Levy Economics Institute of Bard College

Strategic Analysis

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GREECE: GETTING OUT OF THE RECESSION

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Summary

The Greek government has agreed to a new round of fiscal austerity measures, consisting of a sharp increase in income and property taxes and further reductions in pensions and other welfare-related expenditures. In our analysis, policies aimed at reducing the government deficit will cause a recession, unless other components of aggregate demand increase enough to more than offset the negative impact of fiscal austerity on output and employment.

We argue that the troika's strategy of increasing net exports to restart the economy has failed, partly because of the low impact of falling wages on prices, partly because of low trade elasticities with respect to prices, and partly because of a sharp reduction in transport services, which used to be Greece's biggest export industry.

A policy initiative to boost aggregate demand is urgently needed. We propose a fiscal policy alternative based on innovative financing mechanisms, which could trigger an increase in confidence and encourage renewed private investment.

Introduction

It has been more than a year since the third Memorandum of Understanding (MOU) was signed between Greece and its international lenders in August 2015. To secure the receipt of €10.2 billion in loan funds, a number of key legislative acts have been rapidly pushed through Parliament, including significant labor market reforms; direct and indirect tax increases; government expenditure

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cuts in pensions and other social protection programs, public investment, and consumption; and privatization of public enterprises and assets. These "structural reforms" will supposedly ensure that Greece will achieve the projected—and required—primary budget surpluses for 2016–18.

As is customary, only a partial payment of €7.4 billion has been approved so far, with release of the remaining €2.8 billion subject to the troika's progress evaluation report this fall. These funds are aimed at repaying maturing government debt and reducing the accumulated arrears to the private sector. (The government recently announced that in July 2016 €1.1 billion had been used to reduce its arrears, including withheld tax refunds, even though release of the €7.4 billion partial payment stipulated an arrears payment of €1.8 billion.) The remaining €2.8 billion of this year's tranche will be released once the Greek government implements the remaining labor market reforms, that is, changes to collective bargaining agreements, executive and managerial changes in the banking sector, and completing the organization and staffing of the sovereign asset fund so as to accelerate public asset sales and the privatization of public enterprises. The government is therefore once again at work trying to fulfill its MOU obligations and ensure the timely receipt of the remaining funds in order to pay other maturing debt, including interest and another partial payment (€1.7 billion) toward its accounts and tax refunds in arrears. Decreasing the government's arrears accounts and indirect tax refunds due the private sector is crucially important for boosting domestic private demand and production, as we will later show.

Over the last 12 months, the Greek economy has continued to deteriorate. Nominal GDP and residents' disposable incomes and wealth have lost more ground (the result of higher taxes, more part-time work, and stubbornly high unemployment), more children have fallen into poverty, and ElStat (the Hellenic Statistical Authority) reports deteriorating indices of the population's health and the delivery of basic health care and other needs. To be sure, some signs of a jobs recovery have emerged this year. The rate of job growth is significant, but so is the rate of job separation. Despite monthly gains in employment, the number of job leavers and involuntary part-time workers is still extraordinarily high, making the challenge of reversing the scourge of unemployment truly a Herculean task—especially when the public purse remains under severe strain. The unemployment rate stood at 23.4 percent in June 2016 (the latest ElStat statistics available), down from 24.9 percent in the corresponding month of last year. Thus, as we will argue, the increase in net employment does not yet instill confidence that a robust recovery is under way.

The bank closures at the end of June 2015 marked the beginning of a period of capital controls that limited the ability of the public to access bank deposits and, more important, imposed additional administrative rules on monetary transfers to other countries. These measures increased the burden on firms and forced many of them to change their domicile to other countries within the European Union (e.g., Cyprus, Luxemburg, and Bulgaria), with obvious consequences for the government's ability to collect taxes on such businesses, not to mention worsening unemployment due to the elimination of jobs. The liquidity constraints also weakened the ability of many firms to aggressively pursue the marketing of their products abroad, negatively affecting exports. According to the latest ElStat statistics for the first six months of 2016, exports of goods totaled €11.97 billion versus €13.07 billion for the corresponding period in 2015, representing a drop of 8.1 percent. Even if all petroleum products are excluded, a decline in other exports of goods is observed. The collapse in export revenues, especially from transport and other services, may also be linked to capital controls, as well as to adverse effects of the migration crisis. Greek households and businesses seem to have learned how to survive under capital controls over the past year, but the impact on the economy thus far has been significant. The government recently relaxed these controls to entice households to increase their bank deposits (by reducing their holdings under the proverbial mattress) and to repatriate funds from deposits in foreign banks.

Banks are also offering higher interest rates to those opening new time deposit accounts in an attempt to strengthen their balance sheets, in order to offset the draining of reserves due to increased lending activity and the continuing problem of nonperforming loans. To date, the response from depositors has been rather disappointing. Relaxation of the controls, in general, aimed to assist firms by expanding the limits affecting import/export transactions. For Greece, the silver lining of capital controls and the consequent use of electronic forms of payment was that more product and labor markets were brought into the official domain and factored

into statistical data. This may, to some extent, be part of the reason for the improvement in the unemployment rate as well as the smaller-than-anticipated GDP contraction rate recorded in 2015.

In the simulations of the new scenarios discussed below, we expect economic conditions to worsen as the new austerity measures take hold. If no corrective action is taken to offset them, we expect the economy to suffer another year of severe recession, and then to experience very modest growth beginning in 2017. As usual in these reports, we provide simulations of alternate and feasible scenarios that could turn the economic conditions around and put the Greek economy on a significantly higher growth path. But first, we'll examine the current conditions in some detail.

