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Debt Restructuring and Economic Prospects in Greece

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Greece has been at the epicenter of the European debt crisis. It is the only industrial nation since the 1930s that has been forced to restructure public debt with forgiveness. Financial contagion from Greece contributed to debt stress in the euro area periphery, at first in Ireland and Portugal but eventually even in the large and stronger economies of Italy and Spain, which encountered punitive risk spreads on sovereign debt by late 2011. By the second quarter of 2012 political turmoil in Greece and the temporary specter of a Greek exit from the euro, together with heightened banking problems in Spain, sparked another round of stress in debt markets. Then at midyear the sharp escalation of potential European Central Bank (ECB) support through purchases of government bonds in Outright Monetary Transactions restored a measure of calm.

In 2012 a successful exchange of Greek public debt conveyed about 60 percent effective debt reduction for privately held debt. However, much of the debt was excluded because it was held by the ECB, euro area official sector, and International Monetary Fund (IMF). Losses on the holdings by Greek banks necessitated recapitalization that offset a significant part of even the reduction for private holdings. A December package of official sector relief (in the form of lower interest rates and support for a buyback of about half of the restructured privately held debt) set the stage for resumption of IMF and euro area program disbursements and restored the conditions for managing the remaining debt over the next few years if reasonable growth and fiscal expectations are achieved.

Over the longer term, however, it is unclear that Greece will be able to reenter private capital markets by 2020 even if its debt level is down to the range of about 120 percent of GDP. The damage to its credit reputation from restructuring with a large haircut seems likely to leave it in a more difficult borrowing position than other euro area sovereigns even if it achieves comparable debt levels. Further relief on official sector claims thus seems likely to be needed in the future, but is not urgent at present because almost all of Greece's borrowing needs should already be covered for the next few years. Eventual official debt forgiveness would appropriately be linked to demonstrated performance on fiscal consolidation.

INITIAL PROGRAMS AND DETERIORATING PROSPECTS

In May 2010, Greece entered into an economic adjustment program with €110 billion in official support from the IMF (€30 billion) and European governments (€80 billion in the Greek Loan Facility, or GLF). In comparison, Greek public debt at the end of 2009 had stood at €298 billion, or 127 percent of GDP (IMF 2011a, 37). The official program was premised on a return to government borrowing from private markets in 2012, with new private medium- and long-term borrowing rising from about €30 billion annually in 2012 and 2013 to about €70 billion annually in 2014–15 (IMF 2011a, 49). The hope that Greece's debt problem could be resolved through official lending to tide it over during a liquidity problem turned out to be overly optimistic, however. By December 2012, efforts to resolve the problem had escalated to involve relatively deep debt forgiveness by private holders, a new round of large additional official support through the European Financial Stability Facility (EFSF), a major buyback,

and initial variants of official sector debt relief in the form of lower interest rates on GLF debt and the option to capitalize interest on EFSF debt for 10 years. From the vantage point of early 2013 there is little prospect of returning any time soon to substantial private market access, and considerable expectation that further official restructuring may lie ahead.

Greece carried out large fiscal adjustment in terms of reducing primary spending by 24 percent in real terms from 2009 to 2012.

The slide from the policy framework of solvency with refinancing to insolvency with forgiveness reflected in considerable part a progressive deterioration in prospects for growth and fiscal adjustment. Nominal GDP had initially been expected to rise from €237 billion in 2009 to €260 billion by 2015 (IMF 2010a); by October 2012 the expectation was that 2015 GDP would be only €195 billion, or 18 percent below the 2009 level instead of 9 percent above it (IMF 2012b). Figure 1 shows successive IMF review projections for Greece.[1] In panel A, for example, the March 2012 report placed nominal GDP in 2015 at a level 16 percent lower than that projected in March 2011. Panel B of the figure shows the corresponding successive downgradings of projected economic growth. For 2012, for example, the first two IMF program reviews had anticipated GDP growth of +1 percent; in December 2011 the outlook was for 2012 growth of –3 percent, and by October 2012 the outlook had fallen to –6 percent.

Similarly, panel C shows the successive downgradings in expectations for the primary surplus as a percent of GDP. At the outset, the program had aspired to a medium-term surplus of 6 percent of GDP; by December 2011 this target had been cut to 4.5 percent; and by October 2012 the date of achieving this lower target had been delayed by two years. Finally, panel D displays the successive IMF projections of the ratio of debt to GDP. The September 2010 projection was far more optimistic than the October 2012 projection, even though there had been substantial debt relief in between the two reviews. The combination of lower primary surplus performance and much lower nominal GDP more than offset the debt relief. (The modest reduction in the projected debt ratio for 2012 from the March 2011 report to the December 2011 report reflects the limited impact of the restructuring of privately held debt, discussed below).

Despite the slippage on the primary balance, Greece carried out large fiscal adjustment in terms of reducing primary spending. In real terms at 2012 prices (GDP deflator basis), primary spending fell from €102 billion in 2009 to €77.3 billion in 2012 (a decline of 24 percent), and is scheduled to fall further to €66.7 billion by 2017, bringing the total decline to 35 percent (IMF 2012b). A sharp decline in revenue associated with recession meant that the progress in reducing the fiscal deficit was moderated. Even so, the primary deficit fell from a peak of 10.4 percent of GDP in 2009 to 1.7 percent of GDP in 2012. The improvement by 8.7 percent of GDP was more than halfway toward the goal of a total adjustment of 15 percent of GDP from 2009 to 2017 (IMF 2012b).

