design choices for Fiscal Policy Rules", *OECD Journal on Budgeting*, 5: (4).
- Balassone F. and D. Franco, 2001. "The SGP and the 'Golden Rule'", in Brunila A., M. Buti and D. Franco, eds.: *The Stability and Growth Pact*, Palgrave.
- Ben Amar A. and H. Sterdyniak, 2011. "Faut-il remettre en cause le rôle stabilisateur de la politique budgétaire ? ", *OFCE Working Paper*.
- Boone L. and J. Pisani-Ferry, 2011. "Comment discipliner les finances publiques", *Telos*, 17, April.
- Camdessus M., 2010. *Réaliser l'objectif constitutionnel d'équilibre des finances publiques*, Rapport au Premier ministre, La Documentation française, June.

- Debrun X. and M.S. Kumer, 2007. "Fiscal rules, fiscal councils and all that: commitment devices, signalling tools or smokescreens", in Banca d'Italia (eds.), *Fiscal Policy: Current Issues and Challenges*.
- Delpla J., 2010. *Réduire la dette grâce à la Constitution : créer une règle budgétaire en France*, Fondapol.
- Doluca H., M. Hübner, D.Rumpf and B. Weigert 2013. "The European Redemption Pact: An Illustrative Guide", *Revue de l'OFCE/Debates and Policies*, 127.
- Drazen A., 2004. "Fiscal Rules From A Political Economy Perspective" in G. Kopits (ed.), *Rules-Based Fiscal Policy in Emerging Markets*, New York: Palgrave Macmillan.
- Eisner R., 1989. "Budget deficits: rhetoric and reality", *The Journal of Economic Perspectives*, 3: (2), Spring.
- European Commission, 2010. *Reinforcing economic policy coordination*, May.
- European Commission, DG Ecofin, 2009. *Domestic Fiscal Frameworks*, October.
- European Commission, DG Ecofin, 2010. *Public finances in EMU-2010*.
- European Commission, DG Ecofin, 2011. *Public finances in EMU-2011*.
- Fatás A., A. H. Hallett, A. Sibert, R. Strauch and J. Von Hagen, 2003. *Stability and Growth in Europe: Towards a Better Pact*, CEPR.
- German Council of Economic Experts, 2009. *Annual Report*.
- Hernandez de Cos P., 2011. "The reform of the fiscal framework in Spain: constitutional limits and the new public spending growth rule", *Economic Bulletin*, Banco de España, October.
- IMF, 2009. "Fiscal Rules—Anchoring Expectations for Sustainable Public Finances", *mimeo*, December.
- Jèze G. and M. Boucard, 1896. *Cours de la science des finances et de la législation financière*, Paris: V. Giard et E. Brière.
- Leeper, E. M., 1991. "Equilibria under 'active' and 'passive' monetary and fiscal policies", *Journal of Monetary Economics*, 27: (1).
- Leroy-Beaulieu P., 1891. *Traité de la science des finances*, Paris: Guillaumin et C^{ie}.
- Mathieu C. and H. Sterdyniak, 2003. "Réformer le Pacte de stabilité : l'état du débat", *Revue de l'OFCE*, 84, January. In English: "Reforming the Stability and Growth Pact", *Document de travail de l'OFCE*, May.
- Mathieu C. and H. Sterdyniak, 2006. "A European Fiscal Framework designed for stability or growth?", in: *European Economic Policies—Alternatives to Orthodox Analysis and Policy Concepts*, Metropolis-Verlag.
- Mathieu C. and H. Sterdyniak, 2010. "La globalisation financière en crise", *Revue de l'OFCE*, 110, October.

- Mathieu C. and H. Sterdyniak, 2011. "Finances publiques, sorties de crise", *Revue de l'OFCE*, 116, January.
- Murray A. and G. Wilkes, 2009. *Fiscal Rules, OK ?*, Centre Forum.
- Musgrave R., 1939. "The nature of the budgetary balance and the case for a capital budget", *American Economic Review*, 29.
- Nersisyan Y. and L. R. Wray, 2010. "Does Excessive Sovereign Debt Really Hurt Growth? A Critique of This Time Is Different, by Reinhart and Rogoff", *Economics Working Paper Archive wp_603*, Levy Economics Institute,
- Sargent T. J. and N. Wallace, 1981. "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis Quarterly Review*, Fall.
- Sterdyniak H. and P. Villa, 1994. "Indépendance des banques centrales, politiques monétaire et budgétaire : une approche stratégique", *Revue de l'OFCE*, 50.
- Schick A., 2010. "Post crises Fiscal Rules: stabilising Public Finance while Responding to Economic Aftershocks", *OECD Journal on Budgeting*.
- Von Stein L., 1885. *Lehrbuch der Finanzwissenschaft*, Leipzig, F.A. Brockhaus.
- Wren-Lewis S., 2011. "Lessons from failure: fiscal policy, indulgence and ideology", *NIESR Review*, July.
- Wyplosz C., 2002. "Fiscal discipline in EMU: rules or institutions?", *mimeo*, April.
- Wyplosz C., 2011. "Fiscal discipline: rules rather than institutions?", *NIESR Review*, July.

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GLOBAL AND EUROPEAN FINANCIAL REFORMS

ASSESSMENT AND PERSPECTIVES

Dominique Perrut

Banking Consultant in Paris, Associate Researcher at the University of Angers (Granem)

In response to the severe disruption of the financial system, the agenda defined by the Group of Twenty (G20), in 2008, has led to a new regulatory framework. These ongoing reforms outline a new organization, which could be called the *Global and Integrated Prudential Model*. Such a model is based on *global rules* defined by international standard setters and on the *integration* between the different parts of the prudential organization. In this context, a new prudential organization is being set up in Europe.

Henceforth, international coordination is underway, but questions remain. What could be the effects of the new rules on banking capital requirements, and, consequently, on the funding of the economy, not to mention the very structure of the financial system?

As for the EU, which very swiftly carried out an important recasting of its legal frame, the continent will henceforth have to face three challenges: first, the risk of regulatory competition from large countries, chiefly the USA; second, the need to improve the law-making and the complex supervisory system; and third, the building of the Banking Union aimed at overcoming the current euro area crisis.

Keywords: Central banks, Macro-prudential regulation, Banking regulation and supervision, Financial aspects of economic integration.

The first global financial crisis which began in 2007 brought severe discredit on all the Authorities, both national and global, responsible for foreseeing, controlling and managing financial changes. In response to the severe disruption of the system, the agenda defined by the Group of Twenty (G20) has led to reforms aimed at providing a new regulatory framework in order to improve financial stability (G20, 2008 and 2009).

These ongoing reforms outline a new organization, which could be called the *Global and Integrated Prudential Model*. Such a model is based on the one hand on *global rules* defined by international standard setters and, on the other, on the *integration* between the different parts of the prudential organization, mostly between macro and micro-prudential levels.

This paper will take into account, first, the lessons to be learned from the crisis; and, second, the new prudential framework in progress at the global level; an assessment of the new framework, which lays stress on the new banking standards (Basel III), is provided. Then, it will examine how, in this context, a new prudential organization is being set up in Europe. Last, this paper will offer an assessment of the strengths and the weaknesses of this EU framework. We shall see that the implementation of such a reform faces obstacles both inside the EU (with harmonization problems) and outside it (with the worldwide regulatory competition between areas, mostly from the United States). In such a context, the current European project towards an integrated Banking Union is to be seen as an attempt to get over such obstacles and over the current euro area crisis.

1. Post-crisis lessons and reforms: The emergent Global and Integrated Prudential Model

1.1. What lessons are to be learned from the crisis?

Numerous recent debates have been aimed at throwing light on the causes of the recent crisis and on the consequences of its management. Thus a sort of consensus has emerged, which can be summarized around four chief points.

a. Central banking inflation-targeted policies have been called into question

For three decades Central Banks have adopted the so-called inflation-targeted policies aimed at stabilizing inflation at a low level. Such policies were based on the belief that retail price stability would ensure the financial system's stability (Borio, 2011). On the contrary, experience has shown that in a liberalized financial system, retail price stability may well go hand in hand with strong

increases in asset prices (real estate or stock markets). Such bubbles were often the consequence of excess in credit growth, resulting from generous liquidity provision at low rates by central banks (Aglietta, 2011; Blanchard *et al.*, 2010; Eichengreen *et al.*, 2011; Goodhart, 2010b).

These monetarist-inspired policies were not in line with liberalized economies. Indeed, given the increased function of asset markets, which are fluctuating by nature, liberalized economies have become intrinsically unstable. Thus, throughout the so-called period of Great Moderation, monetary stability went together with financial crises. Such a diagnosis has led nowadays to a new approach to Central Bank monetary policy in order to take into account financial stability.

Regarding this new goal, we are bound to wonder what kind of instrument could be used to attain it. Indeed interest rate setting by central banks, which is nowadays almost the single anti-inflation tool, would not be efficient to counteract excessive credit growth (Goodhart, 2010b). Moreover, according to the Tinbergen rule, it seems difficult to try to achieve two different objectives with the same tool. A risk of conflict between the two goals would appear in such a case. For these reasons, a consensus now exists to achieve the financial stability goal through specific instruments.

The response brought by global standard setters, namely the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision (BCBS), has consisted in creating a new tool (capital buffers) with a macro-prudential goal in the new banking framework (the so-called Basel III standard; see 1.2-a, hereafter). This new tool is considered to have a countercyclical effect to mitigate excessive credit raises and their consequences, namely inflation in asset prices.

b. The new features of systemic risk in a global economy

A prolific literature has recently addressed the question of systemic risk (EU Commission, 2009; ECB, 2009; Galati et Moesner, 2011; IMF, 2009). Systemic risk can be briefly described as “the risk of widespread disruptions to the provision of financial services that have serious consequences for economy at large” (FSB, 2011b). The very existence of Systemically Important Financial Institutions (SIFIs) can be seen as a chief cause of such a risk.

Usually, these institutions, mostly banks, were detected on the basis of a single criterion, namely their size, measured according to the total amount of their balance-sheet. The 2007-2009 financial crisis revealed that two other factors could increase systemic risk. These factors consist, on the one hand, of *liquidity problems of banks*, which are related with situations of excessive indebtedness (the latter being measured by the leverage ratio); and, on the other hand, of *off-balance-sheet relations between banks*, especially through credit insurance mechanisms, such as Credit default swaps (CDSs) (FSB, 2011b; BCBS, 2011b).

It was observed during the crisis that liquidity problems and off-balance-sheet relations were acting as dangerous channels leading to quick and wide propagation of financial shocks. The unrestrained development of complex securitization was based on products such as Collateralized Debt Obligations (CDOs) and Asset-Backed Commercial Paper (ABCPs), which appear as mere financial innovation concentrates. Thus, through the securitization process we could observe that the worldwide financial system, chiefly European banks, ensured the financing of the north-American residential real estate bubble.

Among SIFIs, the FSB has isolated a sub-category called global-SIFIs (G-SIFIs). These institutions are such that “their distress or failure would cause significant dislocation in the global financial system and adverse economic consequences across a range of countries” (FSB, 2011d). In order to identify Global Systemically Important Banks (G-SIBs), a study has been carried-out by the BCBS in cooperation with the FSB. This work led to detecting a set of 29 banking groups defined as G-SIBs. A combination of criteria was defined for such a selection, including, in addition to the size, new significant features such as interconnectedness, global cross jurisdictional activity, complexity and the lack of readily available substitutes (FSB, 2011b).

c. The “Too Big to Fail” principle led to considerable changes in the Lender of Last Resort function

The notion of Lender of Last Resort (LLR) appeared two centuries ago in economic literature, but this concept has never received a clear-cut definition (Ugolini, 2011). However, it can be agreed that, in its classical meaning, the LLR function is that of the

Central Bank when it provides emergency liquidities, according to Thornton-Bagehot's well-established rules, to a distressed bank facing a liquidity problem but which is not insolvent (Thornton, 1802; Bagehot, 1873; Humphrey, 1989). This kind of operation is aimed at avoiding a banking failure which could be contagious and therefore create damage to the financial system as a whole.

Nevertheless, for 25 years, in each of the OECD banking crises following the liberalization process, Authorities have rescued insolvent institutions. Such policies were adopted according to the well-known principle Too Big To Fail (TBTf). Indeed, it was agreed that, given their size, big financial entities could bring about, should they meet a failure, a severe disruption or even a collapse of the banking system.

As a consequence, the classical Thornton-Bagehot model was replaced by a new prudential scheme about thirty years ago. We call it the Hierarchical Prudential Model (HPM). It is based on two chief features: on the one hand, *the constructive ambiguity principle* (when the Central Bank adopts a discretionary, or ambiguous, attitude towards distressed banking situations); and, on the other hand, *safety nets* (comprising both *supervision*, which includes *prudential rules* and *surveillance*, and *solidarity and guarantee schemes* (Humphrey, 1992; Gardener, 1992; Perrut, 2010).

During the 2007-2009 financial crisis, the TBTf principle was set up as an intangible rule by G7 decision-makers, in October 2008, when they solemnly declared their commitment to avoid any failure of systemically important institutions (G7, 2008).

As a result of such developments, three major changes can be observed in the LLR function. First, *a doctrinal change* occurred, for the major principles of the prudential doctrine were clearly put aside (both the "Let insolvent institutions fail", of the classical model, or the "constructive ambiguity" principle in the HPM). Second, *a diversification among authorities* acting as LLR could be observed. Indeed, task-sharing took place between States, which chiefly guaranteed recapitalization operations, and Central banks, which provided banks with liquidity. Third, the toolkit used to conduct anti-crises operations was widened to *new instruments*. As for the States, operations expanded henceforth from capital furniture to guarantees, including bad banks (or defeasance structures);

as for the Central Banks, interventions included unlimited long-term liquidity provisions and sovereign debt purchases (4); moreover major Central Banks signed unlimited currency swap agreements with each other (ECB, 2011b; EU Commission, 2009), which outline a kind of International LLR function.

d. Consequences of the crisis management: moral hazard problem and collective costs

A huge moral hazard problem and considerable collective costs can be observed, as consequences of the decision-making to deal with the recent crisis.

The solemn declaration of the G7 leaders mentioned above led to important actions to rescue insolvent institutions and therefore to big amounts of capital furniture in order to fill the equity gap in distressed institutions. The very nature of such operations led to the commitment of States rather than of Central Banks.

Such bail-out operations brought two major consequences. First, a situation of considerably increased moral hazard appears as a direct consequence of the crisis management. Indeed, all systemic institutions could from now on consider themselves as protected against a failure given their size, whatever their misbehaviours. Such an improper situation creates a stimulus for new excessive risk-taking policies.

Considerable collective costs are to be seen as a second effect of the anti-crisis policy. According to the EU Commission, approved State aid in the EU in favour of the financial sector amount to € 4.100 billion, of which about € 2.000 billion were actually employed in 2008 and 2009. IMF sources state that EU bank losses reached a global amount of € 1.000 billion and 8% of EU GDP between 2007 and 2010 (EU Commission, 2011b). Thus, the emergency crisis management led to huge collective costs in order to refloat the financial sector. Therefore, the set-up of management and resolution regimes for financial institutions is to be seen as a priority among the ongoing reforms in order to preserve the economy, to avoid moral hazard and to protect taxpayers.

1.2. Global reforms in progress: the new banking standards and a framework for resolution regimes

An ongoing set of reforms is orchestrated by the G20 and the FSB. Two main components of this agenda consist of a new set of banking standards, the so-called Basel III framework, which is to be seen as the chief tool aimed at preventing a new financial crisis, and a set of guidelines for resolution regimes for financial institutions.

In conjunction with these global responses, each country or area has initiated a recasting of its legislative framework for financial activities. Thus, within the set of recommendations from the FSB regarding macro-prudential supervision, systemic risk observatories have been set-up in the USA, the UK, China, as well as in the EU as a whole (FSB, 2011d); (see hereafter, 2.1).

Reforms can also be observed concerning micro-prudential supervision, in Europe and in the USA where, within the 2010 Dodd-Frank reform, the organization, which is currently somewhat bureaucratic is to be redefined, especially regarding the supervisory task-sharing between authorities.

a. The new Basel III standard on capital, leverage and liquidity

According to capital ratio standards, banks are required to keep an amount of capital as a percentage of their exposures, risk-weighted with several methods. The Basel III framework, still in progress, will be implemented by banks between 2013 and 2019. The existing micro-prudential tool (the capital ratio) will be dramatically strengthened. A macro-prudential overlay will be added through capital buffers and new tools, entirely different from capital ratio, namely liquidity ratios (BCBS, 2010; 2011a, b).

Regarding *the micro-prudential level*, the strengthening of the prior capital ratio, namely Basel II framework (recently changed into Basel 2.5) comprises:

- A rise in minimum capital requirements with better quality;
- A wider risk coverage;
- A new tool called *leverage ratio*, non-risk based and including off-balance-sheet exposures; such an instrument aims to restrict bank indebtedness; it establishes a strict limit for

total exposures; the latter are required to remain under the level of core capital multiplied by 33.

In order to counteract both moral hazard and systemic risk, *the macro-prudential overlay*, which is entirely new, comprises, in respect of capital requirements:

- *A countercyclical buffer* in order to limit excessive credit growth; this tool will be monitored (between 0% and 2,5% of the exposures) by the supervisors;
- *An additional capital buffer* for Systemically Important Banks (SIBs), varying from 1% to 2.5% of the exposures; such an additional loss absorbency capacity for these banks is aimed at reducing systemic risk and, should a failure occur, limiting its effects on collective costs.

Moreover, *two liquidity ratios* (a short-term one and a long-term structural ratio) will be created with a worldwide harmonization. Such tools are aimed at avoiding new liquidity crises like the chronic ones we have been faced with since 2007.

b. The setting-up of a framework for financial crises management and resolution

During the recent crisis, Authorities ascertained the lack of a resolution process for individual failures. Such a lack compelled administrations to undertake emergency actions, which led to a moral hazard problem and to losses for the taxpayers.

A resolution regime for financial institutions is aimed at avoiding the triggering of a systemic crisis when a bank failure occurs, at protecting the taxpayer and at following the proper hierarchy between the creditors.

The FSB recently published a set of principles in order to guide the national resolution regimes which are to be established. FSB guidelines call for jurisdictions to adopt several measures (FSB, 2011a):

- Designation of a resolution authority to resolve insolvent institutions;
- Definition of specific principles for cross-border groups;
- Frames for recovery and resolution plans concerning SIFIs.

Several countries have already planned measures regarding these issues.

The EU Commission, for its part, published a communication in 2010 entitled “A European framework for crisis management in the financial sector”, and made legislative proposals, June 2012 (EU Commission, 2010c; 2012b).

1.3. Towards a Global and Integrated Prudential Model

The boost given by the 2008 G20 agenda and the take-over by the coordination of international institutions outline a new organization to ensure a sounder financial system. We would qualify such an architecture as the Global and Integrated Prudential Model. Indeed, such a framework is founded on two main features. On the one hand, the authorities’ determination to respond to financial globalization has led to a *global regulation*, which should be adopted in all countries. On the other hand, the acknowledgment of systemic risk and moral hazard calls for an integrated prudential policy. This forthcoming organization thus appears as a *third generation prudential model*, following the 19th century Thornton-Bagehot classical model and the post-WW2 Hierarchical Prudential Model, as mentioned before (see 1.1-c).

A new framework defined at the global level. The 2008 G20 programme (Washington Summit) for a global reform of the financial system is based on several principles: promoting sound regulation and financial market integrity; reinforcing international cooperation; reforming international financial institutions (G20, 2008).

This action-based programme was entrusted to the FSB whose task is to ensure, together with the IMF, the coordination of regulators and standard setters. The latter comprise:

- *sector-oriented regulators* (*banking*: Bank for International Settlements, BIS, Basel Committee on Banking Supervision, BCBS; *insurance*: International Association of Insurance Supervisors, IAIS; *security markets*: International Association of Securities Commission, IOSCO);
- *standard setters with broader focus* (International Accounting Standard Board, IASB, and US Financial Accounting Standard Board, FASB, regarding accounting standards) and *international organizations* (World Bank and OECD).

A new feature in this regulatory workshop is to be found in the will expressed from now on by some regulators (Basel Committee, IASB) to expand their standard setting status to that of supervisor of the complete and harmonized implementation of their standards. Such a policy is aimed at avoiding, on the one hand, situations of unfair competition between the countries and, on the other hand, the loss of credibility in standards, should their enforcement be disordered. Thus, the Basel Committee expressed its will to ensure the follow-up of the implementation of its framework, as it appears clearly in a recent comparative report on the implementation timetable among countries or jurisdictions for Basel standards (BCBS, 2011c); (see 1.4, hereafter).

An integrated prudential organization. Integration is indeed a new feature of the new prudential organization. This appears, first, in the setting-up of *coordination between micro and macro-prudential supervision*. Integration between these two levels is required by the new banking standards, which will entrust Central Banks (whose function is, *inter alia*, to look after money and credit) with the task of implementing macro-prudential measures such as the level of countercyclical buffers. A closer cooperation between Central Banks and supervisors will be necessary in this regard in order to make the transmission of such decisions to individual banks effective. EU supervisory reform will give us an example of such integration (see hereafter, 2.1-a).

Second, prudential policy is henceforth to be seen as a *complete cycle*, including several steps linked together:

- *preventive action.* This level is based upon precocious risk detection, which is the task of systemic risk observatories, and strengthened prudential rules (mostly within Basel III reform); monetary policy probably should also contribute to deal with excessive raises in asset prices;
- *crisis management.* Crisis, when they occur are to be faced by several players, namely, Central Banks and States (whenever a LLR function is required), and micro-supervisors to manage individual distressed situations;
- *crisis resolution.* Resolution frameworks are aimed at dealing with the failure of institutions in order to avoid systemic

risk, to spare collective costs and to comply properly with the hierarchy of the rights between creditors.

1.4. The new Basel III banking framework and the global reform: what are the consequences?

a. General remarks about the global reform

If we understand correctly the logic and direction of this new prudential model, we have to wonder about the consequences and dangers facing present developments. Moreover, would a legal separation between activities be an interesting regulatory solution?

Risk of a regulatory gap between financial sectors. The new ongoing regulatory framework will comprise different components, among which the new banking rules and the forthcoming rules on the so-called “shadow banking system” (SBS). Regarding this, we can say that the wider the gap in the regulatory structure (between banks and the SBS), the stronger the incentive will be for actors to develop less regulated sectors. Ben Bernanke has observed that such a gap was a cause of the recent crisis (Bernanke, 2012). Indeed, the different parts of the regulatory system cannot be dissociated from each other. Otherwise, the very causes of the recent crisis would only be reinforced by the new banking standards. Indeed, Basel III higher standards are to be seen as a strong incentive for giving a fresh impetus to the “originate to distribute” model, especially through securitization and new developments of the shadow banking system. G20 leaders are conscious of such a situation. During the Seoul G20 meeting, in 2010, the FSB was asked to elaborate rules in order to control the shadow banking system (FSB, 2011d).

Risk of disparities and time lags between jurisdictions for implementing the reform. To be sure, the global reform will not follow the same pace, depending on countries or jurisdictions, for two reasons. First, the desire to complete the G20's programme is probably not shared with equal intensity by all countries. From this point of view, the slowness in the finalisation of the Dodd-Frank reform may lead to a situation in which national regulations will be competing, thereby slowing down or even impeding any global reform. For instance, a gap between USA and EU jurisdictions about the implementation process of the new banking rules can be

found in a recent BCBS report. According to its recent will to supervise the implementation of its rules, the Basel Committee recently published, as mentioned before (see 1.3), a follow-up report on the implementation of its standards throughout the world. As for Basel 2.5 framework (published in 2009), the report shows that the EU set its deadline at the end of 2011 for the enforcement in all Member States. According to available information, all EU countries could comply with this timetable, whereas in the USA, proposals for regulations were still under discussion and still not yet published in October 2011 (BCBS, 2011c).

Second, the implementation of the reforms cannot possibly avoid some discrepancies among firms or countries, which will lead to disparities in competition. The process of implementation for Basel II (or 2.5), for instance, shows that a perfectly coordinated and homogenous approach between firms and countries is practically impossible.

Indeed, the first pillar of Basel II framework comprises three risk categories: counterparty credit risk, market risk and operational risk. For each category, a choice is to be made by the actors, under the control of the supervisor, among several options. As to credit risk, three options are available, the standardized approach, the Foundation internal-rating-based approach (FIRB) and the Advanced internal-rating-based approach (AIRB). Options must be made for each of the seven portfolios included in the Counterparty credit risk. Thus, even in the same country, under the same supervision, the implementation of Basel rules would not be exactly the same. In the Basel III framework, countercyclical buffers and liquidity ratio will make the process even more complex. Furthermore, banks will be put under a closer oversight from national supervisors whose discretionary powers would be extended (e.g. for defining the level of countercyclical buffers).

Capital ratio versus regulatory separation between activities. Within the *Basel capital ratio*, aimed at taking into account all specific risks of banks, the latter remain free to define their capital allocation between activities according to their strengths and strategies.

As for *legal separation between banking activities* no less than three projects for reforms are currently being discussed. First, the UK Vickers reform which chiefly consists in establishing a “ring fence”

to protect retail banking activities; second, the USA Volcker Rule aimed at establishing limits to proprietary trading; and third, the EU Liikanen report proposals mostly aimed at controlling proprietary trading and particularly “risky activities” (HLEG, 2012).

Basically, mandatory separation between activities is based on two doubtful, not to say erroneous ideas. First, there is the idea that investment banks would carry more systemic risks than retail banks. Therefore it would be necessary to protect retail banking (especially deposits) with a legal separation such as that required by the old USA 1933 Glass-Steagall Act. Nevertheless, during the recent crisis, we have seen that all banking businesses can lead to systemic risks.

Second, legal separation would protect against contagious effects between activities. However, if refinancing links were to remain between businesses, legal separation would be absolutely ineffective against systemic shocks. As it was recently ascertained, liquidity appeared to be a dangerous channel leading to the propagation of financial shocks.

Would a stricter definition of legal separation prevent such propagation? In this a case, a “Chinese wall” would forbid financial links between different activities (e.g, between retail and investment banking). The consequence would be the drying-up of interbank markets. Such a situation would lead to a dramatic lowering of bank lending to the economy.

However, should a *few highly speculative and risky activities*, like proprietary trading, be separated? A mandatory separation as well as a separation in financing could indeed avoid contagious effects. But such a legal separation should be accompanied by a huge capital surcharge, which would be the only effective tool in order to ensure a downsizing of this activity.

b. Direct consequences of the new banking standards (Basel III) on the bank balance-sheets

It is far too soon to have a precise idea about the effects of the new banking standards. Indeed, on the one hand, discussions are still going on about the very definition of some rules (especially concerning the short term liquidity ratio, LCR, as mentioned below). On the other hand, two monitoring exercises have been

carried-out by regulators (BCBS) and supervisors (European Banking Authority). We can only observe that such studies were led under restrictive assumptions. The Basel Committee (BCBS) led a monitoring exercise (using bank accounts as of 30 June 2011) on 212 banks, including 103 Group 1 banks (defined as being international and having a tier 1 capital in excess of € 3 billion), and 109 Group 2 banks (BCBS, 2012). This exercise assumes full implementation of the final Basel III package and takes into account systemic surcharge. But countercyclical buffers and firm strategies, aimed at bringing a response to the new rules, are not considered. The EBA monitoring exercise (EBA, 2012) comprises 158 banks, including 48 Group 1 banks, and follows the same criteria and methodological background as that of the BCBS. Despite these limits a few trends can be identified concerning the effects of the new banking rules.

- *Capital ratios: sharp increase in capital requirements and higher banking capital needs.*

Far higher capital requirements. Such an increase in the capital requirements appears both in the new definition of the Risk-Weighted-Assets (RWA) and in the capital rates required in proportion of these total exposures.

According to the BCBS monitoring exercise, Group 1 *Risk-Weighted-Assets* would increase by 19.4% (almost one-fifth) under Basel III rules, in comparison to current RWA (Basel 2.5).

Under the new framework, *Tier 1 requirements* (comprising mostly equity) for non systemic banks would rise from 4% of the RWA (Basel II rules) to a level ranging from 8.5% to 11% (the latter including the maximum 2.5% countercyclical capital buffers) according to Basel III standards (see Appendix A). For these non systemic banks, *total requirements* would rise from 8% (Basel II) to a level ranging from 10.5% (including 7% in equity shares) to 13% (including maximum capital buffers).

For systemic banks (subject to a systemic surcharge ranging from 1% to 2.5% of the RWA), *Tier 1 ratio* would reach a level ranging from 11 % to 13,5 % (with a full systemic surcharge and full countercyclical capital buffers). The *total requirements* would reach a level ranging from 13% (including 9.5% in equity shares) and 15.5% (including 12% in equity).

Under this new definition of RWA (with a new deduction system) and capital ratios (as percentages of the RWA), Group 1 *capital ratio Tier 1* would fall from 11.5% (current rules) to 7.5% (Basel III rules), *i.e.* a decline by 4.1 percentage points and over one-third (see Appendix B). Total capital ratio, for Group 1 sample, would fall from 14.2% to 8.6% (*i.e.* a decline by 5.6 percentage points and 41%).

Higher capital needs. In terms of capital shortfall, the full effect of Basel III rules (including systemic surcharge) would lead to the following results, according to BCBS exercise (using data as of 30 June 2011). For Group 1 (see Appendix B and C):

- to meet the Common Equity Tier 1 (CET1) target (7%), the capital shortfall would amount to € 485.6 billion;
- then (assuming banks already hold 7% CET1 capital), to meet the Tier 1 capital target ratio (8.5%), Group 1 banks would need an additional € 221.4 billion;
- last, (assuming banks already hold 7% CET1 and 8.5% Tier 1 capital), to meet the total capital target ratio (10.5%), Group 1 banks would need an additional € 223.2 billion.

These estimates, which amount to a total figure of € 930.2 billion, do not include any countercyclical buffer.

Liquidity standards: towards a drastic reducing of banking transformation. As mentioned before (see 1.2-a), two liquidity ratios, still under discussion, are created in the Basel III framework. The first one, the Liquidity Coverage Ratio (LCR), is a short term ratio, aimed at ensuring that banks can withstand a 30-day stressed funding scenario. It is expected to be implemented by 2015. The second one, the Net Stable Funding Ratio (NSFR), is a long term structural ratio, designed to address liquidity mismatches. The NSFR should be implemented by 2018.

According to the BCBS monitoring exercise, the shortfall of liquid assets to comply with the LCR (on the basis of the June 2011 accounts) would amount to € 1.760 billion for the whole sample (Group 1 et 2, *i.e.* 212 banks). This shortfall represents approximately 3% of the € 58.500 billion total assets of the aggregate sample. As for the NSFR, the shortfall would amount to € 2.780 billion.

This amount represents the aggregate shortfall of banks that are below the 100 % NSFR requirement.

According to the press statement issued by the BCBS oversight body, namely the Group of Governors and Heads of Supervision, January 2012, the liquidity approach will not change, except for a few key points related with the LCR, currently under investigation.

Nevertheless, discussions which began two years ago are still going on. According to the European Commissioner M. Barnier, reserves (from Governors from the Bank of England and from the ECB) and even demands for revision (from the USA and Japan) are to be mentioned. Moreover, a Green book issued by the European Commission is expected on these topics, September 2012 (Barnier, 2012).

Regarding liquidity ratios, especially the long term one (NSFR), we observe that such a measure would strongly reduce banking transformation which is part of the function of commercial banking in order to finance the economy. Thus, the current Basel III project should be strongly mitigated in order to avoid, especially in the EU, a sharp lowering of bank lending to the economy.

c. What will be the consequences for using banks to fund the economy?

Bank strategies. Already, significant changes can be observed in bank strategies in order to deal with the new banking rules. Such measures range from: asset sales (according to BIS estimates, such asset sales from EU banks could amount to a level ranging from € 500 billion to € 3.000 billion over the next years); stopping non core businesses; reducing dramatically global exposures. For instance, according to its annual report, a major investment bank, UBS Group, has already decided to downsize its exposures sharply. The chief part of its risk-weighted assets, concerning investment banking, would be reduced by one third, namely a CH 130 billion decrease, between September 2011 (RWA: CH 400 billion) and the end of 2016 (RWA: 270 billion). Moreover, observers have pointed out that UK banks have begun a process aimed at reducing their assets (BIS, 2012a).

Bank asset-liability management. Furthermore, together with the increase of capital ratios, the implementation of the long term

liquidity ratio (NSFR) would have important consequences on the whole banking asset-liability management, both on the asset side (with an increased need for short term assets and for high quality securities), and on the liability side (with diversification of resources and more stable funding).

Risks for the financing of the economy. Thus two risks appear as possible consequences of the new banking framework. On the one hand, numerous questions are to be asked about the *conditions of funding the economy by banks*. A slowdown or a decrease in bank lending is to be feared. As a consequence, discrimination between companies, both in the volume and the cost of operations could appear, especially to the detriment of SME's which are the chief source of job creation. These rules could also lead to an increase in the cost of lending.

On the other hand, there could be a possible *crowding out effect* against the industrial sector for the collation of fresh capital and medium-term resources on the financial markets, which, apart from the States, will be solicited on a large scale by the banks to meet Basel III ratios over the next decade.

d. Towards a reshaping of the whole financial sector

The new Basel III standard probably results from the intent of BCBS regulators, namely major Central bank representatives, to reshape the whole financial sector.

Such a new organization would consist, on the one hand, in a downsizing of banks and of the banking system, whose function in the funding of firms would be reduced; on the other hand, in an increase of firm funding by financial markets and long-term investors (namely pension funds, insurance companies, hedge funds and private equity funds).

We may observe that the effects of such an evolution would converge with some alternative reforms discussed at the beginnings of the Basel III elaboration. Such alternatives comprised size limits for banks or limits related to with banking diversification.

Regarding this, the forthcoming redefinition of banking perimeters under Basel III, according to the criteria of specialization or capital requirements, is not far from some features of the UK Vickers ongoing reform.

However, these forthcoming changes could well go together with a new impetus given to the “originate to distribute” model, which appeared to be among the chief factors of the recent crisis. Indeed, capital surcharges and liquidity ratios will represent a strong incentive to boost the shadow banking system, through the securitization process. Global regulators, especially the FSB, have from now on to address a new challenge. Will they be able to define and ensure a consistent implementation of the whole G20 programme? Indeed, regarding the shadow banking system, its regulatory control is urgent in order to avoid the increased regulatory pressure on banks from leading to a new impulse to less regulated financial sectors.

2. The EU prudential framework: assessment, perspectives

The second part of this paper will examine, first, the EU prudential framework in progress, along with the global reform; second, it will discuss a few points concerning this reform; third, it will address a current issue, the so-called Banking Union for the Euro Area.

2.1. Recent changes in the EU prudential framework

Let us recall first that several EU institutional bodies were involved, during fall 2008, in dealing with the direct consequences of the crisis:

- decisions taken by *intergovernmental meetings* (European Council, Ecofin, Eurogroup), in coordination with international meetings (mostly G7 and G20) ;
- legislative or regulatory actions from the *institutional community “triangle”* (European parliament, Ecofin, Commission) ;
- *Eurosystem actions*, mostly aimed at providing banks with liquidity.

Then, the EU undertook a recasting of both its supervisory and its legislative frame for financial activities. This reform should be completed by the end of 2012 (EU Commission, 2010a; Perrut, 2012b).

a. The EU Financial Supervisory Reform

The revision of EU supervisory institutions was adopted in October 2010, and consists of:

- The creation of a macro-prudential oversight body;
- The set-up of three sector-oriented authorities, taking over from the so-called Lamfalussy supervisory Committees.

Both levels (macro and micro-prudential) are expected to cooperate through cross-representations and a Joint Committee.

Entrusted with *the macro-prudential oversight* of the EU financial system, the European Systemic Risk Board's main objective is to prevent and mitigate systemic risks. In this regard the ESRB must collect the information needed for its action, identify systemic risk, issue warnings and recommend measures when threats have been detected (EU, 2010). The president of the ESRB is the ECB president. Its Steering Committee comprises 14 members, including 7 ECB members and the 3 presidents of micro-prudential authorities. The General Board includes in addition the governors of the 27 national central banks. The ECB provides a secretariat and thereby "analytical, statistical, logistical and administrative support to the ESRB". Last, the ESRB does not have a legal personality.

The micro-prudential supervisory level, called the European system of financial supervisors (EFSF), which includes the ESRB, works as a decentralized network. While *national supervisors* carry-out their day-to-day operations, and *supervisory colleges* ensure the surveillance of cross-border groups, the *3 new European sector-oriented Authorities* (taking over the prior 3 Committees) are entrusted with the tasks of coordinating the implementation of European supervisory standards and ensuring a strong cooperation between national supervisors. Established since the beginning of 2011, these new bodies (European Banking Authority, EBA; European Securities and Markets Authority, ESMA; European Insurance and Occupational Pensions Authority, EIOPA) comprise chiefly the 27 representatives of the national public bodies entrusted with supervisory functions.

In contrast with the ESRB, these authorities have legal personalities. They are independent from political powers but are nevertheless expected to report to them. Moreover, these new bodies have binding powers on financial institutions. However, as

we shall see, these powers can only be applied in a few cases and according to complex proceedings.

Their mandate, which is extremely wide, can be summarized around two quite distinct axes:

- Elaborating a single set of rules and principles, that is to say *a common supervisory culture*;
- Solving conflicts regarding individual cross-border institutions (controlled by supervisory colleges).

b. The recasting of the legislative framework

According to a well-known “spill-over effect”, the launching of the euro, in 1999, gave a fresh boost for completing the single market of financial services with two programmes. First the Financial Services Action Plan (1999-2004) which produced 39 legal measures, and, second, the Financial Services Policy (2005-2010); (EU Commission, 2005).

From 2008 on, the crisis required emergency responses, which were followed-up by the will to reform the legislative framework for financial activities. This programme was to be completed before the end of 2011, in order to ensure a transposition in all EU member states in 2012. This plan is founded on three principles (EU Commission, 2010a; 2011a).

Enhanced transparency. This part includes: a regulation concerning credit rating agencies (CRAs), adopted in 2009; a legislative proposal on derivative markets (already published) and the improvement of the Markets in Financial Instruments Directive (MiFID), whose proposal is under discussion by the legal system.

Enhanced resilience and stability of the financial sector. This section comprises chiefly two points. First, as yet unpublished legislative proposals, in order to set up a complete set of tools for the prevention and resolution of failing banks. Second, proposals for the revision of the Capital Requirement Directive (CRD IV), published in July 2011 (a directive and a regulation), in order to take into account the Basel III framework.

Protection of the consumer. Regarding this issue, measures have been taken on short selling and credit default swaps; moreover, the

revision of guarantee schemes (concerning depositors, investors and insurance policy holders) has been completed or is in progress.

2.2. An assessment of the EU ongoing reforms

Let us examine, first, several issues raised by legal changes in the EU, second, questions related to supervision.

a. Legislative process: some improvement, but weaknesses and questions remain

In the close aftermath of the strong impulse given to the single market of financial services, in 1999, the European Council and Ecofin ordered a study on the regulation of European security markets. Published in 2001, Lamfalussy's report sets out a devastating criticism of the legal European system. Indeed, the paper regrets deeply the lack of basic common rules and doubts whether the existing legislative system would be able to produce such a corpus. It reads as follows: "the current regulatory system is not working". Moreover, the criticism turns into a flame-thrower to attack such a system, arguing that it is feeble and slow while technology changes at a fast pace. As a consequence, new EU laws are already out-of-date when implemented. Last but not least, the diagnosis underlines the lack of any control from the EU to ensure an effective and consistent implementation of rules in all the Member States (Committee of Wise Men, 2001). The core proposal of the report consists in associating regulatory and supervisory committees in the legislative process. Such recommendations led to the setting up (between 2002 and 2004) of sector-oriented committees (for security markets, banking and insurance).

These committees bring together national supervisory and regulatory bodies. They are aimed at improving the rules and, on the authority of legislative institutions, defining implementation measures.

The goal of improving the quality of legislative work has been reasserted in the Financial Services Policy programme (2005-2010) with a formula: "*better lawmaking*". Several means such as: the law recasting technique (making laws more simple, legible and up-to-date), impact assessments (cost-benefits studies), open consultations and controls for the effective application of community

rules, were used to reach such an objective (EU Commission, 2005).

Recently, in 2010, a *Smart Regulation* principle was presented in a communication of the E.C. According to this paper, the whole regulatory “*policy cycle*” must be taken into account, “from the design of a piece of legislation to implementation, enforcement, evaluation and revision” (EU Commission, 2010b).

After such attempts, we have to question the quality and the effectiveness of EU rules. As to the *improvements*, we can observe that the intensive legal work carried-out by the EU in the field of financial services since 1999 is aimed at providing the Union with a modern set of rules, consistent and constantly updated. In addition, legislative responses to address the crisis have been fast and effective, with the ambition of taking over immediate measures to ensure a whole framework for financial security. The recasting technique offers clearer and more legible rules. Follow-ups are frequently conducted. Before the proposals, synthetic green papers presenting clear questions are provided for wide consultation by all the players (see for instance: EU Commission, 2012a).

Nevertheless, weaknesses and questions remain. During the “Lamfalussy process review”, in 2007, remarks were made about the lack of sufficient delegation of power from the legal system to the committees, while it was the very purpose of the “comitology” reform (ECB, 2007). However, we can observe that henceforth the chief directives frequently go together with delegation for implementation measures.

The 2004 Market in Financial Instruments Directive (MiFID), implemented at the end of 2007, raises a number of questions. Indeed, the MiFID is to be seen as *the hard core of the financial market regulation*, whose infrastructures are subject to extremely fast technological change. Reports from market observers state that numerous advanced technologies are used by players, namely investment banks, in order to circumvent the rules, thus create glaring disparities between investors (Vauplane, 2011). What are the reasons for such unfair practices? Do they proceed from unclear, imprecise rules or from the lack of a proper supervision?

Last, is there effective control of national implementation of EU regulation, in order to ensure a consistent set of rules throughout

Europe? Eleven years after Lamfalussy's report, such a question should be seriously documented.

b. The supervisory reform : a complex organization, numerous tasks, limited binding powers

Like several large countries (USA, UK, China, *inter alia*), the EU as a whole has created a *macro-prudential oversight body*, the ESRB. This body, which has no binding powers or legal personality, depends entirely on the EBC for its technical and administrative support.

According to reports published before it was set up, this body was expected to derive its influence from its reputation (High Level Group, 2009). However, given the dependency of the ERSB on the ECB and the ECBS (within the Steering Committee and the General Council, respectively), we consider that such a body will be mostly a place for exchange and consultation, especially between the ECB and the ECBS, on the one hand, and micro-prudential authorities, on the other hand.

In contrast to the ESRB, the *new micro-prudential authorities*, already have a history because they took over prior supervisory committees that were set up almost ten years ago in the aftermath of Lamfalussy's report. Several attempts have been made to strengthen these bodies, in order to allow them to cope with the enlargement of their mandate. They have been entrusted with powers a little more binding (such as the so-called approach "comply or explain", which compels an institution to justify itself if it does not comply with a prescription).

Before being upgraded into Authorities, it was considered that these sector-oriented committees were mainly acting as "informal mediators" (CEPS, 2009). Moreover, the increase in the number of bodies and committees (4 Lamfalussy's committees and 3 Authorities, henceforward), which create risks of overlapping, is to be mentioned (for instance, between European Banking Authority and ECB's Banking Surveillance Committee).

The recent upgrading of the supervisory committees into Authorities provides these bodies with extended capacities, owing to their legal personality and binding powers. However, two limits are to be noted. On the one hand, the decision-making process will

remain difficult because of the collegiate governance. On the other hand, binding procedures that could be undertaken against a financial institution or a national authority (the latter being represented within the new EU Authorities) are complex and, obviously, somewhat tricky.

The specialization of these bodies according to each financial sector (banking, insurance, security markets) has been discussed. Indeed, one might wonder if choosing a single supervisor for all financial businesses would not have been a better solution. However, such a specialization can be seen as preferable, given the specific features of each business, namely concerning rules, national organization and even the very nature of risks (by contrast with insurance, banks have to address systemic risk).

In order to cope with the *supervision of cross-border banking groups*, especially when crises occur, the EBA is supported by two tools, as mentioned, supervisory colleges and memoranda of understanding. *Supervisory Colleges* (there are about 120 SC in the whole EU) bring together, for each cross-border banking group, the authority of the home country (where the registered office of the group is established), which is the *lead supervisor*, and authorities of all the host countries (where subsidiaries or branches are situated). According to field testimonies, hostile situations can be observed in those colleges, between host and home supervisors. Moreover, several reports have pointed out the lack of effectiveness of supervisory colleges to deal with crises of cross-border banking group such as Dexia or Fortis (Pisani-Ferry and Sapir, 2009).

