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Abstract

In this paper we assess the response of the debt-to-GDP ratio to the fiscal consolidation efforts envisaged in the 2013 Stability and Convergence Programmes (SCPs) presented by EU Member States, under different assumptions on the underlying fiscal multipliers. The effects of fiscal consolidation are assessed against a counterfactual no-consolidation scenario, in which the structural primary balance is kept constant at 2012 value. We show that large fiscal multipliers lead to temporary increases in the debt ratio following consolidation, relative to the no-consolidation baseline. However, for high but plausible values of the multipliers, such counter-intuitive effects are relatively short-lived (maximum three years from the beginning of the consolidation programme). Increases in the debt ratio are anyway more protracted if financial markets react myopically to consolidation efforts (demanding higher yields). Despite the possible negative short-term effects, consolidation is needed as the debt dynamic in absence of policy intervention is in many cases quite steep and further debt increases would raise the likelihood of a self-defeating dynamics in the future. Based on our simple analytical framework, short-term increases in the debt ratio (relative to baseline) following consolidation could take place for a group of countries expected to experience high fiscal multipliers, including Belgium, Cyprus, France, Greece, Italy, Ireland, Portugal, Slovenia and Spain.

JEL Classification: E62; H63.

Keywords: Fiscal consolidation; fiscal multipliers; confidence; public debt; Stability and Convergence Programmes, EU Member States.

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1. Introduction

This paper presents a simple analysis of the public debt-to-GDP ratio responses to fiscal consolidation efforts (measured as changes in structural primary balances) envisaged in the latest (2013) Stability and Convergence Programmes (SCPs) presented by EU Member States. In particular, the paper focusses on the impact that different assumptions on fiscal multipliers have on the projected dynamics of the public debt ratio.

By incorporating multipliers' effects in the standard debt evolution equation, the analysis presented in the paper has the advantage of providing, in a rather simple way, debt projection results accounting for the operation of the fiscal multipliers. A counterfactual (baseline) no-consolidation scenario is defined, to which results for the SCP scenario are compared. A set of low, medium and high multipliers' values is chosen and countries are allocated to the low- and high-multiplier groups based on reasonable criteria taken from the relevant literature. Two caveats are to be made with regard to this way of proceeding. First, the counterpart of simplicity is lack of precision, as in principle a fully-fledged model-based analysis would be warranted, to be able to take into account all feedbacks¹ and some non-linearities (this holds true even if modelling choices are very relevant in driving results). Second, as the impact of measures taken by governments on the various GDP components is already taken into account in the regular forecasts done by the European Commission's Directorate General for Economic and Financial Affairs, the multipliers' effects, as incorporated in our model, are not applied over the forecast horizon to avoid any "double-counting".

In the current juncture characterised by deep and prolonged recessions in some Euro Area economies, experiencing high and growing unemployment rates, malfunctioning of traditional credit channels, financial constraints and pressure in sovereign debt markets, fiscal multipliers are deemed to be higher than in normal times (unless, with no fiscal consolidation, a country was perceived to substantially increase the probability of default on its sovereign debt). It is therefore the more important that feedback effects of fiscal consolidation on growth are taken into due account, when drawing conclusions on projected debt ratio dynamics. Accounting for these feedback effects is also key to be able to assess how long it would take for fiscal consolidation to bring the debt ratio below the level reached before the adoption of the consolidation plan – one of the questions that will be tackled in this paper.

Our analysis shows that, in the short run, "self-defeating" fiscal consolidation (i.e. fiscal consolidation leading to a *temporary* increase in the debt-to-GDP ratio) arises as *one of the possible outcomes* in our simple simulation model. Key determinants behind such an outcome are the parameters governing the size of the fiscal multiplier (its initial value, as well as its persistence over time) and the type of reaction held by financial markets (requiring lower or higher yields in the wake of fiscal consolidation).

When a high multiplier is used in the projections (1.5 in what follows), this, together with currently high debt levels, would indeed entail short-term increases in the public debt-to-GDP ratio in response to fiscal consolidation, also if financial markets react "normally" (i.e. yields decrease when fiscal consolidation takes place). No significant short-term increases in the debt ratio would, on the contrary, be obtained for consolidating countries with an assumed low multiplier (0.5). On the other hand, if financial markets react "myopically" to consolidation (i.e. yields increased, based on financial markets' expectations of a higher debt

¹ See, for example, In't Veld et al. (2013) on Spain.

ratio brought about by fiscal consolidation in the short run), an intermediate value of the multiplier (1.0) would already be sufficient to generate a temporary increase in the debt ratio. Our analysis also highlights that, for high but plausible values of the multipliers, this counter-intuitive effect of a debt ratio increase following consolidation would be short-lived, unless financial markets react myopically to fiscal consolidation. Despite the possible negative short-term effects, it is argued that consolidation is needed as the debt dynamics remains steep in absence of policy intervention and further debt increases would raise the likelihood of a self-defeating dynamics in the future. Based on the possibility that multipliers are expected to be higher in the current crisis context, short-term increases in the debt ratio following consolidation (relative to a baseline scenario of no consolidation) are likely for Belgium, Cyprus, France, Greece, Ireland, Italy, Portugal, Slovenia and Spain. However, these debt increases are expected to fade within maximum three years from the beginning of the consolidation programme, when financial markets behave normally. In order to assess the direction of fiscal policy it is therefore relevant to take into account that the debt ratio is a lagged indicator, and that it is relevant to consider the adjustment made in structural terms. Based on planned consolidation efforts, the projected debt dynamics in some EU Member States implies it will in any case take many years for the debt ratio to get below its 2012 value, also in case of normal financial markets.

The final part of the paper presents a comparison of results obtained under the two assumptions of frontloaded versus back-loaded consolidation. The analysis shows that postponing fiscal consolidation with the argument that low multipliers are expected to prevail in the future would not improve the debt ratio dynamics. On the contrary, if postponing consolidation implies that the debt increases up to around 2020, a more adverse reaction by financial markets, and consequently worse economic and fiscal prospects, can be expected.

The remaining of the paper is structured as follows. Section 2 describes the analytical framework, as presented in the 2012 Public Finances in EMU report and in Boussard, de Castro and Salto (2012). Theory and evidence on the size of the fiscal multipliers is briefly discussed in Section 3. In this section we also divide EU countries into the two groups of low and high fiscal multipliers, based on a set of criteria taken from the relevant literature. Conclusions in this sense will be reflected in the country-specific assumptions on fiscal multipliers used in the projections made in the following sections. The scenarios used in the projections (consolidation as in the SCPs versus counterfactual no-consolidation scenario) are described in Section 4, and results on the effects of fiscal consolidation envisaged in the SCPs on the debt ratio dynamics in the Member States are presented in Section 5, under the assumption of no price response to fiscal adjustments. The impact of lifting this assumption is then briefly discussed in following Section 6. Finally, Section 7 compares simulation results under frontloaded versus back-loaded consolidation, and Section 8 concludes.

2. The analytical framework

This section briefly describes the analytical framework, as used here for analysing the effects on debt dynamics of fiscal consolidation efforts indicated in the 2013 SCPs. A more comprehensive description of the framework, under the assumption of a constant annual consolidation effort (as a ratio to GDP), is provided in the 2012 Public Finances in EMU report (PFR) and in Boussard, de Castro and Salto (2012).

The debt-to-GDP ratio at time t (b_t) is obtained from the standard debt evolution equation, under the assumption of zero stock-flow adjustments:

$$b_t = b_{t-1} \left(\frac{1+i_t}{1+g_t} \right) - pbal_t \quad (1)$$

where $pbal_t$ is the primary budget balance over GDP at time t ; i_t is the average effective nominal interest rate on government debt and g_t is the nominal GDP growth rate. The evolution of the debt ratio is therefore driven by the primary balance and the snowball effect (the difference between the average effective interest rate and the growth rate of the economy).²

By definition, the general government balance includes a structural and a cyclical component, with the latter varying proportionally to the percentage difference of GDP to baseline with a coefficient equal to the semi-elasticity of budget balance (ϵ). The government's fiscal consolidation effort in year t (expressed as a ratio to GDP) is given by the change in the structural primary balance over GDP (a_t), which only reflects changes in discretionary fiscal policy. As anticipated, our analysis will focus specifically on the effects of fiscal consolidation efforts envisaged in the 2013 SCPs. These are measured as changes in the structural primary balance over GDP as indicated in the programmes.

The (first-year) fiscal multiplier (\bar{m}_t) is defined as the change in GDP (Y_t) over the change in the structural primary balance (A_t):

$$\bar{m}_t \equiv -\frac{dY_t}{dA_t} \quad (2)$$

Fiscal multipliers can be more or less persistent over time, following a convex, autoregressive path. The following decay function is used to mirror this:

$$m_{t,i} = (\bar{m}_t - \beta)\alpha^{i-t} + \beta \quad \text{with } t = 1, \dots, \tau \quad \text{and} \quad i = t, t+1, \dots, T \quad (3)$$

where $m_{t,i}$ is the fiscal multiplier applying at time i to the consolidation effort done in year t (with $i \geq t$); α and β are two parameters (with $0 < \alpha < 1$ and $\beta > 0$); τ is the last year of fiscal consolidation and T is the last projection year (with $T > \tau$). This decay function reproduces relatively well the shape of the impulse-response function by typical DSGE models for most of the permanent fiscal shocks.³ Through equation (3), our analytical framework allows making different assumptions on the degree of persistence of multipliers by changing the underlying parameter (α) and analysing the impact this has on the resulting debt ratio dynamics.

As explained more in detail in the 2012 PFR, both short-run and medium-run effects of fiscal consolidation on debt dynamics (relative to a baseline scenario of no-consolidation) are taken into account in the analysis. In the short run, the fiscal consolidation effort at time t , $d(a_t)$, affects debt ratio b_t (in equation 1) through its effects on the primary balance, $pbal_t$, and the GDP growth rate, g_t . The effect on the primary balance is both direct (consolidation measures are directly reflected in an improvement in the primary balance) and indirect (consolidation

² Over the medium-term, the snowball effect is particularly important as it drives the magnitude of primary balances that are necessary in order to stabilise government debt.

³ VAR typically present U-shaped functions. However, VAR shocks are by definition temporary ones.

negatively affects the primary balance via the automatic stabilisers through its effect on growth). The debt-to-GDP ratio is also directly increased by the negative short-term effect of consolidation on growth. Thus, the impact of fiscal consolidation on the debt ratio *in the first year of consolidation* includes: i) the direct positive effect of consolidation measures on the balance; ii) the indirect negative effect on the balance, via the automatic stabilisers, brought about by the effect of consolidation on growth; iii) the negative "denominator effect" on the debt ratio, induced again by the effect of consolidation on growth.

In the analytical framework presented in the 2012 PFR and used in this paper, debt dynamics in the medium term continues to be shaped by the three effects mentioned above. Indeed, as shown in detail in the PFR, the debt ratio evolution in the medium term incorporates the following three effects: i) the *cumulative effect* deriving from adjustments in primary balances reflecting fiscal consolidation efforts *in the absence of effects of consolidation on growth* (this effect, ceteris paribus, unambiguously decreases the debt ratio; the effect is greater, the larger the consolidation effort); ii) the *cumulative effect* on the budget balance, through the operation of the automatic stabilisers, induced by changes in GDP growth brought about by fiscal consolidation (this effect is greater, the larger the size of the fiscal multiplier and the greater the sensitivity of the budget balance to the cycle); iii) the *cumulative effect* on the debt ratio from the change in GDP growth induced by fiscal consolidation (this effect is bigger, the greater the initial debt stock and the larger the size of the multiplier).

