



## From Populist Destabilization to Reform and Possible Debt Relief in Greece

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Greece and the euro area have stepped back from the brink of the Grexit (exit from the euro) abyss. By the autumn of 2014 Greece was on a path toward economic recovery and, in the view of the International Monetary Fund (IMF), would have needed no further debt relief (IMF 2015a). Then the populist measures and confrontational tactics of the new Syriza government derailed growth and debt management prospects in the first half of 2015. After the closing of banks on June 28 in the run-up to the referendum of July 5 and its associated risk of Grexit, the combination of large new bank recapitalization needs and the downgrading of growth prospects and plausible fiscal performance caused the Fund to insist that further debt relief will now be necessary (IMF 2015a, b).

This *Policy Brief* applies the European Debt Simulation Model (EDSM) developed in Cline (2014) to examine whether and to what extent additional debt relief is needed in Greece under the new circumstances.<sup>1</sup> It emphasizes the fact that most of the remaining Greek public debt is owed to the official sector at interest rates and maturities that are already relatively concessional. Under these circumstances the usual debt headline number, the ratio of gross debt to GDP, overstates the debt burden. Restructuring of the debt will face the constraint that the heads of state of euro area members have ruled out a haircut on the face value of the debt, mentioning only “possible longer grace and payment periods” (Euro Summit 2015, 6).

The principal findings of this study are as follows:

- Greece's debt burden is significantly lower than implied by the ratio of its gross debt to GDP, because of concessional interest rates on debt owed predominantly to the euro area official sector. At about 4 percent of GDP, its interest burden is about the same as that of Portugal.
- The IMF's call for debt relief recognizes the lower interest burden but argues that the gross financing requirement is, nonetheless, on track to exceed a sustainable range of 15 to 20 percent. But in the Fund's June Debt Sustainability Analysis (DSA) *that threshold would not be exceeded until after 2030*.<sup>2</sup> A sustainability diagnosis based on such a distant future date would seem at best illustrative rather than definitive.
- The euro area creditors might, nonetheless, be well advised to provide two types of interest relief: (1) an earmarked portion of interest otherwise due to finance a public works employment program and (2) additional interest relief to compensate for budget shortfalls caused by growth below plan levels. Interest relief would not violate the Euro Summit injunction against a nominal debt haircut.

1. In the first program of debt relief in April 2012, private sector creditors took a haircut of about one-half on €200 billion in public debt, which in turn was about half of total public debt (Cline 2014, 188).

2. The subsequent brief DSA update in mid-July did not contain detailed projections (IMF 2015b).

- The sovereign debt situation should be alleviated by carrying out the bank recapitalization directly from the European Stability Mechanism (ESM) to the banks, rather than through the sovereign as the intermediary. The large increase in the ratio of gross debt to GDP imposed by bank recapitalization is mostly an optical illusion because there would be a corresponding rise in state assets, but this increase could nonetheless further erode perceptions of sustainability.

## FRAMING THE PROBLEM: KEY ISSUES

**Measuring the Debt Burden.** In its preliminary Debt Sustainability Analysis completed on June 26, 2015, the IMF (2015a) warned that “changes in policies and in the outlook” in the first half of 2015 meant that financing needs would reach €50 billion from October 2015 to end-2018. As a consequence, “at a minimum, the maturities of existing European loans will need to be extended significantly while new European financing to meet financing needs...will need to be provided on similar concessional terms” (pp. 1-4). In its initial update issued on July 14 after the referendum and bank closures, the Fund raised the estimated financing needs to €85 billion and stated that debt was now expected to peak at close to 200 percent of GDP. As a result, “Greece’s debt can now only be made sustainable through debt relief measures that go far beyond what Europe has been willing to consider so far” (IMF 2015b, i).

Yet the Fund recognized that gross debt is misleading because of the concessional interest rates. Thus, in its June 26 appraisal, interest payments were projected to be an average of 3.7 percent of GDP in 2015–20 and 4.3 percent in 2021–24.<sup>3</sup> In comparison, the most recent *World Economic Outlook* projects that interest payments during 2015–20 are expected to average 3.4 percent of GDP in Italy and 4.3 percent in Portugal (IMF 2015c).<sup>4</sup> So judged by the interest burden, Greece is not severely more indebted than either Italy or Portugal.

The IMF’s June 26 DSA recognized the special case of low interest on Greek debt and introduced a new metric for debt sustainability: gross financing needs (GFN). The idea is that without access to private credit at moderate interest rates, the timing of debt rollover of the official low-interest finance becomes critical, such that both amortization and interest matter. Indeed, in the developing-country debt literature, there is a long tradition of considering the “debt service ratio” of interest plus amortization to export earnings, the analogue when the concern is the “external transfer” rather than the

“internal transfer” problem.<sup>5</sup> The Fund’s preliminary DSA cited “the MAC [market-access countries] benchmarks of 15–20 percent of GDP for [the GFN] to define a sustainable path” (IMF 2015a, 11).<sup>6</sup>

It is not clear what empirical basis warrants this particular threshold range.<sup>7</sup> However, what is clear is that at least in the end-June DSA, Greece was not expected to exceed a 15 to 20 percent of GDP range for the GFN in the entire period 2016–30, thanks to the already long maturities on debt owed to euro area partners. The GFN was then on track to rise to about 25 percent by 2040 and remain at that high plateau through 2064. The Fund reached the conclusion that “It is unlikely that Greece will be able to close its financing gaps from the markets on terms consistent with debt sustainability” (p. 10). However, this conclusion was based on the situation *after 2030*. So a first major question about the Fund’s DSA is whether it is meaningful to base a judgment on forecasts that are so remarkably far into the future. Indeed, in the Fund’s program review of June 2014, the GFN never exceeded a peak of 12 percent of GDP (then expected to be reached in 2043). The question then becomes whether one can meaningfully judge that a forecast 25 years into the future is decisively more accurate today than the corresponding estimate was one year ago.

In short, the seeming decisiveness of the judgment of unsustainability has arguably been overstated. A close look at the basis for this judgment reveals that it is premised on a situation that was not expected to arrive until the 2030s (although the Fund has not yet provided comparable detail for the outlook after the referendum and bank closures). More pragmatic analysis would seem instead to pertain to the situation over the next decade or so.

**Rewarding Bad Behavior?** An awkward implication of the IMF’s new call for debt relief is that it is the consequence not of adverse exogenous shocks (such as a higher oil price) but of deterioration in policy implementation. Yet in the main arena of official sector debt relief—in heavily indebted poor countries (HIPC)s—the classic approach has been to make

5. The GFN would be interest plus amortization if the primary surplus were zero and there were no other debt-creating or reducing flows (e.g., bank recapitalization or privatization).

6. The Fund’s staff guidance paper for DSAs for market-access countries places the threshold at 20 percent for advanced economies and 15 percent for emerging-market economies (IMF 2013a, 32).

7. Moreover, there seems to be some confusion in the official sector about the new criterion. The European Commission (2015a, 8) states that “an IMF guidance note to staff suggests that gross financing needs-to-GDP would need to remain below the 15% [sic] to ensure debt sustainability.” The IMF note actually states that the 15 percent threshold is for emerging markets and the threshold is 20 percent for advanced economies; it is unclear that Greece should be treated as an emerging-market economy.

3. Calculated from IMF (2015a, 19).

4. Calculated as the difference between total and primary balances.

debt forgiveness conditional on policy improvements. Going forward, it would make sense to link debt relief to performance on macroeconomic and structural reform policies.

**Should the Fund Participate?** The IMF has indicated that it cannot participate in a new package in the absence of debt relief that makes the debt sustainable. This position is standard, although the earlier “systemic risk” waiver of “high probability” of sustainability seems to have disappeared—either because major contagion from Greece no longer seems likely or because the Fund has had second thoughts about the systemic exception itself.<sup>8</sup> But there is a case for having the IMF indeed

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not participate in new lending, although perhaps it should participate in a monitoring function. The reason is that IMF funding is not as cheap as the official euro area financing. Thus, in the baseline for 2015–20, the average interest rate on debt to the IMF is 3.7 percent, whereas the average interest rate on debt to the European Financial Stability Facility (EFSF) is 1.65 percent.<sup>9</sup> Indeed, from the standpoint of reducing interest costs it would make sense for the lending from the ESM to be sufficient to *retire early* the existing stock of debt owed to the IMF (23 billion SDR [Special Drawing Rights] at the end of 2014, amounting to €27.5 billion at the exchange rate at that time and €29.4 billion at the exchange rate of early July 2015).