FROM STRETCHOUT TO DEBT REDUCTION

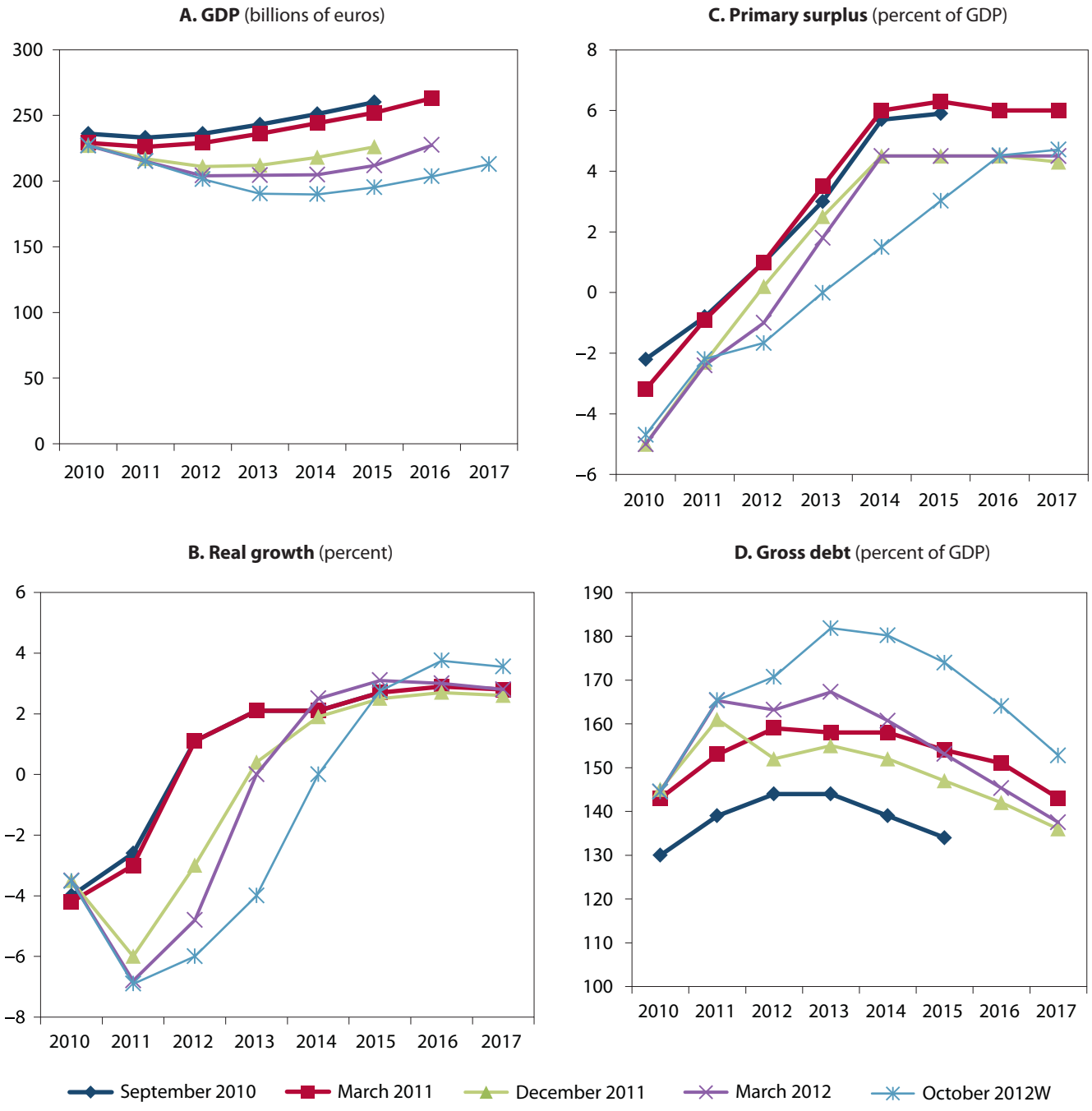
In October 2011, I prepared projections (Cline 2011) that indicated that Greece should be able to sustain its debt on the terms that had been arranged in the July 2011 package of official support combined with Private Sector Involvement (PSI), even though the PSI amounted to a stretchout of maturities with minimal debt forgiveness. Even so, achievement of ambitious fiscal targets (a 6 percent of GDP primary surplus by 2014) and reasonable growth performance were crucial to that possibility. In addition to the earlier €110 billion program of support from the IMF and euro area, the euro area pledged further support of €109 billion. For its part, PSI was supposed to provide refinancing of €135 billion over 2011–20.[2] I emphasized four features that made Greek debt more sustainable than might be inferred from the ratio of gross debt to GDP: large privatizations were planned, providing funds to retire debt; Greece held relatively large public financial assets, making net debt considerably lower than gross debt; there would be a misleading surge in gross debt offset by a corresponding rise in assets as a consequence of the collateralization needed for the PSI; and a large share of the debt was from official sources at relatively low interest rates (Cline 2011, 2).[3]

1. The final set of projections, however, is from the IMF's October 2012 *World Economic Outlook* (IMF 2012b), because of the unusually long hiatus with no program review publication between March (IMF 2012a) and January (IMF 2013).

