The Crisis and the Sustainability of Euro Area Public Finances: What can go Wrong?

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29 January 2010

Abstract

Since the intensification of the financial crisis in September 2008 many euro area countries have provided financial support to their banking system and have adopted expansionary fiscal policies to counter the negative effects of the economic downturn. Together with the operation of automatic stabilisers this has led to a sharp deterioration of public finances. Against this backdrop, this paper discusses the risks to the sustainability of public finances as they may arise from adverse developments in the primary fiscal balance, output growth, interest rates and stock-flow adjustments. In addition, simulations for the euro area government debt-ratio over the period 2010-2030 are provided. Even abstracting from the increasing costs of ageing, they point to the risk of a rapidly rising debt ratio. In order to prevent such developments, there is a need to implement a credible fiscal adjustment strategy, which would restore confidence in the sustainability of public finances.

Keywords: fiscal sustainability, financial crisis, debt simulation.
JEL classification: E62, H68, H63.

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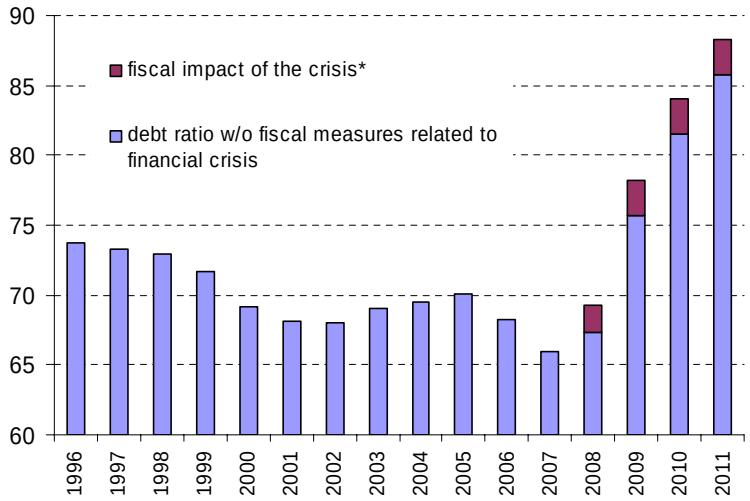
1 Introduction

This paper discusses the risks to the sustainability of euro area public finances that are associated with the crisis. While there are several definitions of fiscal sustainability, it is generally understood as the ability of a government to service its debt obligations in the long term.[1] For many euro area countries this ability has been impaired by the adverse developments in the primary budget balance, a rising burden of net interest payments, lower long-term output growth and the need to finance large capital injections in support of the financial sector. The threat to the solvency of governments is most clearly shown by the fact that their debt-to-GDP ratios are on a rising path and will continue rising if fiscal policies remain unchanged. As indicated in Figure 1, after having declined from roughly 74% of GDP in 1996 to a trough of 66% of GDP in 2007, the euro area government debt-to-GDP ratio jumped to 69.3% in 2008 and is projected to rise strongly to 88.2% in 2011.

Figure 1: Euro area general government debt over the period 1996-2011 (% of GDP)



Note: The fiscal impact of the financial crisis on debt captures the budgetary impact of support to banks in the form of capital injections (i.e. loans and acquisition of shares), as well as asset purchases and other measures. The years 2009-11 are projections. The fiscal impact of the financial crisis on debt in 2010 and 2011 is assumed to stay at the 2009 level.
Sources: European Commission [9], ECB calculations.

Under unchanged policies, debt ratios are projected to rise further in the euro area. Against this background, this paper analyses the risks to the sustainability of public finances in the euro area countries and presents some

[1] See for example [11] for a more detailed exposition on the issue.

simulations on how the debt burden in the euro area may develop under different assumptions.[2] The paper is structured as follows: Section 2 first addresses the risks to fiscal sustainability in the euro area countries. Section 3 analyses debt sustainability by presenting various debt scenarios and some sensitivity analysis. Finally, Section 4 concludes by discussing policy options to achieve sustainable public finances in the medium to long term.

2 Measuring fiscal sustainability

The sustainability of public finances requires as a minimum that the government debt-to-GDP ratio is stable over time. This notwithstanding, in accordance with the Treaty and the Stability and Growth Pact, the general government gross debt ratio must be below the reference value of 60% of GDP or "sufficiently diminishing and approaching the reference value at a satisfactory pace", implying that in many euro area countries, debt ratios would need to be reduced substantially. From a theoretical perspective and for the purpose of defining fiscal sustainability, debt accumulation is driven by four main factors: (i) the government's primary budget balance in each period, (ii) the interest payments on the outstanding stock of government debt, (iii) the nominal growth rate of the economy, which affects the debt-to-GDP ratio through a denominator effect and (iv) any stock-flow adjustments, i.e. those transactions or other factors that affect outstanding debt but do not affect the primary balance.

