CHAPTER 9

The Portuguese Crisis and the IMF

MARTIN EICHENBAUM, SERGIO REBELO, AND CARLOS DE RESENDE

Introduction

In May 2011, Portugal entered a three-year arrangement with the IMF under the Extended Fund Facility (EFF). The EFF-supported adjustment program was designed, implemented, and funded by the IMF, in close cooperation with the European Central Bank (ECB) and the European Commission (EC), with the European portion of the funding coming from the European Financial Stability Facility (EFSF) and the European Financial Stabilization Mechanism (EFSM). The IMF, the ECB, and the EC came to be collectively known as the troika.

This chapter evaluates the IMF's role in the program, including the surveillance of the Portuguese economy that preceded it. The chapter is structured as follows. The second section briefly describes the performance of the Portuguese economy prior to the program, and the third section assesses the IMF's pre-program surveillance. The fourth section describes the program's design and implementation, and the fifth section evaluates the Fund's contributions to the program. The sixth section discusses whether the troika structure posed a problem in program design and implementation. The final section concludes, summarizing the key lessons for IMF surveillance and program design.

Our analysis and conclusions are primarily based on publicly available data, including IMF staff reports. We also incorporate insights obtained from: (i) a survey of Portuguese economists conducted by the IEO; (ii) interviews with staff of the IMF, ECB, and EC, IMF Executive Directors, Portuguese authorities involved in the program, and Portuguese economists; and (iii) internal IMF documents, many of which are not available to the public.

Unless stated otherwise, we use the most recent version of the data available. Because the data have been subject to revisions, they may differ from what was available to IMF staff at the time of their analysis.

Background to the Crisis

How did the Portuguese economy perform in the years leading up to the 2011 program? We consider three time periods: 1995–2000, 2000–07, and

2007–11. The first of these coincided with the run-up to and immediate aftermath of the creation of the euro and was marked by fast growth; the second saw a sharp deterioration in Portugal's economic performance; and the third was characterized by the global financial crisis and the euro area sovereign-debt crisis.

1995–2000: The Run-Up to the Euro

During these five years Portugal enjoyed high real GDP growth, an investment boom, and a substantial decline in borrowing costs. At the same time, its trade and current account deficits were rapidly deteriorating. The domestic banking sector intermediated the required borrowing by seeking wholesale funding from foreign banks. Since the ratio of government debt to GDP was stable during this period, the increase in external deficits was fueled by the private rather than the public sector.

High real GDP growth

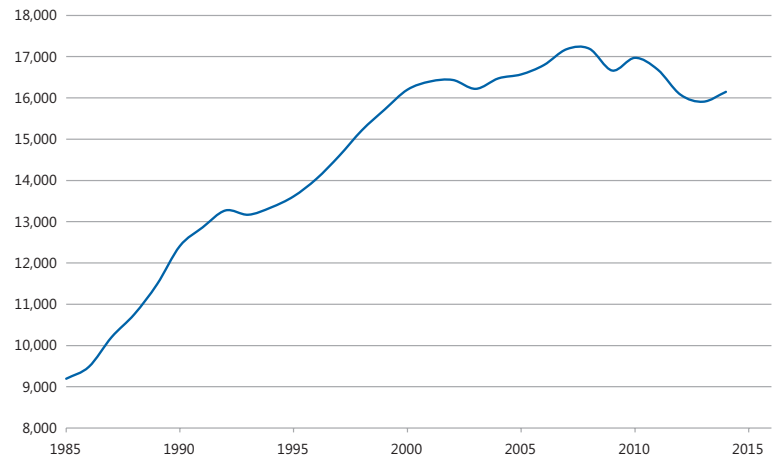
Portugal's per capita real GDP grew by nearly 3 percent in this period (Table 9.1, Figure 9.1), led by nontradable goods and services: utilities, transport, and wholesale and retail trade (Table 9.2).

Table 9.1. Portugal: Average Annual Growth Rate of Real Per Capita GDP
(In percent)

1974–86	1986–95	1995–2000	2000–07	2007–11	2011–15
1.8	3.7	2.9	0.7	–0.6	–0.4

Source: IMF, *WEO* (October 2015).

Figure 9.1. Portugal: Real Per Capita GDP
(In billions of euros)



Source: IMF, *WEO* (October 2015).