2. The mid-2011 PSI converted claims to 30-year par bonds at moderate interest rates (about 4.5 percent) or "discount" bonds forgiving 20 percent of face value but bearing somewhat higher interest rates (about 6.5 percent); Cline (2012a, 201). The main effect of the PSI agreement was to provide long-term rollover of maturities otherwise coming due, without conveying much real relief gauged against the original terms of the debt.

3. Specifically, at end-2010 Greece held a reported €101 billion in financial assets, placing its net debt at 110 percent of GDP, far lower than the gross debt ratio of 143 percent (Cline 2011). Regarding collateral, the July 2011 PSI deal would have involved setting aside AAA zero-coupon bonds to collateralize the (far less concessionary) bond exchange then envisioned. The funds for this

Figure 1 Successive IMF projections for Greece, October 2010 through October 2012



Source: International Monetary Fund. Dates are for IMF country reports or *World Economic Outlook* ("W").

My baseline projection called for gross debt to peak at 175 percent of GDP in 2012 and fall to 113 percent by 2020; net debt would fall from 121 percent of GDP in 2011 to 69 percent by 2020. Noting that the net debt ratio by 2020 would be about the same as the level for US federal debt held by the public in 2011, I concluded that with the July 2011 support package in hand, Greek public debt should be sustainable.[4] However, the arrangement was not given an opportunity to materialize. German authorities in particular pressed for much deeper debt forgiveness by private sector holders.[5] Yet the scope for gains from private-holder forgiveness was limited because by then only about half of the debt was held by the private sector (in part because about €50 billion in government bonds had been purchased from the market by the ECB in its Securities Markets Program, or SMP). By late October euro area authorities reached agreement with representatives of banks and insurers that they would accept a 50 percent reduction in the face value of debt.

In late April 2012, Greece successfully exchanged approximately €200 billion in debt held by the private sector for 10- to 30-year exchange bonds with a face value of 31.5 percent of the original bonds and paying 2 to 4.3 percent interest, plus an up-front payment of 15 percent of original face value over two years (Zettelmeyer, Trebesch, and Gulati 2012, 6). The direct reduction in gross debt was €107 billion (€200 billion less €137 billion forgiven, but plus the €30 billion up-front "sweetener"), representing a 53.5 percent cut in the nominal value of Greek debt held by private investors and exchanged (and 51.9 percent of total eligible privately held debt).[6] However, the €200 billion exchanged accounted for only 56.2 percent of the end-2011 debt total. Almost all of the rest was exempt, including importantly, about €21 billion held by the IMF, €53 billion held by euro area governments in the GLF, and €57 billion held by the ECB from its SMP purchases as well as by national central banks (table A.1). In addition, losses by Greek banks on their holdings as a result of the debt exchange required recapitalization of €22 billion, necessitating this amount in new public borrowing (IMF 2013, 6).[7] The net debt reduction was thus €85 billion, or 23.9 percent of total public debt at the end of 2011. The overall effect of the large PSI of April 2012 was thus to reduce total Greek debt by slightly less than one-fourth. It is perhaps not surprising that once the country had plunged into the insolvency mode, a debt reduction by only one-fourth would not have been sufficient to reestablish solvency decisively.

POLITICAL TURMOIL, "GREXIT" RISK, AND THE OUTLOOK BY OCTOBER 2012

In the second quarter of 2012 political uncertainty escalated. The main parties (New Democracy and Pasok) fared badly in May elections, and the absence of a coalition required a second election in June. A key opposition coalition (Syriza) condemned the economic adjustment program, and market expectations of a possible Greek exit from the euro ("Grexit") escalated.[8] After New Democracy won in the follow-up June elections, and affirmed Greece's commitment to the adjustment program, fears about an exit from the euro eases but delays in euro area and IMF financing persisted in view of shortfalls in fiscal performance.

Prospects for economic performance appeared much grimmer by late 2012 than a year earlier. Thus, whereas my October 2011 study had anticipated GDP growth of –3.8 percent in 2011, +0.6 percent in 2012, and +2.1 percent in 2013, the new baseline for growth by October 2012 showed –6.9 percent for 2011, –6 percent for 2012, and –4 percent for 2013 (IMF 2012b). The growth deterioration alone meant that the projected debt to GDP ratio would now be almost 20 percent higher than before. The delay of achievement of the 4.5 percent of GDP primary surplus for two years meant still further escalation in the debt ratio.

To make matters worse, the IMF apparently no longer considers the sizable public financial assets to be worth anything. Whereas the *World Economic Outlook* (WEO) in October 2010 had estimated end-2010 public financial assets at €49 billion, or 22 percent of GDP, a year later the WEO placed the value of these assets at zero and by the October 2012 issue the assets were still at zero (IMF 2010b, 2011b, 2012b).[9]

collateral, on the order of €30 billion, would reasonably have been seen as an asset, given the expectation that the exchanged bonds would be fully serviced and the collateral not called (Cline 2011 and IIF 2011).

4. A prominent Greek economist who would soon become Prime Minister, Lucas Papademos, reached the same conclusion, and argued that further forced debt relief would be counterproductive. "Forcing Greek Restructuring is Not the Answer." *Financial Times*, October 21, 2011. The more conventional opinion was that "Greece, which is unambiguously insolvent, ought to have a hard but orderly write-down." "How to Save the Euro," *Economist*, September 17, 2011, page 11.

