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Christophe Blot, Marion Cochard, Jérôme Creel, Bruno Ducoudre, Danielle Schweisguth, Xavier Timbeau

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## Christophe Blot

Observatoire français des conjonctures économiques - Centre de recherche en économie de Sciences Po,  
France

✉ christophe.blot@sciencespo.fr

## Marion Cochard

Observatoire français des conjonctures économiques - Centre de recherche en économie de Sciences Po,  
France

✉ marion.cochard@sciencespo.fr

## Jérôme Creel

Observatoire français des conjonctures économiques,  
ESCP Europe,  
France

✉ jerome.creel@sciencespo.fr

## Bruno Ducoudré

Observatoire français des conjonctures économiques - Centre de recherche en économie de Sciences Po,  
France

✉ bruno.ducoudre@sciencespo.fr

## Danielle Schweisguth

Observatoire français des conjonctures économiques - Centre de recherche en économie de Sciences Po,  
France

✉ danielle.schweisguth@sciencespo.fr

## Xavier Timbeau

Observatoire français des conjonctures économiques - Centre de recherche en économie de Sciences Po,  
France

✉ xavier.timbeau@sciencespo.fr

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# Is There an Alternative Strategy for Reducing Public Debt by 2032?

**Summary:** EMU countries have engaged in fiscal consolidation since 2011. This strategy has proven to be costly in terms of GDP. This cost has been amplified by the fact that fiscal multipliers are high in time of crisis, as recently stressed by the literature. Within this context, we wonder whether there is an alternative strategy aiming at bringing back the debt ratio to 60% of GDP in 2032, meanwhile lowering output losses. To this end, we report simulations realized from a simple model describing the Eurozone and the timing for consolidation. Based on a pragmatic view of the fiscal compact, we find an alternative path for consolidation which achieves a 60% threshold for public debt over the next 20 years in most euro area countries.

**Key words:** Public debt, Growth, European macroeconomic policy.

**JEL:** E61, E62, E47.

Expansionary fiscal policies undertaken in 2009, when the world economy was strongly hit by the worst financial crisis since the Great Depression, have been short-lived. EMU countries have indeed clearly engaged in a consolidation of fiscal policies since 2011. The objectives are twofold. In the short run, governments aim at bringing back the deficit ratio to 3% of GDP, as recommended by the Stability and

Growth Pact (SGP). In the long run, in accordance with the new fiscal rules embedded in the revised SGP or the Fiscal compact, the objective is to reach a debt ratio of a least 60% of GDP by 2032. For the advocates of such a frontloaded strategy, consolidation is needed to restore credibility of fiscal policies and to reduce long-term interest rates. The sovereign debt crisis has indeed urged national governments into dealing with the sustainability of public finances. The rise of financial market pressures, the lack of a “true” central bank (endorsing the role of a lender of last resort), and the absence of debt pooling between member states explained this choice. Yet as this paper shows, this choice is not appropriate.

The on-going strategy is unambiguously costly. It puts a drag on demand and triggers a rise in unemployment. The question is then, how large are these costs and is there an alternative strategy? The aim of the paper is precisely to deal with these issues. It considers explicitly that the Eurozone is facing a tradeoff between unemployment and public debt, both of which are interlinked. Up to now, the Eurozone has given the priority to the reduction of public debt. But as it has recently been highlighted by Dawn Holland and Johnatan Portes (2012), this strategy is self-defeating. The Eurozone entered a new recession, the reduction path of public deficits is disappointing regarding the strong negative fiscal stance and the liquidity crisis<sup>1</sup> on the debt markets eased only after the announcement by the ECB that it might intervene in countries under program, i.e. countries undergoing a fiscal consolidation whose composition would have to be agreed upon by the Troika.

This paper does not only confirm the failure of the strategy of a frontloaded consolidation. It discusses an alternative scenario built upon simulations based on a reduced-form model. More precisely, we suggest that keeping the target of a debt ratio of 60 % by 2032 and spreading (or softening) consolidation would enhance growth. For most countries, public debt is significantly reduced in the long-term while in the short run, economic growth is higher.

The main reason behind this failure is that austerity policies have been implemented in countries which have been already facing a highly degraded economic situation that entailed high fiscal multipliers. A growing literature on fiscal multipliers has indeed emphasized that fiscal multipliers are higher during recessions than in normal times<sup>2</sup>. In such a case, attempting to reduce debt by fiscal consolidation generates higher debt and unemployment. Spain is the perfect illustration of this very frustrating dynamics. In contrast, consolidation should be postponed until unemployment is lower, hence until fiscal multipliers are smaller.

Besides, we stress that existing treaties and the fiscal compact allow for a more relaxed path for fiscal consolidation. Even if other fiscal rules may lead to better economic outcomes (Jérôme Creel, Paul Hubert, and Francesco Saraceno 2012), we adopt a pragmatic view where fiscal framework is unchanged. It is clear that the rationale for these rules is open to question. The need for fiscal rules has often been contested. Debt sustainability does not boil down the 60% ratio for public debt. But

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<sup>1</sup> See Paul De Grauwe and Yumei Ji (2013) for an analysis of the failure of austerity to dampen panic on the financial markets.

<sup>2</sup> See Miguel Almunia et al. (2010) for an argument based on the situation during the Great Depression. See Eric Heyer (2012) for a short review of the literature.

the path of consolidation should be based on a pragmatic view (to be opposed to a dogmatic view) on what is suitable, given existing rules, for debt reduction over the next 20 years. It should be added that despite changes in May 2013 for a few countries as regards the pace of their consolidation strategy, it seems that the Commission still relies on the same forecasting model that inspired its original frontloaded strategy (Marion Cochard and Danielle Schweisguth 2013).

To assess interactions between debt and unemployment reduction, we present the results from simulations based on a simple reduced-form model representing 11 euro area countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain). Then, as a strong debate still exists about the value of multipliers and about the empirical evaluation of current output gaps, and also because there is of course irreducible uncertainty about future growth, we have chosen to parameterize the model in such a way that we can conduct a full sensitivity analysis. Finally, we address the search for the optimal fiscal stance, defined as the most appropriate fiscal consolidation path to reduce the costs of unemployment and fulfill fiscal rules in terms of reduction of public debt at horizon 2032.

