The Costs of Greece's Fiscal Consolidation

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Summary: This policy brief reexamines the effects of the Greek austerity experiment on its economy via a counterfactual analysis. We combine the fiscal multipliers from the meta regression analysis in Gechert and Rannenberg (2014) to the fiscal consolidation measures that have been implemented in Greece between 2010 and 2014. We estimate that austerity explains almost the entire collapse of Greek GDP after 2009. This result suggests that—ceteris paribus—, in the absence of austerity, the Greek economy would have entered a prolonged period of stagnation, rather than a depression. At the same time the path of the government debt-to-GDP ratio would have been only somewhat higher. Furthermore, we estimate that if the consolidation would have been postponed until after the recovery of the Greek economy and implemented gradually, almost 80 percent of the cost in terms of lost output could have been avoided. Our results suggest that the period 2010–2014 was the wrong time to implement frontloaded spending cuts due to their strong multipliers in downturns. Implementing only the revenue components of the Greek fiscal consolidation would have strongly reduced the output contraction as compared to the actual path of GDP, but would have been much more effective at lowering the debt-to-GDP ratio than the actual fiscal consolidation. A more cautious consolidation would thus have been in the interest of international creditors as well.

→ JEL Classification: E27, E62, H30
→ Keywords: Fiscal multiplier, regime dependence, austerity

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1 Introduction

The recent Greek elections resulted in a new government led by the Syriza party, whose original goal was to slow the pace of fiscal consolidation as well as the rollback of some of the austerity measures forming part of the "Memoranda of Understanding (MoUs)" between the Greek government and the European Commission, the ECB and the IMF. The attempt by the new government to change course has been met with strong resistance from euro area finance ministers. The latest negotiations on the third bailout program resulted in a list of further spending cuts and tax increases whose impact on macroeconomic performance remains to be seen.

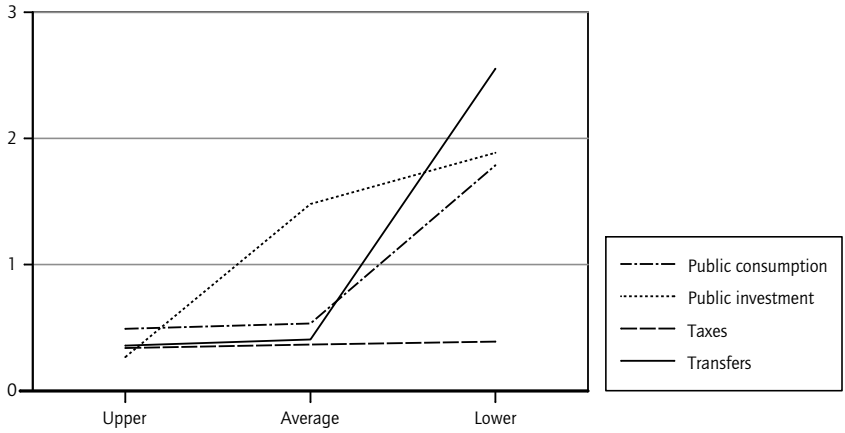
Against this background, we reexamine the effects of the Greek austerity experiment during the years 2010 to 2014 on its economy. We estimate that austerity almost entirely explains the collapse of Greek GDP after 2009. This result suggests that ceteris paribus, in the absence of austerity the Greek economy would have entered a prolonged period of stagnation, rather than a depression. At the same time, the path of the government debt-to-GDP ratio would have been only somewhat higher in 2014. Furthermore, we estimate that if the consolidation had been postponed until after the recovery of the Greek economy and implemented gradually, about 80 percent of the cost in terms of lost output could have been avoided. To be sure, we do not argue that the Greek public finances were in good shape when the fiscal consolidation began. However, irrespective of whether the Greek budget was structurally unbalanced or not, as the economy was in particularly bad shape, our results suggest that the 2010–2014 period was the wrong time to implement spending cuts, and that any expenditure-based consolidation should have been phased in gradually after the recovery of the Greek economy. Implementing only the revenue components of the Greek fiscal consolidation from 2010 to 2014 would have strongly reduced the output contraction as compared to the actual path of GDP, but would have been much more effective at lowering the debt-to-GDP ratio than the actual fiscal consolidation was.