To gain a more complete picture of the medium-term evolution of the debt ratio following fiscal tightening, the framework also incorporates a (linear) reaction function for the real average effective interest rate under consolidation, r_t (with $t = 1, \dots, T$):

$$r_t = \bar{r}_t + \mu \sum_{j=1}^t da_j + \gamma(\tilde{b}_{t+1} - \bar{b}_{t+1}) \quad (4)$$

where \bar{r}_t is the real average effective interest rate in the baseline no-consolidation scenario; $\sum_{j=1}^t da_j$ is the sum of the fiscal consolidation efforts (changes in the structural primary balance) from first consolidation year 1 to year t ; \tilde{b}_{t+1} is the projected debt ratio for the following year in a consolidation scenario with no feedback effects on interest rates; \bar{b}_{t+1} is the projected debt ratio for the following year in the baseline no-consolidation scenario. Based on equation (4), the real average effective interest rate rises with an expected increase in the debt ratio, under fiscal consolidation, one year ahead ($\gamma > 0$). Simulations are run under both assumptions of lower and higher real interest rate, the higher the cumulated fiscal consolidation effort (respectively $\mu < 0$ and $\mu > 0$ in equation (4)). This allows us to distinguish between two cases based on different hypotheses on the way financial market expectations are formed: i) the case of "normal" financial markets, in which fiscal consolidation raises financial markets' confidence, leading to lower yields on government bonds and a lower average effective interest rate; ii) the case of "myopic" financial markets, in which, on the contrary, consolidation lowers confidence by financial markets (that are predominantly concerned with possible short-term negative effects on growth), thus leading to higher yields and a higher average interest rate.

In the framework described above, the short-term (1-year) effect of fiscal consolidation on the debt ratio is not predetermined, but depends on parameter values. The change in the debt ratio following consolidation is obtained by taking the derivative of (1). Under the simplifying assumption of an exogenous interest rate, this gives:

$$\frac{db_t}{da_t} = \frac{db_t}{dpbal_t} \cdot \frac{dpbal_t}{da_t} + \frac{db_t}{dg_t} \cdot \frac{dg_t}{da_t} \quad (5)$$

where:

$$\frac{dpbal_t}{da_t} = \frac{dpbal_t}{dg_t} \cdot \frac{dg_t}{da_t} + \frac{dpbal_t}{da_t} = -\varepsilon \cdot m_1 + 1 \quad (6)$$

By substituting (6) into (5), and considering that $\frac{db_t}{dpbal_t} = -1$ and $\frac{db_t}{dg_t} = -b_{t-1}$ (see equation (1)),⁴ we get:

$$\frac{db_t}{da_t} = (b_{t-1} + \varepsilon)m_1 - 1 \quad (7)$$

Hence, the debt ratio following consolidation can be higher or lower than it would have been without consolidation, depending on the initial debt level, the first-year fiscal multiplier and the cyclical budget semi-elasticity. A "critical" multiplier can then be defined as the value of the multiplier for which a fiscal shock would leave the public debt ratio unchanged (while a multiplier higher than the critical value would entail a short-term increase in the debt ratio). From (7), the critical multiplier is given by:⁵

$$m_1^c = \frac{1}{b_{t-1} + \varepsilon} \quad (8)$$

Beyond the analysis of the impact in the year following consolidation, as described above, the framework is used in the following sections to present results on debt ratio medium-term projections (till 2019). Results will also be summarised in terms of: i) the number of years it would take for the debt ratio under consolidation (as planned in the SCPs) to fall *for the first time* below the level projected under a counterfactual (or baseline) no-consolidation scenario; ii) the number of years it would take for the debt ratio to fall *for the first time* below the level recorded in the year before the fiscal consolidation plan is implemented (2012 in what follows).⁶

The analysis described above is conducted both with and without feedback effects of fiscal adjustments on prices (whenever not specified, results presented in the main text will not include such feedback effects). When prices respond to fiscal consolidation, the debt ratio dynamics is affected in two ways: i) through changes in nominal GDP; ii) through adjustments in the nominal average effective interest rate on government bonds, which enters equation (1). For instance, a decrease in nominal GDP (relative to a baseline of no consolidation), due to lower price levels brought about by fiscal consolidation, translates automatically, *ceteris paribus*, into an increase in the debt-to-GDP ratio. Adjustments in the nominal interest rate would *partly* offset the direct effects of the decrease in nominal GDP on the debt ratio. As only a fraction of debt is renewed every year (on average, the inverse of the average debt maturity), lower (relative to baseline) price levels are only gradually producing a decrease in the nominal average interest rate, while being fully reflected in a lower nominal GDP. The net effect would therefore be an increase in the debt ratio brought about by the fall in prices induced by fiscal consolidation (the fall in the average nominal interest rate would only partly offset the impact of the fall in nominal GDP).

⁴ This is based on the fact that the snowball effect in equation (1) can be written in the form $(1 + i_t - g_t)$.

⁵ It is easy to compute that, for a debt ratio of 100%, a multiplier larger than 2/3 would imply a worsening of the debt ratio, compared to baseline, in the first year if a semi-elasticity of budget balance to growth of 1/2 is assumed.

⁶ Any other reference year could be used, like the year in which the debt ratio reaches a certain threshold or the first year when the debt benchmark is respected.

3. Fiscal multipliers

3.1. Some discussion on theory and evidence

Many factors influence the size of fiscal multipliers. They can be grouped as follows: i) the composition of the fiscal manoeuvre and its credibility, as well as the fiscal rules adopted by the government; ii) the effects of monetary policy on interest rates and the perceived riskiness of the sovereign; iii) the access of households and companies to finance; iv) other economic factors, like price and wage flexibility, the exchange rate regime in which the country operates and external demand.

The literature highlights that, in case of financial crises, fiscal multipliers tend to be larger than usual (see, for instance, Corsetti et al., 2012). In particular, fiscal multipliers tend to be higher when monetary policy is constrained by the liquidity trap (Christiano et al., 2011), economic agents are financially constrained (Galí et al., 2007), important nominal price and wage rigidities are in place (Woodford, 2011; Andrés et al., 2012), economies are relatively closed (Corsetti and Müller, 2012, and Ilzetzi et al., 2012) and exchange rates are irrevocably fixed (as in the Euro Area) (see, among others, Ilzetzi et al., 2012, Corsetti et al., 2012, and Erceg and Lindé, 2012). When this is the case, fiscal consolidation possibly entails short-term increases in the public debt-to-GDP ratio of the consolidating countries, due to its short-term negative impact on economic activity. This is the more likely, the higher the initial debt ratio and the greater the budget elasticity to the cycle.

One should anyway also consider that, as underlined in the literature, another key driver behind the impact of fiscal consolidation is given by financial markets' perception of the possibility for a certain country to default on its sovereign. In this sense, multipliers applying to consolidation efforts would not be large in instances where fiscal policy action lowers the probability of default perceived by financial markets (see, for instance, Ilzetzi et al., 2012, Corsetti et al., 2012, and Hernández de Cos and Moral Benito, 2013).

Estimates of fiscal multipliers vary significantly across studies, depending on the type of models and econometric techniques used.⁷ Both in econometric and in model-based studies, government expenditure multipliers are usually found to be higher than tax-based ones, especially in the short term, as the former generally entail a higher, more direct impact on final demand. The large majority of estimates of first-year spending multipliers *in normal times* are located within the range of 0.4 to 1.2. The values are lower, often in the range of 0.2 to 0.7, for tax multipliers. Recent estimates find average spending multipliers in the range of 0.5, but they also show that multipliers can be above 1.5 in crisis periods.⁸

For the Euro Area, the European Commission's QUEST model yields first-year multipliers of around 0.7 and 0.4 for a balanced consolidation in normal times, perceived respectively as temporary/not credible and permanent/credible by consumers. These multipliers can become larger (by a factor of one half) in a crisis period and even larger in a crisis period in which trade partners consolidate (in this case they can be multiplied roughly by a factor of 5/3). Thus, multipliers in the current juncture, as obtained from QUEST, are around 0.8 and 1.2

⁷ For a more detailed review of the empirical literature on fiscal multipliers, see European Commission (2012a).

⁸ See Auerbach and Gorodnichenko (2011) for OECD countries; Auerbach and Gorodnichenko (2012), Christiano et al. (2011) and Leeper et al. (2011) for the US and Hernández de Cos and Moral Benito (2013) for Spain.

respectively for a permanent/credible and a temporary/not credible balanced consolidation under accommodative monetary policy.

3.2. Fiscal multipliers in EU countries

To have an estimate of the fiscal multiplier for each Member State, a full country-specific model would in theory be needed, taking into account all factors mentioned above and their interactions. However, even when such a model exists, some aspects, very relevant to determine the multiplier's size, inevitably remain open to the modeller's judgement. In particular, the value of the multiplier is heavily influenced by two factors that are generally not observable: the credibility of the adjustment, or its permanent nature, and the future action by the government (changes in taxes and public spending that will be made in the future).

To the purpose of evaluating the impact of SCPs' consolidation efforts on debt evolution, in this paper we will take a practical approach by simply allocating countries over the two categories of low and high first-year multipliers,⁹ on the basis of values taken by variables capturing factors that affect the multipliers' size, according to the relevant literature (see Section 3.1). For low-multiplier countries, a multiplier value of 0.5 will be used in the simulations. For countries deemed to have high multipliers, two values will be used, 1 and 1.5, referred to as medium and high multipliers respectively, henceforth. The simulations that follow will therefore rely on country-specific assumptions with regard to the size of the initial multiplier. But after 2015 all countries will be assigned a low multiplier (0.5), including countries starting off with both a medium (1.0) or high (1.5) initial multiplier, based on the consideration that high fiscal multipliers are justified in the current crisis context, but can be expected to resume to normal values later on.^{10 11} The approach followed in the paper is therefore rather simple and it does not aim at substituting the need for model-based simulations. However, this simple framework is rather useful in considering the main variables affecting debt dynamics and the linkages among them.

Seven variables (long-term sovereign bond spread relative to the German bund, financial institutions' credit growth, long-term real interest rate, unemployment rate, output gap, export growth, share of fiscal consolidation falling on the expenditure side) are used to capture factors affecting multipliers' size. In Table 1, values are reported for 27 EU Member States for all these variables, alongside an individual assessment of whether each variable would, by itself, lead to a low (l) or high (h) multiplier for the country in question. An assessment of whether the country should then *overall* be expected to experience a low or high multiplier, based on the individual assessments variable by variable, is provided in the last column of Table 1.

⁹ Although 1.5 might seem a rather high value, Blanchard and Leigh (2013) argue that the fiscal multiplier might currently be even higher. A multiplier of 1.5 is used here to show simulation results under a worst-case scenario.

¹⁰ This assumption is not critical to the results, though it has some influence on the number of years needed to reduce debt. Considering persistently high multipliers, without resuming to 0.5 after a certain year, would lead to very similar projected debt paths. This is because, also in case of a low multiplier applied from 2016 onwards to a high initial-multiplier country, the fiscal consolidation indicated in the 2013 SCP would in any case take place in years characterised by high multipliers.

¹¹ This assumption also allows us to compare the effects of fiscal consolidation envisaged in the SCP with an alternative scenario, in which consolidation is postponed until 2016 (back-loaded consolidation).