**Whom Did the Debt Benefit?** One of the arguments favoring debt relief has been that most of the debt still owed by Greece went to benefit the euro area official partners that made the loans rather than Greece, and in particular that the large debt accumulation was the consequence of borrowing to finance the exodus of euro area banks that otherwise could have suffered

8. See Edwin M. Truman, “When Should the IMF Make Exceptions? Part II,” Peterson Institute for International Economics RealTime Economic Issues Watch, April 1, 2015. According to one account, IMF staff has told the Board that a Greek default would no longer cause major contagion because the debt is mainly owed to the public sector rather than to private bondholders. Peter Spiegel, “IMF cannot join Greek rescue, board told,” *Financial Times*, July 30, 2015.

9. The relatively high rate on IMF lending reflects the fact that under exceptional access to the Extended Fund Facility, Greece is borrowing far more than its IMF quota, and the maturities are long. Thus, on top of the normal 100 basis point “basic rate of charge” over the SDR interest rate (which itself is currently close to zero), there is a 300 basis point surcharge “designed to discourage large and prolonged use of IMF resources” (IMF 2015e).

major losses from the Greek crisis. Thus, in late June former US Treasury Secretary Lawrence Summers wrote that “the vast majority of the financial support given to Greece has gone to pay back banks rather than support the Greek budget.”<sup>10</sup>

The claims of euro area banks on Greece (public and private sector) fell from €115 billion at the end of 2009 to €57 billion at the end of 2011 and €15 billion at the end of 2012 (Merler 2015). About €30 billion of the decline during 2012 would have been attributable to losses from the private sector bail-in, so the amount that euro area banks were able to extract would have been about €70 billion.<sup>11</sup> Total official sector support has amounted to €53 billion from the EU bilateral Greek Loan Facility (GLF) and €142 billion from the EFSF, in addition to about €30 billion from the IMF, for a total of approximately €225 billion. So one might say that about one-third of the debt went to finance the exodus of euro area banks, but not the “vast majority.” Other uses included €22 billion for recapitalization of the Greek banks (Cline 2014, 188), cumulative primary deficits of €17 billion during 2010–14, and cumulative interest payments of €54 billion in the same period (IMF 2014, 2015a).

In broad terms, the euro area clearly benefited from the avoidance of a Grexit at the height of the euro area debt crisis in late 2011 and early 2012, when contagion to the other periphery economies was at its peak (as reflected by their high sovereign risk spreads; Cline 2014, 3). But it would be misleading to contend that Greece received little benefit from the large amount of official support it has received. Even steeper spending cuts and exit from the euro, in the absence of this support, would have caused much more damage to the economy than it experienced.

**Too Much Austerity, or Unavoidable Fiscal Adjustment?**

Critics of the official Greek adjustment programs since 2010 stress that fiscal adjustment was too severe and caused an unnecessary collapse of GDP as a consequence of Keynesian-demand dynamics that should have been expected. Greece has indeed carried out a large fiscal adjustment. From 2009 to 2014, Greece increased its cyclically adjusted primary balance from –13.2 percent of GDP to +5.3 percent, as estimated by the IMF (2015d). (The actual primary balance was zero in 2014, reflecting the still large output gap of 9.3 percent of GDP [IMF 2015a, c]). This fiscal tightening by 18.5 percent of GDP substantially exceeded that of other euro area periphery economies under stress (by 7.2 percent in Ireland, 9.5 percent in Portugal, 8.2 percent in Spain, and 3.3 percent in Italy).

10. Lawrence Summers, “Greece is Europe’s failed state in waiting,” *Financial Times*, June 20, 2015.

11. That is,  $(115 - 15) - 28$ .

If Greece had enjoyed fiscal space, there would have been grounds for a slower fiscal adjustment. But Greece did not have fiscal space; it was cut off from financial markets. The question thus became how large a financing commitment the euro area official sector was prepared to extend. It is difficult to argue that this official support was too stingy, considering that it amounted to approximately 100 percent of GDP (not counting European Central Bank [ECB] support to the banking system). So the (usually American) economists who chastise policymakers for excessive fiscal tightening in Greece should make clear what source of still greater financing they think could and should have been made available.

Larger *ex ante* fiscal deficits would likely not have been self-financing because of induced growth effects. The IMF did conclude in 2012 that fiscal multipliers under conditions of the Great Recession turned out to be higher than it had originally anticipated (IMF 2012, 41–43). However, even at the upper bound of the range of its revised estimated multipliers (1.7), fiscal expansion would have fallen short of self-financing under Greek conditions. With a revenue elasticity estimated at 1.1 and the tax revenue base at 36 percent of GDP (Price, Dang, and Guillemette 2014), reducing the fiscal adjustment by 1 percent of GDP would have generated only 0.67 percent of GDP in additional revenue.<sup>12</sup> Moreover, much of the fiscal adjustment occurred in 2010–11, when the country risk spread became extremely high and would have been pushed even higher by a shift toward less fiscal adjustment.<sup>13</sup> If signs of a wider deficit cause the country risk spread to spiral upward, the multiplier can turn negative.<sup>14</sup>

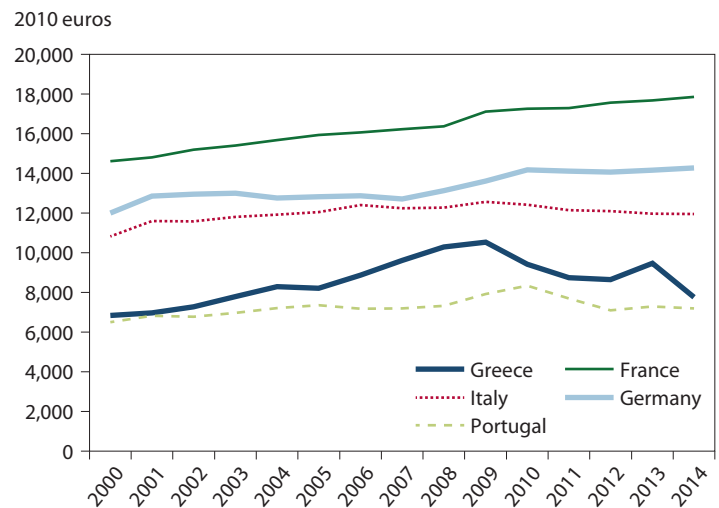
As for the degree of euro area solidarity, some would argue that there should have been even more and that (for example) the €17 billion in cumulative primary deficits during 2010–14 was too parsimonious compared with the €70 billion reduction in euro-area bank exposure. It is, nonetheless, striking that the combined GLF and EFSF support amounting to €195 billion, or 109 percent of Greece's 2014 GDP, was three to four times as large as the European support to Ireland (€45 billion, or 27 percent of Ireland's GDP) and Portugal (€54 billion, or 32 percent of Portugal's GDP; Cline 2014, 175, 177). The only

12. That is,  $1\% \times 1.7 \times 1.1 \times 0.36$ .

13. Sovereign spreads above the German bund were around 750 basis points in 2010 and nearly twice as high by the first half of 2011 (Cline 2014, 3). Of the 18.5 percent of GDP cumulative adjustment in the cyclically adjusted primary balance from 2009 to 2014, 7 percentage points occurred in 2010 and an additional 5 percentage points in 2011 (IMF 2015d). At that time there was still hope for a near-term return to private markets. Thus, the July 2011 IMF (2011, 62) program review anticipated a rebound of medium- and long-term private lending from zero in 2012–13 to €11 billion in 2014 and €19 billion in 2015.

14. As explored in Cline (2014, appendix 2C).

**Figure 1 Real primary public spending per capita, 2000–2014**



Source: IMF (2015c).

comparison involving the United States might be its support to Mexico in the peso crisis of 1994–95, which amounted to a commitment of \$20 billion, or only about 5 percent of Mexico's GDP, and was to be repaid over five years (instead of 40 years in the EFSF support for Greece).<sup>15</sup>

A large fiscal adjustment was necessary because Greece had reached unsustainably high levels of public spending before the crisis. Greece increased primary public spending from an average of 40 percent of GDP in 2003–06 to 49.3 percent in 2009.<sup>16</sup> As shown in figure 1, from 2000 to 2009 real per capita primary spending rose much more rapidly in Greece (by 54 percent) than in Germany (14 percent), Italy (16 percent), France (17 percent), or Portugal (22 percent). The comparison seems particularly relevant with Portugal, an economy with the same population (11 million) and about the same per capita income (about €20,000 in Greece in 2010 and €17,000 in Portugal). As shown in the figure, real primary spending per capita in Greece was almost identical to that in Portugal in 2001, but by 2008 primary spending per capita was 40 percent higher in Greece than in Portugal. Then by 2014 the gap had diminished, but Greek primary spending per capita was still 8 percent higher than that in Portugal.