European *memoranda of understanding* (either multilateral or bilateral) are signed between authorities of banking supervision, central banks and finance ministries in order to offer guidelines for financial crises situations. It appears that such agreements were not helpful during the recent crisis (EU Commission, 2010d).

In addition, new Authorities are entrusted with the task of improving the legislative process, owing to their field experience, especially regarding the definition of implementation measures foreseen in the directives. They are also expected to promote a common supervisory culture and practice in order to ensure a consistent implementation of EU rules. A common basis of this kind for supervision is needed to avoid regulatory competition.

2.3. Towards a banking union for the euro area

a. The vicious circle of debt and the lack of integrated anti-crisis mechanisms

The so-called euro area crisis erupted in spring 2010, with Greek public debt problems. Since then, contagious effects towards other countries (Ireland, Portugal, Spain) have been observed. Two and half years later, the crisis is still not under control. A consensus is now emerging about the causes of such a lasting crisis. Indeed, public finance unbalances and acute banking problems are now creating a vicious circle (BIS, 2012; IMF, 2012; Merler and Pisani, 2011, 2012). Such a situation results from the strong links existing between banks and States, for two reasons.

On the one hand, the euro area lacks an integrated framework for addressing individual banking crises. In such a situation, each member state remains responsible for rescuing its own national banking sector. Given the size of the banking sector, rescue operations, when they occur, have important consequences on public budgets. Thus, the need for bank recapitalization leads to public unbalances.

On the other hand, European banks hold portfolios comprising a high proportion of sovereign bonds as a percentage of their total assets. Indeed, public bonds held by European banks amount to 41.5% of the risk-weighted assets (RWA, according to Basel Committee methodology) in Germany, December 2010, and to 20% and more in France, Italy and Greece (Merler and Pisani, 2012). The breakdown of these public bond portfolios shows a strong concentration upon domestic public debt. As a matter of fact, domestic public bonds amount to more than 70% of the total public bond portfolios held by German banks, September 2011. The percentage rises to more than 80% in Spain, Ireland, Italy and Portugal. Since then, whenever doubts are raised about the solvency of member states, fears lead immediately to impairments of bank public bond portfolios and to bank downgrading by rating agencies.

Moreover, we have to recall that the euro area lacked a public finance solidarity mechanism, at least until 2010. Such a lack created a factor of uncertainty for market operators. Indeed, it was to be feared that a national public finance crisis would lead to the

failure of a euro member state. Such worries were expressed, as early as 2009, through the sharp rise in the spreads between public bond interest rates among euro area countries.

b. A global response to the crisis of the EMU

During the European Council (EC), June 2012, EC President Van Rompuy presented a report entitled “Towards a genuine EMU”, following discussions with the Eurogroup, the ECB and the EU Commission, and comprising proposals (European council, 2012a).

These proposals consist of a building block approach to make the EMU stronger over the next decade. The latter comprises four blocks: an integrated financial framework (the so-called “Banking Union”); an integrated budgetary framework; an integrated economic policy framework (to promote sustainable growth); ensuring democratic legitimacy and accountability (such a goal would be reached through: a better involvement of the European parliament, EP, in EU procedures; and a better cooperation between national parliaments and EP).

Conclusions of the EC meeting invite the President of the EC to develop, in close collaboration with the same institutions, a specific and time-bound road map for the achievement of a genuine Economic and Monetary Union before the end of 2012. The Euro area statement, June 2012, and the Commission proposals under Article 127 (on the prudential tasks the ECB can be entrusted with), September 2012, are to be taken in account for that purpose.

c. What kind of “Banking Union”?

Among the four block approach of the European Council (EC) report, the integrated financial framework still has to be precisely defined before the end of 2012, according to recent Commission proposals, September 12, EC Interim Report, October 12, and meetings. The financial block, or the so-called Banking Union, can be examined through four items (EU Commission, 2012c).

Integrated supervision. This level would be entrusted to the EBC, according to Article 127(6) of the Treaty (TFUE). This article foresees that specific tasks may be conferred upon the ECB by the

European Council, concerning policies relating to the prudential supervision of credit institutions. The scope of institutions concerned by such a function will surely raise tense debates in the next months. This scope would surely comprise, among the 6.000 existing banks, systemic banks, international banks and banks receiving public support. It could also comprise all the other European banks, according to the last proposals from the EU Commission, September 12.

A part of the supervisory tasks, such as the protection of the consumer, would remain decentralized at the level of national supervisors. According to the recent EU Commission proposals, the organization of the ECB should be redefined in order to ensure that monetary policy, under the control of the Council of Governors, and prudential policy, entrusted to a Supervisory board, are strictly separated.

A European deposit insurance scheme. This mechanism would be integrated at the euro area level. It would include banks overseen by the European supervision.

A European resolution scheme. Such a scheme would be funded by contributions of banks and would also be integrated at the euro area level for banks concerned by the integrated supervision. Both the deposit insurance scheme and the resolution scheme could be set up under the control of a common resolution authority.

The European stability mechanism (ESM) as a backstop. In order to give sufficient credibility to these two mechanisms (deposit insurance and resolution schemes), the ESM could act as a fiscal backstop. (European Council, 2012–1). The ESM could also intervene on public debt markets and in order to recapitalize banks. Regarding this, the Euro area statement, 29 June, only gives general principles, which should be formalized in a memorandum of understanding.

Thus, EC proposals for the euro area are based upon two inter-connecting ideas. On the one hand, it is necessary to break the vicious circle between banks and states. The direct recapitalizing by the EMS would be the proper response to such a situation. On the other hand, such a solution requires that a preliminary step would

be achieved, consisting of an integrated supervision and common deposit insurance and resolution schemes.

d. Discussion

Global remarks about European Council proposals “Towards a genuine EMU”. The EC fourfold building block approach can be seen as a medium term political package aimed at strengthening the EMU. This programme announces a step forward in order to address two of the chief weaknesses of the EMU when it was launched—namely, the lack of budget coordination and the lack of centralized banking supervision. However this plan has two shortcomings.

First, the target of the so-called “Democratic legitimacy and accountability” block appears to be very limited. Certainly, the intention to include the European Parliament and national Parliaments “at the level at which the decisions are taken” is to be welcomed. However, it is to be deeply regretted that this block does not offer the slightest idea of any other institutional reform. As a matter of fact, the European institutional framework, whether at the global or euro area level, has become extremely complex. Such a situation cannot but hamper the effectiveness of the European process and its understanding by citizens. Clarity should be seen as a necessary component of democracy and accountability.

Second, it should be noted that the project for a Banking Union does not take into account the question of reforming banking structures. Such a reform could contribute, together with the new banking standards and the resolution plans, to making the system sounder. Indeed, this topic is analyzed in the recent Liikanen report, October 2012, mandated by the EU Commission, February 2012 (HLEG, 2012). However, proposals made in the document about banking structures are somewhat timorous and indefinite, even concerning the core measure on trading activities.

Remarks about the Banking Union. As mentioned above, these proposals will remain under discussion until the end of 2012. Nevertheless, a few questions can be raised and remarks made regarding the project of a banking union. As a preliminary remark, we are bound to observe that such a project is, de facto, an

acknowledgement of the limits of the recent reforms both of the supervision (2010) and deposit insurance.

What should be the scope covered by the banking union? This question is one of paramount importance given the fact that, as we saw before, the different blocks of the project of the Banking Union would be applied to the same coverage of institutions.

According to the Commission recent proposals, all the euro area banks should be subject to the integrated supervision from the ECB. Such coverage would be enforced according to three steps: first, it would concern all banks receiving public support (1 January 2013); second, the most significant systemically important banks (1 July 2013); third, all the banks from the euro area (1 January 2014). To argue about such a wide coverage, the Commission points out that last bank failures were observed in non-systemic banks. Nonetheless, these failures have created “significant negative impacts on the financial stability of Member States” (EU Commission, 2012c).

Yet German leaders expressed a clear opposition to such an extension of the ECB supervisory tasks. In their view, the ECB is not provided with sufficient means in order to ensure such control. They also consider that a proportion of about 90% of the banking assets in the euro area is held by about 200 banks.

Another concentration indicator can be found for the whole EU in ECB data as of December 2011. The latter show that 37 banks (out of 4.713) hold total assets amounting to € 26.780 billion (out of € 44.820 billion), which represent 60% of the total banking assets.

We may consider that the supervisory reform should only concern about 100 banks comprising banks with public support, systemic banks and cross-border banks.

Centralized supervision would offer one important advantage which would be to ensure an harmonized implementation of banking rules, especially of the new Basel III framework (which is transposed in EU by the CRD IV directive and the CRR regulation). Indeed, the current approach would leave some important powers to national supervisors (like the decisions about the enforcement

of the countercyclical buffers) and therefore could lead to a kind of regulatory competition through the euro area.

What form of task-sharing will exist between the ECB and the current supervisory system? The current supervisory system comprises national supervisors and the new supervisory architecture, examined above (see 2.1). The latter consists of a macro prudential level, chiefly entrusted to the ECB, and a micro-prudential level entrusted to the 3 sector-oriented authorities bringing together national supervisors. These two levels work together through the European System of Financial Supervisors.

Questions must be raised about the relations between the EBA and the ECB to achieve the new prudential tasks entrusted to the ECB. According to the Commission proposals, voting arrangements within the EBA should be adapted, in order to avoid giving an automatic majority to euro area representatives.

As for the task-sharing, in our opinion, the ECB should manage only prudential supervision over a small number of banks, *i.e.* all the banks belonging to the 3 categories mentioned above. The remaining supervisory tasks (protection of the consumer, control of the enforcement of the EU rules...) should be ensured by the existing authorities (national supervisors and European Banking Authority).

We are bound to observe that this new forthcoming reform, with its different levels (supervision, deposit and resolution schemes, ESM) is likely to make the current system even more complex. This forthcoming multi-level supervisory process should be simplified and clarified in order to become: technically clear and understandable by citizens; efficient and not excessive (centralized supervision of all banks is not relevant); and able to take quick decisions.

3. Conclusion

Aimed at addressing the first global financial crisis with a global regulatory reform, the G20 agenda outlines a new prudential architecture, which is global and integrated. Such a goal is ambitious. Henceforth, international coordination is operative and functioning, but questions remain. Is there the same strong will in all

countries to ensure a complete achievement of the G20 programme? What could be the perverse effects of the new rules?

Regarding the new banking rules on capital and liquidity, it is to be feared that such a reform would lead to a decrease in the funding of the economy, especially of SMEs which create jobs. These new rules will probably give a strong impulse towards the reduction of banking functions in the financial sector and an increased role for other actors. What is at stake is the entire reshaping of the financial sector. Will the global regulators be able to define a consistent framework in order to control all financial actors and to ensure its complete implementation? Such is the chief post-crisis challenge in order to avoid, on the one hand, regulatory circumventing through the shadow banking system, which would only repeat recent misconduct, and, on the other, regulatory competition between the chief areas.

As for the EU, which very swiftly carried out an important recasting of its legal frame, the continent will henceforth have to face three challenges. The first is outside the EU and results from the risk of regulatory competition from large countries, chiefly the USA. The second is inside the EU and is the result of the complex organization of the legal and supervisory system. We are bound to wonder if the challenge of creating a set of harmonized rules and practices in all the countries can be met without improving such an institutional framework.

The third challenge is related to the redefinition of the Economic and Monetary Union around four blocks. A chief element of the latter covers all of the sensitive issues in the debate over Banking Union, the precise shape of which still has to be defined. Leaders should soon be able to move on to a new stage in the integration of anti-crisis measures.

Yet important features remain unclear and still under discussion. The definition of a new, clear and efficient frame will be a decisive test of the ability of EU decision-makers to overcome the current political and financial crises. These are technical issues, but what is at stake is a central political question: will the EU leaders ensure the “sustainability” of the European process?

Two tasks lie ahead, the redefinition of world standards and the European financial reform. These post-crisis programmes are

aimed at bringing the liberalized financial system into line with social and economic needs. It seems that EU citizens have a compelling duty to watch developments in these two areas very carefully.

References

- Aglietta M., 2011. "La rénovation des politiques monétaires", Complément A, in *Banques centrales et stabilité financière*, Rapport du CAE.
- Bagehot W., 1873. *Lombard Street: A Description of the Money Market*, London: H.S. King; reprinted, Homewood, III:Richard D. Irwin, 1962.
- Bank for International Settlements, 2012a. *Quarterly report*, March.
- Bank for International Settlements, 2012b. *82nd Annual report*, July.
- Barnier M., 2012, Interview, *Les Échos*, September 1st.
- Basel Committee on Banking Supervision, 2010. *Basel III: International framework for liquidity risk measurement, standards and monitoring*, December.
- Basel Committee on Banking Supervision, 2011a. *Basel III: A global regulatory framework for more resilient banks and banking systems*, <<revised version, June.
- Basel Committee on Banking Supervision, 2011b. *Global systemically important banks: Assessment methodology and the additional loss absorbency requirement*, June.
- Basel Committee on Banking Supervision, 2011c. *Progress report on Basel III implementation*, October.
- Basel Committee on Banking Supervision, 2012. *Results on the Basel III Monitoring exercise as of 30 June 2011*, April.
- Bernanke B. S., 2012. *Federal Reserve Bank of Atlanta Financial market Conference*, Stone Mountain, April 9th.
- Blanchard O.J., G. Dell'Araccia and P. Mauro, 2010. "Rethinking Macroeconomic Policy", *IMF Staff Position Note*, 10/03, February 12.
- Borio C., 2011. "Central banking post-crisis: What compass for uncharted Waters?", *Bis Working Paper*, 353, September.
- Borio C. and M. Drehmann, 2009. "Towards an Operational Framework for Financial Stability: 'Fuzzy' Measurement and its Consequences", *BIS Working Paper*, 284.
- Brunnermeier M., A. Crocket, C. Goodhart, A. Persaud and H. Shin, 2009. "The Fundamental Principles of Financial Regulation", *Geneva Reports on the World Economy*, CEPR, 11, January.

- Center for European Policy Studies, 2008. *Concrete Steps towards More Integrated Financial Oversight, The EU's Policy Response to the Crisis*.
- Committee of Wise Men on the Regulation of European Securities Markets, 2001. *Final Report*, Chaired by A. Lamfalussy, Brussels, February 15.
- Davis E. P. and D. Karim, 2009. "Macro-prudential regulation, the missing policy pillar", *Keynote address at the 6th EUROFRAME Conference*, London, June.
- Eichengreen B. *et al.*, 2011. "Rethinking Central Banking", *Brookings Institution*, Washington.
- Euro Area, 2012. *Euro Area Summit Statement*, June 29.
- European Banking Authority, 2012. *Results on the Basel III Monitoring exercise as of 30 June 2011*, April.
- European Central Bank, 2011a. *Financial Integration in Europe*, May.
- European Central Bank, 2011b. "The ECB's non-standard measures: impact and phasing-out", *Monthly Bulletin*, July.
- European Central Bank, 2011c. "The new EU framework for financial crisis management and resolution", *Monthly Bulletin*, July.
- European Council, 2012a. *Towards a genuine EMU*, Report by the President, June 26. EUCO 120/12.
- European Council, 2012b. *Conclusions*, June 28/29, EUCO 76/12.
- European Council, 2012c. *Towards a genuine EMU*, Interim Report by the President, October 12.
- European Commission, 2005. *White paper: Financial Services Policy 2005-2010*, Brussels.
- European Commission, 2009. *European Financial Integration Report 2009*, Commission Staff working Document, SEC (2009) 1702 final.
- European Commission, 2010a. *Regulating financial services for sustainable growth*, Communication, COM (2010) 301 final.
- European Commission, 2010b. *Smart Regulation in the EU*, Communication, COM (2010) 543 final.
- European Commission, 2010c. *An EU Framework for crisis Management in the Financial Sector*, COM (2010) 579 final.
- European Commission, 2010d. *Communication: Towards a Single Market Act*, COM(2010) 608 final.
- European Commission, 2011a. *Regulating financial services for sustainable growth, A progress report*.
- European Commission, 2011b. *Press release on CRD IV*, July 23.
- European Commission, 2012a. *Green paper: shadow banking*, COM (2012) 102 final.

- European Commission, 2012b. *Proposal for a Directive establishing a framework for the recovery and resolution of credit institutions and investment firms*, COM (2012) 280/3.
- European Commission, 2012c. *A roadmap towards a Banking Union*, COM (2012) 510 final.
- European Union, 2010. *Regulation (EU) 1092/2010, Establishing a ERSB*.
- Financial Stability Board, 2011a. *Key Attributes of Effective Resolution Regimes for Financial Institutions*, October.
- Financial Stability Board, 2011b. *Reducing the moral hazard posed by systemically important institutions*, October 20.
- Financial Stability Board, 2011c. *Macroprudential policy tools and framework*, October 27.
- Financial Stability Board, 2011d. *Overview of progress in the Implementation Recommendations for Strengthening Financial Stability, Report to G20 leaders*, November 4.
- G7, 2008. "Leaders Statement", *Washington*, October 10.
- G20, 2008. "Declaration, Summit on Financial Markets and the World Economy", *Washington*, November 15.
- G20, 2009. "Leaders Statement", *London Summit*, April 2.
- Galati G. and R. Moessler, 2011. "Macroprudential policy – a literature review", *BIS Working Papers*, 337, February.
- Gardener E. P. M., 1992. "Banking Supervision", in *The new Palgrave Dictionary of Money and Finance*, Ed. Newman P., Milgate M., J. Eatwell.
- Goodhart Ch. A. E., 2010a. "The changing role of central banks", *BIS Working Papers*, 326, November.
- Goodhart Ch. A. E., 2010b. "La surveillance macro-prudentielle", complément B, in *Banques centrales et stabilité financière*, Rapport du CAE.
- High-level Group on Financial Supervision in the EU, 2009. *Report*, Chaired by J. de Larosière, February.
- High-level Group on reforming the structure of the EU banking sector, 2012. *Final Report*, Chaired by E. Liikanen, October 2.
- Humphrey T. M., 1989. "Lender of Last Resort : the Concept in History", *Federal Reserve Bank of Richmond Review* 75, March-April : 8-16.
- Humphrey T. M., 1992. "Lender of Last Resort", in *The new Palgrave Dictionary of Money and Finance*, Ed. Newman P., Milgate M., J. Eatwell.
- IMF, 2009. "Detecting Systemic Risk", chapter 3 in *Global Financial Stability Report*, April.
- IMF, 2012. *Global Financial Stability Report*, April.
- Kindleberger C. P., 1989. *Manias, Panics and Crashes : A History of Financial Crises*, Basics Books.

- Merler S. and J. Pisani-Ferry, 2011. "Who's afraid of sovereign bonds?", *Bruegel policy contribution*, February.
- Merler S. and J. Pisani-Ferry, 2012. "Une relation risquée : l'interdépendance entre dette bancaire et dette souveraine et la stabilité de la zone euro", *Revue de Stabilité financière*, Banque de France, April.
- Perrut D., 2010. "Do the new financial regulations for the European Union offer good responses to the current crisis and forthcoming challenges?" *Communication at the 7th EUROFRAME Conference*.
- Perrut D., 2012a. "Quelle banque centrale pour l'Europe de demain?", www.atlantico.fr, January.
- Perrut D., 2012b. "Financial regulation after the subprime crisis: lessons and reforms", Robert Schuman Foundation, *Policy paper*.
- Pisani-Ferry J. and A. Sapir, 2009. *Banking crisis Management in the EU: An Interim Assessment*, Bruegel.
- Schinasi G. J. and E. M. Truman, 2010. "Reform of the Global Financial Architecture", *Peterson Institute for International Economics*, Working Paper, September.
- Thornton H., 1802. "An Inquiry into the Effects of the paper credit in Great Britain", F. H. Hayek ed., *Mac Kelley*, (1978).
- Ugolini S., 2011. "What do we really know about the long-term evolution of central banking ?", *Norges Bank Working Papers*, 15.
- Vauplane H. de, 2011. "Révision de la directive MIF", *Revue Banque*, February.

Appendix A

Table. Capital requirements, as a percentage of risk-weighted assets

	Basel III				Basel II	
	Min	Conservation buffer ¹	Countercyclical buffer	SIFI surcharge ²	Total ³	Min
Common equity	4.5	2.5	0–2.5	1–2.5	7–12	2
Tier 1 ⁴	6				8.5–13.5	4
Total (Tier1 + Tier 2)	8				10.5–15.5	8

1. Buffer that restricts distributions if the capital ratio falls below 7%.

2. SIFIs will be placed in buckets according to their systemic importance, whereas non-SIFIs will receive a zero surcharge. An empty bucket will be added on top of the highest populated bucket to provide incentives for banks to avoid becoming more systemically important. If the empty bucket becomes populated in the future, a new empty bucket will be added with a higher additional loss absorbency level applied.

3. A SIFI operating at the peak of the financial cycle could be required to hold up to 12% of common equity against risk-weighted assets under Basel III. Under the Basel II definition of common equity, the ratio of common equity to risk-weighted assets would be roughly 15% for the same bank.

4. Common equity plus additional Tier 1 capital.

Source: BIS, 82nd Annual Report 2011/2012, 2012. Table VI.B

Appendix B

Table. Aggregate capital ratios and capital shortfalls

	Fully implemented requirement, in percent		Actual capital ratios, in percent		Capital shortfalls, in € billions	
	Minimum	Minimum plus capital conservation buffer	Current	Basel III	Minimum	Minimum plus capital conservation buffer [*]
Group1						
CET1	4.5	7.0	10.2	7.1	38.8	485.6
Tier 1	6.0	8.5	11.5	7.4	66.6	221.4
Total	8.0	10.5	14.2	8.6	119.3	223.2
Group2						
CET1	4.5	7.0	10.1	8.3	8.6	32.4
Tier 1	6.0	8.5	10.9	8.6	7.3	16.6
Total	8.0	10.5	14.3	10.6	5.5	11.6

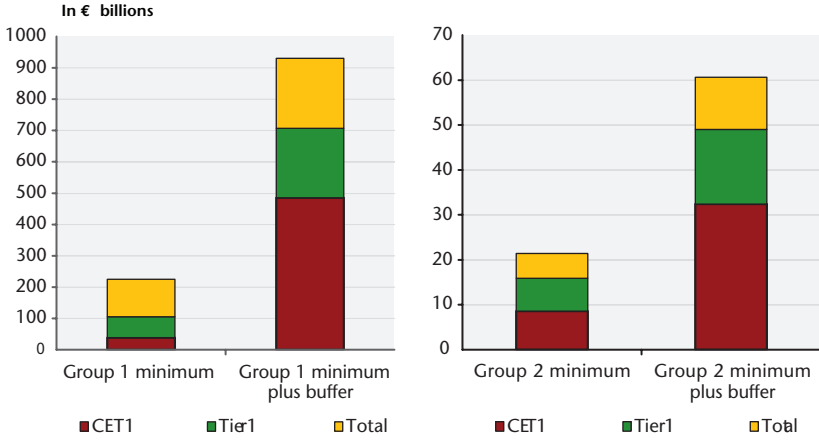
The shortfall is calculated as the sum across individual bank where a shortfall is observed. The calculation includes all changes to risk-weighted assets (eg definition of capital, counterparty credit risk, trading book and securitisation in the banking book). The Tier 1 and total capital shortfalls are incremental assuming the higher tier capital requirements are fully met. See below for details.

*The shortfalls including the capital conservation buffer also include the capital surcharges for 28 initial G-SIBs as applicable.

Source: BCBS, 2012, Results of the Basel III monitoring exercise as of 30 June 2011.

Appendix C

Figure. Estimated overall capital shortfalls, participating Group 1 and Group 2 banks



Source : BCBS, 2012, Results of the Basel III monitoring exercise as of 30 June 2011.

EXIT STRATEGIES
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FINANCIAL CRISIS, ECONOMIC ADJUSTMENT AND A RETURN TO GROWTH IN THE EU¹

John FitzGerald

The Economic and Social Research Institute

This paper considers how a range of economies are adjusting to the external imbalances that they faced at the beginning of the current crisis. It also considers how the real economy may adjust when recovery eventually takes hold. Finally it considers how the adjustments under way will contribute to a return to long-term growth.

Keywords: Joint analysis of fiscal and monetary policy, Stabilisation, Current account adjustment.

While the EU economy is suffering from its worst economic crisis since its foundation, it remains probable that a resolution will eventually be found which will allow a return to growth. As of today it is not clear what the nature of that resolution will be or how long it will take before an economic recovery will be clearly established. It is also not clear what permanent damage has been done to the EU economy as a result of this crisis. While it is absolutely certain that the current crisis will leave a permanent scar on the EU economy, resulting in the level of output per head in the future being substantially lower than it would have been absent the crisis, it still seems likely that there will be an eventual return to growth.

1. This paper was presented at the 9th EUROFRAME conference in Kiel in June 2012. This research was part funded by DG ECFin. The paper has benefitted from comments received at that conference and comments from Iulia Siedschlag, Thomas Conefrey, Ide Kearney and Adele Bergin and an anonymous referee. The author is solely responsible for the views expressed in this paper.

This paper considers the experience from a range of EU countries that have undergone a radical adjustment in the current crisis. It examines the speed of adjustment and the impact of that adjustment on their domestic economies. In particular, it looks at the experience of a group of countries that entered the crisis with large and unsustainable deficits on their current accounts. In the case of many of these countries, the imbalances in the current accounts were accompanied by investment bubbles, which burst when the crisis began. In the case of the remainder of these countries there was no investment bubble and the external imbalances were associated with a high level of domestic consumption relative to exports. A further factor that has affected the adjustment process has been whether or not the banking system was largely domestically owned or foreign owned.

The different circumstances of these countries have affected the nature of the adjustment that they have undergone. Where an investment bubble burst, the increase in unemployment was especially rapid and severe. Also the adjustment in the current account has been large. By contrast, in the countries where there was no investment bubble the rise in unemployment has been slower, though nonetheless severe, and the adjustment in the external imbalances has been less dramatic.

Section 1 of this paper considers the past experience of EU economies which had major external imbalances. This past experience holds some lessons for the current situation, but there are also significant differences. Section 2 then considers the nature of the adjustment process occurring in a range of EU economies today and its implications for future growth. Section 3 of the paper discusses what lessons can be learned from the past experience of growth and convergence in the EU for growth in the eventual recovery phase.

1. Previous periods of economic adjustment

Crises in the current account of countries are not new; they have occurred in many EU countries (and most non-EU countries) at some stage over the last 60 years. The beginnings of the current crisis were also characterised by large current account deficits in all the countries that have subsequently faced major difficulties. It is

useful to examine some of the cases from the past where there were large current account deficits and how these countries subsequently adjusted.

Table 1. Previous large adjustments

Country	Years	Balance of payments as % of GDP		Exports	Imports	GDP	Effective exchange rate
		Initial	Change	Change	Change	%	%
Austria	1980-85	-4.5	3.4	3.4	0.1	7.4	5.3
Finland	1989-93	-5.0	3.5	8.4	2.0	-9.5	-24.8
UK	1989-94	-4.9	3.9	2.8	-0.4	6.1	-8.8
Belgium	1980-85	-3.9	4.3	13.4	9.3	4.8	-15.1
Denmark	1986-90	-5.5	5.9	4.1	-1.8	2.3	8.2
Portugal	1982-86	-14.5	13.0	6.6	-7.5	4.9	-44.5
Ireland	1981-87	-13.3	13.1	9.3	-9.2	15.2	-0.3

Source: EU DGecFin AMECO database, spring 2012.

In Table 1 a number of examples of major imbalances that have occurred in the past are illustrated. In the case of each country the table shows the current account deficits at their peak and also the subsequent change in the current account balance as the problem was addressed. It also shows the period over which that adjustment took place.

The two biggest previous crises considered in Table 1 are those of Portugal and Ireland in the 1980s. The adjustment in the current account can occur through either or both of a rise in exports or a fall in imports. The classic and most desirable method of adjustment is for a country to improve its competitiveness, very often through an exchange rate change, and then to increase output and exports. Such an adjustment is likely to have the least damaging effects as it should, eventually, lead to a higher level of output. This is likely to show up as an increase in the share of exports in GDP.

The alternative mechanism is for domestic demand to fall sufficiently far to cut the volume of imports (reflected as a fall in the share of imports in GDP). In the case of adjustment through a fall in domestic demand, output is generally reduced. The mechanism whereby the fall in domestic demand takes place may vary. In some cases a collapse in domestic investment can bring this about without direct government intervention. However, it very often

takes a significant period of contractionary fiscal policy to reduce domestic demand through reducing consumption and, hence, imports, to restore external balance.

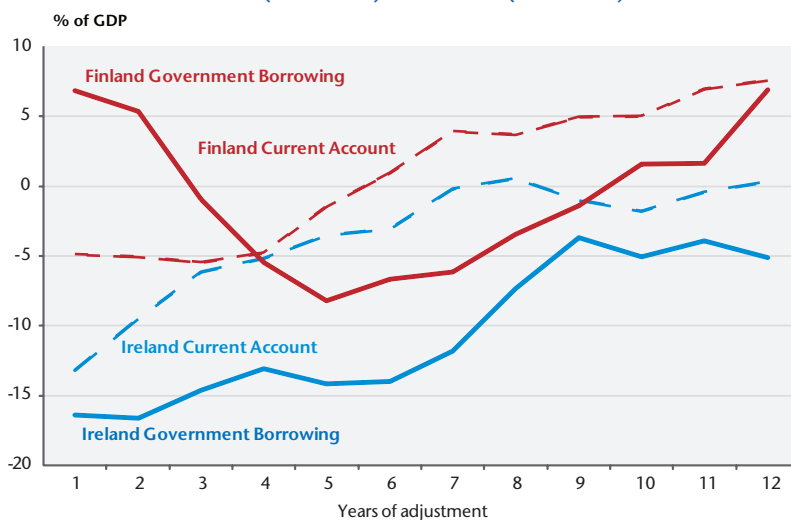
In Table 1 we consider for each country the period over which a major change in the balance of payments took place. The Table shows the relevant period over which the adjustment took place, the change (improvement) in the current account (as a percentage of GDP) and the change in exports and imports, also as a percentage of GDP.

As shown in Table 1, only in the Irish and the Portuguese cases did a large reduction in imports contribute to the adjustment in the current account. Even in those two cases the increase in the export share was close to the reduction in the import share. In all the other cases, because the adjustment took place through the allocation of more resources to producing exports, the export share of GDP showed a significant rise.

Compared to today, in most cases the external environment facing the countries undertaking the adjustment was more favourable, sometimes much more favourable. For example, the latter part of the Irish adjustment in the late 1980s occurred against the background of rapid growth in a major trade partner, the UK. This was a significant factor explaining why, in all cases other than Finland in the 1990s, the favourable adjustment in the current account was also accompanied by moderate growth in the economy making the adjustment. The Finnish problems in the early 1990s were aggravated by the economic collapse in a major trading partner, the Soviet Union, and the Finnish crisis also involved a financial collapse. None of the other cases involved a major financial collapse.

While a real depreciation of their exchange rate occurred in the case of most of these countries, it was only of a substantial magnitude in the cases of Finland, Belgium and Portugal. Thus exchange rate flexibility, while facilitating an adjustment in the balance of payments, was not an essential condition for such a change. In the case of the Irish adjustment in the 1980s the fall in the effective exchange rate was quite moderate. However, to achieve this result there was a substantial change in the nominal exchange rate in 1986, offsetting other adverse exchange rate movements.

Figure 1. Adjustment in the government and the external accounts, Finland (1989-2000) and Ireland (1981-1992)



Source: EU DGECFin AMECO database, spring 2012.

A final aspect of previous adjustments that is worth considering is the timing of the adjustment in the balance of payments and in government borrowing. Figure 1 shows the paths of adjustment in the case of the Irish adjustment of the 1980s and the Finnish adjustment of the 1990s. In both cases the balance of payments and the government accounts showed adjustments of fairly similar magnitudes. However, in the case of the current account in both countries, the adjustment began much earlier than the adjustment in the government deficit. This reflects the fact that the impact effect of fiscal tightening is to reduce domestic demand and hence imports, but also to reduce growth and hence tax revenue. It is only when the necessary adjustment in the government structural deficit had been accomplished, and the fiscal stance relaxed, that the benefits were reflected in higher growth and a rapid reduction in government borrowing. (A similar pattern was observed in the UK adjustment of the early 1990s).

The experience of Finland and Ireland in the 1980s and the 1990s was that adjustment took the best part of a decade. The improvement in the current account preceded the improvement in the government balance. When accompanied by world growth, as was the case for Ireland, the adjustment was less painful. In the

case of Finland the fact that there was also a financial crisis aggravated the initial loss in output.

2. The current crisis—beginning the adjustment

After the start of the EMU the issue of the current account balance of individual member states fell from policy-makers' oversight. While both Ireland and Spain largely complied with the requirements of the Stability and Growth Pact (SGP) before the crisis, they saw a critical deterioration in their public finances when the recession hit. The SGP was no guarantee that all was well in those economies. What most clearly signalled the growing internal problems in those economies was the growth of their balance of payments deficits over the course of the last decade. Blanchard, as early as 2001, identified this as a problem for Spain and, writing in 2007, he showed that, even with rational and well-informed markets (no bubbles), governments of individual member states in EMU should care about balance of payments deficits (Blanchard, 2001 and 2007). With the benefit of hindsight it is clear that property bubbles were growing in both Spain and Ireland, bubbles which markets (and governments) did not anticipate (European Forecasting Network, 2006). The possibility of such bubbles occurring through irrational or unexplainable action by individual economic agents further strengthens Blanchard's arguments.

While membership of EMU made it easier to finance such current account deficits, non-membership did not prevent the growth of very large deficits in other member state such as Estonia, Latvia, Bulgaria, Hungary and Romania. The era of cheap capital knew no international boundaries. Where these deficits were funded by direct foreign investment, the countries were less vulnerable to sudden reversals (von Hagen and Siedschlag, 2010). However, where the capital inflow occurred through the banking system, or through portfolio investment, there was greater vulnerability to sudden shocks. Table 2 shows the current account balance at the beginning of this crisis for countries with large deficits.

In the run up to the current crisis, in the period 2005-7, relatively little public attention was devoted to this sign of growing imbalances. Governments (and international institutions such as the IMF and the EU Commission) relied on the fact that the foreign

liabilities being incurred as a counterpart to the balance of payments deficits were private sector liabilities. This apparent lack of concern was strengthened by the absence of exchange risk in the case of Spain and Ireland. There was an illusion that such private sector liabilities could never become the responsibility of domestic governments. However, when the crisis hit, where these liabilities belonged to a domestically owned banking system, it proved impossible for the domestic government to avoid responsibility for these debts. Ireland was the most notable example where the private sector liabilities turned into public sector liabilities. Other countries that have seen this occur on a smaller scale include Spain, the UK, and even in a surplus country, Germany. Today we are seeing a belated replay of the Irish crisis in the case of Spain, with serious concerns about the stability of the banking system and its implications for the sovereign.

Table 2. The current crisis—economic adjustment and the balance of payments

Country	Years	Current Account		Exports	Imports	GDP	Consumption
		Initial	Change	Change	Change		
as % of GDP						% change over period	
Ireland	2007-11	-5.5	5.6	25.4	12.9	-9.5	-11.8
Hungary	2008-11	-6.9	7.9	10.6	3.7	-4.0	-8.3
Spain	2007-11	-10.0	6.1	3.2	-2.9	-2.3	-4.3
Portugal	2008-11	-12.6	6.0	3.0	-3.2	-3.1	-4.2
Romania	2007-11	-13.6	9.5	9.0	0.3	1.1	-1.1
Lithuania	2007-11	-15.0	13.4	23.9	12.2	-5.9	-13.3
Estonia	2007-10	-15.7	19.5	12.3	-3.8	-15.5	-22.2
Greece	2008-11	-17.9	6.6	-0.1	-7.1	-13.1	-11.6
Latvia	2007-11	-22.4	21.2	16.8	0.5	-16.4	-23.6
Bulgaria	2007-11	-25.2	27.0	7.0	-13.3	2.5	-4.8

Source: EU DGECFin AMECO database, spring 2012.

For some countries with very large balance of payments deficits, such as Estonia and Hungary, the liabilities were the responsibility of foreign owned banks. As a result, these countries did not have to take responsibility for these private sector liabilities when the crisis hit, as ultimate responsibility lay with the foreign owners of the banks. As a result, the recovery in these two countries has been

much more rapid than in Ireland or Spain. Whether or not a country “owned” banks has been an important aspect of how the adjustment, subsequent to the crisis, has played out.

Whether or not the counterpart to the balance of payments deficits across the EU was a rise in government indebtedness or in private sector indebtedness, the deficits signalled dangers ahead. As the deficits continued to rise, as a consequence of very rapid domestic growth, especially in the building sector, this was unsustainable. With the advent of the crisis, even where the current account deficits were not the counterpart to large government borrowing, they still needed to be tackled as they were no longer fundable in a risk-averse world.

Table 2 shows similar data to Table 1 for the early years of the current crisis for those economies with large current account deficits, which might be difficult to finance. In the Table they are ranked in order of the size of the current account imbalances at the beginning of the crisis (from smallest to largest deficits). The years when the adjustment in the current account began (either 2007 or 2008) are shown in the second column. The current account imbalance at the beginning of the crisis and the subsequent improvement is shown in columns 3 and 4 for each country.

The largest deficits were experienced in 2007 or 2008 in a range of non-members of the Euro zone—Latvia, Estonia, Bulgaria, Lithuania and Romania. However, many of the countries with very large current account imbalances have seen them greatly reduced or eliminated by the end of 2011. This was the case for the Baltics, Hungary, Bulgaria, Romania, Ireland and, to a lesser extent, Spain. Portugal and Greece still had deficits of over 5 percentage points of GDP at the end of 2011.

In the case of most of these countries, a substantial part of the improvement has been achieved by increasing exports as a share of GDP. However, in the case of Ireland, this rise in the export share was achieved through resilient exports showing some growth against the background of a very large drop in the value of GDP.

For six of the countries featured in Table 2 the cumulative fall in the volume of GDP was very substantial—between -5% and -17%. The cumulative falls in personal consumption was even larger for these countries—between 8% and 24%. The fall in consumption in

Spain and Portugal, by contrast, was much lower. This dramatic decline in domestic consumption played an important role in reallocating resources to the current account.

Table 3 shows the cumulative fall in GDP along with the investment share of GDP at the beginning of the crisis and the change in this share since 2007/2008. It also shows the rise in unemployment over the adjustment period.

Table 3. The current crisis—economic adjustment, investment and unemployment

Country	Years	Growth GDP %	Investment share		Unemployment rate Change
			Initial	Change	
			as % of GDP		
Ireland	2007-11	-9.5	25.5	-15.4	9.8
Hungary	2008-11	-4.0	21.7	-4.9	3.1
Spain	2007-11	-2.3	30.7	-9.0	13.4
Portugal	2008-11	-3.1	22.5	-4.4	4.4
Romania	2007-11	1.1	30.2	-5.6	1.0
Lithuania	2007-11	-5.9	28.1	-10.5	11.1
Estonia	2007-10	-15.5	35.5	-16.7	12.2
Greece	2008-11	-13.1	22.1	-8.2	10.0
Latvia	2007-11	-16.4	34.1	-11.7	10.1
Bulgaria	2007-11	2.5	28.7	-7.8	4.3

Source: EU DGecFin AMECO database, spring 2012.

For the EU 15 the investment to GDP ratio averaged around 20 per cent over the period 1991-2010 and for the EU 27 it averaged around 19 per cent. By this measure, many of the economies with large current account deficits at the beginning of the crisis also had very high levels of investment—over 25 per cent of GDP. In many of them this was due to a bubble in the construction / real estate sector. A key mechanism to bring about the very rapid and large adjustment in the Baltic republics was, first and foremost, a collapse in domestic investment demand. This collapse in the investment bubbles was accompanied by a collapse in consumption. In turn, this fall in domestic demand created major fiscal problems, which were rapidly addressed with fiscal tightening. The combined effect was a drastic fall in output. The problems were less acute in Bulgaria as there had been a boom in

productive investment rather than in property. The ending of the boom saw a parallel reduction in imports of capital goods, having limited impact on domestic output in the short run.

In the case of Portugal and Greece the deficits in 2008 were very large. While some adjustment had taken place by 2011, there was still a long way to go. In both cases the bulk of the adjustment that did take place was through a reduction in the import share of GDP. In both cases the export share of GDP is quite low, so that a very large percentage increase in exports would be required to close the deficit. Such a huge reallocation of resources could take some considerable time, leaving a cut in imports, through domestic deflationary action, the main mechanism for adjustment.

In the case of Ireland the bulk of the adjustment in the balance of payments had been completed by 2010. This partly reflected the fact that the initial deficit was smaller than in the case of the other countries. In the Irish case the main mechanism appears from the table to be a rise in the export share of GDP. This proved possible because exports already constituted a very large share of GDP, so that the percentage increase in volume needed to make the adjustment was relatively low and, hence, achievable in a relatively short time scale. However, the dramatic reduction in the value of GDP here masks a major reduction in import demand as a result of the large fall in domestic demand.

Generally, where a current account adjustment takes place through a cut in imports this must, in turn, be driven by a fall in domestic demand and, hence, a fall in GDP. This is a painful process. If the adjustment can be achieved through higher exports it is much more likely to be accompanied by growth in GDP.

Table 3 gives more details of how the adjustment process is playing out within the EU deficit countries. It shows the investment share at the beginning of the crisis for each country. This suggests a sharp divide between the countries where the imbalances reflected an exceptionally large investment share of GDP, and related property market bubble, and countries where investment was not abnormal—Greece and Portugal. In the former camp were Ireland, Spain, Romania, Lithuania, Estonia, Bulgaria and Latvia. With the exception of Bulgaria, the investment share in these countries has fallen dramatically over the period 2007-10.

The effect of the collapse in a property/housing market bubble is that the investment share of GDP falls precipitously. It is generally much faster than for an adjustment that is brought about by fiscal policy, because of the inevitable political constraints associated with dramatic changes in fiscal stance.

This collapse in the investment share has generally not been due to direct fiscal action, but rather to a collapse in a building/property bubble. This has, in turn, had very adverse consequences for the public finances.

A second consequence of an adjustment through a bursting property market bubble is that the output of the building sector falls dramatically. Because this sector generally has low productivity and is, as a result, quite employment intensive, a collapse in output results in a big increase in unemployment. In six of the economies experiencing an adjustment through this mechanism (a collapse in investment) the rise in the unemployment rate exceeded 9 percentage points over the period 2007-2010. The rise in three other economies (Bulgaria, Portugal and Hungary) was much lower.

A third consequence of an adjustment through a bursting property market bubble is that it can lead to a financial collapse. This is what happened in Ireland in the period 2008-10 (and in Finland in the early 1990s). Today Spain seems to be facing the same, rather delayed, consequences for its financial sector of the bursting property market bubble. Where there is a financial collapse, as in Ireland, this greatly magnifies the costs of adjustment. In the case of Ireland the support for the banking system has directly added forty percentage points to the debt GDP ratio, with all that entails in the burden of future debt interest payments (FitzGerald and Kearney, 2011).

This contrasts with the case of Estonia. Because the banking sector in Estonia was foreign owned, the financial costs of the collapse in investment demand did not directly affect the local economy. This has made it possible for the economy to move on rapidly from the collapse in investment, unlike Ireland. While one Latvian owned bank had difficulties, the bulk of the costs incurred in the financial sector in that country accrued to shareholders in

foreign banks operating in that country, speeding the process of economic recovery.

In the case of the other countries (Portugal, Greece and Hungary) with more normal investment shares yet large deficits, the adjustment process (towards balance on the current account) is more complex.² Instead of a collapse in investment demand triggering the adjustment, direct fiscal action is the only way to bring it about. This must involve a generalised reduction in consumption as well as in investment. Instead of the costs of the adjustment being concentrated on the unemployed, who previously worked in the building and related sectors, as in Ireland, Spain and Estonia, the costs of adjustment are likely to be shared much more broadly by the population as a whole.³ Adjusting through cutting public expenditure or raising taxes also tends to take longer than the forced adjustment through a bubble bursting.

Those countries that had exceptionally high levels of investment have seen a collapse in investment demand triggering a big fall in imports and a rapid adjustment in the balance of payments. There are a number of mechanisms whereby the collapse in building and construction has translated into a fall in imports: these include the effects on employment, and hence on incomes, as well as the effect of the fall in perceived housing wealth and the rise in household indebtedness on consumption. For the countries that have experienced such a shock, the necessary adjustment in the balance of payments has been accomplished or is on the way to being accomplished. What are left are the legacy effects of the collapse on the public finances (and, in the case of Ireland, on the financial system). In the other countries the adjustment has some considerable way to go. The fact that the action to bring about adjustment in the current account has been concentrated on the deficit countries, the effects have been more painful than would have been the case if demand had risen in surplus countries.

2. Obviously it is not necessary to restore the current account to exact balance to ensure sustainability. However, in the case of these countries there is clearly a significant further distance to travel.