The first variable used for assessing the multiplier's size, the long-term sovereign bond spread, is taken as an indication of the possibility of fiscal stress risk attributed by financial markets to a given country.¹² The greater the country's riskiness, the smaller, *ceteris paribus*, its expected fiscal multiplier will be. This is because in instances of high public finance-related risks fiscal consolidation tends to be welcomed by the markets as a sign that the government is taking strongly needed corrective action. This positive reputational effect benefits, *ceteris paribus*, the consolidating country, and is expected to at least partly smooth down the immediate effect of fiscal consolidation on the real economy. Conversely, a fiscal expansion in a context of fiscal crisis is expected to trigger sustainability concerns, thereby leading to a strong increase in sovereign bond yields, crowding out private consumption and investment. Other two variables employed in Table 1, financial institutions' credit growth and the unemployment rate, provide a broad indication of how extensively firms and households are to be considered financially constrained (though, in principle, observed credit growth developments are driven by both supply and demand factors). The lower the credit growth and/or the greater the unemployment rate in a given country, the larger its multiplier can be expected to be, *ceteris paribus*. The output gap variable gives an idea of the slack in the economy, and can also proxy to what extent firms are facing lower demand and lower profits, thus tighter financial constraints. In this sense, the more negative the output gap, the larger the multiplier. The long-term real interest rate (10-year sovereign bonds) provides an indication of the overall monetary stance. The higher the real interest rate, the tighter the monetary conditions and the larger the negative impact on the economy from consolidation, thus the higher the multiplier. The variable export growth provides an indication on the extent to which firms will be able to rely on external demand, in face of reduced internal public demand. Higher export growth would therefore be associated with smaller multipliers (even if, strictly speaking, exports are determined by both demand and supply factors). Finally, the share of fiscal consolidation borne by expenditure is an indication of the composition of the adjustment, which is relevant as expenditure multipliers are typically larger in the short term. Accordingly, the more the consolidation effort is expenditure-based, the larger the multiplier is.

As indicated in Table 1, the overall assessment, based on the individual assessments variable by variable, leads us to conclude that the high-multiplier group should include Belgium, Bulgaria, the Czech Republic, Ireland, Greece, Spain, France, Italy, Cyprus, Lithuania, Hungary, Portugal, Slovenia and the United Kingdom. For Bulgaria, the low risk of fiscal stress (which would, in itself, pinpoint to a low value of the multiplier) is not expected to compensate for the joint effects of high unemployment, negative output gap, relatively low export growth and the expenditure-based share of fiscal consolidation. For the Czech Republic and France, the low risk of fiscal stress and the large negative output gaps are two of the main reasons behind the classification into the high-multiplier group, complemented by indications in the same direction provided by other variables. Belgium, Ireland, Greece, Spain, Italy, Cyprus, Lithuania, Hungary, Portugal and Slovenia are all placed in the high-multiplier group, according to what most variables in Table 1 suggest. These countries have been indeed the most heavily hit by the crisis and have fallen under closer scrutiny by financial markets. Thus, their classification in the high-multiplier group does not appear

¹² Another indicator that could be used to the purpose is the short-term fiscal stress risk indicator, S0. For more details, see Berti, Salto and Lequien (2012), as well as European Commission (2012b) "Fiscal Sustainability Report 2012" and European Commission (2011) "Public Finances in EMU 2011", Part IV.

surprising. In particular, for Italy and Spain, empirical evidence¹³ suggests higher-than-one multipliers for expenditure shocks already in normal times. And, as already said, in the current setting with high unemployment rates and tight financial constraints, multipliers can be expected to be well above what observed in normal times. For the UK, while credit growth, the monetary stance and the unemployment rate would point to a low fiscal multiplier, all the other variables, especially the large negative output gap and the envisaged expenditure-based consolidation, point to the opposite. As more variables suggest high multipliers, the country has been classified in the latter group. While being aware of the existing significant differences across countries, all other cases, beyond those mentioned above, have been classified in the low-multiplier group, based on the number of variables pinpointing to this conclusion.

Table 1 - Factors affecting the value of fiscal multipliers

	Long-term sovereign spreads with Germany		Credit growth from financial institutions: September 2012		Long-term real interest rates in 2011 (with CPI)		Unemployment rate 2012		Output gap 2012		Exports growth 2012		Share of consolidation borne by expenditure		Conclusion on multiplier	
BE	0.9	h	-1.7	h	1.1	l	7.5	l	-1.3	l	-0.7	h	0.7	h	h	h
BG	2.1	l	3.6	l	1.5	l	12.7	h	-2.1	h	1.7	h	1.0	h	h	h
CZ	0.5	h	1.4	l	3.2	h	7.0	l	-2.2	h	3.9	l	1.0	h	h	h
DK	-0.2	h	0.8	l	0.3	l	7.7	l	-3.3	h	2.5	l	28.3	h	l	l
DE			1.0	l	0.5	l	5.5	l	-0.3	l	3.9	l	3.5	h	l	l
EE			0.4	h			10.5	h	1.0	l	4.3	l	6.4	h	l	l
IE	3.4	l	-17.7	h	8.0	h	14.8	h	-1.5	l	2.8	l	1.0	h	h	h
EL	16.3	l	-9.6	h	12.0	h	23.6	h	-13.0	h	0.8	h	0.5	l	h	h
ES	4.6	l	-2.7	h	2.4	h	25.1	h	-4.6	h	2.1	l	0.9	h	h	h
FR	0.8	h	0.2	h	1.2	l	10.2	h	-2.3	h	2.6	l	0.5	l	h	h
IT	3.6	l	0.4	h	2.6	h	10.6	h	-3.2	h	1.1	l	0.9	h	h	h
CY	11.0	l	4.9	l	2.4	h	12.1	h	-2.0	h	-0.9	h	0.9	h	h	h
LV	2.3	l	-9.4	h	1.1	l	15.2	h	-1.8	l	5.1	l	14.7	h	l	l
LT			-5.5	h	0.9	l	13.5	h	-2.0	h	5.0	l	1.5	h	h	h
LU			-8.4	h	0.3	l	5.4	l	-1.8	l	-4.2	h	2.2	h	l	l
HU	5.5	l	-9.6	h	3.0	h	10.8	h	-3.2	h	2.0	l	5.9	h	h	h
MT			5.9	l	3.5	h	6.3	l	-0.1	l	5.4	l	0.4	l	l	l
NL	0.3	h	2.0	l	0.7	l	5.4	l	-2.7	h	3.8	l	0.6	l	l	l
AT	0.5	h	1.8	l	-0.3	l	4.5	l	-0.5	l	1.5	l	0.9	h	l	l
PL	2.8	l	12.4	l	1.1	l	10.1	h	-1.4	l	3.0	l	2.2	h	l	l
PT	7.5	l	-8.1	h	6.6	h	15.5	h	-4.3	h	4.3	l	0.9	h	h	h
RO	5.4	l	0.7	l	1.4	l	7.4	l	-3.1	h	0.2	h	0.5	l	l	l
SI	4.5	l	-2.9	h	3.2	h	8.5	l	-3.2	h	1.2	l	0.8	h	h	h
SK	1.1	h	3.4	l	0.6	l	13.5	h	-0.1	l	7.8	l	1.1	h	l	l
FI	0.3	h	8.5	l	-0.4	l	7.9	l	-2.0	h	-2.7	h	0.2	l	l	l
SE	0.1	h	13.1	l	1.3	l	7.5	l	-1.0	l	0.5	h	1.6	h	l	l
UK	0.4	h	5.0	l	-1.6	l	7.9	l	-3.4	h	0.2	h	0.8	h	h	h

Sources : AMECO, Bloomberg and 2013 SCPs.

"Critical" multipliers (calculated on the basis of debt ratios in 2012 and cyclical budgetary elasticities), which indicate the largest value the multiplier can take before fiscal consolidation leads to an increase in the debt-to-GDP ratio, are reported in the last column of Table 2. Empirical evidence (as reviewed in Section 3.1) suggests that current first-year multipliers might be above these critical multipliers. Accordingly, given the high debt levels currently observed in the EU, around one third of EU countries could see their debt ratios *temporarily*

¹³ See De Castro (2006), De Castro and Hernández de Cos (2008), De Castro and Fernández (2013) and Giordano et al. (2007).

increase in response to the fiscal consolidation plans sketched in the SCPs, particularly in cases of predominantly expenditure-based consolidation (unless, with no fiscal consolidation, a country was perceived to substantially increase the probability of default on its sovereign debt). Additionally, one should bear in mind that, were such consolidation plans to be seen as not fully credible, multipliers could become even larger, thus strengthening the case for a short-term increase in the debt ratio.

Table 2 - Critical multipliers for EU Member States

	Semi-elasticities	Debt (2012)	Critical Multiplier
BE	0.50	99.6	0.7
BG	0.35	18.5	1.9
CZ	0.36	45.8	1.2
DK	0.63	45.8	0.9
DE	0.54	81.9	0.7
EE	0.29	10.1	2.5
IE	0.45	117.6	0.6
EL	0.43	156.9	0.5
ES	0.43	84.2	0.8
FR	0.53	90.2	0.7
IT	0.49	127.0	0.6
CY	0.43	85.8	0.8
LV	0.31	40.7	1.4
LT	0.29	40.7	1.4
LU	0.44	20.8	1.6
HU	0.44	79.2	0.8
MT	0.37	72.1	0.9
NL	0.56	71.2	0.8
AT	0.47	73.4	0.8
PL	0.39	55.6	1.1
PT	0.45	123.6	0.6
RO	0.31	37.8	1.5
SI	0.45	54.1	1.0
SK	0.31	52.1	1.2
FI	0.58	53.0	0.9
SE	0.61	38.2	1.0
UK	0.46	90.0	0.7

In what follows, we will focus our attention mainly on debt-to-GDP ratio projection results for high first-year multiplier countries, as only under the assumption of high multipliers, as we will see, consolidation might lead to temporary increases in the debt ratio (keeping in mind that our simulations assume a zero probability of sovereign default in case of no consolidation).

4. The SCP scenario versus a counterfactual (baseline) no-consolidation scenario

The fiscal consolidation scenario, for which debt projections are presented in the following sections, is based on fiscal efforts indicated in the SCPs presented by Member States in spring 2013 (see Table 3 below). The SCPs cover the time horizon up to 2016, beyond which our

simulations assume a structural primary balance kept constant at 2016 value (no further fiscal effort is therefore assumed beyond the SCPs' horizon).¹⁴ This consolidation scenario is compared to a counterfactual no-consolidation scenario (labelled as "baseline"), in which the structural primary balance stays constant at 2012 value.

The starting debt-to-GDP ratio for the projections, under both consolidation and no-consolidation scenario, is the 2012 value as from the Spring 2013 European Commission - DG ECFIN's forecasts. Other macroeconomic assumptions used in the baseline scenario are as follows. The real implicit interest rate is set at the 2012 value from the Autumn 2012 Commission's forecasts, and its evolution after 2012 is assumed to depend only on the debt ratio. The average interest rate is kept constant at previous year's value if the debt ratio is smaller than, or equal to, 75%. Conversely, if the debt exceeds 75% of GDP, the interest rate is assumed to increase/decrease with increases/decreases in debt over GDP (with the size of such increase/decrease in interest rate inversely related to the country-specific weighted average maturity of public debt).¹⁵ Real GDP growth rates are taken from the SCPs till 2016¹⁶ and from the baseline scenario (updated to Autumn 2012) of the European Commission – DG ECFIN's Debt Sustainability Monitor model for the years thereafter.

The GDP level in the consolidation scenario is calculated by taking into account the operation of the assumed fiscal multipliers (according to what indicated in Section 3.2) on the GDP path used in the baseline scenario. As explained in Section 2, debt projections under the consolidation scenario also incorporate a linear reaction function for the real average interest rate, which depends on the (cumulated) fiscal consolidation effort and the projected debt ratio for the following year (see equation (4)). In particular, two important parameters used in reaction function (4) are: (i) parameter μ capturing the effects on the interest rate of consolidation measures taken by the government; (ii) parameter γ measuring the interest rate sensitivity to the projected evolution of the debt ratio in the year after consolidation.