This can be formally expressed as:

$$\Delta d = \frac{i-g}{1+g} d_{t-1} - p_t + sf_t \tag{1}$$

where Δd is the change in the debt-to-GDP ratio over the previous period, i is the implicit interest rate paid on the outstanding government debt, g is the nominal growth rate of the economy, d_{t-1} is the debt-to-GDP ratio in the previous period, p_t is the primary balance-to-GDP ratio and sf_t presents the stock-flow adjustments-to-GDP ratio. The stock-flow adjustment includes differences in cash and accrual accounting, accumulation of financial assets, valuation changes as well as other residual effects. This term has assumed particular relevance during the recent crisis in light of the financial support provided by many euro area governments to ailing financial institutions. This support generally has consisted of capital injections, loans and acquisitions of (impaired) financial assets. To the extent that these financial transactions were conducted at market prices or yield a sufficient return, they do not have an immediate impact on the primary balance, but

[2] For a similar analysis for the G20 countries, see e.g. [12].

will raise outstanding debt if governments need to borrow in order to finance them. The counterpart of this extra government debt is represented by the financial assets that the governments acquired during the crisis, which in the future may be sold at a loss or a profit. The explicit government guarantees that were provided in the context of the crisis represent contingent liabilities that are recorded off balance sheet. They would only affect the primary balance once a call on a guarantee is made, which will then usually result in a deficit-increasing government capital transfer.1 The fees, dividends or interest payments that the government receives from the banks as a result of its rescue operations are recorded as revenues and improve the overall budget balance. As argued in [13], a comprehensive view of the sovereign balance sheet is necessary to properly assess the risks to the creditworthiness of governments following their crisis-related interventions.

Applying equation (1), the table below displays the actual and projected developments in the euro area government debt-to-GDP ratios over the periods 2003-07 and 2008-11, as well as the underlying factors. As the table indicates, the euro area debt ratio is projected to rise by 18.9 percentage points to 88.2% of GDP over the period 2008-11. The main underlying factors are: (i) the change in the primary balance from a moderate surplus to a large deficit; (ii) the so-called snow-ball effect, which captures the joint impact of the interest expenditures on the accumulated stock of debt and of low real GDP growth and inflation on the debt ratio, and (iii) the stock-flow adjustments.

Table 1: The euro area government debt-to-GDP ratio: changes and underlying factors (in % of GDP)

	Average 2003-07	**2008**	**2009**	**2010**	**2011**
Gross debt-to-GDP ratio	**68.6**	**69.3**	**78.2**	**84.0**	**88.2**
Change in the debt ratio	-0.4	3.3	8.9	5.8	4.2
Contribution to change:					
Primary balance deficit (- for surplus, + for deficit)	**-0.9**	**-1.0**	**3.4**	**3.7**	**3.1**
Snow-ball effect	**0.3**	**1.1**	**4.9**	**1.8**	**1.1**
of which:					
Interest expenditure	3.0	3.0	3.0	3.2	3.4
Growth effect	-1.4	-0.4	2.9	-0.5	-1.2
Inflation effect	-1.4	-1.5	-1.0	-0.8	-1.1
Stock-flow adjustment	**0.3**	**3.2**	**0.6**	**0.3**	**0.1**

Source: European Commission [9], p. 31.
Note: The snow-ball effect captures the impact of interest expenditure on accumulated debt, as well as the impact of real GDP growth and inflation on the debt ratio (through the denominator). The stock-flow adjustment includes differences in cash and accrual accounting, accumulation of financial assets, valuation changes and other residual effects.

From equation (1) a simple condition for achieving a constant debt-to-GDP ratio can be obtained, namely:

$$\frac{i-g}{1+g}d_{t-1} = p_t - sf_t \tag{2}$$

According to equation (2) a stable debt ratio requires the government to generate a sufficient primary surplus if the implicit interest rate on outstanding debt exceeds the nominal growth rate of the economy and if the stock-flow adjustment is positive. Otherwise, in the presence of a positive stock-flow adjustment, primary deficits are compatible with a stable trajectory for the debt ratio only if the interest-growth rate differential $(i-g)$ is sufficiently negative. Therefore, under the assumption that the implicit interest rate on government debt and the nominal growth rate of the economy are given or exogenously determined, the primary balance is the variable governments can control in order to achieve fiscal sustainability. In principle, this condition implies that any level of the debt-to-GDP ratio would be compatible with fiscal sustainability provided the primary surplus is sufficiently large.

3 Risks to fiscal sustainability

This section discusses the risks to fiscal sustainability associated with each of the main determinants of euro area government debt-to-GDP developments in relation to the crisis.

