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Independent report on the Greek official debt

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1 Introduction

A spectre continues to haunt Greece and no less its creditors. Under plausible projections for growth, interest rates and fiscal performance, the government's debt is unsustainable, as its official creditors have effectively acknowledged.[2] The promise of more official debt relief in the form of interest rate concessions and maturity extensions is on the table, but realising that promise will require the Greek government and society to commit to substantial primary budget surpluses for two generations. One might ask whether it is morally defensible to require future generations to pay for the sins of their forefathers, not to mention the consequences of poor crisis management by European institutions and the IMF. One might also ask whether it is politically feasible that future generations can be mandated to repay the debts of others for the better part of their adult lives. At stake are mutual trust and solidarity among EU member states. Both stand to be challenged by continued oversight of Greece and by a long-term creditor/debtor relationship based on unrealistic assumptions. We favour instead incentives that promote genuine reforms and reduce moral hazard.

Beyond these considerations, we ask whether this scenario is vulnerable to being thrown off track by even modest shocks to growth rates, interest rates and fiscal performance. Is the risk of more crises, more negotiations, and yet further restructurings sufficiently serious that the associated uncertainty could depress investment, and therefore growth, to the point of rendering the underlying scenario untenable? If the requirements of the official creditors are unrealistic, dooming both their Greek interlocutors and themselves to continuous conflict and debilitating uncertainty, how should those requirements be revised? How can parties with different points of view square the circle?

It is now nearly eight full years since the first IMF-EU emergency loan of €73 billion, which denied the need for debt restructuring and was based on what appear in hindsight to have been wildly unrealistic assumptions about growth and fiscal adjustment. It is more than six years since the EU and the IMF committed to a second bailout of almost €165 billion in conjunction with a deep write-down for private bondholders. It is over five years since the revision of the second aid deal that included lower interest rates on EU loans and foresaw Greece as reducing its debt-to-GDP ratio to 124% by 2020. It is almost three years since the third, €86 billion bailout, to which the IMF refused to contribute and which only narrowly averted the country's exit from the Eurozone.

In the meantime, Greek GDP has fallen by 22%, an output collapse unprecedented in the annals of modern Europe and one that rivals the severity of the Great Depression in the United States. Unemployment remains in excess of 20%, youth unemployment in excess of 40%. The debt-to-GDP ratio, rather than falling, has continued to rise and exceeded 180% already in 2017. None of this is as promised in official forecasts.

1 The authors are very grateful to the European Public Law Organization (EPLO) for hosting the initial meeting of our group and for helpful discussions, comments and suggestions. This report is simultaneously published by EPLO and CEPR.

2 See Eurogroup statement on Greece, 15 June 2017; and Zettelmeyer (2017) for an interpretation of the statement.

All this points to the need for a further – and final – rethink of the official approach to managing the country's debt. Unfortunately, the participants in negotiations over Greece's debt all have deeply entrenched positions. This became evident once more in 2017, which was occupied by yet further negotiations between Greece and the Troika (the European Commission, the ECB and the IMF) and within the Troika itself. It culminated in the release of a pair of documents that encapsulate the unsatisfactory state of affairs. The statement released on 15 June by the Eurogroup (the group of finance ministers of the members of the Eurozone, including Greece) anticipated a primary budget surplus of 3.5% of GDP through 2022 and then a surplus "equal to or above but close to" 2% of GDP from 2023 through 2060. The document reiterated the readiness of the Eurogroup to extend the average maturity of Greek debt held by the European Stability Mechanism (ESM), to defer further interest and amortisation on Greek bonds held by the European Financial Stability Facility (or EFSF, the predecessor of the ESM), and to create a link between Greece's debt service to the EFSF and its economic growth, all in the "medium term", meaning after 2022. The statement also "reaffirmed and confirmed the commitments and principles in the statements of May 2016", in which the Eurogroup had ruled out reductions in principal of officially held debt. Finally, the Eurogroup envisaged a quick return of Greece to capital markets at the conclusion of the programme in 2018.

A troubling aspect of this plan is the tightness of the fiscal path, starting with a primary surplus of 3.5% of GDP for an additional five years and then envisaging 2% primary surpluses for nearly 40 years. Surpluses so large for such extended periods are rare, as shown in Eichengreen and Panizza (2016). Large and persistent surpluses require not just a healthy economy but also a broad social consensus. Historically, they have also required a flexible exchange rate so that external demand can be smoothly substituted for domestic demand, an option that is not available to Greece. In any case, it is hard to find instances where countries ran substantial surpluses in order to pay off their creditors, many of whom were foreign, for nearly half a century without interruption, as noted in IMF (2017).

A further problem with the Eurogroup's plan is that it lacks an incentive mechanism that would discourage new overborrowing by Greece. The provision that comes closest is the requirement that Greece should cover its gross finance needs through private borrowing as early as this year. The Eurogroup's hope is that this need to access private markets will discipline the Greek government and ensure continued good fiscal outcomes. In fact, however, this is unlikely to be the case. New borrowing from the private sector can be structured to amortise before major repayments to the official sector are scheduled to begin. That new private debt will be effectively senior, rendering the private sector willing to lend whether or not the Greek government is on course to meet its official obligations. As a consequence, the market discipline on which Greece's official creditors are counting will be weak or non-existent. The result in all likelihood will be yet another renegotiation of the government's debt to the official sector before major repayments come due, accompanied by the predictable uncertainty, political noise, and negative consequences for investment and growth.

Any plan that seeks to do better must begin by recognising the difficulties of both the economics and the political economy of Greek debt. The Greek authorities prioritise economic recovery but also want to limit invasive oversight by the Troika while at the same time convincing their neighbours that past problems are unlikely to recur. They have been moving in the right direction with structural reforms and fiscal consolidation, but their critics question whether they have gone far enough. The creditors, meanwhile, are struggling to reconcile four potentially irreconcilable objectives: to facilitate that same Greek economic recovery, but also to recoup some of their money while limiting their ongoing involvement in Greece and not setting bad precedents for the Eurozone. They are constrained by EU law. They too have been moving in the right direction, by offering interest rate reductions and maturity extensions and signalling that further "recalibration" of the debt might be possible at some future date. But the result still does not meet the objectives that the creditors have set for themselves.

In this report we first confirm that the status quo is not viable. Greece's debt is not sustainable. Even under the most optimistic assumptions (those of the Eurogroup itself), and taking into account the "short-term" debt relief measures already implemented in 2017, the gross financing needs (GFN) thresholds, of 15% of GDP in the medium term and 20% thereafter, that the Eurogroup accepted in its June 2017 statement for the purposes of determining sustainability are violated. Substitute more cautious assumptions for growth and primary surpluses, such as those of the IMF, and the violation of sustainability is even more egregious.

We then consider a scenario where the full set of potential debt relief instruments described and hinted at in Eurogroup statements is deployed, including EFSF re-profiling and capping and deferral of interest payments. Under the Eurogroup's relatively optimistic assumptions about growth and fiscal policy, this renders Greece's debt just sustainable, maybe. But recall that those assumptions include that Greece maintains a primary surplus of 2% or higher for more than 40 years, an outcome that is unprecedented and, in our view, unrealistic. Stuff happens – both political stuff and economic stuff. A primary budget surplus

above 2% over 40 years does not make for a robust programme. Moreover, under somewhat less extreme but still ambitious assumptions regarding growth, inflation and the fiscal balance, Greek debt is again unsustainable. We conclude that this 'status quo with full set of potential debt-relief instruments' scenario is not one where Greek debt is sustainable with high probability.

Further measures are therefore essential. In the remainder of our report, we analyse three options consistent with EU law and with the broad philosophy set out by the Eurogroup. *Option I* entails conditional face-value debt relief. To play a constructive role, face-value debt relief must avoid creating moral hazard (weakening incentives for fiscal adjustment by rewarding it with principal reduction), and it must conform to EU law. We describe a scheme for face-value debt relief that meets both conditions, assuming only that Greece wishes to avoid defaulting on the EFSF/ESM, as it does.

In essence, we propose that for every euro by which Greece over-performs a baseline fiscal path – the path assumed by IMF (2017), for example – EFSF debts will be reduced by an equal amount, but only up to the point at which Greece achieves a specified upper-limit fiscal path. For example, if the upper limit in 2025 is a primary surplus of 2% and the baseline is 1.5%, then the maximum face-value debt relief that Greece can earn based on its 2025 performance is 0.5% of GDP. We show that if this plan were to be applied between 2023 and 2037, the time window that the Eurogroup had envisaged for debt relief such as interest deferrals, it would render Greece's debt sustainable. This should make Greece happy, since the plan rewards the country for good fiscal performance (although whether the Greek people will stomach such still-large surpluses for an extended period, even when rewarded with debt relief, is a question). And it should please the creditors, since it avoids creating moral hazard and, as we show below, conforms to the requirements of EU law.

Option II entails continued ESM financing. One reason Greek debt is unsustainable under the Eurogroup plan is the assumption of an early return to the market, committing the country to finance itself at very high lending spreads and thereby creating explosive debt dynamics. Market financing, moreover, provides little in the way of discipline, as we explained above. A possible alternative therefore is providing the country with cheaper finance through continued ESM loans.

The problem is that this approach, even when combined with the full package of potential "medium-term" debt relief measures described by the Eurogroup, may require a succession of ESM programmes over a very long period, including not just lending but also invasive conditionality. It would also entail a large increase in total European official sector exposure to the country, which Greece's creditors would oppose. Our analysis suggests that under standard assumptions about the evolution of private sector interest rates, even ESM programmes stretching over two more decades, in combination with EFSF maturity extensions and interest deferrals, may not be enough to make Greece's debt sustainable. This said, given uncertainty about these assumptions, combining the Eurogroup's "medium-term" measures with a new ESM programme would certainly be preferable to ending Greece's access to official financing in 2018, as it would give Greece's creditors the option of applying additional debt relief measures in the future without the need to repay or restructure expensive private debts that would otherwise have accumulated in the meantime.

Finally, *Option III* applies the Eurogroup measures to a broader debt base, not just EFSF loans but also the bilateral loans of the 2010 Greek Loan Facility (GLF), the set of bilateral loans from euro area countries, extended the month before the EFSF was created. GLF repayments are front-loaded and relatively expensive in terms of interest rates. But they could be restructured along four dimensions – later start, longer maturities, interest deferrals, and a reduction in the lending spread – without requiring face-value debt reductions.

Unfortunately, our analysis shows that even this may not be sufficient. To achieve debt sustainability without face-value debt relief, it would be necessary to combine Options II and III. However, this would imply a large increase in the total exposure to Greece of the European official sector from currently expected end-2018 levels, that is, by 50% or more. It would also mean that Greece could still be paying off debts to European official creditors well into the 22nd century.

For this reason, it is hard to avoid the conclusion that any solution to the Greek debt crisis that does not fall on the shoulders of taxpayers several generations removed from the 2010 crisis will require conditional face-value debt relief. As we show below, if designed correctly, this could be structured in a way that incentivises additional fiscal efforts on the part of Greece, limiting moral hazard and ensuring conformance with EU law, while at the same time keeping the costs for euro area taxpayers relatively low.

The need for face-value debt relief may be difficult to accept. But the same set of problems cannot be allowed to recur indefinitely. The time for putting the Greek debt crisis to rest is now.

2 Methodology

Debt sustainability is an elusive concept. Solvency, on the other hand, can be precisely defined: the present discounted value of current and future primary budget surpluses must equal or exceed the value of the existing public debt. Unfortunately, substituting solvency for debt sustainability is impractical for two reasons.

- First, solvency is only meaningful for the private sector, not for a government. Whereas a corporation that is insolvent can be declared bankrupt and liquidated or restructured, a government cannot be liquidated. Furthermore, a corporation can be forced by legal means to fulfil its debt obligations, while a sovereign can choose not to do so, as Greece was instructed to do in 2012 by the Troika within the Private Sector Involvement (PSI) initiative. This means that debt service can be lightened either because the government is unable to meet its obligations or because it is unwilling to do so.[3]

- Second, the present discounted value of current and future primary budget surpluses should be computed, in theory, over the infinite future because a country and its governments last (or are expected to last) forever. This requires making forecasts of the country's income (GDP), tax receipts and public expenditures over an infinite horizon. This requirement also applies to the discount factor, which is the interest rate that applies to debt instruments. Whereas economic forecasts over a few years are famously uncertain, extending them to the indefinite future means making arbitrary and implausible assumptions.

- For all these reasons, the IMF – which pioneered Debt Sustainability Analysis (DSA) in the late 1990s – focuses on debt sustainability rather than solvency. The Fund considers debt to be sustainable when "the primary balance needed to at least stabilize debt under both the baseline and realistic shock scenarios is economically and politically feasible, such that the level of debt is consistent with an acceptably low rollover risk and with preserving potential growth at a satisfactory level" (IMF 2013). This definition has the merit of being intuitive. It requires that the debt be at least stabilised, i.e. not indefinitely growing relative to the size of the economy. Furthermore, the level at which it is stabilised must be such that debt service is possible without disruption to growth prospects that are sufficiently serious to create serious economic hardship and political turmoil, and without a high risk of being excluded from the financial markets, as happened to Greece in early 2010. Finally, it recognises that any forecast is subject to uncertainty, which calls for exploring various scenarios.

Unfortunately, this formulation also leaves important questions unanswered. It is silent, for example, about the horizon over which the criteria are applied. In practice, the IMF normally answers the question by looking at the "medium term", which is taken to mean the next five years. In the case of Greece, it has extended the horizon period to 2060, as did the European Commission when it started conducting DSA for programme countries.