**Contemplating Euro Exit.** The events of end-June and early July once again raised the specter of Grexit. This time there was a major change: German Finance Minister Wolfgang Schäuble

15. David E. Sanger, "Mexico Repays Bailout by U.S. Ahead of Time," *New York Times*, January 16, 1997.

16. Calculated from IMF (2015c).

strongly signaled his preference that Greece take a “timeout” from the euro.<sup>17</sup> In one interview, he clarified that in the early July negotiations a German position paper had observed that it was up to Greece to decide whether to leave the eurozone for a limited period of time if it insisted on debt relief, because “Debt relief is not possible within the currency union. European treaties do not allow it.”<sup>18</sup> Because the euro was formed with the understanding that no nation could leave once it had joined, the emergence of a threat of invited exit seemed to raise fundamental questions about the underpinnings of the single currency. The broad implication would seem to be growing pressure by Germany and like-minded members to ensure that member countries either stick to fiscal rules or be expelled in one fashion or another. Essentially, one constitutional imperative of the single currency—that it is not a “transfer union”—would trump another—that any country’s membership is irreversible.

It is beyond the scope of this *Policy Brief* to review the arguments in favor of and against exit from the euro, except to note that most analyses find that the economic consequences for Greece (or other members leaving) would be highly adverse (see Cline 2014, 111–18). There would be large balance sheet losses for firms (and households) externally indebted in euros (or US dollars) but with incomes fixed in a replacement drachma that experienced a sharp depreciation. There would likely be destabilization from bank runs in anticipation of currency replacement. Although the banks are currently subject to capital controls, prolonging this situation would surely be costly to economic growth, yet there is no indication that Greece is technically or politically prepared for an immediate exit from the euro.

### **Piling More Debt onto an Already Unsustainable Level?**

One of the striking ironies of the recent deliberations on Greek debt is that even as the IMF was declaring that Greek public debt is unsustainably high, new borrowing amounting to over €80 billion was being placed on the official agenda, to be forthcoming in some combination from the ESM and the IMF. The informed public could be forgiven for wondering why the solution to the problem of already excessive debt is the addition of still more debt, amounting to an extra 40 percent or so of GDP.

The answer is that the new debt is largely an optical illusion: Most of it will go to pay off existing debt or build up assets

(including in the banking sector). The European Commission. (2015a, 9,11) sets total gross financing needs from mid-2015 to mid-2018 at €82 billion. Of this amount, amortization accounts for €35.9 billion (including €8.3 billion to the IMF, €12.7 billion in bonds held by euro area national central banks—Agreement on Net Financial Assets (ANFA)—and the ECB from its Securities Markets Programme (SMP), €1.9 billion to the Greek central bank, and €6.8 billion to private creditors.) Another major part is the large amount earmarked for recapitalizing the banks: €25 billion. Yet whoever recapitalizes the banks acquires an equity position in them, so these funds are not lost or comparable to unrequited payments on legacy debt. An additional €7 billion is for clearance of arrears—debt already owed—and another €4.5 billion for building up cash deposit buffer. So as much as €72 billion out of the €82 billion can be seen as reshuffling existing debt and building up assets rather than adding new net debt. (This diagnosis becomes less favorable, however, the more one thinks that bank recapitalization would mainly be exhausted in covering existing losses rather than building up bank equity.)

### **Bank Recapitalization: Log that Breaks the Camel’s Back?**

The optics of the large financing, nonetheless, contribute to a perception of great overindebtedness. In this regard the bank recapitalization, amounting to about 14 percent of GDP, might reasonably be seen as an unnecessary log that breaks the camel’s back. The euro area’s progress toward banking union was supposed to make it possible to break the link between the sovereign and the country’s banks. In particular, the ESM is supposed to have the capacity to directly recapitalize banks that have met appropriate conditions. These conditions include an initial tranche of bail-in of existing shareholders and creditors, potentially including large depositors holding deposits that exceed the insured ceilings.

The strong attraction of direct ESM recapitalization of the banks is that it would avoid placing an extra €25 billion or so onto the books of sovereign Greek debt. Suddenly the peak ratio of debt to GDP, placed at 200 percent in the IMF’s brief DSA update (IMF 2015b), would be pared down to about 184 percent of GDP. However, a substantial risk of this approach is that economic recovery could be set back by private sector fears of haircuts on bank deposits, with likely special adverse impact on small firms (considering that the large firms will likely have already moved their major accounts outside of Greece before the late-June capital controls).<sup>19</sup> Moreover, a consequence of

17. German economist Hans-Werner Sinn has long recommended a “timeout” for Greece and recently noted that American economists Paul Krugman and Joseph E. Stiglitz as well as former Greek finance minister Yanis Varoufakis agree with him that an exit from the euro would be advisable for Greece as the means of restoring competitiveness. Hans-Werner Sinn, “Why Greece Should Leave the Eurozone,” *New York Times*, July 24, 2015.

18. Interview with Wolfgang Schäuble,” *Spiegel*, July 17, 2015. As noted below, some German experts disagree with Schäuble’s reading of the treaties.

19. The current ESM rules require a bail-in of at least 8 percent of the bank’s total liabilities. After January 1, 2016, in addition there would be a write-down or conversion of all unsecured liabilities, excluding eligible (i.e., insured) deposits (ESM 2014).

this approach would be that the euro area official sector would wind up owning most of the Greek banking system, arguably not a fortunate outcome in an environment in which the public is already outraged by the loss of economic sovereignty.

In mid-2012 it briefly appeared that the ESM could directly recapitalize banks retroactively in Spain and Ireland. But in September 2012 the finance ministers of Finland, Germany, and the Netherlands stated that the governments in question should be responsible for “legacy assets” (Véron 2015, 17–19). In the present case of Greece, the banks were destabilized by the government’s policies in the first half of 2015, not by losses on legacy assets.<sup>20</sup> As for the 8 percent bail-in requirement, the ESM members could presumably vote to apply at least a partial waiver considering that the problem has not been an irresponsible banking sector but contagion to the banks from government policies.

Four large private banks account for approximately 90 percent of bank assets in Greece. As of late June before the five-week closure of the Greek stock exchange, their combined market capitalization was €12.9 billion.<sup>21</sup> Their market value had been far higher before the new government took office, and by late June their stock prices were 60 percent lower than their peaks during the previous 12 months (weighted average). Moreover, as a consequence of the recapitalization associated with the first (private-sector) restructuring, the government (through the Hellenic Financial Stability Fund) already owned two-thirds of Pireaus and Alpha banks, 57 percent of the National Bank of Greece, and 35 percent of Eurobank.<sup>22</sup> By implication, the government already had equity positions in the banks worth €5.1 billion.<sup>23</sup>

When the stock market reopened in early August, Greek bank stocks plunged further, bringing the combined market capitalization of the four large banks to only €5.4 billion.<sup>24</sup> If the government were to borrow €25 billion to recapitalize the banks, in effect it would be raising its equity position in the banks from €2 billion to €27 billion and increasing its share of ownership from about 40 percent to almost 90 percent.<sup>25</sup> This possibility explains another of the seeming idiosyncrasies

in the tentative package agreed by Greece and the Eurogroup: the notion that an independent fund of €50 billion in assets would be earmarked for privatization, of which €25 billion is to be used for repayment of recapitalization of the banks, €12.5 billion to pay off general government debt, and €12.5 billion “for investments” (Euro Summit 2015). In other words, the eurozone official sector will lend Greece €25 billion to recapitalize banks and then expect Greece to repay this amount out of privatization receipts from the eventual sale of the equity that the government will have acquired in the banks.

In short, the large extra debt build-up to recapitalize the banks (yet again) involves an unfortunate optical illusion of adding yet more debt to an already unsustainable burden when in principle it would constitute little or no increase in net debt (because of the equity acquired), and in practice this outcome could be achieved directly by avoiding the sovereign’s involvement and calling on direct ESM recapitalization instead.