In what follows, simulations for the consolidation scenario will be run under two different assumptions: (i) one of financial markets reacting positively to the implementation of the consolidation package, which results in a decline in interest rates (the case in which $\mu < 0$, labelled as a case of normal financial markets), while projected changes in the debt ratio do not directly affect interest rates ($\gamma = 0$); (ii) a second assumption of financial markets behaving myopically and reacting to fiscal consolidation by asking for higher yields, as consolidation might entail short-term debt ratio increases (the case in which $\mu > 0$, labelled as myopic financial markets), while at the same time increases in the projected debt ratio also directly entail increases in the interest rate ($\gamma > 0$).¹⁷ It is worth noticing that the case with normal financial markets actually corresponds to a situation in which markets are highly concerned about the lack of fiscal consolidation, as a permanent consolidation of 1% would lead to a permanent reduction by 30 basis points in the implicit interest rate paid by governments on new issuances. If the average maturity of government bonds was around six years, the

¹⁴ This analysis abstracts from the fact that Member States would have to converge to their respective MTOs beyond the SCP horizon, which would imply further consolidation efforts in following years and consequences for both the number of years needed to bring debt ratios below the baseline and the number of years needed to reduce debt ratios with respect to 2012.

¹⁵ The 75% threshold value for the debt ratio and the associated increase/decrease in the real interest rate rely on evidence from the OECD Economic Outlook 2010/2.

¹⁶ The effects on these real GDP growth rates stemming from fiscal efforts have been undone.

¹⁷ The specification regarding the response by financial markets in In't Veld (2013) is somewhat in between the two alternative hypotheses used in this paper.

consolidation effort would entail a permanent reduction in the interest rate on new issuances by 2 percentage points.

Table 3 - Fiscal efforts envisaged in the 2013 SCPs

	Structural primary balance (% of GDP)					Consolidation effort			
	2012	2013	2014	2015	2016	2013	2014	2015	2016
BE	0.50	1.60	1.90	3.10	3.60	1.10	0.30	1.20	0.50
BG	0.70	0.40	0.00	0.10	0.00	-0.30	-0.40	0.10	-0.10
CZ	0.10	0.00	-0.30	-0.50	-1.00	-0.10	-0.30	-0.20	-0.50
DK	1.90	2.00	1.80	1.20	1.10	0.10	-0.20	-0.60	-0.10
DE	2.80	2.70	3.00	2.80	2.80	-0.10	0.30	-0.20	0.00
EE	0.30	-0.20	0.50	0.50	1.00	-0.50	0.70	0.00	0.50
IE	-3.50	-1.60	0.70	2.60	3.00	1.90	2.30	1.90	0.40
EL	-2.40	-1.10	0.40	1.90	3.40	1.30	1.50	1.50	1.50
ES	-2.70	-1.00	-0.40	0.60	1.50	1.70	0.60	1.00	0.90
FR	-0.80	0.60	1.40	2.00	2.30	1.40	0.80	0.60	0.30
IT	4.20	4.90	5.60	5.50	5.80	0.70	0.70	-0.10	0.30
CY	-3.43	-1.30	-0.95	-0.20	1.60	2.13	0.35	0.75	1.80
LV	0.90	0.00	-0.10	-0.60	-0.90	-0.90	-0.10	-0.50	-0.30
LT	-1.90	-0.80	-0.10	0.60	1.30	1.10	0.70	0.70	0.70
LU	0.60	0.80	0.40	-0.40	-1.20	0.20	-0.40	-0.80	-0.80
HU	3.50	3.10	2.10	1.70	1.60	-0.40	-1.00	-0.40	-0.10
MT	0.00	0.50	1.10	1.40	2.10	0.50	0.60	0.30	0.70
NL	-0.70	0.40	0.20	0.90	0.60	1.10	-0.20	0.70	-0.30
AT	1.20	0.80	1.50	2.00	2.50	-0.40	0.70	0.50	0.50
PL	-0.80	0.00	0.20	0.30	0.90	0.80	0.20	0.10	0.60
PT	0.20	0.90	2.30	2.80	3.70	0.70	1.40	0.50	0.90
RO	-1.00	0.20	0.60	0.70	0.70	1.20	0.40	0.10	0.00
SI	-0.70	0.10	1.50	1.30	1.50	0.80	1.40	-0.20	0.20
SK	-2.20	-1.00	-0.50	0.20	0.60	1.20	0.50	0.70	0.40
FI	0.10	0.10	0.40	0.50	0.50	0.00	0.30	0.10	0.00
SE	0.40	0.20	0.80	1.40	1.90	-0.20	0.60	0.60	0.50
UK	-1.40	-2.40	-1.90	-1.20	0.30	-1.00	0.50	0.70	1.50

Source: 2013 Stability and Convergence Programmes Updates and Economic Adjustment Programmes for Greece and Cyprus.

5. Projected responses of debt-to-GDP ratios to fiscal adjustments envisaged in the 2013 SCPs

As anticipated, our main focus here will be on EU countries classified in the high-multiplier group in Section 3.2 (i.e. Belgium, Bulgaria, Czech Republic, Ireland, Greece, Spain, France, Italy, Cyprus, Lithuania, Hungary, Portugal, Slovenia and the UK). Given the uncertainty surrounding the "true" fiscal multipliers, for these countries results will be presented for high, intermediate and low multiplier's values (1.5, 1 and 0.5 respectively), to analyse the impact that different assumptions on the multiplier's size have on projected debt dynamics (while keeping in mind that the high-multiplier scenario is the most likely for the countries in question). For the remaining EU countries, which are expected to experience fiscal multipliers below the critical level (see Table 2), fiscal consolidation would not bring about increases in

the debt ratio, and projection results will only be presented for the low-multiplier case. Given that our specific interest here lies in the case for short-run "self-defeating" fiscal consolidation and the conditions under which this would take place, the analysis naturally focusses more on the group of countries for which high fiscal multipliers are possibly to be expected.¹⁸

Simulation results presented below further assume no price response to fiscal consolidation. Given the mixed evidence on this issue (that will be briefly presented in Section 6), this is considered as a reasonable central scenario. Projection results incorporating a negative response of prices to consolidation will anyway be shortly discussed in Section 6.

Debt-to-GDP ratio responses for the group of high-multiplier countries are displayed in Figure 1, under the assumptions of multiplier's high persistence over time¹⁹ and normal financial markets (specifically, simulation results presented in Figure 1 are derived under the assumption that $\mu = -0.3$ and $\gamma = 0$; see European Commission, 2012a) (plots of debt ratio projections for low-multiplier countries are provided in Annex I). For all the countries in Figure 1 that improve their structural primary balance according to their SCP (only Bulgaria, the Czech Republic and Hungary do not, and the UK does not in 2013 only, as can be seen from Table 3), fiscal consolidation leads to *an increase in the debt ratio*, with respect to the counterfactual no-consolidation scenario, *when the multiplier is high (1.5)*, while deviations from the baseline emerge but are in most cases marginal with an intermediate value of the multiplier (1.0). With a high multiplier, the increase in the debt ratio relative to the no-consolidation baseline is generally observed *over two-three years* from the beginning of the consolidation programme. These results show that, with normal financial markets, the case for short-term self-defeating fiscal consolidation is indeed relevant with a fiscal multiplier of 1.5, while it is generally not with a multiplier ranging between 0 and 1. These results should anyway be read by keeping in mind that, for some countries, the assumptions we made on the multiplier might be on the conservative side (this would particularly apply to Greece, Portugal and Spain). Debt ratio responses might therefore be more pronounced than shown in Figure 1.

Projection results for the case with myopic financial markets are reported in Figure 2, still under the assumption of multiplier's high persistence (specifically, results in Figure 2 are based on the assumption that $\mu = 0.3$ and $\gamma = 0.03$, in accordance with values indicated by the empirical literature). The comparison of results between Figures 1 and 2 is eased by Table 4, where simulation results are reported, for 27 EU Member States, in terms of number of years (n^*) required for the debt ratio in the consolidation scenario to go, for the first time, below the baseline (no-consolidation) debt ratio and the number of years (n_0) needed for the debt ratio to get, for the first time, below its latest historical value (2012). Following this "terminology", an n^* larger than zero shows that there is a case for fiscal consolidation increasing, rather than decreasing, the debt-to-GDP ratio. Figures on n^* and n_0 are reported in Table 4 under both assumptions of normal and myopic financial markets.

¹⁸ Except for Greece, for all other countries in Table 2 an assumed multiplier of 0.5 would always lie below the critical multiplier, thus not entailing any rise in the debt ratio following consolidation.

¹⁹ As explained in Section 2, fiscal multipliers can be more or less persistent over time. Low and high persistence is then simulated by changing the underlying parameter in the multipliers' decay function (in equation (3) we set $\alpha = 0.5$ and $\alpha = 0.8$ for low and high persistence respectively).

Figure 1 - Debt-to-GDP ratio responses to fiscal consolidation with multiplier's high persistence and normal financial markets

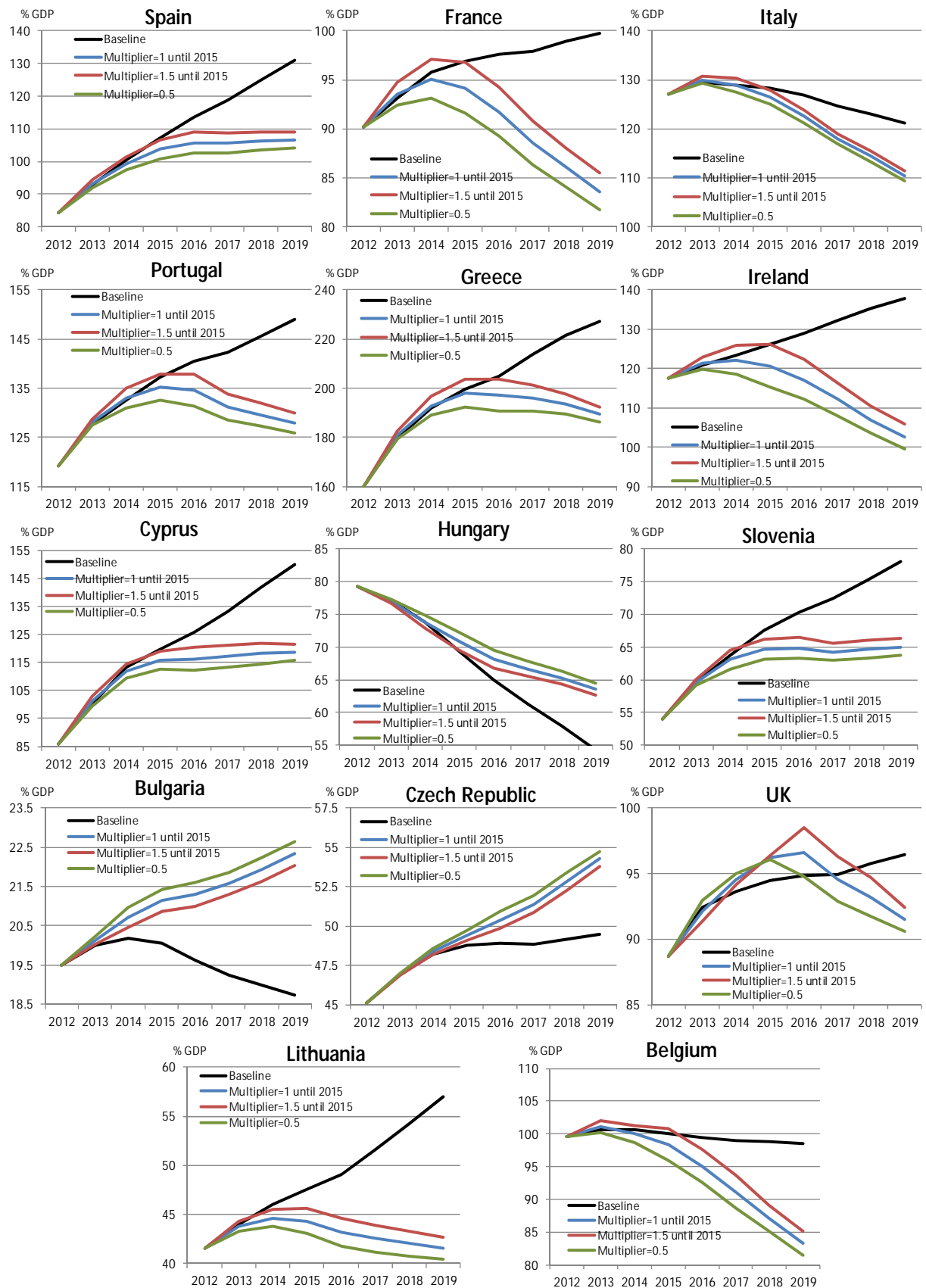


Figure 2 - Debt-to-GDP ratio responses to fiscal consolidation with multiplier's high persistence and myopic financial markets