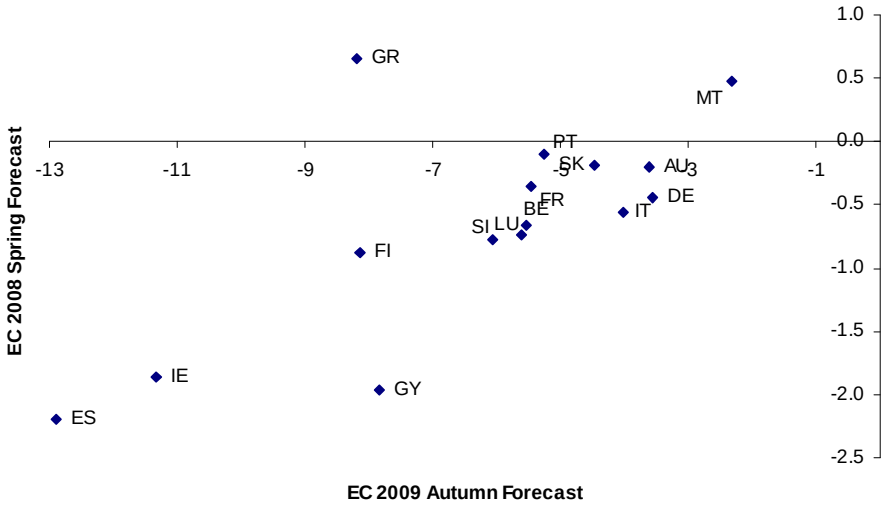
3.1 Primary Balance

The primary balance is a major determinant of fiscal sustainability. The sharp and unexpectedly large deterioration in the euro area governments' primary balances is illustrated in Figure 2. The chart plots the cumulated change over the period 2007-09 in the primary balances of euro area countries as was projected by the European Commission in its Spring 2008 Economic Forecast [8] (i.e. before the financial crisis erupted) versus the projections released 18 months later in its Autumn 2009 Economic Forecast [9]. For all countries, given the stronger than initially expected worsening of the macroeconomic environment, the deterioration in the primary balance is estimated to have been much stronger than anticipated one and a half year earlier.

The main sources of risk for fiscal sustainability related to these adverse developments in the primary balance are:

First, even if the fiscal stimulus measures were to be quickly removed, this would in most euro area countries not suffice to return to debt-stabilising

Figure 2: Cumulated change in primary balances (2007-09) - EC Spring 2008 Forecast vs. EC Autumn 2009 Forecast



Sources: European Commission [8, 9], ECB calculations.

primary surpluses. Generally, a full assessment of the impact of fiscal activism on the sustainability of public finances requires consideration of the composition of fiscal stimulus measures as well as their effectiveness in promoting growth both in the short and long run.

Second, further losses in the banking sector may trigger additional governments' bailout operations. Although the exact amount of government guarantees to financial and non-financial firms that is likely to be called is not known, a non-negligible part may be called. At the same time, expiring guarantees may be prolonged and further guarantees may be granted in the future. Also, the higher level of retail deposit insurance, even when the costs are expected to be covered by the banking sector, would ultimately imply a risk that the government might potentially have to step in to repay deposit-holders in case of a more widespread failure of banks. This is true in particular for those euro area countries where governments promised a more or less unlimited guarantee for all retail deposits.

Third, the cyclical component of the (primary) deficits may become structural to the extent that, for example, the higher unemployment rate turns out to be structural and potential output settles at a lower level than before the crisis. A prolonged period of lower output and revenue growth would suggest that existing spending growth trends, reflected in rising gov-

ernment expenditure-to-GDP ratios, are unsustainable. On top of this, the costs related to population ageing will increasingly take their toll on public finances by way of lower revenues from social security contributions and higher ageing-related expenditures.[3]

Against this background, the debt simulations below, which take the projection for the euro area primary balance in 2010 as a starting point, assume an improvement in the primary balance amounting to 1% of GDP per year until 2030. Alternatively, accounting for further downside risks, this annual consolidation effort is assumed to reach only 0.5%.

3.2 Ageing costs and risks to fiscal sustainability

The debt simulations in this paper abstract from the impact of changes in the age-related public expenditure that is due to the projected population ageing. According to [7], the ratio of age-related public expenditures-to-GDP in the euro area is projected to rise by 5.2 percentage points over 2007-2060 in a no-policy change scenario. This, however, hides large differences across the euro area countries (see Table 2).

[3]The fiscal sustainability against the backdrop of population ageing is analyzed in [3].

Table 2: Age-related government expenditure in the euro area 2007-60(level in % of GDP, change in percentage points of GDP)

as a percentage of GDP	Pensions level 2007	Pensions change 2007-60	Healthcare level 2007	Healthcare change 2007-60	Long-term care level 2007	Long-term care change 2007-60
Belgium	10.0	4.8	7.6	1.2	1.5	1.4
Germany	10.4	2.3	7.4	1.8	0.9	1.4
Ireland	5.2	6.1	5.8	1.8	0.8	1.3
Greece	11.7	12.4	5.0	1.4	1.4	2.2
Spain	8.4	6.7	5.5	1.6	0.5	0..9
France	13.0	1.0	8.1	1.2	1.4	0.8
Italy	14.0	-0.4	5.9	1.1	1.7	1.3
Cyprus	6.3	11.4	2.7	0.6	0.0	0.0
Luxembourg	8.7	15.2	5.8	1.2	1.4	2.0
Malta	7.2	6.2	4.7	3.3	1.0	1.6
Netherlands	6.6	4.0	4.8	1.0	3.4	4.7
Austria	12.8	0.9	6.5	1.5	1.3	1.2
Portugal	11.4	2.1	7.2	1.9	0.1	0.1
Slovenia	9.9	8.8	6.6	1.9	1.1	1.8
Slovakia	6.8	3.4	5.0	2.3	0.2	0.4
Finland	10.0	3.3	5.5	1.0	1.8	2.6
Euro area	**11.1**	**2.8**	**6.7**	**1.4**	**1.3**	**1.4**