The Austerity Myth of Rising Greek Exports

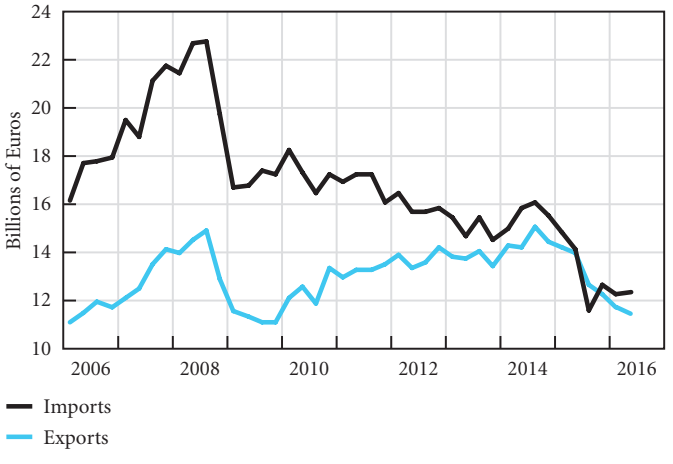
As we have argued elsewhere (Papadimitriou, Nikiforos, and Zezza 2014, 2015, 2016), the principal aim of fiscal austerity and labor market reforms—imposed on Greece as a condition of financial support—was to turn a current account deficit into a surplus large enough to more than offset the impact of fiscal consolidation on the economy. This result was to have been achieved through two channels.

The first channel was fiscal austerity and its effect on income and production—that is, cutting public expenditure and raising tax rates would generate a fall in domestic demand and production, lowering the demand for imported intermediate and final goods and services, thereby improving the current account balance in the short term.

As Figure 1 shows, the first channel operated effectively. Excluding the dramatic fall in global demand in 2008 as a result of the Great Recession, imports have fallen a further 32.5 percent (26 percent when measured at constant prices) from their previous peak in 2010Q1. This drop is largely attributed to low domestic demand as a result of fiscal austerity, and in part—up to 2014—to an improvement in price competitiveness, as measured by the relative price of imported goods against domestic goods. We estimate that these relative prices increased around 12 percent between 2010 and the beginning of 2014. For services, the relative price of foreign imports increased by 5.5 percent against domestic prices between 2010 and the end of 2015. After 2014, the decline in the price of oil also contributed to the decrease in imports.

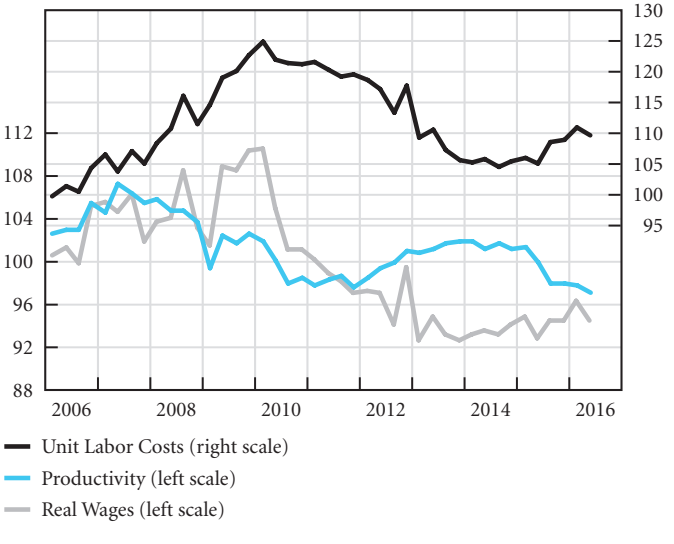
The second channel consisted of "labor market reforms" and "internal devaluation," and their assumed positive effects: downward pressures on wages and general labor costs, achieved through "reforms," would improve price competitiveness,

Figure 1 Greece: Trade in Goods and Services



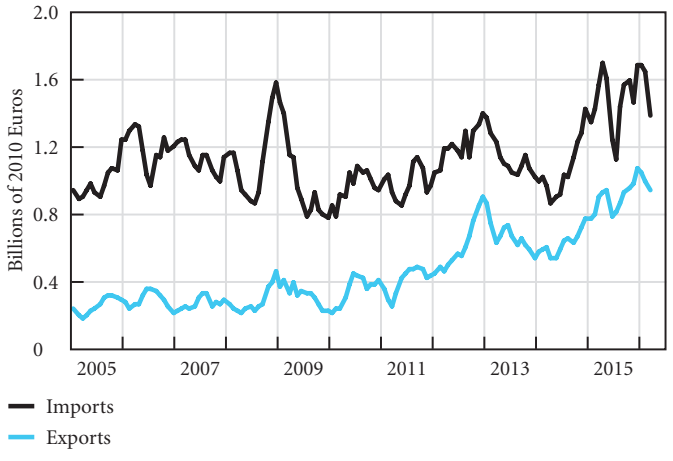
Source: ElStat

Figure 2 Greece: Labor Cost Indices (2005=100)



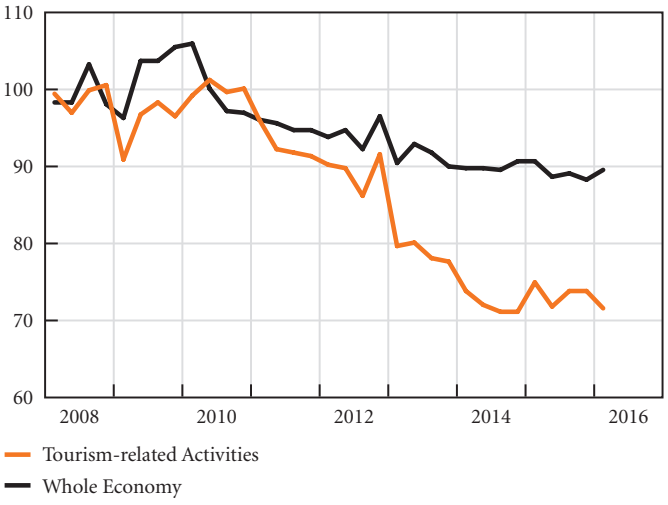
Source: ElStat

Figure 3 Greece: Trade in Oil Products (Three-month Moving Averages)



Sources: Bank of Greece; US Energy Information Administration

Figure 4 Greece: Index of Average Real Wages (2010=100)



Source: ElStat

boosting exports and, in turn, improving the current account balance over a longer-term horizon.