The rest of the paper is organized as follows. In the Section 1, we draw on the EU fiscal framework to assess the stringency of EU fiscal rules and explore the scope for an alternative strategy to ensure “fiscal sustainability” in due respect of EU regulations and treaties. The main features of the model, which is used for simulations, are presented in the Section 2. The Section 3 shows that the actual path of consolidation is ill-designed. Finally, the Section 4 presents alternative strategies.

## 1. Margins for Maneuver within the Actual EU Fiscal Framework

There are currently five fiscal rules which must be fulfilled by EU Member States. Except for one fiscal rule exclusively related to the Fiscal Compact - the new medium-term fiscal objective, see fifth fiscal rule below - all EU fiscal rules have been in force since at least November 2011.

First, the cornerstone of European fiscal rules remains the public deficit to GDP limit at 3%. Deficits above this threshold can be labelled “excessive deficits”, setting in train an excessive deficit procedure.

Second, the public-debt-to-GDP ratio must be limited to 60% of GDP or it must be decreasing towards this level. The first and second fiscal rules are embedded in the Stability and Growth Pact originally introduced in 2005. The first rule has been the cornerstone of European fiscal rules since 1997 and the first version of the Stability and Growth Pact, whereas the second rule was only a convergence criterion between 1997 and 2005, before it was introduced in the first reformed version of the SGP. Legally speaking, the debt-rule was not a binding constraint on Euro area members states between 1999 (creation of the euro) and 2005.

They were confirmed by the revised Stability and Growth Pact adopted in November 2011 under Council Regulations 1173/2011, 1175/2011 and 1177/2011.

Third, if the public-debt ratio is above the threshold limit, the ratio will be considered to diminish at a sufficient pace if the difference between actual debt and

the 60%-of-GDP limit has been decreasing during the three preceding years at an average yearly rate of  $1/20^{\text{th}}$  of the difference. This  $1/20^{\text{th}}$  debt rule is incorporated in the revised Stability and Growth Pact adopted in November 2011 under Council Regulation 1177/2011, article 2, par. 1bis. It has also been included in the Fiscal Compact, article 4, of the Treaty on Stability, Coordination and Governance in the EMU of March 2012.

Fourth, if a Member State is under an excessive deficit procedure, Council Regulation 1177/2011, article 3, states that: *“in its recommendation, the Council shall request that the Member State achieve annual budgetary targets which, on the basis of the forecast underpinning the recommendation, are consistent with a minimum annual improvement of at least 0.5 % of GDP as a benchmark, in its cyclically adjusted balance net of one-off and temporary measures, in order to ensure the correction of the excessive deficit within the deadline set in the recommendation”*. In its article 5, Regulation 1175/2011 restates the same benchmark of a yearly improvement of 0.5% of GDP of the cyclically-adjusted deficit to reach the medium-term fiscal objective of a balanced-budget expressed in structural terms.

Fifth, the medium-term fiscal objective was made more precise in the Fiscal Compact, article 3. It states that general government budgets shall be balanced or in surplus, a criterion that: *“shall be deemed to be respected if the annual structural balance of the general government is at its country-specific medium-term objective, as defined in the revised Stability and Growth Pact, with a lower limit of a structural deficit of 0.5 % of the gross domestic product at market prices”*.

Some of the above-mentioned rules are conditional on exceptional circumstances. Such has always been the case for the first rule. However the strictness of exceptional circumstances has largely changed over the years. Between 1999 and 2005, exceptional circumstances meant a recession: a yearly real GDP growth rate of at least -2% permitted automatically delayed austerity to converge towards the 3%-of-GDP limit for the public deficit and balanced budget in the mid-run. A yearly real GDP growth rate of at least -0.75% permitted delayed austerity provided a majority of MS approved these exceptional circumstances. In 2005, the scope of exceptional circumstances was widened to encompass the implementation of structural reforms that were elaborated to cope with the Lisbon agenda strategy, and the implementation of public investment. Moreover, an unexpected economic slowdown could be considered as exceptional circumstances.

The 2011 body of legislation - the 6-pack - recalls the reform of the 1997 version of the SGP. It opens up a scope to use pension reforms as authorizing a public finances' gap *vis-à-vis* the convergence path towards the medium-run deficit objective (article 5, regulation 1175/2011). The fiscal compact introduced the following (complementary) definition of exceptional circumstances: *“an unusual event outside the control of the (MS) which has a major impact on the financial position of the general government or periods of severe economic downturn as set out in the revised SGP, provided that the temporary deviation (...) does not endanger fiscal sustainability in the medium-term”* (article 3, (b)). The definition of an “unusual event” remains unclear.

Finally, the first and fifth EU fiscal rules are conditional on exceptional circumstances.

Drawing on these circumstances and on the fourth rule of a yearly improvement of 0.5% of GDP of the cyclically-adjusted deficit, it is possible to show that EU fiscal rules give fiscal leeway under current economic circumstances.

As a conclusion, the implementation of structural reforms should not be viewed as the only justification for softening the stance on fiscal austerity: severe economic downturn is also included as an exceptional circumstance to postpone fiscal efforts, and achievements of cyclically-adjusted annual improvements of public finances above a threshold of 0.5% of GDP are not legally required.

The EU does not have to change its position in order to soften the fiscal stances of Euro area countries facing excessive deficits. Notwithstanding a possible change in this position in the future, there are already ample margins for maneuver in the short run to escape “self-defeating austerity” under the present legislation.

## 2. Short Description of the Model and Calibration

The simulations are realized with a macroeconomic model that combines structural and reduced-form non-linear equations. An exhaustive presentation of the model and its calibration is available in the appendix of iAGS 2012 Report<sup>3</sup>. It is a simple reduced-form equation model to analyse complex supply and demand mechanisms that can be heterogeneous across countries. Hence the model is not the by-product of optimal behaviours. There have been multiple competing ways to obtain optimal equilibria though no consensus has ever emerged on the best modelling strategy<sup>4</sup>. Moreover, Dynamic Standard General Equilibrium (DSGE) models proved to perform poorly during the crisis (Jean-Bernard Chatelain and Kirsten Ralf 2012), underestimating the deepness of the crisis. These models also do not embed nonlinearities. It notably does not allow for variable fiscal multiplier over the business cycle, since these models are linearised around a single equilibrium. In our approach, the value of the fiscal multiplier is endogenous and determined according to the size of the output gap. The parameters of the model are calibrated to allow the analyses of various scenarios. It is far more tractable than DSGE models and given the current context, it may better capture the effect of fiscal policy on the output gap. It does not rest on structural hypotheses regarding agents' behaviour (representative rational agent), hypotheses which are today largely debated (Giorgio Fagiolo and Andrea Roventini 2012). Alternative hypothesis can be easily implemented. Considering the value of the fiscal multiplier, the model may reproduce Keynesian or New Classical hypotheses. Then the aim is not to give normative conclusions regarding economic policy but to shed some lights on the effects of various economic policy shocks according a given set of transparent hypotheses.