Table 9.2. Portugal: Average Annual Growth Rate of Real Sectoral Output
(In percent)

	Agriculture, Forestry, and Fishing	Industry	Energy, Water Supply and Sewage	Construction	Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles, Accommodation and Food Service Activities	Transportation and Storage, Information and Communication	Financial Insurance and Real Estate Activities
1995–2000	–1.1	3.8	4.9	3.8	4.0	4.2	2.6
2000–07	–0.3	0.3	1.9	–1.8	0.5	3.4	2.7
2007–11	0.3	–1.4	0.2	–5.7	0.4	0.5	1.3
20011–14	1.2	–0.3	–2.9	–6.1	1.0	–1.3	–2.2

Source: Instituto Nacional de Estatística, National Income Accounts.

Table 9.3. Portugal: Average Annual Growth Rate of Real GDP and Expenditure Components
(In percent)

	GDP	Private Consumption	Private Durable Goods Consumption	Public Consumption	Residential Investment	Nonresidential Investment
1995–2000	3.4	3.4	7.0	3.3	5.5	7.2
2000–07	1.0	1.2	–1.5	1.7	–4.5	0.6
2007–11	–0.6	–0.5	–5.0	–0.4	–10.0	–3.3
2011–14	–1.1	–1.2	–2.5	–1.4	–7.8	–4.3

Source: Instituto Nacional de Estatística, National Income Accounts.

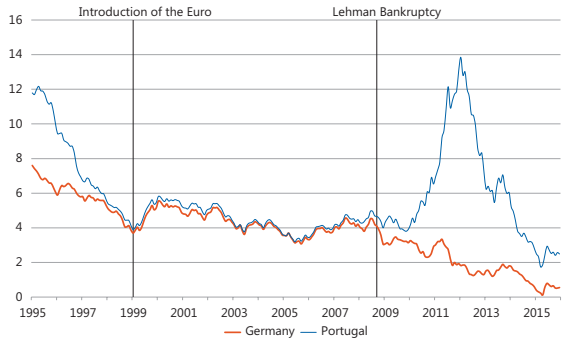
Private consumption and investment boom

Consumption of durable goods, and residential and non-residential investment, all grew faster than overall economic activity (Table 9.3). The first two types of spending did not add to Portugal's export capacity, a point to which we return below. Car ownership rose rapidly; the annual growth rate in an index of passenger vehicles (1995=100) exceeded 7 percent in much of the five-year period. The number of new homes built increased by 64 percent over the period. In sharp contrast to Spain and Ireland, there was no pronounced rise in Portuguese house prices.

Sharp reduction in borrowing costs

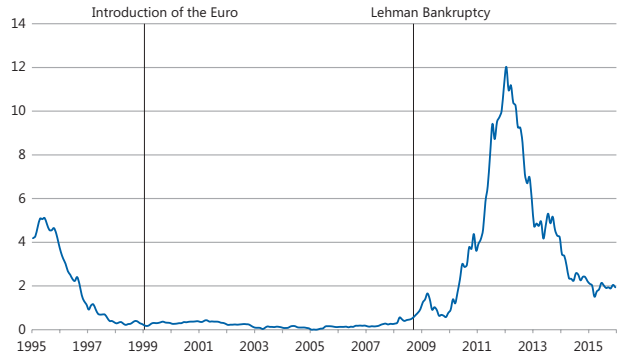
Both the private and the public sector experienced a steep reduction in borrowing costs, in line with the broader European trend during this period. Yields on ten-year government bonds fell from 11.5 percent in 1995 to 5.6 percent in 2000 (Figure 9.2), and the spread between the yields on Portuguese and German 10-year government bonds declined from a peak value of 5.1 percent in June 1995 to 0.3 percent in 2000 (Figure 9.3).

Figure 9.2. Yields on Ten-Year Portuguese and German Bonds
(In percent)



Source: Eurostat.

Figure 9.3. Spread Between Ten-Year Portuguese and German Government Bonds
(Basis points)



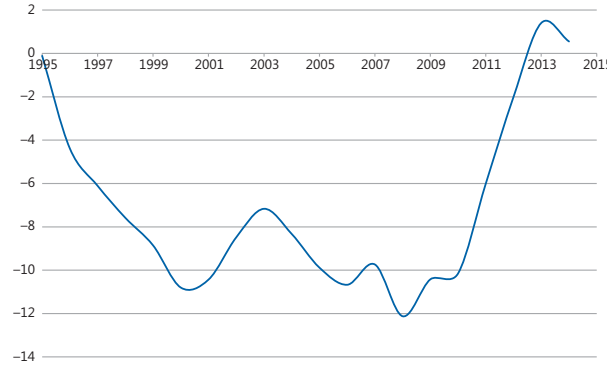
Source: Eurostat.