Figure 2 illustrates the dynamics of real wages, productivity, and unit labor costs,[1] and shows that the internal devaluation was indeed effective in lowering both nominal and real wages. Real wages were moving in line with productivity up to the 2009 recession. After peaking in 2010, real wages fell by as much as 16 percent, a low reached in 2013Q1, and nominal wages kept falling slightly less than prices up to 2016Q2, with real wages thus recovering a mere 2 percent against their 2013 low. The decline in productivity started earlier, in 2007, and was less dramatic: productivity recovered after 2011Q4 but has been falling since 2015Q1. Unit labor costs fell as well, by as much as 16 percent between 2010Q1 and 2014Q3—a result of the rapid drop in nominal wages and the recovery in productivity—but then began to recover as a result of the decline in productivity, which has not been offset by an equiproportional decline in the nominal wage.

Relative to this dramatic fall in wages and unit labor costs, the decline in prices has been slow. The consumer price index is now only 6.4 percent lower than its peak in 2012, and a similar order of magnitude is obtained for any price index in which oil plays no significant role. Price competitiveness has increased (at least up to 2015) for Greek exports of goods and services, since competitors in destination markets have not experienced analogous levels of price deflation. Consequently, our measures of relative prices for the export of goods and services fell by 23.5 percent and 19.7 percent, respectively, between 2010 and 2016Q2 (it should be remembered, however, that the drop in oil prices has played a large role in the decline in the relative price of goods exports).

Imports of crude oil and exports of refined oil have also grown in relevance for Greece, and therefore another nontrivial component of the recent fall in both exports and imports of goods in nominal terms can be attributed to the price of oil: the trade deficit in petroleum products decreased from €9 billion to a little more than €3 billion between 2008 and 2015.

In Figure 3 we report an estimate of Greece's trade in oil, obtained by deflating exports and imports with a 2010 index of the price of oil per barrel. The chart clearly shows Greece's increased specialization in the refinement of imported crude oil products for export, with an upward trend starting around 2009. This process implies an increase in the vulnerability of Greek export revenues to volatility in the price of oil. Oil is currently (August 2016) priced at 58 percent of its June 2014 peak and 45 percent higher than the bottom value of $30 per barrel reached in February 2016. For Greece, this implies a steep fall in revenues from the export of oil products, and an even steeper reduction in the value of oil imports. While movements in oil prices generate changes to both exports and imports, the latter component prevails, so that, should oil prices move up, this would contribute to deterioration in the trade account.

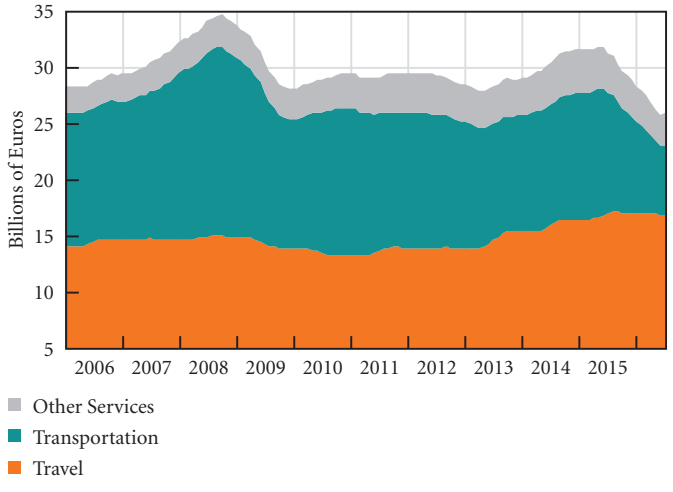
To be sure, exports improved between 2009 and 2014, as shown in Figure 1, but this resulted from a combination of factors unrelated to the internal devaluation policy imposed by Greece's international lenders. These factors include the recovery of global demand after the Great Recession of 2007–9; increased specialization in petroleum refining, as discussed above; the shift of exporters to new markets (documented in Papadimitriou, Nikiforos, and Zezza 2014); and increased tourism due to conflicts and uncertainty in countries that are competitors in tourism.

Tourism-related activities were expected to play a major role in establishing a current account surplus. In fact, labor cost indices for tourism have fallen more (up to 2015) than for the economy as a whole, primarily due to the precarious nature of this sector's employment. In Figure 4 we report an estimate[2] of the real average wage in tourism-related activities, compared to the whole economy. In this sector, real wages hit a low at the end of 2014, falling as much as 30 percent below their 2010 peak, compared to a 9 percent drop for the economy as a whole over the same period. More recently, real wages seem to have stopped falling, in part due to the ongoing deflation and higher demand for trained workers, but they have not recovered: in the first quarter of 2016, real wages in the tourism industry were only 0.7 percent higher than the bottom level reached in 2014, while real wages for the economy as a whole fell an additional 1.2 percent.[3] Price competitiveness may have played a role in the dynamics of tourism revenues, at least up to 2015.

Figure 5 shows the major revenue components of key service export categories.[4] Starting around 2010, a clear upward trend in revenues from tourism can be seen. However, a much larger share of the revenues is attributed to transport activities, which have collapsed since capital controls were introduced in June 2015. The fall in revenues from transport activities was larger than the increase in revenues from tourism in 2015. The slow upward trend in revenues from tourism is the result of two opposing trends: first, as Figure 6 shows, a rising trend in the number of inbound travelers, which almost doubled between 2009 and 2015, increasing steadily from 14.9 million to 26.1 million; and second, a declining trend in the average expenditure of travelers, which fell by 22 percent over the same period.