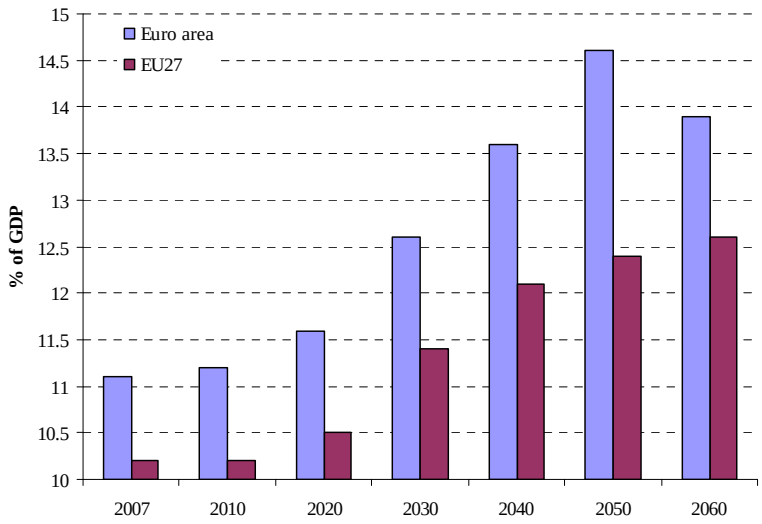
	Unempl. benefits level 2007	Unempl. benefits change 2007-60	Education level 2007	Education change 2007-60	Total level 2007	Total change 2007-60
Belgium	1.9	-0.4	5.5	0.0	26.5	6.9
Germany	0.9	-0.3	3.9	-0.4	23.6	4.8
Ireland	0.8	0.1	4.5	-0.3	17.2	8.9
Greece	0.3	-0.1	3.7	0.0	22.1	15.9
Spain	1.3	-0.4	3.5	0.1	19.3	9.0
France	1.2	-0.3	4.7	0.0	28.4	2.7
Italy	0.4	0.0	4.1	-0.3	26.0	1.6
Cyprus	0.3	-0.1	6.1	-1.2	15.4	10.8
Luxembourg	0.4	0.0	3.8	-0.5	20.0	18.0
Malta	0.4	0.0	5.0	-1.0	18.2	10.2
Netherlands	1.1	-0.1	4.6	-0.2	20.5	9.4
Austria	0.7	0.0	4.8	-0.5	26.0	3.1
Portugal	1.2	-0.4	4.6	-0.3	24.5	3.4
Slovenia	0.2	0.0	5.1	0.4	22.9	12.8
Slovakia	0.1	-0.1	3.1	-0.8	15.2	5.2
Finland	1.2	-0.2	5.7	-0.3	24.2	6.3
Euro area	**1.0**	**-0.2**	**4.2**	**-0.2**	**24.3**	**5.2**

Sources: European Commission [7].

The projections also show that the rise in public pension expenditure in the euro area is expected to accelerate after 2020 before slowing down somewhat after 2050 (see Figure 3).

Thus, accounting for the projected increase in age-related expenditure would imply that - in a no-policy change scenario - budget deficits and thus debt-to-GDP ratios would turn out higher than in these debt simulations (see [10] for more details on fiscal sustainability in the EU countries accounting for changes in age-related expenditure). Furthermore, following the dramatic decline in the value of assets in the funded components of private and public pension systems, there may potentially be pressure on governments to compensate for these financial losses in order to provide the elderly with

Figure 3: Public pension expenditure in the euro area and the EU, 2007-60



Sources: European Commission and Economic Policy Committee [7].

an adequate living standard, thus raising risks to fiscal sustainability.

3.3 Economic growth

As the crisis unfolded, output growth prospects over the short term deteriorated drastically, triggering rising debt-to-GDP ratios across the euro area countries. At the same time, long-term developments in output growth, the estimates of potential growth and thus government debt-to-GDP ratio developments are associated with a high degree of uncertainty at the current juncture. For example, [6] describes three possible scenarios for future developments in potential output. These entail a "full recovery scenario", according to which the decline in potential output is only of a short-term nature as a post-crisis acceleration in potential growth would quickly realign the level of potential output with its long-term pre-crisis path. Second, in the "level shift scenario", potential growth would grow at its long-term rate of 2% after the end of the downturn, but not return to its long-term path. Finally, according to a "lower growth scenario", there may not only be a downward shift in the level, but also a persistent slowdown in the rate of growth of potential output.

In general, it follows from equation (2) in Section 2 that a lower (or negative) economic growth rate leads to an increase in both the debt-to-GDP ratio and the interest-growth rate differential, which in turn increases the speed of debt accumulation. Thus, in an environment of permanently lower growth, higher primary surpluses would be required to stabilise the govern-

ment debt ratio and even higher primary surpluses would be needed to bring it onto a declining path. Although lower economic growth could improve the primary balance ratio through a denominator effect, permanently lower growth would also entail lower government revenues, thus putting additional pressure on the primary balance. Therefore, in the absence of fiscal consolidation measures, debt ratios would remain on a rising path.

In the debt simulations below, the real growth rate of potential GDP is assumed to gradually decline from 2.2% in 2010 to 1.5% in 2030, in line with [7]. In a sensitivity analysis, developments in the debt ratio until 2030 are also simulated for half a percentage point lower potential growth rate over the simulation horizon.