## DEBT OUTLOOK UNDER THE THIRD FINANCING PACKAGE

**The Package.** On July 12, 2015, Greece reached tentative agreement with its euro area partners on a third financial rescue package of as much as €86 billion.<sup>26</sup> Greece had missed a payment to the IMF and fallen into arrears, and the government’s end-June decision to call a referendum meant that the EFSF support program—which expired on June 30—was no longer on the table for renegotiation. The new agreement involved a Greek commitment to adjustment measures that were at least as demanding as those the Greek public thought it was rejecting in the July 5 referendum, when 61 percent of voters voted “no” to the terms of the financing package proposed by the IMF, European Commission, and ECB—as urged by Prime Minister Alexis Tsipras. He could cite only a bit of daylight in return: The new package contained the possibility

20. The large Greek banks passed the ECB’s Asset Quality Review of 2014, with only Eurobank needing to raise more than €1 billion in capital (“Stressful Tests,” *Economist*, October 26, 2014).

21. The banks and market capitalizations are: National Bank of Greece, €4.2 billion; Alpha Bank, €4.1 billion; Pireaus Bank, €2.4 billion; and Eurobank, €2.1 billion (Bloomberg, July 28, 2015).

22. Adam Mernon, “Six things you need to know about Greek banks,” *CapX*, January 30, 2015.

23. Applying the bank-specific government shares and market capitalizations.

24. Bloomberg, August 7, 2015.

25. That is, from 2.1/5.4 to 27.1/30.4.

26. The first package, in May 2010, amounted to €110 billion, with €30 billion coming from the IMF and €80 billion from European governments. The second, in March 2012, was for €173 billion, with €28 billion to come from the IMF and €145 billion from the euro area official sector (Cline 2014, 184; IMF 2014, 1). Totals actually disbursed were less, because of the shift of about €25 billion that would have been disbursed under the first program of European support, through the GLF, to the second support program, which was through the EFSF. In addition, disbursements (including of IMF support) were suspended by late 2014 through the first half of 2015 in a context of the new government’s call for renegotiation of terms. Disbursements of IMF support under the second package have so far been only 10 billion SDR, or €12.8 billion, because delay of the intended IMF reviews (6th through 9th) prevented disbursement of 6 billion SDR in the second half of 2014 and another 3 billion SDR in the first half of 2015 (IMF 2014, 55). Beyond these official packages, the private sector debt restructuring cut in half public debt of about €200 billion.

**Table 1 Baseline projections for growth and primary fiscal balance**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Average
Real growth (percent)												15–24
June 2014	0.6	2.9	3.7	3.5	3.3	3.6	2.6	2.25	1.9	1.9	1.9	2.8
June 2015	0.8	0	2	3	3	2	1.7	1.7	1.5	1.5	1.5	1.8
July 2015	0.8	-1.2	0.4	3	3	2	1.7	1.7	1.5	1.5	1.5	1.5
Primary balance (percent of GDP)												
June 2014	1.5	3	4.5	4.5	4.2	4.2	4.2	3.1	2	2	2	3.4
June 2015	0	1	2	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.1
July 2015	0	0	1	2.3	3	3.5	3.5	3.5	3.5	3.5	3.5	2.7

Sources: IMF (2014, 2015a); European Commission (2015a); Consensus Economics (2015); and author's calculations.

of rescheduling maturities if needed—but explicitly ruled out a haircut on principal.

The agreement was contingent on action by the Greek Parliament by July 15 to legislate key reform commitments. These included boosting the consumption tax from 13 to 23 percent on a range of goods and services, ending special tax exemptions for Greek islands, raising the retirement age for pensions to 67, and reducing pension benefits.<sup>27</sup> The agreement stipulated that the final memorandum of understanding was to introduce “quasi-automatic spending cuts in case of deviations from ambitious primary surplus targets after seeking advice from the Fiscal Council” (Euro Summit 2015, 2). Unless the Fiscal Council could be counted on to relax targets if the fiscal erosion were due to a decline in GDP, such an arrangement would be questionable, as discussed below.

The agreement also covered numerous structural reforms in such areas as Sunday trade, pharmacy ownership, opening of professions, and collective bargaining (p. 3) and called for revising recent legislation “backtracking previous program commitments” (p. 5). Such detail reflected frustration of euro area partners with past Greek implementation of committed reforms. The emphasis on structural reform in the package reflects the concern that without reforms medium-term growth performance will be weak, and growth will ultimately determine debt sustainability. The Euro Summit statement based its requirements on structural reform on Organization for Economic Cooperation and Development (OECD) analysis of reforms that could contribute to growth.

27. Suzanne Daley and Liz Alderman, “Premier of Greece, Alexis Tsipras, Accepts Creditors’ Austerity Deal,” *New York Times*, July 13, 2015; Holly Ellyatt, “How Greek firms are coping with massive tax hikes,” CNBC, July 20, 2015. The increase in the consumption tax applied to luxury goods and services such as restaurants, travel tickets, and meat, sugar, and vinegar; the rate remained unchanged at 13 percent for basic foods such as milk as well as energy and water. Liz Alderman and Anemona Hartocollis, “As Banks in Greece Reopen, New Sales Taxes Add to Confusion,” *New York Times*, July 20, 2015.

**Baseline Growth and Fiscal Performance.** Table 1 shows the successive deterioration in the outlook for growth and fiscal performance in Greece. The June 2014 baseline was projected in the IMF’s fifth review of the Extended Fund Facility program for Greece (IMF 2014). The June 2015 projections are from the June 26, 2015 preliminary Debt Sustainability Analysis issued by the IMF (2015a). The July 2015 baseline reflects conditions after the bank freeze, referendum, and tentative new financing package. These estimates take into account both the June IMF DSA and the July 10 evaluation of the European Commission (2015a).

The IMF sharply downgraded its growth projections from mid-2014 to June 2015, from an average rate of 2.8 percent in 2015–24 to 1.8 percent.<sup>28</sup> By July 2015 the near-term growth prospects were considerably worse because of dislocation from the bank freeze. The European Commission judged that growth would range from -2 to -4 percent in 2015 and from -0.5 to -1.75 percent in 2016 (European Commission 2015a). However, private forecasts of mid-July placed near-term growth much higher, at -0.4 percent in 2015 and 1.3 percent in 2016 (Consensus Economics 2015, 25). The new baseline used here and shown in table 1 takes the average of the European Commission and private forecasts for growth in 2015–16 and then reverts to the June IMF baseline (IMF 2015a) for 2017–24.<sup>29</sup>

The Fund also downgraded its expectations for Greek fiscal performance. In its June 2014 review the IMF anticipated primary surpluses averaging 4.3 percent of GDP in 2016–20; the June 2015 DSA cut the estimate for this period to an average of 3.1 percent (IMF 2015a). However, the new estimate had a higher primary surplus in the later years (2021–24) than in the

28. The 2021 figures are interpolated from that report and the 2023–24 figures extrapolated from 2022.

29. Return to the earlier medium-term outlook makes no allowance for faster snap-back growth that might occur starting from the lower 2015–16 base.

earlier report. The July 2015 estimates in the table are based on the European Commission (2015a) for 2015–17 and are lower than the June IMF estimates. The European Commission baseline returns to the IMF baseline of 3.5 percent by 2018 and after.<sup>30</sup>

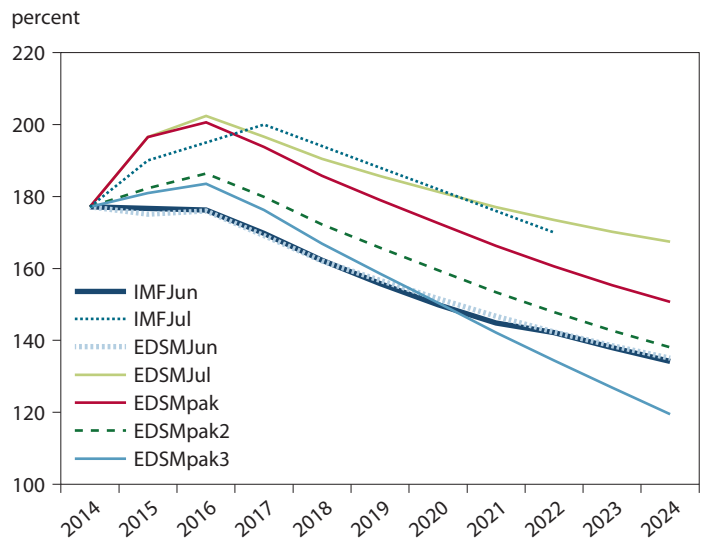
In its brief DSA update in July, the Fund did express reservations about feasibility of maintaining the 3.5 percent surplus “for the next several decades...,” noting that “Few countries have managed to do so,” and that Greece had reversed key public sector reforms on pensions and civil service and yielded to political pressures to ease adjustment once primary balance swung into surplus (IMF 2015b, 2). At least for the next decade or so, however, a 3.5 percent primary surplus target would not seem overly ambitious. The median primary surplus for the moving 5-year high average among advanced countries in 1950–2011 was 4 percent of GDP (IMF 2013b, 2). Over the longer term the potential for relatively high privatization receipts could act as a partial substitute.