3. In the case of Ireland, Spain and Estonia, the population as a whole are also suffering a major loss of real income as a result of the second round effects of the crisis—the catastrophic effect on the public finances of the property market bust.

Table 4 shows the state of the public finances in the countries considered here for 2011 and the change since the beginning of the crisis. This shows that while there has been a very substantial improvement in the current account imbalances there has been much less change in the public finances over the period. In the case of Latvia and Lithuania the Table masks very dramatic changes since 2007. Their government deficits ballooned as a result of the building bust but then, through dramatic fiscal action, the public finances have been brought back much closer to balance.

Table 4. Government borrowing, investment and GDP

Country	Years	Government borrowing	Investment	Current a/c	GDP
		Change	End	Change	Change
		as % of GDP			%
Ireland*	2007-11	-13.1	-13.0	-15.4	5.6
Hungary	2008-11	7.9	4.2	-4.9	7.9
Spain	2007-11	-10.4	-8.5	-9.0	6.1
Portugal	2008-11	-0.5	-4.2	-4.4	6.0
Romania	2007-11	-2.3	-5.2	-5.6	9.5
Lithuania	2007-11	-4.5	-5.5	-10.5	13.4
Estonia	2007-10	-1.4	1.0	-16.7	19.5
Greece	2008-11	0.8	-9.2	-8.2	6.6
Latvia	2007-11	-3.1	-0.4	-11.7	21.2
Bulgaria	2007-11	-3.3	-2.1	-7.8	27.0

* The figure for Ireland includes the cost of bank recapitalisation. If this is excluded the deficit for 2011 is now estimated at 9.2 % of GDP.

Source: EU DGecFin AMECO database, spring 2012.

For countries such as Ireland, Spain and Portugal, considerable fiscal tightening has taken place but progress appears to be slow. This arises first because the adjustment, unlike those in the past considered in Table 1, is taking place against the backdrop of a very unfavourable economic environment in the euro area. Secondly, as discussed earlier in the case of past adjustments in Finland and Ireland, the current account generally improves before progress appears in the public finances. That is because the tough fiscal action, while reducing the structural deficit, has a substantial negative impact effect on growth. It is only towards the end of the

fiscal adjustment that the advent of growth will produce an improvement in the cyclical element of the deficit.

Table 5 shows exports as a share of GDP in each country at the beginning of the crisis⁴. In countries where the share of exports in GDP was 40% or more at the beginning of the crisis the adjustment in the current account has been more rapid. This reflects the fact that a given percentage increase in exports will have a bigger current account impact where exports are already large. This is a problem which Portugal and Greece face as they have a low export share of GDP. Unless there is a large rise in exports, the only other way to reduce the deficit is through a large reduction in imports, driven by a corresponding fall in domestic demand.

Table 5. Exports as a share of GDP at the beginning of the crisis

Country	Years	Exports	Change in current account
		as % of GDP	
Ireland	2007	80.2	5.6
Hungary	2008	81.7	7.9
Spain	2007	26.9	6.1
Portugal	2008	32.4	6.0
Romania	2007	29.3	9.5
Lithuania	2007	53.8	13.4
Estonia	2007	67.1	19.5
Greece	2008	24.1	6.6
Latvia	2007	42.5	21.2
Bulgaria	2007	59.5	27.0

Source: EU DGecFin AMECO database, spring 2012.

This examination of past current account crises, and of the progress to date in the current crisis, suggests a number of conclusions.

Firstly, don't own your own banks or, if you do, exceptionally tight regulation and suitably targeted fiscal policies are essential to ensure no financial collapse. Estonia and Latvia, while suffering

4. The countries are ranked as they are in the other tables: the first country in the table had the lowest current account deficit in 2007 and the last country had the highest 2007 deficit.

from bursting investment bubbles, have bounced back rapidly as the costs of the burst bubble are carried by foreign banks and their shareholders. By contrast, Ireland and Spain are carrying all the financial costs of burst housing bubbles and this burden will greatly slow any recovery. Until the costs of the financial collapse have been fully dealt with it is difficult for the real economy to recover.

The size of the export sector matters. Where an export sector in an economy is large it is much easier to grow exports through improving competitiveness. Where the export sector is small a bigger share of any adjustment must be achieved by cutting imports by means of a fall in domestic demand (and living standards). This is a more painful process.

The pattern of recent adjustment does not suggest that membership of EMU was a good predictor of whether a country would suffer severely in the current crisis. Current account imbalances occurred whether or not countries were EMU members. The nature of the adjustment that has taken place so far does not suggest that exchange rate changes have been important in the adjustment process for most countries who were not EMU members. Only in the case of Hungary and Romania has there been a substantial fall in the effective exchange rate over the course of the adjustment period.

In countries where a property market or investment bubble has burst, the adjustment in the current account has taken place more rapidly. The initial incidence of this adjustment has been felt particularly by the large numbers who have lost their jobs in the building sector as a result of the bursting bubble. Where the current account imbalances have to be eliminated through reducing consumption there is no "automatic stabiliser" to ensure that adjustment happens rapidly. Instead the adjustment must be a consequence of fiscal action reducing consumption. This is inevitably a slower process than bursting a bubble. Also, because it requires domestic policy action to impose cuts in consumption across the whole population (not just those affected by a building bust), it is likely to face much more popular opposition.

Finally, experience in previous crises in EU countries suggests that major adjustments to restore domestic balance can take many years. It also suggests that the adjustment in the current account

imbalances leads the adjustment in the public finances by a number of years. However, the current crisis is different from previous crises as the adjustment process in the countries with major imbalances is taking place against the backdrop of contractionary fiscal policies in the rest of the EU. EUROFRAME (2012) estimates that the effect of the tightening fiscal policy stance in the EU this year will be to knock between 0.8% and 1.4% off the growth rate. In addition, the failure to deal effectively with the banking crisis, not just in Spain and Ireland, but throughout the EU has seen the destruction of the single EU financial market. Barrell *et al.* (2011) suggest that this move to national banking systems, if not reversed, will have a very negative additional effect on the EU growth rate.

3. Returning to growth

Returning the EU economy to balanced growth requires a number of tasks: restoring order to the public finances, enhancing competitiveness in those economies with chronic current account deficits (as well as changes in the economies with large current account surpluses to increase demand), developing a resilient banking system and reducing the exposure of EU economies to financial shock and, finally, labour market changes to match supply and demand for unskilled labour in the longer term.

3.1. Restoring order to the public finances

A key priority for policy is to return the public finances in a range of EU members to a sustainable path. This is a *sine qua non* for future growth in these economies and it will require a prolonged period of fiscal tightening in countries such as Ireland, Greece, Spain and Portugal. For other countries, such as Italy, the necessary adjustment is much more limited. All of this would be much easier if there were a return to sustained growth in the EU economy. A significant part of the fiscal crisis is due to the fact that the EU economy is operating well below capacity. When actual output in the EU economy grows to match its potential, all economies will see a significant improvement in their public finances. Without a return to growth in the EU economy as a whole, the current crisis in the more troubled EU member economies will

persist. As discussed above, in previous decades quite large adjustments in the current account (and in the public finances) were made with less pain where they occurred against the backdrop of growth in trading partners.

In some economies the problem with the current account imbalance has already been addressed but there is a distance to go before balance is restored to the public finances (Ireland). In addressing the public finance crisis, the balance of payments in a country such as Ireland is likely to move into substantial surplus. In other economies, such as Portugal, the adjustment needed in the public finances, while still large, is less than it is for Ireland. However, there is still some distance to go before the current account of the balance of payments is restored to a sustainable path. All of these problems will be eased for economies, and eventually put behind them, by a return to growth. This Section of the paper addresses some of the lessons to be learned from the past experience of convergence.

3.2. Restoring competitiveness

A second task will be to improve the competitiveness of the EU economy, to enhance future growth. This will involve changes to enhance cost competitiveness across the EU as a whole, and changes in competitiveness in individual economies, which serve to reduce the major domestic imbalances. This must involve a relative improvement in the competitiveness of deficit countries relative to surplus countries. This will be achieved by a more rapid increase in costs in surplus countries than in deficit countries.

As discussed above, the current crisis has so far seen adjustment in many of the economies with large balance of payments deficits occurring through a reduction in imports brought about by a collapse in domestic demand. While such a contraction in output can, if sufficiently large, restore balance it comes at the cost of a considerable loss of output. An alternative strategy is to reduce domestic costs relative to competitors so that exports grow more rapidly. Such an approach is the only one which will protect growth and ensure that the other imbalance—in the labour market—is ironed out within a reasonable space of time.

However, for those economies that are in EMU restoring competitiveness can only be secured by reducing domestic costs. This tends to be a time consuming process. In addition, even with a restoration of competitiveness it takes time for the productive capacity of the economy to be rebuilt through investment. Thus even with a rapid adjustment a recovery in exports will take some considerable time. With the huge pressures for early adjustment in those economies that are heavily indebted, this leaves little alternative than to adjust through cutting domestic demand as an instrument for cutting imports.

In addition, with relatively inflexible labour markets in some economies, the necessary adjustment in domestic costs is taking some considerable time. At one end of the spectrum are the Baltic states, where domestic competitiveness has been improved quite rapidly. At the other are Spain and Portugal where the response of domestic costs to the crisis has proved sluggish. In the case of Germany and the Netherlands, the tighter labour markets are resulting in an above average increase in wages, which facilitates adjustment across the EU. However, this process is also quite slow in these latter economies.

3.3. Developing a resilient and competitive banking system

The Cecchini report, which provided the blueprint for the Single Market, quantified major economic benefits from a more integrated EU financial system. While progress over the 15 years since the Single Market began has been slow, it was, nonetheless, real. The effect of the current financial crisis has been to fragment the EU banking system. Whereas before the crisis there had been a gradual move towards a more integrated EU banking system, this has now been dramatically reversed. With each country responsible for the solvency of its own banks there has been a rapid return towards a system of national banks. A major consequence of this is a fall off in competition. The decision to recapitalise the EU banks over a nine month period aggravated this tendency in early 2012. There are big potential gains for shareholders in reducing capital requirements through deleveraging rather than raising new capital, and this process could pose major problems for some of the New Member States who do not have domestically owned banks.

Also a failure to raise adequate capital will potentially leave relevant governments responsible for any shortfall.

Barrell *et al.* (2011) show that a purely national banking system in the EU would see a substantially lower level of output than one where there is a system of EU-wide banks. This would arise because, instead of risks being shared over a large and diversified banking system, each national banking system would reflect the risks of the local economy (and any related lack of liquidity).⁵ By contrast, the US has continued to move away from the Glass-Stiagall era, where out-of-state banking was not allowed. An important impetus for this was the reduction in risk consequent on more regionally diversified banks. It also has resulted in significant efficiency gains. Even with the recent financial upheavals in the US there is no suggestion that the trend towards an integrated US banking system should be reversed.

The development of a less competitive national banking system in the EU may not affect large multinational companies, which raise funds directly from financial markets and have access to many different banks across the range of countries in which they operate. However, in the absence of geographically diversified international banks, that can provide comparable terms for similar borrowers across the different EU markets, the problems with national banking systems are likely to have a negative impact on the cost of funds for smaller companies and the household sector. In turn this will negatively impact growth.

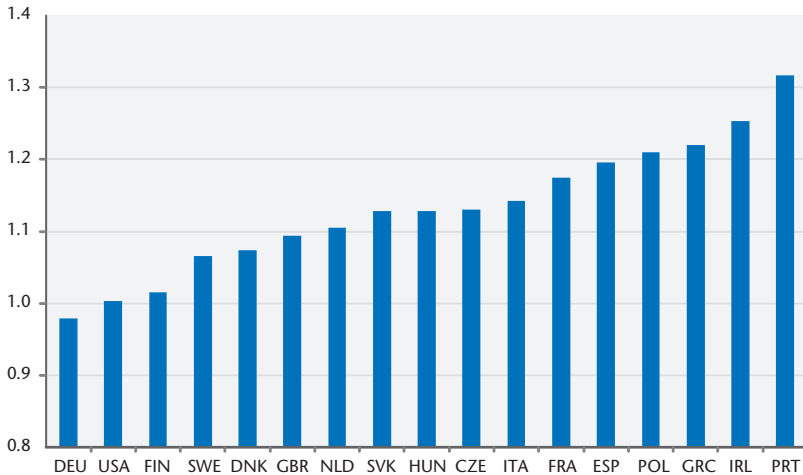
Reversing this process will be important for the growth of the EU in future years. Any return to a more integrated EU banking system is only likely to proceed if there are major changes in how the banking system is regulated. As currently proposed, an EU wide banking system will need an EU-wide regulatory system rather than the current system with individual national regulation and responsibility.

5. Geographical diversification may not always be successful, if poorly managed. However, the recent Spanish experience suggests that the more geographically diversified large Spanish banks have proved more robust in the face of the current crisis than have the smaller banks, whose business was confined to the Spanish economy.

3.4. Labour market reform and investment in human capital

The experience of convergence in living standards in the EU over the last quarter of a century has highlighted the significance of investment in human capital. Darvas and Pisani-Ferry (2011) make the point that the EU2020 agenda is still relevant. “Education, research and the increase in participation and employment rates are perfectly sensible objectives in the current context...”. As shown in Figure 2, because of the fact that the educational attainment of the population in many member states has only improved gradually over the last twenty five years, there is still considerable benefit to be reaped in the coming decade (in terms of increased potential output); as less well educated workers retire and are replaced by more productive better educated workers there will be further growth in productivity and in the productive labour force across a range of countries.

Figure 2. Investment in human capital. Ratio of human capital index of 25-29 year olds relative to the index for 55-59 year olds



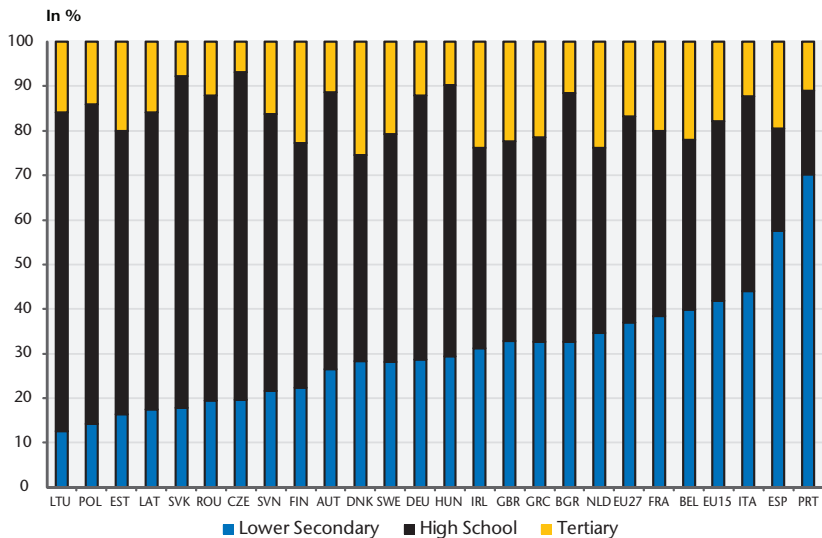
Source: FitzGerald (2012).

In the case of some of the countries in southern Europe, even today their education systems are failing to produce adequate numbers of high school and third level graduates. This is particularly the case for Portugal. If it raised the throughput of skilled persons through their education system towards the EU average, this would see substantial benefits accruing well into the next

decade. However, the benefits of any such policy would take some considerable time to mature.

The effect of the current recession has been to dramatically increase the unemployment rate in the EU. However, the increase in unemployment has not been evenly distributed, with relatively good performances in the German and the UK labour markets, contrasting with dramatic increases in unemployment in those countries that have seen a collapse in their building and construction sectors. However, the distribution of the increase in unemployment within the EU is not only uneven, but the share of the unemployed who have limited education also varies across countries. Because the average education of workers in the building and construction sector is quite low, those economies that have seen a collapse in that sector have also seen a disproportionate rise in the unemployed with limited education.

Figure 3. Share of unemployed by level of education, 2010



Source: EU Eurostat Labour Force Survey.

Figure 3 shows the educational attainment of the unemployed across the EU member states. The share with lower secondary education is exceptionally high in Portugal and Spain. In the case of Portugal it reflects the relatively low average educational attainment of the labour force as a whole. However, in Spain it also

reflects the very serious loss of employment in building and construction⁶. What is perhaps surprising is that the share of less well educated workers in the numbers unemployed is relatively low in Ireland, Estonia and Latvia, which all saw a dramatic fall in the investment share of GDP. In the case of Ireland this may reflect differential emigration by non-Irish former building workers who have lost their jobs.

Whatever the causes of the rise in unemployment, the evidence suggests that those who are unemployed with limited education will find it most difficult to get back to work, even in a recovering economy (Kelly, McGuinness and O'Connell, 2011). Because of the concentration of such unemployed workers in a number of member states, this may make the task of returning their economies to full employment in the recovery phase more difficult.

Figure 4. Labour force and employment in the EU
EU 15, lower secondary education

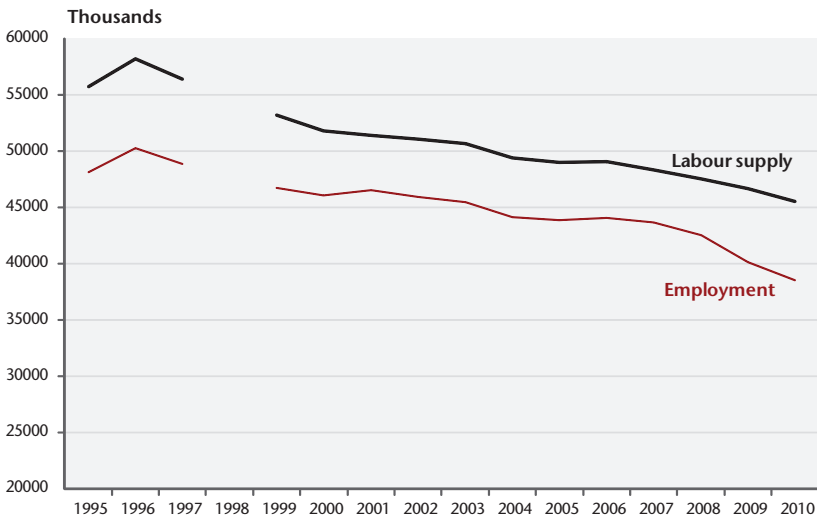
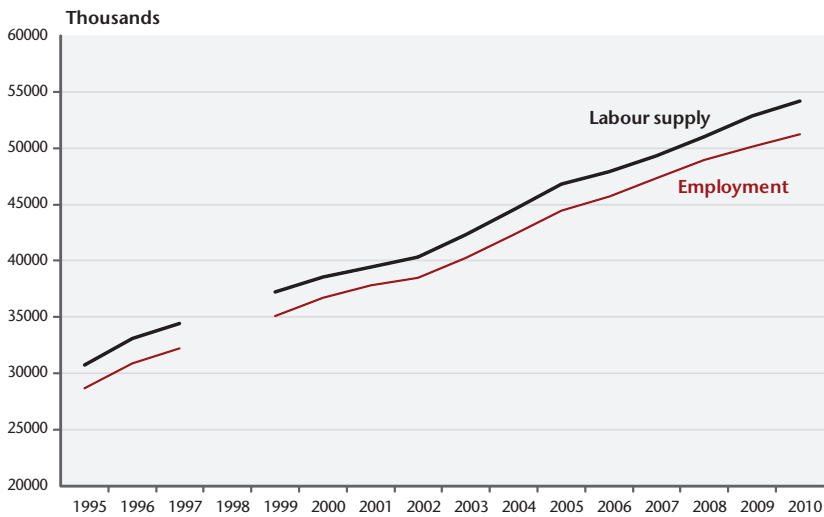


Figure 4 shows the trend in employment and labour supply in the EU over the last 15 years for those with only lower secondary education. The trend in both supply and demand has been steadily

6. Spain may also be affected by substantial immigration of workers for the building and construction sector in the boom years.

downwards. However, the recession has seen demand fall even more rapidly than supply. A continuation of this pattern of falling demand in an economic recovery would mean that demand for this category of labour is unlikely to catch up with supply to address the problem of unemployment. By contrast, Figure 5 shows the steady upward trend in the supply and demand for skilled labour. Even in the economic downturn demand for this category of labour continued to rise.

Figure 5. Labour force and employment in the EU, EU 15, tertiary education



Source: EU Eurostat Labour Force Survey.

Much will depend on the elasticity of substitution between skilled and unskilled labour in individual economies. If it is very low as it is in Ireland (Bergin and Kearney, 2007), then it will be more difficult to see employment for unskilled workers increasing. With a Leontief production technology, where skilled and unskilled workers are employed in fixed proportions, it would require substantial growth in total employment to ensure that substantial numbers of unskilled workers got jobs. Under these circumstances, reducing wage rates for unskilled workers relative to skilled workers would make little difference to demand. With unskilled workers constituting a small share of total employment unskilled wage rates would have to fall dramatically relative to

skilled wage rates in order to improve the competitiveness of the economy sufficiently to employ all the unemployed unskilled workers (along with even more skilled workers). However, the higher the elasticity of substitution between skilled and unskilled labour, the easier the economy will adjust to employing unemployed unskilled workers.

An alternative strategy is to reduce the supply of unskilled workers. In the long run, in an economy such as Portugal, this would be best achieved by reducing the output from the school system of young people with only lower secondary education and increasing the share completing tertiary education. While it would take a generation to achieve its full impact on the economy, there is no real alternative. A less effective strategy is likely to be retraining unemployed workers with limited education, especially where they constitute a large share of the unemployed. Nonetheless, it would be likely to produce a faster pay back than just waiting for a generation of new young graduates.

4. Conclusions

A *sine qua non* for sustainability and recovery in the most troubled EU economies is a return to sustained growth in the EU as a whole. It is obvious that the trigger for a return to growth is not available in the more troubled economies. As a result, it is only when the countries within the EU, which do not face major domestic imbalances, return to growth that a generalised recovery will ensue. Those economies, which are currently experiencing large current account surpluses, are best placed to lead the recovery. The study by EUROFRAME, 2012, showed the strong negative effect on growth in 2012 arising from the current stance of EU fiscal policy. Until the overall fiscal stance of the EU, and especially of the euro area, at least ceases to be deflationary, it is hard to see an economic recovery occurring. With continuing retrenchment in the more troubled economies, this rebalancing of the EU fiscal stance must depend on appropriate policy action in the rest of the EU, especially in the countries with substantial current account surpluses.

However, tackling serious domestic imbalances in the more troubled economies cannot await a return to growth. But this task

will only be completed when growth in the EU is assured and it would also be greatly facilitated by increased flexibility in domestic costs so that adjustment could take place through increased exports rather than reduced imports. The counterpart to such an improvement in competitiveness should be an increase in domestic demand in the surplus economies.

The experience of the last twenty years shows that convergence has actually happened, even if in a rather uneven form. Past investment in human capital holds out the prospect for further dividends in the coming decade. This is true for most of the troubled economies. However, realising this potential will depend on tackling a range of obstacles. Further investment in human capital is desirable in some economies, especially in southern Europe.

The crisis has left a serious legacy of unemployed workers. In some of the most troubled economies a substantial proportion of the unemployed have limited education and this will pose a barrier to re-employment even in an economic recovery. Making the labour market work better is going to prove a challenge in those countries where unemployment is especially high.

References

- Barrell R., T. Fic, J. FitzGerald, A. Orazgani and R. Whitworth, 2011. "The Banking Sector and Recovery in the EU Economy", *National Institute Economic Review*, 216: R41–R52.
- Bergin A. and I. Kearney, 2007. "Human Capital Accumulation in an Open Labour Market: Ireland in the 1990s", *Economic Modelling*.
- Darvas Z. and J. Pisani-Ferry, 2011. "Europe's Growth Emergency", *Bruegel Policy Contribution*, 2011/13.
- Blanchard O., 2001. "Country adjustments within the euro area: lessons after two years". In *Defining a Macroeconomic Framework for the Euro Area*, London: CEPR.
- Blanchard O., 2007. "Current account deficits in rich countries", *NBER Working paper*, r 12925.
- European Forecasting Network, 2006. *Economic Assessment of the Euro Area*, Autumn, Report of the European Forecasting Network for DG Ecofin, Dublin: EUROFRAME, Spring. http://www.euroframe.org/fileadmin/user_upload/euroframe/efn/spring2006/EFN_Spring06_Report.pdf

- EUROFRAME, 2012. *Economic Assessment of the Euro Area*, Winter Report 2011/2012, EUROFRAME. http://www.euroframe.org/fileadmin/user_upload/euroframe/docs/2011/winter2011/EFN_Winter1112.pdf
- FitzGerald J., 2012. "To Convergence and Beyond? Human Capital, Economic Adjustment and a Return to Growth", Dublin: The Economic and Social Research Institute, *Working Paper* 419.
- FitzGerald J. and I. Kearney, 2011. "Irish Government Debt and Implied Debt Dynamics: 2011-2015", *Quarterly Economic Commentary, Summer*, The Economic and Social Research Institute.
- Kelly E., S. McGuinness and P. J. O'Connell, 2011. "What Can Active Labour Market Policies Do?", Dublin: ESRI, *ESRI Economic Renewal* 001.
- Von Hagen J. and I. Siedschlag, 2010. "Changing Capital flows: Experience from Central and Eastern Europe", in M. Kawai and M.B. Lambert, *Managing Capital Flows: The Search for a Framework*, Edward Elgar, Cheltenham, UK, 192–213.

HOW TO RESTORE SUSTAINABILITY OF THE EURO?¹

Kari E.O. Alho

The Research Institute of the Finnish Economy (ETLA)

We specify an open-economy version of a two-region New Keynesian model for EMU and demonstrate that the result on the unsustainability of the euro with ever-mounting inflation differentials by Wickens (2007) does not hold in general. Strong fiscal consolidation and far-reaching successful structural reforms are needed to reach sustainability in terms of competitiveness and reduced public debt over the medium run. However, the current deflationary adjustment involves a major polarisation within the euro area. Debt relief within the union and internal devaluation in the debtor country may essentially alleviate the adjustment burden and shift it from the problem countries to the strong countries. An internal revaluation in the strong countries can markedly help the situation in the weak countries in the short run if the interest rate remains unchanged.

Keywords: EMU, Euro, Sustainability, Fiscal policy, Competitiveness.

The financial and economic crisis which started in 2008 has delivered a major blow to the global economic system. As is typical in a deep recession, the crisis has also caused tensions between countries operating in a fixed exchange rate system, like the EMU, with diverging economic developments and imbalances within it.

1. The paper is associated with the report Alho, Kotilainen and Nikula (2010). I thank Ville Kaitila, Markku Kotilainen and Niku Määttänen from ETLA, as well as the participants of the XXXIII Annual Meeting of the Finnish Economic Association in Oulu and of the 9th EUROFRAME Conference in Kiel, especially John FitzGerald, and two anonymous referees and the editors for comments to earlier versions of the paper. The usual disclaimer applies.

Already before the crisis, Wickens (2007) observed that the euro had not been stable in the sense that the price levels, *i.e.*, the real exchange rates of the participating countries of the euro area had been on diverging paths during the first decade of the euro. The high inflation countries at the outset did not experience lower inflation hence, but quite on the contrary, they diverged in terms of price levels and competitiveness. He then made the claim that this will be the case in the future as well. Sustainability can only be reached if there are fiscal transfers from the high-inflation countries to the low-inflation countries, which would be unlikely to happen. This unsustainability holds irrespective of the fact that the ECB has a perfect success in its task and capacity to contain inflation in the euro area as an aggregate in the sequel as well.

In this paper, we first intend to tackle this same question using a stylized new-Keynesian macro model (NKM) for two member countries of the euro area, with a slightly more elaborated specification than that used by Wickens (2007). However, our conclusions are far more comforting than his. We argue that his core result does not hold in general. The model has a determinate solution both for the euro area as a whole and its member countries. Also, if there is an inherited divergence in price levels, linked to a loss of competitiveness in a member country, the internal adjustment within EMU is sufficient to eliminate this imbalance, even without a policy reaction by the ECB.

It has already been shown earlier in the literature of the NKM models that the model for a single infinitesimally small member country of a closed monetary union is stable, see Galí and Monacelli (2005).² The intuition behind this notion is the fact that the output in the monetary union is pinned down by the relative price level within the union which acts as a substitute for the Taylor rule in a single open economy under flexible exchange rates. Below we come to the same conclusion in our formulation of the relative price level in an open economy EMU.

Wickens (2007) only considered stability with respect to price levels, while we subsequently enlarge the analysis to consider stability in terms of both price levels and fiscal policy and public

2. Note that this section is missing from their article publication of the same paper in Galí and Monacelli (2008).

debt. The model is reformulated by giving up the assumption of homogeneous financial markets in the euro area and replacing it with segmented markets with diverging sovereign risk premia in interest rates.

We can discern two meanings of the term sustainability. First, we have the case where the NKM model has or does not have a determinate, bounded unique solution. Secondly, we should consider, whether it makes sense for a weak country to remain as a member of the euro area, so that from a policy point of view this is beneficial for both the weak and strong euro area countries. The exchange rate has both a dimension of macroeconomic stability and microeconomic efficiency (see e.g. Alho, 2011 on the latter). The current crisis, manifesting in the financial markets, is basically due to macroeconomic imbalances in terms of idiosyncratic deviations in competitiveness, output and public deficit. Therefore, we have to base the consideration of the sustainability of the euro on whether the emerged imbalances in the euro area in terms of competitiveness and debt ratios will be eliminated within a reasonable time span of, say, the next five to ten years, and what this requires in terms of economic policies.

One core feature in the current crisis management is the magnitude of the burden sharing, so that the problem countries get some assistance from the strong countries in their adjustment process. This has also created a conflict within the currency union as some actors and the public in the strong countries hold that that there has already been enough transfer of funds to the problem countries, while the problem countries urge for more help. Here we come to illustrate this situation with respect to some policies, but, needless to say, without a definitive result on how far this goal should be accomplished in the present crisis, as is also done in the report by the council of the Institute for New Economic Thinking (2012). We contain ourselves to analyse how the various policies work and are shaped in this respect.

We analyse the sustainability of the euro from the following policy angles to alleviate the current divergences:

- (i) Fiscal austerity in the problem country with a high debt and a large public sector deficit, and loss of competitiveness.

- (ii) EU bailout programmes extending subsidised credit to the problem country.
- (iii) Debt restructuring and debt relief in the problem country.
- (iv) Structural reforms, *i.e.*, cutting mark ups in the economy of the problem country.
- (v) Internal (fiscal) devaluation, *i.e.* lowering the export prices of the problem country through cost cuts and raising the home market price of the imported goods by VAT type of changes.
- (vi) Inflationary policies (revaluation) like cost rises in the strong EMU country which reduces the existing gap in competitiveness between the EMU countries.

As a final scenario we could think about a full breakdown of the EMU. This case has not, however, been evaluated in the paper.

We study the mutual interrelationship between the ECB and national fiscal policies. However, our approach differs markedly from the recent literature on monetary unions where optimal monetary and fiscal policies are studied, see e.g. Galí and Monacelli (2008), Ferrero (2008) and Orjasniemi (2010), where optimal fiscal policies could be linked to respond to idiosyncratic shocks. Instead we try to capture a situation, like the current one, where a policy error has been made and imbalances within the euro area have emerged, and policies are basically pursued to stabilise future public debt and competitiveness developments with simple budgetary rules. Numerically, we illustrate a case like that currently in some EU member states where a rapid pace is required in the elimination of the public deficit, assisted by an EU rescue package. If there is no or only a weak fiscal consolidation, this may entail an unsustainable situation for the euro area in the sense that the imbalances would not be eliminated, or that the mounting public indebtedness would not be prevented within a reasonable horizon.

However, in the future, a rise in the interest rate set by the ECB could cast a doubt on managing the interest burden of accumulating public debt and the success of fiscal consolidation. We also illustrate that the adjustment, although successful, to the current divergence in competitiveness and public debt will lead to a major polarisation within EMU in the sense that the problem countries lose and the rest can gain, although the latter fairly little, in terms

of output during the medium-run adjustment period. And as a next item, we infer that far-reaching successful structural reforms are needed to quickly balance the public debt ratio in the problem EMU country. Then we turn to consider policies where the adjustment burden is shifted to the creditor EMU country so that we first analyse debt restructuring and a possible debt relief, and as a last item internal devaluation, called fiscal devaluation (revaluation) in the problem (strong) country. The general conclusion is that these policies work in quite an effective manner in boosting the economy of the weak EMU country and stabilise the divergences in adjustment within the Monetary Union. However, the effects of a reverse cost push in the strong EMU country crucially depend on the reaction of monetary policy. We assume that the ECB first commits to a fixed low interest rate and then gradually returns to obey a Taylor rule. Under such a policy, a revaluation in the strong country lowers the expected real interest rate and changes the gap in competitiveness and thus has an expansionary effect, especially on the weak country in the short run. However, over time, the effect turns negative for the strong country and neutral also for the weak country. On the other hand, if the ECB reacts immediately to a rise in the inflation rate, the effects are recessionary on both countries and thereby on the whole union.

In general, we find that existing idiosyncratic losses and gains in competitiveness bear a major overhang for the Monetary Union. Much more vigorous policies are needed under such conditions in comparison to those under no initial divergence in competitiveness. We also conclude that the measures aiming at balancing the indebtedness process can only be observed over time, which leads to uncertainty as to policy effectiveness in the short run.

The rest of the paper proceeds as follows. In the next section we build the two-region model for the EMU, and in Section 2 consider theoretically stability of the euro area NKM model. In Section 3 we calibrate the model numerically. In Section 4 we widen the analysis to fiscal policy and public debt, with subsections on the fiscal austerity, debt restructuring and bailout packages, structural reforms and fiscal devaluation (revaluation) in the problem (strong) country. Section 5 concludes.

1. The model

We specify the following stylized New Keynesian macro model for the euro area, consisting of two countries, following Wickens (2007), but deviating from it in some key respects. The IS curve, based on aggregate demand, is in period t the following, for both member countries, $i, j = 1, 2, i \neq j$,

$$q_{i,t} = -\beta(r_t - E_t \pi_{i,t+1} - \theta) + \gamma E_t q_{i,t+1} + (1 - \gamma) q_{i,t-1} + \lambda(p_{j,t} - p_{i,t}) + \phi(s_t + p_t^* - p_{i,t}) + \delta q_{j,t} + \chi z_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where q is the output gap in log, r the common interest rate set by the ECB, π is the inflation rate, E_t is the expectation operator on information in period t , θ is the equilibrium real rate of interest given by the time preference, p is the price level in log, p^* the global price level outside the euro area, s is the log of the effective exchange rate of the euro, units of foreign currency per unit of euro, z and ε the demand impulses stemming from the domestic fiscal policy and the world markets, respectively. In general, a superscript star denotes a global variable. All parameters in (1) are positive. The first two terms on the right-hand side refer to contributions by consumption behaviour and investment to aggregate demand, and the next three terms refer to net exports. So, we depict the influence of the expected real rate of interest, the expected output gap in the next period, the influence of the competitiveness of the country concerned, both within the euro area and in relation to the rest of the world, and the external demand both within the euro area and the world economy outside it. In the Appendix we present a more exact derivation of the IS curve, especially the case how it is specified in connection with fiscal policies in Section 4.

The supply curve, the inflation rate, measured through a CPI, is determined by the following relationship, depicting also a Calvo pricing mechanism for domestically produced goods,

$$\pi_{i,t} = \xi_1 E_t \pi_{i,t+1} + \xi_2 \pi_{j,t} + \xi_3 (s_t - s_0 + \pi_t^*) + \alpha q_{i,t} + u_{i,t}, \quad (2)$$

$$\xi_1 + \xi_2 + \xi_3 = 1,$$

where the subscript 0 denotes an initial value of a variable determined outside the model. The justification of this specification for the supply curve is that the domestic price level is made of goods

supplied by the domestic producers, and by imports from the euro area partner and from the global markets (the three first terms on the right-hand side of (2)). In addition, we depict the influence of the output gap on inflation in a standard manner. The supply (u_{it}) shocks in (2) are serially uncorrelated, but observed in the beginning of the period, before the policy by the ECB is decided.³

We deviate from Wickens (2007) who took the external value of the euro as fixed and derive its determination as an endogenous item through the portfolio balance. The demand (superscript D) for the euro assets denoted by B (government bonds), the stock B^S of which is momentarily given, is determined by investors in the euro area and those in the rest of the world, so that in equilibrium we have,

$$B_t^S = B_{i,t}^D + B_{j,t}^D + s_t B_t^{D*} . \quad (3)$$

Here we assume that the euro area bonds are perfect substitutes for each other so that within the euro area financial markets are homogeneous, but see, however, below in Section 4. Each demand component k is determined by the given wealth \bar{W}_k and positively by the expected yield differential between the euro area and the rest of the world,

$$B_{k,t}^D = a_k \bar{W}_{k,t} g(r_t - (r_t^* + Es_{t+1} - s_t)), \quad (4)$$

$$g' > 0, g(0) = 1, 0 < a_k < 1 .$$

A similar equation holds for the demand for the external assets, which can be skipped through the portfolio balance identity. For simplicity, we assume that the investors in the market have a fixed de/revaluation expectation of the future exchange rate of the euro so that $Es_{t+1} - s_t$ is given by the initial gap in the inflation rates, *i.e.*, it is equal to $\Omega - \pi_0^*$, where Ω is the inflation target by the ECB. From (3) and (4) we can derive the reaction that a rise in the euro area interest rate leads to an inflow of capital from abroad and to a revaluation of the external value of the euro, and thereby to disinflation within the euro area through this link as well, see (2),

3. We have somewhat incorrectly specified that the price variable in the competitiveness term in (1) is the gap in the total price levels, not that in the domestically produced goods. This deviation can, however, be corrected when specifying the parameters of the equation.

$$s_t = s_0 - \psi(r_t - r_0), \psi > 0 \quad . \quad (5)$$

In the standard manner, we assume that the two EMU countries in the model are initially symmetric and of equal size. This means that all the reaction parameters in the above country model are identical for countries i and j .

The ECB takes the aggregate euro area indicators, denoted by a bar, as a basis for its policy. These are in the symmetric case,

$$\bar{q} = \frac{q_i + q_j}{2}, \bar{\pi} = \frac{\pi_i + \pi_j}{2} \quad . \quad (6)$$

The model for the aggregate euro area is then given by the following behavioural equations,

$$(1 - \delta)\bar{q}_t = -\beta(r_t - E_t\bar{\pi}_{t+1} - \theta) + \gamma E_t\bar{q}_{t+1} + (1 - \gamma)\bar{q}_{t-1} + \phi(s_t + p_t^* - \bar{p}_t) + \bar{z}_t + \bar{\varepsilon}_t \quad (7)$$

$$(1 - \xi_2)\bar{\pi}_t = \xi_1 E_t\bar{\pi}_{t+1} + \xi_3(s_t - s_0 + \pi_t^*) + \alpha\bar{q}_t + \bar{u}_t \quad (8)$$

From the supply curve (8) we find that when the purchasing power parity (PPP) holds, *i.e.*, the expected inflation rate is equal to the global inflation measured in euro then the expected euro area output gap is zero given that there are no supply shocks in the euro area. Similarly, we find that if this holds in each member country as well, then the expected value of the output gap is zero, $E q_{i,t} = E q_{j,t} = 0$, and output is at the natural level in each country. From (8) we infer, using the above result concerning expected change in the exchange rate that, in equilibrium,

$$E\bar{\pi}_t = \Omega + \frac{\alpha}{1 - \xi_1 - \xi_2} E\bar{q}_t + \frac{1}{1 - \xi_1 - \xi_2} \bar{u}_t \quad . \quad (9)$$

We should still make a note on the nature of our model with respect to the interpretation of the price levels. Our approach is a macroeconomic one, not one describing growth and convergence. Therefore, when we speak of price levels we should not identify them to the existing price level differentials in a PPP sense within Europe so that the price levels are lower in Southern Europe in comparison to the Northern Europe due to lower real income and productivity levels in the former. But we should rather identify them as price levels in relation to productivity levels, and interpret them in terms of competitiveness differentials.

2. Sustainability of the euro: the basic result on determinacy

We could start, as Wickens (2007) did, from a discretionary formulation of the monetary policy by the ECB. However, this effort is not in effect needed, and in order to be able to argue about the conclusion of Wickens, we first state the basic outcome of the policy-making. It is well known that the central bank fully offsets the effects of aggregate demand shocks (if the interest rate is not free to move due to the zero lower bound). This means that in the absence of the supply shocks the expected (for the next period) and the current period output gap is zero. As mentioned above, this holds in the steady state long-run equilibrium.

We could then insert, similarly as Wickens (2007) did, the ECB policy into the IS curves (1) for both countries i and j and subtract the IS curves for i and j from each other. Using the identity $E\pi_{i,t+1} = Ep_{i,t+1} - p_{i,t}$, the following dynamic equation can be readily derived for differentials of logs of price levels,

$$p_{it} - p_{jt} = \frac{\beta}{\beta + 2\lambda + \phi} (Ep_{i,t+1} - Ep_{j,t+1}) + \frac{1}{\beta + 2\lambda + \phi} ((z_{it} - z_{jt}) + (\varepsilon_{it} - \varepsilon_{jt})) \quad (10)$$

This is a determinate difference equation with a unique bounded solution based on the future path of the fiscal and demand shock differentials, in contrast to that stated by Wickens (2007), as the coefficient of the forward-looking variable is smaller than unity, see King and Watson (1998) and Sargent (1989, 216), Lubik and Schorfheide (2004) and Galí (2010) for a general treatment of the NKM model. This requires that the fiscal impulses and the demand shocks do not diverge from each other more rapidly than with the exponential order of $(\beta + 2\lambda + \phi) / \beta$. Meeting this, if there is an initial idiosyncratic shock to the price levels, they converge over time. This takes place in conjunction with the fact that the euro area as a whole stays well in a stable way within the goals adopted by the ECB, see below. The terms involving competitiveness are essential as to this outcome.

However, this is not how Wickens (2007) treats this equation (10) and Minford and Srinivasan (2010) consider the NKM model in a similar way to him. Both start from a shock to the initial price

level or the price differential in (10) and then trace the future path of the price differential. Both then use Eq. (10) or the like in the NKM model in effect as a backward-looking equation to trace the future path. Wickens (2007) argues that the ECB can do nothing to prevent this divergence in price level deviations to mount over time. But we argue that this interpretation of the NKM model is not correct.

Galí and Monacelli (2005) argue that within a closed monetary union consisting of infinitesimally small member countries, a member country's terms of trade within the union has a unique stationary solution, by deriving a forward and backward looking difference equation for the terms of trade. From this result they then derive the equilibrium levels of domestic prices and output. But, we can add to this that this relative stability is reached within a monetary union for all kinds of monetary policy rules by the ECB. Let us next follow their line of argumentation, which starts from the inflation equation. We can first derive the following equation in our case for the price differential within the monetary union,

$$(1 + \xi_2)(\Delta p_t - \Delta p_{t-1}) = \xi_1(E_t \Delta p_{t+1} - \Delta p_t) + \alpha \Delta q_t + \Delta u_t, \quad (11)$$

where Δ is the difference between countries i and j . Let us then take the goods market equilibrium, see the Appendix, analogously as Galí and Monacelli did. Now we can approximately state the following equation for the output difference, as a function of the differential in competitiveness and in the fiscal impulse,

$$\Delta q_t = \zeta \Delta z_t - (1 - \zeta) \delta \Delta p_t, \quad (12)$$

where ζ is the share of the fiscal impact in output, assumed to be 0.2, and δ is the elasticity of substitution between the goods produced in the home and foreign country, assumed to be two in the calculations below. Inserting this into (11) we can derive the following second-order difference equation

$$(1 + \xi_1 + \xi_2 + \alpha(1 - \zeta)\delta)\Delta p_t = (1 + \xi_2)\Delta p_{t-1} + \xi_1 E_t(\Delta p_{t+1}) + v_t, \quad (13)$$

where v is a combination of the difference in the fiscal impulses and the supply shocks. The roots of the difference equation (13) are hard to handle analytically. However, a numerical evaluation

of the grid (with α being 0.3), where $0 < \xi_1 + \xi_2 < 1$, $\xi_1 > \xi_2$, gives the result that one of the roots μ_1 is quite tightly centered on the value of 0.6-0.7, *i.e.* less than unity in absolute value, while the other root is clearly higher than unity. We can now derive the following solution to this difference equation, analogously as in Galí and Monacelli (2005, 16) and Sargent (1987, 395),

$$\Delta p_t = \mu_1 \Delta p_{t-1} + \frac{\mu_1}{1 + \xi_2} \sum_{k=0}^{\infty} \left(\frac{\xi_1}{1 + \xi_2} \mu_1 \right)^k E_t(v_{t+k}). \quad (14)$$

This is a unique stationary solution for the equation (13), converging to price parity similarly as above.