2 Estimating the value of fiscal multipliers

We employ the multiplier estimates of Gechert and Rannenberg (2014) to assess the impact of the fiscal consolidation in Greece over the period 2010–2014, following Gechert et al. (2015), who use them to assess the effects of the euro area's fiscal consolidation on aggregate euro area GDP. Gechert and Rannenberg (2014) conduct a meta-regression analysis of fiscal multiplier estimates based on a broad set of empirical reduced form models, which is extracted from 98 scientific papers. The meta-study aims to identify and quantify the dependence of individual fiscal instruments' fiscal multipliers on the economic circumstances in the period in which the multiplier was estimated, controlling for model uncertainty and sample uncertainty. Taking averages across all other independent variables, the authors report multiplier estimates for a range of expenditure categories as well as for taxes, and for three economic regimes, which are reported in Figure 1. The regimes are an "upper regime" (above average economic circumstances), an "average regime" (average economic circumstances), and a "lower regime" (below-average economic circumstances). The lower regime clearly corresponds to the post-2007 state the Greek economy.

Figure 1

Cumulative multipliers of fiscal impulses for different regimes, full sample



Upper: above-average economic circumstances, Average: average economic circumstances, Lower: below=average economic circumstances.

Source: AMECO, own calculations.

For all expenditure categories, the cumulative multipliers always exceed one in a downturn. By contrast, tax-impulse multipliers are substantially below one across all regimes.[1]

Are these multiplier estimates valid in the case of the fiscal contraction that occurred in Greece? Basically, the multipliers are roughly in line with a recent estimation of regime-dependent multipliers for Greek time series (Monokroussos and Thomakos 2013). However, a common argument is that when embarking on fiscal consolidation, financial markets had severe doubts regarding the sustainability of Greek public finances. By helping to restore investor confidence and thus lowering sovereign bond yields, fiscal consolidation measures would support private expenditure, implying lower fiscal multipliers than would be the case in the absence of fiscal stress (Trichet 2010, Corsetti et al. 2012). However, recent empirical evidence suggests that the effect of cuts to government consumption expenditure on GDP is actually higher in the presence of fiscal stress than in its absence (Born et al. 2015), which is perhaps related to the fact that the effect on the sovereign risk spreads is ambiguous (Born et al. 2015, Cottarelli and Jaramillo 2012).

We do stress, however, that applying the fiscal multipliers estimated by Gechert and Rannenberg (2014) to the Greek fiscal consolidation to gauge its effects requires the assumption that under the alternate fiscal policies we explore below, everything else would stay the same. In particular,

1 Some authors, e. g. Alesina and Ardagna (2010, 2013) argue that tax-based consolidations have bigger adverse GDP effects than do spending based consolidations. Their findings are included in the fiscal multiplier database Gechert and Rannenberg (2014). However, their finding is an outlier in the literature on empirically estimated tax and spending multipliers, which mostly finds tax multipliers to be smaller than spending multipliers, unlike what is sometimes alleged. Therefore, the impact of their estimate on the point estimate of the meta-regression analysis of Gechert and Rannenberg (2014) is small. Simulations of structural models also lend support to the finding that, especially during downturns, tax multipliers are much smaller than are expenditure multipliers (e. g. Erceg and Lindé 2013, Coenen et al. 2012).

Greek does not exit the euro. The Greek fiscal bailout and the associated bailout of the Greek banks do take place and the Greek banks still receive funding via the ECB's unconventional measures, etc. Whether such alternative scenarios would have been realistic given the politics of the Eurogroup is beyond the scope of this article. The value added of our analysis lies in exploring how GDP might have evolved if alternative strategies had been given a chance.