This formulation also does not explain what is "economically and politically feasible" and when "potential growth [is] at a satisfactory level". The implication is that DSA rests on unspecified and unverifiable value judgements.

In recognition of that fact, DSAs generally involve the construction of scenarios designed to explore the implications of alternative assumptions. This entails carefully explaining how the baseline and scenario assumptions are constructed. In recent years, the IMF has standardised the construction of its scenarios. It also now presents the results of its analysis with fan charts that graphically display the degree of confidence of the results, estimated on the basis of the historical behaviour of the variables used in the analysis.

In the present report, we adopt the approach developed by Zettelmeyer et al. (2017), which uses the accounting identity to track debt accumulation over time and shares key elements of the IMF's methodology. The key elements of this approach are the following:

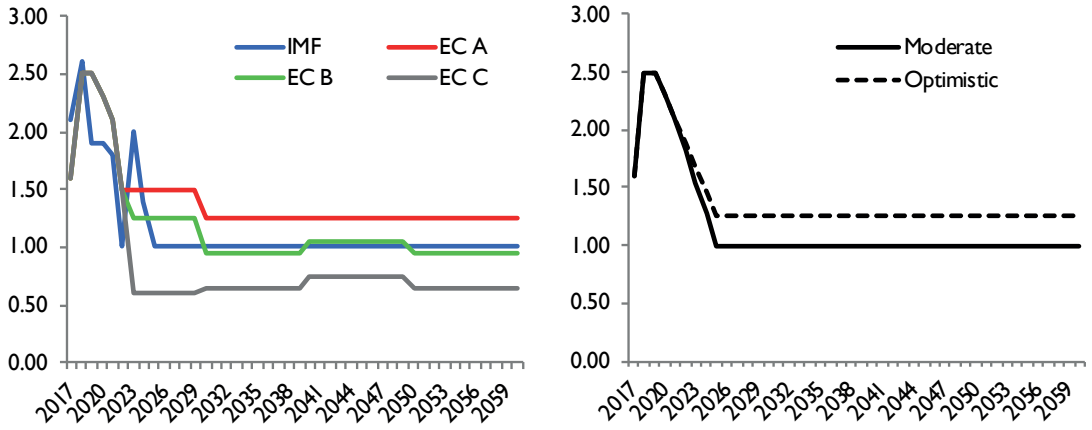
- For comparison with the IMF and Commission DSAs, the horizon is set at 2060. While we adopt the Commission data for the medium term, meaning typically the next five years, we then attempt to describe the steady state as explained below.

- Debt sustainability is defined in terms of two criteria: that by 2060 the debt-to-GDP ratio must be declining, and that the government gross financing needs – the sum of the primary deficit and interest and amortisation – must not exceed 20% of GDP in any given year.

- In each scenario, the implications of various assumptions about the path of the primary budget deficit are explored over the entire horizon. The aim is to find out which of these assumptions deliver debt sustainability, as previously defined.

3 Choosing instead to default, either partially or completely.

Figure 1 GDP growth, 2017-2060 (% per year)



Source: European Commission (2018) and IMF (2017).
Note: The left chart shows IMF baseline growth projections for Greece from IMF (2017) as well as three growth scenarios from European Commission (2018). "EC A" refers to Scenario A, "EC B" to Scenario B and "EC C" to Scenario C, respectively, outlined in European Commission (2018, Table 4). The right chart shows the growth paths used in the debt sustainability analysis below.

- In contrast to other DSAs, the scenarios are not meant to be sensitivity tests of the baseline result; we have no baseline. Instead, we construct the scenarios to evaluate various options.

- Uncertainty is crucial to interpreting the results. Based on the historical properties of Greek GDP growth, inflation and interest rate, we run a large number of 'Monte Carlo' simulations that generate fan charts.

- The methodology allows for two-way feedback between debt and the interest rate, as explained below. This feedback is important because it is a potential source of instability, insofar as higher debt leads to a higher interest rate which, in turn, deepens the deficit through debt service.

3 Assumptions

Any DSA must rely on forecasts, in the present case extending to 2060. For the short and medium term, the next five years, we use actual forecasts from the European Commission, which have a reasonably good track record. As we evaluate various options, including some discussed by the Eurogroup, any discrepancy between what the Eurogroup has offered and what we determine as sustainable will not, therefore, hinge on disagreements over short- and medium-term forecasts. For the longer term, we make – and justify – transparent assumptions about the steady state.

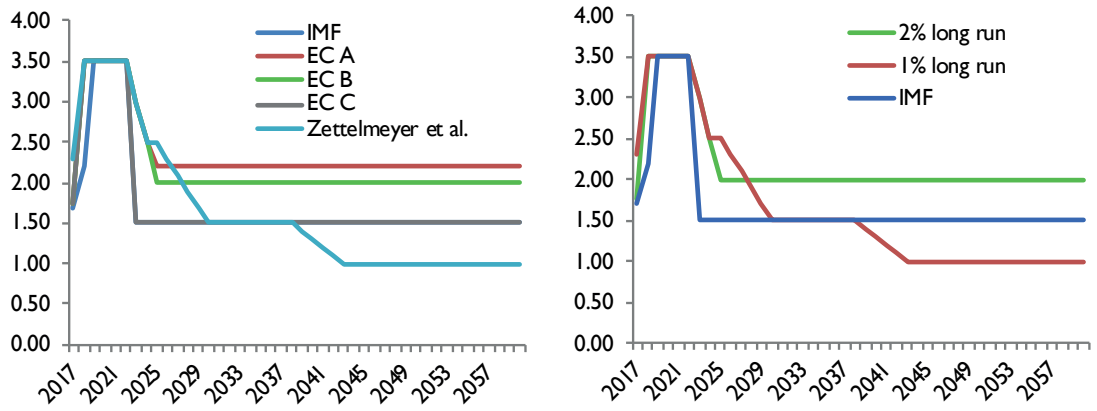
3.1 GDP growth

The left-hand chart in Figure 1 displays the most recent forecasts published by the IMF and the European Commission in July 2017 and January 2018, respectively.[4] The Commission envisages three scenarios labelled A (baseline), B (moderately pessimistic), C (more pessimistic) and D (optimistic). We ignore Scenario D, which we (and the IMF) view as overly optimistic for reasons explained in Appendix 1. All these forecasts assume that the steady state is reached between 2025 and 2030.

We experiment with two paths. For the period 2017-2022, in both cases we adopt Scenario B (which is identical to Scenario C over this period) from European Commission (2018), which is more optimistic than the forecasts in IMF (2017). It is important to stress that relatively small differences between the various short- and medium-term forecasts have a negligible impact on a DSA that extends over more than 40 years. What is crucial is the assumed steady-state growth rate. Appendix 1 explains why we reach the conclusion that a reasonable assumption is a real GDP growth rate of 1% per year as of 2025.5 Between 2022 and 2025 we use a linear interpolation. We also examine in some cases the situation where steady-state growth is 1.25%. The two GDP growth rate paths are shown in the right-hand side of Figure 1. We refer to them as "moderate growth" and "optimistic", respectively.[6]

4 The sources are IMF (2017) and European Commission (2018).
5 Even though we justify our assumption as carefully as possible, this can only be a wild guess. Many factors may deliver a different outcome, and some will. For example, steady-state growth could be higher due to a return of Greek émigrés, a strong response to structural reforms or the re-entry of disenfranchised workers.
6 This means that the growth rate is taken as exogenous, a clear limitation of our analysis. While this assumption is reasonable for the long run, it is more doubtful over the medium run. As noted, however, medium-run differences do not affect DSA carried over several decades.

Figure 2 Primary budget surplus assumptions



Source: European Commission (2018), IMF (2017) and Zettelmeyer et al. (2017).
Note: The left-hand chart shows IMF baseline primary surplus paths for Greece from IMF (2017), primary surplus paths corresponding to scenarios A, B and C from European Commission (2018), and a primary surplus path taken from Zettelmeyer et al. (2017). The right-hand chart shows the three primary surplus paths used in the debt sustainability analyses below.

3.2 Primary surplus

As indicated, our approach is to explore which paths for primary budget surpluses deliver debt sustainability. We examine a number of options, which are defined by the surplus path and, in some cases, by the existence of a debt reduction agreement. These options are not forecasts, they are a description of policy choices.

For the short to medium term, it has already been agreed between the Greek government and the Commission that the budget surplus will be of 3.5% of GDP over 2018-2022. The IMF departs marginally from this assumption by considering that this target will only be reached in 2019, with a 2.2% surplus in 2018; such a small and brief difference does not really affect debt sustainability. The left-hand chart in Figure 2 shows what is assumed thereafter. The Commission's Scenario A envisions that the surplus declines in two steps to reach 2.2% in 2025 and remains at that level thereafter. In Scenario B, the lowest primary surplus path consistent with the Eurogroup's June 2017 statement, the surplus settles at 2% of GDP by 2025. Scenario C portrays an immediate reduction to 1.5% as soon as 2023. This is also the assumption made by the IMF, which is therefore almost identical to the Commission's Scenario C.

We consider three possible paths, shown in the right-hand chart of Figure 2:

- The Commission's Scenario B (consistent with the Eurogroup statement, as indicated above), called "2% long run". Over 2018-2060, the average primary surplus is 2.21% of GDP.

- A path proposed by Zettelmeyer et al. (2017) based on international evidence on the duration of primary fiscal surpluses. Starting in 2023, the surplus declines in steps from 3.5% to 1% of GDP. This path is called "1% long run". Over 2018-2060, the average primary surplus is 1.63% of GDP.

- The path proposed by the IMF, which, in the medium run, is very close to the Commission's Scenario C, as explained above. Over 2018-2060, the average primary surplus is 1.70% of GDP.

3.3 Inflation (percentage change in the GDP deflator)

Debt accumulation is computed in real terms. A higher inflation rate raises nominal GDP and reduces the debt-to-GDP ratio. In its baseline scenario, the Commission assumes that inflation rises from 0.9% in 2017 to 2% in 2024 and remains unchanged afterwards. The IMF foresees a slow rise in inflation from 1.2% in 2017 until it reaches 1.8% in 2023, after which it remains there. In what follows, we adopt the Commission's relatively optimistic assumption, including 2% inflation in the medium and long term, except when we adopt the IMF forecasts (growth, surplus, inflation and privatisation proceeds).

3.4 Privatisation proceeds

A number of privatisations – including of some banks – have been agreed and may or may not be realised. In its baseline scenario, the European Commission takes into account those achieved in 2017, valued at €3.4 billion. From 2018 onward, it anticipates additional privatisation receipts of about €13 billion. The IMF envisions a much smaller total of €4.9 billion for 2017-2068. We consider the implications of both the relatively optimistic Commission privatisation revenue forecasts and the IMF's more conservative forecasts in the scenarios that follow.

3.5 Interest rates

Interest rates play a crucial role in DSA. When cumulated over decades, small variations can have large effects. And interest rates are very difficult to predict over such a long horizon.

Luckily (for us), a large part of the Greek debt is owed to official lenders. The Greek Loan Facility (GLF) is a set of bilateral loans provided in May 2010 at the start of the crisis. It charges Greece the three-month EURIBOR rate plus a spread of 50 basis points. Afterwards, loans were provided by the ESM and its predecessor, the EFSF. These institutions charge Greece their funding costs related to borrowing from Greece plus a 10-basis-point spread in the case of the ESM and no spread in the case of the EFSF. Currently, these rates stand at around 1-1.2%.[7] Finally, Greece has also borrowed from the IMF. The interest rate charged by the IMF is considerably higher than those charged by the European official lenders (for 2018, about 3.2%), but these loans are of a much shorter maturity.[8]

Key questions are when Greece will return to the markets for its borrowing needs, possibly rolling over maturing official loans, and then at what interest rate. We proceed on the following assumptions.

- EFSF rates: We use the EFSF projections shown in European Commission (2018, Table 4, Scenarios A, B and D), with interpolation for years not shown in the table.

- ESM and GLF rates: We follow the approach used in Zettelmeyer et al. (2017), which is to project ESM funding costs and the 3-month Euribor (for GLF) using the 6-year German bund forward rate and euro swap forward curve, respectively, for the medium term and then to allow these rates to continue rising in parallel with the projected EFSF rates.

- Private lending rates: We use a linear rule that models private lending rates as a spread over the ESM marginal funding rate.[9] In line with European Commission (2018), the spread is assumed to equal 3 basis points for every point of the debt-to-GDP ratio above 60%. This implies that at current debt levels (a little over 180% of GDP), the formula predicts a spread of approximately 370 basis points. This is close to the actual spread on the 10-year Greek government bond, which was about 355 basis points in early March 2018.

3.6 Four scenarios

All these assumptions can be combined in a large number of ways. To keep the analysis manageable, we focus on just four scenarios that span the range of plausible outcomes.

1. **Optimistic growth, 2% surplus**. This assumes a steady-state growth rate of 1.25% and a primary surplus path of at least 2% of GDP, as in Scenario B of European Commission (2018) and consistent with the June 2017 Eurogroup statement. Inflation and privatisation proceeds follow the Commission baselines.

2. **Moderate growth, 2% surplus**. Same as the optimistic scenario except that steady-state growth is assumed to be 1.0%.

3. **Moderate growth, 1% surplus**. This scenario is the same as the previous one, assuming a steady-state GDP growth rate of 1%, but it accepts that the primary surplus eventually declines to 1% of GDP, as in Zettelmeyer et al. (2017).

4. **IMF**. The steady-state growth rate is 1% and the primary surplus after 2022 is set at 1.5% of GDP. This scenario assumes low privatisation revenues and long-term inflation of just 1.8% instead of 2% as in the three previous scenarios.