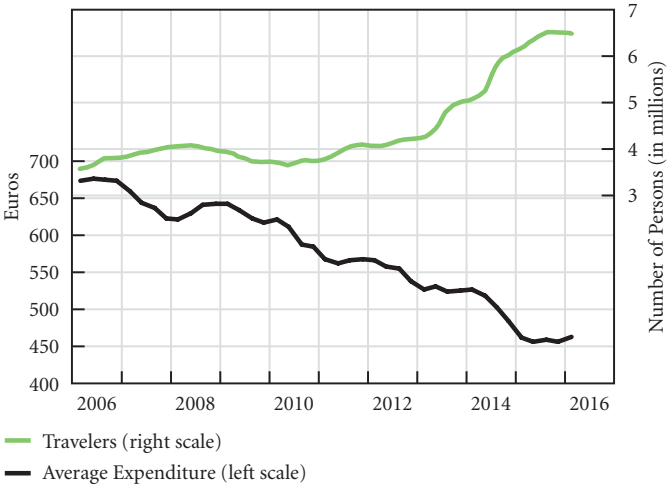
The increase in tourism may therefore be due, at least in part, to a price effect: as the average cost of vacations in Greece goes down, more tourists choose the country as their destination. This sector may therefore be specializing in low-cost tourism, with a lower-than-expected impact on revenues. On the other hand, the latest data show a deceleration in the growth rate of arrivals and a flattening of the average expenditure.

Figure 5 Greece: Exports of Services



Source: Bank of Greece

Figure 6 Greece: Inbound Travelers and Their Average Expenditure (Four-quarter Moving Averages)



Source: Bank of Greece

The other major determinant of the fast improvement in tourism may be attributed to political instability in competitor countries (e.g., Turkey and Egypt) that is unlikely to be reversed in the short term.

However, since 2014 improvement in the price competitiveness of the tourism industry seems to have stopped. As shown in Figure 4, real wages are no longer falling, and the deflator for the value added of tourism and related industries has also stabilized. The decline in wages and labor costs may have reached its limit: you cannot expect workers to survive without some level of wage, although proposals for "voluntary unpaid employment" have been put forward in countries (like Italy) with a high youth unemployment rate.

Since the value of price elasticity increases with time, no further rehabilitation in the export of services can be expected from additional improvements in price competitiveness, but Greece could benefit from a rise in tourism and related activities as an increasing number of foreigners exploit the relative price advantage.

Employment and Unemployment

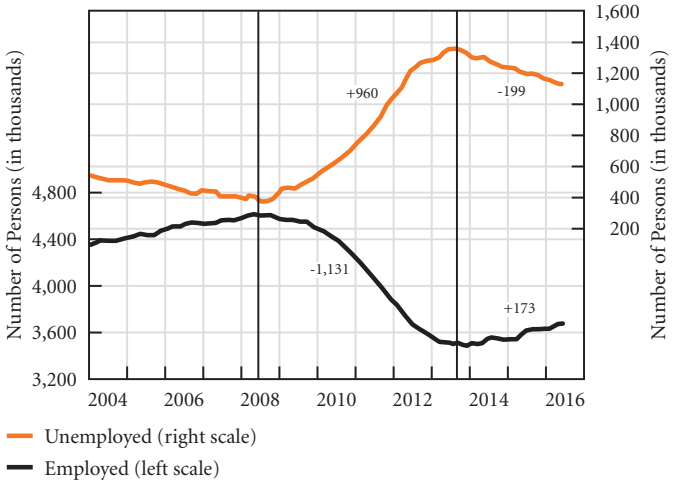
The good performance of the tourism and tourism-related sector is having an impact on employment. Figure 7 shows the number of employed and unemployed persons in Greece, with the two vertical lines denoting the bottom level of unemployment, in May 2008, and the top level, in September 2013. Over the 2008–13 period, the Greek economy lost more than one million jobs, while nearly one million people joined the unemployed. The difference between the rise in unemployment and the number of jobs lost is due to the number of discouraged workers and net migration effects. The active worker population fell by 310,000 people over 2008–13, with an additional loss of 111,000 people as of June 2016.

The large majority of new jobs are in the tourism industry, followed by wholesale and retail trade activities. The greatest increase is in the "Salaried employees" category, while those in the "Senior officials and managers" group have dropped considerably. About half of the new jobs are part-time positions held by workers who could not find a full-time job, while many full-time workers are being paid less than is customary for the positions they hold. These labor conditions are consistent with the lower average wages in the tourism industry—not an encouraging sign in a sector that is expected to drive a recovery in domestic demand and exports.

Domestic Demand

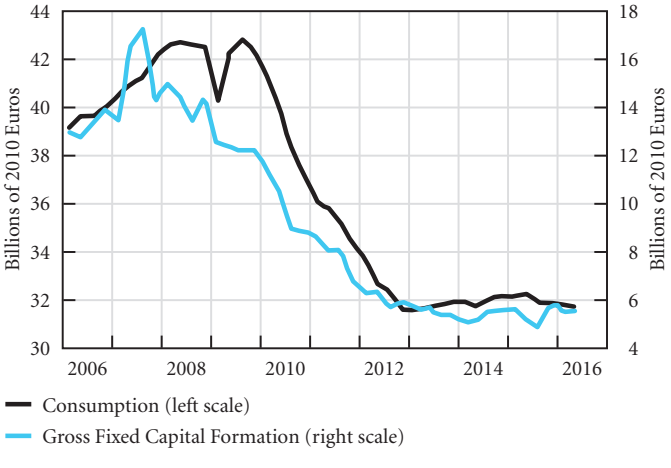
Domestic private investment and consumption have remained very low, as shown in Figure 8. Real investment is fluctuating around €5 billion, down from its peak of €17 billion in 2007. Looking at the gross saving of nonfinancial corporations, as