**Projections with the European Debt Simulation Model (EDSM).** Appendix A sets forth a description of new estimates using the EDSM (Cline 2014). Figure 2 presents a summary of the projections for the ratio of gross debt to GDP under seven alternative paths. The two lowest paths for 2015–19 are the baseline in the June 2015 DSA by the IMF (2015a) and the EDSM projections under the same assumptions as used in that IMF study. As shown, the EDSM closely replicates the IMF projections. Similarly, the two highest paths in the figure are for the IMF’s updated July estimates for the new situation after the bank freeze and referendum (IMF 2015b) and the EDSM projections for the new situation. In this case the EDSM applies the “July 2015” assumptions for growth and the primary balance shown in table 1. Note that the IMF update reported only the 2017 and 2022 estimates (debt ratios of 200 and 170 percent of GDP, respectively), and the path shown (IMFJul) interpolates. Once again the EDSM closely replicates the IMF path, although the peak (at 202 percent) is a year earlier.

In the EDSM projections, the new situation in July (EDSMJul) includes the need for €25 billion in bank recapitalization but does not provide for any new official financing. In this case the 2024 debt ratio would stand at 167 percent of GDP.

The three other projections show the EDSM baseline results under three alternative implementations of the new financial support package (labeled “pak”). The first (EDSMpak) refers to the new situation in July but assumes availability of the tentatively agreed official financing program of more than €80 billion. In this case the ratio of debt to GDP is significantly lower by 2024, at 151 percent, than in the July baseline without the

**Figure 2 IMF and EDSM projections for gross debt/GDP, 2014–24**



IMF = International Monetary Fund; EDSM = European Debt Simulation Model  
Sources: IMF (2015a, b); author’s calculations.

package. The reason for the improvement is that the additional official support provides the needed new financing at much lower interest rates than those assumed for private financing—if it could be secured.<sup>31</sup>

In the second formulation of the package (“pak2”), it is assumed that no additional sovereign debt is incurred to deal with the bank recapitalization, either because it turns out the banks do not need to be recapitalized or the ESM directly recapitalizes the banks. The avoidance of the €25 billion recapitalization burden means the entire path of debt lies considerably lower. By 2024, the debt ratio would be at 138 percent of GDP rather than 151 percent.

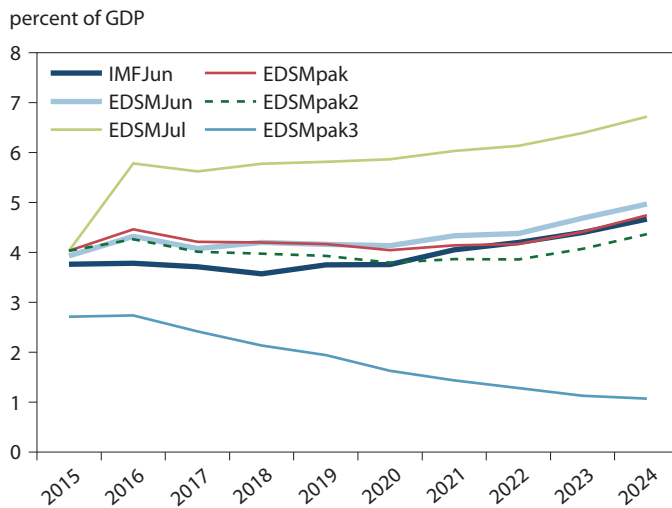
A third version of the package (“pak3”) is primarily illustrative and meant to gauge the scope for debt relief through major interest rate concessionality. In this baseline it is assumed that, in addition to avoiding the burden of bank recapitalization debt, all interest otherwise due through the GLF, EFSF, and new lending by the ESM is *waived*, an interest holiday. (All of this interest already enjoys a grace period in the form of recapitalization but adds to the stock of debt.) If all euro area lending is on an interest-free basis over the next 10 years, the debt ratio by 2024 stands at 119 percent of GDP, reducing the level by about 20

31. The private financing rate, set at 6 percent interest, is higher than the 4.75 percent rate paid on 5-year bonds issued in April 2014, although under recent conditions in practice it is unclear that much long-term finance could be mobilized even if the rate were considerably higher than 6 percent. For the 2014 issue, see Marcus Bensasson and Hannah Benjamin, “Greek Bond Sale Tops \$4 billion in Return to Markets,” Bloomberg, April 10, 2014.

30. The baseline set here is slightly lower for 2018.



**Figure 3 IMF and EDSM projections of interest payments 2015–24**



IMF = International Monetary Fund; EDSM = European Debt Simulation Model  
Sources: IMF (2015a); author's calculations.

percent of GDP compared with the second (no bank recapitalization) variant. Considering that a debt ratio of 120 percent of GDP was earlier identified as a target for sustainability in the context of the euro area periphery, this exercise suggests that a 10-year interest holiday from euro area lenders would provide debt sustainability for Greece even by the (exaggerated) test of the debt-to-GDP metric.

A more meaningful test of the debt burden for Greece, however, is the ratio of interest payments to GDP, shown in figure 3. The impact of the prospective new package is even more evident in this measure of the debt burden. In the outlook as of June, the IMF baseline projected a ratio rising from slightly under 4 percent of GDP to about 4.5 percent by 2024. The EDSM replication of the assumptions in that baseline was relatively close at slightly over 4 percent rising to 5 percent. Then in the new situation as of July but in the absence of a support package, the interest path would have surged to about 5.8 percent of GDP in 2016, rising to 6.7 percent by 2024 (EDSMJul). In contrast, in variants “pak” and “pak2,” thanks to the much lower interest rate on new ESM lending than on borrowing from the financial markets, the new interest burden remains on a path close to that before the late-June destabilization, despite the extra debt imposed by the new situation (especially from the bank recapitalization).<sup>32</sup>

32. By 2020 the interest path under the package is actually slightly lower than the June baseline, because the financing is large enough to eliminate some €17 billion in new private borrowing that otherwise would have been necessary in 2015, and the official support is at a considerably lower interest rate than the private borrowing would have been.

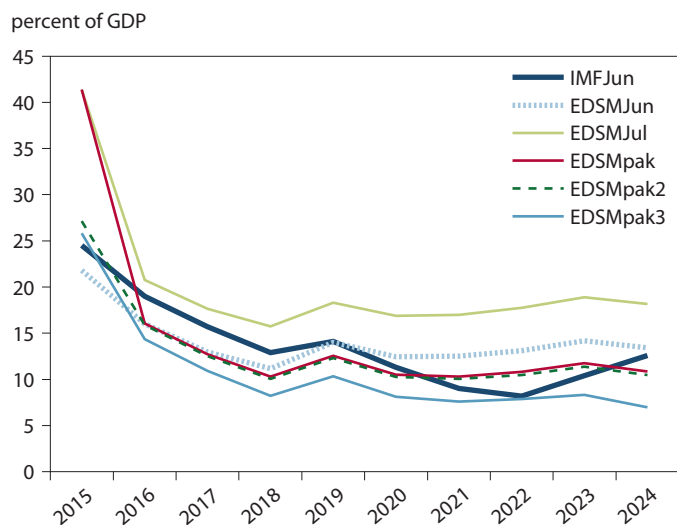
Perhaps the most dramatic interest burden path, however, is the one in which an interest holiday is given for 10 years on GLF, EFSE, and ESM support (EDSMpak3). In this case the interest burden falls immediately from about 4 percent of GDP to 2.7 percent, and then declines gradually to only 1.1 percent of GDP by 2024. By implication, if, for example, 50 percent of the interest otherwise due on this euro area official debt were forgiven in this period, the corresponding path would be an immediate decline to interest payments of about 3-1/3 percent of GDP, easing to slightly below 3 percent by the end of the 10-year period.

Another important implication of the interest paths shown in figure 3 is that the debt incurred for bank recapitalization does not make much difference in terms of the interest burden—so long as the official financing package is available to cover it. The interest path in the package excluding bank recapitalization (pak2) is only about 0.2 percent of GDP below the corresponding path for the package including it (pak). The reason is that the ESM interest rate is low in the projection period, and when applied to the 14 percent of (2015) GDP represented by the bank recapitalization, adds only modestly to the interest burden.<sup>33</sup> The main impact of excluding the bank recapitalization debt from the sovereign debt would thus be in the psychological effect of the sizable reduction in the headline number for the ratio of debt to GDP (by about 14 percent of GDP at the 2016 peak; figure 2, “pak” versus “pak2”).