7 See https://www.esm.europa.eu/lending-rates, last accessed 26 February 2018.

8 For 2018, the IMF projects charges/interest of 296.5 million SDR (approximately €350 million), on a currently outstanding principal of 9.157 billion SDR (approximately €10.7 billion). The IMF loan is scheduled to amortise fully in 2024. See "Greece: Financial Position in the Fund", http://www.imf.org/external/np/fin/tad/exfin2.aspx?memberKey1=360&date1key=2099-12-31, last accessed 26 February 2018.

9 The linear rule is based on Laubach (2009). There is some debate about whether the link is linear. Ardagna et al. (2007) report that there is no effect of public debts on interest rates for low-debt countries but a measurable effect for large-debt countries.

4 Results

We now examine what the following five options deliver under the above four scenarios:

- **Status quo**: No additional debt relief except for the "short-term measures" that were already implemented in 2017.
- **Full use of measures considered by the Eurogroup**: These measures apply to EFSF debt and include indexing the principal to GDP.
- **Option I**: This option considers a conditional face value debt relief, as explained below.
- **Option II**: In this option, we allow for the full use of Eurogroup measures plus continued official financing of Greece (via the ESM) over the medium term.
- **Option III**: Eurogroup measures are applied to a broader base than presently envisaged, namely, both EFSF and Greek Loan Facility debts.

4.1 Status quo

No debt relief is extended beyond the short-term measures implemented in 2017. These measures were primarily designed to reduce interest rate risk for Greece, but also included waiving an originally scheduled increase of the interest rate margin on a portion of the EFSF's loans to Greece, and some smoothing of Greece's EFSF repayment profile, as detailed in European Commission (2018).[10] Figure 3 presents the results for all four scenarios. Even under the optimistic scenario (upper two fan charts), the debt is unsustainable: the debt ratio declines, but never below 100%, and gross financing needs are significantly above the thresholds that the Eurogroup accepted for the purposes of establishing sustainability. The situation is even worse under all three less-optimistic scenarios, which imply a continuously rising debt ratio.

4.2 Full use of all debt relief instruments described in recent Eurogroup statements

In addition to the "short-term measures" already implemented and incorporated in Figure 4, the following potential debt relief instruments are mentioned in the Eurogroup statements of 15 June 2017 and (in slightly more detail) in May 2016 (quotes below are from the 25 May 2016 Eurogroup statement; see Zettelmeyer et al. 2017).

- "*Use of 2014 SMP profits from the ESM segregated account and the restoration of the transfer of ANFA and SMP profits to Greece*." "[T]ransfer of ANFA and SMP profits" relates to profits earned by the Eurosystem – the ECB and euro area national central banks – as a result of purchases of Greek bonds which escaped the 2012 debt restructuring. The maximum volume of this transfer is about €7.7 billion.
- "*Early partial repayment of existing official loans to Greece by utilizing unused resources within the ESM programme*." This refers to early repayment of about €11 billion to the IMF, using cheaper ESM funds, at the end of the ongoing programme.
- "*EFSF reprofiling and capping and deferral of interest payments*." This is potentially the most important and also vaguest of the potential measures mentioned, although the Eurogroup later clarified that it viewed 2037 as the upper limit for deferral of EFSF interest and amortisation.[11] Following Zettelmeyer et al. (2017), we assume that it would be implemented through a combination of delayed amortisation, linking amortisation to GDP growth and a cap on interest payments.

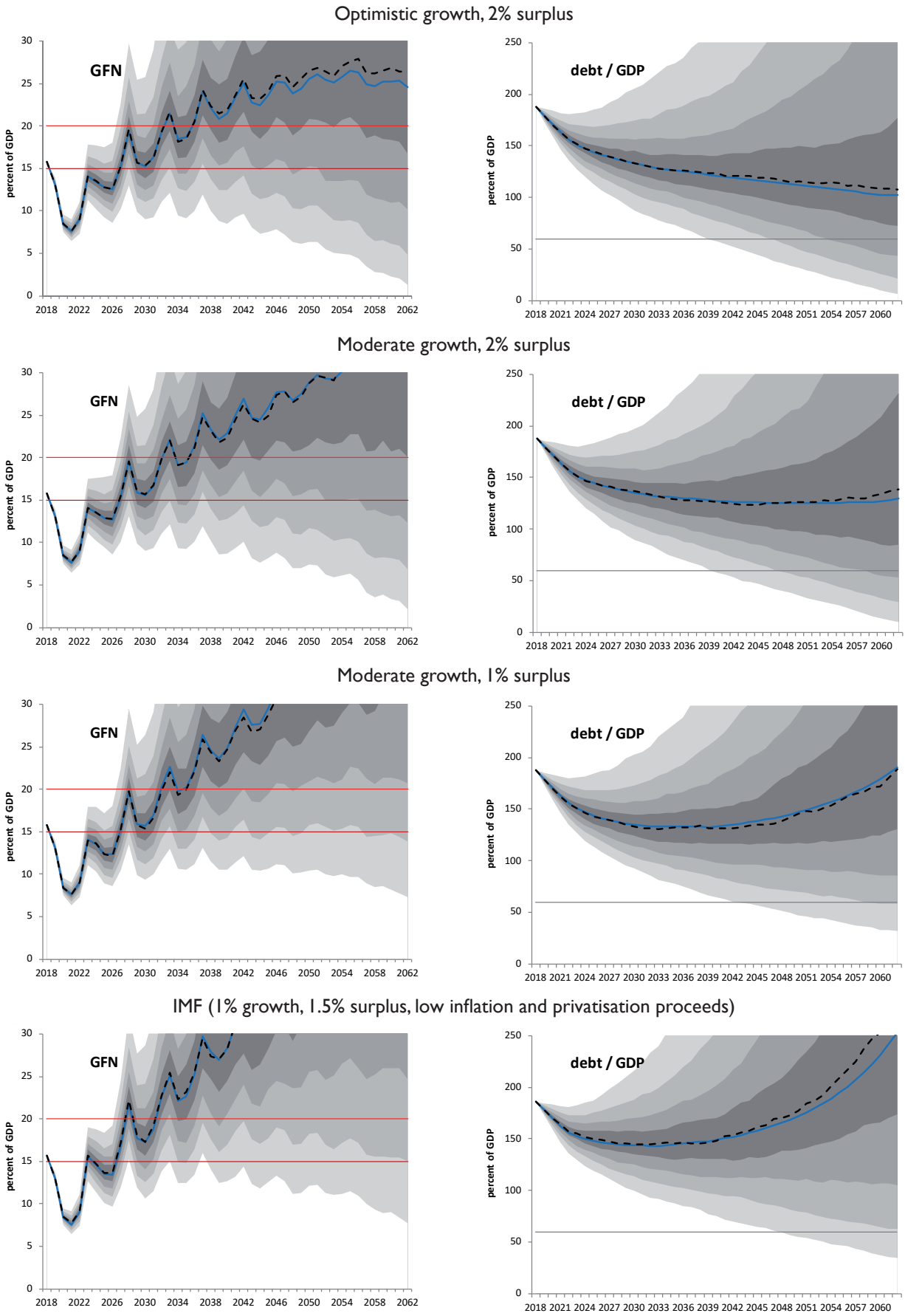
Setting the cap of interest payments to zero until a given date amounts to full deferral of interest, which is assumed to be capitalised until the deferral period ends. Fixing amortisations as a share of GDP in each year (at, say, 1%) amounts to a specific form of GDP indexation of debt service. The way in which we model it is technically convenient and makes economic sense. However, it may violate the Eurogroup's upper limit of 15 years for amortisation deferral, since the deferral is endogenous. In this sense, the mechanism considered below may be slightly more generous than what the Eurogroup is willing to include as part of its "medium-term" measures.

In addition to "medium-term" measures, the Eurogroup also promised a "contingency mechanism on debt" which could be activated, subject to a decision by the Eurogroup, "in the case of an unexpectedly more adverse scenario." This could entail measures such as a further EFSF reprofiling and capping and deferral of interest payments. Hence, this "contingency mechanism" would not consist of additional debt relief measures, but merely extend the re-profiling and capping and deferral of interest payments already envisaged in the "medium-term" bundle beyond 2037.

10 See https://www.esm.europa.eu/press-releases/esm-and-efsf-approve-short-term-debt-relief-measures-greece.

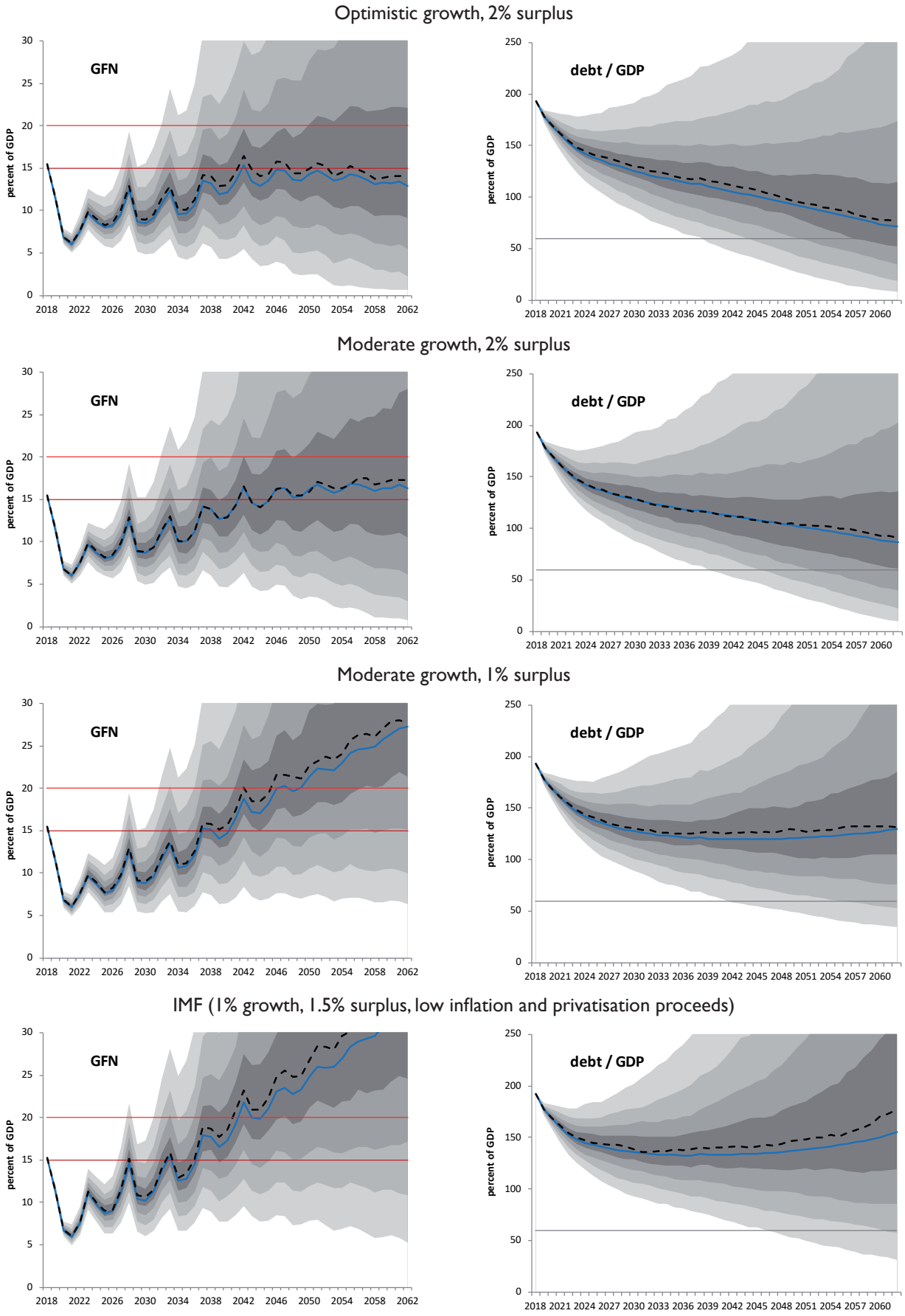
11 The Eurogroup statement of June 2017 states that "the Eurogroup stands ready to implement, without prejudice to the final DSA, extensions of the weighted average maturities (WAM) and a further deferral of EFSF interest and amortization by between 0 and 15 years." "[*F]urther*" refers to the fact that EFSF interest payments and amortisations are presently already deferred until 2022 (2022+15 = 2037).

Figure 3 Debt sustainability under the status quo (no further debt relief)



Source: Authors' calculations based on Zettelmeyer et al. (2017).
Note: Left-hand charts show gross financing needs (percent of GDP) and right-hand charts the debt-to-GDP ratio. Red lines indicate the IMF's upper and lower thresholds for gross financing needs: 15% for emerging markets and 20% for advanced countries. The solid blue line describes deterministic projection, the shaded areas the percentiles (60, 70, 80, 90) of the simulation distribution, and the dashed line the median of that distribution.

Figure 4 Full use of short- and medium-term debt relief measures considered by the Eurogroup



Source and notes: See Figure 3.

In Figure 4 we investigate whether full use of the "medium-term" measures envisaged by the Eurogroup – including the GDP-linking of amortisations proposed above – would be enough to make the Greek debt sustainable, based on the same four scenarios. Specifically, we assume that the first three elements of the package described above would be implemented in full in 2018, while the last component (EFSF reprofiling and capping and deferral of interest payments) would be implemented as follows:

- An outward shift of the EFSF amortisation profile by 6 years (this turns out to be the optimal shift from the perspective of smoothing amortisations).