The key features of the model are that: i) the model allows for an explicit representation of the main countries of the euro area: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal and Spain. An aggregated

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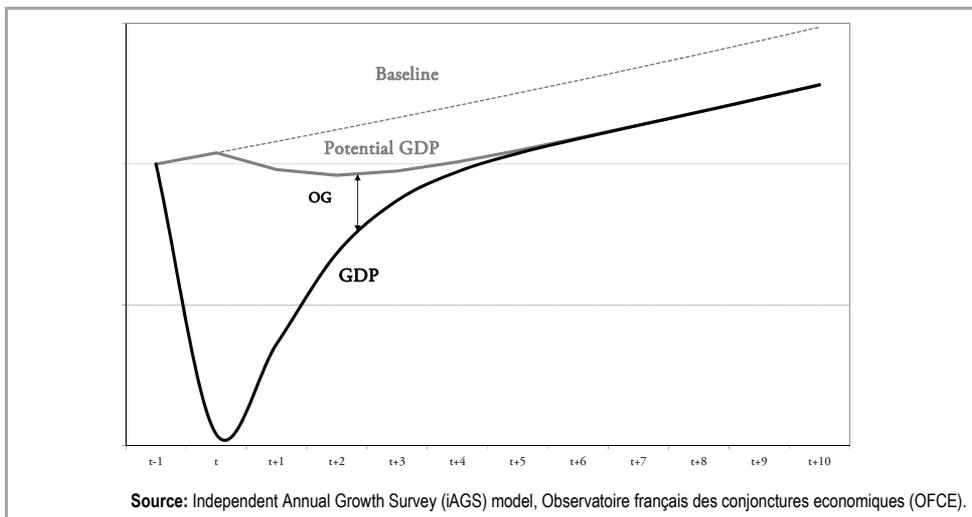
<sup>3</sup> Xavier Timbeau et al. (2013).

<sup>4</sup> See Volker Wieland et al. (2012) for a comparison of fiscal policy effects on output gap for a large set of DSGE models. These models make different assumptions on the share of liquidity constrained households for example, a point that is crucial to assess the fiscal multiplier.

euro area is also computed in order to deal with global (rest-of-the-world) analysis and monetary policy; ii) on the demand side, an open economy aggregate demand function is modelled, with fiscal and monetary policy, external demand (a channel for intra EU interdependencies) as well as exogenous shocks on the output gap (the gap between actual and potential GDP). The equation is written as an error-correction model. It may also take into account possible long run effects of macro-economic policies such as long term fiscal policy, debt-related threshold effects and hysteresis on potential output. The stabilization of the economy stems from adjustments in the long run interest rates and competitiveness, which have effects on the output gap in the long-term part of the equation and in the short-term. The stabilization may then hinge on private demand (through interest rates adjustment and monetary policy) and on external demand (through the decrease in relative prices). The parameterization allows simulating standard hypothesis as well as alternatives, checking the dependence of results on different sets of hypotheses. Furthermore, the size of fiscal multipliers is allowed to move along the business cycle and the level of public debt. The ineffectiveness of monetary policy is made possible when the economy hits the zero lower bound (ZLB); iii) external demand is modelled using a bilateral trade matrix representing interdependencies between countries. The trade matrix is also used as a basis for imbalances analysis; iv) we model prices by a generalized Phillips curve relating current and expected inflation to economic activity, imported inflation and other exogenous shocks. Expectations can be modelled as adaptive (backward-looking) or rational (forward-looking); v) a Taylor rule sums up monetary policy, except under the ZLB. Monetary policy becomes expansionary when the output gap is negative considering that inflation is close to the target fixed at 2%; vi) according to the expectations theory, the long term interest rate for German public bonds is set equal to the expected sum of future short term interest rates (Robert J. Shiller 1979), with short term interest rates set by the central bank. The long term public rate for Germany is considered risk free, and long term public rates of other countries include a risk premium that is set exogenously. We also temporarily set exogenously the long rate for countries that entered the EFSF to account for a lower interest rate on debt refinancing. Finally, for each country the long term interest rate on private bonds is equal to the public one plus a risk premium that is set exogenously. The long term *real* interest rate on private bonds is then equal to the private nominal long term rate minus long run expected inflation; vii) the public balance separates interest payments, cyclically-adjusted balance and cyclical components, in order to properly assess the fiscal stance, i.e. the part of fiscal policy which is under the direct control (discretion) of current governments. We then deduce public debt projections for euro area countries.

In the model, GDP is written as a gap between the actual level of GDP and a baseline trajectory determined by a constant potential growth. However, we distinguish this baseline from the potential GDP, which can differ from the baseline due to possible hysteresis effects of recession or fiscal policy on potential GDP (Figure 1). As a result, we model three gaps for GDP: a)  $\tilde{y}_c$  is the gap between log of real GDP  $Y$  of country  $c$ , and its baseline trajectory  $\bar{Y}$  which is exogenous; b)  $y_c^*$  is the gap between log of potential GDP  $Y^*$  of country  $c$  and the baseline  $\bar{Y}$ ; c)  $y_c$  is the output gap of country  $c$ , hence the difference between  $\tilde{y}_c$  and  $y_c^*$ .