Figure 4 reports the corresponding paths of gross financing needs relative to GDP. (The GFN equals interest plus amortization, plus bank recapitalization and other discovered debt, and build-ups in deposits; minus the primary surplus and receipts from privatization.) Once again the EDSM baseline for the June (pre-destabilization) outlook tracks the IMF (2015a) projections relatively well, with GFN that would have been 22 percent of GDP in 2015 (IMF: 24 percent), 16 percent in 2016 (IMF: 19 percent), and then an average of about 13 percent of GDP in 2017–24 (IMF: 12 percent). These paths again show that against the Fund’s benchmark of 15 to 20 percent of GDP for the GFN, there was no real problem on the horizon over the next 10 years; instead, the problem the Fund emphasized was to arise only much later (as noted above, by about 2030). The new situation after the bank freeze and worsened economic outlook at mid-year shows a sharp jump in the GFN for 2015, to 41 percent of GDP. However, if the bank recapitalization can be kept out of sovereign debt, this surge is largely eliminated (“pak2”).

In the main official support variant (“pak”), the availability of official finance makes it possible to bring down the average

33. This interest rate averages 1.66 percent in 2015–20 and 2.57 percent in 2021–24. See appendix A. The rate of about 2 percent applied to bank recapitalization debt of about 12 percent of average GDP for the period adds about 0.2 percent of GDP to the interest payments path.

**Figure 4 IMF and EDSM projections of gross financing needs, 2015–24**

IMF = International Monetary Fund; EDSM = European Debt Simulation Model  
Sources: IMF (2015a); author's calculations.

GFN of 2017–24 from 17.5 percent in the July baseline without new support to 11.2 percent. So especially with the new official support, there should be little risk to debt sustainability over the next decade, even applying the lower (15 percent) end of the IMF's threshold for this metric.

**Repayments after 2024.** If there were a sudden surge of maturities of the euro area official claims after 2024, there might be more grounds for concern than otherwise implied by the projections in figures 2 through 4. It turns out, however, that the schedule of maturities is relatively steady and moderate in the decade after 2024, amounting to an average of about 1.6 percent of GDP per year.<sup>34</sup> Additional financial market access of such magnitudes would be unlikely to be a problem under conditions of steadier economic policies and (especially) structural reform.

**Probability-Weighted Outlook.** As discussed in appendix A, the EDSM provides a method for estimating the probability distribution of projected debt paths. The appendix presents these results for the central relevant variant, “EDSMpak,” which examines the new support package and includes bank recapitalization. As shown in appendix figures A.1 and A.2, the

34. Annual repayments in this period are €2.5 billion for GLF loans and €2 billion for EFSF loans; Charles Forelle, Pat Minczeski, and Elliot Bentley, “Greece’s Debt Due: What Greece Owes When,” *Wall Street Journal*, July 20, 2015, <http://graphics.wsj.com/greece-debt-timeline>. Continuation of nominal growth at the rate of 3.5 percent assumed in the baseline for 2024 would place GDP at €284 billion by 2029.

probability-weighted paths are somewhat more adverse than the corresponding baseline paths shown in figures 2 and 3. The distance between the baseline scenario and the unfavorable scenario is greater for both growth and the primary surplus than is the distance between the baseline scenario and the favorable scenario, posing greater risk on the downside. Nonetheless, the qualitative conclusions are not changed by focusing on the probability-weighted rather than baseline projections.

## WHAT ROLE FOR DEBT RELIEF?

Overall, the existing tentative package of support agreed in early July would seem sufficient to be consistent with debt sustainability over at least the coming decade. Nonetheless, there is a case for complementing the package with a program of contingent compensatory interest relief. This relief would be activated if fiscal revenue declined because realized economic growth fell short of the baseline growth presumed in the adjustment program. For example, if growth in 2017 turned out to be 2 percent, rather than the baseline of 3 percent in table 1, and if the tax revenue elasticity with respect to the output gap is set at 1.1 and the relevant tax base is 36 percent of GDP (as estimated for Greece in one OECD study by Price, Dang, and Guillemette 2014, 22), the revenue shortfall would be 0.4 percent of GDP (1.0% GDP shortfall x 1.1 x 0.36). Interest due on euro area official claims (excluding ECB) amounts to 1.9 percent of GDP (appendix table A.2). So forgiving about one-fifth of euro area official interest due in 2017 would offset the revenue shortfall from the unanticipated growth shortfall. (This interest would already have been capitalized, so the cash flow would be unaffected but there would be a reduction in the debt buildup that would otherwise occur.)

This approach would be exactly the opposite of “quasi-automatic spending cuts” to offset shortfalls from primary fiscal targets as stipulated in the Euro Summit agreement (noted above), at least in the case where the cause of the fiscal shortfall was a growth shortfall rather than slippage in fiscal policy. Three prominent German experts have argued in favor of this type of contingent interest relief, emphasizing that it would be consistent with German law because it would set up an incentive structure favorable to effective repayment.<sup>35</sup>

An additional approach to contingent debt relief could be to rebate say one-fourth of interest otherwise payable to euro area creditors each year for the purpose of financing a special works program designed to provide temporary employment opportunities for otherwise unemployed workers. The unem-

35. Armin von Bogdandy, Marcel Fratzscher and Guntram Wolff, “Schuldenschnitt auch ohne Grexit möglich,” *Faz.net*, July 23, 2015.

ployment rate rose from 7.8 percent in 2008 to 26.5 percent in 2014 (IMF 2015a). With unemployment at about the same rate as the peak in the United States in 1935 in the Great Depression, work programs in that era such as those of the Works Progress Administration (WPA) and Civil Conservation Corps (CCC) might serve as examples.<sup>36</sup>

One-fourth of the interest bill payable to the euro area creditors would represent about €1 billion annually over the period 2016–20 (appendix table A.2). The minimum wage is currently €684 per month (€8,205 per year) and was reduced by 22 percent from the precrisis level in the second half of 2012 (European Commission 2015b). If a works program set

**Overall, the existing tentative package of support agreed in early July would seem sufficient to be consistent with debt sustainability over at least the coming decade. Nonetheless, there is a case for complementing the package with a program of contingent compensatory interest relief.**

the wage at 90 percent of the minimum wage, then €1 billion annually would provide work for 135,000 workers, representing about 11 percent of the unemployed.<sup>37</sup> Such a program could be authorized for, say, an initial three years, and renewed subject to continued favorable reviews of implementation of policy reforms pledged by the government.

Finally, the question of relief on principal instead of interest and maturities seems to cross a red line for Germany and some other euro area partners. In these countries the political dynamics of extending additional relief to Greece appear to be far easier through the more opaque means of interest cuts and maturity extensions than through the highly visible mechanism of a haircut on principal. If one considers markets

36. Unemployment benefits are relatively parsimonious in Greece, so unduly comfortable benefits do not appear to contribute much to high unemployment. To be eligible for benefits, workers must have been salaried employees for two years prior to unemployment. Benefits are available for only one year, and amount to only €350 per month. Chloe Hadjimatheou, “Greeks go back to basics as recession bites,” BBC, August 20, 2012.

37. Employment in 2014 stood at 3.54 million (European Commission 2015c). With the unemployment rate at 26.5 percent, the labor force amounted to 4.82 million and the unemployed numbered 1.28 million. (That is,  $U = [u/(1-u)]E$ , where  $u$  is unemployment rate,  $E$  is the number employed,  $U$  is the number unemployed, and  $E+U$  is the number of workers in the labor force. Annual funding of €1 billion would cover cost of 135,000 workers earning 90 percent of the minimum wage €7,387 per year).

and investors to be sufficiently sophisticated that they would recognize the equivalence of interest and maturity relief to a haircut, the politics would seem to argue in favor of providing relief on interest and maturities rather than through a haircut on principal. This issue is essentially the same as the point that the financial markets recognize that nominal debt overstates the true debt burden because of below-market interest rates.

## CONCLUSION

Greece has agreed to adjustment measures in a reversal of the confrontational populist stance of the new government in the first half of the year. In return, the euro area has pledged more than €80 billion in additional support, most of which would be on relatively concessional terms. The destabilization associated with the bank closures and referendum at mid-year worsened the outlook for growth, fiscal performance, and the banking sector. The ratio of public debt could now peak at slightly over 200 percent of GDP and still be as high as about 150 percent of GDP by 2024. However, concessional interest rates on the euro area official support mean that the interest burden is considerably lower than usually would be associated with such debt levels. At about 4 percent of GDP during the coming decade, this burden is not substantially higher than that of Portugal.