- Fixing amortisations at just 0.3% of GDP in each year from 2023 onward (no amortisations fall due before that). If amortisations exceed this amount, they are rolled over by one year. If amortisations fall short of this amount, this triggers early repayment of future amortisations. (Note that the results are not sensitive to how exactly this cap is calibrated.)

- Full deferral and capitalisation of interest payments for the maximum period that the June 2017 Eurogroup statement allows, i.e. until 2037 inclusive. From 2038 onward, interest is paid normally (including on capitalised interest).

The top two rows of Figure 4 show that these measures would make the Greek debt sustainable under the Eurogroup's fiscal assumptions of a surplus of 2% of GDP. However, for reasons argued in Zettelmeyer et al. (2017) and Eichengreen and Panizza (2016), these assumptions are unrealistic. Maintaining a primary surplus of 2% of higher over a period of more than 40 years is historically unprecedented. In contrast, under the two more realistic (but still ambitious) assumptions about the fiscal path shown in the two bottom rows of Figure 4, Greek debt would not be sustainable. Under "moderate growth, 1% surplus", the GFN criterion is satisfied until 2060, but the debt-to-GDP ratio never falls below 100% and eventually explodes, ultimately leading to violation of the GFN criterion. The situation is even worse under the IMF scenario. These conclusions are robust not only to uncertainty in growth and interest rates shown in Figure 4 – in the sense that the probability of an exploding debt ratio exceeds 50% – but also to alternative modelling assumptions about interest rates (see Appendix 2).

At the same time, a comparison of Figures 3 and 4 shows that full implementation of the medium-term measures considered by the Eurogroup would have a significant impact. The question is whether these measures could be extended still further to make the Greek debt sustainable. Zettelmeyer et al. (2017) show that allowing interest deferrals beyond the 15-year limit leads to sustainability. However, since deferred interest is capitalised, it requires that the EFSF lend large additional volumes to Greece outside of a programme. The calculations of Zettelmeyer et al. show that it would imply that "starting from its current level of about €131 billion, the debt owed to the EFSF would more than double to about €278 billion in 2050, when interest deferral is assumed to end, and then slowly decline, but the outstanding amount in 2080 would still be higher than it is today." This may be why the Eurogroup decided to impose the 15-year limit, which implies a projected increase in EFSF exposure of "only" about €62 billion. The bottom line is that Greek debt is not really sustainable under either the status quo or the full set of measures considered by the Eurogroup. Making the debt sustainable without creating a large rise in exposures by the EFSF that lasts for several generations requires debt relief measures that go beyond what the Eurogroup has envisaged so far. We now explore three such sets of measures. These can be combined, but for analytical and presentational purposes they are presented separately.

4.3 Option I: Conditional face-value debt relief

The Eurogroup and the ministries of finance of creditor countries have explicitly rejected face-value debt relief, citing two arguments. One is concern about moral hazard. Once face-value debt relief has been granted – even if conditional on some primary surplus path – what stops a country from underperforming this surplus path and then asking for still more debt relief? If the agreed path was needed to make the debt sustainable, then the withdrawal of debt relief in the face of fiscal underperformance would not be credible.

The second argument is legal – that face-value debt relief would violate the 'no bailout' clause of the European treaties. As argued in Appendix 3, these two arguments may be one and the same. Based on the *Pringle* case, in which the European Court of Justice was asked to take a stance on the consistency of the clause with ESM crisis lending, a reasonable interpretation of the 'no bailout' clause is that this allows for a debt relief – regardless of whether this is delivered through maturity extension, interest deferrals, interest rate reductions, or face-value reductions – if and only if this can be structured in a way that strengthens budgetary discipline. By this interpretation, the legality of face-value debt relief rests on whether this can be administered in 'incentive-compatible form' – in a way that would lead Greece to undertake more fiscal adjustment effort than otherwise.

In the following, we present such an incentive-compatible scheme.[12] We assume that Greece wants to avoid default to the EFSF/ESM because of its economic and political repercussions, but not at any cost – there is a level of austerity at which it would perceive no alternative. Consider two fiscal paths, the first more ambitious than the second.

- The more austere ('upper') fiscal path is sufficiently ambitious that it is unrealistic unless Greece is given additional incentives, but not so ambitious that Greece would not even try to achieve it if it is the only way to avoid default. The path agreed with the Eurogroup in June 2017 (3.5% primary surplus until 2022, followed by a surplus of at least 2% for the next 38 years) falls in this category. Even though the chance that Greece could deliver this path without strong incentives is almost zero, 2% is less than the primary surpluses that Greece has already achieved. In addition, this path is based on current European fiscal rules (as the Eurogroup statement argues), so Greece would give it a shot. From the point of view of Greece, attempting to stick to the path is preferable to default.

- The less austere ('lower') path describes a primary surplus that Greece may be able to achieve even without further incentives, but which is not ambitious enough to make the debt sustainable even if accompanied by the entire arsenal of debt relief measures that the Eurogroup has put on the table. The primary surplus paths considered in the moderate surplus scenario or IMF (2017) arguably fall into this category.

We consider a relief scheme that combines carrots and sticks. It requires the surplus to never stray below the lower path and provides incentives for Greece to achieve the higher path.

- Conditional on Greece achieving the fiscal targets agreed until 2022, deliver the maximum debt relief consistent with the instruments proposed by the Eurogroup, exactly as described in the previous section. Specifically, successful exit from the programme later in 2018 triggers early repayment of about €11 billion to the IMF, financed by cheaper ESM funds. Adherence to the 3.5% primary surplus target in 2018 and the following four years triggers annual transfers of profits earned by the ECB and euro area national central banks due to interest earnings on Greek bonds. Finally, successful 'graduation' from the post-programme period in 2023 triggers maturity reprofiling, interest deferrals, and capping of annual amortisation at a fixed 0.3% share of GDP.

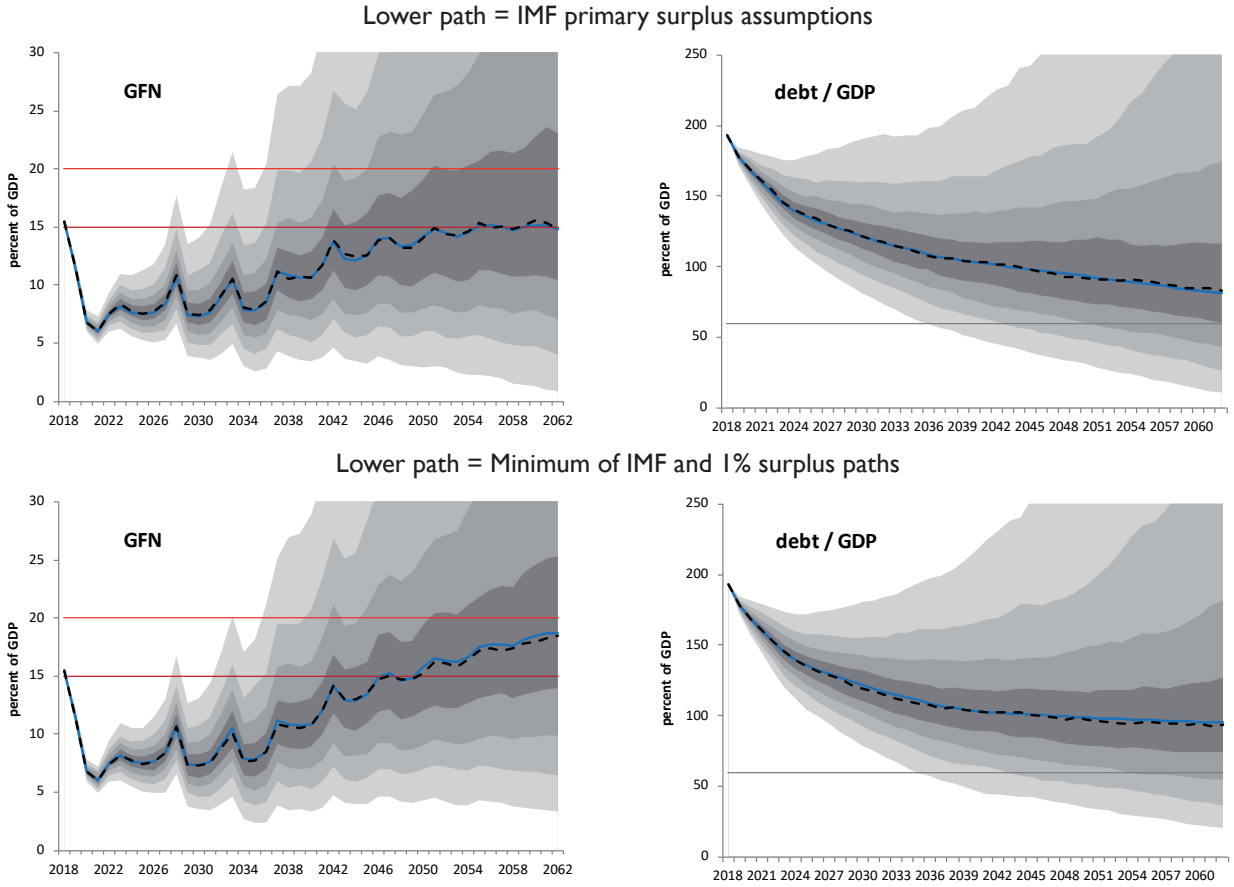
- In addition, in 2023, put in place the following scheme:
  - For every euro by which Greece over-performs the lower fiscal surplus path, EFSF debts will be reduced by an equal amount, but only up to the point at which Greece achieves the upper fiscal path. For example, if the upper target in 2025 is 2% and the lower target 1.5%, the maximum face value debt relief that Greece can earn based on its 2025 performance is 0.5% of GDP.
  - A clawback rule ensures that the debt relief is reversed if Greece falls below the lower target. This would make it impossible to game the scheme by alternating fiscal splurges with years in which adjustment triggers debt relief.
  - The scheme would end after 2037, in line with the time limits the Eurogroup has set for reprofiling and interest deferrals. This implies a maximum for face value debt relief that Greece could earn over that period. For example, if the upper path is the Commission's Scenario B described above (i.e. 3% in 2023, 2.5% in 2024, and 2% from 2025-2037) and the lower path is 1.5% over 2023-2037, then the maximum face value debt relief would be 9% of GDP, or approximately €24 billion – a manageable amount compared to both Greece's official debts (€131 billion to the EFSF alone) and the magnitude of net transfers to Greece from the EU budget, which are between 2% and 3% of GDP per year.

To summarise, this option implements some debt relief after the end of the third programme: refinancing the IMF loans, an initial deferral of GLF interest, and maybe an initial tranche of Eurosystem profits related the Greek debt service. More relief (the remaining Eurosystem profits and further deferral of GLF interest and amortisations, which are scheduled to start in 2020) would be provided annually when the agreed-upon surplus of 3.5% of GDP is achieved until 2022. The rest – the complete package of maturity extensions, interest deferrals, and a rule for linking amortisations to GDP, for both EFSF and GLF debts – is provided in 2023. After 2023, there is no more conditionality, just an assumption that Greece will pay whatever is due after the implementation of the package.

Could such a scheme restore Greek debt to sustainability, notwithstanding its manageable cost to the European taxpayer? This question is explored in Figure 5. For the upper path, we take the 2% surplus path shown in Figure 2 (the Commission's Scenario B and also the Eurogroup's assumption) and we consider two alternative lower paths: first, the primary surplus

12 An alternative incentive-compatible scheme has been proposed by Bulow and Geneakoplos (2017). Debt repayments are determined by the difference between public spending and a fixed threshold so that they are bound to increase over time as the economy grows and public spending with it. In addition, every debt repayment triggers a proportional debt reduction.

Figure 5 Conditional face-value debt relief



Source and notes: See Figure 3.

path assumed by the IMF (see Figure 2); second, a composite path which takes the minimum of the surpluses of the IMF and of the 1% surplus scenarios. Until 2038, as shown in Figure 2, this path is identical to the primary surplus path projected by the IMF, and hence implies the same maximum debt relief. It differs after 2038 when it assumes that the primary surplus would gradually decline to just 1% of GDP. In both cases, the underlying assumption is that the incentives given to Greece induce it to meet the upper fiscal target in every year between 2022 and 2037. From 2038 on, after the scheme ends, Greece reverts to the lower path.

The first row of Figure 5 shows that the proposed debt relief scheme would make the Greek debt easily sustainable if the lower path follows IMF assumptions (see Figure 2)). This is a consequence of three factors. First, between 2023 and 2037, Greece is assumed to meet the primary surplus path of at least 2% of GDP. Second, it is rewarded with nominal debt relief worth 9% of GDP. Together, these two factors are equivalent to running a primary surplus of 2.7% of GDP, on average, between 2023 and 2037. Third, a reasonably high primary surplus, namely the 1.5% assumed by the IMF, is maintained even after 2037 (note that the IMF scenario includes low proceeds from privatisation). The second row in Figure 5 tests whether the proposed debt relief scheme would still be powerful enough to deliver sustainability when the primary surplus is allowed to decline to just 1% in the long run. The answer is yes (just).