The growth rate of the baseline for real GDP is set exogenously. The growth rate of potential GDP is equal to the baseline unless there is a long run impact of fiscal policy, hysteresis or a debt-threshold effect. The growth rate of real GDP is given by that of potential GDP and the output gap. The structural primary surplus evolves according to the fiscal impulse (which are set exogenously, at levels given by Stability programmes, except otherwise stated) and to changes in taxes due to variations in the gap between potential production and the baseline. A permanent downward shift in potential production relative to the baseline entails a permanent fall in taxes, hence a permanent fall in the structural primary surplus. The average interest rate on debt evolves according to the long term nominal interest rate on newly issued public bonds. The average maturity of public debt is assumed to be constant. The inverse of average maturity gives the share of debt refinanced every year. Public debt (in % of nominal GDP) evolves according to its usual law of motion.

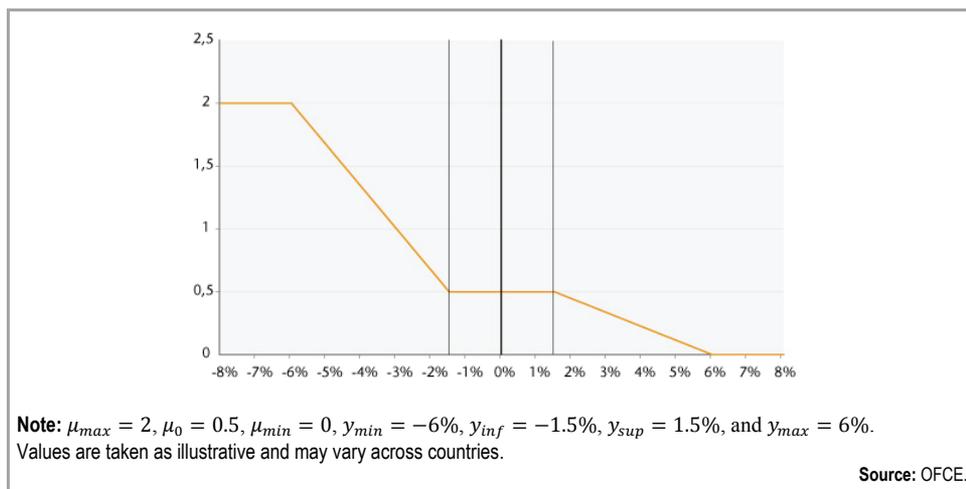


**Figure 1** Example: GDP Path and Potential GDP Path with Hysteresis

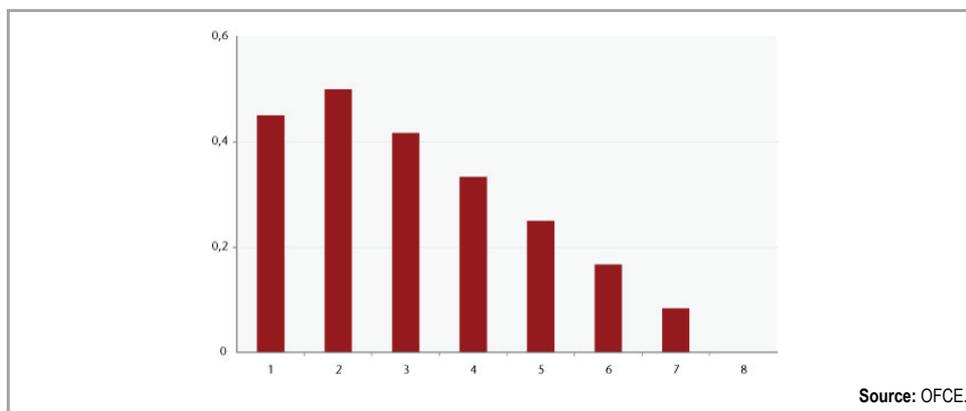
The impact of fiscal policy is modelled according to the state of the economy, as in Jonathan A. Parker (2012), and in accordance with empirical papers (e.g. Alan J. Auerbach and Yuriy Gorodnichenko 2010)<sup>5</sup> that show that the fiscal multiplier differs along the position of the economy in the cycle. The fiscal multiplier is modelled as in Figure 2: its value is maximal (minimal) in very bad (good) times. We define normal times as economic states in which output gap is greater than -1.5% and lesser than 1.5%. In that case, we fix the *ex ante* instantaneous fiscal multiplier to 0.5 for large countries (Germany, France, Italy and Spain), and to 0.3 for other countries, accounting for the fact that fiscal multipliers are generally smaller for small countries

<sup>5</sup> See Anja Baum and Gerrit B. Koester (2011) and Jérôme Creel, Heyer, and Matthieu Plane (2011) for empirical estimates resp. for Germany and France. See Pascal Michaillat (2014) for a theoretical approach on non-linear fiscal multipliers and Philip Arestis (2011) who addresses the effectiveness of fiscal policy as a macroeconomic instrument of stabilisation policy.

(Ethan Ilzetsky, Enrique Mendoza, and Carlos A. Vegh 2011). When output gap is over 1.5%, the *ex ante* instantaneous fiscal multiplier linearly decreases to 0, until output gap reaches 6%. In bad times, the *ex ante* instantaneous fiscal multiplier increases as output gap deteriorates. We set its maximum value to 2 when output gap reaches -6%. Drawing on exogenous fiscal impulses, we compute the *effective* fiscal impulse: it is the *ex ante* cumulative real effect of current and past fiscal impulses at time  $t$ . It must yet be noted that the *ex ante* multiplier does not take into account monetary policy effects and feedback effects of external trade on GDP following a fiscal impulse. We retain 7 lags to account for the possibility of long lasting effects of fiscal impulses (see an example in Figure 3).



**Figure 2** Example of the Value of the Multiplier According to the Output Gap



**Figure 3** Effective Fiscal Impulse in Normal Times with Following a Positive Fiscal Impulse (1% of GDP)

A critical point of calibration relates to the speed of convergence of output to its long run equilibrium. We set the same calibrated values across countries; they ensure that the speed of convergence is comparable in normal times to that of standard DSGE models: the output gap is closed more or less 5 years after a shock.