Turn then to the monetary policy rule. Below we shall analyse rules of the Taylor type of the following kind,

$$r_t = r_0 + \omega_1 \bar{q}_t + \omega_2 (\bar{\pi}_t - \Omega), \text{ where } \omega_i > 0. \quad (15)$$

Let us next turn to consider the determinateness of the aggregate euro area, the model of which was presented above in Equations. (7) and (8). In the prototype case of a closed economy the NKM model as such, *i.e.* without the monetary policy reaction, is not determinate, see Galí (2010). The model can be made as determinate if $\omega_2 > 1$, see e.g. Woodford (2003) and Galí (2010). However, in our specification of the open economy model for the euro area we come to the conclusion that it is stable under a wider range of policy rules, under the set of parameters adopted below in Section 4.

We have now come to the conclusion that both the models for the aggregate euro area and the difference between the EMU countries are stable. We can then infer that the individual EMU countries have a determinate solution as a linear combination, being either a sum or a difference of these two models, too, given that the shock processes do not diverge too fast from each other. Given the equilibrium path for the terms of trade within the monetary union, we can then trace back out the equilibrium prices and output.

Galí and Monacelli (2005) (and in their other papers, too) derive the result that the open economy NKM model is isomorphic with the closed economy model. This specification leads, however, to the case where there is no return back to parity in price levels

and competitiveness and differences in this sense stick to the initial gap in them. It seems that the key role of competitiveness vanishes in an equilibrium case from the IS curve. Therefore, we have wanted to specify the model so that it applies in a disequilibrium situation as we have now a case where competitiveness is a key factor in determining the output.

3. Numerical analysis of sustainability within the euro area after an idiosyncratic shock in inflation and competitiveness

We illustrate the above two-region EMU model with simulations using a numerical specification. We choose the following fairly standard or plausible values for the parameters (see the Appendix): the inflation target Ω is 2% p.a., the same holds for the global inflation rate π^* , $\lambda = 0.2$, $\beta = 0.3$, $\gamma = 0.3$, $\alpha = 0.3$, $\delta = 0.1$, $\theta = 0.02$, $\psi = 6$, $\phi = 0.2$, $\xi_1 = 0.5$, $\xi_2 = 0.3$ and $\xi_3 = 0.2$. The elasticity of substitution between imported goods and home goods is taken to be fairly small, two, which leads to the value of the ϕ parameter, see on this also the Appendix. The openness of the euro area to global trade is taken to be 10%. The reaction parameter ψ in Equation (5) is based on the evidence between the relation of the euro-dollar rate and the respective interest differential, depicted in Commission (2008, 10). The long-run equilibrium of the model is that the interest rate set by the ECB is 4% p.a., and inflation is on its target of 2% p.a. in both countries. The standard Taylor rule in (15) has the parameters $\omega_1 = 0.5$, $\omega_2 = 1.5$, but see on this Section 4.

In this section, we carry out the simulations of the model, specified for a quarterly time unit⁴, over the period from 2010, second quarter, to 2040 under the assumption that initial shocks to level (stock) variables take place in 2010Q1. This temporal specification does not mean that we aim in this section to trace the current situation in the euro area, but rather want to demonstrate how the equilibrium can be restored after an initial shock. So, i.a., we assume in this section that initially output is on its trend in both countries and that the interest rate is on its equilibrium value, i.e., 4% p.a. In this Section we omit the fiscal impulses. We impose

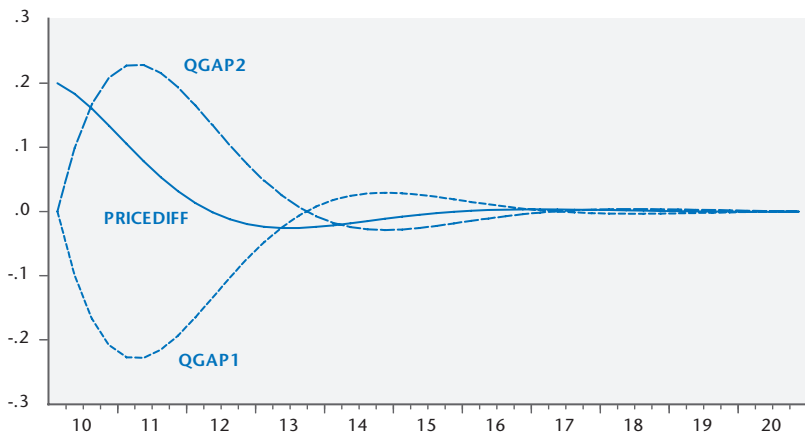
4. This means adjusting the annual interest and inflation rates to match the quarterly dimension of the model.

terminal conditions to the model so that the forward-looking variables reach in the long run constant levels.

Assume that, similarly as in reality, referred to in the Introduction, country 1 has run into an imbalance in its initial price level and in competitiveness of the magnitude of 10 per cent (in logs) in the initial situation (in 2010 Quarter 1). Similarly, this is reflected in that the country 2 has reached a competitiveness gain of the same magnitude. The outcome for the price level differential and the output gaps is now the following, see Figure 1.

Adjustment within the euro area eliminates the initial gap in competitiveness. We see that adjustment brings in a substantial polarisation within EMU in terms of output reaction. In the EMU country which has lost its competitiveness, the loss in output in the deflationary process is very severe, while the country with a gain with respect to competitiveness benefits from this. The speed and magnitude of these reactions are astounding which casts doubt on the relevance of the model from an empirical point of view. This feature is basically dependent on the expected output term in the IS curve. If that term does not appear the size of adjustment is much smaller, but at the same time much more sluggish back towards equilibrium.

Figure 1. The price differential and the output gaps (QGAP) after an asymmetric positive price level shock (10 percentage points) in country 1 in 2010Q1



In this case there is no reaction by the ECB if the initial output gaps are zero, if the initial interest rate is on its equilibrium level (4%) and if the global inflation rate is the same as the target adopted by the ECB. This is then the case of a perfect idiosyncratic shock within EMU. However, even without a policy reaction the euro area reaches stability, although this can involve a very marked polarisation within the EMU.

The general conclusion is that this kind of idiosyncratic disparities will be eliminated over the long run within EMU, rather than that they are persistent.

4. Sustainability with respect to public deficit and debt

Recently, another angle as to the stability of the euro has emerged, namely the robustness of the Monetary Union with respect to a diverging situation in public borrowing and debt. Currently, the EMU has had to face the debt crisis of Greece and other so-called PIIGS countries with a large public sector deficit, many of them over 10% of GDP, and a high debt exceeding 100% of GDP, with a marked trade imbalance.

In the initial stage of the EMU more than a decade ago, concern was often raised that the financial markets do not deliver enough sanctions with respect to those countries pursuing lax policy in their public finances. The interest rate differentials were quite small irrespective of the diverging public indebtedness in the member countries. The present global economic crisis has changed all this. The interest premiums between good and bad borrowers have widened markedly and now the tune has changed from tranquillity to an alarmed consideration of a Euro area country even running into some kind of insolvency, reinforced by excessive market reactions in the interest rates.

The fiscal sustainability has been considered in a NKM model, i.a., by Leith and Wren-Lewis (2007) in an optimising framework with several instruments of fiscal policy identified in it, see also Galí and Monacelli (2008), Ferrero (2008) and Orjasniemi (2010). Here our approach deviates from these optimal policy analyses in a fundamental way. We assume that an imbalance has emerged as currently, and the goal of policy-making is to overcome it, notably in public sector indebtedness and competitiveness.

We limit ourselves to consider sustainability with respect to an emerged fiscal imbalance in one EMU country so that we identify the effect of fiscal policy as a demand impulse in the IS curve in Eq. (1) and through a sovereign risk factor.⁵ We consider how the public deficit should be reduced and its link to the stability of the euro. We have analysed the sustainability of the euro from the policy points mentioned in the Introduction. By sustainability we now mean that the public sector indebtedness can be kept under control, ultimately measured by whether the no-Ponzi game assumption will or will not be met as to public sector indebtedness.

4.1. Modifications to the model

The debt dynamics are,

$$D_{i,t} = (1 + \bar{r}_{i,t} - \pi_{i,t})D_{i,t-1} + z_{it}Q_{i,t-1}, \quad (16)$$

where D is the real public debt (in book value), \bar{r} is the average interest rate on public debt, z_i is now primary deficit in country i in relation to GDP, and Q is the level of GDP. The actual level of output evolves as follows,

$$\log Q_{i,t} = \log Q_{i,t}^{POT} + q_{i,t}, \quad (17)$$

where Q^{POT} is the potential output growing at the rate of the trend growth of the labour-augmenting productivity process, see below Section 4.3.

Let us now take as a starting point the current debt crisis in EMU, started in 2010 by the situation in Greece, and the policies adopted to overcome the instability caused by it to the euro. We assume that the fiscal policy rule consists of the components of automatic stabilisers and discretion, where the latter now means a stipulated gradual cut in the initial primary deficit along the announced path in one of the member countries, the problem country $i = 1$. Thus we have,

$$z_{1t} = -h_1 q_{1,t} + [(1 - h_2)^t z_{1,0} - h_3], \quad 0 < h_1, h_2 < 1, \quad (18)$$

5. See, however, below where we allow for an effect on inflation by the fiscal austerity leading to hikes in taxation.

where the first component captures the automatic stabilizers and the second the structural budget deficit in the problem EMU country 1. In the other strong EMU country 2, only the automatic stabilizers are at play. Above in the previous section we have assumed that the external value of the euro only reacts to the interest rate set by the ECB and the financial markets in the euro area are homogeneous. This is clearly not consistent with the facts of the 2010-2012 euro debt crisis. We assume now that the financial markets in the euro area are segmented so that the bonds of countries 1 and 2 are no longer perfect substitutes for each other as they were above in (3). So, their risk premia deviate according to the extent of the respective government borrowing, see below. The interest rate on the government debt of the problem country rises as the fears of insolvency of the country spread in the market. Second, this also leads to an outflow of capital from the euro area. We should note that the first impact, in itself, leads according to our specification above in (5) to a stronger euro. In order to reach the possibility of a weakening euro, the latter negative impact should be stronger than the first impact. Let us therefore revise the determination of the external value of the euro to take place through the following open interest parity arbitrage condition, incorporating a combined risk premium,

$$\frac{(1+r^*)Es_{t+1}}{s_t} = 1 + \frac{r_{1,t} + r_{2,t}}{2} + m_0 - m_1 \left(\frac{D_{1,t}}{Q_{1,t}} + \frac{D_{2,t}}{Q_{2,t}} \right), \quad m_i > 0, \quad (19)$$

where r^* is the foreign interest rate and the rates r_i and r_j now refer to the short-run market rates. This equation can be derived from a portfolio balance model between domestic and foreign assets, where the parameter m_1 reflects the attitude toward risk aversion and the risk (variance) of the exchange rate, and GDP marks the size of the portfolio. Now, given the exchange rate expectations, the higher the debt ratio is in the euro area, the more the euro depreciates. Let us assume simply that $Es_{t+1} = s_{t-1} + \Omega - \pi^*$, similarly as above.

A notable feature of the debt crisis is the markedly widened interest rate differentials in the euro area between the good and bad borrowers. We can introduce the following specification for this risk premium,

$$r_{1,t} = r_t + \Delta_1 + \kappa\mu f\left(\frac{D_{1,t}}{Q_{1,t}}\right), f' > 0, f'' > 0. \quad (20)$$

Here the second term captures the interest differential vis-à-vis the interest rate set by the ECB and the last term captures the expected capital loss related to government bonds of country 1. The parameter $1 - \kappa$ depicts the expected amount of the debt to be paid by the borrower country in the case of its debt default, and μ , multiplied with the convex function f of the debt ratio, captures the probability of the default by the country 1.

One outcome of the crisis in 2010-2012 has been that funds have been channelled to other euro area countries so that the interest rates in Germany and elsewhere with a limited budget deficit, like Finland, have been pushed downward. We take this effect simply into account so that for the country 2, modifying Laubach (2009),

$$r_{2,t} = r_t + \eta_2\left(\frac{D_{2,t}}{Q_{2,t}} - \bar{d}\right) - \eta_1\left(\frac{D_{1,t}}{Q_{1,t}} - \bar{d}\right), 0 < \eta_1 < \eta_2. \quad (21)$$

Here \bar{d} is the EMU reference value for the public debt ratio, *i.e.*, 60 per cent. We insert r_i and r_j into the IS curve in Equation (1) instead of r .

The euro rescue package reached in May 2010 consists of loans extended to Greece by the other euro area countries at rates lower than the current market interest rates, and similarly for Ireland in November 2010, Portugal in May 2011 and Spain in July 2012. This transfer has the effect that the domestic fiscal impulse in the country 2 is smaller than without this measure by the amount of the interest subsidy extended to the problem country. An equivalent effect, *mutatis mutandis*, applies to the country 1. This transfer effect will be taken into account in Section 4.3.

Based on this reasoning we specify in Equation (20) that $f(d_t) = 0.5d_t + 0.5d_t^2 - d_{12}$, where d is the debt ratio in country 1 being 100% initially and d_{12} is the size of the debt of country 1 which country 2 is ready to finance or guarantee. This implies that in the initial stage the probability of default is zero if the euro partner is ready to finance the total debt outstanding. However, over time this probability may become positive, if the country concerned will run into a higher level of debt as will be the case in reality, see below. It is quite unlikely whether the guarantee of the

rest of the euro area countries will be extended to cover such a situation as well. It is true that this formulation for the f -function is ad hoc, but in any case the future evolution of the interest spreads in the euro area is quite uncertain at the moment. Let us further tentatively assume that $\kappa = 0.5$, $\mu = 0.01$, and initially $d_{12} = 0.5$. The last item comes to play a role in Section 4.3.

Let us finally introduce the capital stock and the labour market explicitly in the model. In the spirit of the Keynesian analysis in an open economy, the labour market in effect operates as a residual of the model here in the following sense. Let us first specify the output gap in a log-linear manner as a function of the constant returns to scale production function,

$$q_{it} = \kappa k_{it} + (1 - \kappa)(a_{it} + l_{it}), \quad 0 < \kappa < 1, \quad (22)$$

where k is the capital stock, a is labour-augmenting technical change and l is the labour input, all as log deviations from the equilibrium. In effect, we use this equation to derive the labour input, once the output and the capital stock have been determined. The capital stock is defined on the basis of the investment function in the Appendix, and the country-wise interest rates,

$$i_{it} = q_{it} - \tau(r_{it} - E\pi_{i,t+1}) . \quad (23)$$

The capital stock evolves as,

$$k_{i,t} = \vartheta i_{i,t} + (1 - \vartheta)k_{i,t-1}, \quad (24)$$

where ϑ is the share of investment in equilibrium in relation to the capital stock. The demand for labour now determines the wage rate from the marginal productivity condition,

$$w_{it} = (1 - \sigma)^{-1}(q_{it} - l_{it}) + a_{it} + p_{it} - mu_{it} , \quad (25)$$

where $(1 - \sigma)^{-1}$ is the elasticity of substitution between capital and labour and mu is the mark up-term in the pricing decisions of the firms. In the numerical solutions, we use a fairly typical value of 0.7 for the elasticity of substitution and 0.2 for the mark-up factor.

4.2. Simulations on the sustainability of the euro in a debt crisis: fiscal austerity

We now turn to the simulations. With the previous specifications, we will try to trace a situation like the current one in the euro area, at least more than we did in Section 3.

The above specification is not able to describe the current situation in the euro area so that the interest rates would correspond to those realised currently in the financial market in the European debt crisis. However, to avoid being too far from the reality, we assume below that the short-run interest rate r_1 of the problem country 1 is 2.5 percentage points above the short-term rate set by the ECB throughout, added by the premium described in the previous section in Equation (20). We further assume that a country has to finance its debts with loans with the maturity of ten years, and that the starting values for the average interest rates on debt in Equation (16) are 3% for country 1 and 2% for country 2. The future evolution of the interest rate is quite crucial for the sustainability of the fiscal austerity in country 1, see below.

To further increase realism, we assume that both countries have initially (in 2010) a negative output gap of 4 per cent and face an autocorrelated adverse aggregate demand shock ε from world markets which vanishes by 10% per quarter, and that there is in addition a recessionary shock in late 2011 and early 2012 of one percentage point mimicking the current cycle. The size of the initial shock is calibrated in such a way that the aggregate demand initially equalizes output with the stipulated gap. To depict the current situation, we also define that initially country 1 has lost its competitiveness by 10 per cent vis-à-vis the average in the euro area and the rest of the world, while country 2 has reached a gain of the same magnitude. We simulate the model basically over the period starting in 2010Q2. Some policies will take place later on in the manner described below.

We now specify the rule in (18) to be the following for country 1,

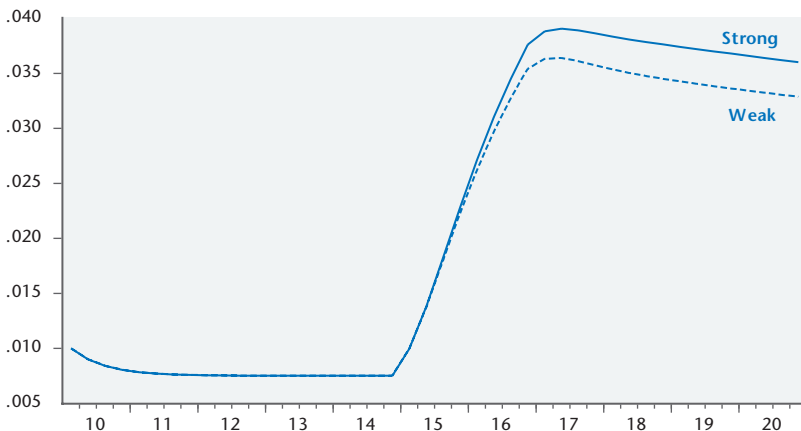
$$z_{1,t} = -0.5q_{1,t} + 0.09(1 - 0.6)^t - 0.01 . \quad (26)$$

We call a fiscal consolidation according to the rule (26) a *strong* one, and the case where in Equation (18) $h_2 = 0.1$ and $h_3 = 0$, a *weak* one. The magnitude of the automatic stabilizer in (26) is standard,

but the fiscal consolidation is arbitrarily fixed, although it is harsh enough to bring in a rapid reduction in the public deficit and, in the end, a ceiling for the public debt—although a very high one—see Figure 3 below. By fixing the h_2 parameter to this value, we assume that the high debt country cuts its public deficit in relation to GDP initially by more than 3 percentage points per year in its austerity programme, which is broadly consistent with the present desired situation in the PIIGS countries. It is true that in (26) we explicitly miss the link between the debt ratio and the degree of fiscal consolidation, raised to an important position by Schabert and van Wijnbergen (2011). In country 2 only automatic stabilisers are in operation. We assume that the potential output grows by 2% p.a. in both countries, but see on this Section 4.4. The initial debt ratios are taken to be 100% for country 1 and 50% for country 2. The IS curve is now modified as in Equation (37) in the Appendix. The strong scenario (26) defines the baseline.

During the crisis the standard monetary policy rules have not been at play. This is partly dictated by the zero lower boundary of the nominal interest rate. The interest rate policy by the ECB is assumed to be a combination of two rules so that it is first fixed to a rule of keeping the rate at 1% up to the end of 2014 and thereafter it gradually returns in two years to the modified Taylor rule, see Figure 2 (see Equation (38) in the Appendix for details). It is true

Figure 2. The interest rate policy by the ECB in the two scenarios



that this fairly rigid set up omits the link between the monetary policy and fiscal consolidation in the euro area in the initial stage. If we assume that the ECB obeys a Taylor rule throughout, some, but not all, of the results below will change.

From Figure 3 we see that fiscal austerity can have a perverse effect in the short and medium run as to the debt ratio, although the size of this difference is not very big. So, there is a temporary, but not permanent, self-defeating fiscal austerity. Even though the public deficit is cut markedly, the debt ratio in country 1 rises temporarily more rapidly in the case of a strong adjustment than in a weak case as output is squeezed in the short run. In any case the debt ratio rises to a very high level in the problem country 1.

Above in Section 2, we initially identified sustainability of the euro in terms of a determinate solution for the euro area and the member countries. From a policy point of view this may be quite far from the reality. Let us therefore examine in the sense of Bergman (2001), whether the evolution of the future public debt meets the no-Ponzi—game assumption. According to this analysis, we estimate a regression of the following kind,

$$D_t = e_0 + e_1 D_{t-4} + v_t. \quad (27)$$

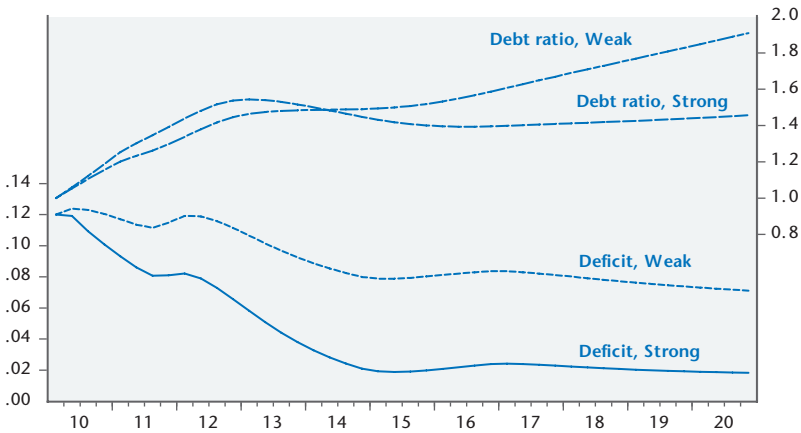
If the parameter e_1 is higher than unity plus the discount rate, indicating explosive debt dynamics, then the no-Ponzi game condition is not satisfied. In our simulations estimation of this equation for the period 2011-2031 produces the outcome that under a strong fiscal policy the parameter e_1 gets the value 0.966 (with t-value 70) and under a weak consolidation it gets the value 1.048 (with t-value 368). This implies that the weak consolidation policies are likely to lead to a situation of being near insolvent in terms of debt dynamics.

If the problem country 1 could finance throughout its public debt with a fixed interest rate, say 4% p.a., the public debt in it would be on a sustainable path under a strong fiscal consolidation (e_1 would then be clearly less than unity), see the Table. In this sense we see that the interest rate policy by the ECB, the fiscal policy and the sustainability of the euro are closely linked together. A likely future rise in the interest rate set by the ECB towards the equilibrium value can jeopardise the sustainability of

the euro through its spillover effect on the interest burden of the public debt in the problem EMU country.

The country 1 reaches under a strong fiscal austerity in 2016 the limit of 0.5% of GDP in terms structural budget balance stipulated by the Fiscal Compact of spring 2012.

Figure 3. The public deficit and debt in a high debt, low competitiveness EMU country (1) under an adverse demand and supply shock and varying degree of fiscal austerity, in relation to GDP (deficit on the left scale, debt on the right) (for explanations, see the text above)



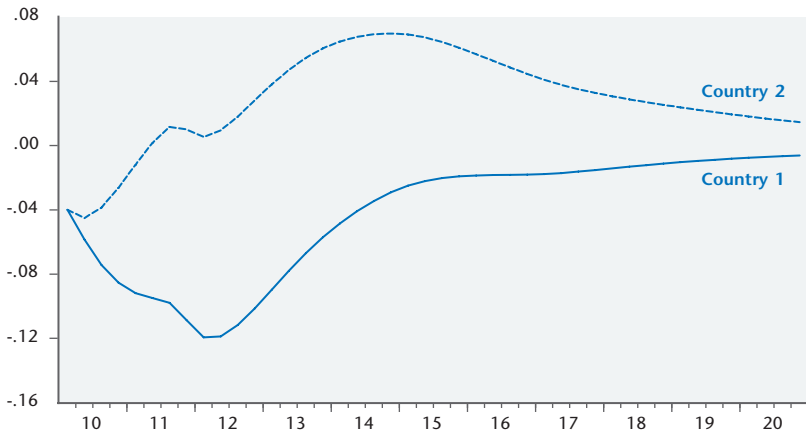
We see that the diverse impacts of various cases will be felt over the long run, but over the medium run the outlook is quite independent of the interest rate assumptions, similarly as predicted in the Greece country report by the OECD (2011). Over the long run, the interest burden and the fiscal consolidation will make their effects felt clearly on the sustainability criterion in Equation (27). The problem in actual policy making lies in the fact that it is very difficult to commit to this kind of policy restraint in a credible way from the point of view of the financial market agents, which recognise various uncertainties and have normally a much shorter time horizon in their decisions.

Fixing the interest rate by the ECB to 1% throughout the simulation period would drive down quite soon the debt ratio under a strong fiscal austerity, but this would take place at the cost of jeopardising the inflation control, which would rise over time to 6% p.a.

Table. Alternative simulations on the link between the interest rate and the fiscal policy in the problem country 1 (under strong fiscal consolidation)

Interest rate r_1 for new government debt in country 1	Output gap in 2015, %	Primary balance (surplus, i.e. $-z_1$) in 2015, % of GDP	Debt ratio in 2015, %	Debt ratio in 2030, %	Value of e_1 in Eq. (27) over the period 2010-2031
as in Equation (20)	-2.2	-0.2	140	181	1.030
4% p.a. throughout	-2.1	-0.1	138	115	0.740

Figure 4. The output gaps in the two EMU countries under a strong fiscal consolidation in country 1 (for explanations, see the text above)

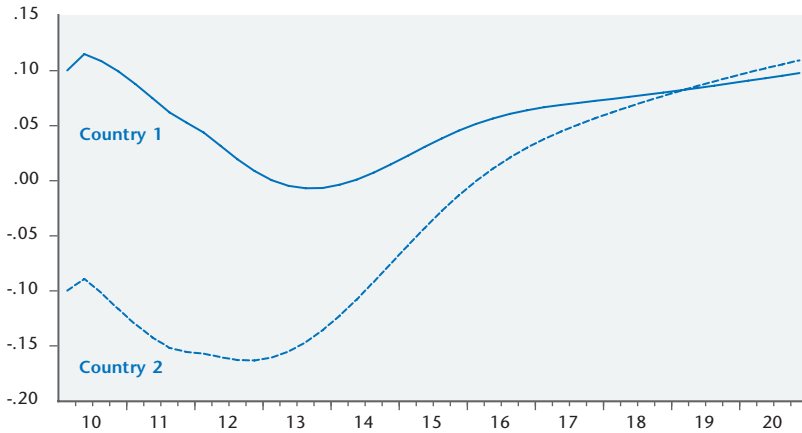


It is anyway interesting and important to see from Figure 4 that the adjustment in the strong EMU country 2 involves an overshooting so that output gap changes sign before converging to the equilibrium where output is equal to the potential GDP. It can be argued that the NKM model shows a fairly vigorous pattern of adjustment back to parity which is not very likely to happen in reality. Therefore, we should interpret the results as only illustrative rather than predictions of future developments. We see that the adjustment implies roughly a 10 percentage point reduction in the nominal wages in the problem country 1, see Figure 5. It is also interesting to note that the wage adjustment in the strong country back to equilibrium is sluggish during the first few years.

Let us then return to compare the situation under a *strong* fiscal adjustment assumed so far compared to the *weak* case, see Figure 6.

We infer that the strong country 2 gains in terms of output after a couple of years from a harsh adjustment to the euro debt crisis. However, the difference for country 2 is quite small so that we can state that the adjustment burden is fully borne by the problem country alone. On the other hand, the country 1 causing the debt crisis loses sharply and increasingly during the first two years, but then the situation is reversed and it turns towards neutrality and a small gain. Thus, there is a marked polarization within EMU as a result of the debt crisis.

Figure 5. The evolution of the nominal wage rates under a strong fiscal consolidation in country 1

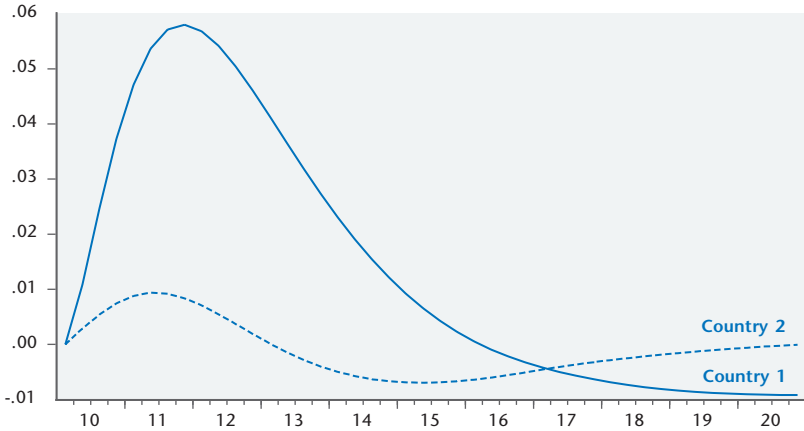


By varying the policy rule in Equation (18) so that the parameter h_2 is raised, we can infer that the pain linked to a strong adjustment is higher, but the more rapidly the reduction in the budget deficit takes place in country 1, the more rapidly it will start to gain from its austere policies. Of course, the measure used here omits many aspects, economic and political, linked to a successful elimination of emerged imbalances within EMU. Altogether, we could argue that a successful consolidation and price adjustment are a condition for a country to be able to permanently reap the microeconomic gains delivered by the participation into the single currency.

We can also depict a difference with respect to the external value of the euro and the average inflation rate. It seems to be the case that over the long run a weak fiscal adjustment to some extent

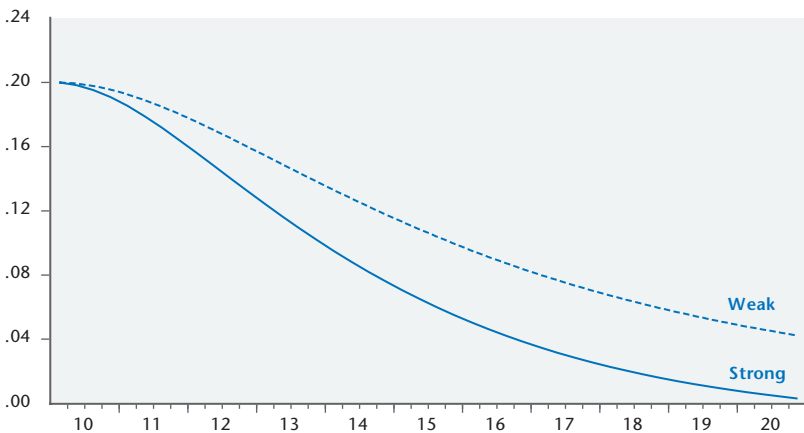
jeopardizes the inflation control in the euro area. Thus the average inflation rate would be on a gradually accelerating trend up to 2015, and weak consolidation can markedly slow down the price level adjustment after initial idiosyncratic disparities to competitiveness. We illustrate this in Figure 7 below.

Figure 6. The difference in the output gaps (output less potential) between the cases of weak and strong fiscal austerity*



* In this comparison in the weak consolidation case the parameters are as follows in Eq. (18) $h_1 = -0.5$, $h_2 = 0.1$, $h_3 = 0$. The strong consolidation is that stipulated in Eq. (26). The curves denote the difference $q(\text{weak}) - q(\text{strong})$.

Figure 7. The price level differential ($p_1 - p_2$, in logs) under a strong and weak fiscal consolidation (for explanations, see the text above)



The interest rate policy by the ECB is not sufficient alone to hold public sector indebtedness under control. There is thus a limited interaction between monetary and fiscal policy in EMU, as the latter is necessarily needed to manage the current situation of the debt crisis. Of course, the interest rate policy also plays a role, but it is limited in the sense that it cannot alone stabilise output under a demand shock due to the lower boundary for nominal interest rates. In this sense our result reinforces the conventional wisdom, analysed by Kirsanova, Leith and Wren-Lewis (2009), that monetary policy can be targeted to output stabilisation and fiscal policy to contain public sector finances. But our results sharpen this outcome in the sense that the fiscal policy adjustment is necessarily needed to assist the ECB in its task of reaching a sustainable non-explosive outcome for the euro area.

In the package of new EU legislation, launched in autumn 2010, and recently approved as the so-called six pack, aiming to enhance the sustainability of the euro area, a new concept by the EU Commission was launched. In addition to the fundamental concept of Excessive Deficit Procedure of the Stability and Growth Pact a new one, namely Excessive Imbalance Procedure, was introduced. It tackles other types of imbalances in the overall economic developments than just the budget deficit and public debt. The Euro Plus agreement agreed in March 2011 calls for additional adjustment to restore imbalances in competitiveness. The above model shows that fiscal stabilisation can markedly speed up the convergence in price levels (competitiveness), and is in broad terms a sufficient condition for this, see Figure 7. However, the path back to parity may be quite sluggish. The smaller the parameter h_2 is in Equation (18), the slower the price levels converge back to parity. This would suggest that the role of other policies to maintain overall stability could also be of importance.

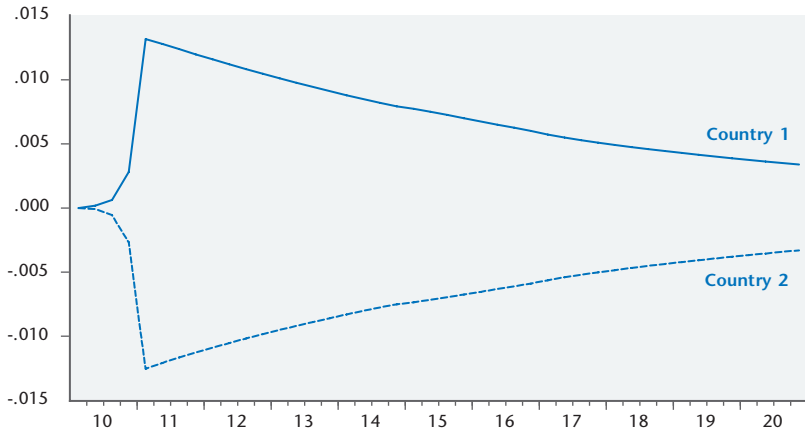
4.3. Sustainability through debt relief?

One central issue in the crisis of Greece has been a possible debt default which has been tried to be avoided through organised debt relief by combining fiscal austerity and debt restructuring with lower than market interest rates. Let us next consider this possibility. Imagine that in the first quarter of 2011 a debt default takes place so that a half of the debt of the country 1 will be wiped out

and the consequent capital loss will be borne by the country 2. Assume further that in Equation (20) in the interest differential the term d_{12} is one half, because the country 2 is ready to finance a part of the debt burden through debt restructuring. The interest rate on new debt in country 1 will be lower due to this mechanism. In order to capture this situation, we have to modify also the IS curve so that the capital gain related to a lower debt burden will give rise to a higher level of spending so that a part of the gain, say 10%, will be consumed in country 1 in a year. The government finances also change due to this transfer as the country 2 is assumed to finance the part of the debt depicted by d_{12} of the country 1 at the lower rate r_2 . Similar effects, *mutatis mutandis*, concern country 2.

We see from Figure 8 that, as specified, the burden is shared by the two countries symmetrically. However, the effect of this effect is quite limited, around 1% of GDP, and vanishes gradually. This policy leads to a slowing down of the reduction in the existing gap in competitiveness.

Figure 8. The effect of debt restructuring on the output gaps



4.4. Sustainability through structural reforms?

The above results are quite gloomy in the sense that the high debt country runs into ever mounting debts in this decade even though the evolution of the debt may not be as such inconsistent with the no-Ponzi game criteria. Let us therefore still find out

under which kind of structural reforms to be adopted by the high-debt country it could stabilize and turn its debt ratio into decline.

We derive from a CES production function in (22) and the dependence of the potential output on the capital stock K , $\rho = \rho(Q^{POT}, K)$ where ρ is elasticity, and from the optimal investment equation, the following expression,

$$d \log K^{POT} = d \log Q^{POT} - \frac{1}{1 - \sigma} \left[\frac{d \log(1 + mu)}{+ d \log(r - \pi + d)} \right], \quad (28)$$

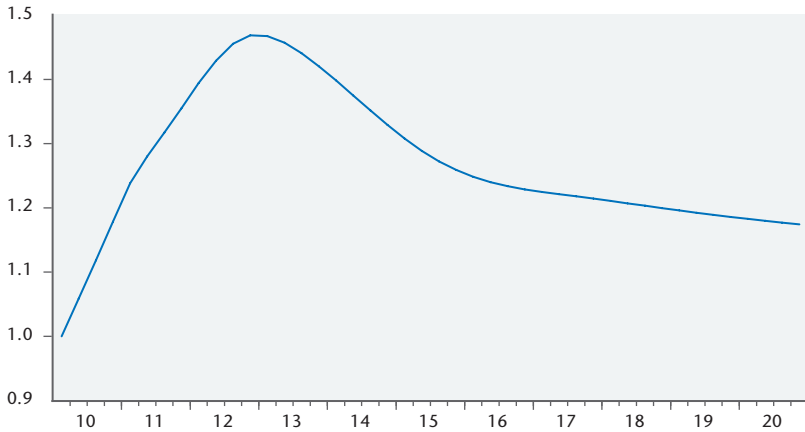
where mu is the mark up factor in the goods market and $(1 - \sigma)^{-1}$ is the elasticity of substitution and d is the rate of depreciation. We now have the expression for a change in the potential output

$$d \log(Q_i^{POT}) = - \frac{\rho}{(1 - \sigma)(1 - \rho)} \left[\frac{d \log(1 + mu_i)}{+ d \log(r_i - \pi_i + d_i)} \right]. \quad (29)$$

The mark up factor has two kinds of effects. First, as in (28), it has an effect on the potential output. Secondly, it has an opposite effect on the inflation rate in (2). We now see that the problem country 1 needs to carry out reforms to such a magnitude that their impact outweighs their recessionary impact through the rise in the real financing costs.

Assume in a schematic way that the potential output of the problem country 1 concerned grows permanently by 2 percentage points p.a. more than earlier, which is a very big amount, and assume further that it initially cuts the annual inflation rate by 0.25 percentage points and thereby has an effect on the equilibrium price level. Let us further assume that the fiscal policy rule in Equation (18) is fixed to the strong value. The outcome is the following, see Figure 9. If there were no initial loss of competitiveness in country 1, an acceleration of the potential growth rate by 0.5 percentage points p.a. would be enough to reach a similar leveling off and slight reduction in the debt ratio. This again shows the large impact of the inherited loss of competitiveness as to the sustainability of the euro.

Figure 9. The debt ratio in country 1 under structural reforms, in combination with a strong fiscal consolidation (see the text for explanations)



4.5. Stability through internal devaluation and revaluation?

The key challenge facing the euro area, on the basis of what has been found out in the previous sections, is divergence in competitiveness. Therefore, it would be interesting to find out what could be achieved by measures influencing directly the competitive position of an EMU country in trouble. Accordingly, the term of fiscal devaluation has been launched, which means that domestic costs of exporters are cut through lowering the payroll tax of the employers, financing this through raising the tax on import prices by a hike in the VAT rate. Although our model is quite concise and deficient in this respect, we can try to mimic something of this kind of policies by inserting (a) a negative shock to the price level P_1 of country 1 in the markets of both countries, as a kind of an export subsidy, (b) a corresponding rise in the price level of country 2 in the market of country 1, and (c) a corresponding shift in the competitiveness term of country 1 vis-à-vis the third countries.

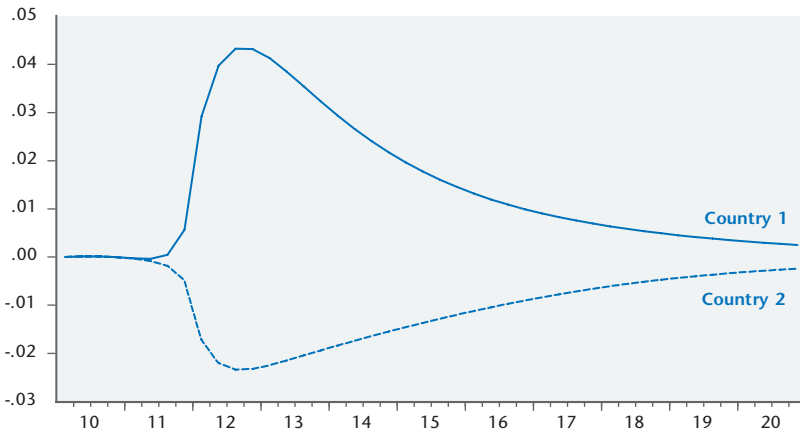
As an illustration, we assume that the export and import competing enhancement in competitiveness of country 1 is 5% from 2012Q1 onward. As foreign trade is typically a quarter of GDP, and consumption a half, this means that the consumer price level rises by around 2.5%-points, and the overall gain to the

competitive position of country 1 is 7.5% vis-à-vis the country 2 and the rest of the world.

We assume in the baseline a strong fiscal consolidation in the meaning defined above in Section 4.2. The result for the output gap is now the following, see Figure 10. The impact is quite vigorous so that a 7.5% internal devaluation leads already quite in the short term to a 4%-points gain in output in country 1.

It has a major negative effect on the country 2, and is to some extent a beggar thy neighbour policy, although the euro area as a whole gains in terms of output, see Figure 10. As this policy boosts output in country 1, and does not initially have an impact on the budget deficit, it also has a major positive effect on the debt ratio. The strong growth is also a result of a rapid convergence back to equilibrium incorporated in the model.

Figure 10. The effect of fiscal devaluation on the output gaps in countries 1 and 2

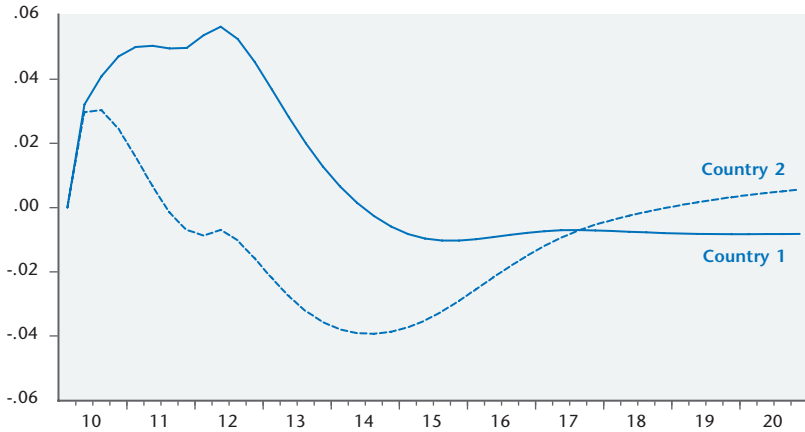


The core of the current EU policies is to prevent divergences in competitiveness from emerging and eliminating rapidly those emerged in this respect. It has been sometimes recently argued that the surplus countries, like Germany, should pursue inflationary policies driving down its competitiveness and thereby creating boost to the problem deficit countries in EMU. One justification for this effect is that the euro area is quite closed vis-à-vis the rest of the world and thereby it could be quite an effective policy to neutralise, or at least reduce, the existing gaps in competitiveness.

Let there be a temporary shock of 2.5%-points to the annual inflation rate in country 2 (in 2012Q1).

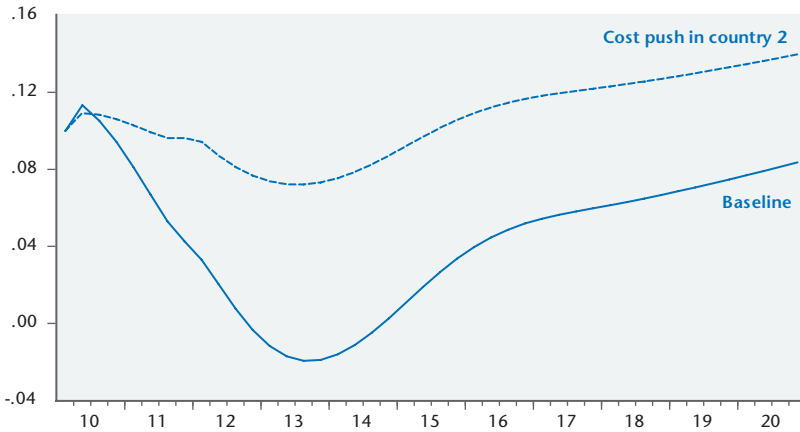
An internal cost push shock in country 2 is a successful alternative from the point of view of country 1 which gains in terms of output, and the disparity within the euro area would diminish, see Figure 11.

Figure 11. The effect of a cost push (internal revaluation) in the strong EMU country 2 on the output gaps



The outcome of this policy crucially depends on the reaction of the monetary policy. If the interest rate does not react in the beginning, but only in lagged manner as assumed here, the expected real rate of interest goes down and initially both countries will gain. After that there is a loss for the revaluing country. Both countries turn in the end to neutrality. A revaluation in the strong country also decreases the needed reaction of deflationary adjustment in wages and prices in the weak country, as is plausible, see Figure 12.