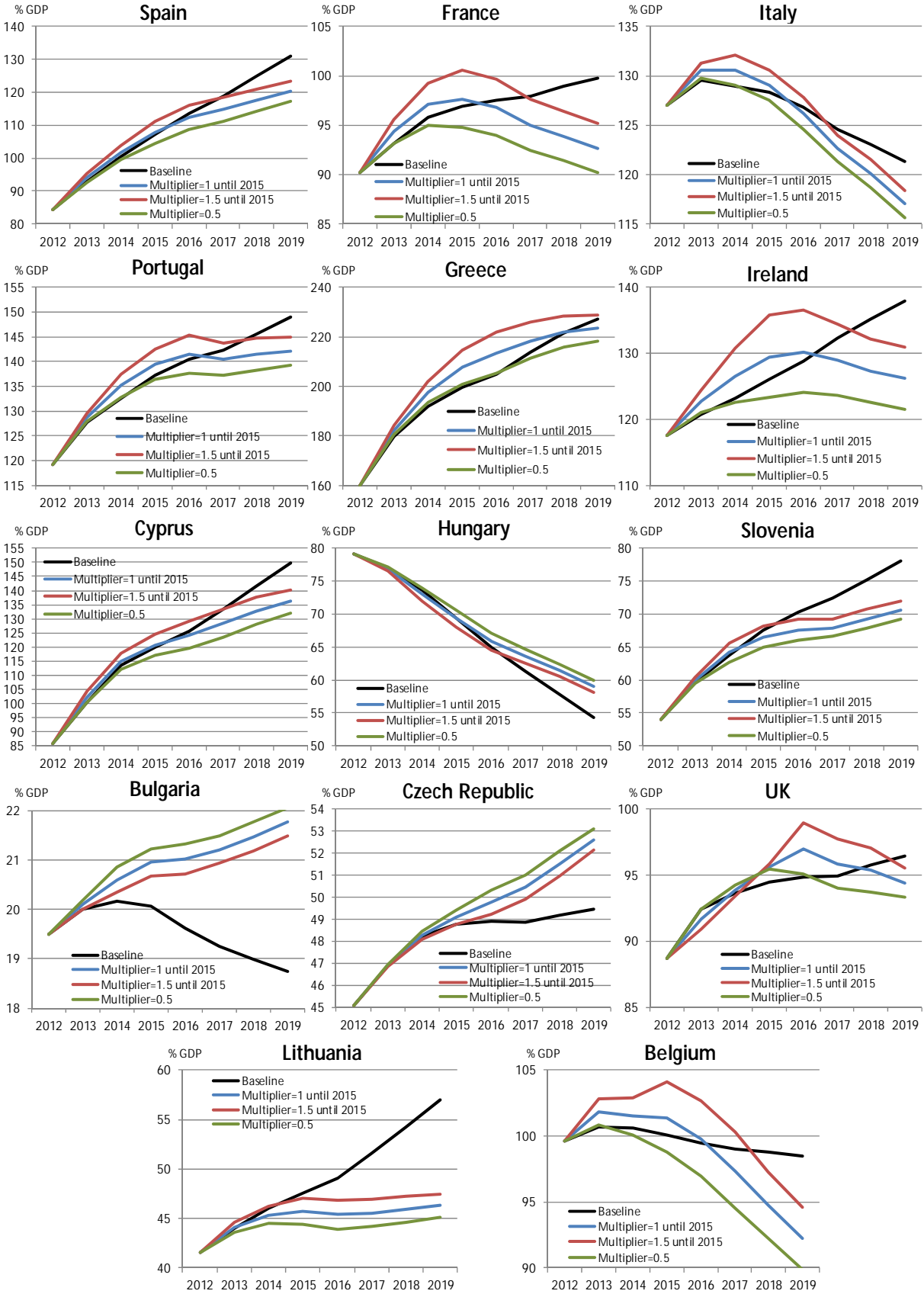


Table 4 - Number of years needed for debt ratio to fall below no-consolidation baseline (n^*) and below 2012 value (n_0) with consolidation envisaged in 2013 SCPs

	Normal reaction by financial markets						Myopic financial markets					
	n^*			n_0			n^*			n_0		
	$m_1=0.5$	$m_1=1.0$	$m_1=1.5$	$m_1=0.5$	$m_1=1.0$	$m_1=1.5$	$m_1=0.5$	$m_1=1.0$	$m_1=1.5$	$m_1=0.5$	$m_1=1.0$	$m_1=1.5$
BE	0	1	3	1	2	3	1	4	5	2	4	5
BG	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
CZ	>10	>10	0	>10	>10	>10	>10	0	0	>10	>10	>10
DK	0			0			0			0		
DE	2			0			2			0		
EE	3			0			3			0		
IE	0	1	3	2	3	4	1	4	5	10	>10	>10
EL	0	2	3	>10	>10	>10	4	6	7	>10	>10	>10
ES	0	1	2	>10	>10	>10	0	3	4	>10	>10	>10
FR	0	1	2	3	4	5	1	3	4	7	8	10
IT	0	1	2	2	2	3	2	3	4	3	3	4
CY	0	1	2	>10	>10	>10	1	3	5	>10	>10	>10
LV	>10			0			>10			0		
LT	0	0	1	4	6	>10	0	1	2	>10	>10	>10
LU	0			1			0			1		
HU	>10	0	0	0	0	0	>10	0	0	0	0	0
MT	0			0			0			0		
NL	0			>10			0			>10		
AT	2			1			2			0		
PL	0			5			0			>10		
PT	0	2	3	>10	>10	>10	2	4	5	>10	>10	>10
RO	0			4			0			6		
SI	0	0	2	>10	>10	>10	0	2	3	>10	>10	>10
SK	0			3			0			>10		
FI	0			1			0			1		
SE	1			2			1			2		
UK	3	0	0	8	9	10	0	0	0	>10	>10	>10

Source: Commission Services

Notes: According to the SCPs, for Bulgaria, Czech Republic, Germany, Estonia, Latvia, Hungary, Austria, Sweden and the UK, the structural primary balance is envisaged to deteriorate in 2013 (and also beyond 2013 for some of these countries; see Table 3). This is the reason why the debt ratio deviates upwards from the baseline even under assumed low multipliers, as indicated by a strictly positive n^* in the first column of the table above.

From Figure 2 and Table 4, we can see that, *with myopic financial markets*, the number of years needed to bring debt ratios below baseline no-consolidation values in countries that undertake consolidation efforts generally *increases by two/three years*, relatively to the case with normal financial markets, and this is true both *with intermediate (1.0) and high (1.5) fiscal multipliers*. This shows that with myopic financial markets, the case for short-term self-defeating fiscal consolidation becomes remarkably stronger, as one would expect. In particular, by looking at the figures by country, n^* rises by two years in Spain, France, Italy and Portugal, and by two/three years in Belgium, Ireland and Cyprus. The case of Greece is especially salient as six/seven years would be needed for the debt ratio to get below its baseline no-consolidation value, if financial markets behaved myopically (an increase by four years relative to the case with normal financial markets). From Table 4 one can also see that, contrary to the case with normal financial markets, with myopic markets the case for self-defeating consolidation arises *for a few countries also with a low multiplier (0.5)*. Indeed, with a multiplier of 0.5, the increase in the number of years needed for the debt ratio to get below baseline would not be marginal for Greece, Portugal and Italy (an increase in n^* by four years for Greece and two years for Portugal and Italy). In any case, though a debt ratio increase does take place for the three countries under the aforementioned conditions, the size

of the increase is marginal (maximum 0.2 p.p. for Italy and Portugal, and 1.5 p.p. for Greece, as will be shown in Table 5).

Table 4 shows that, under the assumption of normal financial markets, in almost all cases where multipliers are assumed to be low, the debt ratio goes down, relative to the no-consolidation baseline, in the same year in which consolidation starts (cases for which n^* is zero).²⁰ The zero-value for n^* is nevertheless accompanied, in a number of cases, by a strictly positive value of n_0 . The two results are clearly fully consistent with each other and are explained by the projected upward trend of the debt ratio in a number of countries, requiring some time for their debt ratios to be reduced below levels reached in 2012 (though consolidation is not leading to a short-run increase in the debt ratio). This is the case, for instance, of countries like the Netherlands, Poland, Romania and Slovakia, within the low-multiplier group. It would take five years for Poland, four for Romania and three for Slovakia for the debt ratio to get below its 2012 value, under the assumption of normal financial markets. This time horizon is even longer for the Netherlands, where it would take more than one decade, considered current consolidation plans.

For countries expected to have high multipliers, Table 4 shows that the number of years needed to reduce debt ratios below 2012 levels varies. The most remarkable cases are Greece, Spain, Cyprus, Portugal and Slovenia, where the debt ratio would remain above the 2012 value for more than one decade *under all three values assumed for the multiplier* (see left panel of Table 4). Furthermore, the ratio would remain above the 2012 value for nine-ten years in the United Kingdom and for four-five years in France, with multipliers set at 1-1.5.

As for n^* , also for n_0 we see an increase in moving from the assumption of normal financial markets to that of myopic markets (from left to right panel of Table 4). The period needed to reduce debt ratios below the levels recorded in 2012 lengthens significantly in a number of cases, involving both some low- and high-multiplier countries. Under myopic financial markets, it would take more than one decade to reduce the debt ratio below its 2012 level for all (consolidating) countries, for which this was already the case with normal financial markets (i.e. Greece, Spain, Cyprus, Portugal and Slovenia) but also for others (Ireland, Lithuania and the United Kingdom). It would take eight-ten years in France (an increase by four-five years relative to the case with normal financial markets).

Finally, Table 5 usefully complements Figures 1-2 and Table 4 by showing the maximum projected debt ratio increase under consolidation relative to the no-consolidation baseline, under both assumptions on the possible reaction by financial markets. Results displayed in this table are particularly useful with regard to consolidating countries experiencing an increase in their debt ratio following consolidation, as identified in Figures 1-2 and Table 4. For these countries, Table 5 makes it possible to assess whether such debt ratio increase is significant in size or not.

²⁰ For Bulgaria, Czech Republic, Germany, Estonia, Latvia, Hungary, Austria, Sweden and the UK, the debt ratio deviates upwards from the baseline even under assumed low multipliers (see strictly positive n^* in Table 4, first column) because, according to the SCPs, structural primary balances are envisaged to deteriorate in 2013 (and also beyond 2013 for some of these countries; see Table 3).