Figure 7 Greece: Employment and Unemployment



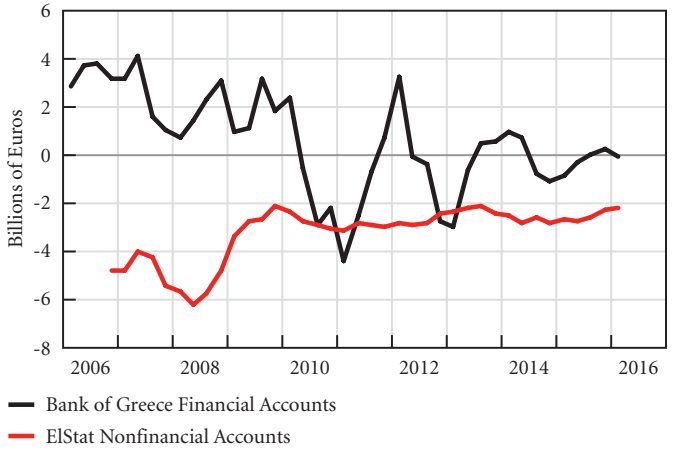
Source: ElStat

Figure 8 Greece: Consumption and Investment



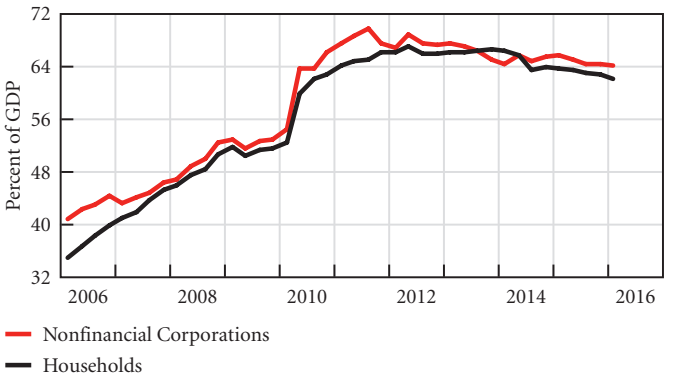
Source: ElStat

Figure 9 Greece: Household Net Lending (Four-quarter Moving Averages)



Sources: ElStat; Bank of Greece

Figure 10 Greece: Private Sector Loans Outstanding



Sources: ElStat; Bank of Greece

reported in the institutional sector accounts, the positive increase between 2010 and 2013 has been reversed, with gross saving in 2015 falling €2 billion below its level in 2014. The latest available figure, for 2016Q1, shows a further decline, and as long as this measure of internal finance is relevant for investment prospects, there is no reason for optimism.

Turning to consumption, we note that it remains flat, still 29 percent below its 2009 peak. Some commentators writing in various bank research reports (e.g., Piraeus Bank 2016) argue that consumption will not decrease further despite the new round of austerity measures that will take effect in the coming months. It is suggested that households will try to maintain their living standards even as their disposable income declines by lowering their saving ratio.

We view it differently, however, since it is difficult to expect households to go deeper into their (negative) savings or to borrow when consumer credit for the average household has largely dried up. In Figure 9, we report the two available measures of net lending, the first published by ElStat, based on its estimates of household disposable income and expenditure; and the second by the Bank of Greece, based on changes in financial assets and liabilities. Since the two measures reflect the results of different surveys, they exhibit discrepancies that, in the case of Greece, have often been considerable,[5] with the central bank usually reporting a more optimistic measure of the financial position of Greek households. In any case, both measures report that households' expenditures exceed their disposable income, and therefore an increase in the propensity to spend implies either an increase in borrowing—which is unlikely to happen—or an even faster disposition of financial assets.

Instead, as Figure 10 shows, households have continued to deleverage or go bankrupt. Despite the continuing fall in GDP over the last five years, gross private sector debt decreased from an equivalent of 67 percent of GDP at its peak in 2012 to just above 62 percent at the end of 2015.

Similarly, Figure 10 shows a decline in the gross indebtedness of nonfinancial corporations, obtained by adding up short- and long-term loans (the debt in securities has practically disappeared). Nevertheless, the level of gross indebtedness is still very high relative to GDP, confirming the financial fragility of the Greek economy and its still-shaky banking sector, as evidenced by the increasing number of nonperforming loans.

Fiscal Policy

The government reported a net primary surplus for 2015, but in fact, the accounts for the general government ended up with a primary deficit of €6 billion for the year, down from a small surplus of €700 million in 2014. The primary deficit was almost entirely offset by the net government transfers to the capital account—amounting to €5.4 billion—that were needed for the latest bank recapitalization, which occurred in the fourth quarter of 2015.[6]

Other major items of expenditure either remained flat (social contributions) or decreased in 2015. Overall consumption expenditures dropped by almost 2 percent at current prices, while interest payments went down by €500 million compared to 2014.

On the revenue side, an increase of €400 million in indirect tax payments, together with an increase in social contributions of the same magnitude, was just enough to offset the drop in revenues from taxes on income and wealth, which were €800 million lower in 2015 than in 2014. (It is worth remembering that an increase in nominal tax revenues, in the face of a decline in nominal income, is tantamount to an increase in the ex post tax rates.)

Recently released figures from the quarterly nonfinancial sector accounts for 2016Q1 show a further decrease in some components of government outlays, most notably, fixed investment, which is at 51 percent of what it was in 2015Q1. Government consumption also dropped, by about 2 percent. At the same time, and somewhat unexpectedly given the fall in real output, both direct and indirect tax revenues increased, by 9 percent and 15 percent, respectively, over the same quarter in 2015. Social contributions also rose, perhaps explaining part of the increase in the "Compensation of employees" discussed above. The fall in household disposable income—1.7 percent—must have been affected by the fiscal policy stance in this period.

The Ministry of Finance's latest *State Budget Execution Bulletin*, for the period January–August 2016, sheds additional light on the finances of the Greek government.[7] Net revenue for the period stands at €32 billion, around €1.2 billion above its level for the first eight months of 2015. Still, revenues lag behind the 2016 budget estimates by €600 million. On the expenditure side, the overall budget expenditure was €1.1 billion above its 2015 level (€33 billion against €31.9 billion) but, more important, €3.5 billion below its 2016 budget target. More specifically, ordinary budget expenditures rose slightly compared to 2015, from €30.3 billion to €30.8 billion, but are €2.5 billion below the 2016 budget estimates. Public investment also increased by the same amount (€500 million), but it too is below its targeted budget level, by around €1 billion.