Figure 12. Wage developments in the weak country 1 under an internal revaluation in the strong country



5. Concluding remarks

We have analysed the case of EMU adjustment to an imbalance in inflationary shocks and competitiveness. We argue that internal adjustment within the euro area is able to restore over time sustainability of the EMU also with respect to idiosyncratic shocks. We reject the unsustainability result by Wickens (2007, 2010) and show that it does not hold within EMU in general. True, we did not address the issue of whether the EMU as such is conducive to such imbalances to emerge. So, we consider the reaction to a period of mounting imbalances, like in 1999-2007, rather than the reasons behind it. Thus, we do not ask the causes of the crisis, but try to find a remedy for it. We also find that, even though the EMU would stay sustainable, the adjustment patterns with respect to the emerged imbalances entail a major polarisation within the Monetary Union which is likely to lead to political tensions.

Above, we have basically taken two approaches to the issue of sustainability: a technical one concerning the existence of a determinate solution for the euro area model and a policy point of view playing a bigger role in reality. As to the fiscal consolidation, we inferred that it takes a lot of time and the debt ratio in the problem country may rise to a very high level.⁶ This may make it implausible that the debtor country could reassure the financial markets

of its solvency. This would call for a more stringent fiscal adjustment rule in the country concerned. The problem with the adjustment is that a strict fiscal policy leads to a cut in output, which leads to a higher debt ratio. This would call for an enlargement of the NKM model to describe the behaviour of the private sector under fiscal consolidation in the sense that a lower scenario of the public debt developments can have a boosting effect on private consumer behaviour through an expected reduction in taxation. On the other hand, we could expect that the public debt ratios rise also permanently because in private sector portfolios private assets are substituted for those of the public sector in the crisis. We leave these issues for future consideration.

The mounting debt ratios in the problem countries cast a doubt on whether the EMU can successfully manage its current crisis. In the spring of 2012 fears and speculation emerged that Greece would have to leave the euro area. What this would imply for the monetary policy and stability of the banking sector falls outside the realm of the present paper.

We inferred that far-reaching and successful structural reforms are sufficient to restore the sustainability of the euro in terms of containing the public sector indebtedness, as it seems that in the case of rising future interest rates by the ECB austerity in the public finances may not be sufficient to achieve this alone. Fiscal devaluation is quite an effective tool in stabilising the EMU and in reducing the otherwise marked disparities in adjustment to the debt crisis within the Monetary Union.

It is difficult to definitely argue how much and how rapid a macroeconomic adjustment is in reality needed in order to restore euro and overcome the present crisis. We have illustrated some of the ways to reach a better balance in the euro area. It is, however, true that many aspects like the stability in the financial markets are not at all well captured in macroeconomic modelling like the NKM model. The relevance of our approach stems from the fact that a better balance in the real and nominal overall economy is also conducive to a better balance in the financial markets. However, the financial markets react to macroeconomic developments with

6. We did not here assume any asset privatisation in the problem country assumed in OECD (2011).

a lead and do not properly discount future developments. Therefore, it is difficult to assure the markets in the short term of future stringent adjustment as these policies typically take quite some time to be successfully put into effect.

References

- Alho K.E.O., 2011. "Should Sweden Join the Euro Area: An Analysis of General Equilibrium Effects through Trade", *ETLA Discussion paper*, 1245.
- Alho K.E.O., M. Kotilainen and N. Nikula, 2010. "Prospects of the Northern EU Integration" (in Finnish), *Central Chamber of Commerce, Finland*.
- Bergman M., 2001. "Testing Government Solvency and the No Ponzi Game Condition", *Applied Economics Letters*, 8: 27–29.
- Commission, 2008. "EMU@10, Assessing the first 10 years and challenges ahead", *Quarterly Report on the Euro Area 7, 2*, European Commission.
- Debrun X. and R. Kapoor, 2010. "Fiscal policy and macroeconomic stability: New evidence and policy implications", *Nordic Economic Policy Review*, 1/2010: 35–70.
- Galí J., 2010. "Are Central Banks' Projections Meaningful?", *CEPR Discussion Paper*, 8027.
- Galí J. and T. Monacelli, 2005. "Optimal Monetary and Fiscal Policy in a Currency Union", *CEPR Discussion Paper*, 5374.
- Galí J. and T. Monacelli, 2008. "Optimal Monetary and Fiscal Policy in a Currency Union", *Journal of International Economics*, 76: 116–132.
- Ferrero A., 2008. "Fiscal and Monetary Rules for a Currency Union", *Journal of International Economics*, 77: 1–10.
- Fuhrer J.C. and G. D. Rudebusch, 2004. "Estimating the Euler Equation for Output", *Journal of Monetary Economics*, 51: 1133–1153.
- Institute for New Economic Thinking, 2012. "INET Council, Breaking the Deadlock: A Path out of the Crisis", *INETeconomics.org*, 23th July.
- King R. G. and M. R. Watson, 1998. "The Solution of Singular Linear Difference Systems under Rational Expectations", *International Economic Review*, 39 (4):1015–1026.
- Kirsanova T., C. Leith and S. Wren-Lewis, 2009. "Monetary and Fiscal Policy Interaction: The Current Consensus Assignment in the Light of Recent Developments", *The Economic Journal*, 199 (541): F482–F496.
- Laubach T., 2009. "New Evidence on the Interest Rate Effects of Budget Deficits and Debt", *Journal of the European Economic Association*, 7, (4): 858–885.

- Leith C. and S. Wren-Lewis, 2007. "Fiscal Sustainability in a New Keynesian Model", *Oxford University, Department of Economics, Discussion Paper Series*, 310.
- Lubik T. A. and F. Schorfheide, 2004. "Testing for Indeterminacy: An Application to U.S. Monetary Policy", *American Economic Review*, 94 (1): 190–217.
- Mavroeidis S., 2010. "Monetary Policy Rules and Macroeconomic Stability: Some New Evidence", *American Economic Review*, 100, (1): 491–503.
- Minford P. and N. Srinivasan, 2010. "Determinacy in New Keynesian Models: A Role for Money after All?", CEPR, *Discussion Paper*, 7960.
- OECD, 2011. *Economic Survey of Greece*.
- Orjasniemi S., 2010. "The Effect of Openness in a Small Open Monetary Union", *Bank of Finland, Discussion Papers*, 18.
- Sargent T. J., 1989. "Macroeconomic Theory", *John Wiley*.
- Schabert A. and S. J. G. van Wijnbergen, 2011. "Sovereign Default and the Stability of Inflation Targeting", *Duisenberg School of Finance—Tinbergen Institute Discussion Paper*, TI 11-064/2/ DSF 20.
- Wickens M. R., 2007. "Is the Euro Sustainable?", *CEPR Discussion Paper*, 6337.
- Wickens M. R., 2010. "Is the Euro the Success that Everyone Seems to Think?", *Open Economics Review*, 21: 183–185.
- Woodford M., 2003. "Interest & Prices—Foundations of a Theory of Monetary Policy", *Princeton University Press*.

Appendix. Derivation of the IS curve and specification of the interest rate rule

We start from the goods market equilibrium, written in terms of log deviations from the steady state

$$q_{it} = w_C c_{it} + w_I i_{it} + w_X x_{it} - w_M m_{it} + z_{it} + \varepsilon_{it}, \quad (30)$$

where q is the output gap, c is consumption expenditure, i investment, x exports and m imports (measured in terms of the domestic price level), z the fiscal impulse and the w_i 's are the equilibrium shares of respective variables in relation to output. From an intertemporal optimisation we derive the consumption expenditure

$$c_{i,t} = E_t c_{i,t+1} - \frac{1}{\nu} (r_{i,t} - E_t \pi_{i,t+1} - \theta), \quad (31)$$

where ν is the intertemporal elasticity of substitution and θ depicts the time preference. Based on the cost minimisation by firms we can write the following investment equation

$$i_{i,t} = q_{i,t} - \tau (r_{i,t} - E_t \pi_{i,t+1}) \quad . \quad (32)$$

The export equation is based on the import demand function of the importer country, so that typically for the country k ,

$$x_{kt} = q_t^* + \delta \text{comp}_{kt} \quad \text{and} \quad m_{kt} = q_{kt} - \delta \text{comp}_{kt} \quad , \quad (33)$$

where comp is the competitiveness of the country k , *i.e.* the real exchange rate and δ is the relevant elasticity of substitution. We divide exports and imports to those of the EMU country with the EMU partner and rest of the world, with shares of $w_{k,EMU}$ and $w_{k,REST}$, $k = X, M$, summing to unity.

Let us next insert first (31), (32) and (33) into (30) and write it, in a standard manner, for the next period $t+1$ and take expectations on both sides, and subtract this equation from Equation (30). Let us approximate that investment is in the long run roughly a constant share of the capital stock being in a constant relation to aggregate output, so that the expected investment term on the right-hand side can be written to be the same as the expected output gap. These steps give first the following equation, (we omit

here the separation of the exports and imports into those within and outside of EMU),

$$\begin{aligned}
 (1 + w_M - w_I)q_{i,t} &= (1 + w_M - w_I)E_t q_{i,t+1} + \\
 (-w_C \frac{1}{V} - \tau)(r_{i,t} - E_t \pi_{i,t+1}) - w_X (E_t q_{i,t+1}^* - q_t^*) & \quad (34) \\
 -(w_X + w_M)\delta(E_t \text{comp}_{i,t+1} - \text{comp}_{i,t}) - (E_t z_{i,t+1} - z_{i,t}). &
 \end{aligned}$$

Let us next assume that competitiveness obeys the following type of return to normality adjustment, based on price and wage setting reacting to the existing gap in competitiveness and expected output. If competitiveness is bad, there is less room for price and wage rises, and competitiveness returns to normality. Similarly, if the current output gap is positive, the wage rises are more moderate. So, competitiveness adjusts as follows,

$$E_t \text{comp}_{i,t+1} - \text{comp}_{i,t} = -l_1 (\text{comp}_{i,t} - \text{comp}_i^E) - l_2 q_{i,t}, \quad (35)$$

where the parameters are positive and the superscript *E* denotes the equilibrium. Let us further assume that the expected change in the fiscal impulse depends negatively on the existing impulse,

$$E_t z_{i,t+1} - z_{i,t} = -\chi z_{i,t}, \quad (36)$$

where χ is positive. This implies that there is a solvency rule operating in public finances. Similarly, we assume that the change in the expected foreign output gap obeys a return back to parity.

We further want to allow for that typically we cannot realistically specify that production would be a jump variable. So, a part of the agents are backward looking and liquidity constrained, while a part of them are forward looking in the manner described above, see Fuhrer and Rudebusch (2004). There are also costs in adjusting production to meet the demand. This enlargement means that we introduce into the model the lagged output gap and divide the impact of the expected output to this term and the lagged output gap. Then, altogether, we can get the following IS curve, being a mixture of forward and backward looking curves (see also Debrun and Kapoor, 2010),

$$\begin{aligned}
 q_{i,t} &= \gamma_1 E_t q_{i,t+1} + \gamma_2 q_{i,t-1} - \beta(r_{i,t} - E_t \pi_{i,t+1}) + \lambda^* q_t^* + \lambda q_{j,t} + \\
 \delta^* \text{comp}_{i,t} + \phi(p_{j,t} - p_{i,t}) + \chi z_{i,t}. & \quad (37)
 \end{aligned}$$

This is the basis of our specification of the modified IS curve in the section 4 from the basic one in Equation (1) above. Calibration takes place so that the short run fiscal multiplier of z is around 0.7. The lag structure is specified so that the fiscal impulse vanishes in around three years. These conditions stipulate the parameter χ to be 0.5 and $\gamma_1 = 0.3$ and $\gamma_2 = 0.6$.

We assume that the EMU is a small open region in the sense that it does not have an impact on the global economy, so that the global output gap q^* obeys the developments influenced by a demand shock mentioned above in Section 4.2.

Let us still specify the interest rate rule by the ECB assumed in the paper in Section 4. We specify for the target interest rate r^T and the actual rate r the following,

$$\begin{aligned} r_t^T &= r_0 + \text{raux}_t(\theta + \omega_1 \bar{q}_t + \omega_2 (\bar{\pi}_t - \pi^*)) \\ r_t &= v_1 r_t^T + v_2 r_{t-1}, \end{aligned} \quad (38)$$

where r_0 is 1% and the function raux is zero up to the year 2015, and then rises in two years to unity and stays there. The parameters ω_1 and ω_2 are 0.5, and v_1 is 0.3 and v_2 0.6.

THE EUROPEAN REDEMPTION PACT

AN ILLUSTRATIVE GUIDE¹

Hasan Doluca, Malte Hübner, Dominik Rumpf and Benjamin Weigert

German Council of Economic Experts, Wiesbaden, Germany

The European Redemption Pact (ERP), a proposal of the German Council of Economic Experts, describes an exit strategy from the debt crisis which currently plagues the euro area. The pact includes a binding commitment of all participating countries to bring public debt ratios below the reference value of 60% within the next 20 to 25 years. To ensure that this objective can be reached with realistic primary balances, participating countries can transfer their excessive debt exceeding the 60% threshold at a certain date, into a redemption fund for which participating member countries are jointly and severally liable. In this technical paper, we describe in detail one possible way of implementing the ERP and the primary balances each country would need to achieve under the proposal.

Keywords: European Redemption Pact, European debt crisis.

In their for now latest attempt to solve the European debt crisis, policy makers at the EU summit in January 2012 decided to introduce a fiscal compact aimed at initiating a reduction in excessive sovereign debt. While this decision laid the foundations for solving the debt crisis, one cannot rule out that individual member countries of the European Monetary Union (EMU) get into refinancing difficulties until financial markets have been convinced that the agreed consolidation process is being upheld. The high degree of uncertainty on financial markets is reflected in the still high risk

1. An updated and extended version of this paper has been published as: Doluca H., Hübner M., Rumpf D., B. Weigert, 2012. "The European Redemption Pact: Implementation and Macroeconomic Effects." *Intereconomics* 47(4): 230–239.

premiums on sovereign debt. At these interest rates, the consolidation path agreed upon in the fiscal compact requires member countries with high debt ratios to run primary surpluses at levels which only very few countries were so far able to sustain over a prolonged period of time.

Given the herd instinct and high degree of uncertainty still prevailing in financial markets, there is still the danger that an abrupt loss in market confidence can swiftly turn into a “self-fulfilling prophecy” among investors. The massive surge in interest rates thus triggered then actually calls into question whether the public debt of a country is actually sustainable. Therefore, we cannot exclude that financing terms for some EMU member countries deteriorate further, even when the respective member countries have undertaken credible and essentially appropriate reforms. In the extreme case, such a country may no longer be able to refinance outstanding bonds in the international financial market, and a liquidity crisis could then turn into a solvency crisis.

To regain the trust of the markets, the consolidation targets of the fiscal compact have to be backed by realistic paths for primary balances. At the same time, to give EMU member countries time to reach required primary balances, one has to ensure that sudden outbursts of a liquidity crisis can be adequately dealt with. However, these measures must neither rely on the European Central Bank to buy up government bonds nor imply unlimited joint financing through Eurobonds. In addition, a successful mechanism for addressing potential liquidity crisis should function pre-emptively and not only after a crisis occurs such as the EFSF/ESM. The European Redemption Pact (ERP), a proposal of the German Council of Economic Experts (GCEE), describes an exit strategy from the debt crisis which fulfils these requirements.

1. European Redemption Pact—The proposal

The proposal, which is described in detail in the Council’s annual report of the year 2011 demands that member countries engage in an irrevocable consolidation of their public finances in return for support in time of a liquidity crisis². The key idea of the

2. The respective chapter of the annual economic report 2011/12 and additional information on the ERP can be downloaded from www.sachverstaendigenrat-wirtschaft.de.

proposal is to separate the public debt of participating member countries into a part that is compatible with the debt threshold of 60% of Gross Domestic Product (GDP) stipulated in the Stability and Growth Pact (SGP) and the excessive debt above this threshold. Under the proposal, the EMU member countries' debt exceeding the 60% ceiling on a certain date will be transferred into the European Redemption Fund (ERF) for which the EMU members are jointly and severally liable. In return, the participating countries would enter into payment obligations towards the ERF that are calculated such that each country would repay its transferred debts within 20 to 25 years. Through the joint and several guarantees for the fund, highly indebted member countries pay a lower interest rate on their transferred debt. This reduction in refinancing costs reduces primary balances required for reducing debt ratios below the 60% threshold.

The possibility to take advantage of lower financing costs for the transferred debt is associated with strict conditions. In particular, these conditions comprise earmarking the revenue of a designated tax for fulfilling the payment obligations, depositing collaterals and an obligation to commit to consolidation and structural reforms. After transferring excessive debt into the ERF, the remaining national debt must thereafter not again exceed a level of 60% of GDP. To this end, debt brakes would be introduced in all participating countries based on the German and Swiss models. In particular, after a transition period, these debt brakes must constrain the structural deficit below the level of 0.5% of GDP set out in the SGP.

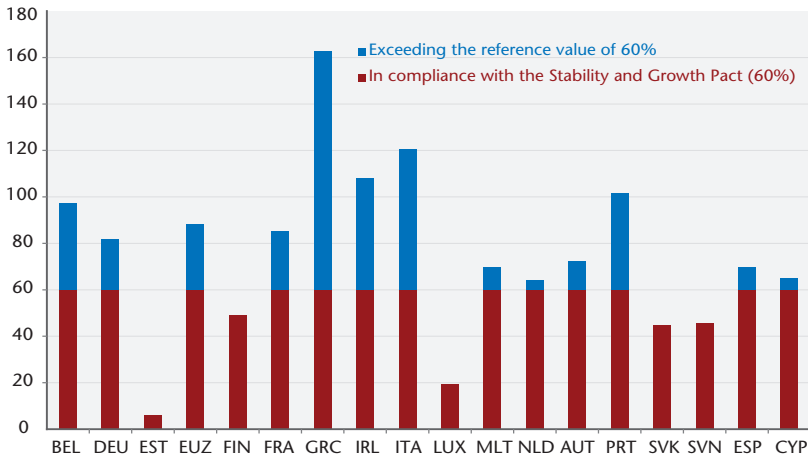
Participation in the pact is open to all euro area countries. However, one has to distinguish between those states that are currently running a structural adjustment programme and the other member countries of the EMU. Countries that are currently running a structural adjustment programme can join the redemption pact immediately, but their debts can only be transferred to the redemption fund after the successful conclusion of the respective adjustment programme. Concerning the other member countries, at the very least, those countries should take part whose debt ratios exceed the level of 60% of GDP. At present, these would be Austria, Belgium, Cyprus, France, Germany, Italy, Malta, the Netherlands, and Spain.

The central parameters of the ERP are consistent with the deficit and debt rules of the intensified Stability and Growth Pact and the fiscal compact. In particular, the commitment to redeeming the debt in the ERF within 20 to 25 years corresponds to the stipulations calling for annual debt reduction by 1/20th of debt exceeding the target level of 60% of GDP. Moreover, the commitment to implement national debt brakes, the key element of the fiscal compact, already fulfils a central precondition for the implementation of the ERP.

To make the proposal operational countries enter in payment-obligations against the fund in return for being allowed to transfer part of their debt. Two questions are important: (i) how can debt be transferred into the fund? and (ii) how must the payment-obligations be designed to ensure timely redemption?

Transferring debt into the redemption fund is organized by allowing participating member countries to refinance themselves through the redemption fund until the amount of debt refinanced through the ERF reaches the current difference between the debt accumulated to date and the hypothetical debt that would just equal 60% of GDP, *i.e.* the SGP debt threshold (Figure 1). The exact

Figure 1. Debt ratios in the euro area (2011)*



*In relation to Gross Domestic Product at current prices. BEL-Belgium, DEU-Germany, EST-Estonia, EUZ-Euro Zone, FIN-Finland, FRA-France, GRC-Greece, IRL-Ireland, ITA-Italy, LUX-Luxembourg, MLT-Malta, NLD-Netherlands, AUT-Austria, PRT-Portugal, SVK-Slovakia, SVN-Slovenia, ESP-Spain, CYP-Cyprus.

Source: EU (November 2011).

length of this transitional phase depends on the sequence of immediate refinancing needs. During this so-called roll-in phase, the participating countries fulfil consolidation and reform agreements which are comparable to the structural adjustment programmes of the EFSF. While each country will henceforth have to service its own debt financed *via* the new fund until it is completely redeemed and the new fund expires, participants will be jointly liable for the debt, thus ascertaining affordable refinancing cost for all participants.

Payment-obligations through which the transferred debt is redeemed are expressed as a constant fraction of GDP. The scale of annual payment-obligations relates to the volume of transferred debt. It is set at a level that ensures that each country redeems its debt in the ERF within a period of 20 to 25 years. Accordingly, countries transferring more debt have to bear higher annual payment-obligations. As the ERF can only gain the trust of financial markets if the joint and several guarantee is upheld until the transferred debt is completely redeemed, payment obligations have to be constructed in a way that all participating countries complete the redemption of their debt inside the ERF at approximately the same time.

By agreeing to redeem their debt in the redemption fund within 25 years and to keep the remaining debt below the 60%-threshold, participating countries implicitly commit to certain upper limits for their primary balances and debt quotas. The exact development of these figures depends on several assumptions on GDP growth and country specific refinancing costs. In addition, required primary balances are determined by the sequencing of refinancing needs that each country is allowed to cover through the redemption fund during the roll-in phase. In general, there are several options to implement the ERP, which differ mainly in the exact sequencing of refinancing via the funds. In the following, we study the development of primary balances for one possible implementation of the ERP.

2. Implementing the ERP—Illustrative examples and calculations

In this section we describe in detail one possible way of implementing the ERP together with the set of assumptions. Thereby,

answers are given to technical questions that arise when implementing the ERP like, e.g., how the debt of each country will be transferred into the ERF and how payment obligations for each country are calculated.

2.1. Designing the roll-in phase

The total amount that each country is allowed to refinance via the ERF depends on the amount of debt that exceeds the threshold of 60% debt of GDP as set out by the Maastricht-Treaty at a certain date (To simplify the subsequent analysis, we use 1 January 2012 as the starting date of the ERF). Countries that are currently showing high deficit figures might be admitted to transfer a slightly higher amount. Without this deficit surcharge, which was not part of the original proposal of the GCEE, they would either face unrealistically high consolidation needs during the first years or end up with a debt-to-GDP ratio exceeding the 60%-ceiling after the roll-in phase. In the following, we design the deficit surcharge in a way that prevents high deficit countries from having to improve their fiscal balance by more than two percentage points in 2012. Under these assumptions, the total volume to be refinanced by the ERF adds up to 2 327 billion euro (Table 1). Together with the deficit surcharges which prevent the eventual size of the ERF would stand at 2 378 billion euro. Of this amount, Italy would account for 963 billion euro or 40% of the debt in the ERF, followed by Germany with 558 billion euro or 23% and France with 533 billion euro or 22% (Table 1).

In our calculations, the transfer of national debt to the ERF will be stretched over three to four years—the roll-in phase. Depending on whether short term treasury notes are included or not, a longer roll-in phase can be constructed for most countries. In most cases a country's refinancing needs during the first three years exceed by far the amount to be transferred to the ERF. Given the large amount of short term debt, the total amount to be transferred is allocated such that 50% is used in the first, 30% in the second and 20% in the third year. However, any other allocation rule, e.g. 33.33% in each year, can be implemented without altering the basic results. Under this scenario, Italy would be allowed to roll-in debt of about 963 billion euro which covers nearly 100% of the refinancing needs over the four years 2012 to 2015 (Table 1) and

no specific allocation rule would be necessary. In contrast, Germany with a much lower debt-to-GDP ratio and consequently less debt exceeding the 60% threshold would cover only a fraction of its refinancing needs by using the ERF. The same holds true for the Netherlands that covers only (10.9%) of its total refinancing needs *via* ERF.

Table 1. Financing of general governments via ERF¹ within the roll-in phase²

Euro billion		2012	2013	2014	2015	Total
Germany	Financial demand	399.0	342.0	192.0	197.0	1.130.0
	thereof <i>via</i> ERF	279.2	167.5	111.7	0.0	558.4
	Ratio (%)	70.0	49.0	58.2	0.0	49.4
France	Financial demand	381.0	202.0	155.0	162.0	900.0
	thereof <i>via</i> ERF	266.4	159.8	106.5	0.0	532.7
	Ratio (%)	69.9	79.1	68.7	0.0	59.2
Italy	Financial demand	422.0	211.0	171.0	169.0	973.0
	thereof <i>via</i> ERF	422.0	211.0	171.0	159.3	963.3
	Ratio (%)	100.0	100.0	100.0	94.2	99.0
Spain	Financial demand	205.0	107.0	86.0	58.0	456.0
	thereof <i>via</i> ERF	60.7	36.4	24.3	0.0	121.5
	Ratio (%)	29.6	34.1	28.3	0.0	26.6
Netherlands	Financial demand	88.0	53.0	46.0	49.5	236.5
	thereof <i>via</i> ERF	12.9	7.8	5.2	0.0	25.8
	Ratio (%)	14.7	14.6	11.2	0.0	10.9
Belgium	Financial demand	72.0	40.5	35.0	34.0	181.5
	thereof <i>via</i> ERF	68.9	40.5	28.4	0.0	137.7
	Ratio (%)	95.7	100.0	81.1	0.0	75.9
Austria	Financial demand	22.5	20.0	29.5	18.0	90.0
	thereof <i>via</i> ERF	18.3	11.0	7.3	0.0	36.7
	Ratio (%)	81.5	55.0	24.9	0.0	40.7
Cyprus	Financial demand	2.2	3.9	1.4	2.5	10.0
	thereof <i>via</i> ERF	0.7	0.4	0.3	0.0	1.3
	Ratio (%)	30.0	10.2	18.9	0.0	13.2
Malta	Financial demand	–	–	–	–	0.0
	thereof <i>via</i> ERF	0.3	0.2	0.1	0.0	0.6
	Ratio (%)	–	–	–	–	n/a
Total³	Financial demand	1591.7	979.4	715.9	690.0	3977.0
	thereof <i>via</i> ERF	1129.4	634.6	454.8	159.3	2378.0 ^{a)}
	Ratio (%)	71.0	64.8	63.5	23.1	59.8

1. European Redemption Fund. 2. Own calculation, basic data from Thomson Financial Datastream as of 30 January 2012. 3) Without Malta.– a) The financing amount *via* ERF for some countries is slightly increased to avoid unrealistic high improvements of primary balances in 2012, while achieving debt to GDP ratio to decline below 60% of GDP at the end of the roll-in phase. For this reason the amount lies above the total overhang of debt exceeding the level of 60% of GDP at the end of 2011 by about 50 billion euro.

2.2. Annual payment obligations to the fund and debt accounting

The scale of annual payment-obligations depends on the volume of transferred debt. Countries transferring more debt have to bear higher annual payment-obligations. A country's annual payments to the fund are a constant fraction of GDP—the “annual payment key.” They have to comprise the pro-rated interest payments by the redemption fund on its transferred debt and a redemption payment. Given a certain annual payment key, the time until a country has redeemed its debt in the fund depends on the assumed growth rate and the refinancing costs of the ERF. Given our assumptions on future real GDP growth, it turns out that all debt in the Redemption Fund is redeemed after a period of 20 to 25 years if the annual payment keys are calculated according to the following two-step rule: First, total payments in the first year equal one percent of the amount of debt to be transferred plus the ERF's pro-rated annual interest payments. In a second step, the sum of these two components is then set in relation to the country's 2011 GDP. This ratio is the annual payment key, which is kept constant from then on. More precisely, a country's annual payment key is obtained from the following formula:

$$\text{annual payment key} = (\text{interest rate ERF} + 1 \text{ percentage point}) \times \frac{\text{amount to be transferred to the ERF}}{\text{GDP of 2011}}$$

This formula illustrates that with economic growth, a country's payment-obligations rise in absolute terms over the course of time.

Annual payments to the fund start in the first year even though not all debt has been transferred to the fund. During the roll-in phase, the annual payments are therefore corrected to reflect not yet transferred amounts of debt (Table 2).

Table 2. Illustrative calculation of annual payment obligations

Assumptions	
GDP 2011	€ 1 000.00 billion
GDP 2012	€ 1 030.00 billion
Public debt 2011	€ 900.00 billion
Ratio of public debt to GDP (2011)	90%
Interest rate of ERF-bonds ¹	4%

Debt to be transferred and annual payment key	
Total volume of debt to be transferred to the ERF ¹	€ 300 billion [Public debt] – 60% * [GDP ₂₀₁₁]
Debt transfer to the ERF in year	
2012.....	€ 150 billion
2013.....	90 billion
2014.....	60 billion
Annual payment key	1.5% [Interest rate of the ERF] + [1% "redemption charge"] * [total debt to be transferred to ERF] / [GDP ₂₀₁₁]

2012 Payment-obligations for 2012	
Debt not yet transferred to the ERF ¹)	€ 150.00 billion (= 90 billion + 60 billion)
a_{2012} = Hypothetical payment allocation if the total amount to be financed by the ERF would have been already transferred to the ERF in 2012	€ 15.00 billion ["annual payment key"] * [GDP ₂₀₁₁]
– Correction for debt not yet transferred to the ERF	€ 7.50 billion a_{2012} * [Debt not yet transferred] / [Total debt to be transferred]
= Payment-obligations in 2012	€ 7.50 billion

Account balance at the end of 2012	
Liability against ERF at the beginning of 2012	€ 0.00 billion
+ Debt transfer to the ERF in 2012.....	€ 150.00 billion
+ Financing costs	€ 6.00 billion [Interest rate of the ERF] * € 150 bn
– Payment-obligations in 2012.....	€ 7.50 billion
= Liability against ERF at the end of 2012	€ 148.50 billion

2013 Payment-obligations for 2013	
Debt not yet transferred to the ERF ¹)	€ 60.00 billion
a_{2013} = Hypothetical payment allocation if the total amount to be financed by the ERF would have been already transferred to the ERF in 2013	€ 15.45 billion ["annual payment key"] * [GDP ₂₀₁₂]
– Correction for debt not yet transferred to the ERF	€ 3.09 billion a_{2013} * [Debt not yet transferred] / [Total debt to be transferred]
= Payment-obligations in 2013	€ 12.36 billion

Account balance at the end of 2013	
Liability against ERF at the beginning of 2013	€ 148.50 billion
+ Debt transfer to the ERF in 2013.....	€ 90.00 billion
+ Financing costs	€ 9.54 billion [Interest rate of the ERF] * € 238.5 bn
– Payment-obligations in 2013.....	€ 12.36 billion
= Liability against ERF at the end of 2013	€ 235.68 billion

1. European Redemption Fund.

2.3. A stylized model of debt dynamics

To discuss in detail how each country's fiscal position will be affected by participating in the ERP as well as the resulting evolution of their stock of public-debt it is helpful to use a simple theoretical framework of public debt dynamics. A country's gross public debt ratio to GDP ratio ($d \equiv \text{Debt/GDP}$) evolves over time according to the following stylized dynamic equation:

$$d_{t+1} - d_t = (i_t - g_t)d_t - p_t \quad (1)$$

with i_t denoting the average nominal interest rate to be paid on the amount of public debt at year t , g_t denoting the year t growth rate of nominal GDP and p_t denoting the primary fiscal balance relative to GDP. The primary fiscal balance is the balance before interest payments are deducted and is essentially comparable to a company's earnings before interest position (EBIT) on the Profit and Loss Statement. By using this stylized model, we abstract from any one time effects that directly affect the stock of gross public debt like receipts from privatization or additional liabilities assumed by bank bailout packages. These are not in all cases considered in the official deficit figure.

As can be seen from Equation (1), a consolidation path can be expressed as target values for the debt ratio or as targets for the primary balance. In the former case, primary balances required to meet the desired reduction in debt ratios become a function of assumed interest- and growth rates. In the latter case, commitment to a certain path for primary balances ties down debt ratios which also depend on the assumption on interest- and growth rates.

Participation in the ERP defines a target debt ratio of 60% to be reached after no more than 25 years. In addition, the level of annual payments to the ERF affects the consolidation path for the next 25 years. With the path of debt ratios fixed, we thus see that the primary balances as required by the ERP become a function of assumed growth-, and interest rates.

As can be seen directly from equation (1) certain assumptions about key parameters are necessary to calculate the evolution of the public debt-to-GDP ratio, namely, the average nominal interest rate that will prevail in the future and prospective nominal GDP growth rates. Additionally, after joining the ERP a part of a

country's public debt is refinanced via the ERP while the remainder is still refinanced on the market. Therefore we need to distinguish between two different nominal interest rates, interest rates that will be paid by the ERP and interest rates that will be paid by the sovereign on financial markets. The crucial interest rate for total debt dynamics is the weighted average of both interest rates.

2.4. Assumptions: Interest rates

With regard to interest rates we consider two different scenarios. The first scenario covers the current situation with highly stratified interest rates for various member countries of the euro area and assumes sustained high interest rates for most of the member countries (scenario "without ERP"). In the case of Italy interest rates of 7% were already reached and even surpassed during the past months and there is the risk that high interest rates will prevail in the future.

The second scenario describes the interest rates likely to prevail after the introduction of the ERP (scenario "ERP"). Of course, for this scenario, it is essential to come up with a plausible assumption on the refinancing costs for the ERF. The main challenge in this respect is to assess how the financial market will receive the new bond class created by the ERF.

Bond yields depend, alongside other factors, in particular on the following two key parameters: (1) probability of default and (2) the bond's liquidity. When trying to project the interest rates on bonds to be issued by the ERF one can thus draw on the yields of existing bonds which are also guaranteed by European countries. Bonds issued by the European Investment Bank (EIB) or the European Financial Stability Facility (EFSF) are therefore a natural reference point for potential yields on ERF bonds. For ten-year bonds, these two institutions currently pay interest rates of around 3.0% and 3.3% respectively (as of 23 January 2012). For the two reference bonds (EIB, EFSF) the default probability can be considered to be comparable to that of the bonds to be issued by the ERF. With respect to the EFSF, it bears remarking that only partial liability is involved, and thus there is a somewhat higher default probability than under joint and several liability.

Market liquidity for ERF bonds would presumably be higher than that for the two reference bonds. The impact of a more liquid market on the yield can best be estimated by comparing the yields between the bonds issued by the Kreditanstalt für Wiederaufbau (KfW) and the far more liquid Bunds. A ten-year paper issued by KfW is currently traded at about 0.5 percentage points higher than the Bunds despite the identical default probability. The liquidity advantage for the ERF bonds will probably be on a similar order.

Based on these considerations, financing costs of the ERF can be expected to fall within a range of around 2.5% to 3%. However, higher yields also seem possible given present market uncertainty. In the light of the currently exceptionally low-interest rate environment for risk less assets, yields above those on bonds issued by EFSF, *i.e.* around 3.3%, seem improbable, however. To reflect a future normalisation of the interest rate, we assume ERF's financing costs of 4%—compared to an EFSF interest rate of 3.3% today.

Furthermore in the scenario “ERP” interest rates on nationally issued debt are assumed to be significantly higher, but still lower than in the scenario “without ERP” (Table 3). Exceptions are those countries in the euro area that currently benefit from lower interest rates due to safe haven effects, *i.e.* Germany and the Netherlands. For these countries, interest rates on nationally issued debt would normalize with the introduction of the ERF. Accordingly, for these countries we assume higher interest rates in the “ERP”—scenario than in the scenario “without ERP”.

2.5. Assumptions: Nominal GDP growth

GDP in the year 2012 is assumed to grow according to the growth forecast of the European Commission as published in the AMECO database for each country in November 2011. From the year 2013 on, we assume a growth rate of nominal GDP of 3%, which is derived from a growth rate of real GDP of 1 – 1.5% and an average inflation rate of 1.5 – 2% being in line with the inflation target of the ECB. As growth prospects are less favourable for the year 2012, GDP growth is lower for that year compared to the long term growth rate of nominal GDP assumed for any year beyond 2012.

Table 3. ERP¹: Key figures for participating countries

		Gross Domestic Product	Public debt	Primary balance	Interest rates		
					"ERP"		"Without ERP"
					ERF ² bonds	national debt	national debt
		2011			%		%
Germany	Euro billion	2.567.1	2.098.6	27.9	4.0	3.5	3.0
	% of GDP	100.0	81.8	1.1			
France	Euro billion	1.987.7	1.697.1	-63.8	4.0	4.0	4.5
	% of GDP	100.0	85.4	-3.2			
Italy	Euro billion	1.586.2	1.910.9	14.8	4.0	5.0	7.0
	% of GDP	100.0	120.5	0.9			
Spain	Euro billion	1.074.9	748.0	-47.9	4.0	5.0	7.0
	% of GDP	100.0	69.6	-4.5			
Netherlands	Euro billion	607.4	390.3	-14.6	4.0	3.5	3.0
	% of GDP	100.0	64.3	-2.4			
Belgium	Euro billion	370.4	360.0	-1.2	4.0	4.5	5.5
	% of GDP	100.0	97.2	-0.3			
Austria	Euro billion	300.9	217.2	-2.4	4.0	4.0	4.5
	% of GDP	100.0	72.2	-0.8			
Cyprus	Euro billion	17.9	11.7	-0.8	4.0	5.0	7.0
	% of GDP	100.0	65.4	-4.3			
Malta	Euro billion	6.4	4.5	0.0	4.0	5.0	6.0
	% of GDP	100.0	69.6	0.2			

1. European Redemption Pact.

2. European Redemption Fund.

Source: EU (November 2011), own calculations.

3. Results

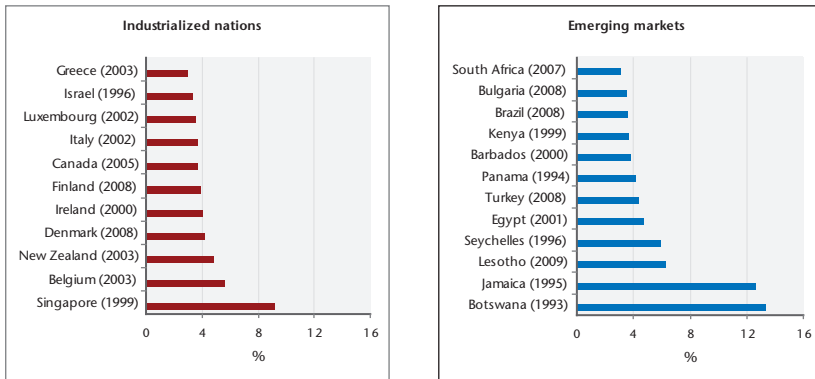
Based on these assumptions, we are now able to calculate primary balances, debt ratios and the evolution of the size of the ERF over time.

3.1. Primary balances

During the roll-in phase primary balances improve step-wise up to the level that is necessary to fulfil the requirements of the national debt brakes which ensure a structural deficit below 0.5% of GDP and national debt (*i.e* debt not transferred to ERF) not exceeding 60% of GDP. For each scenario, Table 4 shows the maximum primary surplus that has to be reached between 2012 and 2035. Taking Italy as an example, we see that it needs to run a

primary surplus of 4.2% of GDP to comply with the requirements of the debt brakes, even when it can benefit from reduced interest rates achieved by the implementation of the ERP (Table 4, column “Primary balances required to meet budget rules with ERP”). From a historical perspective, this constitutes already the upper bound of primary balances that can be sustained over a longer time horizon. Only a small number of countries were able to sustain primary balances well beyond 4% of GDP for a decade (Figure 2). However, most of these countries faced more favourable macroeconomic conditions during their fiscal consolidation than what we experience in the euro area today.

Figure 2. Primary balances of selected countries*



* In relation to nominal GDP. Highest average primary balance over a ten-year period. Years in brackets are the last year of the respective period.

Source: IMF.

To achieve the same debt reduction path without the implementation of the ERP, Italy would have to achieve a maximum primary surplus of 6.8% (Table 4, column “Primary balance required too meet budget rules without ERP”). This is well above the maximum primary balances observed historically. At the interest rates prevailing in the “without-ERP”-scenario, Italy already needs a primary surplus of 4.8% only to stabilize the debt-to-GDP ratio (Table 4, column “Primary balance required to stabilize current debt ratio without ERP”). This means that in case interest rates prevail at a level of 7% over the coming years, any successful consolidation would probably be just enough to compensate for the resulting higher interest payments, without being able to

reduce the debt-to-GDP ratio. These illustrative calculations show that bringing down risk-premiums on sovereign debt is necessary precondition for a successful reduction of debt-to-GDP ratios in the euro area.

Table 4. Consolidation requirements and ERP^{1, 2}

	Primary balance in 2011		Primary balance required ...			Improvement of actual primary balance required to meet budget rules...	
			to meet budget rules ³ ...		to stabilize current debt ratio		
	actual	structural	with ERP	without ERP	without ERP	with ERP	without ERP
	Percent of GDP		Percent of GDP		Percentage points		
Germany	1.1	1.6		1.8	0.0	0.9	0.7
France	-3.2	-1.2	2.4	3.0	1.2	5.6	6.2
Italy	0.9	4.1	4.2	6.8	4.7	3.2	5.8
Spain	-4.5	-1.7	2.5	4.0	2.7	6.9	8.5
Netherlands	-2.4	0.1	1.5	1.4	0.0	3.9	3.8
Belgium	-0.3	-0.7	2.9	4.2	2.4	3.3	4.5
Austria	-0.8	0.1	2.2	2.4	1.1	3.0	3.2
Cyprus	-4.3	-1.3	2.3	3.8	2.5	6.6	8.1
Malta	0.2	-0.2	2.7	3.3	2.0	2.5	3.1

1. European Redemption Pact. 2. Own calculations, November 2011. 3. Maximum primary balance which is necessary to ensure deficit does not exceed 0.5% of GDP and national debt does not exceed 60% of GDP if ERP would be implemented. Without ERP: Maximum primary balance needed to reach same evolution of debt ratio.

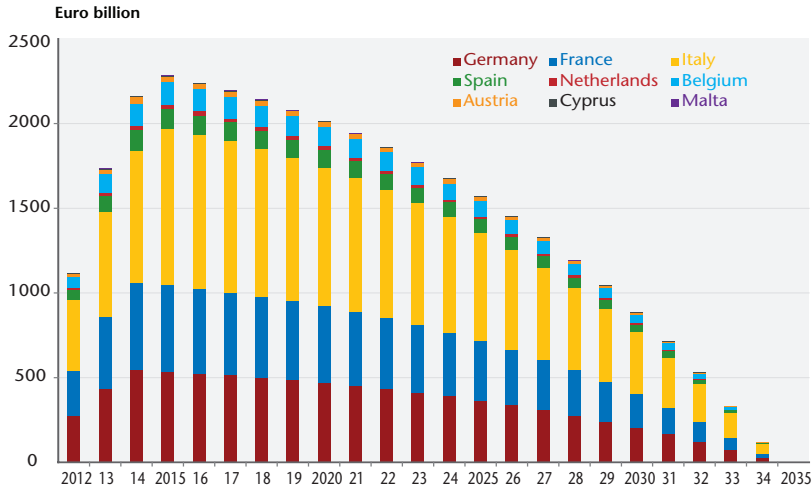
Source: EU (November 2011).

3.2. Evolution of the ERF volume over time

With the beginning of the roll-in phase, participating countries start serving and redeeming their debt inside the ERF. As a consequence, even though the size of the ERF grows during the roll-in phase, its maximum size of 2 281 billion euro is slightly smaller than the total sum of all amounts refinanced by the ERF which add up to 2 378 billion Euros. With the end of the roll-in phase the fund begins to shrink in size. As each country's annual payment to the ERF is defined as a fixed percentage of nominal GDP the actual annual amount paid to the fund grows at the same rate as GDP. In addition, the share of interest payments in annual payment obligations declines relative to the share of payments devoted to redeeming debt. While initially, annual payments to the fund are mainly used to service interest payments, redemption is getting

more and more important towards the end of the retention period. The speed at which the volume of the ERF shrinks in time therefore accelerates over time. In 2035 each country makes its final payment to the fund and the ERF ceases to exist (Figure 3).

Figure 3. Debt in European Redemption Fund by country*



* Own calculations.

3.3. Detailed results by country

After having described all the elements of the ERF and the specific timing of events, we can illustrate the impact of implementing the ERP for each participating country in detail. Italy may serve as an illustrative example (Figure 9): The top left panel summarises a country’s key macroeconomic data together with information about total public debt, annual payments to the ERF and crucial parameters used in the various scenarios. Given that Italy had a debt-to-GDP ratio of 120.5% at the end of the year 2011, it receives a credit line of 963 billion euro from the ERF. During the roll-in phase this credit line is used to refinance nearly all maturing national debt via the ERF. Successively, all debt in the ERF is redeemed until 2035 (Figure 9, top right panel). To achieve the envisaged debt reduction, the primary balance needs to be improved from 0.9% in 2011 to a maximum of 4.2% in 2015 (Figure 9, middle left panel). In comparison, without the ERP and sustained high interest rates, the primary balance to achieve the

same level of debt reduction has to be improved from 0.9% in 2011 to a maximum of 6.8% in 2015.