Table 5 - Expected peak debt ratio increases from fiscal consolidation

	High persistence					
	Normal markets			Myopic markets		
	$m_1=0.5$	$m_1=1.0$	$m_1=1.5$	$m_1=0.5$	$m_1=1.0$	$m_1=1.5$
BE	0.0	0.4	1.4	0.1	1.3	4.0
BG	6.6	6.2	5.9	5.5	5.2	4.9
CZ	9.5	9.0	8.5	6.3	5.8	5.4
DK	5.8			4.1		
DE	0.1			0.0		
EE	0.4			0.4		
IE	0.0	0.5	2.7	0.2	3.3	9.7
EL	0.0	1.3	4.7	1.5	8.6	17.0
ES	0.0	0.4	1.7	0.0	1.3	3.9
FR	0.0	0.5	1.6	0.0	1.3	3.7
IT	0.0	0.4	1.4	0.2	1.6	3.2
CY	0.0	0.8	2.6	0.1	2.0	4.7
LV	13.9			10.2		
LT	0.0	0.0	0.3	0.0	0.0	0.5
LU	12.3			10.2		
HU	16.8	15.9	14.9	9.8	8.9	8.0
MT	0.0			0.0		
NL	0.0			0.0		
AT	0.3			0.2		
PL	0.0			0.0		
PT	0.0	0.4	2.4	0.2	2.5	5.3
RO	0.0			0.0		
SI	0.0	0.0	0.7	0.0	0.3	1.8
SK	0.0			0.0		
FI	0.0			0.0		
SE	0.1			0.1		
UK	1.6	1.8	3.6	0.9	2.2	4.1

Source: Commission Services

As partly anticipated, the numbers presented in Table 5, for instance, show that, except for the cases where fiscal deteriorations (rather than consolidation) are expected based on the SCPs, *with an assumed low fiscal multiplier* the envisaged fiscal consolidation efforts generally do not entail *any significantly sized increase in the debt ratio* relative to baseline. On the contrary, *when high multipliers are assumed*, fiscal consolidation programmes entail *moderate debt ratio increases* in the short term, even if markets do not behave myopically. For Greece the debt ratio would increase by 4.7 p.p. maximum. The maximum debt ratio increase would be some 3.5 p.p. for the United Kingdom, around 2.5 p.p. for Ireland, Cyprus and Portugal, and between 1.4 and 1.7 p.p. for Belgium, Italy, France and Spain. Peak debt ratio increases would hardly exceed 0.5 p.p. with a multiplier of 1 (with the only exceptions of Greece, Cyprus and the United Kingdom). Myopic financial markets have a significant impact also on the size of the debt ratio increase. Indeed, in the latter case, peak debt ratio increases would generally exceed 1 p.p. with a multiplier of 1 and 3 p.p. when the multiplier is 1.5. The

peak debt ratio increase would be especially sizeable in Greece (17 p.p.), Ireland (9.7 p.p.), Portugal (5.3 pp.) and Cyprus (4.7 p.p.).

All in all, our results support the case for the debt-to-GDP ratio *temporarily* increasing following fiscal consolidation envisaged in the 2013 SCPs (relative to the counterfactual no-consolidation scenario), *if certain conditions hold true*. This is indeed always the outcome in our simple model when: (i) the fiscal multiplier is assumed to be high (1.5), in case of financial markets reacting "normally" to fiscal consolidation; (ii) the fiscal multiplier is assumed to take a high (1.5) or intermediate (1.0) value with financial markets behaving myopically. When the fiscal multiplier is assumed to be low (0.5), in our simulations fiscal consolidation brings about increases in the debt ratio (though very marginal in size) only in a few cases and only if financial markets behave myopically. The peak increase in the debt ratio following fiscal consolidation, relative to no-consolidation, is generally moderately sized when the multiplier is high and generally small already with an intermediate value of the multiplier (1.0), though the magnitude of the effect is significantly raised if financial markets behave myopically. The increase in the debt ratio is generally short-lived (two-three years from the beginning of the consolidation programme) if markets react positively to consolidation efforts, whereas it is far more protracted if markets behave myopically (in general, an extension of the effect by two-three years is observed relative to the case with normal financial markets).

6. Debt projection results incorporating a price response to fiscal adjustment

Projection results presented so far have been derived under the assumption of no price response to fiscal consolidation. In this section, we will first briefly review the evidence on the effects of fiscal adjustments on prices, and we will then present debt projection results obtained by lifting the assumption of no price response.

Depending on their composition, fiscal adjustments can entail very different price responses. A reduction in government purchases of goods and services, for instance, entails a positive wealth effect, which would counterbalance only in part the reduction in prices brought about by the fall in aggregate demand. Public investment cuts entail similar effects. Likewise, government wage cuts would lead to a reduction in prices due to lower aggregate demand, reinforced by the likely downward pressure on private wages. Hence, public expenditure retrenchment is likely to yield negative price responses. This conclusion is supported by evidence from VAR modelling on Italy (Giordano et al., 2007), Germany (Heppke-Falk et al., 2010; Perotti, 2004) and Spain (de Castro, 2006; de Castro and Hernández de Cos, 2008; de Castro and Fernández, 2013) among others. The European Commission's QUEST II model also provides evidence in this direction. For instance, for Spain a full expenditure-based consolidation of 1% of GDP would lead to a fall in the CPI by 0.13% in the first year compared to the baseline.

The direction of the response in prices is less clear-cut in the case of consolidation measures on the revenue side. VAT increases would clearly translate into higher prices, and this could also be the case for increases in social contributions (insofar as they translate into higher production costs). But increases in the personal income tax and corporate tax would not necessarily lead to a rise in prices. Empirical evidence is rather mixed and not always in line with the aforementioned considerations. Giordano et al. (2007), Heppke-Falk et al. (2010), de Castro (2006), de Castro and Hernández de Cos (2008) and de Castro and Fernández (2013),

for instance, provide evidence of a decline in prices in response to higher net taxes in Italy, Germany and Spain. Conversely, Perotti (2004) provides evidence in the opposite direction for Germany and the UK.

Table 6 – Number of years needed for debt ratio to fall below no-consolidation baseline (n^*) and below 2012 value (n_0) with consolidation envisaged in 2013 SCPs (with additional negative effect on prices)

	Normal reaction by financial markets						Myopic financial markets					
	n^*			n_0			n^*			n_0		
	$m_i=0.5$	$m_i=1.0$	$m_i=1.5$	$m_i=0.5$	$m_i=1.0$	$m_i=1.5$	$m_i=0.5$	$m_i=1.0$	$m_i=1.5$	$m_i=0.5$	$m_i=1.0$	$m_i=1.5$
BE	0	1	3	1	2	3	2	4	5	3	4	5
BG	>10	>10	>10	>10	>10	>10	>10	>10	0	>10	>10	>10
CZ	>10	>10	0	>10	>10	>10	>10	0	0	>10	>10	>10
DK	0			0			0			0		
DE	2			0			0			0		
EE	3			0			3			0		
IE	0	2	3	3	4	5	3	5	6	>10	>10	>10
EL	1	3	4	>10	>10	>10	6	8	>10	>10	>10	>10
ES	0	1	3	>10	>10	>10	1	4	5	>10	>10	>10
FR	0	2	3	4	4	5	2	4	5	8	9	>10
IT	1	2	3	2	3	3	2	4	5	3	4	4
CY	0	1	3	>10	>10	>10	1	4	5	>10	>10	>10
LV	>10			0			>10			0		
LT	0	0	1	5	9	>10	0	1	2	>10	>10	>10
LU	0			1			0			1		
HU	>10	0	0	0	0	0	0	0	0	0	0	0
MT	0			0			1			0		
NL	0			>10			1			>10		
AT	2			1			0			0		
PL	0			5			0			>10		
PT	1	2	3	>10	>10	>10	3	5	6	>10	>10	>10
RO	0			4			0			6		
SI	0	1	2	>10	>10	>10	0	2	3	>10	>10	>10
SK	0			4			0			>10		
FI	0			1			0			2		
SE	2			2			2			2		
UK	4	0	0	9	10	10	0	0	0	>10	>10	>10

Source: Commission Services

Based on the QUEST II model, higher taxes by 1% of GDP imply an increase in the CPI, which, in the case of Spain, amounts to 0.9% with respect to the baseline. Overall, the tax effect outweighs the spending effect in the QUEST II model. A fully balanced consolidation of 1% of GDP leads to a rise in the CPI ranging between 0.3% and 0.5%.²¹

Given that the price response to consolidation has in any case only a limited impact on debt projections in our analytical framework, here we limit ourselves to the results for the case with fiscal consolidation entailing a fall in prices by 0.5%, which simply has to be taken as a worst-case scenario (see Table 6).

Table 6, compared with Table 4, reveals that, with a fall in prices following consolidation of the assumed magnitude, the number of years (n^*) needed for the debt ratio to get below the no-consolidation baseline would in general increase by one year at most (both under normal

²¹ The rise would be 0.31% in Italy, 0.35% in Greece, 0.41% in Spain, 0.45% in Portugal and 0.49% in Ireland.

and myopic financial markets). The same would apply to the number of years (n_0) needed to reduce the debt ratio below its 2012 value.

7. Back-loaded versus frontloaded fiscal consolidation

The simple framework developed and used so far can also provide some indications on the impact that back-loaded and frontloaded consolidation would respectively have on the evolution of the debt ratio. In most cases, the SCPs envisage frontloaded consolidation efforts. However, it is sometimes argued that if multipliers were high, such an adjustment path might entail sizeable costs in terms of output and employment, along with limited improvement on the fiscal side. Hence, a more gradual consolidation strategy could at the same time comply with the provisions of the SGP and be less harmful, if the bulk of it is accomplished when conditions improve and multipliers resume to "normal" values, especially in most vulnerable economies.

Table 7 - Year when debt ratio falls below baseline and below 2012 value in the frontloaded and back-loaded consolidation scenarios (with normal financial markets)

	Frontloaded consolidation					Backloaded consolidation		
	Critical multiplier in 2013	Multiplier = 0.5		Multiplier = 1		Critical multiplier in 2016	Multiplier = 0.5	
		below baseline	below 2012	below baseline	below 2012		debt below baseline	debt below 2012
BE	0.7	2013	2014.0	2014	2015	0.7	2018	2020
BG	1.9	>2023	≥2023	>2023	≥2023	1.8	2018	≥2023
CZ	1.2	>2023	≥2023	>2023	≥2023	1.2	2016	≥2023
DK	0.9	2013	2013			0.9	2016	2016
DE	0.7	2015	2013			0.8	2016	2016
EE	2.5	2016	2013			2.7	2022	2016
IE	0.6	2013	2015	2014	2016	0.6	2021	≥2023
EL	0.5	2013	≥2023	2015	≥2023	0.4	2021	≥2023
ES	0.8	2013	≥2023	2014	≥2023	0.7	2018	≥2023
FR	0.7	2013	2016	2014	2017	0.7	2021	≥2023
IT	0.6	2013	2015	2014	2015	0.6	2016	2020
CY	0.8	2013	≥2023	2014	≥2023	0.6	2016	≥2023
LV	1.4	>2023	2013			1.5	2016	2016
LT	1.4	2013	2017	2013	2019	1.3	2016	≥2023
LU	1.6	2013	2014			1.5	2019	2017
HU	0.8	>2023	2013	2013	2013	0.9	2017	2016
MT	0.9	2013	2013			0.9	2019	2016
NL	0.8	2013	≥2023			0.8	2016	≥2023
AT	0.8	2015	2014			0.9	2021	2016
PL	1.1	2013	2018			1.0	2016	≥2023
PT	0.6	2013	≥2023	2015	≥2023	0.5	2021	≥2023
RO	1.5	2013	2017			1.4	2019	≥2023
SI	1.0	2013	≥2023	2013	≥2023	0.9	2017	≥2023
SK	1.2	2013	2016			1.1	2016	≥2023
FI	0.9	2013	2014			0.9	2016	2018
SE	1.0	2014	2015			1.0	2021	2018
UK	0.7	2016	2021	2013	2022	0.7	2016	≥2023

Source: Commission Services

Admittedly, in the light of results presented in previous sections, delaying fiscal consolidation until when multipliers get to lower values would entail lower short-term costs. On the other hand, the overall effect would remain unclear, as this strategy would also involve higher debt

increases and, associated to this, a higher likelihood of a self-defeating dynamics later on (it will take, in most cases, many years to reduce debt ratios below the values observed in 2012).