Another caveat is that the path of the expenditure or tax impulse for which the multipliers in the multiplier database are estimated will in general not equal the changes implemented over the 2010–2014 period in Greece. However, given that any assessment of the effects of fiscal consolidation is bound to suffer from uncertainties, and that the multipliers reported here are based on a substantial amount of estimates generated by a range of different methodologies, we believe the following exercise to be useful nevertheless.

3 Measuring the consolidation effort

For the exercise conducted below, we would ideally like to use data on the discretionary, exogenous policy changes to government consumption, government investment, transfers to households, and taxes as caused by the implementation of the Memoranda of Understanding (MoUs) between the Greek government and the Troika. As we are not aware of such detailed data on the Greek fiscal effort, we take the following route. For changes in government consumption, government investment, and transfers, we use AMECO series "Final consumption expenditure of general government," "Gross Fixed Capital Formation: General Government," and "Social Benefits other than social transfers in kind: General government," and deflate them using the GDP deflator. These three categories comprise more than 90 percent of non-interest government expenditure in Greece. Note that we are not able to perform any cyclical adjustment on these measures.[2] This should not pose a big problem with respect to government consumption and investment, whose magnitudes are arguably directly determined by fiscal policy. However, the available figures for transfers are likely to underestimate the discretionary consolidation effort as they are affected by both fiscal policy and economic developments. Benefit claims would be expected to increase when unemployment is on the rise, as observed in Greece from 2008 to 2013, thus countering the discretionary cuts in transfers.

To measure the discretionary increases in taxes and social security contributions, we used the AMECO series "Discretionary Measures Current Revenue." This measure is held to be superior to the changes in cyclically adjusted revenue, which tend to understate the true discretionary fiscal effort due to imperfections of the cyclical adjustment procedure and the fact that the Greek economy was in a severe downturn (European Commission 2013, Gechert et al. 2016).[3]

2 There is a time series on "discretionary measures current and capital revenue" in AMECO. However, the series does not distinguish the different expenditure components, which arguably have distinct multipliers.

3 This measure is generated by the country desks of the Directorate General for Economic and Financial Affairs of the European Commission following the so-called "bottom-up approach," which cumulates the budgetary effects of changes to tax laws holding the tax base constant.

Table 1

Consolidation actions in Greece

a) Cumulative revenue increases and expenditure cuts, 2010 Billion Euro

	2010	2011	2012	2013	2014
Total revenue	10.0	19.6	25.2	28.4	28.9
Transfers	1.5	1.2	2.7	7.3	7.1
Government consumption expenditure	5.5	11.2	14.5	18.2	18.7
Government gross fixed capital formation	2.1	3.3	3.2	2.2	1.7
Total expenditure	9.1	15.7	20.5	27.8	27.5
All measures	19.1	35.3	45.7	56.3	56.4

b) Cumulative revenue increases and expenditure cuts, percent of 2009 GDP

	2010	2011	2012	2013	2014
Total revenue	4.2	8.2	10.5	11.9	12.1
Transfers	0.6	0.5	1.1	3.1	3.0
Government consumption expenditure	2.3	4.7	6.1	7.6	7.8
Government gross fixed capital formation	0.9	1.4	1.4	0.9	0.7
Total expenditure	3.8	6.6	8.6	11.6	11.5
All measures	8.0	14.7	19.1	23.5	23.6

Source: AMECO, own calculations.

Table 1a and 1b present our estimate of the cumulative consolidation effort expressed in billions of 2010 euros and as a percentage of 2009 real GDP. The table illustrates the biblical scale of austerity in Greece. By 2014, total government expenditure is expected to have been cut by 27.5 billion euros, the equivalent of 11.5 percent of the 2009 GDP. As pointed out above, the discretionary cut we would ideally like to observe will likely exceed the decline of actual transfers reported in the table and used in our calculation below, so that to this extent our estimations must be considered conservative.