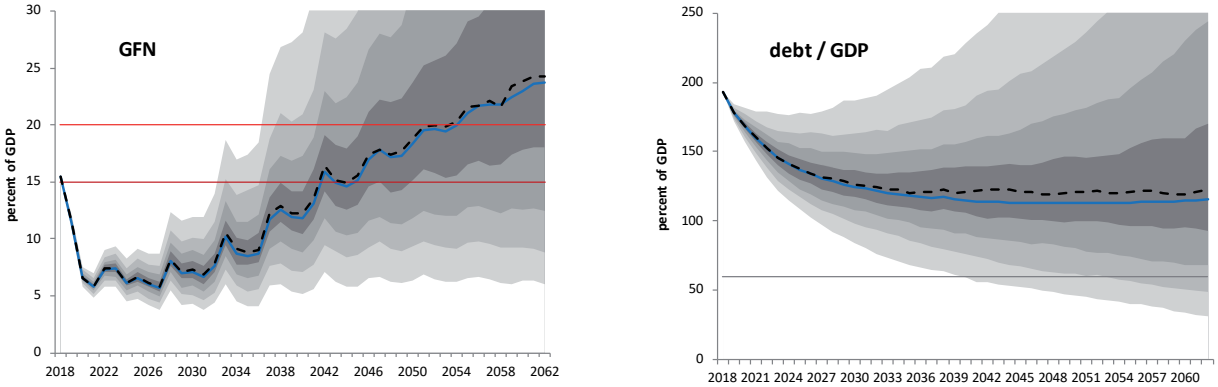
4.4 Option II: Continued ESM financing

One reason why the Greek debt is unsustainable in the status quo option is that early return to market finance at a time when debts and private lending spreads are still high (the latter are still in the order of 3.5 percentage points) creates explosive debt dynamics. The "medium-term" debt measures considered by the Eurogroup would improve these dynamics by reducing the need for expensive new private borrowing, but they fall short of eliminating it completely. This leads to the question whether Greek debt could be made sustainable by replacing expensive private borrowing entirely through continued access to ESM funding in the context of one or several follow-up programmes, while also implementing those "medium-term" measures. The ancillary question is how long such a period would need to be.

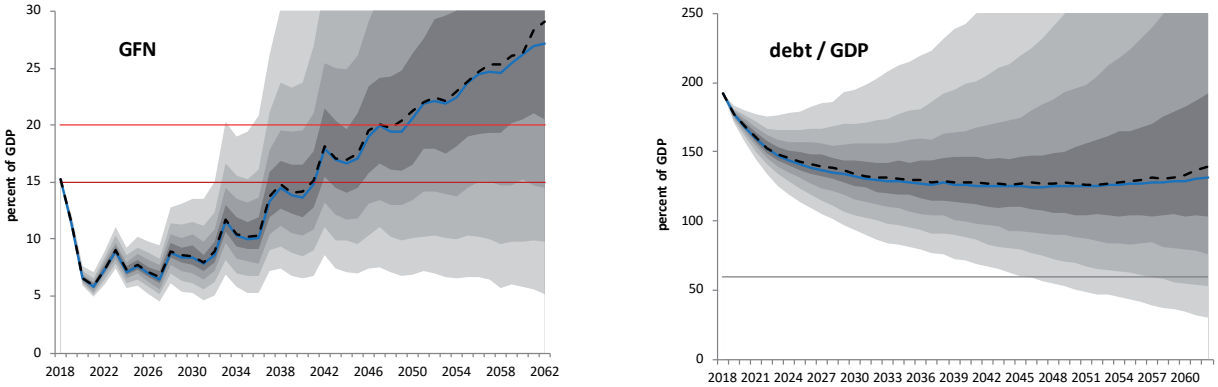
The answer is shown in Figure 6. The upper two rows show two scenarios in which the ESM would continue to finance all new Greek borrowing for an additional six years. The first row assumes moderate growth and 1% surplus scenario, the second the IMF scenario. In both cases, the debt path remains unsustainable

Figure 6 All Eurogroup measures and continued official financing

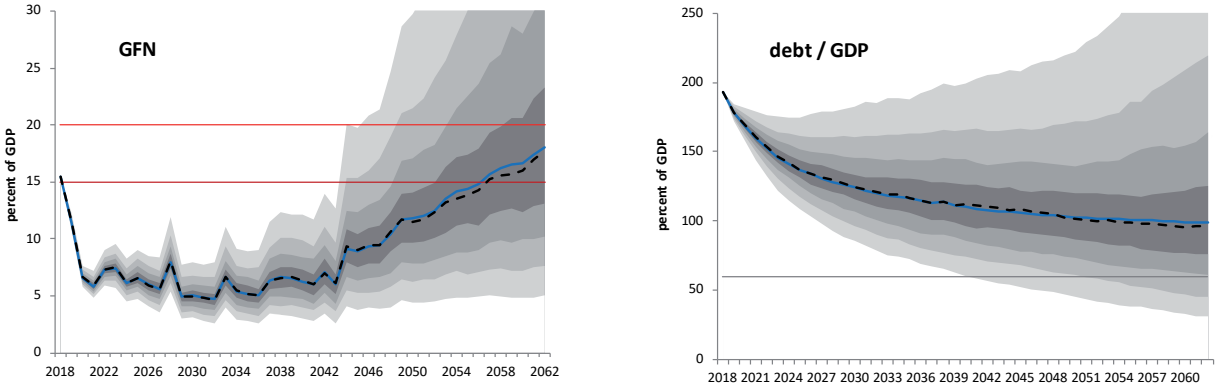
Further ESM financing for 6 years, moderate growth, 1% surplus scenario
(requires additional ESM financing of €28 billion)



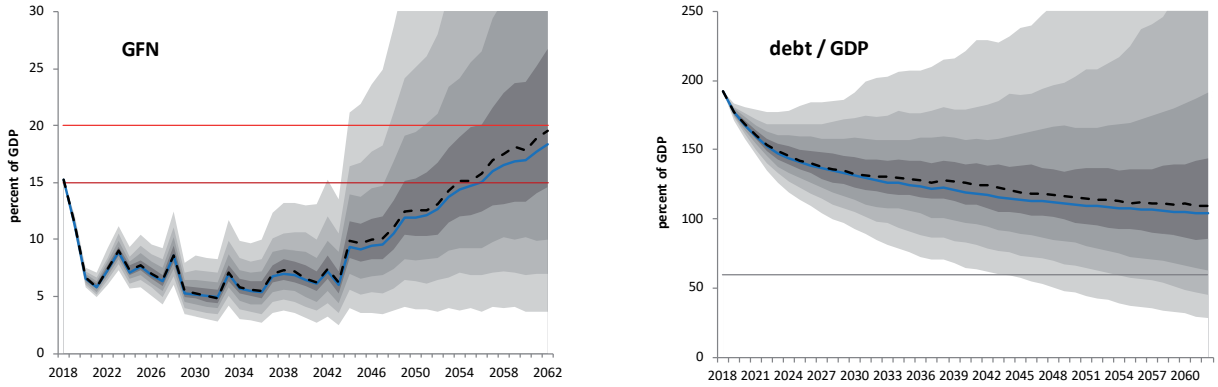
Further ESM financing for 6 years, IMF scenario
(requires additional ESM financing of €33 billion)



Further ESM financing for 21 years, moderate growth, 1% surplus scenario
(requires additional ESM financing of €135 billion)



Further ESM financing for 21 years, IMF scenario
(requires additional ESM financing of €154 billion)



Source and notes: See Figure 3.

(with GFN eventually rising above 20% of GDP, and the debt ratio never falling below 100% of GDP and eventually rising again).

Hence, if we consider that a permanent 2% surplus is unlikely to be achieved in the absence of the kind of incentives described above, a much longer period of continued ESM financing would be required to restore Greece's debt sustainability. The bottom two rows in Figure 6 show an example in which Greece's exclusive reliance on ESM financing continues for 21 years, to the tune of €135-155 billion. The figure shows that that not even this – seven consecutive new ESM programmes, clearly an unrealistic proposition – may be sufficient to restore debt sustainability in either the 'moderate growth, 1% surplus' scenario or the IMF scenario.[13] Although the debt ratio would drop initially and then stabilise, it never falls below 100% of GDP, and eventually starts to rise again. While the GFN criterion is technically satisfied, the probability that GFN would rise above 20% is close to 50%.

These results are somewhat sensitive to interest rates assumptions. The assumed linear relationship between private lending spreads and the debt ratio implies that interest rate spreads decline slowly, even when markets anticipate continued good fiscal performance and economic recovery. In the bottom row of Figure 6, for example, spreads would remain over 200 basis points until 2029 under this assumption. If, instead, they were to drop much faster from their present level of 350 or so basis points, then an extended period of continued access to ESM funding, combined with full use of the Eurogroup's medium-term debt relief measures, could in fact be enough to restore Greece's debt sustainability. It would also provide protection against sudden increases in risk aversion or loss of confidence. Hence, although we are not confident that Option II would be enough, it may be a reasonable approach to deal with interest uncertainty (and uncertainty more generally). In particular, it would keep the option for additional future debt relief open without requiring Greece to borrow on expensive terms in the interim.

13 Note that the IMF scenario makes a much bigger difference in the six-year ESM financing option (compare second row of Figure 6 to the first) than when the ESM would continue to finance for 12 years (compare fourth row to the third). The reason for this is that between 2023 and 2030, the IMF scenario envisages *lower* fiscal surpluses than the 1% surplus scenario (Figure 4). This does not matter under the 12-year financing option, since the extra borrowing requirement due to lower primary surpluses during this period would be fully financed by cheap ESM lending. In contrast, under the six-year financing option, Greece would be forced to return to return to expensive private borrowing in 2024. This has a larger negative impact on the debt dynamics under the IMF's fiscal assumptions than under the alternative (1% surplus) scenario, since the latter would require less borrowing from the market during 2024-2030.

4.5 Option III: Applying the Eurogroup measures to a broader debt base

An additional option is to apply the measures suggested by the Eurogroup to a broader set of official debts than just the EFSF. The most obvious candidate would be the bilateral loans of the 2010 Greek Loan Facility. These loans, which total some €53 billion, currently represent the second highest Greek obligation to the European official sector. The GLF is relatively short-term: amortisations are scheduled to begin in 2020 and end in 2040 (by comparison, ESM amortisations are scheduled to start in 2034 and end in 2059). The GLF is also relatively expensive, with a spread of 50 basis points over EURIBOR (in contrast, the spread of ESM lending rates over its funding cost is only 10 basis points). Restructuring of the GFL could therefore have a noticeable impact on debt sustainability.

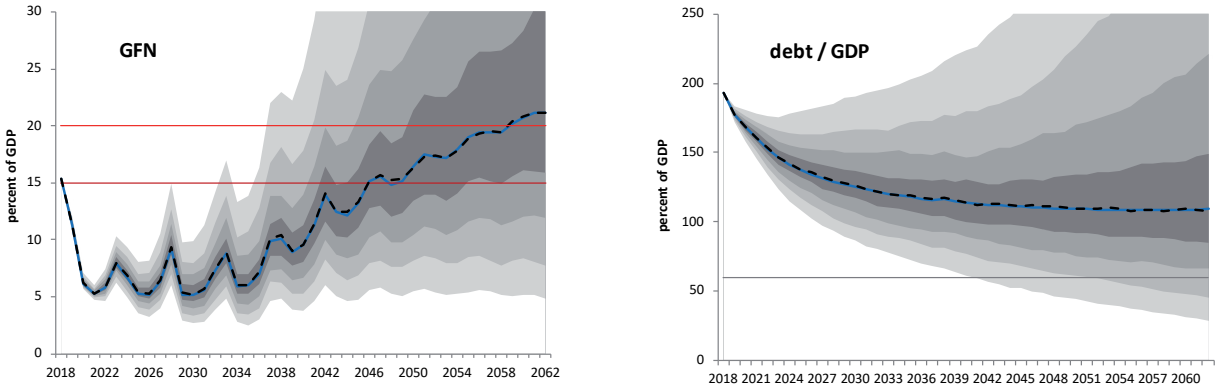
Figure 7 explores the impact of a combined reprofiling of EFSF and GFL loans, interest deferrals and reduction in the GLF interest margin. The upper two rows of the figure assume (1) shifting GLF amortisation into the future by eight years, to begin in 2028; (2) stretching out the amortisation period by an additional 30 years, so as to end at the same time as amortisations to the ESM; (3) deferring GLF interest payments until 2038 (in analogy with the deferral of EFSF interest payments, as also assumed); and (4) lowering the lending spread on GLF loans from 50 basis points to zero.

The result is that even the combination of all these measures would probably not be sufficient to restore Greek debt sustainability: in both scenarios, GFN exceeds 20% and the debt ratio starts to bend upward prior to 2060, and eventually explodes.

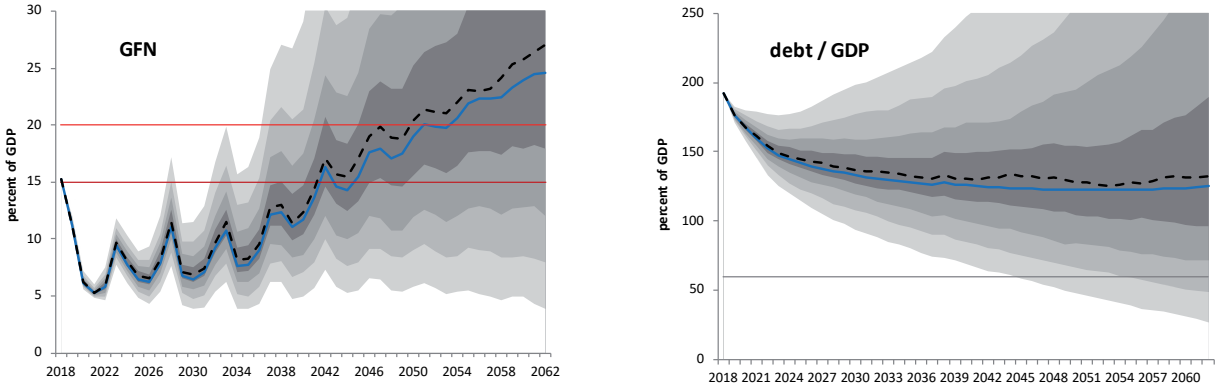
However, Option III could play a useful role in combination with other debt relief options. The last two rows of Figure 7 show the effects of all Option II and Option III measures combined, assuming further access to ESM financing by 21 years (as in the last two rows of Figure 6). This could be enough to make Greek debt sustainable – albeit not with high probability. Furthermore, the necessary additional official financing implied by the combination of these options is very high. Figure 8 shows the amortisation profiles (bars, left axis) and total outstanding volumes for various debt categories based on the scenario corresponding to the third row of Figure 7. The main result is that total European official sector exposure – that is, the sum of EFSF, GLF and ESM loans – would rise from a projected end-2018 level of about €250 to over €380 billion in 2038, an increase of over 50%. In the IMF scenario, total exposure would peak at €400 billion in 2038, an increase of about 60%.