5. See for example Ambrose Evans-Pritchard, "German Push for Greek Default Risks EMU-wide Snowball," the *Telegraph*, October 10, 2011.

6. Of the total eligible private holdings of €206 billion, €6 billion was not exchanged (Zettelmeyer, Trebesch, and Gulati 2012, 5).

7. Other bank losses brought the total amount of bank recapitalization needed to €50 billion (IMF 2012a, 28).

8. In February 2012, Citigroup's chief economist had raised the probability of a Grexit in the next 18 months from between 25 percent and 30 percent to 50 percent (Buiter and Rahbari 2012). He later raised the probability to 90 percent. Kate Mackenzie, "Buiter's Now Predicting Grexit Probability of 90%." *FT Alphaville*, July 26, 2012.

9. Government financial assets equal the difference between gross debt and net debt.

In October 2012, the IMF's WEO projected that for Greece the ratio of gross public debt to GDP would rise from 165 percent of GDP at the end of 2011 to 171 percent at the end of 2012, peak at 182 percent in 2013, and then decline to 153 percent by 2017. In principle it was surprising that the debt ratio was scheduled to rise in 2012, considering that in 2012 there was a restructuring with a nominal haircut of 53.5 percent for private holders.[10] One reason for this paradox was that GDP was falling, by a nominal decline of 7 percent. Another reason was that after taking into account the new borrowing needed to cover support of about €50 billion to banks, about half of which was necessitated by their losses on holdings of government obligations, the actual reduction in total debt was on track to amount to only about €30 billion, far less than the €107 billion reduction in the face value of the debt as a consequence of the exchange.[11]

OUTLOOK AFTER THE DECEMBER PACKAGE

By the third quarter of 2012, the IMF was increasingly pressing for a sufficient easing of the terms of euro area official support to bring the 2020 debt ratio down to sustainable level of 120 percent of GDP or less.[12] In late November 2012, euro area finance ministers and the IMF agreed on what amounted to a new round of debt relief, this time for official sector creditors. The package involved four elements of relief: lower interest rates on GLF loans; support for a buyback of debt; scope for deferring and capitalizing interest due on EFSF lending; and ECB profits on Greek debt purchased in the market were to be passed on to Greece. [13]

Interest rates on the bilateral (GLF) loans were to be cut by 100 basis points, to 50 basis points above interbank rates. Interest payments on the second round of euro area support (through the EFSF) were eligible to be "deferred" (i.e., capitalized) over the next decade, although such capitalized interest in turn would be subject to interest payments. Some €10 billion in support would be used to buy back some €30 billion in government debt at about 33 cents on the euro of face value. Some €9 billion in prospective profits from ECB receipts on Greek government bonds acquired at a discount in the SMP that would have devolved to member country central banks would instead be passed along to Greece.[14] Altogether some €40 billion would be cut from the debt, placing the debt to GDP ratio at no more than 124 percent by 2020 and 110 percent by 2022. In mid-December, the Greek government successfully repurchased debt with a face value of €31.9 billion for €11.29 billion (Ministry of Finance 2012b).[15]

The baseline debt ratio rises from 158 percent of GDP in 2012 to 179 percent in 2013 and then declines to 128 percent by 2020. The December package of official sector interest rate reductions, return of ECB bond profits to Greece, and buybacks cut the debt ratio by about 10 percentage points of GDP from where it would have been otherwise in 2012, widening to about 20 percentage points by 2020. The broad effect of the official relief package was to increase the overall relief conveyed by the PSI by about 35 percent.

In mid-January 2013, the IMF issued its long-delayed review under the Extended Arrangement that had been agreed in March 2012, with its new assessment incorporating the effects of the December 2012 official relief package (IMF

10. Zettelmeyer, Trebesch, and Gulati (2012) calculate the corresponding present-value reductions at 60 percent from the standpoint of Greece and 65 percent from the standpoint of creditors (central estimates).

11. Actual end-2012 debt was €307 billion. The buyback had extinguished about €20 billion net, so without the December package the end-2012 debt would have stood at about €327 billion, significantly below the October WEO figure of €344 billion (IMF 202b). Darvas (2012) had noted that the WEO's end-2012 debt buildup could not be fully explained.

12. Matthew Dalton and Costas Paris, "IMF Pushes Europe to Ease Greek Burden," *Wall Street Journal*, August 6, 2012; Dina Kyriakidou and Lesley Wroughton, "Exclusive: IMF, EU Clash over Greece's Bailout," *Reuters*, September 26, 2012.

13. Peter Spiegel, "Eurozone Agrees Greek Aid Deal," *Financial Times*, November 27, 2012; James Kanter, "European Finance Ministers and I.M.F. Reach Deal on Greek Bailout Terms," *New York Times*, November 26, 2012; EC (2012).

14. Prior to the PSI debt exchange the ECB exchanged at full face value its holdings of Greek public debt acquired in the SMP at market prices. SMP profit returns to Greece are placed by the IMF at €9.3 billion through 2020. (IMF 2013, 87). At the end of 2011, the ECB and euro area national central banks (NCBs) held €56.5 billion in Greek public bonds (Darvas 2012, 4; Reserve Bank of Australia 2012, 31). The Greek Ministry of Finance provides a narrower measure of the holdings of the ECB itself at the end of 2011, amounting to €42.7 billion (Ministry of Finance 2012a). In appendix table A.1 below the time profile of maturities on the narrower ECB estimate during 2012–20, as reported in the latter source, is applied to the broader ECB-NCB total for end-2011 to obtain stocks and flows through 2020.