Estimated discretionary revenue increases are of essentially the same magnitude. By 2014, our measure of combined revenue and expenditure cuts accumulated to 56.4 billion euros, equivalent to 23.6 percent of Greece's 2009 GDP. This is above the change in cyclically adjusted net lending as measured by the European Commission (16.9 percent) and in the underlying primary balance as measured by the OECD (18.4 percent) over the same period, which should be due to the different assessment of discretionary changes on the revenue side. However, the broad time profile of our estimated fiscal consolidation effort—a very big initial impulse in 2010, followed by smaller efforts in subsequent years—is roughly in line with the profile of these measures of the fiscal stance.

4 Gauging the effect of Greece's fiscal consolidation

We now combine the changes of the fiscal instruments reported in Table 1 with the multipliers reported in Figure 1. We account for the fact that the Greek share of imports is somewhat higher than the average in the fiscal multiplier database on which the Gechert and Rannenberg's (2014) estimates are based, implying that the actual multipliers are somewhat below the values reported in Figure 1.[4] Table 2 shows the impact on GDP.

We find that the fiscal consolidation in Greece reduced GDP by almost 7.5 percent in 2010, with the cumulative GDP decline increasing to more than 21 percent in 2013, after which it decreases to about 20 percent in 2014, as—according to our estimates—fiscal austerity was relaxed somewhat on the expenditure side in 2014. Thus the austerity measures came at a huge cost.[5] By far the biggest contribution to the GDP decline comes from cuts to government consumption, which is driven by its high share in the overall consolidation effort and its high multipliers. By contrast, the contribution of tax increases to the GDP decline is much lower due to the lower tax multipliers.[6]

We can use our estimates of the GDP decline induced by fiscal austerity to gauge the path of Greek GDP in the absence of the austerity measures as displayed in Table 1. Figure 2 compares this scenario of no austerity to several benchmarks, including the actual path of Greek GDP. According to our estimate, in the absence of fiscal consolidation Greek GDP would be only about 2 percent lower in 2014 than in 2009, instead of suffering a decline of more than 25 percent. This result is driven by the aforementioned scale of austerity in Greece, and our fiscal multipliers. The average multiplier of the cumulated spending reduction and revenue increases amounts to 0.9.

We also report an estimate of the path of the Greek primary budget balance and the government debt-to-GDP ratio in the absence of fiscal consolidation. This exercise requires further assumptions. First, we have to estimate the feedback of the GDP contraction caused by the fiscal consolidation on the primary balance. This feedback effect partly offsets the direct effect of the discretionary fiscal measures summarized in Table 1 by reducing tax revenues and increasing benefit claims. To capture this automatic stabilizer effect, we assume a semi-elasticity of the primary budget balance with respect to GDP of 0.47, as estimated by Girouard and André (2005) for the Greek economy. Furthermore, we assume that the average interest rate on the outstanding stock of government debt equals its actual value over the 2010 to 2014 period in all scenarios considered below.

Finally, we have to assume a path for the GDP deflator, which is relevant in shaping the dynamics of the government debt-to-GDP ratio. As can be obtained from Figure 3, the change in the Greek

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4 The share of imports in GDP ranges from 30.7 percent in 2010 to 35.1 percent in 2014. By contrast, the sample average equaled 22.8 percent. Multipliers are accordingly reduced by between 0.24 and 0.31.

5 This finding is consistent with Wren-Lewis (2015), who argues, based on some alternative fiscal measures, that changes in the underlying primary balance since 2009 explain all of the change in the output gap.