To illustrate the influence of interest rates on required consolidation efforts, we have so far taken interest rates and a sequence of debt-to-GDP-ratios as given and calculated the primary balances associated with these consolidation paths. As equation (1) shows, we can also make a different thought-experiment and hold primary balances constant and ask to what extent debt-ratios can be reduced under different interest-rate scenarios. If we apply different interest rate scenarios to the primary balances obtained under the scenario “ERP”, we get a range of debt levels (Figure 9, middle right panel). Assuming that Italy would achieve exactly the same primary balances as previously calculated for the scenario “ERP” (Figure 9, middle left panel), without the favourable interest rate environment obtained by implementing the ERP, the debt-to-GDP ratio would increase above 130% in the year 2035. On the contrary, when achieving a reduction of interest rates to the levels assumed in the “ERP”-scenario, Italy’s debt would, by construction, be reduced to 60% until 2035 with the same primary balances.

The reason for the significant difference in debt levels achieved are the interest payments resulting from the low refinancing costs of the ERF and the expected normalisation of interest rates of nationally issued debt. Even if the latter won’t play out, *i.e.* interest rates for nationally issued debt prevail at high levels, Italy’s debt-to-GDP level would decrease enormously. Finally, the bottom table gives detailed information about Italy’s envisaged account balance evolution within the ERF and the debt evolution composed by debt issued nationally and through the ERF.

For most of the countries the debt-to-GDP ratio in 2035, the final year of the ERP, is well below 60%. This is due the underlying binding budget rules which call for a structural deficit of at most 0.5% of GDP and for a debt ratio—excluding debt transferred to ERF—not exceeding the target value of 60%. For all countries except Italy the former rule is binding which implies national debt ratios to fall below 60%. Only in periods of high redemptions in the ERF the latter rule can require deficits lower than 0.5% of GDP or even surpluses. Under the assumed growth rates, this is the case only for Italy, which therefore ends up with a debt ratio of exactly 60% in 2035.

Primary balances induced by these budget rules differ notably between countries for two reasons: interest rates for nationally issued debt range from 3.5% to 5% and the initial debt level varies from around 60% to 120%. As indicated by our stylized model of debt dynamic, an interest rate range of 3.5% to 5% at a debt-to-GDP ratio of 60% will necessarily result in a primary balance spread of up to 1 percentage point. A country like Malta or Cyprus will therefore face a tighter fiscal policy over the 25 year horizon than the Netherlands even though the latter have a higher initial debt level.

4. Conclusion

In this paper, we have illustrated one possible implementation of the European Redemption Pact proposed by the German Council of Economic Experts. Based on a set of assumptions about future growth rates and interest rates of bonds issued by sovereigns and under joint and several liability, we were able to illustrate primary balances required in each of the euro area member countries to reduce public debt below the 60% threshold enshrined in the SGP within the next 20-25 years. Our calculations show that required primary balances become sustainable if interest rates on public debt can be reduced by allowing member countries of the euro area (that are not yet taking part in an adjustment program) to transfer their excessive debt beyond the 60% threshold into a redemption fund that is able to issue bonds under joint and several liability.

Figure 4. Austria¹

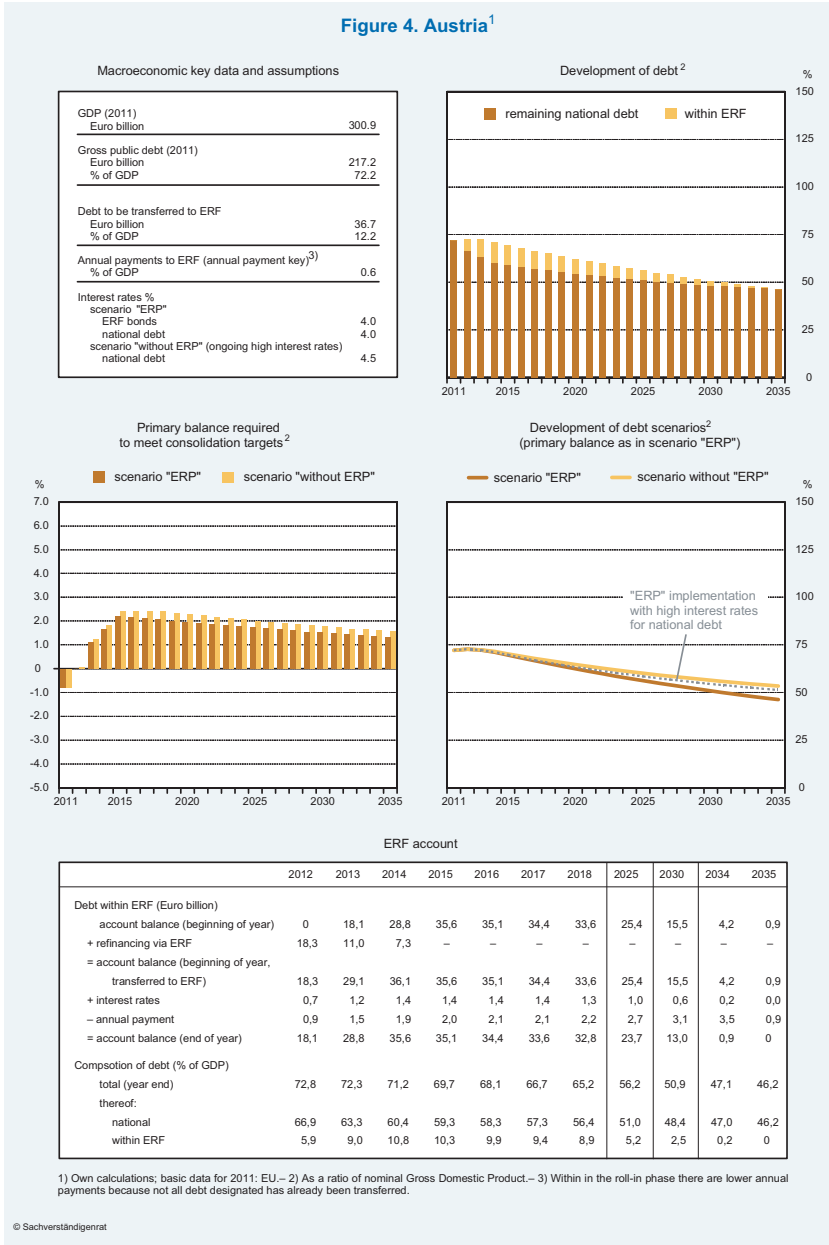
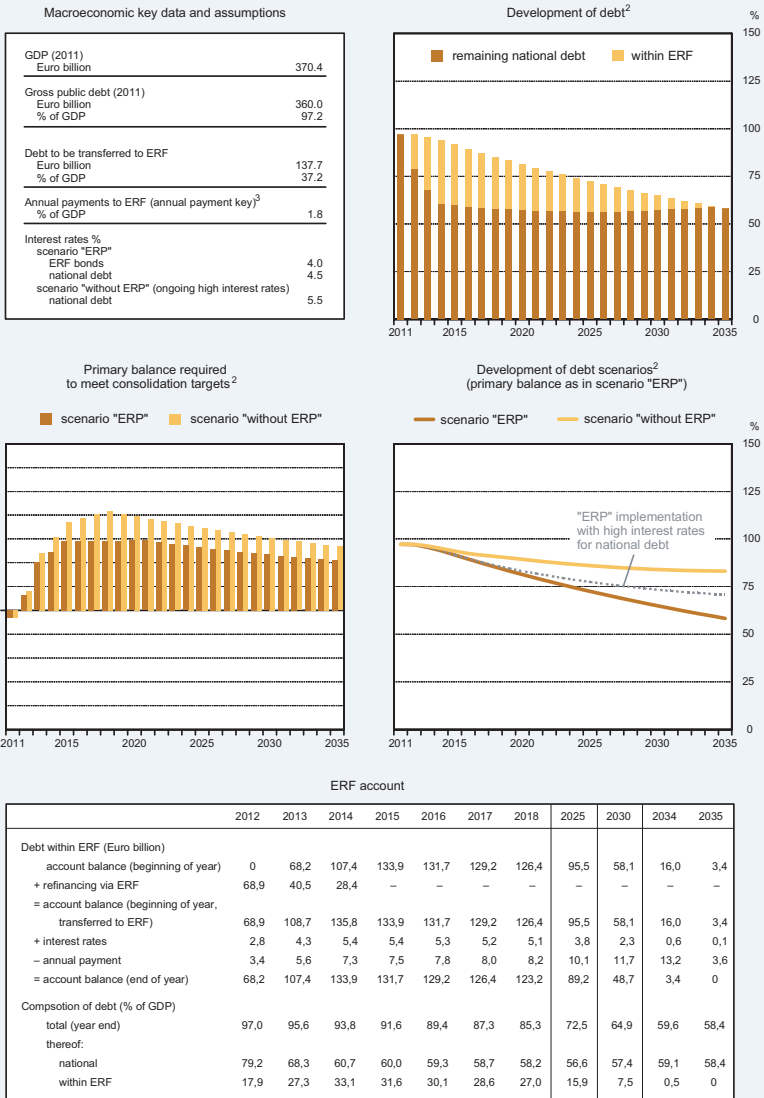


Figure 5. Belgium¹



1) Own calculations; basic data for 2011: EU-2) As a ratio of nominal Gross Domestic Product.- 3) Within in the roll-in phase there are lower annual payments because not all debt designated has already been transferred.

Figure 6. Cyprus¹

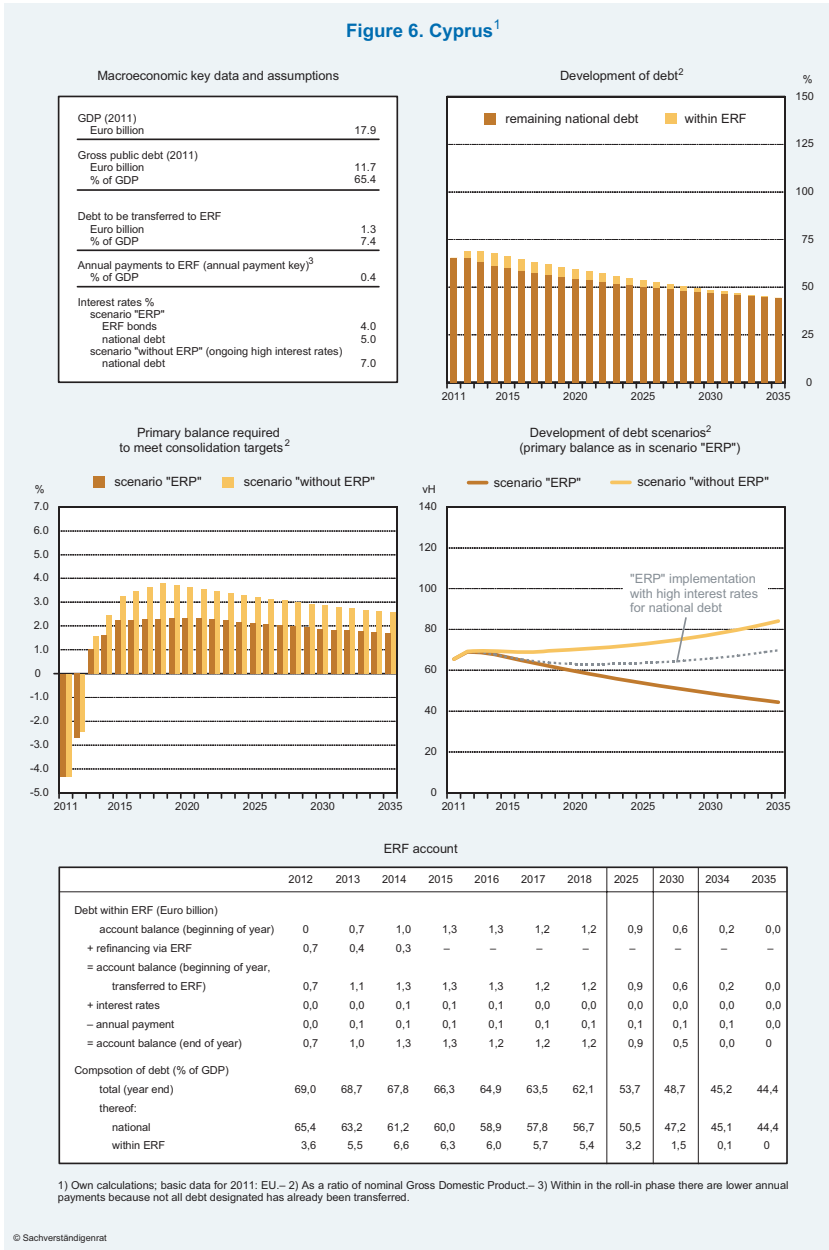
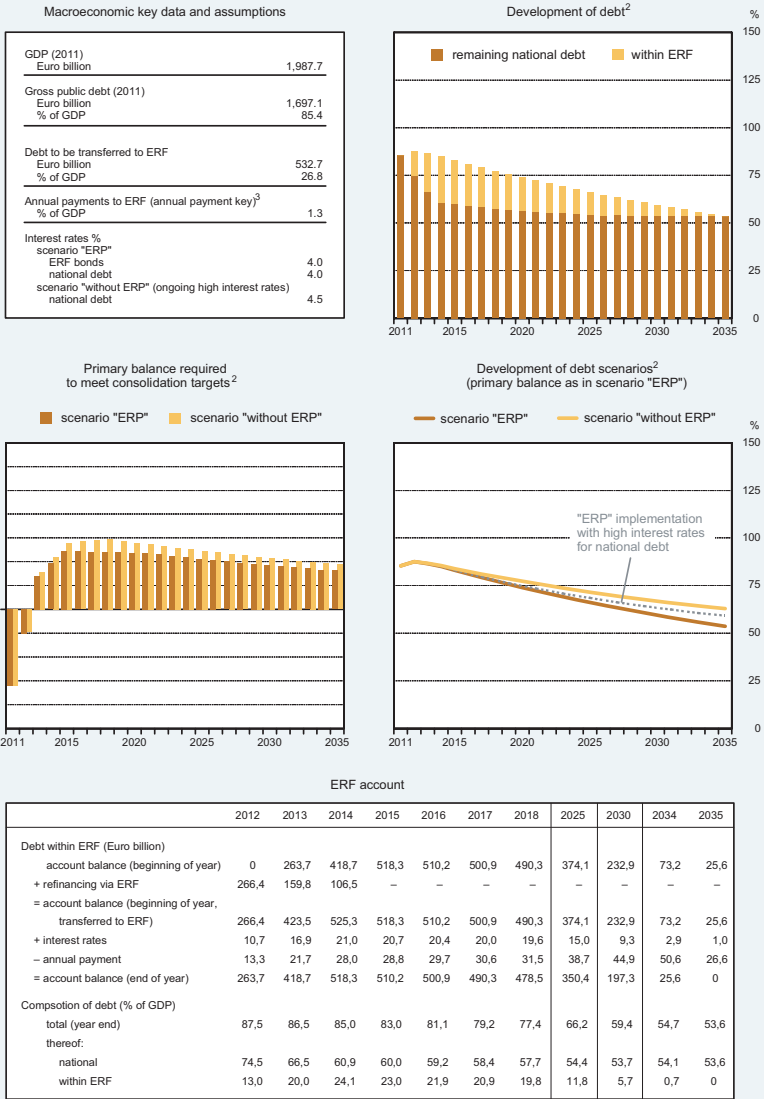


Figure 7. France¹



1) Own calculations; basic data for 2011: EU.- 2) As a ratio of nominal Gross Domestic Product.- 3) Within in the roll-in phase there are lower annual payments because not all debt designated has already been transferred.

Figure 8. Germany¹

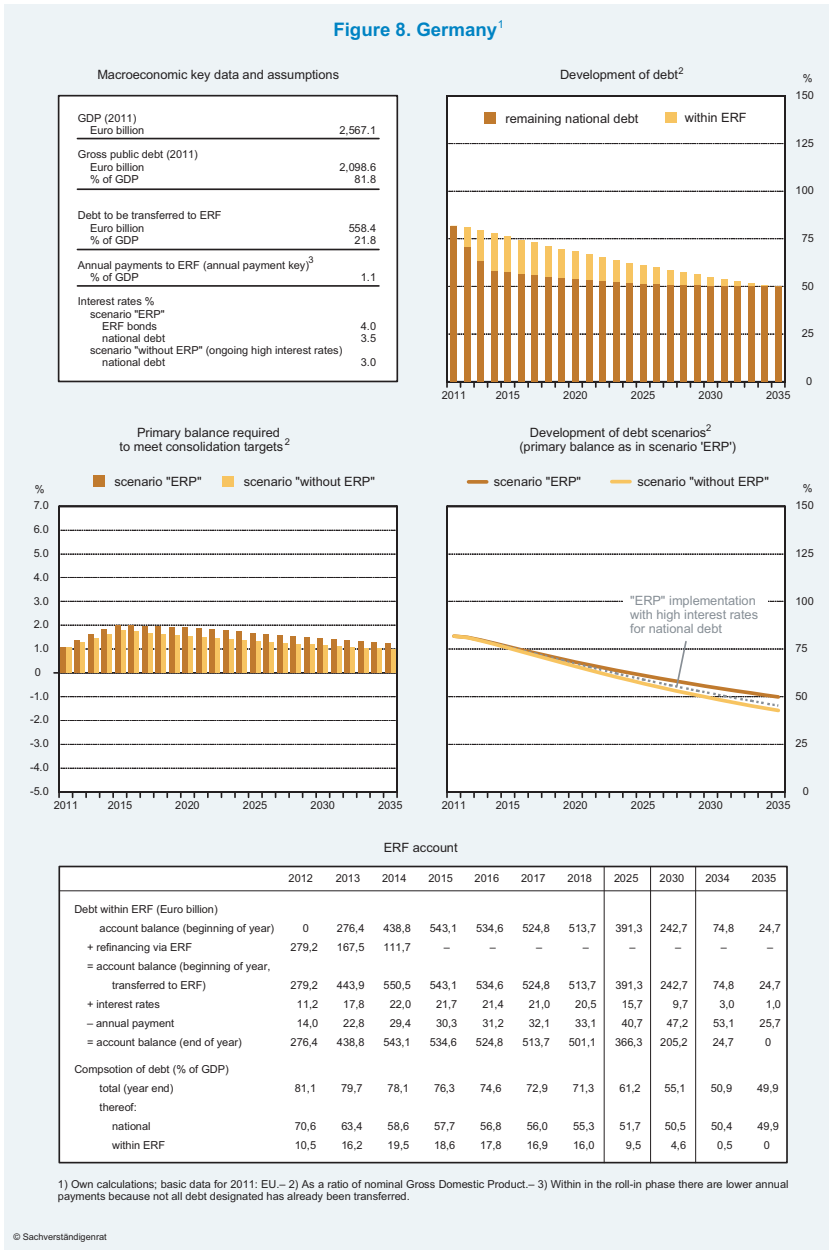
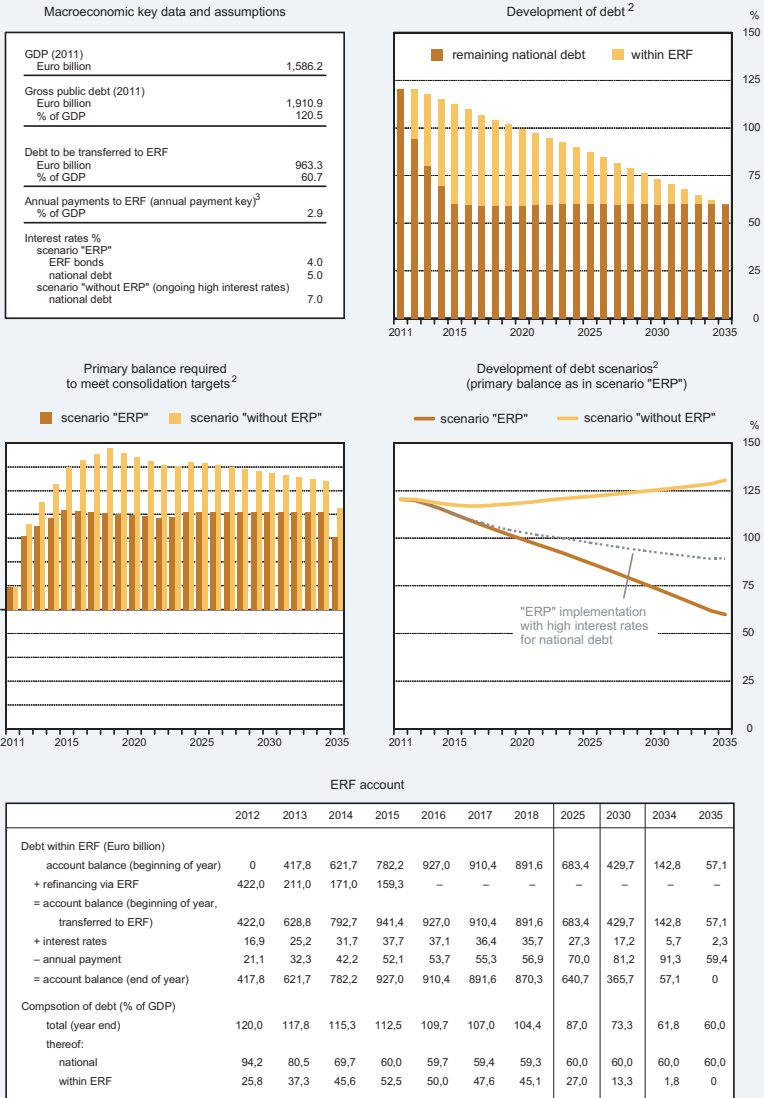


Figure 9. Italy¹



1) Own calculations; basic data for 2011: EU.- 2) As a ratio of nominal Gross Domestic Product.- 3) Within in the roll-in phase there are lower annual payments because not all debt designated has already been transferred.

Figure 10. Malta¹

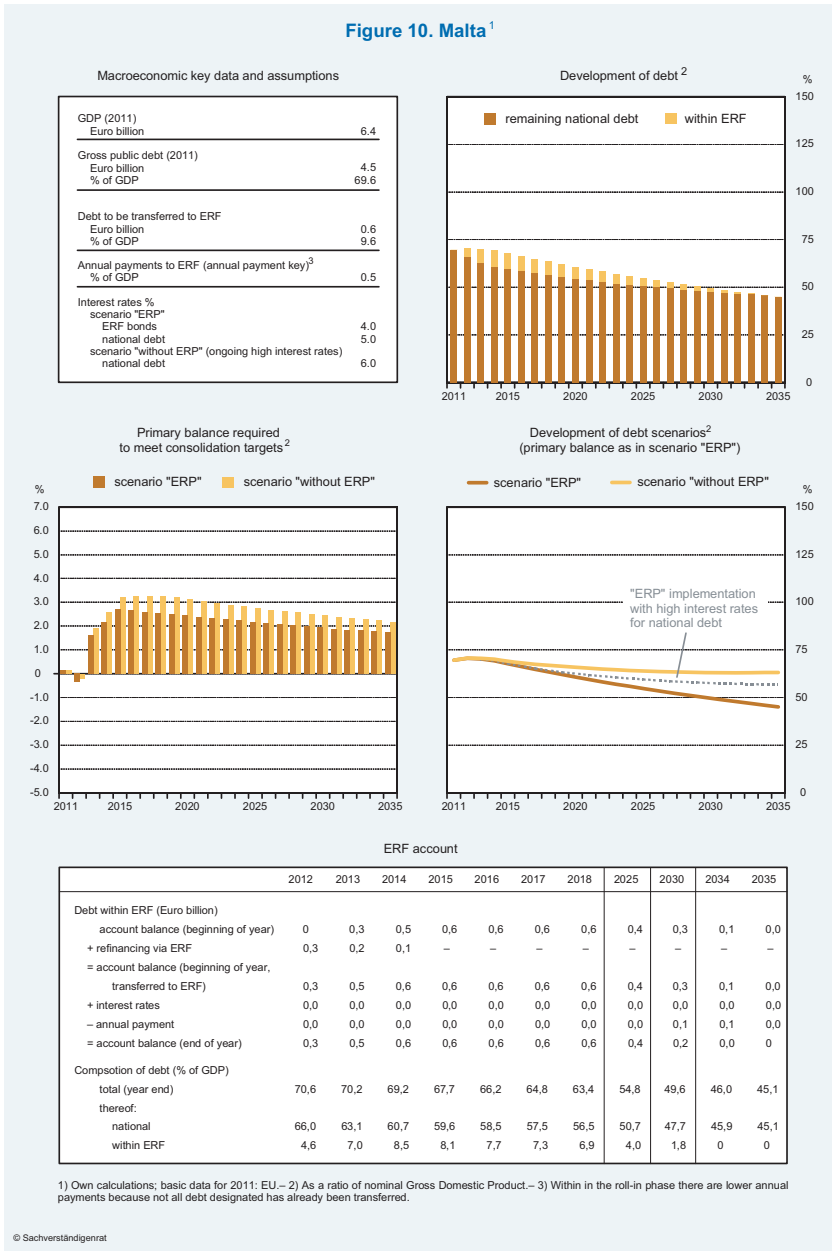
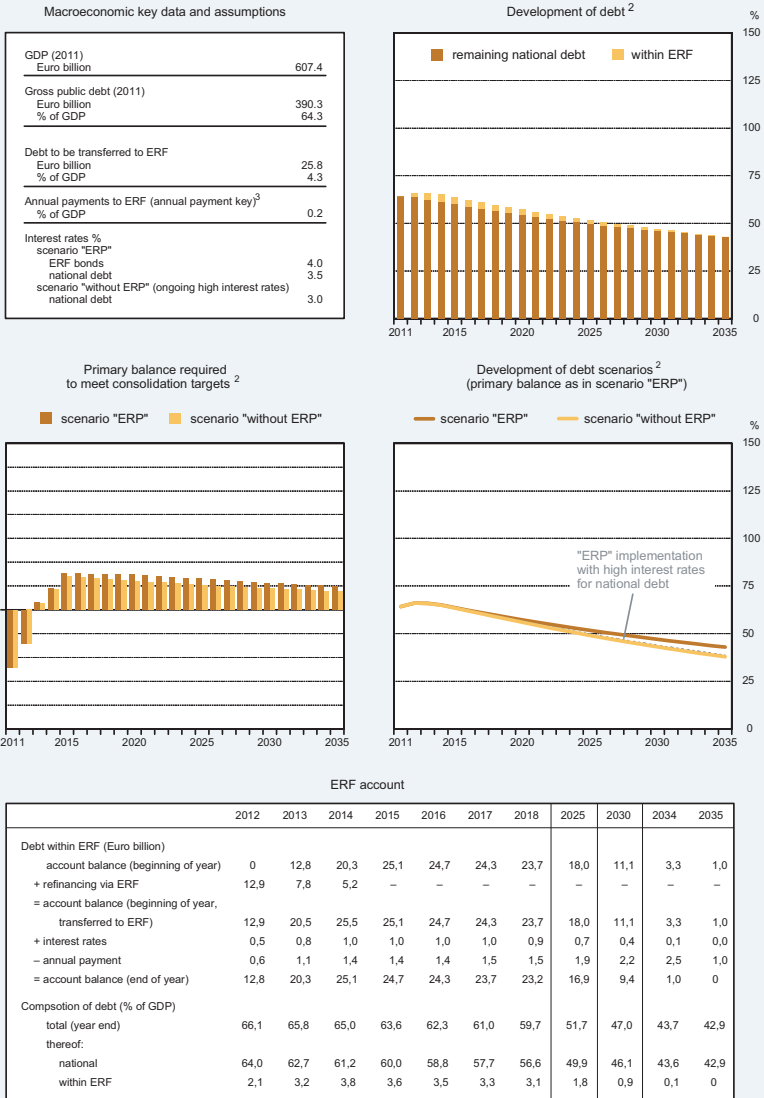
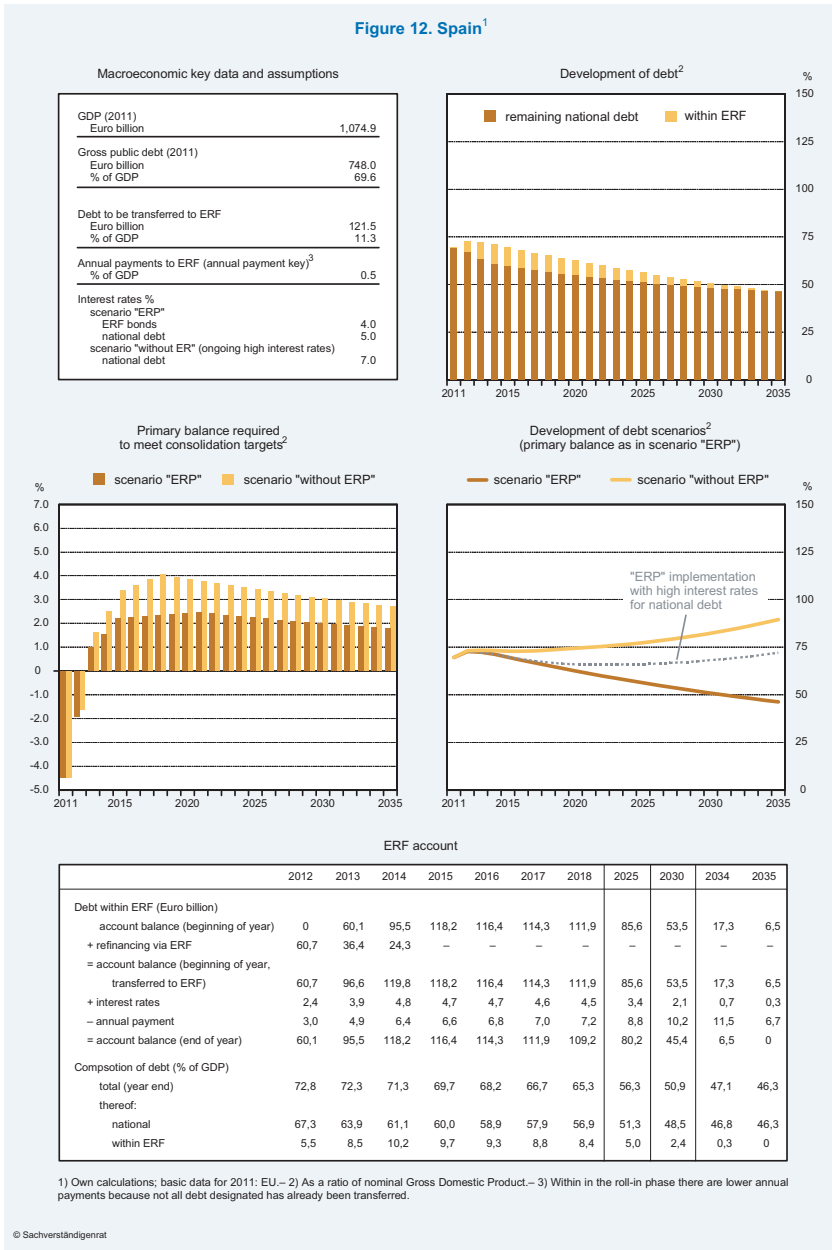


Figure 11. Netherlands¹



1) Own calculations; basic data for 2011; EU – 2) As a ratio of nominal Gross Domestic Product – 3) Within in the roll-in phase there are lower annual payments because not all debt designated has already been transferred.

Figure 12. Spain¹



GOOD AND BAD EQUILIBRIA

WHAT CAN FISCAL (AND OTHER) POLICIES DO?

Pier Carlo Padoan, Urban Sila and Paul van den Noord¹

OECD, Economics Department, Paris

Fiscal consolidation will go too far if it pushes the economy towards a “bad equilibrium” with high and growing fiscal deficits and debt, high risk premia on sovereign debt, slumping economic activity and plummeting confidence. In this paper we examine the possible conditions under which fiscal consolidation would backfire in this sense. For this purpose we develop a stylised stock-flow model of public debt and growth, which we subsequently calibrate empirically on a sample of OECD countries. We find that, if the sovereign risk premium is initially high, fiscal consolidation will help a country to escape from a “bad equilibrium”, not push it toward it, even if the direct negative demand impact of fiscal consolidation is large. In that case the stabilising impact of structural reform and financial backstops will also be larger than under normal market conditions.

Keywords: Fiscal policy, Sovereign debt, Multiple equilibria.

Fiscal consolidation is ongoing in many countries, including in several euro area member states. There are increasing calls to ease the pace of consolidation on the grounds that fiscal “austerity” in bad times, rather than strengthening debt sustainability by lowering risk premia, could be self-defeating as its negative impact on growth (both actual and potential) would more than offset credibility benefits. It could be argued that such a dilemma as to whether and in which circumstances markets prefer discipline or stimulus

1. The views expressed in this article are those of the authors and do not necessarily reflect those of the OECD and its members. The authors are indebted to participants at the EUROFRAME conference and an anonymous referee for valuable comments.

should be resolved empirically. However this dilemma cannot be addressed effectively without expanding the discussion and looking more carefully at growth in a high debt environment, such as the one that many advanced countries face today (and will face for some time to come). In such an environment the role of debt in depressing growth (and affecting risk assessment) must be taken into consideration, as well as the role that structural policy can play in boosting growth and contributing to debt sustainability.

Obviously, fiscal consolidation carries a negative direct demand effect in the short run. However, there may be offsets, and how strong the net effect on growth will be, and perhaps even its sign, is uncertain. There is a vast though not entirely conclusive literature on the subject, prompted by Giavazzi and Pagano (1990) who argued that fiscal consolidations can be expansionary, based on a number of case studies. According to Perotti (1999) the odds of an expansionary effect of fiscal consolidation increase with the extent of the initial fiscal predicament, possibly because the private sector realises that the situation is unsustainable. In a similar vein, Reinhart and Rogoff (2010) argue that when government debt rises above 90% of GDP, median growth falls by 1 percentage point. Consequently, cutting debt below that threshold would boost economic growth, at least in the medium to long run. Conversely, there is evidence to suggest that fiscal consolidation may have a possibly large negative impact on economic activity in the short run if the interest rate has hit the zero bound and hence monetary easing cannot be used as an offset (see e.g. Delong and Summers, 2012 and IMF, 2012).

Given the uncertainty of the size—if not the sign—of its impact, how should we identify the “right amount” of fiscal consolidation? One possible way is the following. Fiscal consolidation will go too far if, in a world where multiple equilibria are possible, it will push the economy into a “bad equilibrium” after it has been hit by an adverse shock. A bad equilibrium is characterized by the simultaneous occurrence, and adverse feedbacks between, high and growing fiscal deficits and debt, high risk premia on sovereign debt, slumping economic activity and plummeting confidence. Conversely, fiscal consolidation is an appropriate policy if it helps to break such a downward spiral, possibly in combination with

financial firewalls to prevent contagion and structural reforms to boost growth or expectations thereof.

To analyse these relationships in a systematic way we develop a stylised stock-flow model of public debt and growth, which we subsequently calibrate empirically on a sample of OECD countries. A main finding is that fiscal consolidation generally helps countries to escape from a “bad equilibrium”, as do structural reforms and financial backstops. This appears to be true even if the initial adverse growth impact of fiscal consolidation is comparatively large, assuming a country suffers from a high risk premium in bond markets. Moreover, in that case the stabilising impact of structural reform and financial backstops is also larger than under “normal” market conditions.

1. “Good” and “bad” equilibria

As a necessary first step we need to identify what a “bad equilibrium” is and what distinguishes it from a “good equilibrium”. We define these concepts with the help of a stylized economic stock-flow model.² The model has three equations. The first equation describes a negative relationship between public debt and economic growth (Y = output, D = real government debt and an over-dot indicates the change in the variable)³. It is augmented with the impact on growth of financial conditions proxied by the real interest rate r , and the fiscal policy stance proxied by the primary deficit as a share of GDP p , with the associated semi-elasticities represented by the parameters f and g , respectively:

$$\frac{\dot{Y}}{Y} = a - b \frac{D}{Y} - fr + gp \quad (1)$$

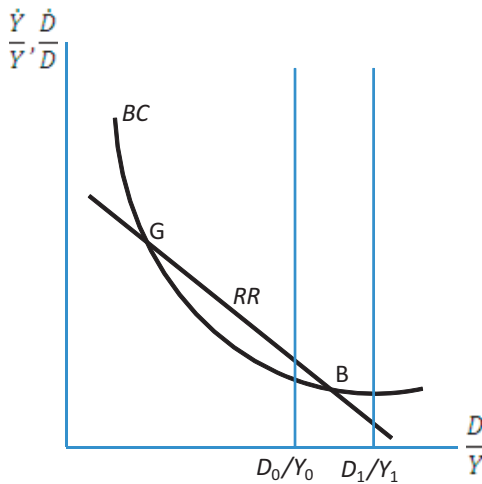
This equation is depicted in Figure 1 as the downward-sloping straight line RR . RR stands for Reinhart and Rogoff (2010) who were the first to posit this relationship and to have tested it empirically. This negative relationship can be explained *inter alia* by adverse expectations with regard to future taxation associated with high public debt. It may also capture the effect of sovereign stress

2. It is inspired by a model developed by Duesenberry (1958) to analyze the Great Depression.

3. To keep the model simple we abstract from inflation, hence real and nominal variables are identical.

spilling over to banks which hold substantial amounts of sovereign debt on their balance sheets, in turn weighing negatively on the cost of financing for the private sector and on confidence and hence on growth. However, as we will argue below, this negative relationship between debt and growth exists only beyond a certain threshold. At lower levels of the ratio of debt to GDP the relationship may actually be flat or even positive. Finally, growth is positively affected by the exogenous impact of structural reforms, as documented in several issues of the OECD’s series *Going for Growth* (see e.g. OECD, 2012), captured by parameter a .

Figure 1. Good and bad equilibria



Note: The horizontal axis measures the public debt to GDP ratio and the vertical axis the growth rates of public debt and output. RR is the relationship between growth and debt and BC the government’s budget constraint. If the debt ratio is located right from the bad equilibrium B , it derails while output contracts at an accelerating pace. Left of B the debt ratio converges towards the good equilibrium G .

According to equation (1) a higher interest rate depresses growth and a larger fiscal deficit supports growth.⁴ These are just

4. We include the level rather than the change of the primary public deficit in this growth equation. This is consistent with the “Robertsonian saving” hypothesis embedded in Duesenberry’s (1958) model. This hypothesis postulates that the next period’s output is determined by the preceding period’s income less net saving (S_n), so $Y_{t+1} = k(Y - S_n)$, where k is a constant. This implies that $\dot{Y}/Y = -kS_n/Y - (1 - k)$, so it is the level of net saving as a share of output that determines the next period’s output growth rate. Net saving can be broken down into public net saving as a share of output, *i.e.* the fiscal position, and private net saving as a share of output, which in turn may be assumed to be a function of the public debt ratio and the real interest rate as is implicit in equation (1).

the first-order effects of the interest rate and fiscal policy on growth. There are second order effects that run through the government's budget constraint, which is the second equation of the model and in fact an identity. It relates the primary deficit as a per cent of GDP p to the real interest rate r and real public debt D :

$$\dot{D} = rD + pY \quad (2a)$$

Dividing the two sides of the equation by D yields:

$$\frac{\dot{D}}{D} = r + \frac{p}{D/Y} \quad (2b)$$

This is the hyperbolic relationship between real growth of debt and the debt ratio depicted as BC (as in budget constraint) in Figure 1.⁵ As the debt ratio increases, the real growth of debt approaches asymptotically the real interest rate. The intersections of the two curves correspond to, respectively, the "good" equilibrium (G) and the "bad" equilibrium (B). If the debt ratio is located in the interval between the intersections G and B (indicated by D_0/Y_0), output growth will exceed the growth of debt, and hence the debt ratio is falling until the good equilibrium G is attained: the good equilibrium is stable. However, if the debt ratio is located right of the intersection point B (e.g. if the debt ratio equals D_1/Y_1), the growth of debt exceeds output growth. So the equilibrium B is unstable. Beyond B debt keeps growing while output growth keeps falling, hence the debt ratio is on an explosive path.

What is not shown in Figure 1 (for the sake of simplicity) is that if the debt ratio is on an explosive path the real interest rate is bound to increase: the BC schedule shifts outward, thus adding momentum to the debt explosion. To capture this effect we need to include an interest rate equation, which is the third equation of our stylised model. Specifically, we assume that the interest rate responds to the growth in the debt ratio and an (exogenous) factor h . So:

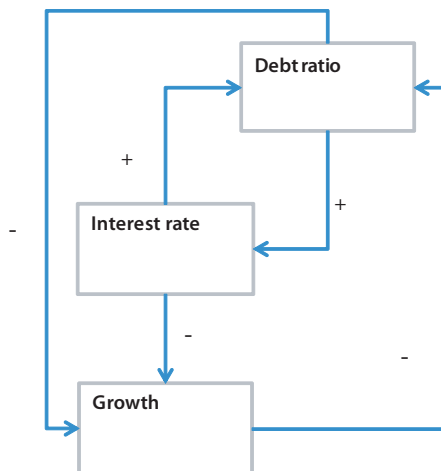
$$r = h + c \left(\frac{\dot{D}}{D} - \frac{\dot{Y}}{Y} \right) \quad (3)$$

5. For the sake of simplicity we omit in this specification the impact of other factors on changes in the stock of debt, such as revaluations, the purchase or sale of financial assets by the government, or default.

The rationale for including the growth rate of the debt ratio as an explanatory variable is that we see this as a possible gauge of unsustainable public finances. Specifically, we expect an accelerating debt ratio to raise the probability of default (for real or as perceived by the markets), *i.e.* the faster the increase in the debt ratio, the higher the risk premium. The parameter h captures the impact of swings in market sentiment and contagion effects (in as much as these are unrelated to local debt dynamics) as well as financial backstops to offset such sentiment and contagion effects. As we shall see these factors seem to play an important role in the recent euro area dynamics. A reason why this occurs in the euro area (and not elsewhere) is that concerns about the sustainability of monetary union give rise to a euro “exit” or “break-up” risk premium in countries in fiscal distress.

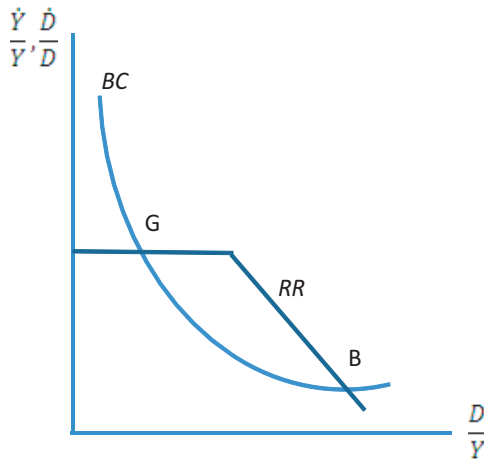
In sum, our model gauges three potentially explosive feedback mechanisms: (i) between the debt ratio and growth (a high debt ratio depresses growth which boosts the debt ratio, etc.); (ii) between the debt ratio and the interest rate (a high interest rate pushes up debt which gives a higher interest rate, etc); and (iii) between growth and the interest rate (a higher interest rate depresses growth which pushes up the debt ratio and hence the interest rate, etc.). This is illustrated in Figure 2. The point to retain is that these feedbacks will be explosive if the initial debt ratio is “right of B ” or converge (to the “good equilibrium” G) if it is located “left of B ”.

Figure 2. Feedback mechanisms in the model



It is possible to derive formal expressions for the “good” and “bad” equilibrium debt positions G and B , but before we do so we need to address two (important) technical complications. The first complication is that the RR schedule may be “kinked”, in the sense that only beyond a certain debt threshold there will be a significant adverse impact of debt on growth, as depicted in Figure 3. This is a standard finding in the empirical literature following Reinhart and Rogoff’s seminal paper, with the debt threshold generally found to be close to 90% of GDP.⁶ Indeed this is what we find in our own empirical work (see below). This does not change the basic features of the model, other than that the value of the parameter b in equation (1) is conditional on the level of the debt ratio.

Figure 3. Debt threshold



The second complication is that the hyperbolic relationship between debt growth and the debt ratio depicted in Figures 1 and 3 is only valid in this form if the primary balance is in deficit. If it is in surplus p takes a negative value and the shape of the BC schedule changes as depicted in Figure 4. The bad equilibrium preserves its basic features, that is right from the intersection B the debt ratio

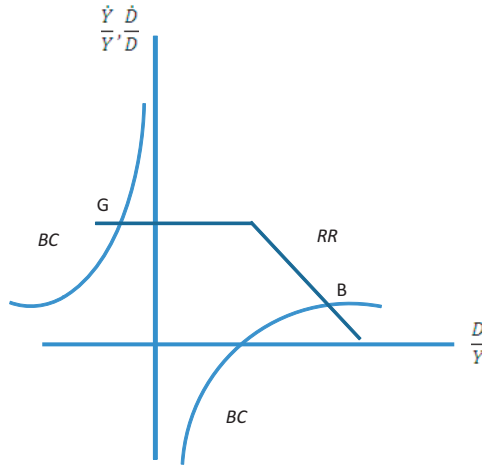
6. See Cecchetti *et al.* (2011) and Checherita and Rother (2010). Some authors find two thresholds, with debt below the lower threshold favourable to growth and debt beyond the higher threshold harmful to growth; see Kumar and Woo (2010) and Elmeskov and Sutherland (2012) who report thresholds of 30 and 90% and 45 and 66%, respectively.

explodes, but the nature of the good equilibrium is somewhat different. Left of the intersection *B* the economy is still stable as output grows faster than debt. However, the good equilibrium *G* is now located in the second quadrant, *i.e.* corresponds to a positive asset position of the government. In the interval between the vertical axes and the good equilibrium *G*, assets grow faster than output and hence the asset-to-GDP ratio increases. It will do so until the good equilibrium *G* is reached.