15. The corresponding IMF figures were €31.8 billion and €10.8 billion, respectively (IMF 2013, 87).

Table 1 Scenario assumptions for Greece

	2012	2013	2014	2015	2016	2017	2018	2019	2020
					Real GDP growth (percent)				
1	–6.0	–5.2	–0.4	1.9	2.7	2.5	2.3	2.0	1.6
2	–6.0	–4.2	0.6	2.9	3.7	3.5	3.3	3.0	2.6
3	–6.0	–3.2	3.9	3.9	3.9	3.9	3.9	3.9	3.9
					Primary surplus (percent GDP)				
1	–1.5	–1.0	0.5	2.0	3.0	3.0	3.0	3.0	3.0
2	–1.5	–0.0	1.5	3.0	4.5	4.5	4.3	4.3	4.3
3	–1.5	1.0	2.5	4.0	5.5	5.5	5.3	5.3	5.3
					Bank recapitalization and contingent debt recognition (billions of euros)				
1	44.2	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	44.2	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	44.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
					Privatization (billions of euros)				
1	0.1	1.5	0.9	1.0	1.0	1.3	2.3	2.7	3.3
2	0.1	2.5	1.9	2.0	2.0	2.3	3.3	3.7	4.3
3	0.1	3.5	2.9	3.0	3.0	3.3	4.3	4.7	5.3

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

Source: IMF (2013); author's calculations.

2013). I have applied the baseline macroeconomic assumptions of the new IMF report to carry out projections using the European Debt Simulation Model (EDSM).[16] This model examines a probability distribution of outcomes under alternative scenarios. Table 1 reports these scenarios. The baseline cases ("scenario 2") are the same as used by the IMF (2013).[17]

For growth, the unfavorable scenario reduces growth rates by 1 percent from the baseline. The favorable case applies, beginning in 2014, the seventh highest decile of average growth rates for the 10 successive nine-year periods in 1990–2007 (calculated from IMF 2012b). High "snap-back" growth after such a deep depression would not be highly unlikely, if only because much of the growth would merely represent a return toward earlier output levels. The primary surplus in the unfavorable case reaches 3 percent of GDP; in the favorable case, it is 1 percent of GDP above the baseline target. For bank recapitalization and other discovered debt, the largest amount was already included in the 2012 outcome (€44 billion). The baseline calls for another modest amount (€4 billion) in 2013; this is approximately doubled in the unfavorable case and set at zero in the favorable case.

An important change in the new IMF projections is the sharp reduction in expected privatization receipts. Thus, whereas the March 2012 review (IMF 2012a, 93) had projected annual privatization income at an annual average of about €5 billion, the new program has cut these estimates to an average of only about €2 billion in 2013–16, rising to about €4 billion by 2020.

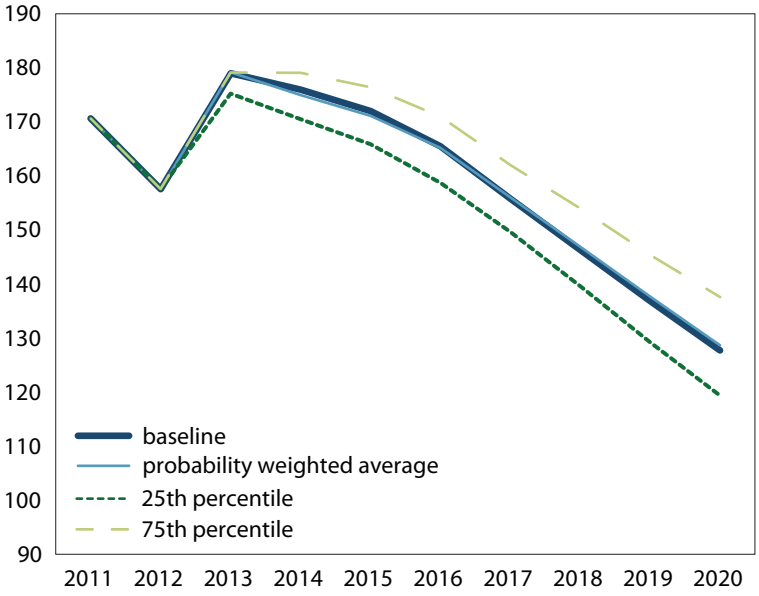
Appendix table A.1 sets forth details of the resulting baseline projection of the EDSM.[18] For the ratio of gross debt to GDP, figure 2 shows the baseline as well as the favorable 25th percentile in the distribution, unfavorable 75th percentile, and probability weighted average path. The baseline debt ratio rises from 158 percent of GDP in 2012 to 179 percent in 2013 and then declines steadily to 128 percent by 2020. The distribution of the outcomes across the scenarios is relatively narrow, with the 2020 debt to GDP ratio at 119 percent in the favorable 25th percentile and at 138 percent in the unfavorable 75th percentile.

16. For a description of the EDSM with probabilistic application of scenarios, see Cline (2012b).

17. The IMF report gives details for 2012–16 and for 2020; the years 2017–19 are interpolated. Note that the model also includes alternative scenarios for interest rates on new borrowing from private markets, but for Greece in this period there is minimal market access to such borrowing.