Figure 7 All Eurogroup measures and GLF debt relief

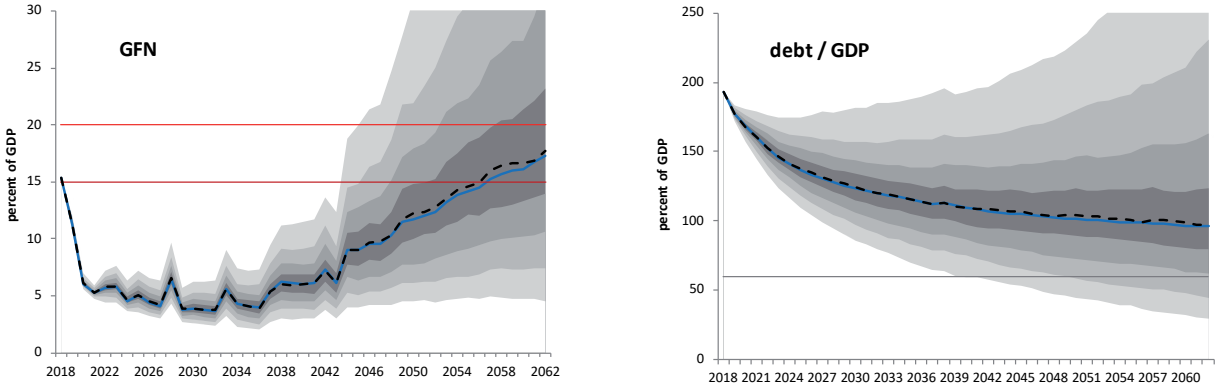
Reprofiling of amortisations, interest deferral until 2038, and zero GLF lending spread
Moderate growth, 1% surplus scenario



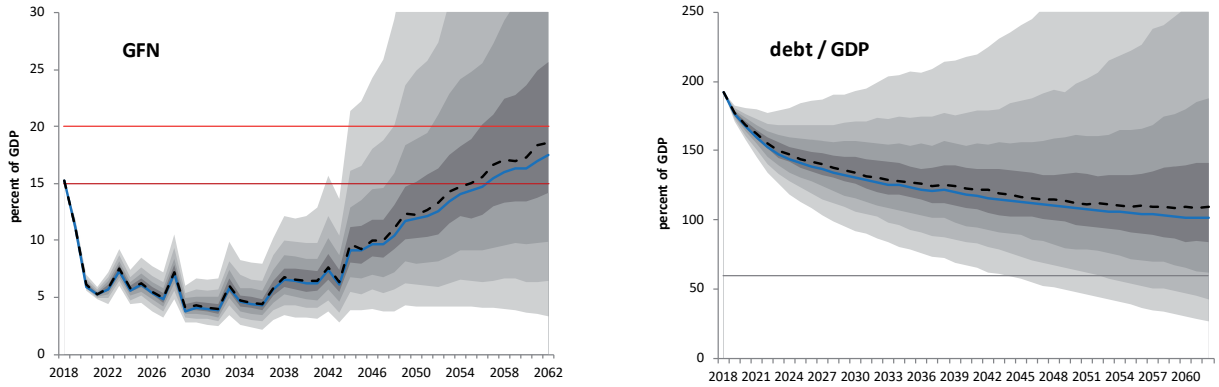
Reprofiling of amortisations, interest deferral until 2038, and zero GLF lending spread
IMF scenario



Combination of all EFSF and GLF measures with further ESM financing for 21 years
Moderate growth, 1% surplus scenario

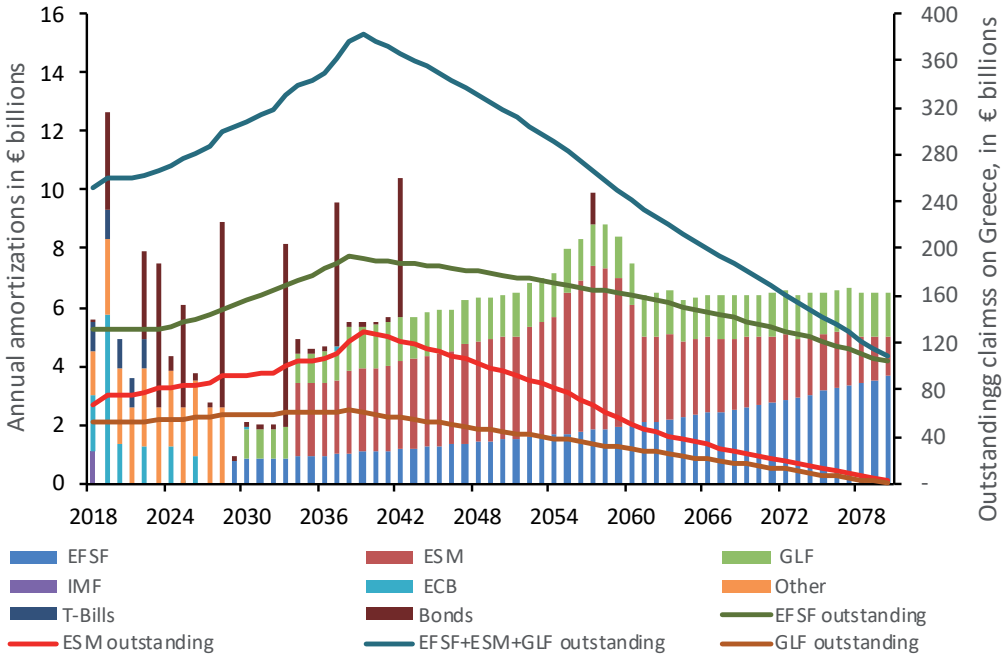


Combination of all EFSF and GLF measures with further ESM financing for 21 years
IMF scenario



Source and notes: See Figure 3.

Figure 8 Greece's amortisation profile under combination of Options II and III
(assumes reprofiling of amortisations and interest deferral until 2038 of both GLF and EFSF debts, zero GLF lending spread, exclusive reliance on ESM financing for 21 years, and 'moderate growth, moderate surplus' scenario)



Repaying these debts could take until the end of the century and beyond. An increase in European official sector exposure of such length and magnitude is hardly plausible, particularly in combination with seven consecutive additional ESM programmes. It is therefore hard to avoid the conclusion that Option III could play a useful role only in combination with some degree of face-value debt relief, i.e. Option I.

In the event that Option III were to come to pass in some form, the question arises whether and in what way the additional debt relief should be made conditional.

- One possibility would be to maintain ESM monitoring until 2022 – informally or as part of a new precautionary programme – and deliver both EFSF- and GLF-related relief in one swoop upon successful conclusion of the currently agreed 5-year period involving 3.5% of GDP primary surpluses.

- Another would be to maintain minimal fiscal conditionality and annual reviews beyond 2022, perhaps up to 2037. Currently scheduled GLF amortisation payments and interest service would be maintained as a fallback option if Greece were to not meet agreed annual fiscal targets during that period. If the targets were met, both amortisation and interest would be deferred, but only in that year.

Importantly, the second option can be credibly applied only if it applies solely to the GLF relief. Debt relief measures that refer to the EFSF, along the lines envisaged by the Eurogroup and described in Section 4.2 of this report, must be delivered 'in one swoop' in 2022 or soon thereafter, because falling back to the status quo would overburden Greece under any reasonable fiscal effort, and the country would likely be forced to default.

5 Conclusion

In August of 2018, the current official lending programme for Greece will expire. The Eurogroup, with or without the IMF, will have to negotiate with Greece another programme that meets the government's gross financing needs and gives it the incentive and capacity to repay.

To be acceptable to the Greek government, that programme will have to do more than just enable it to meet its financial obligations. It will also have to limit the duration and extent of invasive conditionality and permit the economy to grow. It will have to limit the burden on future generations but also the likelihood of yet additional disruptive debt crises down the road.

The creditors share with the Greek government the wish that the new programme should be compatible with the resumption and maintenance of growth. But they also want to recoup some of their money, limit their ongoing involvement in Greece, and set good precedents for the euro area. The latter implies avoiding moral hazard and violations of EU law.

The Eurogroup statement of June 2017 that provides the framework for negotiations does not satisfy these requirements. It does not render Greece's debt

sustainable even under the Eurogroup's own relatively optimistic assumptions about inflation, growth and primary surpluses. It certainly does not render that debt sustainable under the more conservative assumptions of the IMF and others. Even with the adoption of the additional medium-term measures to which the Eurogroup has alluded but not yet officially committed, the debt is only borderline sustainable. Any number of economic or political disturbances could throw the programme off track. The likelihood of such disturbances is high when the programme is scheduled to extend over more than 40 years. Neither is the statement clear about how incentives would be created to increase the chances that Greece will deliver on fiscal surpluses that are presumed to underpin future debt relief.

An essential requirement for an adjustment and debt relief programme, as nine years of turmoil in Greece have reminded us, is that the programme be robust. Another one is that it be clear about why Greece would have an incentive to actually adhere to the programme. So far, the plans sketched by the European official sector deliver neither.

We have explored three alternatives in this report. All three may be understood as 'add-ons' to the package of medium-term debt relief that the Eurogroup has put on the table. Our *Option I* adds conditional face-value debt relief. We describe a scheme that avoids creating moral hazard and satisfies EU law. For every euro by which Greece over-performs a baseline fiscal path, EFSF debts will be reduced by an equal amount, but only up to the point at which Greece achieves a specified upper-limit fiscal path. This formula, augmented by a few additional provisions consistent with the Eurogroup's own approach, would render Greece's debt sustainable.

In a nutshell, this option trades debt relief for long-lasting fiscal discipline. The risk of relapse cannot be eliminated, but the claw-back clause that we propose should discourage the Greek authorities from going in this direction. The crux is to establish that this clause will be implemented with full certainty.

Option II substitutes relatively economical ESM financing for expensive market financing. This reliance on the ESM, together with only the Eurogroup's short-term debt relief measures, would require a very lengthy ESM programme and a large increase in total European official sector exposure to the country. Even extending ESM programmes for two more decades, in combination with EFSF maturity extensions and interest deferrals, may not be enough. Combining the Eurogroup's "medium-term" measures with a new ESM programme would not restore debt sustainability with high probability either. Still, this combination would be preferable to ending Greece's access to official financing in 2018. It would give Greece's creditors the option of applying additional debt relief measures in the future without the need to repay or restructure additional private debts.

Option III applies the Eurogroup measures, i.e. reprofiling of amortisations and deferral of interest, not just to EFSF loans but also the bilateral loans of the 2010 Greek Loan Facility. Our analysis shows that this is unlikely to be sufficient. To achieve debt sustainability without face-value debt relief, it would be necessary to combine Options II and III. But while this would suffice to restore debt sustainability, it would imply a very large increase in the total exposure to Greece of the European official sector. It would mean that Greece could still be paying off debts to European official creditors well into the 22nd century.

In sum, it is hard to avoid the conclusion that any solution to the Greek debt crisis that does not fall on the shoulders of taxpayers several generations removed will require conditional face-value debt relief.

Later this year there will be another programme negotiation between Greece and the European authorities. The goal should be to make it the last one. Continuing uncertainty about Greek debt sustainability does no-one any good. It creates the spectre of yet further renegotiations and restructurings, which depress investment and roil politics. It does not burnish the reputation of the European authorities when their claims that debt sustainability has been definitively restored are first questioned and then falsified. The result is finger pointing and recrimination, and more pain for the Greek people and problems for their economy.

By thinking more creatively while still respecting the parties' respective red lines, however, Greece's debt can be restructured in ways that restore sustainability with high probability, limit moral hazard, conform to EU law, and avoid the indefinite involvement of institutions like the ESM in the Greek economy. The European authorities and the Greek government should take the opportunity of the impending negotiation to move in this direction.

Appendix 1. The steady-state growth rate

Whereas the Commission does not explain its assumptions regarding long-term growth, the IMF does provide some information, which can be interpreted as follows. Assume a Cobb-Douglas technology (all are terms are growth rates):

$$y = \alpha k + (1 - \alpha)l + a,$$

with $l = p + n$, where l is employment and n is labour force so p is participation (again all in growth rates). a represents total factor productivity (TFP) growth.

The IMF assumes that capital will provide a negligible contribution to growth other than allowing maintenance of the steady state,[14] which seems to rule out an increase in the capital/output ratio. With this assumption, $k = l$ and: $y = p + n + a$.

IMF (2017) assumes that there will be no change in labour force participation so that $p = 0$. With a declining demography, they posit $n = -0.9\%$. With TFP growth assumed to be equal to its historical average $a = 0.4\%$ per year, the formula yields a negative steady-state GDP growth rate $y = -0.5\%$. To reach $y = 1\%$, since $n = -0.9\%$ is an inviolable fact, they explicitly triple a to 1.2% and assume that labour force participation will grow by $p = 0.7\%$, each year. Figure A1.1 displays these assumptions. Labour force participation, which is now lower than the euro area average, would have to rise sharply. Indeed, starting from a rate of 68.2% in 2016, compounding a 0.5% annual increase, labour force participation would rise to 92.7% by 2060. As a comparison, the highest rates among the OECD countries are those of Iceland (89.0%), Switzerland (83.9%), Sweden (82.0%) and Denmark (80.0%). Furthermore, the IMF cites some studies on the effects of structural reforms on TFP growth, which suggest that a could be between 0.4% and 0.6%, which is less than the assumed 0.9%. IMF (2017) notes that these are "ambitious assumptions regarding the impact of structural reforms".