3.4 Interest rates

Table 3 shows the development of the implicit interest rate on euro area government debt based on the Commission's Autumn 2009 Forecast. It is calculated as the ratio of government interest expenditure to gross general government debt. The decline in the implicit interest rate observed in 2008 and 2009 can be linked to generally favourable financing conditions for the vast majority of euro area governments. The "flight to safety" that followed when the crisis took hold brought an elevated demand for government securities that lowered on average the yields required by investors. At the same time, a differentiation among countries took place and resulted in a widening of government bond yield spreads vis--vis Germany.[4] However, these unique market conditions, reflecting an elevated risk aversion as well as limited investment opportunities in the corporate sector, are likely to change in the future. As the recovery gains momentum, investors will likely return to more risky (corporate sector) securities. The future development of interest rates may pose risks to fiscal sustainability as higher interest rates on government debt would imply higher interest expenditure and higher primary balance surpluses required to stabilize government debt.[5] On the other hand, lower interest rates on government debt would in principle enable a faster government debt consolidation.

In the debt simulations below, the sensitivity analysis simulates developments in the debt ratio also under the assumption of a one percentage point higher interest rate than in the baseline.

[4] [5] shows that long term interest rates in the G-7 countries are affected by macroeconomic factors and that the fiscal trajectory and the quality of government debt are important.

[5] [2, 4] provide empirical evidence on the market discipline hypothesis. As the debt ratio grows beyond a certain threshold the long term interest rate at which a country can borrow jumps suddenly as the market places a larger default premium on the country.

Table 3: Implicit interest rate on euro area gross general government debt

		2007	2008	2009	2010	2011
Government interest expenditure	% of GDP	2.9	3	3	3.2	3.4
Gross general government debt	% of GDP	66	69.3	78.2	84	88.2
Implicit interest rate	%	4.39	4.33	3.86	3.81	3.85

Sources: European Commission [9], ECB calculations.

3.5 Stock-flow adjustments

A positive stock-flow adjustment means that government debt increases by more than the annual deficit (or decreases by less than implied by the surplus). The stock-flow adjustment consists of three main categories: (i) the net acquisition of financial assets, which are recorded "below the line" as they do not contribute to the deficit; (ii) financial derivatives and other liabilities; and (iii) other adjustments (e.g. effects of face valuation, appreciation/depreciation of foreign currency debt and other changes in volume).

Over the past few years, the stock-flow adjustment contribution to changes in the debt-to-GDP ratio for euro area countries has been modest, though positive. For the period 2004-07 the stock-flow adjustment was 0.5% of GDP or less and the net acquisition of financial assets has usually been the main factor behind the stock-flow adjustment. Since the financial crisis the size of the stock-flow adjustment has recorded a sixfold increase for the euro area countries, reaching 3.2% of GDP in 2008, against 0.5% of GDP in 2007.

The main reason underlying such a sharp increase in the stock-flow adjustment is the support extended by governments to ailing financial institutions by way of capital injections. In 2008, the impact on euro area government debt due to the support extended to the financial sector was 1.9% of GDP. The direct effect on the debt stock will last until these assets can be sold again. Moreover, since governments have committed larger amounts of capital support to the financial sector than were actually used and banks may yet be confronted with further write-downs, the possibility of additional recapitalisations cannot be ruled out. This would imply further contributions of the stock-flow adjustment to the level of debt. On the other hand, following a successful stabilisation of the banking sector, the restructuring of bank balance sheets and a sustained return to profitability, governments may also be able to sell the financial assets they acquired during the crisis and exit from the financial sector sooner rather than later. Generally, the medium-term fiscal cost of financial support operations and thus the impact on fiscal sustainability will depend on the extent to which the assets acquired by the government keep their value and can be disinvested without

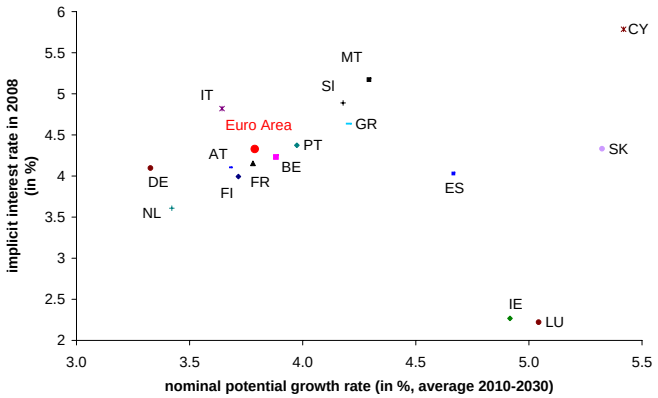
losses. In this respect, uncertainty about the timing of asset disposals and the recovery rate from the sale of these assets is an additional source of fiscal risks. All in all, in the course of 2008 "below the line" operations have led government debt in the euro area to increase much faster than indicated by the government deficit (see Section 2).

As regards the subsequent debt simulations, developments in governments' exposure to bank guarantees is captured by assuming that the government guarantees equal to 4.5% of GDP are called, part of which may be financed by revenues received from re-selling financial assets acquired by governments during the financial crisis.