6 There is evidence that in response to tax increases, Greek firms shift economic activity from the formal to the informal sector in a quantitatively significant way (Pappadà and Zylberberg 2014). Such shifting could imply that the effect of the policy change on "true" overall economic activity (the sum of formal and informal activity) is smaller in Greece than it is in countries with more vigorous tax law enforcement. Thus applying the multiplier estimates of Gechert and Rannenberg (2014) to revenue increases in Greece might overstate their effect on "true" economic activity. Therefore the GDP effect of the revenue increases over the 2010-2014 period might be even smaller than what we estimate. We thank an anonymous referee for drawing our attention to this issue.

Table 2

Estimated cumulative GDP effect of Greece's fiscal consolidation

a) Billion Euro

	2010	2011	2012	2013	2014
Total revenue	–1.9	–3.0	–3.3	–3.6	–2.3
Transfers	–3.5	–2.8	–6.3	–16.8	–15.8
Government consumption expenditure	–8.8	–17.3	–22.2	–27.8	–27.7
Government gross fixed capital formation	–3.5	–5.5	–5.3	–3.6	–2.6
Total expenditure	–15.7	–25.6	–33.8	–48.2	–46.1
All measures	–17.6	–28.5	–37.1	–51.7	–48.4

b) Percent of 2009 GDP

	2010	2011	2012	2013	2014
Total revenue	–0.8	–1.2	–1.4	–1.5	–1.0
Transfers	–1.4	–1.2	–2.6	–7.0	–6.6
Government consumption expenditure	–3.7	–7.2	–9.3	–11.6	–11.6
Government gross fixed capital formation	–1.5	–2.3	–2.2	–1.5	–1.1
Total expenditure	–6.6	–10.7	–14.1	–20.1	–19.3
All measures	–7.4	–11.9	–15.5	–21.6	–20.2

Source: AMECO, own calculations.

GDP deflator decelerated substantially after 2008 and turned negative in 2013. This development is most likely caused by the collapse of GDP and the associated emergence of big spare capacities and mass unemployment, which reduced wage and price pressures. It appears likely that under the essentially flat GDP path in the scenario of no fiscal consolidation, the annual change in the GDP deflator would have avoided negative territory. As austerity explains almost all of the difference in the post-2009 GDP path between Greece and the euro area, we assume that in the absence of austerity, starting in 2010, the Greek GDP deflator would have grown at the same pace as the Euro Area GDP deflator.

Figure 4 shows that in the absence of austerity, although the primary deficit would have deteriorated somewhat further over the 2010–2014 period, the 2014 debt-to-GDP ratio would actually be only slightly above its value in the presence of fiscal consolidation, chiefly as a consequence of the more favorable path of real GDP.

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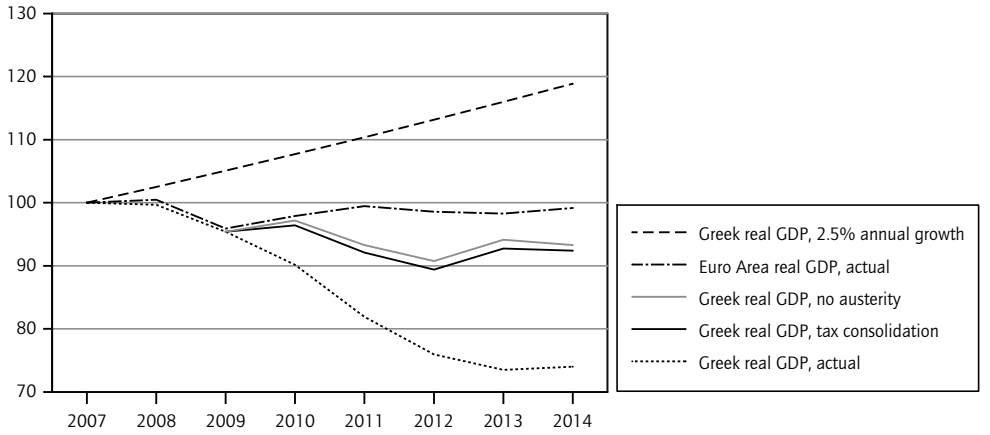
Figure 2