Ignoring these complications for now, the steady-state debt ratio (when debt and output grow at the same rate) can be derived by equating the *BC* and *RR* equations (1) and (2b) and equating the growth rates of debt and output in the interest equation (3), which yields:

$$-b \left(\frac{D}{Y}\right)^2 + [a + gp - (1 + f)h] \frac{D}{Y} - p = 0 \tag{4}$$

Figure 4. Debt threshold and primary surplus



This has two solutions:

$$\left(\frac{D}{Y}\right)^G = \frac{[a + gp - (1 + f)h] - \sqrt{[a + gp - (1 + f)h]^2 - 4bp}}{2b} \tag{5a}$$

$$\left(\frac{D}{Y}\right)^B = \frac{[a + gp - (1 + f)h] + \sqrt{[a + gp - (1 + f)h]^2 - 4bp}}{2b} \tag{5b}$$

Equations (5a) and (5b) are the solutions for the good equilibrium G and the bad equilibrium B , respectively. It is interesting to note that the parameter c , the semi-elasticity of the real bond yield with respect to the growth in the debt ratio, drops out of the equation, which is simply a consequence of the economy assumed to be in a steady state and hence the debt ratio being constant. This implies that the adverse feedback loop from debt *via* the bond yield on growth does not operate via a change in the bad equilibrium itself but rather by influencing the pace of decline or improvement once the economy finds itself in the bad equilibrium.⁷ That said, *exogenous* increases in the bond yield (an increase in h) will lower the bad equilibrium debt ratio (see below).

Importantly, the solutions (5a) and (5b) provide an indication as to where the economy will be heading if the actual debt to GDP ratio is located either left or right of the bad equilibrium B . As can be inferred from Figure 1, the higher is the bad equilibrium debt ratio, the smaller are the odds that the economy after being hit by an adverse shock to its debt ratio shifting it from D_0/Y_0 to D_1/Y_1 (for example due to a banking crisis) will be trapped in a tailspin of falling activity and rising interest rates. And the lower is the good equilibrium debt ratio, the longer will be the spell of accelerating growth if the debt ratio is hit by a favourable shock (e.g. a bail-out or orderly default). So, an increase in the bad equilibrium debt ratio (and a fall in the good equilibrium debt ratio) should be interpreted as contributing to more favourable growth and debt dynamics in the short and medium run.

For the solutions (5a) and (5b) to be feasible it is necessary that the term under the root sign is positive. At the limit it could be zero in which case only one solution exists, which has a “bad” right side (debt ratio and growth derail of the equilibrium) and a “good” left side (debt ratio and growth stabilise left of the equilibrium). Whether or not these solutions are feasible is an empirical question, which we will address below. But before we address that issue we will first examine how policy can help a country who is trapped in the bad equilibrium to recover.

7. If it is assumed that the interest rate depends on the level (as opposed to the growth rate) of the debt ratio, the equivalent of the parameter c would of course enter the solutions for the good and bad equilibria. However, our empirical work (see below) suggests that it is the growth rate of the debt ratio rather than its level that affects the yield spread.

2. Policies to escape from the “bad equilibrium”

Within the logic of this model there are three policy levers available for countries to escape from the bad equilibrium: structural reform (affecting a), financial backstops to reduce the bond yield (affecting h), and fiscal policy (p). These policies should not be seen as alternatives, but rather as complements. This is the case because they can be mutually reinforcing, as will be demonstrated below. More fundamentally, though, this is also the case because we assume the economy's growth and fiscal fundamentals to be structurally weak. This weakness may have been masked for some time by risk under-pricing in financial markets and excessive leveraging in the private sector, but has become apparent as the economy is hit by a financial and sovereign debt crisis. Hence, this reversal of fortunes needs to be addressed by all three policy levers so as to deliver durable results.

2.1. Structural reform and financial backstops

As depicted in Figure 5, structural reform shifts the RR schedule outward. As a result, a country whose debt ratio D_1/Y_1 was on an explosive path initially, will find itself left from the (now shifted) bad equilibrium B' and see its debt ratio fall and growth resume towards the good equilibrium G' .

But obviously it takes time for structural reform to exert this virtuous effect on growth and debt, while time is severely lacking when a country is trapped in a bad equilibrium. Moreover, for structural reform to produce this virtuous effect confidence must be restored. Think for example of product market liberalisation that opens up new investment opportunities. Without confidence and the availability of affordable funding these opportunities for investment may be not taken up and so higher growth would not materialize. Without a financial backstop the interest rate could continue to grow, driven by adverse debt dynamics and or by systemic effects (more below). In other words the role of a financial backstop is to provide a “confidence bridge” to buy time, *i.e.* to allow for structural reforms to bear their fruits.

Financial backstops can help countries to escape from the bad equilibrium also through another channel: via the government budget constraint. This is depicted in Figure 6, illustrating how a

fall in the interest rate shifts the *BC* schedule downward and thus again pushes the bad equilibrium to the right, triggering a convergence towards the (now shifted) good equilibrium *G'*. So, financial backstops are a double-edged sword: they boost growth directly as well as indirectly by containing the debt-interest snowball. Obviously this presupposes that the backstops are not “abused” by the government to give up on either structural reform or fiscal consolidation (to which we turn next). Moral hazard must be contained; otherwise the confidence bridge breaks down.

These findings can be easily formalised by computing the relevant policy multipliers from equation (5b):

$$\partial \left(\frac{D}{Y}\right)^B / \partial a = \left(\frac{D}{Y}\right)^B \frac{1}{\sqrt{[a + gp - (1 + f)h]^2 - 4bp}} > 0 \quad (6)$$

$$\partial \left(\frac{D}{Y}\right)^B / \partial h = - \left(\frac{D}{Y}\right)^B \frac{1 + f}{\sqrt{[a + gp - (1 + f)h]^2 - 4bp}} < 0 \quad (7)$$

Figure 5. The impact of structural reform and financial backstops through the output channel

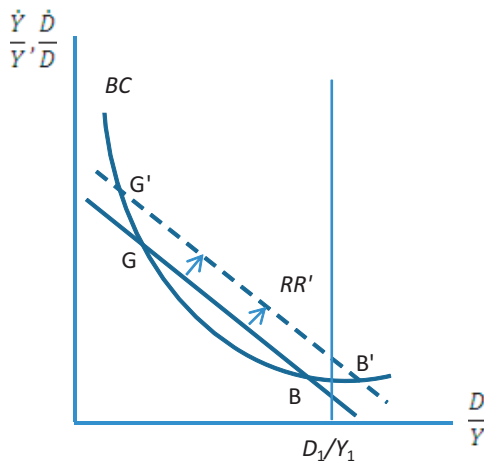
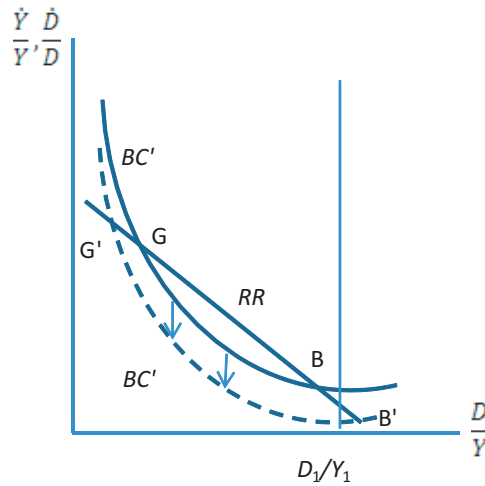


Figure 6. The impact of financial backstops through the government budget channel



These equations confirm the graphical analysis: structural reform and financial backstops help countries to escape from the bad equilibrium (as it “shifts to the right”). Importantly, these multipliers also confirm that these policies are mutually reinforcing: a rightward shift in the “bad equilibrium” triggered by structural reform raises the multiplier of financial backstops and *vice versa*.

2.2. Fiscal consolidation

In our stylised model fiscal consolidation works through two channels (output and the government budget constraint). This is similar to financial backstops, which work through the same channels, except that the effects of fiscal consolidation are in opposite directions, with the net effect ambiguous. Fiscal consolidation is represented by a sustained cut in the primary deficit p , which shifts the BC schedule down as depicted in Figure 7. However, as shown in Figure 8 it also implies a negative demand shock, shifting the RR schedule down. The former is potentially stabilising (the bad equilibrium shifts to the right) whereas the latter is potentially destabilising (the bad equilibrium shifts to the left). Where the bad

equilibrium ends up is an empirical question: our theory cannot provide a prediction.

It is again possible to derive the relevant multiplier to measure the impact of changes in the primary deficit p on the bad equilibrium, which reads:

$$\partial \left(\frac{D}{Y} \right)^B / \partial p = \left[g \left(\frac{D}{Y} \right)^B - 1 \right] \frac{1}{\sqrt{[a + gp - (1 + f)h]^2 - 4bp}} \begin{matrix} > 0 \\ \leq 0 \end{matrix} \quad (8)$$

Whether an increase in the primary deficit gives a lower bad equilibrium debt ratio (with the economy becoming more unstable) or the reverse is indeed ambiguous and depends on the initial level of the bad equilibrium debt and on the “Keynesian” fiscal demand multiplier g . When both are large, such that:

$$g \left(\frac{D}{Y} \right)^B > 1$$

fiscal expansion (an increase of p) will have a favourable impact on the bad equilibrium *i.e.* it will shift it to the right. This is a situation where the country has fiscal space available to effectively boost the economy out of the bad equilibrium through fiscal expansion. But if either of the two is small (the Keynesian fiscal impact on growth is small and the initial bad equilibrium debt level is small), such that:

$$g \left(\frac{D}{Y} \right)^B < 1$$

fiscal expansion will exacerbate the bad equilibrium trap. Fiscal consolidation is than the appropriate policy, possibly in combination with structural reform and financial backstops (since these increase the multiplier (8) and hence the effectiveness of fiscal consolidation).

To sum up, the effect of fiscal policy on the growth path of the economy is ambiguous and strongly depends on the initial conditions. It is therefore of crucial importance to empirically calibrate the model so as to able to assess the need for and effectiveness of fiscal consolidation when countries are trapped by the bad equilibrium. We turn to this in the next section.

Figure 7. The impact of fiscal consolidation through the government budget channel

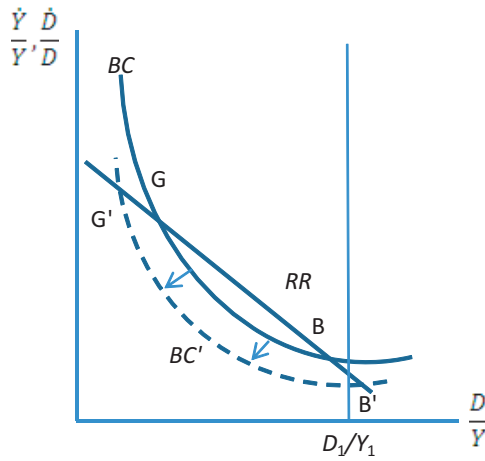
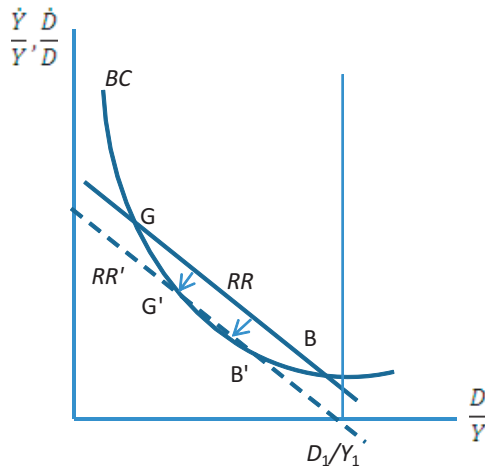


Figure 8. The impact of fiscal consolidation through the output channel



3. Empirical calibration

In a recent OECD working paper (Padoan *et al.* 2012) we report estimation results for the growth and interest rate equations (1) and (3), respectively, which we will use as the basis for our empirical calibration. The estimations are based on a sample of 28

OECD countries and spans over up to 52 years, from 1960 to 2011, depending on data availability.⁸ We purposefully used as broad a sample as possible, in order not to make results dependent on an arbitrarily chosen period or group of countries. We also used the GMM estimation technique and only included lagged right-hand side variables so as to minimise the risk of reverse causality.

Most parameter values can be directly inferred from the estimation results, with the exception of the terms a and h appearing in, respectively, the growth and interest rate equations. These comprise country-specific constant terms as well as the impact of a range of control variables on growth and the interest rate, and hence vary across countries and over time.⁹

In addition we need to modify the theoretical model to capture the threshold effect of public debt on growth that came out significant in the econometric results. Specifically, the relevant growth equation reads:

$$\frac{\dot{Y}}{Y} = a - b_1 \frac{D}{Y} - b_2 M \left(\frac{D}{Y} - T \right) - fr + gp \quad (1b)$$

where M is a dummy variable taking the value 1 if the debt ratio is above the threshold and zero otherwise and b_2 represents the growth impact of the debt ratio above the threshold, T . This equation can be re-written as:

$$\frac{\dot{Y}}{Y} = a' - (b_1 + b_2 M) \frac{D}{Y} - fr + gp \quad (1c)$$

in which $a' = a + b_2 M \times T$. This gives us a properly adjusted estimate of the constant term in the equation.

The numerical parameters inferred from the estimation results, averaged for the whole sample in cases where these vary per

8. The countries included are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom and United States.

9. The growth equation includes controls for catch-up effects (gauged by the level of per capita GDP) and other structural factors such as skill endowments and population growth. The interest rate equation includes controls for the effect of monetary policy, inflation risk and the openness of the economy.

country and/or over time, are reported in Table 1, including for the average primary deficit (p) which equals 0.3% of GDP.

Table 1: Baseline parameters

a'	0.050	p	0.003
b_1	-0.012	f	0.195
b_2	0.026	g	0.087
c	0.082	h	0.027

Source: Padoan *et al.* (2012).

The debt threshold, *i.e.* the level of debt where the kink in the growth equation appears, is estimated at 87% of GDP, broadly consistent with findings by other researchers. The effect of government debt on growth below the threshold is positive (b_1 is negative), though not statistically significant. Above the threshold, on the other hand, the effect becomes more negative and statistically significant (b_2 is positive).

The effects of the primary deficit and the interest rate on growth are also in line with our priors, although the size of the fiscal demand multiplier ($g = 0.087$) may be considered at the low end of the spectrum of plausible results—we will turn to this later. It is important to stress that aside from the intercepts a and h all parameter values are uniform across countries and time and hence reflect the sample average relationships. We will turn to a sensitivity analysis in which this assumption is relaxed below.

The coefficient for variations in the debt ratio in the interest rate equation ($c = 0.082$), finally, indicates that for every 1 percentage-point slowdown in output growth or hike in debt growth the sovereign risk premium increases by slightly less than 10 basis points. This is again the sample average impact: it may be smaller or larger for individual countries and time episodes.

These parameter estimates allow us to identify the “good” and “bad” equilibrium debt levels and the multipliers developed in section 3 for the sample. The results are reported in Table 2. The sample average “bad equilibrium” debt ratio equals 106% of GDP, which implies that, on average, a country recording a debt ratio above 106% would see its debt ratio spiral out of control and its economy slump in the absence of offsetting policy action. Conver-

sely, the “good equilibrium” to which the debt ratio tends if it is below the bad equilibrium threshold, turns out to be 75% of GDP. This means that if the debt ratio is in the 75%-106% interval it would, on average, be falling towards 75% (and conversely increasing towards 75% if it is below that level). It should be stressed again, however, that these numbers apply to the average of the sample as a whole and not necessarily to individual countries or sub-periods, and obviously are surrounded by uncertainty margins.

The multiplier analysis in Table 2 shows that, again for the sample as a whole, structural reform yielding an increase in economic growth of 0.1% per annum raises the bad equilibrium (*i.e.* moves out the point *B*) by 9 percentage points. This is a relevant result as it shows that the contribution that structural reforms bring to debt sustainability can be significant. Similarly, a sustained cut in the risk premium on the interest rate by 10 basis points increases the bad equilibrium debt ratio by 11 percentage points. An increase in the primary deficit as a share of GDP by 0.1 percentage point reduces the bad equilibrium debt ratio by 8 percentage points. This means that expansionary fiscal policy renders the economy, on average, more unstable as the sign of the relevant multiplier is negative. The upshot is that a country in bad equilibrium should pursue a restrictive fiscal policy.

Table 2. “Good” and “Bad” equilibrium and multipliers under different assumptions

In %	Good equilibrium	Bad equilibrium	Multipliers with respect to :		
			<i>a</i>	<i>h</i>	<i>p</i>
Baseline	75	106	9	-11	-8
<i>g</i> = 0.5	68	116	8	-10	-3
<i>g</i> = 1	60	129	8	-10	2
<i>g</i> = 1, <i>h</i> = 0.033	60	74	12	-14	-4

Note: Multipliers measure the impact on the bad equilibrium debt ratio of 10 basis points (0.1 percentage point) changes of *a*, *h* or *p*.

Some authors have argued that in very depressed economies the fiscal demand multiplier *g* may be considerably larger than in

normal times, of the order of 1 or even larger (see e.g. DeLong and Summers, 2012). Possible reasons invoked are that monetary policy offsets of fiscal stimulus are unlikely to be undertaken by the central bank and that private saving offsets are small as credit constrained households will spend a large share of current income on consumption.

Table 2 reports a sensitivity analysis for different assumptions with regard to this parameter. One striking finding is that the multipliers of structural reform and financial backstops hardly change. However, the sign of the fiscal policy multiplier switches when the parameter g is 1. This is assuming that all other parameters of the system are unchanged. This is unlikely to be a reasonable assumption for euro area countries under market stress. Unlike other high-debt OECD countries in our sample (such as e.g. Japan) they do not dispose of a national lender of last resort and/or may be seen as vulnerable to exit from the monetary union, thus contributing to a hike in risk premiums beyond the “conventional” fundamentals (see for instance De Grauwe and Ji, 2012).

Against this backdrop we show in the last line of Table 2 the impact of an increase in h , the shock term in the interest rate equation, by half a per cent (50 basis points). The “bad equilibrium” debt ratio now falls well below 100% of GDP. The multiplier of fiscal policy becomes negative again, suggesting that fiscal consolidation now has a favourable effect on the stability of the economy. Perhaps even more strikingly, the multipliers on structural reform and financial backstops become larger.

4. Conclusions

If fiscal sustainability is at risk, fiscal action is inevitably directed towards consolidation. However, benefits of fiscal consolidation are largely medium to long term, as reducing debt levels breed stronger growth. There may also be favorable short-term effects to the extent that credible fiscal consolidation programs may boost market confidence which translates into lower sovereign risk premia. At the same time, in the short term their negative impact on demand may depress growth and hence could jeopardize debt sustainability. In practice, which of the two short-run effects of fiscal consolidation prevails is an empirical issue

largely dependent on: (i) the size of the fiscal demand multiplier, and (ii) the size of the ratio of debt to GDP beyond which the economy enters the “bad equilibrium”, itself a function of the stances of structural and financial policies (which is a possible way of defining fiscal space).

If the initial adverse growth impact of fiscal consolidation is large (the demand multiplier is one or bigger), fiscal consolidation may make it more difficult for a country to escape from the “bad equilibrium”. On the other hand, countries in a monetary union who have suffered a reputational loss may experience very strong adverse confidence effects on sovereign risk premia. In that case fiscal consolidation may be stabilising rather than destabilising and, as well, the stabilising impact of structural reform and financial backstops gets stronger. The corollary is that, for countries that are under market stress and hence with limited fiscal space, there may be no alternative than to consolidate, notwithstanding an adverse impact on growth in the short run. In that case the role of structural reform alongside financial backstops to contain excessive sovereign risk premia becomes all the more important.

References

- Cecchetti S.G., M.S. Mohanty and F. Zampolli, 2012. “The real effects of debt”, *BIS Working Papers*, 352, Bank for International Settlements.
- Checherita C. and P. Rother, 2010. “The impact of high and growing government debt on economic growth; an empirical investigation for the euro area”, *ECB Working Paper Series*, 1237, August.
- De Grauwe P. and Y. Ji, 2012. “Mispricing of sovereign risk and multiple equilibria in the eurozone”, *LICOS Discussion Paper Series*, 304/2012.
- DeLong J. B. and L. H. Summers, 2012. *Fiscal policy in a depressed economy*, (mimeo).
- Duesenberry J. S., 1958. *Business Cycles and Economic Growth*, McGraw-Hill.
- Elmeskov J. and D. Sutherland, 2012. *Post-crisis debt overhang: growth implications across countries*, Paper prepared for the Reserve Bank of India Second International Research Conference 2012: “Monetary Policy, Sovereign Debt and Financial Stability: The New Trilemma” 1-2 February, Mumbai, India.
- Giavazzi F. and M. Pagano, 1990. “Can severe fiscal contractions be expansionary?”, In Blanchard O, Fischer S (eds.) *NBER Macroeconomics Annual 1990*, MIT Press.

- IMF, 2012. *Fiscal Monitor*, April issue, Washington DC.
- Kumar M. S. and J. Woo, 2010. "Public debt and growth", *IMF Working Paper*, WP/10/174, July.
- OECD, 2012. *Economic Policy Reforms: Going for Growth*, 2012 issue, OECD Publishing, Paris.
- Padoan P. C., U. Sila and P. Van den Noord, 2012. "Avoiding debt traps: Financial backstops and structural reforms", *OECD Economics Department Working Paper*, 976.
- Perotti R., 1999. "Fiscal policy when things are going badly", *Quarterly Journal of Economics*, 114.
- Reinhart C. M. and K. S. Rogoff, 2010. "Growth in a time of debt", *American Economic Review*, 100.

THE EUROPEAN MONETARY FUND¹

A SYSTEMIC PROBLEM NEEDS A SYSTEMIC SOLUTION

Stephan Schulmeister

Austrian Institute of Economic Research

The deepening of the debt crisis in the euro area is due to three systemic causes which national governments are not able to overcome on their own. First, being members of a monetary union euro states cannot dampen or even reverse the rise in public debt through devaluations. At the same time, they have no access to funds from a national central bank. Second, under “finance-capitalistic” framework conditions, speculators systematically exploit and strengthen the fiscal troubles in the weakest countries by driving up CDS premia and interest rates to unsustainable levels. This development might transform a liquidity crisis into a solvency crisis. Third, these speculative activities widen the interest rate differentials within the euro area drastically thereby endangering the economic and political cohesion of the EMU and even of the EU.

A systemic solution which restores the primacy of politics over speculation needs to stabilize interest rates for all euro countries. It is proposed to transform the European Stability Mechanism (ESM) into an agency for financing euro states, the European Monetary Fund (EMF). It would provide governments with financial means by selling Eurobonds. These bonds are guaranteed by all euro countries to an unlimited extent. The EMF would stabilize Eurobond interest rates at a level slightly below the level of medium-term economic growth (in nominal terms). The Eurobonds are held by investors with the EMF, they are not tradable but can be liquidated at any time. The EMF helps to restore sound public finances in euro countries in close cooperation with the ECB, the European Commission and national governments. To this end, the EMF provides funds for the euro states according to clear criteria (“conditionality”) which are not exclusively restrictive.

Keywords: Euro crisis, Monetary union, Dynamic budget constraint, Finance capitalism.

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For the third time since 1990 an economic crisis which originated in the US (1990, 2000, 2007) affects the European economies much stronger than the US. This time, the crisis even endangers the economic and political cohesion of the European (Monetary) Union. These troubles are closely linked to the loss of orientation on behalf of the economic and political elites. On the one hand, a policy based on the neoliberal paradigm had paved the way for the financial crisis, on the other hand, the (austerity) measures to overcome the crisis are derived from the same paradigm.

This contradiction is much more pronounced in the EU than the US. In the EU, e.g., fiscal and monetary policy is bound by rules as prescribed by monetarist theory (in contrast to the US). At the same time, however, actors in financial markets can expand their “finance alchemy” activities without being restricted by rules (the US at least passed the Frank-Dodd act).

The spill-over of a fiscal crisis in a small economy like Greece to the euro area as a whole is the most telling example of this contradiction. The radical austerity policy in Greece (called for by the Maastricht rules) has caused the economy to shrink for 4 consecutive years. Speculators were able to exploit this development by driving up CDS premia and interest rates which in turn made fiscal consolidation impossible. As a consequence, the EU had to set up the rescue fund (European Financial Stability Facility, EFSF). The rules of the “financial games”, however, have remained unchanged. Thus, the interest rate epidemic reached more and more countries.

European Policy reacts to the deepening of the crisis by intensifying the symptom therapies, *i.e.*, strengthening the rescue fund and adopting more austerity measures. Since government bonds of Spain and Italy have already come under speculative attacks, causing interest rates to rise, market participants consider these measures as insufficient. The ECB tries to mitigate the situation by buying bonds of euro countries under attack and by injecting liquidity into the banking system. In order to accommodate “the markets”, governments set up new savings packages in Spain, Italy, France and Greece.

All these symptom cures can at best provide short-term relief. To overcome the crisis, market actors desperately hope for new concepts. Having only to offer “more of the same”, politicians in fact make the situation worse. As a consequence, the euro area has become the only region in the global economy which slides in 2012 in a recession again. This might cause stock prices to enter into a new bear market. The reinforcing interaction between the widening of interest differentials in the euro area, the intensifying of austerity measures and a global devaluation of stock wealth (eventually also of commodity wealth) could cause the European Monetary Union to collapse and the world economy to slide into a depression.

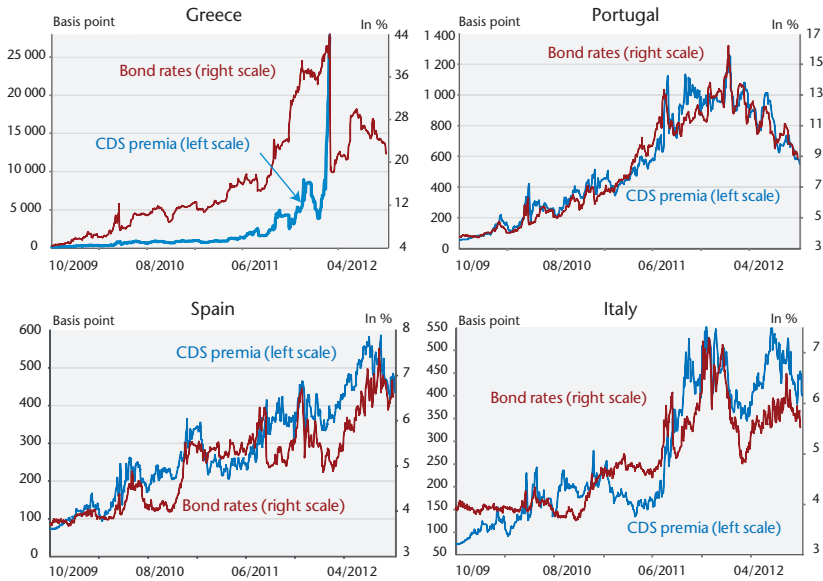
These dangers call on politicians to develop a comprehensive concept which restores the primacy of politics over “finance alchemy”, which overcomes the crisis in a sustainable manner and which will pave the way towards a new prosperity phase. Such a “New Deal for Europe” needs to be based on a diagnosis of the systemic causes of the great crisis.

One core component of a “New Deal for Europe” should be the “European Monetary Fund” (EMF). It manages public finances of euro countries through the emission of Eurobonds. In contrast to the concepts proposed so far, Eurobonds are sold by the EMF at fixed interest rates and they are not tradable (like credits taken up by the IMF). Instead, Eurobonds are held by investors with the EMF. In this respect, Eurobonds are similar to German “Schatzbriefe”, however, they are fully liquid (investors can always exchange them for cash at the fixed price).²

Such a proposal might seem too radical from the perspective of the (still) prevailing economic paradigm. However, such a proposal can be derived from a systemically oriented analysis of the crisis and of the process of its deepening over the recent past.

2. “Schatzbriefe” are time deposits at interest rates which are fixed over the entire maturity of 6 or 7 years. These instruments are held with the “Finanzagentur des Bundes” (agency for the management of government finances in Germany) by private households or enterprises. Since the financing costs for the German government have declined so strongly in recent times, it was decided that this instrument would only be available until December 31, 2012.

Figure 1. CDS premia and interest rates on government bonds



Source: Thomson Reuters.

1. A synopsis of the present conundrum

1.1. Destabilizing speculation against sovereign states

Since November 2009 interest rates on government bonds have risen dramatically in an increasing number of euro countries. This development is brought about by the interaction between the changes in the perception of risk, the downgrading by rating agencies and speculation in the CDS and bond markets. On the one hand, the interest rate rise reflects higher risk premia, on the other hand, speculation increases default risks by driving up interest rates (if the perception of risk had been the main reason for the interest rate boom, significant interest rate differentials between euro countries should have existed from the very beginning of the EMU, and they should have widened already years before fall 2009).

Also the stepwise spreading of the “interest rate epidemic” from Greece to Ireland, Portugal and then to Spain, Italy and France suggests that speculation is the key force, driving up in tandem CDS premia and bond rates (Figures 1 and 7). Those banks and hedge funds which are specialized in “making money out of

money” took advantage of high public indebtedness, a fragile banking system and/or the lack of competitiveness. CDS speculation against sovereign states has become the most profitable game over the past two years.

Speculation based on rational expectations would drive prices towards their fundamental equilibrium values. As in other asset markets, this was not the case in the CDS and bond markets: Within few months, interest rates rose to levels 10 percentage points above that level of economic growth (in nominal terms) which can reasonably be expected for countries like Greece or Portugal over the medium run.³ Such interest rate levels are unsustainable, they do not serve as an enforcement of fiscal discipline but rather as a macroeconomic “death sentence”. Even an interest rate level of “only” 6% for Spanish and Italian bonds is not sustainable since the economies of both countries will grow at a much smaller rate

To put it differently: The stepwise increase in interest rates in several euro countries has produced additional (default) risks rather than just compensating for already existing risk.

1.2. Role of the interest-growth-differential

The reason for that is simple: If the rate of interest exceeds the rate of growth (in nominal terms), any debtor (sector) has to run a primary surplus in order to stabilize the debt-GDP-ratio (“dynamic budget constraint”). To achieve such a surplus, the non-financial business sector reduces real investment in favour of financial accumulation. At the same time, also financial businesses and households run primary surpluses (e.g., private households—a creditor sector—save usually more than their net interest income).⁴

3. Rating agencies then strengthen the rise in interest rates as their downgrading mostly follows interest rate movements rather than triggering them (Tichy, 2011).

4. Figure 2 shows the inverse relationship between the financial balances of the non-financial business sector and the government sector for Germany and the euro area without Germany (the higher is the willingness of the business sector to take up credits the easier it is for the government to reduce its deficit). In the case of Germany, the fluctuations of the public budget are to a large extent also counter-balanced by the current account. The high and, until 2007, rising deficit of the rest of the world (vis-à-vis Germany) facilitated fiscal consolidation in Germany (Figure 2). The opposite was the case in most other euro countries due to their current account deficit rising significantly between 2003 and 2008. Figure 2 also shows that the non-financial business in Germany has been running surpluses already since 2004, its primary surplus is even higher (as a debtor sector, net interest payments of non-financial business are positive).

Under this condition, the government can achieve a primary surplus only if the rest of the world runs/accepts a current account deficit (the primary balances of all sectors of any country sum up to zero). Since the current account (minus net interest payments) of the euro area as a whole is roughly in balance (Figure 2), only governments of countries with (large) current account surpluses (like Germany) have a good chance to achieve primary surpluses. The other euro countries do have such a possibility only under very restrictive conditions (e.g., if households save less than their interest income). Conclusion: As long as the rate of interest exceeds the rate of growth significantly, more government saving will rather reduce economic activity than the public debt.

The relevance of the interest-growth-differential for the sustainability of private and public debt accumulation is confirmed by the empirical evidence. Over the 1950s and 1960s, this differential was significantly negative; at the same time the public debt declined almost continuously relative to GDP (in spite of the fact that the welfare state was strongly built-up at that time). Since the early 1980s, the interest-growth-differential has been almost continuously positive in European countries, and the debt-GDP-ratio doubled in spite of a more restrictive fiscal policy (Figure 5). Also the development in the euro area since 2000 clearly demonstrates the relevance of the interest-growth-differential for the dynamics of the public debt (compare the development in Germany and Spain in Figure 6).

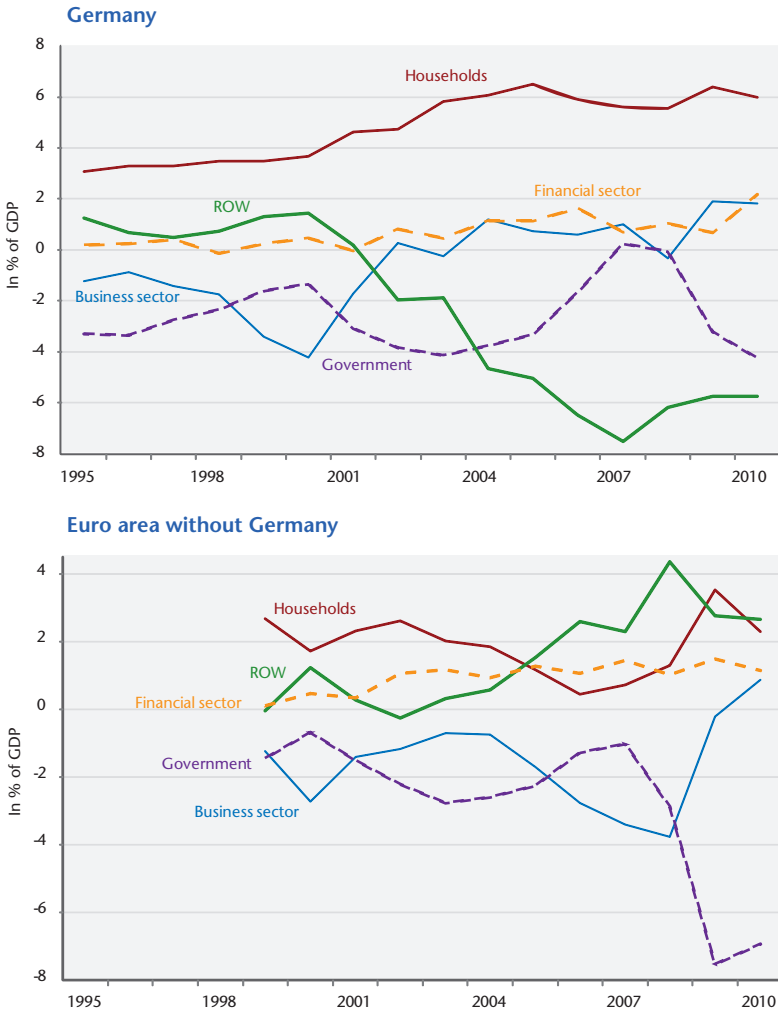
1.3. Real capitalism and finance capitalism

The switch in the relation between the rate of interest and the rate of growth was just one important component of the transformation process which fundamentally changed the incentive conditions of market economies between the early 1970s and the early 1980s.

During the “golden age of capitalism”, e.g., over the 1950s and 1960s, stable exchange rates and commodity prices together with a negative interest-growth-differential and almost “dormant” stock markets channelled the search for profit to the real sphere of the economy (“real capitalism”). The business sector used household savings to finance the continuous expansion of real investment. Given strong and stable economic growth at full employment, governments could easily achieve a balanced budget over the medium run (it was the business sector which ran permanent defi-

cits). Given the negative interest-growth-differential, the public debt declined continuously relative to GDP (Figure 5). Even the extremely high debt-GDP-ratio of the US, the UK and France after WWII (in part exceeding 200% of GDP) could easily be reduced under “real-capitalistic” conditions.

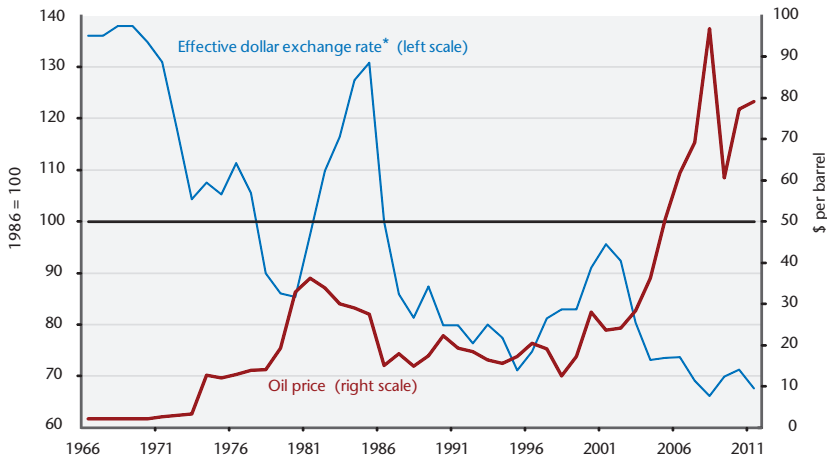
Figure 2. Financial balances in Germany and the euro area



Source: Eurostat.

Over the 1970s, the instability of exchange rates, in particular of the dollar rates, and the related instability of commodity prices dampened business investment (the two oil price shocks were the OPEC reaction to the two preceding dollar depreciations—Figure 3). This effect was strengthened by the switch in the interest-growth-differential in the early 1980s (due to an extremely restrictive monetary policy in order to fight inflation—Figure 5). At the same time, financial innovations, in particular derivatives of all kinds, facilitated profit-seeking in financial markets. The sequence of “bulls” and “bears” in stock markets (their “manic-depressive fluctuations”) is the outcome of (increasingly) short-term speculation under the framework conditions of “finance capitalism” (Figures 3 and 4—see also Schulmeister, 2010a).

Figure 3. Dollar exchange rate and oil price fluctuations



* Vis-a-vis DM, Franc, Pound, Yen.
Sources: OECD, IMF.

All these developments together caused the business sector to shift investment activities from the real sphere to the financial sphere of the economy. This shift caused four long-term effects which reinforced each other (Figures 2, 4 and 5):

— First, non-financial business in all industrial countries reduced its financial deficits, in some countries the business sector became even a surplus sector (e.g., in Germany, the UK, the Netherlands, USA—the primary surpluses of the business sector became even higher).

— Second, economic growth declined and unemployment rose in spite of the significant expansion of atypical employment of many kinds.

— Third, governments suffered from chronic deficits (the households' surpluses were no longer used up by the business sector).

— Fourth, given the positive interest-growth-differential, the public debt rose faster than GDP, in spite of strong efforts to limit this process (in particular in the EU since the early 1990s).

Hence, the empirical evidence suggests that the development of public finances is embedded into the overall economic performance (*i.e.*, endogenous). As a consequence, governments need to take into account the repercussions of their fiscal policy on the private sector. Cutting expenditures and/or raising taxes are neither a necessary nor sufficient condition for consolidation. If private demand is weak, an austerity policy will even worsen the fiscal stance. This “thrift paradox” had become apparent during the depression of the 1930s, in particular due to the savings policy adopted in Germany by chancellor Brüning in 1931.

1.4. Finance capitalism and neoliberalism

From a systemic point of view, re-directing the search for profit from the financial to the real sphere represents the most efficient and sustainable consolidation policy. However, such a strategy is difficult to implement for two reasons. First, one has to develop a coherent and comprehensive set of measures which would dampen “finance alchemy” and would reward entrepreneurial activities. Second (and more difficult), one has to emancipate oneself from the economic paradigm which has been prevailing over the past decades. This is so because the economic policy derived from this paradigm has shifted the search for profit progressively from the real sphere of the economy to the financial sphere.

The most important steps in the transition from a “real capitalistic” to a “finance capitalistic” incentive structure were the giving-up of a system of stable exchange rates (instead of repairing the flaws of the Bretton Woods rules), the adoption of a monetarist policy of extremely high interest rates (causing a switch in the interest-growth-differential), the progressive deregulation of financial

markets, the boom of financial innovations (derivatives of all kinds), and the privatization of social security, in particular of the pension system.

All these steps were legitimated by the neoliberal paradigm. At the same time, the new incentive structure caused the business sector to reduce real investment in favour of financial investment. As a consequence, economic growth declined relative to the “real capitalistic” period, unemployment and the public debt kept rising (Figure 5). The prevailing diagnosis and therapy of these problems are again derived from the neoliberal paradigm. In the case of the public debt the diagnosis is: Governments have control over their financial balance and they just live beyond their means. The therapy is: Cut public spending.

1.5. Development of the current crisis

Under a “finance capitalistic” incentive structure, “bulls” and “bears” of asset prices become increasingly pronounced and exert an increasing influence on the real economy. The pre-history of the current crisis is an excellent example:

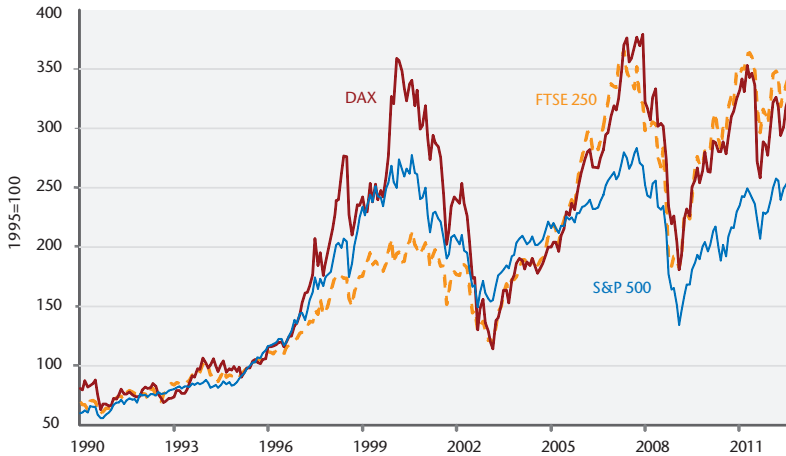
— The boom of stock prices in the 1990s and again between 2003 and 2007 as well as the boom of house prices between 1998 and 2005 stimulated the US economy through positive wealth effects. At the same time, however, the “twin booms” laid the ground for the subsequent “twin busts”.

— After the outbreak of the sub-prime mortgage crisis the third “bull market”, *i.e.*, the commodity price boom, accelerated, mainly driven by speculation of financial investors in commodity derivatives markets.

— Since mid 2008 the devaluation process of stock wealth, housing wealth and commodity wealth was globally “synchronized”. This process set free several contraction forces, not only through wealth effects and balance sheet compression but also *via* import reductions on behalf of commodity producers.

The fall of stock prices and commodity prices has been strengthened by trend-following technical trading *via* taking huge short positions in the respective derivatives markets. Due to the extraordinary strength of these “bear markets”, hedge funds using these models reported higher returns than ever before.

Figure 4. Stock markets in Germany, United Kingdom and the USA



Source: Yahoo Finance (<http://de.finance.yahoo.com/m8>).

The systemic causes of the crisis, e.g., the coincidence of three “bear markets”, were not recognized due to the predominance of the “free-market-paradigm”. Instead, the crisis was attributed to the misbehaviour of certain (groups of) agents, be they greedy bankers and hedge fund managers, irresponsible central bankers or governments. Hence, the “finance-capitalistic” rules of the game remained basically unchanged.

When the global economy approached the brink of collapse in fall 2008, economists and politicians activated their long-term memory. They reacted to the economic contraction as policy should have reacted in the beginning of the Great Depression: The banking sector was saved and stimulus programs were adopted. However, it was not taken into account that (pseudo-Keynesian) deficit spending policies cannot do their job under “finance-capitalistic” framework conditions. Banks took advantage of low interest rates to borrow from central banks and use the funds for speculation (also against sovereign states) instead of financing the real economy. In a similar way, non-financial corporations would not use additional funds due to tax reductions for real investment but could again engage in the game “let your money work”. And stock prices as well as commodities prices started to boom again....

As a consequence, the cost-benefit-ratio of the stimulus measures turned out to be very disappointing. They prevented the crisis of 2008 from turning into a depression but they could not pave the way towards a self-sustaining recovery. At the same time, this “pseudo-Keynesian” policy increased the public debt significantly providing the evidence for a re-interpretation of the crisis as a genuine “public-debt-crisis”. The unsustainably high debt levels in some countries like Greece or Portugal (where public indebtedness had already been too high when hit by the crisis) seemed to confirm this perception.