18. Note that the €30 billion in sweetener notes payable over 2013–14 are not included in the end-2012 debt (or 2013–14 amortization) because in effect there was a transfer of ownership of this claim from the private creditors to the EFSF. New borrowing from the EFSF in 2012 reflects this transfer. Private creditors correspondingly acquired a two-year claim on the EFSF.

Figure 2 Debt projections for Greece as of January 2013
(gross public debt as percent of GDP)



Source: Author's calculations.

Figure 3 shows the EDSM baseline and the corresponding IMF baseline projections for the ratio of gross debt to GDP. The two projections are almost identical for 2013–16, as should be expected in view of identical assumptions for the key macro inputs (growth, primary surplus, privatization, bank recapitalization). Thereafter the paths diverge modestly, with the EDSM ratio reaching 128 percent percent in 2020 but the IMF path easing to 124 percent The divergence by 2020 can be fully explained, however, by the fact that the IMF assumes further official relief of some type. The IMF review states that "measures delivering roughly 4.1 percent of GDP by 2020 will be needed to bring debt to 124 percent of GDP by 2020" (IMF 2013, 84). By implication, in the absence of such measures the IMF baseline would also place gross debt at 128 percent of GDP in 2020.

Figure 4 shows the impact of the December package of official relief. The new baseline for the ratio of gross debt to GDP is lower than the pre-relief baseline by about 10 percentage points of GDP in 2012, reflecting the debt buyback. The difference widens to 20 percentage points by 2020, reflecting the cumulative effect of lower GLF interest rates and the effect of the return of ECB profits from the SMP.[19] Taking the average of 15 percent and applying it to the level of GDP in the middle of this period, the implicit debt reduction from the official support package was about €30 billion, or 35 percent of the size of the €85 billion net debt savings from the April PSI.

It is important to recognize that the by now predominantly official-sector sourcing of Greek public debt means that interest rates are moderate, aiding debt sustainability. Table A.1 reports interest payments by creditor.[20] Not only are the GLF rates modest (for example, at about 1 percent in 2013–15 and 2 percent by 2016). In addition, interest rates on the EFSF debt are also moderate, at about1.5 percent for 2013–14 and 3 percent by 2016 and after.[21] Interest payments to the IMF are also moderate, at an effective rate of 3.7 percent in 2014 for example.

OVERVIEW

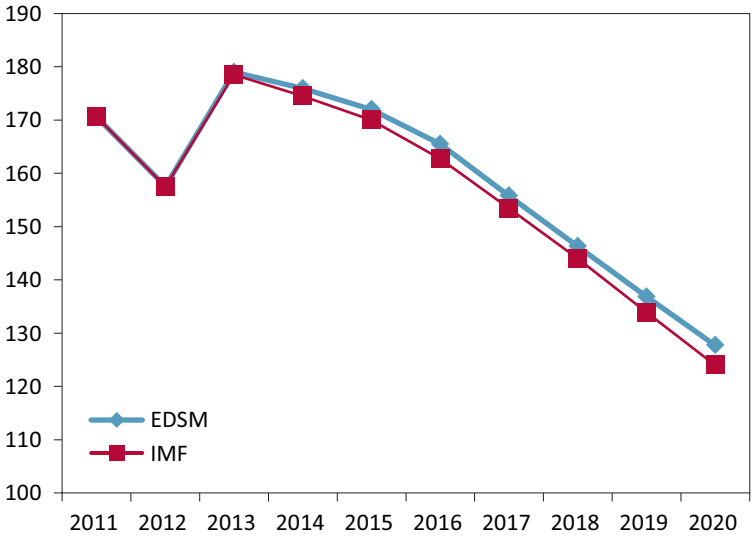
In view of the IMF projections and those here, it seems likely that more relief will be needed in the future. For a country that has gone through debt restructuring with deep forgive-

19. The outlook prior to the December official relief package was for debt to peak at 192 percent of GDP in 2013, and then decline to 148 percent by 2020. Note that the IMF (2013, 84) places the corresponding impact of the December package at 17.2 percent of GDP by 2020, composed of 10 percent for the buyback, 2 percent for interest rate reductions, 0.6 percent for elimination of EFSF fees, and 2.8 percent for remittance of SMP profits.

20. Effective interest rates can be calculated by comparing these payments against the stock of debt outstanding at the end of the previous year.

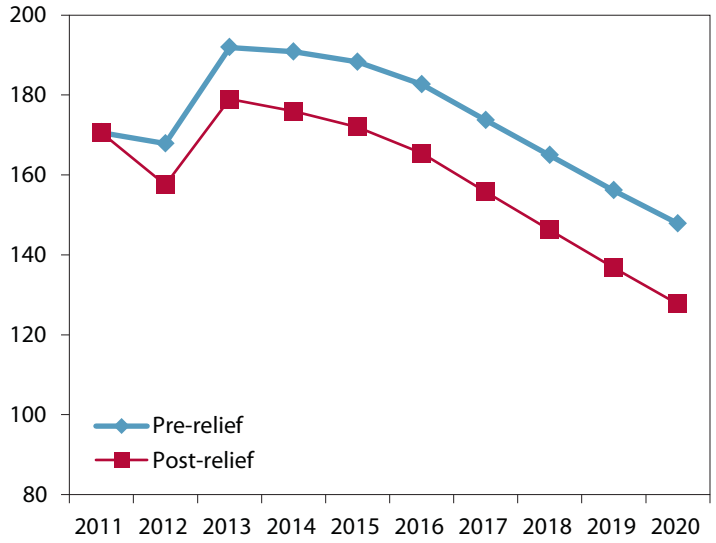
21. Detailed projections for interest payments and other elements of debt flows and stocks during 2013–16 were kindly made available by IMF experts.