In summary, the *State Budget Execution Bulletin* shows that the government has managed to increase its revenues but not as much as forecast in its budget. While this discrepancy is more than offset on the expenditure side, where there is a slight increase over the previous year, there is also a very significant lag compared to the 2016 budget targets. (We should caution that some of the government expenditures included in the *Bulletin* may have been pushed back to a later date. It is therefore doubtful that by the end of the year expenditures will be that far below their estimated budget level.)

As is customary in these Strategic Analysis reports, we first simulate a baseline scenario incorporating basic assumptions about the present and likely future trajectories of key variables. Once we obtain a baseline, we then use it to form other plausible alternative scenarios. For our baseline we assume that the government will implement the austerity measures contained in the latest (2015) MOU (see Reuters 2016; Piraeus Bank 2016), which are expected to yield a cumulative increase in government revenues as detailed in Table 1.

We observe that the bulk of the money raised or saved will come from an increase in direct tax revenues and further pension cuts. Given that direct tax receipts in 2015 were €16.5 billion, an expected increase of more than 10 percent is indeed a very bold assumption, given the likely recessionary impact of yet another round of fiscal austerity. Moreover, social contributions were €24.4 billion in 2015, so the new austerity plan will reduce this expenditure by 10 percent from 2018 onward, in direct opposition to what would logically be assumed of an aging population: that the number of retirement-age Greeks as a share of the total population will continue to grow at an annual rate of just under 1 percent.

Although the achievement of such targets in light of the new austerity seems unlikely, especially on the basis of their

Table 1 **Greece: New Fiscal Measures (in millions of euros)**

	2016	2017	2018	2019
VAT reforms	255	437	437	437
Tax reforms	298	382	456	456
Personal income tax reforms	1,700	1,700	1,700	1,700
Excise duty reforms	597	597	610	610
Pension reforms	1,206	1,903	2,571	2,708
Other reforms	-221	-234	-247	-260
Total measures	**3,835**	**4,784**	**5,526**	**5,650**

Source: Piraeus Bank (2016)

impact on income and sales, we will nevertheless use the projections in Table 1 as the source of our new baseline scenario.

No Recovery in Sight

Our baseline projections include data available up to the second quarter of 2016, with the exception of sector accounts, which are available only up to 2016Q1. Monthly data have been updated to May 2016, or to August 2016 for readily available variables such as stock market prices and exchange rates. As usual, we adopt "neutral" assumptions as much as possible for projecting the exogenous determinants of the Levy Institute's macroeconomic model for Greece. We assume, for instance, that the stock market index will stop falling—it is now at a historical low—but not increase. A similar assumption is made for housing prices, which have fallen by 42 percent since their peak in 2008, although this decline has recently slowed. We further assume that price deflation will continue in 2016 at a rate of 1 percent, with prices stabilizing in 2017 and monetary policy maintaining interest rates at their current very low level.

We also expect that Greece will continue to receive capital transfers from its European creditors in the amount of €10 billion per year, which will be used to meet existing debt commitments. The impact of such transfers on the real economy will be minimal, as it has been in the last few years.

As Table 2 shows in more detail, the government, according to the schedule available from the *Wall Street Journal*,[8] has three tranches of debt coming to maturity in 2016–18. Given that the government has an additional growing debt in arrears, new loans from the troika of €10 billion annually will barely be enough to roll over the existing debt coming to maturity. In order to reduce the current level of debt, fiscal austerity needs to generate an overall government surplus, not merely a primary surplus. As our simulations will show, such a policy would be devastating for a country that has already experienced an extraordinarily long and deep recession, with a sharp increase in unemployment and poverty. Debt forgiveness, more than debt restructuring, is needed, as we have argued in Nikiforos, Papadimitriou, and Zezza (2016).

Table 2 Greek Public Debt Coming to Maturity (in billions of euros)

	Treasury Bills	IMF; ESM; ECB	Total
2016	4.7	6.1	10.8
2017	6.5	9.2	15.7
2018	0	6.0	6.0

In our baseline, we assume that fiscal policy will meet the targets on fiscal revenues, as well as reduce expenditures as detailed in Table 1. In addition, we assume that the government will be able to increase public investment by €1 billion in 2017 and pay back €1.6 billion in arrears in 2016, along with an additional €1 billion in both 2017 and 2018.

Our model shows that, conditional on our assumptions, and if the government is indeed able to raise taxes and cut pensions as prescribed in the MOU, the economy will experience another recession in 2016, with real GDP down 0.7 percent for the year. In 2017 the increase in public investment, coupled with the disbursement of arrears, will be just sufficient to compensate for the impact of the newly imposed taxes and pension cuts. We expect exports, especially exports of services, to recover somewhat starting next year, with a growth rate of 0.2 percent in 2017 and 1.4 percent in 2018.

It is worth bearing in mind that some components of aggregate demand—notably, exports of transport services—dropped considerably in the second half of 2015 against the first half of that year, and have remained relatively stable at the new, lower level. The recession we project, therefore, is not simply the result of the new austerity measures. More specifically, exports of transport services fell by 47 percent over 2015Q4–2016Q2 compared to the same period a year earlier. At annual rates, this amounts to a drop of more than €6 billion. The primary reason for this decline seems to have been the imposition of capital controls at the end of June 2015. Data from the Bank of Greece show a sharp break in the revenues from transport services starting in July 2015. In addition, the fall in revenues may be partly attributed to a global slowdown in transport activities, as documented in the Baltic Dry Index (BDI), which in 2016Q1 was 63 percent below its previous peak in 2015. However, the correlation between the BDI and the value of Greek revenues from transport services is rather low, and therefore does not fully account for the falloff in these services reflected in the balance of payments.