4 Government debt scenarios

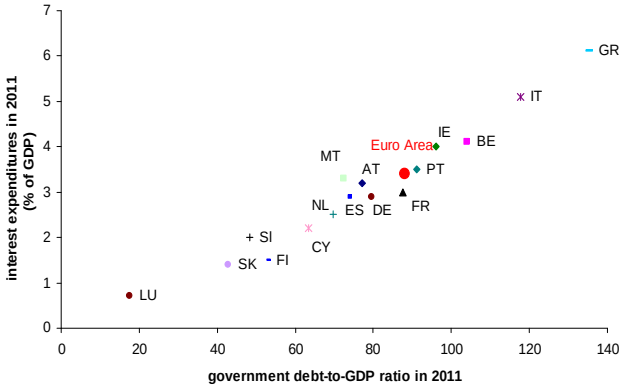
The euro area countries entered the crisis with very heterogeneous initial debt positions, growth perspectives and budgetary imbalances. Moreover, investors differentiate among countries and the long-term interest rates on government debt have diverged. This heterogeneity is partly depicted in Figure 4 which displays the projected average nominal potential growth rates between 2010 and 2030 and the implicit interest rates in 2008. At the same time, the heterogeneity is given also by the initial debt-to-GDP ratio and debt-servicing costs represented by government interest expenditures as shown in Figure 5.

Figure 4: Nominal potential growth rates and implicit interest rates across the euro area countries



Sources: Real potential growth rates - [7]; implicit interest rates - [9]. Nominal potential growth rates are derived from real growth rates and assumed annual inflation of 1.9%.

Figure 5: Heterogeneity in government debt ratios and interest expenditures



Source: European Commission [9].

In the following, we focus on euro area aggregates and thus abstract from the existing heterogeneity among the euro area Member States as demonstrated in Figures 4 and 5. However, this heterogeneity must be fully accounted for when designing fiscal exit strategies from the crisis, assessing debt management strategies or discussing issues related to the appropriate size of fiscal consolidation at the Member State level.

4.1 The baseline scenarios

The following part presents some scenarios for possible developments in the general government debt ratio for the euro area until 2030. Their purpose is to provide a general idea of the magnitude of fiscal consolidation needed in the euro area in the years to bring public finances back on a sustainable path. In addition, a sensitivity analysis is provided. Three illustrative scenarios are constructed on the basis of the following assumptions:

- In all scenarios, the Commission Autumn 2009 Forecast for euro area general government debt (84.0% of GDP) in 2010 is used as a starting point. The real growth rate of potential GDP is assumed to gradually decline from 2.2% in 2010 to 1.5% in 2030.[6] The increase in the GDP deflator is assumed constant at 1.9% over the scenario period. The implicit interest rate on government debt is assumed constant and equal to 4.3%, the value recorded in 2008 (as the values in 2009-2010 may be distorted by the financial crisis). The starting value of the primary balance in 2010 is -3.7% of GDP. For illustrative purposes, it is assumed that fiscal consolidation starts in 2011 and continues until a balanced budget is reached. The different assumptions underlying the consolidation efforts of the three scenarios are depicted in Figure 6. Since economic growth is assumed to be at its potential over the period 2010-30, the annual changes in the overall fiscal balance correspond to the changes in the structural balance (see Figure 7).

- The green scenario (dotted line) assumes a rapid fiscal consolidation with the primary balance improving by 1 percentage point of GDP per year until a balanced budget is reached (in 2018). Afterwards, a primary balance compatible with a balanced budget is maintained over the projection horizon (i.e. until 2030).

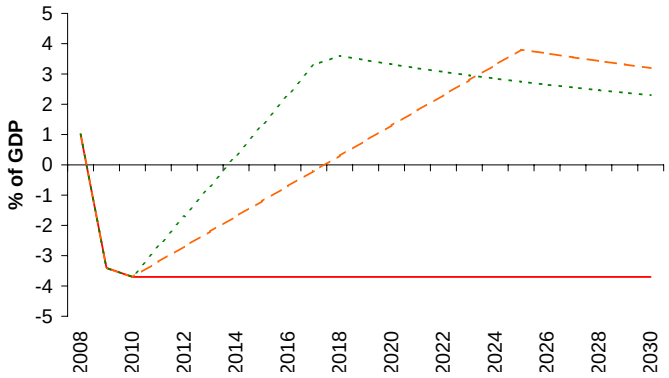
- The orange scenario (dashed line) assumes a less ambitious consolidation path, with the primary balance improving by only 0.5 percentage point of GDP per year until a balanced budget is reached (in 2025). Primary surpluses compatible with a constant balanced budget are then kept until 2030.

- The red scenario (smooth line) assumes that no consolidation effort takes place. The primary balance remains at -3.7% of GDP (i.e. constant at the forecast for 2010 value).

The results of the debt simulations are shown in Figure 8. The debt ratio peaks in the green scenario in 2013 at 89.3% of GDP and in the orange

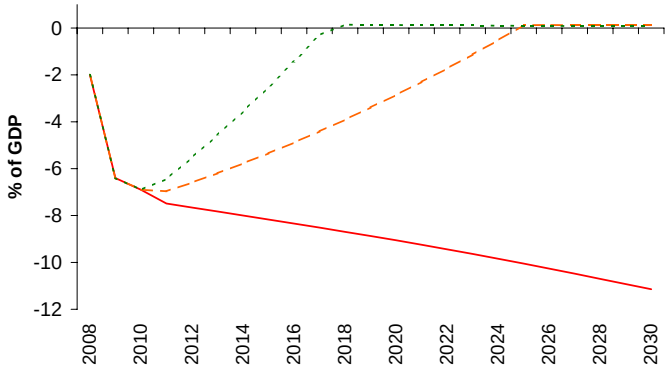
[6] According to assumptions in [7].

Figure 6: Assumptions about primary balance-to-GDP developments in the three scenarios (% of GDP)



Source: own simulations.