An alternative approach is to take growth theory at face value and assume that TFP eventually will converge to the level of the technological leader. The growth convergence literature suggests that the per capita output gap is closed by 2% per year. This comes from capital accumulation and TFP growth. Keeping with the assumption of no capital deepening, we apply the 2% rule to TFP growth.

We then need a measure of current (or recent) Greek and US (the leader) TFP levels. To the best of our knowledge, there is no estimate for Greece, so we use the following data. Hall and Jones (1996) compute (log of) the ratio of Greek to US TFP levels in 1995. The Groningen-Conference Board database includes TFP growth for a number of countries, including Greece and the US from 1951 to 2016 (Conference Board, 2017). This makes it possible to track the log of the ratio of Greek to US TFP levels as follows.

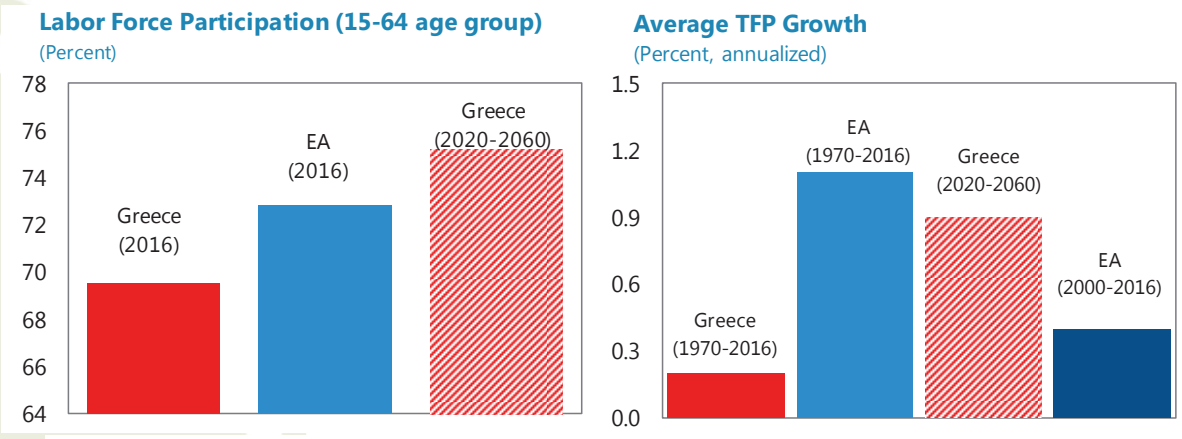
Assuming the that convergence is $\beta = 2\%$ per year, we have:

$$ln\frac{A^G_{t+n}}{A^{US}_{t+n}} = (1-\beta)^n \, ln\frac{A^G_t}{A^{US}_t}$$

where $\beta = 0.02$ and A is the TFP level in Greece (G) and the US, as indicated by the superscript.

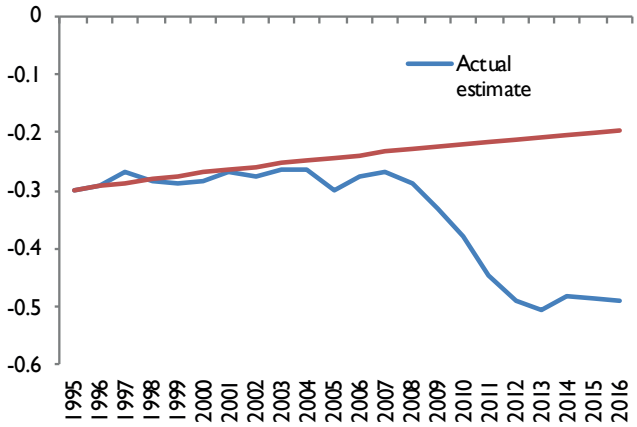
14 To quote the IMF: "Investment is bound to recover from its highly depressed level once Greece emerges from the crisis, but the growth effect of this will wane once the capital stock returns to its long-run level. Staff's medium-term projections already assume a temporary boost to growth from higher investment (with real growth rates averaging over 2% during the investment recovery). Once the transition to the new, higher capital ratio is completed, however, the impact of increased investment will fade and growth dynamics will be determined by the evolution of output per worker and of the number of workers."

Figure A1.1 IMF assumptions



Sources: AMECO database; European Commission 2015 Aging Report; IMF staff estimates.

Figure A1.2 Estimates of $ln(A^G/A^{US})$



Source: Authors' computations.

According to Hall and Jones (1996), $ln(A^G/A^{US})$ = -0.298 in 1995. Using Conference Board data on US and Greek TFP growth rates, we can compute the evolution of $ln(A^G/A^{US})$ over 1996-2016. Figure A1.2 compares the result with the 2% growth rule. Through 2005, the two estimates differ little, supporting the 2% assumption. Afterwards, of course, Greece enters a deep recession, which may explain the IMF result that the average historical TFP growth rate is 0.4%.

Looking forward, we can project the 2% convergence path to 2060 starting from the actual estimate of ln(AG/AUS) for 2016. If US TFP grows at annual rate γ:

$$lnA_{t+n}^{US} = lnA_t^{US} + n\gamma$$

then the convergence assumption implies that the n-period growth rate of Greek TFP is:

$$ln\frac{A_{t+n}^G}{A_t^G} = n\gamma - [1-(1-\beta)^n]ln\frac{A_t^G}{A_t^{US}}.$$

US TFP growth averages γ = 0.9% over the period 1995-2007. We use this period to take into account the US TFP growth slowdown hypothesis and to match Figure A1.2. Applying the formula to the period 2016-2060, we find an average annual TFP growth rate of 1.55%.

It bears remembering that these calculations concern TFP growth, not the per capita GDP growth to which the empirical 2% rule applies. Given the negative demographic trend and limited probability that labour force participation increases significantly, a steady-state growth rate of 1% seems reasonable. Still, in some of our simulations we examine as an alternative the assumption of a 1.25% GDP growth rate.

Appendix 2. Robustness of interest rate assumptions

The debt sustainability analyses conducted in this report assume that Greece's sovereign borrowing spread over the risk-free rates would evolve in proportion to its debt ratio (this is sometimes referred to as the 'Laubach rule', since the parametrisation follows Laubach (2009)). This approach, which we adopt in part to make the results of the analysis comparable with those of the European Commission and the IMF (both of which assume the same rule in their sustainability analyses), can be criticised for not taking into account expectations. For example, when markets anticipate that debt is on an unsustainable path, interest can rise much faster than the rule would predict. Conversely, when debt is on a sustainable adjustment path, interest rates could drop much faster than predicted by the rule. Since interest rates feed back into debt accumulation, one would expect a more realistic exchange rate modelling to lead to more extreme debt dynamics both in clearly sustainable and clearly unsustainable cases.

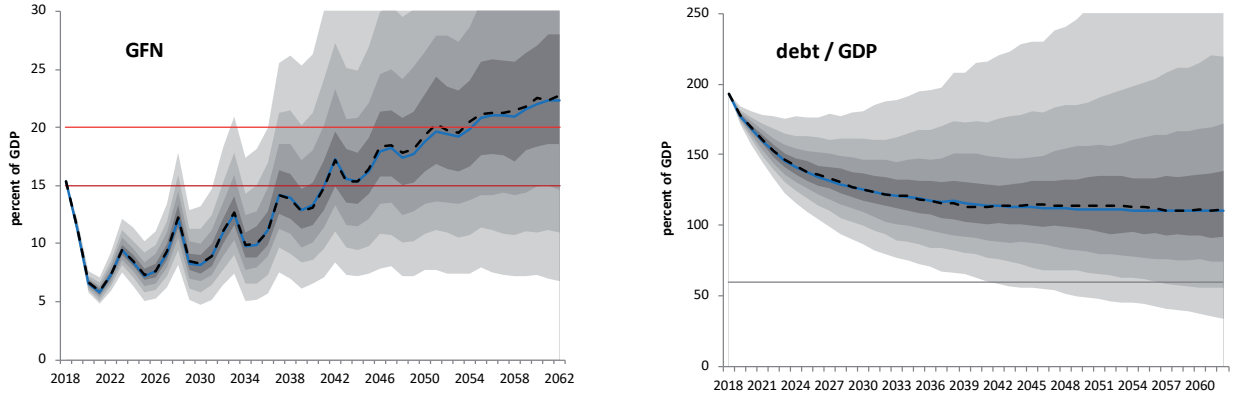
What is less clear, however, is how more realistic modelling would affect the results when debt sustainability is borderline. In these cases, market beliefs that debt is sustainable may lead to low interest rates that validate these beliefs, while beliefs that debt is not sustainable may become similarly self-fulfilling. For this reason, it is important to check that the main result of this report – that Greece's debt is unsustainable even after full use of the measures suggested by the Eurogroup (Figure 4, bottom two rows) – is not an artefact of unduly pessimistic interest rate assumptions. What if interest rates fall much faster, upon successful graduation of Greece from its current programme with a full debt relief package (within the red lines of the Eurogroup), than implied by the Laubach rule? Could debt be sustainable in this case?

To answer this question, Figure A2.1 shows the trajectories of GFN and the debt ratio under the assumption that Greece's sovereign borrowing spread (currently about 350 basis points) falls to the level of Portugal's sovereign spread (120 basis points) this year and remains there forever. This is an implausibly optimistic assumption: Portugal has a much lower debt ratio than Greece and a much better credit rating, and whether and how fast Greece will be able to reach similar fundamentals will remain uncertain for an extended period. Figure A2.1 shows that even under this assumption, Greece's debt would remain unsustainable in the 'moderate growth, moderate surplus' scenario.

One can also ask what constant borrowing spread would be low enough to make Greek debt sustainable in the moderate growth and 1% surplus scenario, in the sense of producing a GFN and debt trajectory that is comparable to that of the second row of Figure 4. The answer is around 25 basis points, in line with today's borrowing spread for Austria and France, and below Greece's average borrowing spread in the 2002-2008 pre-crisis period.

Figure A2.1 Robustness with respect to interest rate assumption

Moderate growth and 1% surplus scenarios, fixed borrowing spread of 120 basis points



Source and notes: See Figure 3.

Appendix 3. Legal limits and conditions on debt relief

Any form of debt relief is a form of financial assistance that needs to be assessed with reference to the 'no bailout' clause set out in Article 125 TFEU. Paragraph 1 states the following:

> *1. The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project. A Member State shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project.*

This provision prohibits member states or the EU from becoming liable for, or assuming the commitments of, another member state (see Louis, 2010; Athanassiou, 2011). This may occur by making payment on that debt or committing to make such a payment in the future. The critical distinction here is that the prohibition does not extend to purchases of bonds that have been issued by a member state, since no redemption takes place and nor does the purchasing state or the ESM assume a commitment to cancel or pay out the debt in lieu of the issuer. In this case, as the Court of Justice argued in *Pringle*, the debt is simply transferred and the attached liability to repay continues to exist.[15]

The text of Article 125 TFEU regulates financial payments within a triangle that comprises the initial creditor, the debtor state and the debt-assuming state/institution (Steinbach, 2016). In this sense it prohibits transfer of repayment 'liability' and the assumption of the debt 'commitments' of another member state. The Treaty does not just rule out joint liability for the payment of debts of another member, although it prohibits the voluntary assumption of such liability by the Union or any of the member states.

The objective is to impose market discipline on member state budgetary and fiscal policies since their debt is not 'guaranteed' by the Union or other member states. As the Court of Justice states in *Pringle*:

> *135 It is apparent from the preparatory work relating to the Treaty of Maastricht that the aim of Article 125 TFEU is to ensure that the Member States follow a sound budgetary policy (…). The prohibition laid down in Article 125 TFEU ensures that the Member States remain subject to the logic of the market when they enter into debt, since that ought to prompt them to maintain budgetary discipline. Compliance with such discipline contributes at Union level to the attainment of a higher objective, namely maintaining the financial stability of the monetary union.*
>
> *136 Given that that is the objective pursued by Article 125 TFEU, it must be held that that provision prohibits the Union and the Member States from granting financial assistance as a result of which the incentive of the recipient Member State to conduct a sound budgetary policy is diminished (…)*

To reach this conclusion, the Court looked back at discussions in connection with preparatory work underpinning the Maastricht Treaty, where the intention to "ensure that the Member States remain subject to the logic of the market", when they enter into financial assistance, was affirmed (Craig, 2013).

Accordingly, Article 125 TFEU, as interpreted by the Court, is meant to press member states to uphold sound budgetary policies. Financial assistance is not excluded so long as market discipline is preserved and/or incentives for upholding sound budgetary policies are guaranteed. As the Court notes in *Pringle*, the Treaty foresees the possibility of such financial assistance in Article 122(2) "where a Member State is in difficulties or is seriously threatened with severe difficulties caused by natural disasters or exceptional occurrences beyond is control". In addition, nothing in the Treaties prevents member states from providing any form of financial assistance to one other (in the same way that they can provide it to third states). It would, thus, be absurd to exclude the possibility that one or more states might decide on a voluntary and bilateral basis to offer financial assistance to another member state. What is forbidden is the provision of financial assistance that would undermine the conduct of sound budgetary policies by another EMU state. The Court concludes therefore that such financial assistance can be provided but subject to certain strict conditions:

15 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland,* para. 139.