The different extent of the indebtedness of euro states provided the opportunity for financial investors to speculate on the default risks of sovereign debtors. Understandably, Greece became the first target: Its indebtedness got as high as that of Italy and Belgium, and at the same time the Greek government had hidden the truth. Between October 2009 and May 2010, CDS premia and interest rates on Greek bonds soared (Figure 1) forcing the EU to set up EFSF. However, this measure could not prevent the interest epidemic to spill over to Ireland, Portugal, Spain and Italy (step by step). France was not really hurt. In order to please the markets, austerity measures were strengthened but it did not help: CDS premia and interest rates continued to rise, economic growth started to decline, and this provided the justification for further interest rate increases.

1.6. Thrift paradox and the stock market decline

Even though the symptom therapy of austerity is much simpler to communicate than the systemic approach, it has two shortcomings. First, it does not work under the conditions which prevail in reality. Second, market participants lose confidence in a political leadership which has no other solution to offer but the prescription of “more of the same”.

The fast deepening of the “Greek crisis” is a clear example: As result of a too radical austerity policy, the economy shrinks so strongly that the fiscal consolidation falls behind the targets (the “free-market-paradigm” does not know about the “thrift paradox”). As consequence, the “troika authorities” call for more austerity measures. This reaction in turn intensifies tensions and fears in financial markets as agents know: More of the same won't

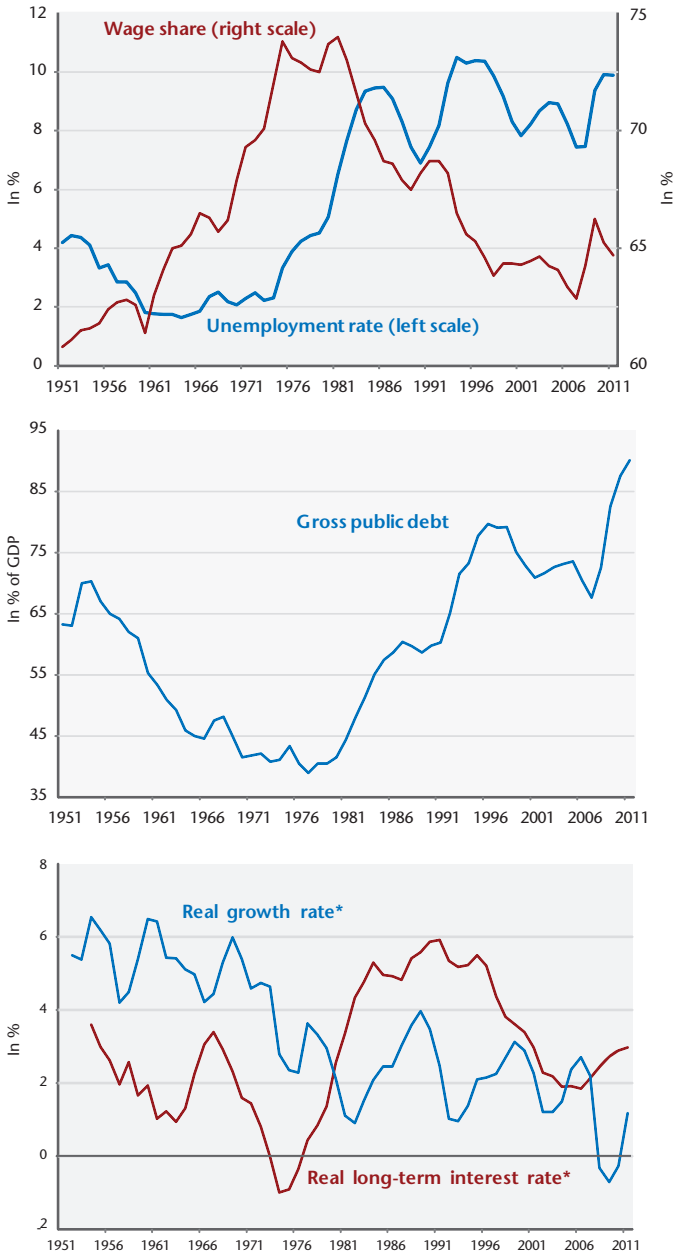
work. At the same time, also the Greek people who initially accepted the austerity measures, lost faith in the efficacy of this policy (not least because of the tremendous rise in unemployment). The elections of May 6, 2012 sent a clear signal to EU leaders: We are willing to pay back our debts, we want to remain in the EMU but we can't stand the austerity measures any longer!

If the EU leaders react by turning off the transfer of EFSF funds and thereby forcing Greece into bankruptcy they will trigger a chain reaction leading probably to the collapse of the EMU. Germany will regain its monetary hegemony, however, at very high costs for all.

The developments in global stock markets seem to confirm the fear of investors that more austerity measures will deepen the crisis. In July 2011, quarrels over the permissible debt ceiling in the US caused stock prices to retreat. This process was accelerated when the compromise between Democrats and Republicans was announced on August 1: The US government should cut expenditure by 1.5% of GDP over a period of 10 years, tax increases were excluded. Within a week, stock prices fell by 13% (S&P 500) and 19% (DAX). After a short recovery, share prices fell again after Merkel and Sarkozy announced on August 16, that every euro country should implement the so-called "debt brake". The third downward run was triggered on August 31 when it became clear that Greece would miss the budget targets and would intensify the savings policy.

In May 2012, the victory of Francois Hollande in the presidential elections in France, the results of the Greek parliamentary elections which were seen as rejection of further austerity measures by the Greek people, and the insistence of Merkel on continuing such a policy were the most important reasons why stock prices declined by almost 10% over just two weeks. These developments suggest the following. The distrust in the capability of political leaders to overcome the debt crisis and the disappointment that they only offered the old recipes, triggered waves of sell-offs. The attempt of individual stock investors to save the value of their wealth caused in the aggregate a dramatic devaluation of stock wealth (Figure 4).

Figure 5. Interest rate, growth rate and economic performance – Western Europe



* 3-years moving average, GDP deflators are used for both series.
Source: OECD.

This paradoxical development reflects the loss of orientation on behalf of many owners and managers of financial wealth. They no longer strive for high returns, they would even accept no returns at all if only their capital as such would be safe. Hence, they sell bonds of “problem states” and buy US or German bonds, Swiss assets or gold. Owners of financial wealth desperately hope for clear signals of political leadership, they would welcome Euro-bonds if only the institutional setting were stable and based on a political consensus.

Unfortunately, the political leaders have lost orientation themselves. Instead of conceptualizing new approaches to tackle the most oppressing problems like financial instability, public debt and unemployment in a comprehensive manner (all these problems are interlinked), politicians aim at pleasing “the markets” by adopting the old recipes. The fiscal compact signed by 25 EU head-of-states on March 2, 2012, is the most instructive example.

In more general terms: The sub-system “politics” and the sub-system “financial markets” have both lost their orientation and seek “navigation advice” from the other system. Under this condition the overall system can easily slide into a downward spiral.

1.6.1. Position of the current crisis in the “long cycle”

In order to answer the question “where do we stand?” it is necessary to locate the position of the current crisis in the context of the latest “long cycle”.

The trough phase of this cycle was the Great Depression of the 1930s and its consequences, *i.e.*, the transition period from the “finance-capitalistic” conditions of the 1920s to the “real-capitalistic” conditions of the 1950s.

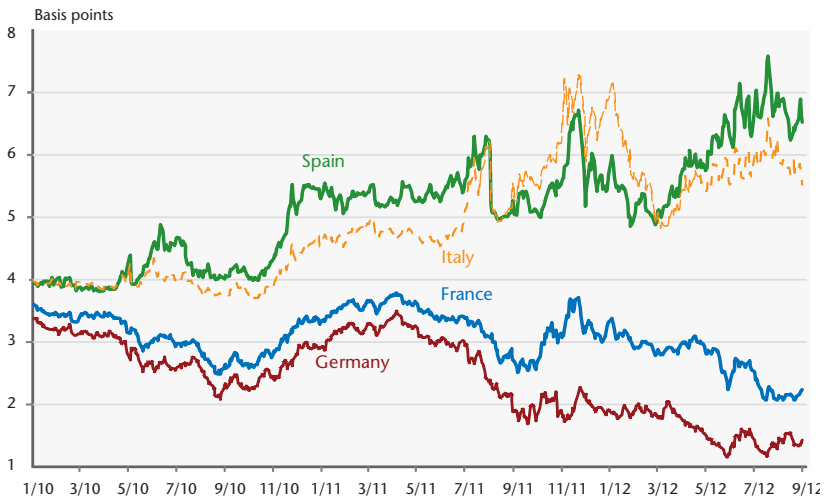
The learning process enforced by this crisis resulted in a new macro-economic theory (Keynesianism), an active economic policy focusing on stable growth and full employment, stable exchange rates (“Bretton Woods”), de-regulation of goods markets (e.g. through the GATT rounds), but strict regulation of financial markets. The essential characteristic of the system (“real capitalism”) was the following: The driving force of capitalist development, striving for profits, was systematically directed towards activities in the “real economy”. Under these conditions

the “golden age of capitalism” was realized over the 1950s and 1960s.

The “monetarist counterrevolution” of the late 1960s got support from “big business” because permanent full employment had strengthened trade unions as well as the welfare state (too much). The stepwise realization of the monetarist/neoliberal demand for de-regulation of financial markets (pushed forward by Friedman and Hayek) changed the “rules of the game” fundamentally. Under the condition of widely fluctuating exchange rates and commodity prices, and of a high interest-growth-differential, financial and non-financial business shifted activities from the “real economy” to financial investment and short-term speculation (“finance capitalism”). This shift was supported by the tremendous amount of financial innovations (*i.e.*, derivatives of all kinds) which have been realized since the 1980s.

From this perspective, the current crisis which has been deepening since 2007 marks the early phase of a transformation process from “finance-capitalistic” to “real-capitalistic” framework conditions—in other words: The beginning of the trough phase in the long cycle.

Figure 6. Interest rates on government bonds



Source: Thomson Reuters.

2. A “more-of-the-same” scenario

If the political leaders in the EU are unable to propose a fundamentally new approach to overcome the debt crisis, and rely on “more of the same” instead, the following development is plausible:

— The recent (mini)boom in stock prices—triggered by the announcement of the “outright monetary transactions” program of the ECB (OMT) in September 2012 - turns into a genuine bear market, devaluating stock wealth by up to 70% relative to their peaks in spring 2011 (as already twice since 2000—Figure 4).

— Entrepreneurs and households reduce their investments and consumption, the latter in particular in reaction to the devaluation of their pension fund wealth.

— Prices of government bonds of euro countries like Spain, Italy, Belgium and France start to fall again, interest rates rise (Figure 6). At the same time interest rates on government bonds of Germany decline even further.

— The ECB cannot prevent the widening of interest differentials in the euro area as Spain and Italy refuse to accept further austerity measures demanded by the European Stability Mechanism (ESM), the ECB is trapped by its promise to purchase only bonds of those countries which subordinate themselves under the ESM directives). In addition, internal opposition led by the president of the Bundesbank hinders the ECB to strengthen confidence through a clear leadership.

— The economic and political split within the euro area widens, thereby weakening not only the euro and the EMU, but also the political coherence of the EU. This development could endanger even the German-French axis if interest rates rise in France during the coming recession but stay much lower in Germany.

— Rating agencies continue to downgrade the most indebted euro states as well as those banks which hold a large part of government bonds of the respective countries. The whole banking system in the EU comes close to a collapse.

— The conflicts within the ECB as well as between EU governments intensify over how to overcome the euro crisis. As a

consequence, any potentially efficient measures against the aggravation of the economic situation are politically blocked.

— The US from which the great crisis originated, will enjoy the lowest interest rates. There are three reasons for this paradox. First, investors are confident that the Fed will buy US government bonds to an unlimited extent (if necessary).⁵ Second, the weakness of the EMU strengthens the authority of the Fed. Third, the dollar remains the unchallenged key currency in the global economy.

— The “safe-haven-assets” like gold cannot absorb the flight of finance capital out of stocks and bonds. Demand for cash rises which is hoarded at banks. At the same time, the asset side of the banks’ balance sheet shrinks due to the devaluation of stocks and bonds, the banks’ equity is wiped out.

— Commodity prices continue to fall. The related decline in (import) demand on behalf of commodity producers dampens (international) trade and production. As in 2008/2009, this effect is stronger than the (positive) real-income-effect of falling prices.

— Governments lack financial means to fight the symptoms of the crisis by a primitive deficit-spending-strategy as in 2009/2010.

— The EMU breaks down, Germany regains the monetary hegemony in Europe—be it in the form of a “Northern euro” or the deutschemark—which it had sacrificed in the early 1990s to the integration of the former GDR. The economic and political tensions rise dramatically within the EU.

These developments will probably lead into a depression deepened by the simultaneous devaluation of different types of wealth (stocks, government bonds, commodities, and eventually houses once again) as between 2007/2009 and 1929/1933.

3. Challenges of the current situation

The transition from “finance-capitalistic” to “real-capitalistic” framework conditions, triggered by a stock market crash (e.g., 1873, 1929, 2007ff), usually takes many “depressive” years (e.g., 1873 to

5. De Grauwe (2011b) documents in a recent paper that the Fed and the Bank of England have served as “lender of last resort” to their governments to a much larger extent than the ECB. This behaviour has obviously strengthened the credibility of both central banks and also the attractiveness of US and British bonds.

~1890, 1929 to ~1948) as the old “rules of the game” don’t work any longer but new rules have not yet been designed and implemented.

The dramatic events of recent months show: The attempts to restore the “finance-capitalistic” game by “pseudo-Keynesian” means have failed. Preventing a further deepening of the crisis, developing a systemic concept for a sustainable recovery, and putting such a concept into practice, is almost a “mission impossible”.

However, a similar challenge was met after WW II (and in part already earlier through Roosevelt’s New Deal): By learning the lessons from the Great Depression, economists and politicians were able to design new framework/incentive conditions which formed the basis for the “golden age of capitalism” in the 1950s and 1960s. Why shouldn’t we be able to learn the lessons before a depression takes place?

Such a concept for new “rules of the game” or for a “New Deal for Europe” has to deal with the following issues:

— The fears of people that their financial wealth, in particular their pension capital, will be devalued a third time since 2000, must be contained (stock indices still stay roughly 10% below their 2000 peaks in spite of two bull markets).

— Confidence must be built up that political leaders will be able to overcome the debt crisis and the euro crisis in a stepwise process.

— The incentive structure has to be changed so as to favour entrepreneurial activities and to dampen all kinds of “self-referential” accumulation of financial wealth, in particular short-term speculation unrelated to market fundamentals (“finance alchemy”).

— The cohesion of the EU must be strengthened, at the same time no country should be put at a disadvantage through a new crisis strategy (otherwise the resistance against such a strategy would be too strong within member states).

— All that has to be achieved rather quickly and should not need large amounts of money.

The most urgent challenge consists in preventing the downward spiral in many euro countries from spilling over to the EU as a whole due to the interaction between widening interest

differentials and stronger austerity measures. Bringing this process to a halt requires in the first place a political consensus on a pragmatic concept to stabilize interest rates in all euro countries at a sustainable level. To this end, the capability of speculators to drive up interest rates on government bonds of euro countries must be restricted.

This is necessary also for political reasons. These activities play euro countries off against each other and, hence, undermine the economic and political cohesion of the European (Monetary) Union: The more interest rates rise in the “problem countries”, the lower they get in the “good countries” in particular in Germany. Instead of correctly valuating risk, bond and CDS speculation produces additional risk, in particular with respect to the EMU as a whole.

In a similar manner, short-term speculation causes exchange rates and commodity prices, in particular crude oil and food prices, to widely overshoot their fundamental equilibrium values. As part of new framework conditions also these prices need to be stabilized by economic policy in order to foster the real economy at the expense of “finance alchemy”.

It is no coincidence that the two prices which intermediate between the real sphere and the financial sphere of the economy, *i.e.*, the exchange rate (in space) and the interest rate (in time), were stabilized by economic policy in those periods/countries when/where the economic performance was particularly successful. These conditions prevailed over the 1950s and 1960s and also in present times in successful “real-capitalistic” economies like China.

The theoretical benchmark for stabilizing interest rates should be the (nominal) rate of economic growth to be expected over the medium run, for exchange rates the benchmark should be purchasing power parity of internationally traded goods and services (tradables). As an intermediate step regarding currency markets, the central banks of the US, the euro area, Japan and China (eventually also the UK and Switzerland) should commit themselves to stabilize their exchange rates within tight bands (e.g., +/-2%), taking the averages over the recent past as means (e.g., the average exchange rates since the creation of the euro).⁶

As regards crude oil prices, one has to take into account two peculiarities. First, crude oil is an exhaustible resource the price of which needs to increase in equilibrium with the rate of interest stronger than the general price level (Hotelling rule). Second, the use of crude oil is the most important cause of climate change. To compensate for these externalities, economic theory suggests that oil prices should become permanently more expensive than all other goods. In reality, however, the wide fluctuations of crude oil prices bring about a waste of this resource, a deterioration of the environment and hamper investment in energy saving technologies.

Even though one cannot precisely quantify by which margin the price of crude oil should rise faster than the general price level, it is clear that any steady and reliable increase of oil prices above the general inflation rate would do a better job than the market which sometimes produces price changes of 50% and more within a few months.

To give a concrete example: OECD studies conclude that the price of greenhouse gas emissions should rise to 370 € per ton CO_{2-eq} if the increase in climate temperature is to be restricted to 2° C (with such a price increase one would be on the safe side of the “low carbon scenario”—EC, 2011a). At a world market price of oil price of 100\$ these additional cost would translate into an oil price for users of 248\$.

If this target is to be reached by 2020, the oil price needs to rise by roughly 12% per year. Such a stable and reliable price path can neither be brought about through emissions trading schemes nor through carbon taxes. If, however, the EU would set such an obligatory price path for all users of crude oil (primarily refiners which

6. It might take some time to find a compromise on “fair” exchange rate values, in particular, as the estimates of tradables PPP would imply a significant revaluation of the US dollar and a corresponding devaluation of the euro (as long as one does not also take into account the different degree of external indebtedness). In any case, exchange rate stability as such would strongly facilitate entrepreneurial activities and restrict speculation. This is particularly clear if one recapitulates how strongly currency fluctuations have hampered the real economy since the early 1970s. E.g., the overshooting of the dollar exchange rate and of the oil price are inversely related to each other, at least during periods of marked “bull markets” and “bear markets” (since crude oil is priced in dollars, depreciation of the key currency devalues real oil export earnings - this valuation effect in turn strengthens the incentive for oil-producing countries to increase the price of their most important export good as 1973 and 1979).

would then increase their output prices accordingly) by introducing a flexible tax which amounts to the difference between the world market price and the target price according to the long-term price path, a wave of investments in energy saving would be triggered, from isolation of buildings to new forms of mobility.

The reason for that is simple: These investments become much more profitable than today (in terms of avoiding opportunity costs) and the rates of return on these investments become calculable. The latter is extremely important as the amortization periods of energy saving investments are particularly long.

In the present situation, the most urgent challenge is the stabilization of interest rates on government bonds at a level below the rate of economic growth as this is a prerequisite for fiscal consolidation over the medium and long run, and, hence, for restoring confidence in the political and financial system in the EU. The markets have proved unable to provide sustainable long-term interest rate levels. Therefore, this task has to be taken over by the European Monetary Fund in a similar way as the ECB controls the level of the short-term interest rate.

4. Features of the European Monetary Fund

The European Monetary Fund (EMF) coordinates and manages public finances of euro member countries in such a way that the crisis in Europe can be overcome in a sustainable manner. This crisis is not just an economic crisis but also a social and political crisis. It calls for the implementation of new framework conditions which would reward entrepreneurial activities on all levels (macroeconomic policy, tax policy, regulatory policy, etc.) more than finance alchemy. The EMF is one core component of such a “New Deal for Europe”.

4.1. Scope and principles

A systemic problem needs a systemic solution which restores the primacy of politics over speculation. It is proposed to transform the European Financial Stability Facility (EFSF) into the European Monetary Fund (EMF). The scope of the EMF is fourfold:

— The EMF provides euro governments with financial means by selling Eurobonds in the capital markets. These bonds are guaranteed by all euro countries to an unlimited extent. In addition, the EMF has full backing by the ECB (if necessary, the ECB buys Eurobonds from the EMF).

— The EMF stabilizes Eurobond interest rates at a level slightly below the level of medium-term economic growth (in nominal terms). The Eurobonds are held by investors with the EMF, they are not tradable but can be liquidated at any time. In these two respects the present proposal differs most from Eurobond concepts already put forward.

— The EMF helps to restore sound public finances in euro countries according to a systemic approach and, hence, in close cooperation with the ECB, the European Commission and national governments. To this end, the EMF provides funds for the euro states according to clear criteria (“conditionality”) which are not exclusively restrictive.

— The EMF overcomes the split between euro countries caused by widening interest rate differentials and strengthens thereby the cohesion and credibility of the EMU and of the EU as a whole.

The fundament for achieving these goals has already been built by European leaders: The European Financial Stability Facility (EFSF) set up in May 2010 could be transformed into the European Monetary Fund. Simply enlarging the “fire power” of the EFSF or implementing the European Stability Mechanism (ESM) already in 2012 won’t be sufficient by any means.

4.2. Motives

With the deepening of the fiscal crisis in some euro countries several proposals have been made to introduce new instruments for financing (in part) euro governments (De Grauwe and Moesen, 2009; Gros and Micossi, 2009; Delpla and von Weizsäcker, 2010; Gros and Mayer, 2010; Palley, 2011). These Eurobonds should be sold up to a certain limit (e.g., “Maastricht debt limit” of 60% of GDP) either by the single countries or by a new institution, backed by the guarantee of all 17 euro states (Varoufakis and Holland, 2011, propose to transfer part of the public debt to the ECB).

The main argument in favour of Eurobonds is as follows. In a monetary union, member states do no longer have the possibility to devalue their currency in case of a (asymmetric) shock and the governments do no longer have access to financial means provided by “their” central bank. “As a result, a loss in confidence of investors can in a self-fulfilling way drive the country into default” (De Grauwe, 2011a, p. 32).

Pisani-Ferry (2012) argues that “an impossible trinity of no-coresponsibility over public debt, strict no-monetary financing and bank-sovereign interdependence is at the core of Euro area vulnerability” (p. 14). In other words, the three conditions, namely, the “no bail-out clause”, the prohibition of financing euro governments through the ECB and the fact that public finance relies to a large extent on the banking system which in turn depends on the governments’ fiscal stance (*via* the market valuation of their bonds) are inconsistent and undermine the stability of the euro, in particular in the case of shocks.

Pisani-Ferry (2012) discusses the “corresponding three options of reform—a broader mandate for the ECB, the building of a banking federation, and fiscal union with common bonds...” (p. 14). These options are by no means mutually exclusive, yet, all of them are difficult to put in practice for legal, political and economic reasons.

This paper argues that the fundamental contradiction does not prevail between the stability of a monetary union and the “trinity conditions” but between the former and speculative activities which drive interest rates up to unsustainable levels in some countries and to extremely low levels in others, thereby strengthening the economic divergence in the union as a whole. This becomes clear if one assumes that policy succeeds in stabilizing interest rates on government bonds at a level below the rate of economic growth. In this case, the problems related to the “trinity conditions” would become much less oppressing and easier to handle.

The recent massive transfers of deposits from Greek banks to banks from other euro countries (almost exclusively to German banks), and the take-off of similar developments in Portugal, Spain and Italy demonstrate the incompatibility between the stability of

a monetary union comprising economies at different stages of development/specialization on the one hand, and completely unrestricted financial markets on the other hand. In case of an exit of Greece from the EMU these transfers would blow up the target2-imbbalances to an extent which might cause the whole system to collapse.

The economic performance under the “real-capitalistic” framework conditions of the 1950s and 1960s provides further evidence in favour of this incompatibility hypothesis. This is so because the Bretton Woods system can be conceived as a forerunner of a monetary union insofar as exchange rates were pegged (managed adjustments occurred rarely). This arrangement together with a strict regulation of short-term capital movements and the stabilization of interest rates below growth rates brought about stable growth and economic convergence.

Most Eurobond concepts propose limits to the access to Eurobond financing for the single countries. The main argument lies in the “disciplining effect of the higher marginal cost of borrowing” (Delpla and von Weizsäcker, 2010, p. 4). This is so because having fully used the capacity of Eurobond financing (“blue bonds” in the terminology of Delpla and von Weizsäcker, 2010), the single countries need to sell national (“red”) bonds in the capital markets. The markets then would discipline irresponsibly acting governments through high interest rates.

Palley (2011) proposes the foundation of a “European Public Finance Authority” (EPFA) which “would continuously issue bonds as part of assisting euro zone countries with normal budget deficit financing. The goal is to make this a normal element of budget deficit financing.” (Palley, 2011, p. 17).

The EMF concept—sketched in Schulmeister, 2010b—is similar in spirit to the EPFA proposal but goes beyond it in two respects (the first politician who coined the term “European Monetary Fund” was the German finance minister Wolfgang Schäuble in spring 2010, the first paper on an EMF concept is Gros and Mayer, 2010)⁷:

7. For the global economy, Dirk Solte has made a similar proposal already in 2009. His proposal focuses on two requirements of a “world financial system in balance”, the need of a global lender of last resort and the need to prevent hoarding of international liquidity. The IMF should become the global lender of last resort and a “liquidity circulation fund” should be established to channel overflowing liquidity to those countries which are in need of liquidity. For further details see Solte, 2009.

— The EMF stabilizes the interest rate on Eurobonds, *i.e.*, it determines the long-term interest level in a similar way as the ECB determines the level of the short-term interest rate.

— The Eurobonds are held by investors with the EMF, they can always be liquidated but they are not traded in capital markets (like savings accounts).

There are two main reasons for making also the long-term interest rate a target as well as an instrument of economic policy.

First, this approach enables economic policy to stabilize the interest rate on future credits of euro states at a level below the (expected) medium-term growth rate (in the EPFA proposal, this could be indirectly achieved through open market operations of the ECB). In this way, also the interest rate on corporate bonds would be reduced. Such an improvement in the financing conditions for the business sector and the government sector is a precondition for a sustained recovery and, hence, for a gradual reduction of public indebtedness.

Second, controlling the long-term interest rate enables the EMF in cooperation with the ECB and the EC to set the interest rate close to the level enjoyed by the “good countries” like Germany. This will help to overcome the resistance from national-populist politicians and media within the “good countries” against Eurobonds.

Eurobonds should not be traded in capital markets because otherwise financial investors might start to speculate against or in favour of Eurobonds relative to government bonds of the US, the UK, Japan or some smaller states. Even though this game would be less easy than playing off member countries of a monetary union against each other, it is nevertheless superfluous. If this proposal were put in practice, CDS with reference to debts of euro governments would disappear as neither hedging nor speculation makes sense any longer.

In addition, banks would no longer get rents by borrowing at the ECB at low rates and investing in government bonds at high rates. This business does not add any value to the overall economy (just profits to the banks), in contrast to financing firms where the banks’ seeking for the best investment opportunities can—in principle—improve the allocative efficiency. It seems reasonable that investors finance governments directly.

This possibility exists already in many countries (German “Schatzbriefe” etc.), it should be generalized at the level of the EMU through the foundation of the EMF. Eurobonds can therefore also be conceived as fully liquid savings deposits of financial investors held with the EMF. The ECB serves as lender of last resort, however, to the EMF as intermediary which substitutes private banks.

Stabilizing the values of government bonds might also mitigate the fluctuations in the valuation of corporate bonds. The experience since the 1970s suggests that changes of asset values and the related wealth effects have strongly contributed to shifting striving for profits from entrepreneurial activities to financial speculation. Stabilizing the value of government bonds will help to gradually change the incentive structure in favour of the real economy.

But what about the price discovery process provided by capital markets? Don’t they fairly evaluate the performance of states and, hence, their credibility, supported by rating agencies? The answer is: No. The reason for this is simple: States are not corporations. The purpose of the latter can—in principle—be reduced to making profits and future profits can be reflected in just one variable, the stock price, for which markets (supported by rating agencies) can—in principle—bring about unbiased estimates. States have multiple functions, none of which relates to profit making. Hence, the performance and credibility of a state can—in principle—not be measured by just one price, the bond price (rate of interest). As a positive side-effect of establishing an EMF, the upgrading or downgrading of the new Eurobonds by rating agencies would become largely irrelevant.

If one conceives financing the “res publica” as an investment opportunity like any other, one can of course become trapped in mixing up firms and states. Once the (economists’) elites have emancipated themselves from this neoliberal heritage they can devote their intellectual capacity to the complex task of improving the management of public affairs. Letting the market punish the “delinquents” for mismanagement or reckless spending by raising interest rates to “death sentence” levels only makes the situation worse (in particular for those who have nothing to do with economic policy or “finance alchemy”).

4.3. Governance

All euro countries are members of the EMF. The contribution to the fund's equity as well as the voting rights could be allocated according to the economic strength of the members or the population (or some combination). This issue is left open to the political decision process.

As is the case with the ESM, the EMF is governed by the finance ministers of the member states and by the European Council as regards fundamental decisions (a counter-balance to the ECB where central bankers dominate). As regards the operative business, the EMF acts as an independent institution (like the IMF). The fiscal programs for the member states—aiming at macroeconomic stabilization and financial consolidation—are set up in close cooperation with national governments. The distribution of funds is strictly bound to several criteria which, however, are not exclusively restrictive. This conditionality ensures that no member country can act as free rider.

In contrast to most Eurobond proposals (but in line with Palley, 2011), there should be no general limit for Eurobond financing, it should become the normal way to fund euro states as they are members of a monetary union.

If a country does not comply with the criteria for EMF funding, it will not get funds and, hence, has to rely on selling their national bonds for which they would have to pay unsustainably high interest. Knowing this in advance, highly indebted governments will stick to the consolidation measures accorded with the EMF and the EC. In other words, the disciplinary power of the EU authorities is much higher if government financing is provided by the EMF as compared to the extant situation where governments could rely on the reckless lending by banks.⁸

8. A thought experiment might clarify this issue. If any additional credit to an euro government had needed the permission of the EC, countries like Greece or Portugal would have had much smaller budget deficits than they actually did. It were "the markets" which completely failed to "discipline" the debtors. After supporting the misbehaviour of governments for years, "the markets" all of a sudden turned from "no punishment" to "death sentences". This behavior is in line with the two fundamental diseases from which the invisible hand suffers in financial markets: Over the long run, it suffers from manic-depressive illness, and over the short run from strong Parkinson.

The common and unlimited guarantee of Eurobonds by all 17 euro states together with the backing by the ECB ensure that defaults on Eurobonds are only possible if the whole financial system collapses (in which case it does not matter). In this way, the EMU would achieve a similarly strong position vis-a-vis financial investors as the US where the Fed backs government bonds to an unlimited extent. This is the main reason for the attractiveness of US bonds in spite of the weakness of the US economy. Investors know that given the Fed's support, default on US government bonds is (almost) impossible.

The present proposal provides the same degree of security for Eurobonds. Hence, global demand for these instruments will be strong. There are two additional reasons for that. First, only the US would supply a comparable amount of public securities to big investors in the global economy like central banks and pension funds. Second, the real economy in the euro area is stronger than in the US (the European weakness stems from fundamental inconsistencies in the financial sphere which would be overcome by the EMF).

There are three important questions as regards the key objective of the EMF, namely, to stabilize the interest rate on government debt at a level below the (expected) rate of medium-term economic growth. First, what serves as the benchmark for the growth rate given the great differences in economic performance between euro countries and the related differences in the initial conditions? Second, by which margin should the targeted interest rate level be lower than the benchmark growth rate? Third, how can the EMF enforce (international) investors to buy Eurobonds at such (low) interest rates?

Over the coming years, the EMF should focus on the growth potential of the "problem regions" in the euro area, *i. e.*, of the Mediterranean countries. If one does not only consider supply-side factors for economic growth, one will conclude that the GDP of these countries will hardly expand faster than by 1% per year over the medium run. Taking explicitly the growth potential of the weaker regions as basis (and not the expected average over the whole euro area) provides additional stimuli for the better performing regions, in terms of both, real growth and inflation (for the transition period of turning the downward trend into an upward

trend, an inflation rate exceeding 2% should be tolerated as it helps to reach two targets, fiscal consolidation and improvement of the competitiveness of the “problem economies” in the euro area).

The optimal size of the targeted interest-growth-differential cannot precisely be quantified as it not only depends on the (different) debt-to-GDP ratios as part of the initial conditions but also on the state of confidence with respect to entrepreneurs, households and (international) investors. For the first years of EMF operations, this differential should be kept at a maximum (in absolute terms) which is compatible with the willingness of investors to buy Eurobonds. A pragmatic approach would be to set nominal interest rates between 1% and 2%. This implies slightly negative real rates. The example of the US and Germany shows that investors are willing to accept such low rates if they believe in the security of their investment. The unlimited guarantee of all outstanding Eurobonds by all euro states is therefore a necessary condition for successfully selling these instruments at very low rates.

The second condition for achieving investors’ confidence is the guarantee of the ECB to buy Eurobonds in case the private demand falls short of supply at the targeted/fixed interest rate (therefore, the EMF determines the nominal Eurobond interest rate in close communication/coordination with the ECB). Such a guarantee directly contradicts the traditionally monetarist stance of the ECB. However, when struggling for survival even conservative institutions are capable of changing their position and trying new strategies—the policy of the ECB itself over the last two years is an excellent example.

Given the double guarantee of Eurobonds by governments and the ECB, Eurobonds would enjoy the same “security conditions” as US bonds and might even become more attractive than the latter. This could be so because to many big investors like the Bank of China the real economy seems to be stronger in the EU as compared to the US (only/mainly the inability of euro governments to manage their “internal” financial affairs has rendered debt instruments of many euro states less attractive in recent years).

The main channel through which the ECB guarantee will foster the attractiveness of Eurobonds concerns investors’ confidence. Hence, it might not even be necessary for the ECB to actually buy

Eurobonds to such a large extent as the Fed has been doing in recent years. And even if such purchases would be needed to stabilize interest rates at a very low level they would not contradict EU law as the ECB finances the EMF as a supranational EU institution and not directly member states.

4.4. Costs of not controlling interest rates on euro governments' bonds

Stabilizing long-term interest rates in the euro area at a level below the rate of economic growth will stimulate real investment as a prerequisite for a sustained recovery. Only under this condition can the fiscal stance be improved over the medium and long run. Such a development would prevent sovereign defaults and, hence, the necessity of “good” countries to bail out the “bad” ones.

If, by contrast, policy accepts the formal insolvency of an EMU member state, much more capital has to be mobilized. Even though it might be politically easier to put through tax increases within a single nation state to save “our” banks (victims of the reckless policy of “bad” countries....) than to bail-out countries like Greece or Portugal (no transfer of “our” money to “lazy” people.....), not preventing defaults will be much more costly—not only financially but also socially and politically (see, e.g., Cline, 2011; Niechoj *et al.*, 2011).

The resistance of nationalist-populist media and politicians could be overcome if one shows that avoiding defaults does not need tax-payer's money but a change in economic policy, *i.e.*, transforming the long-term interest rate from a market price to an instrument variable. Such an idea will meet strong resistance from mainstream economists (like the financial transactions tax). This resistance can be mitigated in three ways:

- By looking concretely how the interest rate is determined in the CDS and bond markets and which role destabilizing speculation plays in this process.

- By showing that stabilizing long-term interest rates in all euro countries provides the basis for a gradual overcoming of the financial and economic crisis.

- By clarifying that there is no alternative (TINA) to stabilizing interest rates.

As regards the second point, I shall now summarize the results of an econometric exercise which simulates the medium-term economic development under the rules of the fiscal compact on one hand, and under the condition of stabilized interest rates on the other hand.

5. Austerity policy *versus* interest rate stabilization—two model simulations⁹

This section summarizes the results of an econometric simulation of two scenarios using the global model of Oxford Economics (OEF, version of February 2012). In the first case it is assumed that the rules of the fiscal compact are implemented, beginning in mid-2012. In the second case it is assumed that the interest rate on euro government bonds is stabilized at 2%.

The fiscal pact scenario is simulated as follows:

— The annual consolidation requirements of the individual EU countries are identified on the basis of data for 2011 (including the EC estimates of structural deficits).

— It is assumed that the target of a maximum structural deficit of 0.5% of GDP is to be reached by 2016 (in analogy with the German “debt brake”).

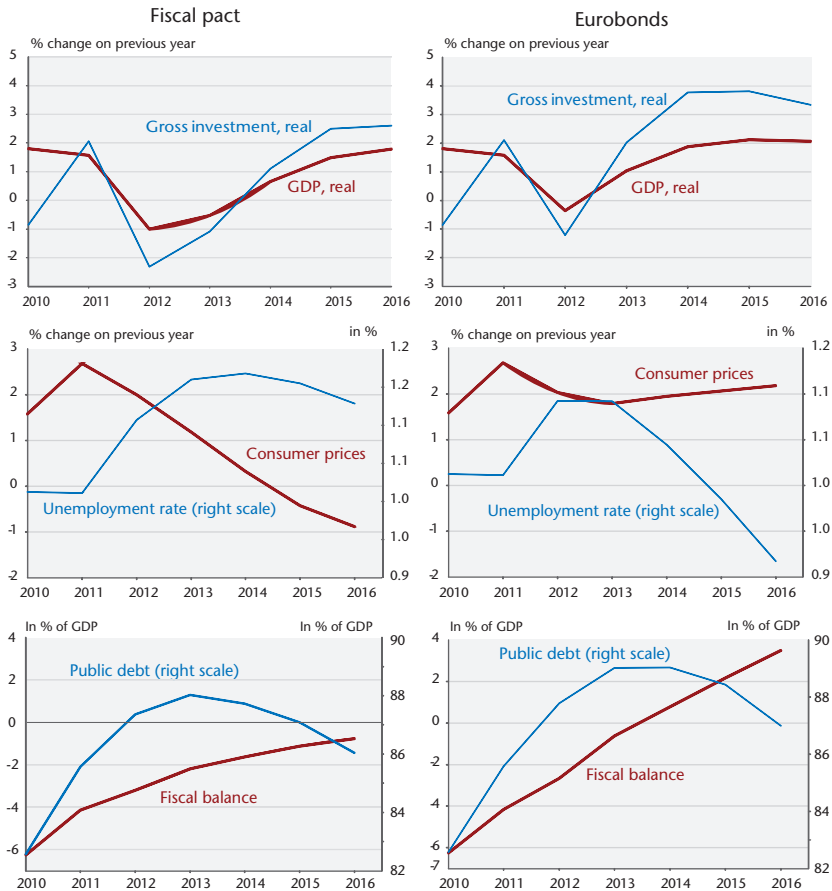
— 70% of the consolidation measures consist of spending cuts in government consumption, public investment and government transfers and 30% consist of increases in direct and indirect taxes as well as employees’ social security contributions.

— The consolidation policies are adjusted on the basis of the simulation results for 2013. If, for instance, the deficit criterion no longer indicates any consolidation requirement, but the debt criterion does, the austerity policy is continued.

The simultaneous austerity policies in almost all EU countries would have a strong negative effect on economic growth in the euro area GDP would shrink for two years (gross capital formation would be most affected), unemployment would rise to more than 12% in 2014 and from 2015 consumer prices would start to decline

9. This exercise was part of a joint project of three research institutes, IMK (Düsseldorf), OFCE (Paris) and WIFO (Vienna) published in IMK (2012). See this report for further details.

Figure 7. Two scenarios of macroeconomic performance in the euro area



Source: Simulations with the OEF-Model.

(Figure 7). Southern euro area countries would be hit most by the implementation of the fiscal pact as they are already in a recession.

The disastrous effects of a synchronous austerity policy in the EU become obvious in the comparison with an alternative strategy: In this simulation, the baseline of the OEF model (February 2012) is adjusted in just one respect. It is assumed that the level of long-term interest rates in all euro countries is stabilized at 2% over the entire forecast period (no discretionary austerity measures are implemented besides those which were already implemented in the February version of the OEF model—this version does not include measures called for by the fiscal compact). Under this

condition a much more favourable trend would result. The economy in the euro area would pick up fast, mainly as a consequence of a rebound of investment activity and the unemployment would decline steadily from 2013 onwards (Figure 7).

Although net borrowing of the government would improve more sharply in the fiscal pact scenario than in the euro bond scenario, the government debt ratio would not. The latter would be even slightly higher in the fiscal pact scenario than in the low interest scenario, because nominal GDP growth would be significantly higher in the second case (Figure 7).

6. Conclusion

The main causes of the deepening of the euro crisis are systemic. The financial crisis of 2008/2009 deteriorated the fiscal stance of all countries. However, euro countries as members of a monetary union are specifically vulnerable to shifts in investors' sentiments as they have neither the possibility to devalue nor to rely on central bank funding (systemic factor I). Under "finance-capitalistic" incentive conditions, short-term profit-seeking brings about "manic-depressive" fluctuations of exchange rates, commodities prices, interest rates and stock prices. Speculative activities caused interest rates on government bonds of several euro countries to rise to unsustainable levels since fall 2009 (systemic factor II). At the same time, interest rate differentials within the euro area widened drastically. This development endangers the economic and political cohesion of the EMU (systemic factor III).

A systemic problem needs a systemic solution which restores the primacy of politics over speculation. It is proposed to transform the European Financial Stability Facility (EFSF) into the European Monetary Fund (EMF). The EMF provides euro governments with financial means by selling Eurobonds in the capital markets. These bonds are guaranteed by all euro countries to an unlimited extent. The EMF stabilizes Eurobond interest rates at a level slightly below the level of medium-term economic growth (in nominal terms). The Eurobonds are held by investors with the EMF, they are not tradable but can be liquidated at any time. The EMF helps to restore sound public finances in euro countries in close cooperation with the ECB, the European Commission and

national governments. To this end, the EMF provides funds for the euro states according to clear criteria (“conditionality”) which are not exclusively restrictive (they should comprise “Marshall-plan-elements”).

Such a solution does not cost much money. What it costs is the efforts to reconsider the most fundamental assumptions of that economic paradigm which has been restored over the past four decades. Admitting errors is painful, sticking to them even more (for others).

References

- Cline W. R., 2011. “Sustainability of Greek Public Debt”, *Peterson Institute for International Economics*, October.
- De Grauwe P. and W. Moesen, 2009. “Gains for All: A Proposal for a Common Euro Bond”, in: *Intereconomics*, 44 (3): 132-135.
- De Grauwe P., 2011a. “A Fragile Eurozone in Search of a Better Governance”, *CESifo Working Paper* 3456, May.
- De Grauwe P., 2011b. “The European Central Bank: Lender of Last Resort in the Government Bond Markets?” *CESifo Working Paper* 3569, September.
- Delpla J. and J. von Weizsäcker, 2010. “The Blue Bond Proposal”, *Bruegel Policy Brief* 3, May.
- European Commission, 2011. “A Roadmap for moving to a competitive low carbon economy in 2050, Summary of the impact assessment”, *Commission Staff Working Document*, SEC, 289.
- Gros D. and S. Micossi, 2009. “A bond-issuing EU stability fund could rescue Europe”, *Europe’s World*, spring.
- Gros D. and T. Mayer, 2010. “Towards a European Monetary Fund”, *CEPS Policy Brief*.
- IMK, 2012. “Fiscal Pact Deepens Euro Area Crisis, Joint analysis of the Macro Group.” (IMK, OFCE, WIFO), *IMK Report* 71^e, March.
- Jones E., 2010. “A Eurobond proposal to promote stability and liquidity while preventing moral hazard”, *ISPI Policy Brief*, number 180, March.
- Niechoj T., Ö. Onaran, E. Stockhammer, A. Truger and T. van Treeck, (eds.), 2011. “Stabilising an unequal economy?”, Public debt, financial regulation and income distribution, *Metropolis*, Marburg.
- Palley T. I., 2011. “Monetary Union Stability: The Need for a Government Banker and the Case for a European Public Finance Authority”, *IMK Working Paper*, 2.

- Pisani-Ferry J., 2012. "The euro crisis and the new impossible trinity", *Bruegel Policy Contribution*, 1.
- Schulmeister S., 2010a. "Boom-Bust Cycles and Trading Practices in Asset Markets, the Real Economy and the Effects of a Financial Transactions Tax", *WIFO Working Paper* presented at the IMF on March 15.
- Schulmeister S., 2010b. "Mitten in der großen Krise—ein, New Deal' für Europa", *Picus Verlag*, Wien.
- Solte D., 2009. "World financial system in balance. Crisis as an opportunity for sustainable future", *Terra Media*, Berlin.
- Tichy G., 2011. "Did Rating Agencies Boost the Financial Crisis?", *Intereconomics*, 5: 232–245.
- Varoufakis Y. and S. Holland, 2011. "A Modest Proposal for Overcoming the Euro Crisis", *Levy Economics Institute at Bard College*, Policy Note 3.