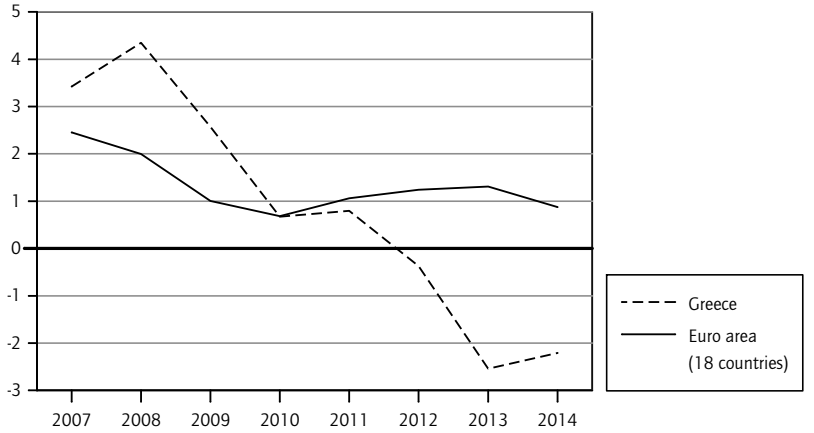
Greek real GDP under various scenarios
2007 = 100



Source: AMECO, own calculations.

Figure 3

GDP Deflator, annual change
In percent



Source: Eurostat, own calculations.

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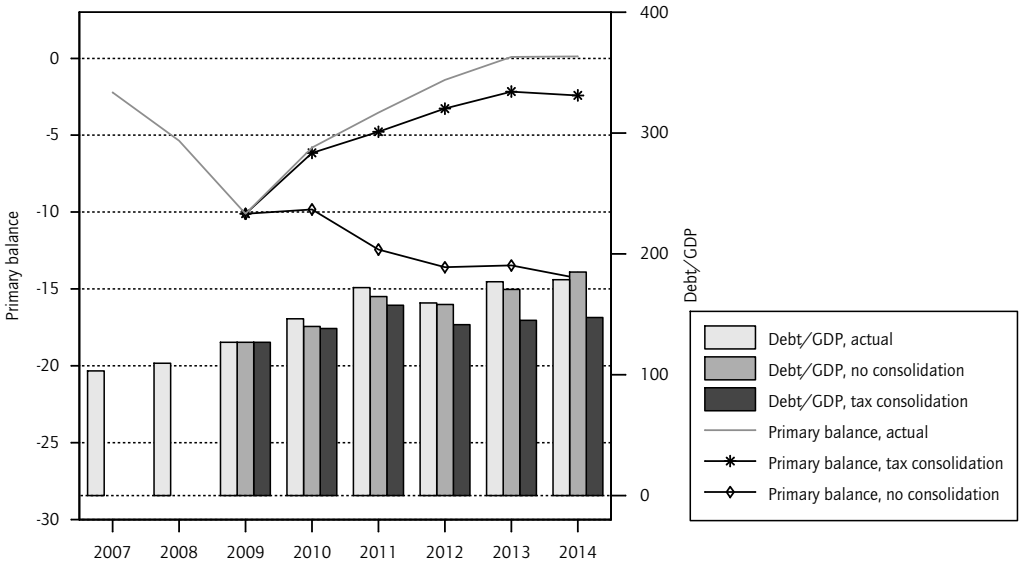
Figure 4

Greek path of primary balances and debt-to-GDP ration for actual and counterfactual scenarios, percent of GDP



Note: The paths of primary balances exclude one-off measures, while the paths of government debt-to-GDP ratios include one-off measures and stock-flow adjustments. Excluding or including these measures would affect all scenarios in the same manner.
Source: AMECO, Eurostat, own calculations.