Debt-related threshold effects on aggregate demand and fiscal policy effects on potential GDP are set to 0 for standard simulations. We calibrate the hysteresis effect to 0.15 in order to obtain qualitatively similar impacts of transitory and permanent fiscal impulses on potential growth, as in the macro model of the Commission, QUEST III (Marco Ratto, Roeger Werner, and Jan in't Veld 2009). The calibration of the sensitivity of tax revenues and expenditures to the business cycle draws on Commission's estimates. To compute the average interest rate on public debt, we compute an average maturity of public debts using national sources on public debt maturity structures in 2011. We choose standard values for the monetary Taylor rule. The short term interest rate is bound at 0.05% to account for the ZLB. The long run nominal interest rate is set at 4% (Jeffrey C. Fuhrer and George R. Moore 1995). Values for the New Keynesian Hybrid Phillips curve are set in accordance with the empirical literature (Jeremy Rudd and Karl Whelan 2006; Maritta Paloviita 2008).

### 3. The Actual Consolidation Path

We analyze the dynamics of public finances and output losses of the path of consolidation decided by the end of 2012. Baseline results are reported in Table 1 (see Box 1 for a description of the main underlying assumptions). We simulate the path of public debt levels (expressed in percentage points of GDP) until 2032, which is the horizon of the 1/20<sup>th</sup> debt rule incorporated in the revised SGP and in the Fiscal Compact. The simulated path of public debt levels depends on the fiscal impulses over the period 2013-2015 which have been forecasted in the euro area and reported in Stability programs released in spring 2012. By assumption, we assume zero fiscal impulses beyond 2016.

#### Box 1 Main Hypotheses for the Baseline Simulations

Simulations start in 2013. To do so, we need to set some starting point values in 2012 for a set of variables. Output gaps for 2012 come from iAGS 2013 forecasts. Potential growth for the baseline potential GDP is based on Asa Johansson et al. (2012) projections (see Table 1). Concerning fiscal policy and budget variables, the main hypotheses are as follows:

- 1) the public debt in 2012 comes from the European Commission's autumn 2012 forecast;
- 2) we use the iAGS 2013 forecasts for fiscal balance in 2012;
- 3) we use the European Commission's autumn 2012 forecast of interest expenditures for 2012; combined with iAGS 2013 forecasts of output gaps in 2012, and model estimates of the cyclical part of the fiscal balance, it gives the structural primary balance for 2012;
- 4) Fiscal impulses come from iAGS 2013 forecasts for 2013 (see Table 2). For 2014-2015, we use fiscal impulses implied by the Stability and Growth Pact reported in the "Assessment of the 2012 national reform programme and stability programme" for each country;

- 5) sovereign spreads come from iAGS 2013 forecasts for 2013-2015 (see Table 3). We made the hypothesis that the ECB program of unlimited debt buy backs on the secondary market (Outright Monetary Transactions) is effective and achieves its goal to bring down interest rates for Italy and Spain. Regarding countries relying on the ESM for debt financing, we assume that Ireland will get direct access to financial markets as of 2014, Portugal as of 2015 and Greece as of 2016.

**Table 1** Main Hypotheses for 2012 in %

Source	Public debt	Fiscal balance	Structural primary balance	Interest expenditures	Output gap	Potential growth
	European Commission	ECLM-IMK-OFCE	ECLM-IMK-OFCE	European Commission	ECLM-IMK-OFCE	ECLM-IMK-OFCE
Germany	81.7	-0.2	2.7	2.4	-1.0	1.3
France	90.0	-4.4	1.2	2.6	-6.2	2.0
Italy	126.5	-2.5	5.8	5.5	-5.5	1.3
Spain	86.1	-7.4	-0.7	3.0	-8.5	2.0
Netherlands	68.8	-4.4	-0.9	2.0	-2.8	2.0
Belgium	99.9	-3.5	2.6	3.5	-4.8	2.0
Portugal	119.1	-5.5	1.7	4.5	-6.1	1.5
Ireland	117.6	-8.0	-1.0	4.0	-7.4	2.2
Greece	176.7	-6.7	4.8	5.4	-14.1	1.9
Finland	53.1	-0.9	1.3	1.1	-2.1	2.2
Austria	74.6	-3.0	0.1	2.6	-1.1	1.6

Source: European Commission, iAGS 2013 forecasts.

**Table 2** Fiscal Impulse in % of GDP

	2013	2014	2015
Germany	0.0	-0.3	0.0
France	-1.8	-0.6	-0.5
Italy	-2.1	0.0	0.0
Spain	-2.5	-1.2	-0.6
Netherlands	-1.2	-1.2	-0.5
Belgium	-0.8	-0.6	-0.8
Portugal	-2.9	-0.6	-0.2
Ireland	-1.8	-2.1	-1.8
Greece	-3.9	-2.7	-0.9
Finland	-1.3	0.0	0.0
Austria	-0.9	-0.3	-0.6

Source: iAGS 2013 forecasts.

**Table 3** Sovereign Spreads Relative to German Interest Rate on Public Debt in %

	2013	2014	2015
Germany	0.0	0.0	0.0
France	0.1	0.0	0.0
Italy	1.3	0.8	0.0
Spain	1.5	0.8	0.0
Netherlands	0.1	0.0	0.0
Belgium	0.5	0.1	0.0
Portugal	1.4	1.2	1.0
Ireland	1.4	1.5	0.0
Greece	1.4	1.2	0.9
Finland	0.0	0.0	0.0
Austria	0.0	0.0	0.0

Source: iAGS 2013 forecasts.

Table 4 shows tough austerity measures: between 2013 and 2015, all member states (MS), except Germany and Finland, will achieve cyclically-adjusted primary improvements in their public deficit equal to, or above, 2% of GDP. Spain, Portugal, Ireland and Greece will make even stronger efforts. This sharp fiscal contraction will make it ever harder to achieve an output gap at, or above, zero: all MS will have to wait until 2019 (Austria, Finland), 2020 (Germany, France, Italy, Spain, Portugal) or 2021 to close the output gap. Meanwhile, the aggregate euro area GDP will plummet to a maximum negative output gap of almost -5%. Hence, the cumulated fiscal impulse, starting from negative output gaps under which fiscal multiplier effects are strong, will lead to gloomy prospects for the entire euro area. Only Germany and Austria will be exceptions.