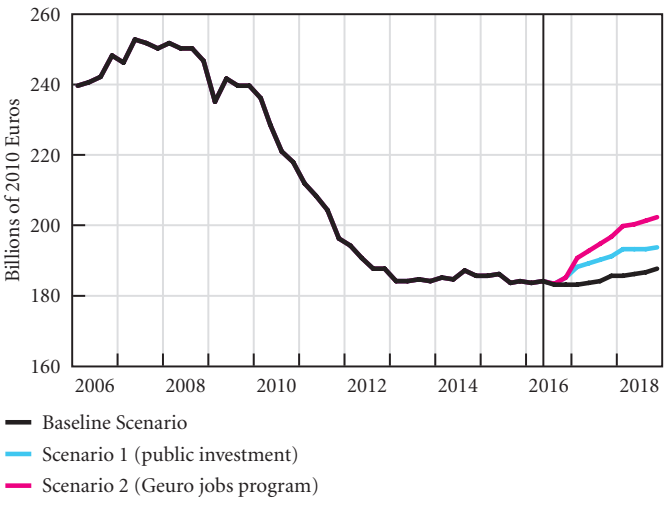
We also anticipate that the government will be able to meet its commitments in terms of the primary surplus, and

even realize a primary surplus above target. The primary surplus will be €4.4 billion in 2016 and will increase further in 2017 and 2018.

Despite our expectation of a large reduction in the value of imports, the sharp fall in exports of services (primarily transport services) implies a deterioration in the current account balance in 2016. The current account balance will improve beginning in 2017, mainly because exports will stop falling and rise relative to 2016, while imports will be lower given the drop in real GDP and disposable income.

In our first alternative scenario we estimate the possible impact of significant payments toward government accounts in arrears in 2017, as well as additional government investment. To this, we turn next.

Figure 11 **Greece: Real GDP under Alternative Scenarios**



Source: Authors' calculations

Scenario 1: The Impact of Government Arrears and Public Investment

In order to meet the primary surplus targets agreed to in 2015, the government has postponed a significant portion of its expenditures, generating a growing amount in arrears. The government has now promised to pay back as much as €3.5 billion, using the MOU disbursements by the end of 2016 and an additional €2 billion by the end of 2017Q2.

What would be the impact of the government extinguishing this part of its debt in arrears? The answer is not straightforward. Our model is based on national account statistics, which record government expenditures at the time they are incurred, while a payment in arrears is a financial transaction whereby the government reduces its private sector debt and the private sector receives liquid assets in exchange for credit it extended to the government. Moreover, it is not clear to what extent the recipients of payments in arrears would increase spending or simply run down debt.

For the purposes of our simulation, we have chosen to assume that the value of the arrears will be spent or saved as if it were a (temporary) increase in disposable income. It must be noted, however, that this additional liquidity does not constitute a permanent increase in income, and therefore its effect on spending and saving will fizzle out rather quickly.

While in our baseline we assume that €1.6 billion in arrears will be paid in 2016, in this scenario we assume that €3.5 billion in arrears will be paid in 2016 and an additional €2 billion in 2017. We also assume that the government will increase public investment by €2 billion in 2017 and by €4 billion in 2018, relative to the baseline.

The effects of this scenario on real GDP are depicted in Figure 11.

Using these assumptions, the economy returns to more robust growth in 2017. As Figure 11 shows, the recovery is substantial, but—being mainly based on public investment—it is not enough to generate a rapid increase in employment.

Scenario 2: Creating Jobs with a Fiscal Currency

In our second and final scenario, we update our analysis of the possible impact of a fiscal expansion financed through the introduction of a fiscal currency, the Geuro, that the government can start issuing to avoid the fall in nominal wages and pensions, and to finance an employment program. This scenario is built on top of our previous scenario—that is, we are assuming a fiscal boost in addition to the increase in public investment projected in scenario 1.

We assume that, starting in the first quarter of 2017, the government will issue a nonconvertible "fiscal currency" along the lines discussed in our previous reports (Papadimitriou, Nikiforos, and Zezza 2014, 2015, 2016). What we have in mind is similar to the complementary currency that has been operating very successfully in Switzerland alongside the Swiss franc since 1934, when it was introduced to offset restrictive fiscal policy (Papadimitriou 2016).

To calibrate the projections, we use the same parameters adopted in our report of January 2016, although we adjust the volumes to match the most recent data on government outlays and revenues. We propose that the government allow the use of Geuros for up to 20 percent of tax payments. In the last year for which data are available (from 2015Q2 to 2016Q1), government revenues from "Taxes on production and imports" were €28.7 billion, "Taxes on income and wealth" an additional €17 billion, and "Social contributions" €24.8 billion, for a total of €70.5 billion. This implies that annual demand for Geuros for tax purposes alone could be equivalent to €14.1 billion.

The main purpose for the introduction of the Geuro would be the gradual implementation of a program of public benefit work, where new jobs are provided to anyone willing to work for a minimum wage, set at a level that is noncompetitive with employment in the private sector yet sufficient for obtaining a decent standard of living. Our estimates are obtained from Antonopoulos et al. (2014) and based on an assumed monthly gross wage of €586, with an annual gross expenditure of €7.5 billion for 550,000 workers, including all other expenses (intermediate products, social contributions, etc.).

We propose to pay for these public benefit jobs in both euros and Geuros. Adopting a proportion of 50 percent, this implies an additional annual expenditure in euros of 3.8 billion, which can be financed by paying 10 percent of public sector wages in Geuros (for an estimated annual outlay of €2.1 billion) and 5 percent of pensions and other social benefits in Geuros (an estimated €1.7 billion annually).

Adopting these measures, net government payments in euros would decrease by roughly 3.9 billion, while the Geuros issued to fill the gap in financing the public benefit jobs program would amount to €3.6 billion—well below the expected demand arising from the option of using Geuros for tax payments. We therefore assume that the additional government expenditure can be financed using Geuros, for a maximum of €2 billion per quarter from the beginning of 2017 to the end of our projection period.