5 Alternative consolidation scenarios

According to the multiplier estimates reported in Figure 1, spending cuts have much smaller adverse effects on GDP during average economic circumstances than they do during economic downturns. We therefore also consider a scenario in which Greece would have backloaded its fiscal consolidation until after the recovery of its economy—a situation that could be classified as average economic circumstances. In this case, the cumulative negative GDP effects would have amounted to only 3.5 percent of GDP. That is to say, about 80 percent of the negative impact on GDP are due to the frontloading of measures, and could have been avoided by postponing and gradually implementing fiscal consolidation. The effect on the primary balance would also be more favorable: Under average economic circumstances, the measures displayed in Table 1 would cause a cumulative improvement in the primary budget balance of about 22 percentage points. As the overall contractionary fiscal impulse is rather big, even in average economic circumstances, a fiscal consolidation of Greek proportions would have preferably been spread over a number years, in order to avoid a return to recession. Our finding that, ceteris paribus, backloading the fiscal consolidation would have had strongly beneficial effects is in line with findings of other authors, using different models and empirical methods (Batini et al. 2012, ECLM, IMK and OFCE 2012).

Interestingly, the overall multiplier in the backloading scenario is not too far away from the value which was used by the IMF and other international institutions at the start of the financial crisis and after to quantify the effects of fiscal consolidation (Blanchard and Leigh 2013). This coincidence suggests that the Troika did not adequately take into account the prevailing crisis conditions causing higher-than-average multipliers when designing the Greek structural adjustment program. In doing so, it was ignoring some of the latest research (see for instance Eggertsson 2009 and Christiano, Eichenbaum, and Rebelo 2011, which was first circulated in 2009 as well).

Furthermore, Figure 1 shows that during economic downturns, estimated tax multipliers are much smaller than spending multipliers. We therefore investigate the effect of implementing only the tax increases but not the spending reductions listed in Table 1. As illustrated by Figure 1, the path of GDP would be somewhat lower than under the "no consolidation" scenario, but still a lot more favorable than the actual path. To estimate the implied paths of the primary balance and the debt-to-GDP ratio, we assume that with a tax-only consolidation, the GDP deflator would have remained at its 2009 level until 2014, as the economy would have been weaker still. The much-lower estimated decline in GDP allows an improvement in the primary balance almost as big as under the actual consolidation, illustrating that the spending cuts displayed in Table 1 contribute very little to fiscal consolidation, as their consolidation effects are almost self-defeating. At the same time, the lower GDP decline directly lowers the trajectory of the debt-to-GDP ratio, implying that the 2014 estimated debt-to-GDP ratio would be about 30 percentage points below its actual level if only the revenue increases listed in Table 1 had been implemented. These findings are in line with Erceg and Lindé (2013), who show in the context of a New Keynesian model that during a deep downturn, front loaded tax hikes are more effective for reducing government debt quickly than are expenditure cuts due to the smaller adverse effect on GDP.

To be sure, backloading the Greek fiscal consolidation would have faced considerable political and institutional challenges. In 2010, the Greek political establishment was not considered trustworthy by its European partners as a consequence of the persistent misreporting of the Greek government debt and deficits revealed in the previous year. Establishing mechanisms ensuring that the Greek government would eventually consolidate after having been granted financial assistance would have been difficult. Euro area governments might also have resisted focusing the consolidation on the revenue side to the extent that they discounted the Greeks' ability to reform its tax collection system. However, these challenges must be weighed against the cost of frontloaded consolidation based on spending cuts. Our estimates suggest that this cost was very high. Frontloading fiscal consolidation has thus made the repayment of the Greek government debt more difficult, which—if nothing else—should have been of concern to euro area governments keen on recuperating their domestic taxpayers' money.

6 On the plausibility of the Greek GDP path under the no-austerity scenario

Regarding the scenario that abstains from any consolidation effort, the fact that our estimate attributes almost the entire decline in Greek GDP since 2009 to fiscal consolidation may seem surprising. At the time the fiscal consolidation began, the Greek economy was widely held to suffer from severe problems, most notably a big decline in price competitiveness during pre-cri-

sis years, a massive current account deficit, and private capital outflows driven by fear about the solvency of the government and the Greek financial system.