**Table 4** Baseline Scenario

	Public debt (% of GDP)			Structural balance (% of GDP)			Cumulated fiscal impulse (% of GDP)	Average annual growth		Maximum negative output gap reached	Sovereign rate spread to Germany
	2012	2017	2032	2012	2017	2032	2013-2015	2013-2017	2018-2032	2013-2032	2013-2015
Germany	82	67	26	0.3	0.9	1.8	-0.3	1.4	1.3	-0.7	0.0
France	90	91	52	-1.4	-0.2	0.2	-2.9	1.9	2.2	-6.8	0.0
Italy	127	109	18	0.3	2.4	5.5	-2.1	1.6	1.4	-6.5	0.7
Spain	86	101	83	-3.7	-2.1	-2.2	-4.3	1.7	2.3	-9.7	0.8
Netherlands	69	68	48	-2.9	-0.8	-0.8	-2.9	2.0	2.1	-2.8	0.0
Belgium	100	91	38	-0.9	0.6	1.8	-2.2	2.1	2.1	-4.3	0.2
Portugal	119	133	79	-2.8	-0.8	0.7	-4.7	0.9	1.8	-10.1	1.2
Ireland	118	140	105	-5.0	-2.4	-2.3	-5.7	1.0	2.6	-10.9	1.0
Greece	177	199	93	-0.6	1.3	3.0	-7.5	0.2	2.5	-17.1	1.1
Finland	53	45	8	0.2	0.1	1.9	-1.3	2.4	2.2	-1.9	0.0
Austria	75	68	40	-2.5	-0.3	0.3	-1.9	1.7	1.6	-0.9	0.0
<b>Euro area</b>	<b>94</b>	<b>88</b>	<b>43</b>	<b>-1.0</b>	<b>0.3</b>	<b>1.2</b>	<b>-2.2</b>	<b>1.6</b>	<b>1.8</b>	<b>-4.8</b>	<b>0.3</b>

Source: Eurostat, iAGS model.

Real divergence across euro area member states under this scenario will thus widen: Greece will hit the floor with a massive output gap of -17%. Ireland, Spain and Portugal will face substantial losses with output gaps reaching abnormal levels around -10%, and France and Italy will be quite harshly hit, touching the ground at -7% after austerity measures are implemented.

The multi-speed euro area in terms of output losses will also be reflected in structural balances and public debt ratios. In 2017, despite substantial fiscal efforts, Spain, the Netherlands, Portugal and Ireland will not be able to bring their cyclically-adjusted deficit under 0.5% of GDP. Spain, Portugal and Ireland will not be able to reach the public-debt-to-GDP threshold of 60% of GDP by 2032. The case of Greece is interesting: despite an extraordinary structural surplus of 3% of GDP and an outstanding negative fiscal impulse of 7.5% of GDP between 2013 and 2015, it would not achieve the 60% threshold. The reason lies in deflation between 2014 and 2018 which will increase the real interest rate.

Another striking result is the degree of excessive austerity implemented by most countries reaching lower debt ratio at the 5-year horizon. Though European rules require only a maximum deficit of 0.5% of GDP (see Section 2), Germany, Italy, Belgium, Greece and Finland achieve structural surpluses. This situation indicates that there is leeway to perform less restrictive fiscal policies without breaching EU fiscal rules.

Finally, the baseline scenario questions the issue of public debt sustainability in the euro area. Consistently with the new fiscal framework, it seems relevant to fix a 20-year horizon for assessing debt sustainability. Though this definition of fiscal sustainability has no theoretical nor empirical rationale, it is the interpretation given by the treaties. Then it may be seen as an institutional definition of sustainability. Yet, the issue of public debt sustainability is theoretically and empirically unsettled, between promoters of investigating the statistical properties of public finances' variables on the one hand, and, on the other hand, promoters of a "return to economic thinking" (Henning Bohn 2007). Stated briefly, sustainability refers to the ability of the general government to pay back the domestic public debt. This ability depends on the available future scope for spending cuts and tax hikes, but also on future economic growth. It is then far more complex than the compliance to a certain threshold at a given horizon. The definition of the target for public debt at 60% may certainly be debated, but it is the rule set in the treaties and the aim here is to identify strategies that comply with existing fiscal rules.

Therefore, in our simulations, the public debt "sustainability" is assessed regarding the ability of countries to meet the objective of bringing back the debt ratio to 60% of GDP by 2032. Though some countries in our baseline simulations do not reach this 60% threshold, it is noticeable that they achieve substantial reductions in public debt-to-GDP ratios. For instance, Greece would halve its ratio and Ireland's debt would decrease by 35 percentage points of GDP between 2017 and 2032. This downward trend in public debt implies enhanced debt sustainability *stricto sensu*. However the social costs as well as the cost in terms of fiscal balance could make this adjustment unrealistic. For Greece, Italy, Portugal and Belgium, it would indeed require structural primary surpluses above 3% of GDP for many years, which have

rarely been achieved in history of fiscal consolidation. The International Monetary Fund (2012) has recently analysed strategies used by countries with public debt overhangs (that is with debt exceeding 100 % of GDP) to consolidate. The average primary balance, during the period of consolidation, is 2.4 % of GDP. This is only 1.2 point above the average primary balance observed during periods of increases in public debt.

However, simulations also show that the long-run debt-to-GDP ratio in some euro area MS is astonishingly low: 26% in Germany, 18% in Italy, even 8% in Finland. It questions the relevance of fiscal austerity in these countries, because public bonds are highly demanded on financial markets, especially “risk-free” bonds like German *Bunds*. It is likely that the fiscal requirements of the baseline scenario go too far in terms of fiscal sustainability in most euro area countries. To sum up, the scenario considers fiscal restrictions that go beyond the requirements of fiscal sustainability, beyond the requirements of EU fiscal rules and beyond the social resilience of European citizens.