The IMF’s insistence that Greece, nonetheless, does not have sustainable debt and must be given debt relief by the euro area official sector turns on a particular metric for a relatively distant period: the gross financing needs after 2030. There are some grounds for using this metric, although it is unclear that the Fund’s target of 15 to 20 percent is definitive. More questionable is the basing of the debt relief decision on so distant a period. Nor is it at all likely that the public is aware that the relief being described would make no difference to fiscal obligations over the next 10 years, and little difference thereafter until beyond 2030.

Under these circumstances, it would make more sense to keep the “debt relief” powder dry to be concentrated if necessary on immediate interest burden relief in the event of unanticipated recession and resulting fiscal shortfalls. This approach would make relief contingent in two senses: dependent on continued best efforts on adjustment policies, and triggered by unanticipated need. The flexibility for contingent interest relief would address an important problem in the tentative Euro Summit agreement of July 12: the formulation of quasi-automatic fiscal tightening if fiscal targets are missed. Such tightening should take place if targets are missed because of a relaxation of spending and tax policies, but not if shortfalls occur because of a poorer growth outcome than expected in the adjustment program.

As a parallel initiative, the euro area could usefully offer to divert perhaps one-fourth of interest due on its loans to a program of public works employment, in view of the exceptionally high level of unemployment in Greece. Allocating one-fourth of interest due on these official loans to this purpose would suffice to hire about 11 percent of the unemployed labor force, or about 135,000 workers. Such a program could be initially set for say three years, subject to renewal if unemployment remains high at the end of this period and if the government has broadly delivered on the economic reforms pledged under the adjustment program.

The potential need for debt relief could be significantly reduced by carrying out bank recapitalization using direct financial support from the ESM to the banking sector rather than increasing debt of the sovereign as an intermediary. Finally, as for the possibility that Greece would face difficulties refinancing on the financial markets after 2030 when the gross financing needs exceed the Fund's 20 percent target, it would make sense for the euro area official sector to undertake a general commitment to reevaluate that risk closer to the time in question but not necessarily to precommit at present to far longer maturities.

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## APPENDIX A DEBT PROJECTIONS

The projections of this *Policy Brief* apply the European Debt Simulation Model (EDSM) developed in Cline (2012, 2014). The model examines the probability distribution of debt paths, considering alternative unfavorable, baseline, and favorable scenarios on each of five key variables: growth, primary surplus, amount needed for bank recapitalization or other “discovered debt” (including arrears), privatization receipts, and interest rates on new debt to the private sector. The likely correlation between the favorable and unfavorable states of each variable provides the basis for arriving at the probability of each of the 243 possible scenario combinations (=  $3^5$  for three possibilities and five variables; see Cline 2014, appendices 6A and 6B). Table A.1 shows the baseline assumptions (case “2”, also identified as “pak” in text figures 2 to 4) and the unfavorable and favorable cases for the five variables.

For growth, the base case is discussed in the main text. The unfavorable case is from European Commission (2015a) for 2015–16. Thereafter, the unfavorable case sets growth 1 percent below the base case in 2017–18, 0.5 percent below the base case in 2019–21, and 0.3 percent below the base case in 2022–24. The favorable growth path is set at 0.5 percent above the base path for 2015–19 and 0.3 percent above the base path for 2020–24.<sup>38</sup>

The base case and unfavorable variant for the primary surplus are from European Commission (2015a) for 2015–17. Both this source and the IMF (2015a) provide the basis for the long-term primary surplus baseline of 3.5 percent of GDP by 2019 and after. The unfavorable case is set a full percentage point lower in 2019–24. The favorable case is set only 0.5 percent higher, at 4 percent.

Bank recapitalization costs are set at €25 billion in the base case and are assumed to occur in the second half of 2015. Another €7 billion in arrears clearance is included in the base case for discovered debt (European Commission 2015a, 11). The total for bank recapitalization and discovered debt is increased by €3 billion in the unfavorable case. The favorable case reduces these needs by €15 billion, reflecting the lower end of the range (€10 billion) mentioned for bank recapitalization in the Euro Summit (2015, 6) statement.

Privatization receipts constitute an area of major disappointment in evolving IMF estimates. In its June 2014 report the Fund projected receipts averaging 1.45 percent of GDP in 2015–20, or about €2.7 billion annually (IMF 2014, 65). This level provides the basis for the favorable scenario in table

A.1. The Fund then sharply downgraded its expectations to an average of only €500 million in its June 2015 DSA (IMF 2015a, 19). This range serves as the basis for the unfavorable case here. The European Commission (2015a, 7) estimated baseline privatization receipts at a total of €10 billion through 2022, the basis for the base case estimate here. By implication, the €50 billion in state assets to be set aside for privatization according to the tentative rescue package (Euro Summit 2015, 4) should apparently be seen more as an aspiration than a pragmatic basis for planning and moreover appears in effect to be premised on privatization of sizable banking sector assets acquired through the bank recapitalization.

Finally, the interest rates for borrowing from the private sector is set at 6 percent in the base case, with the unfavorable case 200 basis points higher and the favorable case 100 basis points lower. Very little is borrowed from the private sector over the coming decade except in a model run in which there is no official support package.

Table A.2 reports the results of the baseline estimates of the EDSM, namely, the variant in which all five of the scenario variables are set at the baseline paths. The projections assume official financing reaches €87 billion. There is assumed to be a catch-up in the originally planned schedule of IMF disbursements by 2016, as well as an additional amount of subsequent IMF support (€7 billion in 2017). With resulting disbursements of €21 billion in 2015–18 from the IMF, euro area support through the ESM would provide the remaining €66 billion (of which €9 billion occurs in 2019–20). These assumptions may overstate IMF support, but if any shortfall in IMF support were made up by additional ESM support the effect would be favorable with respect to reducing interest costs.

The interest rate on EFSF and ESM support is projected on the basis of the path estimated in IMF (2015a, 2). Because this debt is such a large part of the total, this rate is of primary importance. It is driven by the borrowing costs of the EFSF and ESM, which reflect German bund and other euro area government borrowing rates. The IMF projects the rate at only 1.4 percent for 2015–16, with subsequent annual rates at 1.48, 1.73, 1.87, 2, 2.2, 2.3, 2.7, and 3.0 percent in 2017 through 2024, respectively.

The baseline ratio of debt to GDP peaks at 201 percent in 2016 and then declines to 151 percent by 2024. The interest burden is relatively stable at an average of 4.2 percent of GDP in 2015–22 but rises to 4.7 percent in 2024. Gross financing needs are high in 2015 at 41 percent of GDP but then fall to a plateau range of about 10 to 12 percent of GDP for 2017–24. These results are reported as the path “EDSMpak” in figures 2 to 4 in the main text.

38. Note further that GDP deflator inflation is set at the average between the projections in the June DSA of the IMF (2015a) and the most recent *World Economic Outlook* (IMF 2015c).

Figure A.1 shows the baseline, 25th percentile, 75th percentile, and probability-weighted projections for the ratio of debt to GDP. Because the unfavorable scenarios for growth and the primary surplus are considerably farther from the baseline paths than are the favorable scenarios, it turns out that the baseline path is almost as favorable as the 25th percentile path. Correspondingly, the probability-weighted path is significantly higher than the baseline. The probability-weighted debt ratio reaches 156 percent of GDP in 2024, rather than 151 percent in the baseline. Figure A.2 shows the same phenomenon, with

the probability-weighted interest payments ratio at 5.0 percent of GDP by 2024 instead of 4.7 percent in the baseline. Use of the probability-weighted rather than baseline paths does not, however, fundamentally change the findings discussed in the main text, as the differences are modest.

Details of the two other simulations discussed in the main text (“pak2” with no bank recapitalization costs and “pak3” with additionally an interest rate holiday on euro area support for 10 years) are not reported here, although their baseline results are shown in text figures 2 through 4.

**Table A.1 Scenarios**

Scenario	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
<b>Real GDP growth (percent)</b>											
1		-4.0	-1.8	2.0	2.0	1.5	1.2	1.2	1.2	1.2	1.2
2	0.8	-1.2	0.4	3.0	3.0	2.0	1.7	1.7	1.5	1.5	1.5
3		-0.7	0.9	3.5	3.5	2.5	2.0	2.0	1.8	1.8	1.8
<b>Primary surplus (percent of GDP)</b>											
1		-1.0	0.5	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2	0.0	0.0	1.0	2.3	3.0	3.5	3.5	3.5	3.5	3.5	3.5
3		0.5	2.0	3.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0
<b>Bank recapitalization and contingent debt recognition (billions of euros)</b>											
1		35	0	0	0	0	0	0	0	0	0
2	0	32	0	0	0	0	0	0	0	0	0
3		17	0	0	0	0	0	0	0	0	0
<b>Privatization (billions of euros)</b>											
1		0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
2	0.5	0.5	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
3		1.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
<b>Private borrowing interest rates (percent)</b>											
1		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
2		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
3		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Scenarios: 1 = unfavorable; 2 = baseline; 3 = favorable

Source: Author's calculations.