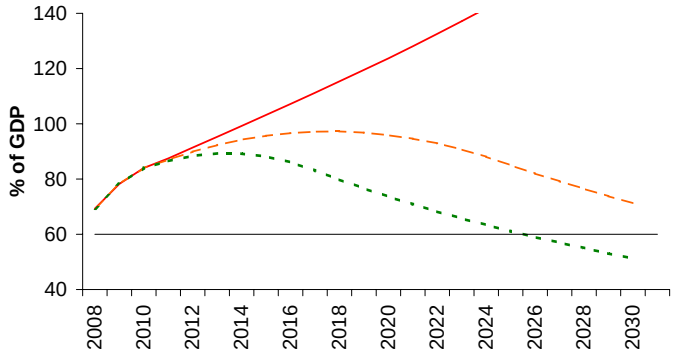
Figure 7: Overall fiscal deficit/surplus in the three scenarios (% of GDP)



Source: own simulations.

scenario in 2017 at 97.2% of GDP. Both the green and the orange scenarios subsequently lead to a gradual decline of the government debt-to-GDP ratio. The 60% of GDP reference value is reached within the scenarios' horizon only in the green scenario (i.e. in 2026). The red scenario leads to a steady rise in the government debt ratio that reaches 100% of GDP by 2015, 120% by 2020 and 150% by 2026. Obviously, the results of these simulations are highly sensitive to the underlying assumptions. This notwithstanding, they serve to illustrate the risks to fiscal sustainability for the euro area as a whole. These risks are much more pronounced for some individual countries, in particular for those that already had high or very high debt ratios before the crisis and for those that face high or very high deficits after the crisis.

Figure 8: General government debt-to-GDP scenarios for the euro area (% of GDP)



Source: own simulations.

4.2 Sensitivity analysis

In order to illustrate the sensitivity of the results related to the choice of the underlying assumptions, we separately simulate the impact of lower than assumed economic growth, higher interest rates and higher crisis-related costs.

- Potential growth is assumed to be 0.5 p.p. lower than in the baseline over the whole simulation period.
- We assume the interest rate to be one percentage point higher than in the baseline, i.e. 5.3%.
- Finally, we assume that 50% of the outstanding government guarantees[7] are called in 2012 with (i) no fiscal revenue being expected to offset the fiscal cost related to these guarantees and (ii) with future fiscal revenues fully offsetting the initial fiscal costs related to the called guarantees.

The consolidation scenarios (annual changes in the primary balance) remain unchanged. The green scenario assumes annual fiscal consolidation of 1 p.p., the orange scenario of 0.5 p.p. and the red scenario assumes no change in the primary balance.

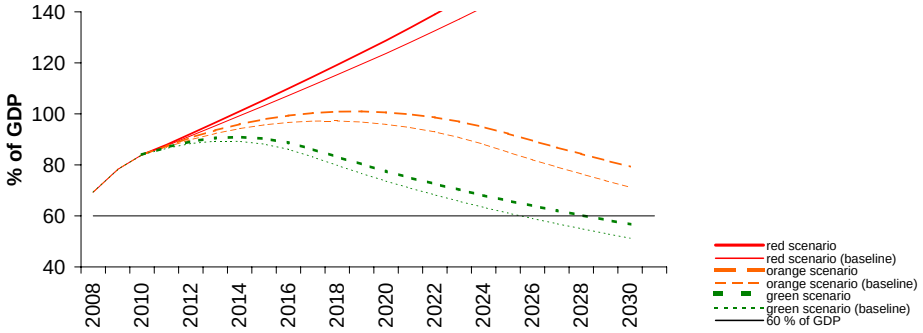
As shown Figure 9, as expected, the consolidation paths under the less favourable growth assumptions shift to less favourable outcomes (thick lines) than in the baseline scenarios (thin lines). In none of the scenarios with an assumed lower nominal potential output growth the debt-to-GDP ratio would be below the 60% of GDP threshold within the simulation period until 2030.

Figure 10 depicts the outcome of 1 percentage point higher interest rates than in the baseline scenarios. This assumption leads to a much faster accumulation of government debt in the orange and red scenarios.

Finally, we look at the guarantees issued by governments, which represent another source of risk to fiscal sustainability. If the guarantees are called, we can assume a level shift in the government debt-to-GDP ratio. In this respect, Figure 11 shows the impact of a situation where government guarantees of 4.5% of GDP (i.e. 50% of the total outstanding government guarantees in the euro area) are called in 2012 and where no fiscal revenue is expected to offset the fiscal cost related to these guarantees. This creates

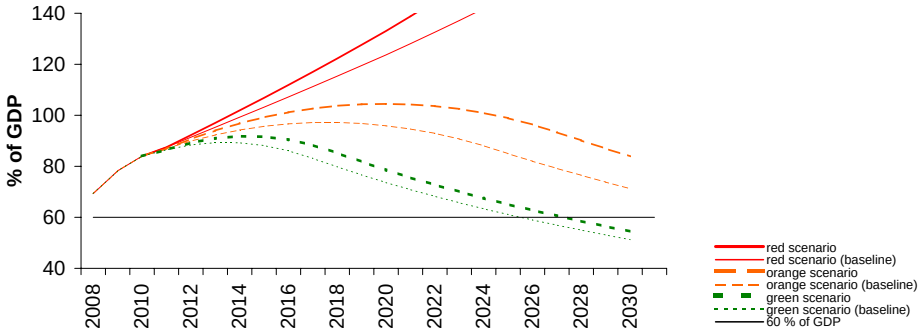
[7]The euro area governments guarantees related to the financial crisis represent about 9% of GDP, including the guarantees on special purpose entities' debt and other guarantees.