The first variant that we introduce in the baseline scenario refers to “fiscal sustainability” stemming from EU treaties and regulations. Sustainability refers here to the ability of EU MS to converge towards a debt target of 60% of GDP. Therefore, we compute simulations that aim at gauging if all countries can reach the public debt target in 2032. We calculate a sequence of fiscal impulses over 2015-2032 that achieve the target, assuming that fiscal impulses for the years 2013 to 2015 are left unchanged. For simplicity, we set fiscal impulses after 2012 at -0.5 or +0.5 depending on the gap *vis-à-vis* the target: the fiscal impulse is positive (resp. negative) if actual debt is below (resp. above) the target. The absolute value of cumulated fiscal impulses is larger than in the baseline scenario for countries which cannot achieve 60% in this scenario, and lower otherwise. For Germany, Italy and Finland, it would notably imply a significant expansionary fiscal policy to stabilize the debt-to-GDP ratio at 60% in 2032. The aim here is to set a common target for public debt. The alternative scenarios may then be directly compared to this first variant as they will also aim at reaching the same target. By this way, the more active fiscal policies implemented in those countries would also support growth in weaker countries. Such a strategy should certainly rest on enhanced cooperation between member states. There are of course no rational for these countries to target 60% as a national objective. But, it is the easiest way to fix a sort of norm for debt-to-GDP ratio. We may indeed consider that there is no rational for Germany to be satisfied by a debt ratio of 26% in 2032, and a structural surplus of 1.8%. For sure, the German government would have leeway to expand fiscal policy.

Table 5 sums up the simulation results of this variant. Results are threefold. First, two countries - Ireland and Greece - are still unable to achieve the debt-to-GDP target. It does not preclude fiscal sustainability *per se*, but it entails further social unsustainability of public finances: the fiscal stance over the period 2013-2032 produces a cumulative fiscal impulse which is highly negative and twice as high (in absolute values) as in the baseline scenario. Such a fiscal stance is entirely unrealistic and inefficient: economic growth in the medium-run would be lowered substantially, and the maximum negative output gap would be even larger. This outcome ensues

from the high value of the fiscal multiplier when the output gap is strongly negative, from inertial processes in economic growth once hysteresis is introduced, and from the relatively insufficient decrease in real interest rates, since these two countries suffer from low or negative inflation rates until 2020.

Second, Spain and Portugal achieve the debt target in 2032, but under substantially more restrictive fiscal stances. Fiscal adjustment under such conditions seems unrealistic and unreasonable: between 2013 and 2017, both countries would experience slower economic growth than in the baseline, hence postponing until 2025 (Portugal) and 2027 (Spain) the return to a zero output gap.

Third, countries with public debt levels below the debt target in 2032 have fiscal leeway: indeed, the cumulated fiscal impulse improves by 2.7 percentage points in Germany, 1 in France, 4.2 in Italy, 5.7 in Finland and 1.4 in Austria in this scenario compared to the baseline. Despite fiscal leeway and relatively high fiscal multipliers in the short run, the net gain in terms of economic growth is very small. The reason lies in trade interactions within the euro zone: larger margins for maneuver in some countries are compensated by larger real difficulties incurred by the implementation of a more restrictive fiscal stance in Southern countries and Ireland.

**Table 5** First Variant: Fiscal Sustainability

	Public debt (% of GDP)			Structural balance (% of GDP)			Cumulated fiscal impulse (% of GDP)	Average annual growth		Maximum negative output gap reached
	2012	2017	2032	2012	2017	2032	2013-2032	2013-2017	2018-2032	2013-2032
Germany	82	68	60	0.3	-0.1	-1.8	2.4	1.5	1.3	-0.7
France	90	89	60	-1.4	-1.1	-0.8	-1.9	2.3	2.1	-6.8
Italy	127	109	60	0.3	1.4	0.4	2.1	1.8	1.4	-6.5
Spain	86	104	60	-3.7	-1.3	1.3	-8.2	1.3	2.2	-9.8
Netherlands	69	68	60	-2.9	-1.6	-1.9	-2.0	2.1	2.0	-2.8
Belgium	100	91	60	-0.9	-0.3	-0.6	-0.3	2.3	2.1	-4.3
Portugal	119	137	60	-2.8	-0.1	3.7	-8.2	0.4	1.8	-10.2
Ireland	118	144	71	-5.0	-1.7	5.2	-13.7	0.5	2.5	-11.0
Greece	177	206	84	-0.6	1.9	8.9	-15.5	-0.4	2.3	-17.3
Finland	53	46	60	0.2	0.1	-4.3	3.4	2.5	2.2	-1.9
Austria	75	69	60	-2.5	-1.2	-1.7	-0.5	1.8	1.6	-0.9
<b>Euro area</b>	<b>94</b>	<b>89</b>	<b>61</b>	<b>-1.0</b>	<b>-0.3</b>	<b>-0.5</b>	<b>-1.0</b>	<b>1.7</b>	<b>1.8</b>	<b>-4.9</b>

Source: Eurostat, iAGS model.

## 4. Searching for an Alternative Strategy

In this section, we address the issue of the opportunity to soften the consolidation path. The scope of alternative scenarios is inevitably infinite and any scenario reducing the strength of fiscal consolidation would improve growth, but it may also undermine public debt sustainability<sup>6</sup>. The identification of an alternative strategy is then based on a trade-off between growth and debt. The aim of this section is to identify a strategy reducing the output losses of consolidation while keeping constant the objective for public debt. In theory, it boils down to an optimal control problem

<sup>6</sup> The model does not integrate any mechanism through which debt would have a negative effect on activity *per se*.

which may be solved using the appropriate algorithm. However, there is no *ex ante* guarantee that the optimal solution may be one that can be implemented in practice. Conversely, we are seeking a solution compatible with the spirit of the various fiscal rules governing euro area MS. Though fiscal rules have been criticized (Catherine Mathieu and Henri Sterdyniak 2013), we adopt here a pragmatic view where we seek alternative strategies compatible with existing rules. Even if treaties may or should be modified, the process may take time whereas there is an urgent need to consider alternative macroeconomic policies.

Taking into account the objective of the TSCG, we maintain the objective for public debt at 60% of GDP in 2032. We also claim that the current rules leave leeway for an alternative strategy as a minimum annual improvement of the cyclically-adjusted balance (net of one-off measures) of 0.5% of GDP is held to be consistent with the required correction of an excessive deficit.

Starting from this, we consider the case where the consolidation is spread out from 2013 onwards. We implement a yearly consolidation of 0.5 point of GDP consistent with the objective of 60% of debt in 2032 as identified in the previous section<sup>7</sup>. The main difference with the scenario described in Table 5 is that we replace the scheduled consolidation path from 2013 until 2015 (see Table 2 in Box 1) by a consolidation, which does not exceed 0.5% of GDP from 2013 until 2032. For those countries (Greece and Ireland) where the 60% debt ratio was not reached in 2032, we implement the same spread consolidation strategy from 2013 to 2032. The aim here is simply to check whether a milder consolidation would reduce output losses while maintaining the objective of bringing the debt ratio back towards 60% in twenty years.