In order to illustrate the consequences, on the debt ratio, of delaying fiscal consolidation (back-loaded consolidation), we ran simulations assuming that the structural primary balance remains constant until 2015 and the same fiscal efforts as in the SCPs start only in 2016, when multipliers are assumed to return to "normal" values (0.5). The simulations below are further based on the assumption of normal financial markets.

Table 7 reports the year in which the debt ratio gets below its 2012 value, under both scenarios of frontloaded and back-loaded consolidation. Postponing consolidation implies delaying debt reduction by at least 3 years, and in many cases it would imply a debt ratio remaining above its 2012 value beyond 2020. We should moreover keep in mind that the way the back-loaded consolidation scenario is designed here makes it as a best-case scenario, given that we assume no negative reaction on the part of financial markets to the short-term deterioration in fiscal accounts. Introducing a negative reaction by financial markets might considerably lengthen the horizon for achieving debt reduction.

8. Conclusions

In this paper, we used a simple public debt projection model incorporating different assumptions on the fiscal multipliers to analyse the effects of fiscal efforts indicated in the 2013 SCPs. In particular, we focussed our attention on the way the debt-to-GDP ratio dynamics is influenced by different assumptions on the multipliers, and specifically on the case for fiscal consolidation possibly leading to a temporary increase in the debt-to-GDP ratio. To this aim, the projected debt ratio in the consolidation scenario (reflecting the implementation of the SCPs) was compared to the debt ratio obtained under a counterfactual (baseline) no-consolidation scenario, where the structural primary balance remained constant at 2012 value.

The debt ratio increase following fiscal consolidation is primarily driven by the size of the fiscal multiplier in the years following consolidation. Based on our simple analytical framework, no significant debt ratio increases derive from fiscal retrenchment when fiscal multipliers are low (around 0.5; in this case the multiplier would indeed generally stand below its critical value). However, as indicated in the relevant literature, multipliers can be expected to be larger, and in some cases much larger, in the current crisis context compared to normal times. This, together with the high debt ratios currently observed in many EU countries, makes short-term increases in the debt ratio following consolidation more likely. In particular, our simulations show that consolidation leads to a debt ratio increase for high values of the multiplier (around 1.5) when financial markets behave "normally" (i.e. yields decrease with fiscal consolidation), and for both intermediate and high values of the multiplier (in the range of 1 to 1.5) when financial markets behave "myopically" (i.e. yields increase with consolidation). For high but plausible values of the multipliers, increases in the debt ratio are relatively short-lived, unless financial markets react myopically to consolidation. Despite the possible negative short-term effects, consolidation is needed in many cases as the present debt dynamic could become explosive in absence of policy intervention and further debt increases would raise the likelihood of a self-defeating dynamics in the future.

Based on our simple analytical framework, temporary increases in the debt ratio following consolidation efforts sketched in the SCPs (relative to the counterfactual of no consolidation) are likely for countries expected to experience high fiscal multipliers, like Belgium, Cyprus, France, Greece, Italy, Ireland, Portugal, Slovenia and Spain. For plausible parameter configurations, such consolidation-induced debt increases (relative to baseline) are anyway expected to fade away within maximum three years from the beginning of the consolidation programme, assuming financial markets behave normally. In a number of EU Member States it will anyway take longer (more than one decade in a number of cases) for the debt ratio to fall below its 2012 level.

In terms of size of the consolidation-induced increase in the debt ratio, our results show such an increase to be moderately sized for countries with high multipliers if markets do not behave myopically (only in the case of Greece the peak increase in the debt ratio would be greater than 4.5 p.p. in this case). However, if markets do behave myopically, sizeable increases in the debt ratio cannot be excluded, especially if multipliers stand close to 1.5 or above.

Adding a feedback effect of fiscal consolidation on prices has only a limited impact on results obtained with our analytical framework. Assuming, for instance, that consolidation entails a fall in prices by 0.5%, the number of years needed for the debt ratio to get below the no-consolidation baseline would in general increase by one year at most, both under normal and myopic financial markets. The same would apply to the number of years needed to reduce the debt ratio below its 2012 value.

We finally use our simulation model to illustrate the consequences, on the debt ratio, of delaying fiscal consolidation (back-loaded consolidation). To this aim, simulations were run for an additional scenario in which the structural primary balance remains constant until 2015 and the same fiscal efforts as in the SCPs start only in 2016, when multipliers are assumed to return to "normal" values (0.5). Results obtained for this scenario were compared with the SCP consolidation scenario, which in most cases envisages frontloaded consolidation. The comparison shows that (under the assumption of normal financial markets) postponing consolidation implies delaying debt reduction by at least 3 years, and in many cases it would imply a debt ratio remaining above its 2012 value beyond 2020. Postponing fiscal consolidation with the argument that low multipliers are expected to prevail in the future would therefore not improve the debt ratio dynamics. On the contrary, if postponing consolidation implies that the debt increases up to around 2020, a more adverse reaction by financial markets, and consequently worse economic and fiscal prospects, can be expected.

References

- Andres, J., J. Bosca and J. Ferri (2012) "Household Leverage and Fiscal Multipliers" *Banco de España, Documentos de Trabajo* No. 1215.
- Auerbach A.J. and Y. Gorodnichenko (2011) "Fiscal Multipliers in Recession and Expansion" *NBER Working Papers* 17447.
- Auerbach A.J. and Y. Gorodnichenko (2012) "Measuring the output responses to fiscal policy" *American Economic Journal: Economic Policy*, 4, 127.
- Berti K., M. Salto and M. Lequien (2012) "An early-detection index of fiscal stress for EU countries" *European Economy Economic Paper* No. 475.
- Blanchard, O. and D. Leigh (2013) "Growth Forecast Errors and Fiscal Multipliers" *IMF Working Paper* WP/13/1.
- Boussard, J., F. de Castro and M. Salto (2012) "Fiscal Multipliers and Public Debt Dynamics in Consolidations" *European Economy Economic Paper* No. 460.
- Christiano, L., M. Eichenbaum and S. Rebelo (2011) "When is the Government Spending Multiplier Large?" *Journal of Political Economy* 119(1), 78-121.
- Corsetti, G., A. Meier and G. Müller (2012) "What determines government spending multipliers?" *Economic Policy*, 27: 521–565.
- Corsetti, G. and G. Müller (2012) "International economic cooperation and the international transmission of fiscal policy" *CEPR Discussion Paper* 8748.
- de Castro, F. (2006) "The macroeconomic effects of fiscal policy in Spain" *Applied Economics*, 38, 913-924.
- de Castro, F and L. Fernández (2013) "The Effects of Fiscal Shocks on the Exchange Rate in Spain" *The Economic and Social Review*, 44(2), 151-180.
- de Castro, F and P. Hernández de Cos (2008) "The economic effects of fiscal policy: the case of Spain" *Journal of Macroeconomics*, 30, 1005-1028.
- Erceg, C. J. and J. Lindé (2012) "Fiscal consolidation in an open economy" *American Economic Review* 102(3), 186-191.
- European Commission (2012a) "Report on Public Finances in EMU 2012" *European Economy*, 4/2012.
- European Commission (2012b) "Fiscal Sustainability Report 2012" *European Economy* 8/2012.
- European Commission (2011) "Public Finances in EMU 2011" *European Economy* 3/2011.
- Galí, J., D. López-Salido and J. Vallés (2007) "Understanding the effects of government spending on consumption" *Journal of the European Economic Association*, 5, pp. 227-270.

- Giordano, R., S. Momigliano, S. Neri and R. Perotti (2007) "The effects of fiscal policy in Italy: Evidence from a VAR model" *European Journal of Political Economy*, 23, pp. 707–733.
- Heppke-Falk, K.H., J. Tenhofen and G.B. Wolff (2010) "The macroeconomic effects of exogenous fiscal policy shocks in Germany: a disaggregated SVAR analysis" *Journal of Economics and Statistics*, Vol. 230(3), 328-355.
- Hernández de Cos, P. and E. Moral Benito (2013) "Fiscal Multipliers in Turbulent Times: the Case of Spain" *Banco de España, Documentos de Trabajo* No. 1309.
- Ilzetzki, E., E.G. Mendoza and C. Végh (2012) "How big (small?) are fiscal multipliers?", *Journal of Monetary Economics*, forthcoming.
- In't Veld, J. (2013) "Successive simultaneous consolidations and spillovers: a model based-assessment of consolidation in periphery and core", mimeo.
- Leeper E.M., N. Traum and T.B. Walker (2011) "Clearing Up the Fiscal Multiplier Morass" *NBER Working Paper Series* No. 17444.
- Perotti, R. (2004) "Estimating the effects of fiscal policy in OECD countries" Proceedings, Federal Reserve Bank of San Francisco.
- Woodford, M. (2011) "Simple analytics of the government spending multiplier" *American Economic Journal: Macroeconomics* 3(1), 1-35.

Annex I

Figure A.1 - Debt-to-GDP ratio responses to fiscal consolidation with multipliers' high persistence and normal financial markets (MSs with low initial multipliers)