**Table A.2 EDSM baseline debt projections through 2024 for Greece**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
<b>Macroeconomic assumptions:</b>											
Real growth (percent)	0.8	-1.2	0.4	3.0	3.0	2.0	1.7	1.7	1.5	1.5	1.5
GDP deflator (percent)	-2.6	-0.8	0.9	1.5	1.5	1.7	1.9	2.0	2.0	2.0	2.0
Primary surplus (percent of GDP)	0.0	0.0	1.0	2.3	3.0	3.5	3.5	3.5	3.5	3.5	3.5
<b>Debt indicators (percent of GDP):</b>											
Debt	177.1	196.5	200.6	193.8	185.8	179.0	172.5	166.3	160.6	155.4	150.7
Interest payments		4.0	4.5	4.2	4.2	4.2	4.0	4.1	4.2	4.4	4.7
Amortization		20.5	14.4	11.6	9.9	12.6	10.7	10.4	10.8	11.5	10.2
Gross financing needs		41.4	16.1	12.7	10.3	12.5	10.5	10.3	10.8	11.8	10.8
<b>Billions of euros:</b>											
Nominal GDP		175.5	177.8	185.9	194.4	201.6	208.9	216.7	224.4	232.3	240.5
Primary deficit		0.0	-1.8	-4.2	-5.8	-7.1	-7.3	-7.6	-7.9	-8.1	-8.4
Total deficit		7.1	6.2	3.6	2.3	1.3	1.1	1.4	1.5	2.1	3.0
(-) privatization receipts		0.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
(-) ECB profit return		2.0	1.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
(+) bank recapitalization		25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(+) other debt discovery		7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net borrowing requirement		36.5	3.0	2.1	0.8	-0.2	-0.4	-0.1	0.0	0.6	1.5
Amortization		36.1	25.5	21.6	19.2	25.5	22.4	22.5	24.3	26.7	24.6
IMF		9.3	3.3	0.8	1.9	3.8	4.9	5.1	4.9	4.3	3.2
EA: additional		0	0	0	0	0	0.7	2.1	2.6	4.9	2.3
ECB		3.2	2.3	5.3	1.9	6.3	1.4	0.0	1.3	0.0	1.3
Private ST		15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
MLT (pre-2013)		7.9	4.3	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8
MLT (new)		0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.4	0.7	1.1
Gross borrowing requirement		72.6	28.6	23.7	20.0	25.3	22.0	22.3	24.3	27.3	26.1
Total financing		72.6	28.6	25.0	20.0	25.3	22.0	22.3	24.3	27.3	26.1
IMF		4.5	9	7	0	0	0	0	0	0	0
EA: GLF											
EA: additional											
EA: supplementary		51.1	1.8	0.0	1.5	6.4	2.6	1.0	1.0	1.7	0.0
EA: interest capitalization		2.0	2.8	3.0	3.6	4.0	4.4	5.0	5.4	6.3	7.3
Private ST		15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Private MLT		0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.9	4.3	3.8

*(continued on next page)*

**Table A.2 EDSM baseline debt projections through 2024 for Greece** *(continued)*

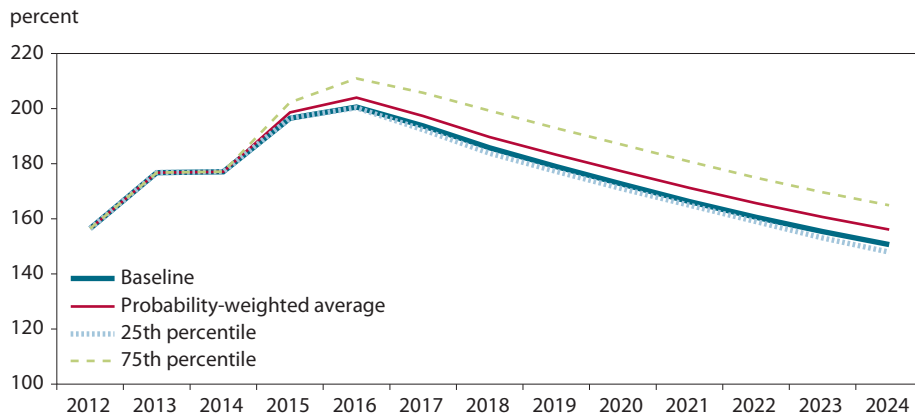
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Debt	317.2	345.0	356.7	360.2	361.0	360.9	360.5	360.4	360.3	360.9	362.4
IMF	29.4	24.6	30.2	36.5	34.6	30.8	25.9	20.9	16.0	11.6	8.4
EA: GLF	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1
EA: additional	141.9	141.9	141.9	141.9	141.9	141.9	141.2	139.1	136.5	131.5	129.2
EA: supplementary	0.0	51.1	52.9	52.9	54.4	60.7	63.3	64.3	65.3	67.0	67.0
EA: interest capitalization	3.69	5.7	8.5	11.5	15.1	19.0	23.5	28.5	33.9	40.2	47.5
ECB	25.9	22.7	20.4	15.1	13.2	7.0	5.6	5.6	4.3	4.3	3.0
ST	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
MLT (pre-2013)	26.3	18.4	14.1	14.1	14.1	14.1	14.1	14.1	14.1	12.3	10.5
Exchange bonds	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
MLT (new)	6.6	5.9	5.3	4.8	4.3	3.9	3.5	4.4	6.9	10.5	13.3
Intragovernment holdings	-14.6	-23.3	-14.6	-14.6	-14.6	-14.6	-14.6	-14.6	-14.6	-14.6	-14.6
Interest payments		7.1	7.9	7.8	8.2	8.4	8.5	9.0	9.3	10.2	11.4
IMF		0.9	1.2	1.1	1.1	1.0	0.8	0.6	0.4	0.2	0.0
EA: GLF		0.3	0.3	0.3	0.5	0.5	0.6	0.8	1.0	1.1	1.3
EA: additional		2.0	2.0	2.1	2.5	2.7	2.8	3.1	3.2	3.6	4.0
EA: supplementary		0.0	0.7	0.8	0.9	1.0	1.2	1.4	1.5	1.7	2.0
EA: interest capitalization		0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.9	1.2
ECB		1.3	1.1	1.0	0.8	0.7	0.3	0.3	0.3	0.2	0.2
ST		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
MLT (pre-2013)		1.0	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Exchange bonds		0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
MLT (new)		0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.6

EA = euro area; ECB = European Central Bank; IMF = International Monetary Fund; ST = short term; MLT = medium and long term; GLF = Greek Loan Facility

Source: Author's calculations.

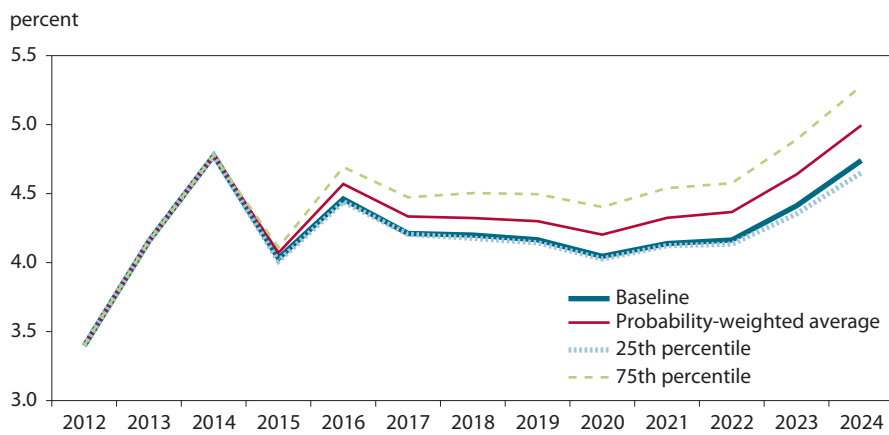


**Figure A.1 Debt-to-GDP ratio, 2012–24**



Source: Author's calculations.

**Figure A.2 Ratio of interest payments to GDP, 2012–24**



Source: Author's calculations.

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