The efficiency of such a strategy, in which austerity is softened but not delayed, should first be assessed regarding the average growth rate over the period. From this, it appears clearly that on the 2013-2017 period, the average growth for the euro area as a whole is 0.6 point higher (Table 6) than in a scenario where the consolidation is not spread over time. Under a softened consolidation stance, a larger share of the fiscal contraction would occur after the output gap has recovered. The negative impact on growth would be reduced. Consequently, the consolidation stance required to fulfill fiscal sustainability would be lowered because consolidation would be more efficient (in terms of debt reducing) when the output gap is closed.

The most striking difference is identified for Greece where the average growth between 2013 and 2017 would be 3.6 points higher than if the current expected consolidation path were implemented. Besides, this strategy would enable Greece to reduce debt in 2032 more significantly even though the cumulated fiscal stance would be loosened, amounting to -3.3 points of GDP in the spread consolidation scenario against -15.5 points otherwise. It must however be noticed that from 2018 until 2032, growth would be slightly reduced in the softened scenario since it also involves a longer time span of consolidation. The situation of Greece is the most symptomatic of the actual ill-designed consolidation. The Greek public deficit results mainly from cyclical effects and interest payments. The structural deficit amounts to -0.6% of

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<sup>7</sup> In the extended version of the first iAGS report, we also study an alternative strategy consisting in delaying consolidation; see OFCE-ECLM-IMK (2013).

GDP for 2012 which is already near the so-called “golden rule” enacted in the fiscal compact. It seems urgent for Greece to reduce the consolidation pace. This is a condition for growth to resume and for a reduction of the cyclical deficit. Such a strategy would also avoid a deflation episode in Greece. The real interest rate between 2013 and 2017 would be indeed 2 points less than in the scenario where the fiscal stance is what is currently scheduled in the Stability programme. Finally, spreading the consolidation would lead to structural surplus of 0.8% for Greece in 2017 instead of 1.9 % for the scenario where consolidation is not spread. By 2032, the structural balance would reach 3.5% of GDP, which is still quite high relative to historical standards but it is nevertheless significantly less than in the baseline scenario (8.9% of GDP).

If we turn to the other countries, results are in the same vein even if the contrast is less striking. Thus, the average growth for the 2013-2017 period would be higher for all euro area countries except Austria, where there would be no change in growth. For the other countries, the benefit would range from 0.1 point in Germany to 2.2 points in Ireland. Portugal, Spain and Italy would be the countries benefiting the most from such a strategy.

**Table 6** Second Variant: Softening Consolidation

	Public debt (% of GDP)			Structural balance (% of GDP)			Cumulated fiscal impulse (% of GDP)	Average annual growth		Maximum negative output gap reached
	2012	2017	2032	2012	2017	2032	2013-2032	2013-2017	2018-2032	2013-2032
Germany	82	72	60	0.3	-1.1	-1.3	1.8	1.6	1.3	-0.5
France	90	86	60	-1.4	-1.0	-0.9	-1.3	2.6	2.1	-4.7
Italy	127	104	60	0.3	-0.6	0.9	2.4	2.6	1.2	-2.7
Spain	86	96	60	-3.7	-2.6	0.8	-6.0	2.5	2.1	-6.3
Netherlands	69	69	60	-2.9	-1.5	-1.9	-1.9	2.2	2.0	-2.3
Belgium	100	89	60	-0.9	-1.0	-0.7	0.4	2.7	2.0	-2.9
Portugal	119	119	60	-2.8	-0.9	1.9	-3.9	1.9	1.6	-4.2
Ireland	118	125	67	-5.0	-3.7	3.9	-9.5	2.7	2.3	-5.6
Greece	177	150	60	-0.6	0.8	3.5	-3.3	3.2	2.0	-8.0
Finland	53	54	60	0.2	-2.1	-3.0	2.0	2.7	2.1	-1.1
Austria	75	71	60	-2.5	-1.5	-1.5	-0.7	1.8	1.6	-0.8
<b>Euro area</b>	<b>94</b>	<b>90</b>	<b>62</b>	<b>-1.0</b>	<b>-1.3</b>	<b>-0.4</b>	<b>-0.4</b>	<b>2.3</b>	<b>1.8</b>	<b>-3.1</b>

Source: Eurostat, iAGS model.

## 5. Conclusion

Drawing on a reduced-form model of most euro area member states, we show that the frontloaded strategy endorsed by governments, under the auspices of the European Commission, is fruitless in terms of economic growth and also in terms of fiscal sustainability. Beyond clarifying the failure of this strategy, we discuss an alternative scenario built upon simulations based on the same reduced-form model. We suggest that keeping the target of a debt ratio of 60 % by 2032 and softening consolidation would enhance growth. For most countries, long-term sustainability of public finances would be fulfilled while in the short run, economic growth would be higher.

The reduced-form model, though it departs from optimal control modeling, includes major features of the so-called New Consensus (New Classical) school: (partly) forward-looking expectations by consumers, firms and financial markets, a Taylor

rule to describe monetary policy setting, the introduction of risk premia on public or private bonds, reliance on the disputable concept of “output gap” and a zero-lower-bound to describe non-linear monetary policy. Despite the closeness of our model with some used in large international institutions like the European Commission, we achieve new results as regards the appropriate pace of fiscal consolidation in the euro area. Two assumptions are important: fiscal multipliers vary along the business cycle and hysteresis effects maintain the drop of real GDP *vis-à-vis* its potential. Both assumptions are clearly grounded in recent literature and empirical facts. The introduction of a softened pace of consolidation in the euro area, in due respect of the European treaties, would significantly alleviate the social consequences of the crisis as it would slowdown unemployment. To make this alternative strategy fully effective, a strong commitment by governments to reduce debt-to-GDP ratio in the future is of course required: debt reduction must be planned, but only after the output gap has substantially decreased, therefore limiting the costs of consolidation.

Further research will be dedicated to extending the model to non-euro-area countries, to endogenizing risk premia and long-term growth, and to introducing current account dynamics and potential negative effects of public debt in the vein of Alexandru Minea and Patick Villieu (2011).

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