> *(…) As is apparent from paragraph 5 of the ECB opinion on the draft European Council Decision amending Article 136 of the Treaty on the Functioning of the European Union with regard to a stability mechanism for Member States whose currency is the euro, the activation of financial assistance by means of a stability mechanism such as the ESM is not compatible with Article 125 TFEU unless it is indispensable for the safeguarding of the financial stability of the euro area as a whole and subject to strict conditions.*[16]

The Treaty therefore does not prohibit financial assistance; on the contrary, it foresees it. But, for the Court, such financial assistance needs to be "indispensable" to safeguarding financial stability in the euro area as a whole and in its member states. This requirement means that financial assistance cannot be granted just for the sake of solidarity, it needs to be systemically justified in light of the overall interests of the euro area.

While this restriction can be seen as limiting solidarity, it can also help to buttress it within the EMU, since it is made clear that such solidarity can still be offered but only when it is in the interests of all of the euro area. In any event, as recent history has proved and the reasoning of the Court judgement in *Pringle* made clear, a member state in need of financial assistance may pose, per se, a systemic threat to the whole euro area, making this a criterion easier to fulfil than might otherwise be thought. Safeguarding the interests of the euro area as whole is also the typical criterion that the Court employs to grant a large margin of appreciation to the political process.

Any financial assistance of this kind needs, however, to also safeguard incentives for upholding sound budgetary policies that underpin the monetary union. Therefore, the acceptable forms of financial assistance and the conditions to which it is subject should be determined by the need to protect that objective. The crucial criterion is that the form, type and conditions of financial assistance (including forms of debt relief) have to comply with the fundamental objective of guaranteeing that the member state in question upholds a sound budget policy.

Member states cannot be under any obligation – imposed or voluntarily undertaken – to assume the debt of another member state, since that would reduce the impact of market discipline on upholding sound budgetary policies. If creditors knew that other states would assume liability for the debt of a member state, they would care little about the budgetary policies of the latter and the disciplining effect of the debt markets would be minimised, giving rise to moral hazard. But this is different from member states, or even the EU, voluntarily providing certain forms of financial assistance to a member state that is no longer capable of meeting its debt commitments. In this case, neither the EU nor the member states are ex ante assuming any liability or the commitments of that member state towards its creditors. It is one thing for the EU or the members to guarantee, de facto or de jure, the commitments of a state, and another to merely offer financial assistance to a member state that can no longer honour those commitments.

This construction explains why Article 125 is structured in terms of a trilateral relationship: the EU or a member state being liable for or assuming the commitments that another member state undertakes with respect to third parties. Thus, *a contrario*, Article 125 does not rule out the possibility of debt forgiveness (including face-value debt relief) in the context of the bilateral relationship amongst member states. In this instance, it would be the creditor itself forgiving the debt and not a third part assuming liability for a member state's debt.

The most significant obstacle to financial assistance resulting from the text of Article 125 is the prohibition for a state to assume the commitments undertaken by another member state. In her Opinion in *Pringle*, AG Kokott states that assuming commitment means discharging the commitment either by making a substitute payment or by becoming liable itself for the future payment.[17] Does this mean that the Union or member states cannot substitute third-party creditors in the debt of another member state by making payment on such debt? According to the Court (and the Advocate General herself), this is not the case, at least so long as the debt does not disappear. The ESM is not seen as contravening the prohibition of Article 125 because what it does is either replacing a loan for another loan or simply substituting in the place of third-party creditor (by buying bonds issued by the debtor State). In both cases, the debt continues to exist (and the commitment to pay remains with the debtor). The member state remains liable, but now with respect to the loans given by the ESM to the member state or those bought by the ESM. As stated by the CJEU, granting a credit line to the state "in no way implies that the ESM will assume the debts of the recipient Member State. On the contrary, such assistance amounts to the creation of new debt owed to the ESM by that recipient State". [18] In fact, the Court goes further and considers both that, under Article 13 (6) of ESM Treaty "any financial assistance granted (…) must be repaid to the ESM" and that, under Article 20(1) ESM Treaty the amount to be

16 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland*, para. 136.

17 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland*, Opinion of AG Kokott, at para. 121.

18 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland*, again at para. 139.

repaid is to include an appropriate margin".[19] **Thus, the reasoning of the Court in Pringle does make financial assistance possible**. At the same time, it appears to do so in such a way as to strongly limit forms of debt relief.

Does the formulation of permitted financial assistance under *Pringle* require that transferred/substituted loans are always honoured by the debtor state? To forgive (or offer substantial relief for) those loans at a later stage would be to discharge part of the debt of that member state and, therefore, to assume it.

But it is far from clear that both the Treaty and *Pringle* actually exclude debt forgiveness. First, the two "requirements" mentioned by the Court (that the "new debt" needs to be repaid and that new loans should include an appropriate margin) are mentioned in the judgement as conditions resulting from the ESM Treaty but not from Article 125 itself. They are used by the Court to highlight how the ESM Treaty imposes strict conditions on financial assistance granted by the ESM, therefore supporting the conclusion that the ESM Treaty does not violate Article 125. This is different from establishing that respecting ESM Treaty requirements is an essential condition for any financial assistance to be permitted under Article 125.

Second, it would be paradoxical for the violation of Article 125 to emerge not when the Union or other member states assist a member state in honouring its commitments towards other creditors but only when, as the new creditors of that state, they voluntarily decide to provide relief on the debt owed to them by that state. It is with respect to the first action (assisting a member state to honour its obligations to other creditors) that the purpose of the provision is at stake: to protect creditor-imposed market discipline by not having their loans to one member state guaranteed by the Union or other member states. ESM buying bonds providing loans to replace market loans would seem more likely to put into question the purpose of the provision than any form of debt relief including forgiveness of debt already owned by ESM or EFSF (so long as such debt relief remains discretionary and, therefore, uncertain).

As the Court states in *Pringle*, "in order to determine which forms of financial assistance are compatible with Article 125 TFEU, it is necessary to have regard to the objective pursued by that Article".[20] The fundamental purpose of Article 125 (ensuring the impact of market discipline on member states' budgetary policies) is at stake in the trilateral relationship between a debtor state, its market creditors, and the Union or other member states, not in the relationship that is established once a debtor state receives assistance from the Union or other member states. It is in this light that one can understand AG Kokott's statement that direct support to the creditors is prohibited by Article 125 while indirect support, via support to the debtor state, is not prohibited. Nonetheless, indirect support should not be certain or guaranteed when the original financial assistance is offered, otherwise market discipline exerted by interest rate spreads would disappear.[21]

What is crucial therefore is to determine whether the assumption of commitments is made a priori and with regard to other creditors (this is the focus in *Pringle*). If it is, it becomes an implicit guarantee that withdraws the impact of market discipline exerted by interest rate differentiation (spreads). If no assumption of the commitments of a member state is made *a priori*, then the purpose of the provision is respected, even if there is a hypothetical possibility that financial assistance granted to a state may be used to facilitate the discharge of the state's commitments to its fellow member state creditors or the EU. The type (but not the conditions) of such financial assistance is largely irrelevant.

Legally, therefore, it is necessary to assess if the form and conditions of financial assistance protect the goals of ensuring market discipline and sound budgetary policies. In itself, even face-value debt relief is not prohibited per se, so long as the way it is structured will safeguard those goals. Moreover, for the reasons mentioned above, other forms of financial assistance are actually more likely to endanger those goals than a face-value debt relief on debt already owned by the EU or other member states, including through the ESM.

Further support for this position comes from *Gauweiler*. In this judgement, the Court of Justice accepts the possibility of a debt loss by the ECB with respect to bonds it buys from member states.[22] The Court simply assumes that this is a risk inherent in

19 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland,* para. 139. This point is stressed by some commentators as a necessary condition for financial assistance to be acceptable under Article 125. See, notably, Steinbach (2016).

20 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland*, para 133.

21 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland,* Opinion of AG Kokott, at para. 148-149.

22 CJEU 16 Jun. 2015, Case C-62/14, *Gauweiler and Others v Deutscher Bundestag.*

buying bonds in the secondary market.[23] It states, moreover, that "even if it were established that that programme could expose ECB to a significant risk of losses, that would in no way weaken the guarantees which are built into the programme in order to ensure that the Member States' impetus to follow sound budgetary policy is not lessened".[24]

In light of the above, different forms of debt relief are possible so long as the means chosen do not endanger the purpose of market discipline enshrined in the Treaty and so long as they respect the conditionality requirement aimed at guaranteeing sound budgetary policies. This, however, does not mean that the form and extent of debt relief are irrelevant.

First, the more substantial the debt relief, the harder it becomes to demonstrate that conditionality-based financial aid represents a functional equivalent to market-based refinancing according to the CJEU's interpretation in *Pringle*. Debt relief, particularly face-value debt relief, may reduce governments' incentives to consolidate budget policies and can heighten moral hazard (Steinbach, 2016; Kerber and Städter, 2011; Frenz and Ehlenz 2010). Naturally, this depends on the extent, form and conditions of the debt relief. In other words, there is a trade-off between the extent of debt relief provided to a state and the extent to which market discipline and the incentives for sound budgetary policies are protected. Debt relief still must preserve the goals of market discipline and furtherance of sound budgetary policies. This can be achieved by how the relief is structured and the incentives attached to it.[25]

Second, the ESM agreement limits the possible forms of debt relief, at least with respect to debt owned by the ESM. As noted, the Court notes in *Pringle* that ESM foresees the recovery in full of any assistance given to the MS (Article 13(6) of the Treaty).[26] As already mentioned, some commentators assume that the Court is actually mandating a condition for the legality of financial assistance under Article 125 (Steinbach, 2016), which is debatable. Full recovery is not a requirement imposed by the TFEU on any form of financial assistance, it is a condition imposed by the ESM Treaty with respect to the assistance provided under it.

Third, one should not ignore that the more legally controversial the debt relief, the higher its political cost. In this light, it should not be ignored that a face-value debt relief is considered by some to infringe on the 'no bailout' clause (Steinbach, 2016). Although this is not the view expressed here, one must recognise that the absence of a legal consensus will make a political agreement harder to reach.

In this instance, the position of national constitutional and supreme courts is also relevant since it is bound to determine the positions taken by the respective national governments. The best-known example is that of the German Constitutional Court. In a series of cases, this Court has established important limits to the forms of financial assistance that could be provided by the German state. It has done so in light of the democratic principle, including in this case the protection of budgetary autonomy and self-determination. It accepted that Germany could become liable for other member states or EU financial needs but required for such financial assistance to be limited, controlled by Parliament and subject to strict conditionality.

What is important therefore, in light of the ECJ and national courts case law, is for market discipline not to be eliminated and incentives for sound budgetary policies to be in place. This requires two things. First, financial assistance needs to be given in a way that does not eliminate market discipline, by preserving differentiated credit risks reflected in the interest rates paid by different states. This is fundamentally achieved, as described above, through two conditions. First, the condition that financial assistance does not entail assumption of the debtor's payments and commitments to creditors, and by it being uncertain (if not unlikely) at the time the debt is issued. Subsequently, taking into account that once that financial assistance is given a state is (partially or totally during a certain period of time) exempt from market discipline, a mechanism must be put in place to ensure sound budgetary policies during such a period. That is the role of the conditionality attached to financial assistance. Strict conditionality also serves the purpose of preserving market discipline: subjecting financial assistance to strict conditionality makes it both less appealing and less certain, thereby helping to protect market discipline. In Gauweiler the ECJ stated that the ECB policy of buying state bonds in the market was acceptable also because of the "guarantees which are built into the programme in order to ensure that Member States' impetus to follow

23 Craig and Markakis (2016) acknowledge the Court's position but differentiate the possibility of ECB losses on Member State debt from the Article 125 prohibition. In their opinion, this provision refers only to the Union budget and not to the ECB that is distinct. A contrario, they seem to assume that Article 125 will, in fact, prohibit a debt cut with regard to the institutions foreseen therein. This is questionable for the reasons mentioned above. Moreover, the Court analysis of what is at stake under Article 123(1) is remarkably similar to what it does in Pringle under Article 125 and, the principles being the same, it is remarkable that it does not even question the possibility of ECB losses being contrary to the Treaty. The focus (paras 123-124) is on the guarantees provided by relevant conditionality in preserving the incentives for sound fiscal and budgetary policies and in limiting potential losses.

24 CJEU 16 Jun. 2015, Case C-62/14, *Gauweiler and Others v Deutscher Bundestag*, para 123.

25 This is what we try to safeguard in the three options for Greek debt relief set out in our paper.

26 CJEU 27 Nov. 2012, Case C-370/12, *Pringle v Ireland*, at para. 139: all financial assistance is to be repaid and with a margin.

a sound budgetary policy are not lessened".[27] These guarantees, inherent in conditionality, are also likely to reduce the risk of losses.[28] Strict conditionality must therefore always be part of any debt relief.

What is crucial, with regard to both the form and conditions of debt relief, is that they are structured so as to provide the right incentives for budgetary discipline. This is at the core of our three options. We recognise that Option I (conditional face-value debt relief) will cause more legal controversy than Options II and III (that fundamentally extend measures already in place). But, for the reasons already explained, we believe it to be equally compatible with the TFEU, in light of the incentives it will create, if administered in the form we propose.

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27 CJEU 16 June 2015, Case C-62/14, *Gauweiler and Others v Deutscher Bundestag*, para 123.

28 CJEU 16 June 2015, Case C-62/14, *Gauweiler and Others v Deutscher Bundestag*, paras. 123-124.

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