Figure 3 Baseline debt projections: IMF and EDSM (gross public debt as percent of GDP)



IMF = International Monetary Fund; EDSM = European Debt Simulation Model
Source: IMF (2013); author's calculations.

Figure 4 Baseline projections for Greek public debt before and after December 2012 package of official relief and buyback (gross debt as percent of GDP)



Source: Author's calculations.

ness forced on private creditors, it is difficult to believe that the euro area benchmark 120 percent of GDP debt ratio that has become the target for creditworthiness would be sufficiently low to induce investors to reenter the debt market on a voluntary basis. Essentially the markets are likely to impose a higher sovereign risk premium on a country that has defaulted than on others that have consistently honored their debt. Return to market access could easily require a cut in the debt ratio to, say, 90 percent of GDP or below. One interpretation of euro area debt strategy for Greece, then, is that the official sector is aware that additional forgiveness of official claims on Greece will be needed, but intends that any such action would be postponed for the time being. One reason is likely that German authorities would wish to delay any forgiveness until after the elections in the autumn of 2013. Another reason is that official forgiveness would presumably be contingent on implementation by Greece of its fiscal adjustment program.

Some might object to this diagnosis because of the possibility that the debt ratio is no longer meaningful given the availability of low interest rates on debt held by the euro area official sector. However, the GLF component with its particularly low rates constitutes only a minority of the debt outstanding. In the projections set forth in appendix A, the ratio of interest payments to GDP is still as high as 4.5 percent by 2020. In comparison, net interest payments in 2020 in the base cases of EDSM projections stand at 4.7 percent of GDP in 2020 for Portugal and Spain and 4.3 percent for Italy (Cline 2013). So even taking account of some interest rate concessionality, Greece would be on a broadly equal footing with other sovereigns in the area with respect to debt burden but not on an equal footing with regard to credit history.

The new IMF review judges that additional relief may be needed. It notes that if the debt ratio is to be brought down to 110 percent of GDP by 2022, as agreed in principle in the December package, doing so "in all likelihood will necessitate either large reductions in EFSF interest rates or principal haircuts on the GLF" (IMF 2013, 84). The IMF baseline implies some market access beginning by 2018 and full reliance on the market after 2020. It suggests that if the debt level were down to 115 percent of GDP, Greece could borrow at a spread of 450 to 600 basis points, based on recent high-debt European country experience plus a premium for Greece's debt restructuring, with the spread rising by 10 basis points for each percentage point increase in the debt-to-GDP ratio (IMF 2013, 87).

The present study reinforces the IMF diagnosis that further official debt relief is likely to be needed. The probability distribution of outcomes across the scenarios places even the favorable 25th percentile ratio of gross debt to GDP at 119 percent in 2020. The baseline projection here tracks almost identically with that of the IMF once allowance is made for the Fund's assumption of 4 percent of GDP further relief by 2020. More generally, sizable renewed access with a debt ratio on the order of 120 percent of GDP seems problematic for a country that has impaired its credit record by recourse to restructuring with deep forgiveness. Finally, the bulk of any future relief would seem likely to have to come from official creditors, both because they will account for 74 percent of the total stock of debt outstanding in 2020 (excluding that held by Greek public subsectors), and because the private holders have already experienced deep reductions in the restructuring.[22]

For the next few years, nonetheless, Greek public debt should now be relatively manageable, thanks to the private restructuring and easing in official sector terms. As shown in table A.1, official sources should almost fully cover borrowing needs through 2020, albeit with the help of capitalizing interest in amounts that cumulate to €24 billion by 2020, or 10 percent of GDP in that year.[23] With debt dynamics manageable over this period, Greece should be able to avoid an exit from the euro, and/ or a severe new round of falling output. Successful adherence to the baseline of the revised adjustment program would go a long way to removing the Greek crisis from its earlier pivotal role in contributing to a broader debt crisis in the euro area.

22. Baseline debt holdings in 2020 are: private, €84 billion (short term, exchange bonds, pre-2014 debt); official, €241 billion (IMF, GLF, EFSF, EFSF interest capitalization, ECB); and Greek official subsectors, €18.7 billion (table A.1).

23. The exception is a cumulative €14 billion shortfall in 2015–16 that is an uncovered residual in the EDSM projections and treated as borrowed from markets. This financing gap is of the same general magnitude as the cumulative €9.6 billion in "unidentified" financing projected for 2015–16 in the IMF program projections (IMF 2013, 62).