Since it isn't feasible to put such a large-scale employment program in place immediately, we assume that the size of the public benefit jobs program will increase incrementally by 25,000 people each quarter, for an overall increase in employment of 200,000 by the end of the projection period. This implies a much smaller expenditure in Geuros than what is feasible, so we also assume that additional public investment is financed through Geuro emission, at 800 million per year, and that pension payments are increased by 10 percent, for an additional expenditure of about 3.2 billion per year.

We have simulated this scenario using our macroeconomic model, with the results reported in Table 3.

Using the assumptions above, the model shows that the additional expenditure in Geuros would be well below the amount in Geuros that could be used for tax payments; or, to put it differently, that the potential demand for Geuros for tax purposes would largely exceed the supply, so there is no reason to fear any inflationary pressures arising from Geuro emission. This argument applies for those who believe that an increase in the money supply generates a proportional increase in the price level: should this theory be realistic—which we doubt—our calculations show that the end-of-the-year increase in the money supply would be negligible. On the contrary, if the fiscal expansion financed through Geuro emission were unable to increase the domestic supply of both capital and consumption goods—due to the wreckage of the Greek industrial base caused by the prolonged recession—our results would be optimistic, and the impact on imports could be greater. This possible outcome could be alleviated by directing at least part of the fiscal expansion toward strengthening

Table 3 Greece: Key Indicators under Alternative Scenarios

	2015	2016	2017	2018
Baseline scenario				
Real GDP (growth rate)	-0.3	-0.7	0.2	+1.4
Gov. total surplus (% of GDP)	-7.3	-0.8	-1.7	0.0
Gov. primary surplus (% of GDP)	-3.4	+2.6	+1.6	+3.3
Current account (% of GDP)	-0.8	-2.0	+0.5	+1.3
Scenario 1: Additional arrears and investment				
Real GDP (growth rate)	-0.3	-0.4	+3.0	+1.9
Gov. total surplus (% of GDP)	-7.3	-0.7	-1.8	-1.0
Gov. primary surplus (% of GDP)	-3.4	+2.6	+1.4	+2.2
Current account (% of GDP)	-0.8	-2.1	-0.3	+0.8
Scenario 2: Geuro jobs program				
Real GDP (growth rate)	-0.3	-0.4	+5.2	+3.7
Gov. euro total surplus (% of GDP)	-1.9	-0.7	+0.8	+1.9
Gov. euro primary surplus (% of GDP)	-3.4	+2.6	+4.0	+5.0
Gov. Geuro surplus (% of GDP)	0.0	0.0	-1.3	-1.6
Current account (% of GDP)	-0.8	-2.1	-0.8	-0.1

the productive capacity of Greek firms or encouraging the creation of new businesses.

As reported in Table 3, a Geuro plan like the one described above would not jeopardize current targets in terms of the government primary surplus in euros, nor would it bring about a significant deficit in the current account. There is reason to believe that the introduction of the Geuro would have a smaller impact on imports relative to a fiscal stimulus of the same size in euros. However, we have not introduced any arbitrary assumptions about the elasticity of imports to expenditure in Geuros, and therefore our projections for the current account (Table 3) may be pessimistic in that respect. If this is correct, an even bolder plan could be put in place for creating jobs financed via the complementary currency, as long as the flow of net new liquidity did not grow faster than the additional domestic output generated by the stimulus.

Conclusion

The Greek government is fulfilling most of the conditions—increasing taxes and reducing public pensions and other expenditures—imposed by its international lenders as agreed in the third MOU. The Eurogroup will most likely approve the disbursement of the second installment of €2.8 billion at its meeting in October. As reported in the Greek media, recent voices have echoed Berlin's intention to delay negotiations for debt relief despite the promise made by European leaders last year to do so once the conditions were met (and of which the government is so proud). On the positive side, Greek bonds may finally be included in the European Central Bank's quantitative easing policy.

Our contention in this report is that 2016 is unlikely to end with improvement in the Greek economy's GDP growth rate, despite the government's pronouncements. Our simulations show, however, that if the arrears accounts are cleaned up and an increase in investment occurs, the government's projection of 2.7 percent GDP growth in 2017 may come to pass. This is not, of course, a cause for celebration, since employment will not increase dramatically. Our second scenario, however, could provide robust growth from 2017 onward, together with very significant gains in employment. It has worked in other countries, and it can work in Greece.

Notes

1. Measured respectively as: (1) compensation of employees per worker, deflated by the consumption deflator; (2) real GDP per worker; and (3) the ratio of employee compensation to real GDP. Such measures do not represent a precise measure of average wages or unit labor costs, since the employment measure includes the self-employed, who represent more than 30 percent of the labor force, while their earnings are not included as "Compensation of employees."
2. Our estimate is based on compensation of employees for a much broader industry, which also includes retail and wholesale trade, etc. The indices in Figure 4 are computed from the ratio of "Compensation of employees" to the number of "Salaried employees," which we have adjusted for seasonality.
3. Wages in Figure 4 are computed from national accounts. Using the 2012=100 index of wages published by ElStat for the whole economy, nominal wages peaked in 2010Q1 and reached a low 2015Q2, at 29 percent below their peak value. In the last year, nominal wages have recovered by a modest 4.6 percent.
4. The figure reports 12-month moving averages at annual rates.
5. The discrepancies may arise for a variety of reasons: underestimation of household disposable income, problems allocating real and financial flows to institutional sectors, etc.
6. The general government account shows an outflow of €7.8 billion in 2015Q4 but an inflow of €4 billion that is not recorded as outflows from other sectors, and therefore must be the result of simply summing up the transactions of the central government and those of local governments rather than a customary consolidation of accounts.
7. Available at minfin.gr/sites/default/files/financial_files/STATE_BUDGET_EXECUTION_BULLETIN_AUGUST_2016_preliminary.pdf.
8. Available at graphics.wsj.com/greece-debt-timeline.

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