However, we believe the GDP path implied by our counterfactual scenario to be plausible on the following grounds. First, it is important to recall that in our hypothetical scenario, everything stays the same, except for the fiscal policy changes reported in Tables 1a and 1b. In particular, Greek does not exit the Euro. The Greek fiscal bailout and the associated bailout of the Greek banks do take place, and the Greek banks still receive funding via the ECB's unconventional measures. These helped to replace the flight of private capital and thus allowed for a more gradual current account adjustment, and with that a more gradual adjustment of private expenditure, than in the absence of such support.

What is more, the performance of the Greek economy under the counterfactual scenario of no austerity is by no means stellar, but amounts to a prolonged period of stagnation. In 2014, Greek GDP would still be more than 6 percent below the pre-crisis peak of 2007. Thus the Greek economy in the absence of domestic austerity would have fared worse than the euro area, whose fiscal consolidation over the period 2010–2014 cumulated to between 3.3 percent and 4.8 percent of the 2009 real GDP.[7] The Greek performance in the absence of austerity would also have been dismal by past Greek standards. From 2001 to 2007, the average annual growth rate of the Greek economy amounted to 4.1 percent. While the high growth observed during this period might be related to high capital inflows associated with Greece's accession to the Euro and thus might be considered unsustainable, during the preceding decade (1991–2000), average GDP growth still equaled 2.5 percent. Furthermore, in 2007, Greece was still the third poorest member of the euro area, with GDP per capita measured at purchasing power standards falling 17 percent short of the euro area average, thus suggesting the possibility of growth rates above the euro area average. As Figure 2 shows, if the Greek economy had grown at its average growth rate of the 1990s in the time since, its 2014 GDP would have exceeded the 2007 figure by almost 19 percent, rather than falling short by over 6 percent as in the no-austerity scenario. All in all, the no-austerity scenario appears consistent with an economy correcting past excesses and undergoing a process of current account adjustment, and thus does not appear excessively optimistic.

7 Conclusion

The debate on Greek economic policy since the outbreak of the European sovereign debt crisis as well as its future is set to continue over the coming months and years. We contribute to the assessment of the former by estimating the effect of the Greek tax increases and expenditure cuts during the years 2010 to 2014. We find that austerity in Greece almost exclusively explains the decline of Greek GDP since 2009 and only slightly lowered the government debt-to-GDP ratio as compared to a no-austerity scenario. We also estimate that most of the costs of fiscal consolidation could have been avoided by postponing and gradually implementing it after the recovery

7 If measured as the real change in cyclically adjusted net lending excluding interest, calculated by multiplying its share in potential GDP with real potential GDP as estimated by the European Commission, the consolidation effort cumulated to 3.3 percent of real GDP in 2009. The estimated magnitude of the effort would amount to 4.8 percent of 2009 real GDP if calculated as the sum of discretionary revenue and expenditure measures cumulated over the 2010 to 2014 period and deflated using the GDP deflator, also reported by the European Commission.

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of the Greek economy, due to the lower expenditure multipliers during normal times. Finally, a much lower path of the Greek debt-to-GDP ratio could have been achieved by implementing only the revenue increases but not the expenditure cuts that were part of the consolidation package. It appears that those who warned against the Greek austerity experiment early on (e.g. Horn et al. 2011) were right.

To be sure, we do not argue that the Greek public finances were in good shape when the fiscal consolidation began. However, irrespective of whether the Greek budget was structurally unbalanced or not, as the economy was in particularly bad shape, our results suggest that the 2010––2014 period was the wrong time to implement spending cuts, and that any expenditure-based consolidation should have been phased in gradually after the recovery of the Greek economy.

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