Figure 9: General government debt-to-GDP scenarios for the euro area - potential product lower by 0.5 p.p. than in the baseline scenarios (% of GDP)



Source: own simulations.

Figure 10: General government debt-to-GDP scenarios for the euro area - interest rates higher by 1 p.p. than in the baseline scenarios (% of GDP)

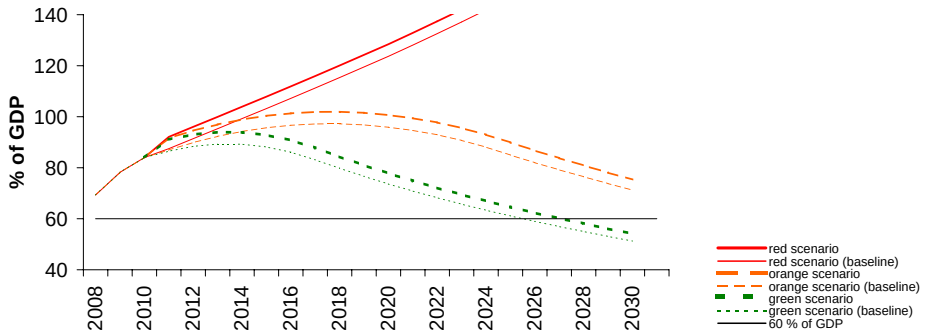


Source: own simulations.

a level jump in the debt-to-GDP ratio in all three considered scenarios in 2011. Thereafter, the consolidation paths are almost parallel to the paths under the baseline.

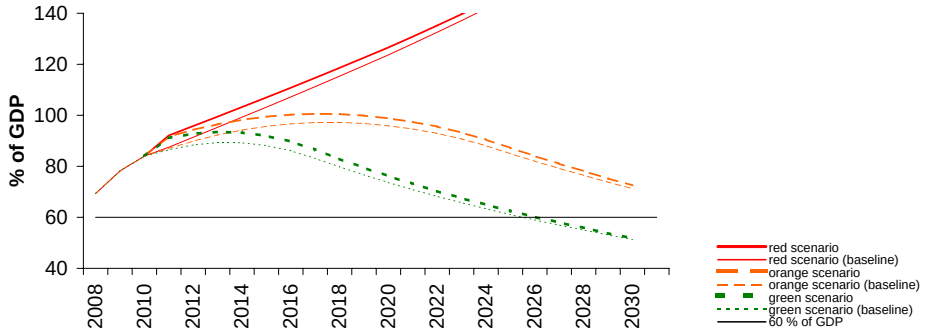
However, one could assume that revenues offsetting the fiscal cost appear (gradually reselling the financial assets acquired by governments back to the private sector) and these revenues would directly reduce government-debt ratios. This would lead to convergence of the debt-to-GDP path towards the baseline scenarios. In an ideal case, the future revenues related to these financial transactions could fully offset the initial capital injections. This is depicted in Figure 12. After 2011, positive flow of revenues from these sales is expected. Under such assumptions, the two consolidation paths under

Figure 11: General government debt-to-GDP scenarios for the euro area - call of guarantees in 2011 equal to 4.5% of GDP (% of GDP)



Source: own simulations.

Figure 12: General government debt-to-GDP scenarios for the euro area - call of guarantees in 2011 equal to 4.5% of GDP with off-setting gains (e.g. from re-sales) (% of GDP)



Source: own simulations.

these scenarios (thick line) would gradually converge towards the baseline paths (thin lines) in Figure 12.

5 Conclusions

The above simulations over the period 2011-30 point to the risk of a rapidly rising euro area government debt-to-GDP ratio. Assuming unchanged fiscal policies, this would pose a clear threat to the longer-term sustainability of public finances. Notwithstanding the high uncertainty surrounding future economic developments, this paper has identified the channels through which debt sustainability is put at risk. These include the combined effect of sustained high primary deficits, a prolonged episode of slow output growth, as well as a possible rise in interest rates. In addition, the fiscal costs of emergency bank support may turn out to be higher than expected. These risks are even more pronounced, as the debt simulations do not take into account the projected rise in ageing-related costs. Especially after 2020, strong pressures on public finances should be expected on account of ageing populations.

The Treaty requires Member States that wish to adopt the euro to maintain a government gross debt ratio below the reference value of 60% of GDP, or else to ensure that the debt ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace. As a consequence of the crisis, many euro area countries that fulfilled this criterion upon joining EMU will need to realign their fiscal policies so as to bring their debt ratios back onto a steadily declining path and to limit the debt servicing burden for future generations. Even with consolidation efforts of 0.5% of GDP annually, the return to the pre-crisis euro area debt ratio is likely to take two decades. Substantially higher annual consolidation would thus be required to ensure a more rapid decline in the debt ratio towards the 60% of GDP reference value. The challenges are particularly pronounced for euro area countries with high or very high government deficits and/or debt ratios after the crisis.

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