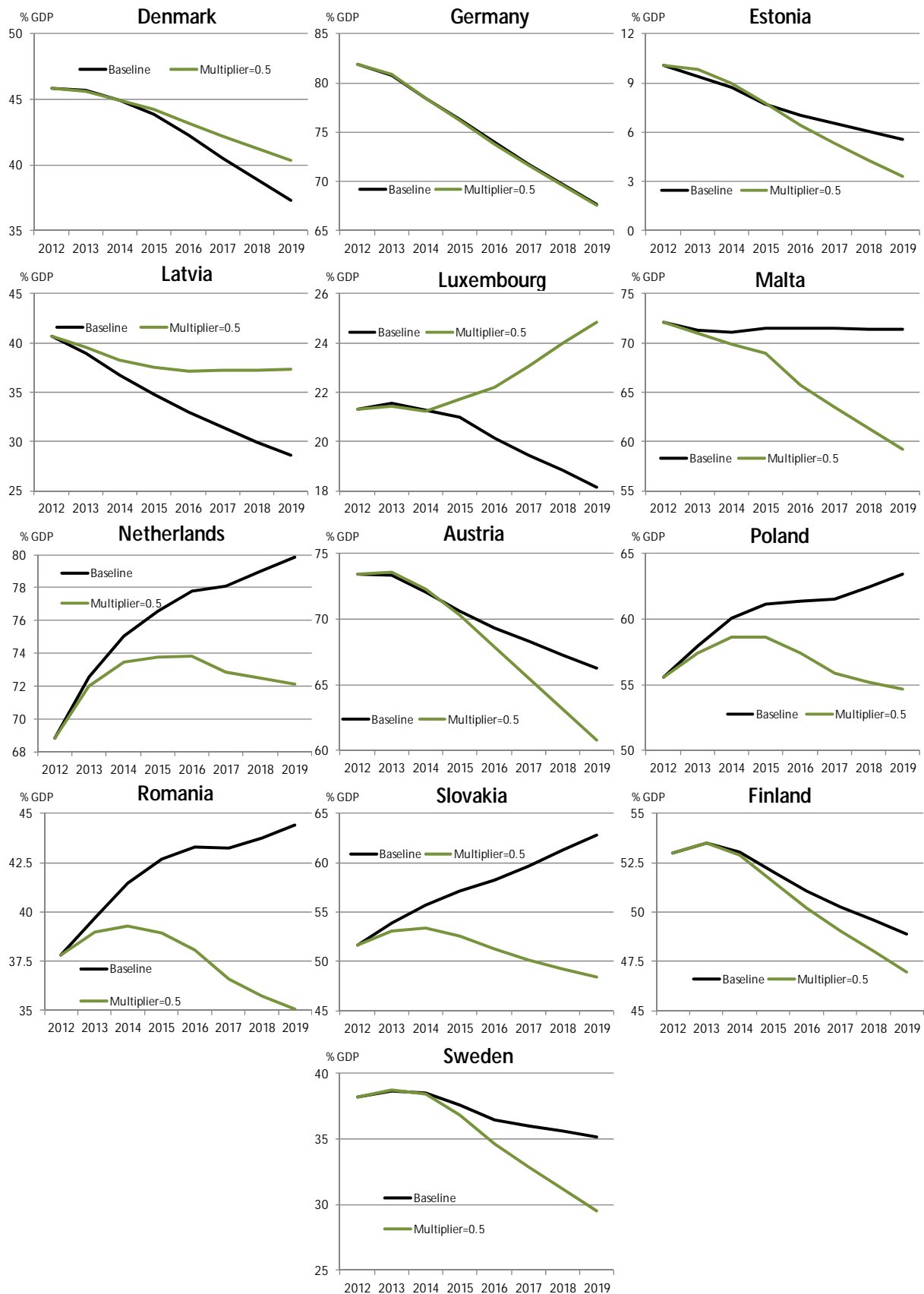
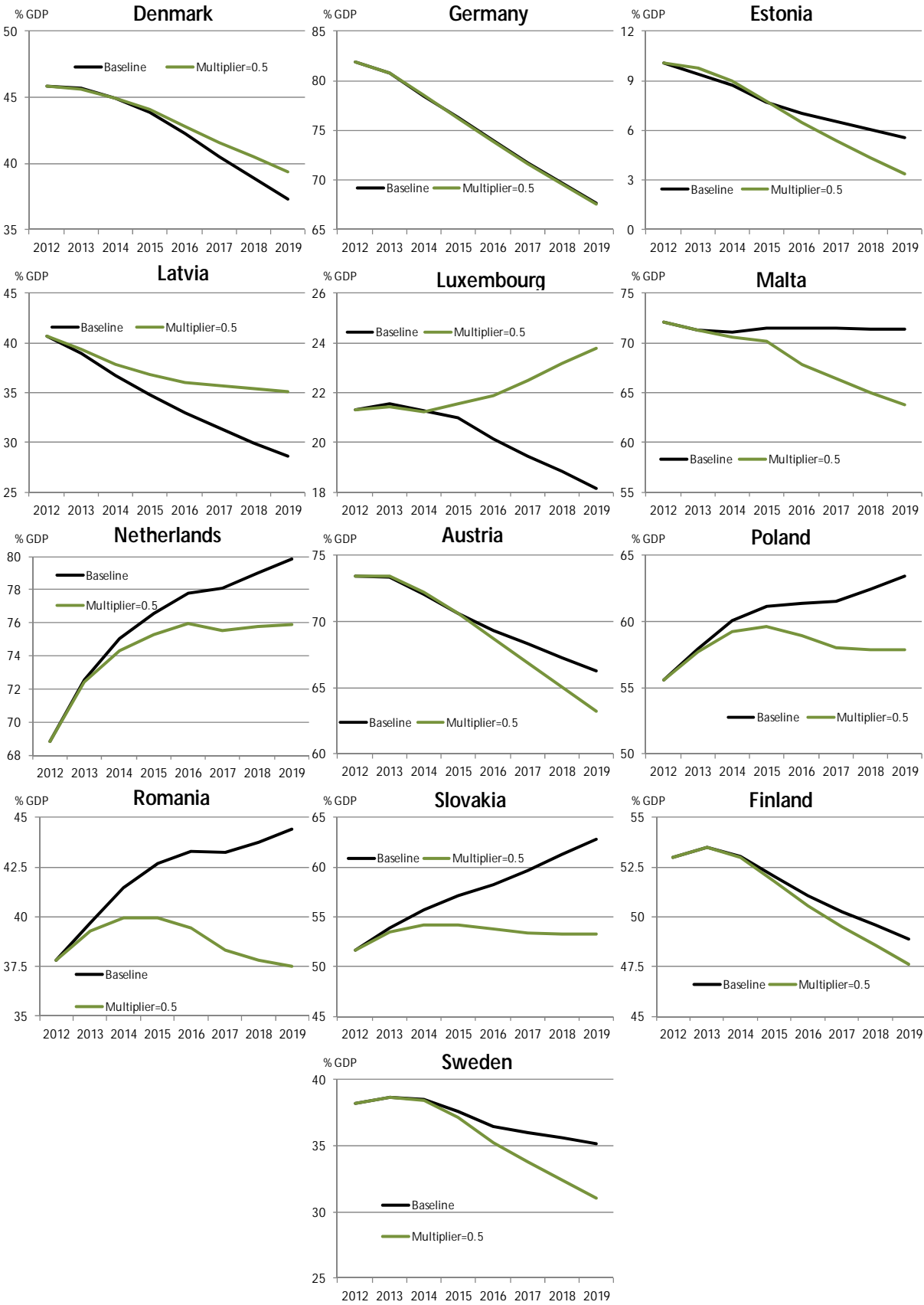


Figure A.2 - Debt-to-GDP ratio responses to fiscal consolidation with multipliers' high persistence and myopic financial markets (MSs with low initial multipliers)



Annex II: GDP growth assumptions in baseline no-consolidation scenario and effect of SCP fiscal efforts on growth rate in consolidation scenarios

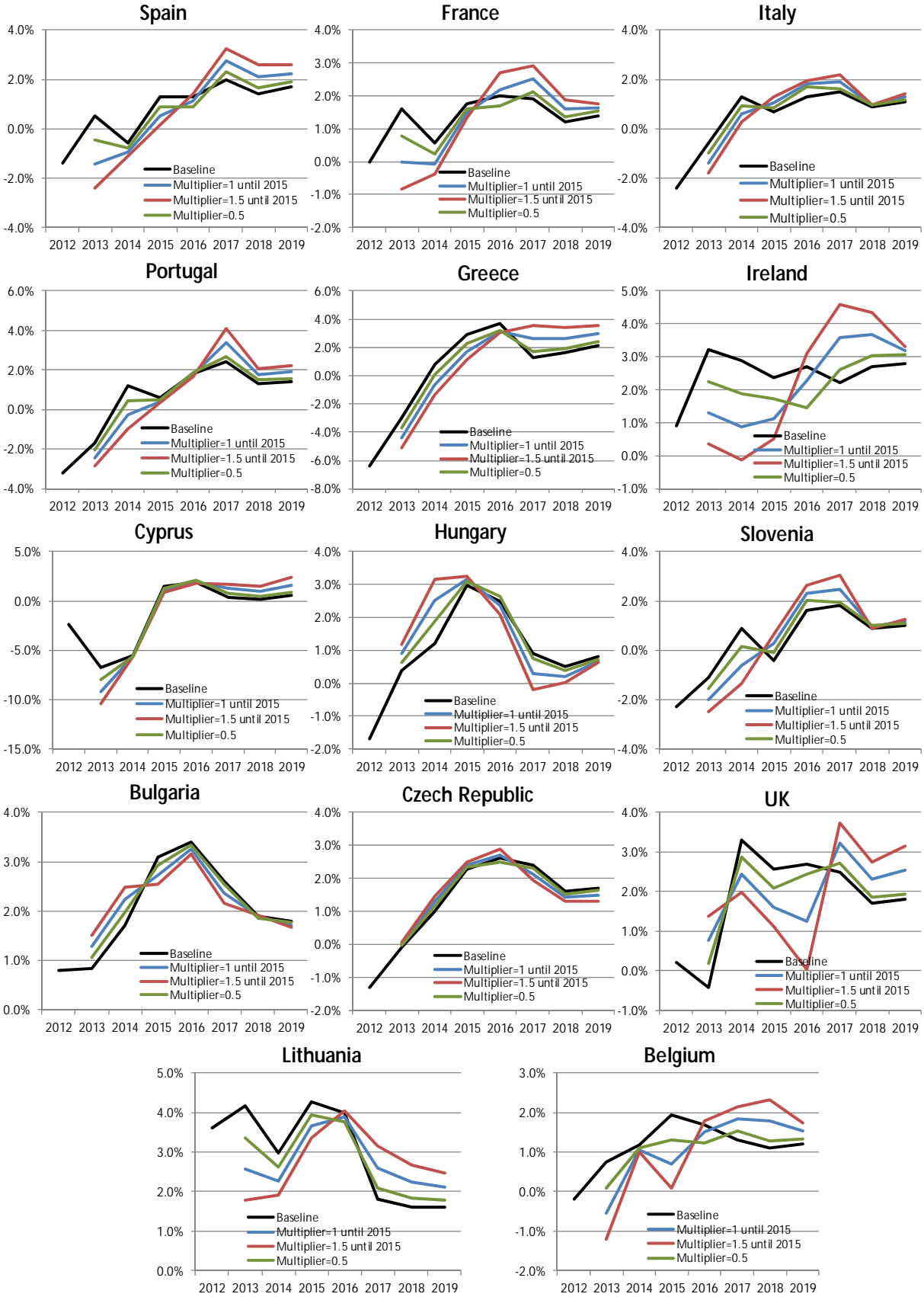


Table A.1. Baseline GDP growth assumptions

	2012	2013	2014	2015	2016
BE	-0.20	0.20	1.50	1.60	1.70
BG	0.80	1.00	1.80	2.90	3.40
CZ	-1.30	0.00	1.20	2.10	2.60
DK	-0.50	0.70	1.60	1.70	2.40
DE	0.70	0.40	1.60	1.40	1.40
EE	3.20	3.00	3.60	3.50	3.50
IE	0.90	1.30	2.40	2.80	2.70
EL	-6.38	-4.20	0.60	2.90	3.70
ES	-1.40	-1.30	0.50	0.90	1.30
FR	0.00	0.10	1.20	2.00	2.00
IT	-2.40	-1.30	1.30	1.50	1.30
CY	-2.40	-8.70	-3.90	1.10	1.90
LV	5.60	4.00	4.00	4.00	4.00
LT	3.60	3.00	3.40	4.30	4.00
LU	0.30	1.00	2.20	1.70	3.40
HU	-1.70	0.70	1.90	2.30	2.50
MT	0.80	1.40	1.60	1.90	1.90
NL	-0.90	-0.40	1.10	1.60	1.60
AT	0.80	1.00	1.80	2.00	1.80
PL	1.90	1.50	2.50	3.80	4.30
PT	-3.20	-2.30	0.60	1.50	1.80
RO	0.70	1.60	2.20	2.40	3.00
SI	-2.30	-1.90	0.20	1.20	1.60
SK	2.00	1.20	2.90	3.30	3.60
FI	-0.20	0.40	1.60	2.10	1.70
SE	0.80	1.20	2.20	3.60	3.90
UK	0.20	0.60	1.80	2.30	2.70

Source: SCPs 2013 and Commission Services

Annex III: Real implicit interest rate assumptions under myopic financial markets