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APPENDIX A

Table A.1 EDSM baseline projections through 2020 for Greece

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Percent GDP:										
Debt	170.6	157.5	179.0	175.9	172.0	165.4	155.8	146.3	136.8	127.7
Interest	7.3	3.4	4.7	5.4	5.5	5.8	5.5	5.1	4.8	4.5
Amortization	17.9	12.6	15.0	19.3	14.3	8.9	8.9	7.6	9.8	7.8
Billion euros:										
Primary deficit	4.8	2.9	0.0	−2.8	−5.8	−9.1	−9.4	−9.4	−9.9	−10.3
Total deficit	20.0	9.5	8.6	7.2	4.7	2.5	2.0	1.7	1.1	0.4
(−) privatization receipts	−1.0	−0.1	−2.5	−1.9	−2.0	−2.0	−2.3	−3.3	−3.7	−4.3
(−) ECB–NCB profit return		−0.3	−2.7	−2.4	−2.0	−1.1	−0.5	−0.3	−0.2	−0.1
(+) bank recapitalization	−3.0	44.2	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(+) other debt discovery		1.9	7.9	1.4	0.8	0.8	0.8	0.8	0.8	0.8
(+) buybacks		11.3								
(+) financial asset purchase		2.2	10.8	−8.2	3.0	4.2	−3.0	−3.0	−3.0	−3.0
(+) PSI–related operations		34.5								
Net borrowing requirement	16.0	103.2	26.1	−3.9	4.5	4.4	−3.0	−4.1	−4.9	−6.3
Subsectors debt change		10.6	−3.0	−1.1	−1.6	−1.6	−1.6	−1.6	−1.6	−1.6
Valuation change		−162.3								
Change in debt		−48.5	23.1	−5.0	2.9	2.8	−4.6	−5.7	−6.5	−7.9
Amortization	37.3	24.5	27.6	35.7	27.2	17.8	18.8	16.7	22.4	18.7
IMF	0.0	0.0	1.7	7.4	8.6	3.1	0.9	2.1	3.4	4.5
ECB	0.0	11.9	8.2	10.5	6.8	2.0	4.9	1.7	6.4	1.5
ST	9.2	11.8	16.8	12.3	11.3	11.3	11.3	11.3	11.3	11.3
MLT (pre–2012)	28.1	0.8	0.8	5.2	0.0	0.0	0.0	0.0	0.0	0.0
Exchange bonds		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MLT (new)			0.1	0.3	0.5	1.4	1.7	1.6	1.4	1.4
Gross borrowing requirement	53.3	127.7	53.8	31.8	31.7	22.2	15.7	12.6	17.5	12.4
Total Financing	53.7	127.7	53.8	31.8	31.7	22.2	15.7	12.6	17.5	12.4
IMF	9.9	1.6	10.4	7.1	7.1	1.8	0.0	0.0	0.0	0.0
EA: GLF	32.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EA: additional	0.0	108.3	27.6	8.6	0.0	0.0	0.0	0.0	0.0	0.0
EA: interest capitalizaton			1.3	2.4	3.7	4.6	4.4	1.3	4.9	1.1
Private ST	11.8	16.8	12.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
Private MLT		1.0	2.2	2.4	9.6	4.5	0.0	0.0	1.4	0.0
Debt	355.7	307.2	330.3	325.3	328.2	331.1	326.5	320.8	314.3	306.4
IMF	20.7	22.3	31.0	30.7	29.2	27.9	27.1	24.9	21.6	17.1
EA: GLF	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1	53.1
EA: additional	0.0	108.3	135.9	144.5	144.5	144.5	144.5	144.5	144.5	144.5
EA: interest capitalization			1.3	3.7	7.4	12.0	16.4	17.7	22.6	23.7
ECB–NCB	56.5	44.6	36.4	25.9	19.1	17.1	12.3	10.6	4.2	2.7
ST	11.8	16.8	12.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
MLT (pre–2012)	213.6	36.2	35.4	30.2	30.2	30.2	30.2	30.2	30.2	30.2
Exchange bonds		29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
MLT (new)		1.0	3.1	5.1	14.2	17.4	15.6	14.1	14.0	12.6
Intra–government holdings		−5.0	−8.0	−9.1	−10.7	−12.3	−13.9	−15.5	−17.1	−18.7

(table continues on next page)

Table A.1 EDSM baseline projections through 2020 for Greece *(continued)*

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Interest payments	15.2	6.6	8.6	10.0	10.5	11.6	11.4	11.2	11.0	10.7
IMF	0.0	0.6	0.9	1.2	1.1	1.1	1.0	1.0	0.8	0.7
EA: GLF	0.5	0.8	0.4	0.5	0.7	1.0	1.1	1.1	1.1	1.1
EA: additional	0.0	0.0	1.3	2.4	3.6	4.3	4.3	4.3	4.3	4.3
EA: interest capitalization				0.0	0.1	0.2	0.4	0.5	0.5	0.7
ECB	1.0	2.8	2.2	1.8	1.3	1.0	0.9	0.6	0.5	0.2
ST	0.3	0.6	0.8	0.6	0.6	0.6	0.6	0.6	0.7	0.7
MLT (pre–2012)	13.4	8.1	1.4	1.3	1.1	1.1	1.1	1.1	1.1	1.1
Exchange bonds			0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.9
MLT (new)			0.1	0.2	0.4	1.0	1.2	1.1	1.0	1.0
Accrual adjustment			0.9	1.3	1.0	0.4				
Financial assets	0.0	2.2	13.0	4.8	7.8	12.0	9.0	6.0	3.0	0.0
Nominal GDP	208.5	195.0	184.6	184.9	190.9	200.1	209.6	219.3	229.7	240.0

EA = euro area official sector; ECB = European Central Bank; NCB = national central banks; EDSM = European Debt Simulation Model; GLF = Greek Loan Facility; IMF = International Monetary Fund; MLT = medium and long term; PSI = Private Sector Involvement; ST = short term

Source: IMF (2013); Ministry of Finance (2012a); author's calculations.