Rising trade and current account deficits

Portugal's current account deficit deteriorated sharply during the period, rising from roughly 0.1 percent of GDP in 1995 to 10.8 percent of GDP in 2000 (Figure 9.4). The trade deficit increased from 6.4 percent of GDP to 11 percent (Figure 9.5). The change in the trade deficit overwhelmingly reflected a large rise in imports, which rose as a percentage of GDP from 33.1 in 1995 to 39.2 in 2000. In contrast, exports were quite stable, remaining roughly at 27 percent of GDP over the period (Figure 9.6). Portuguese exports also remained stable as a percentage of the GDP of countries to which Portugal was exporting (Figure 9.7).

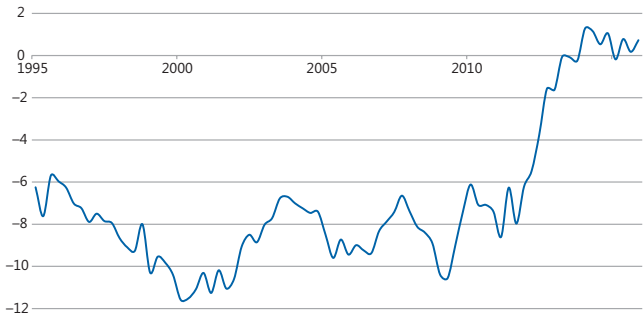
A different way to understand the deterioration in Portugal's trade deficit is to consider the savings gaps in different sectors of the economy. By savings gap we mean the difference between savings and investment expressed as a

Figure 9.4. Portugal: Current Account
(In percent of GDP)



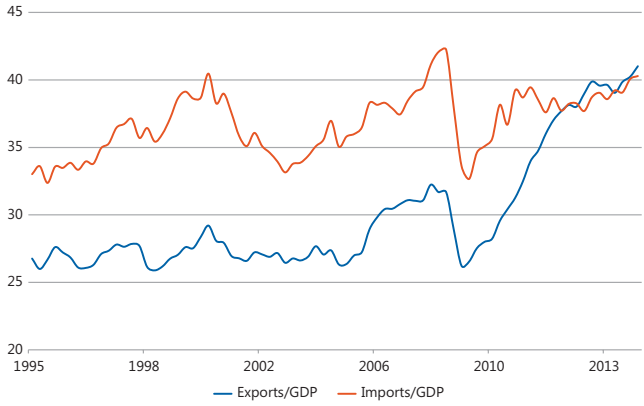
Source: IMF, *WEO* (October 2015).

Figure 9.5. Portugal: Trade Balance
(In percent of GDP)



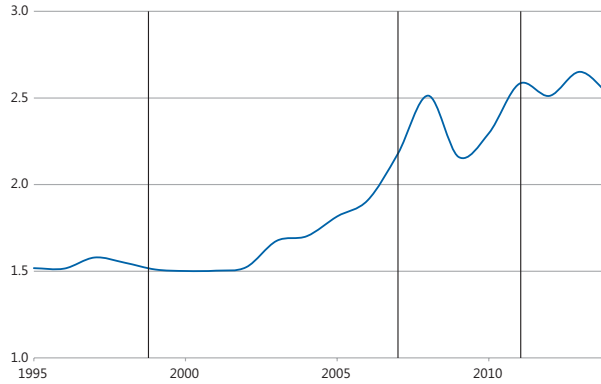
Source: IMF, *WEO* (October 2015).

Figure 9.6. Portugal: Imports and Exports
(In percent of GDP)



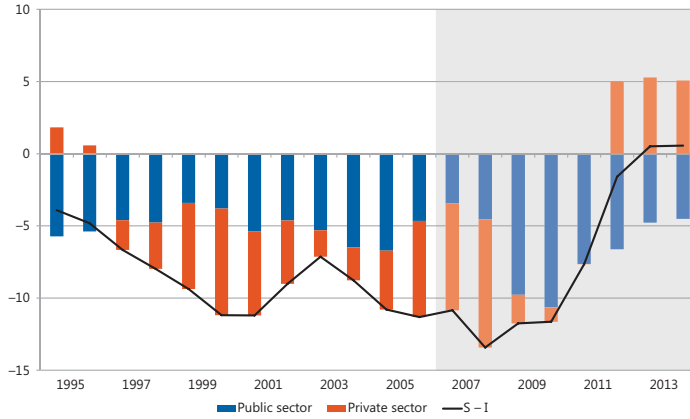
Source: Instituto Nacional de Estatfstica, National Income Accounts.

Figure 9.7. Portugal: Exports of Goods as Percent of GDP of Trade Partners



Source: Authors' calculations using data from UNCTAD.

Figure 9.8. Portugal: Public and Private Sector Savings Minus Investment
(In percent of GDP)

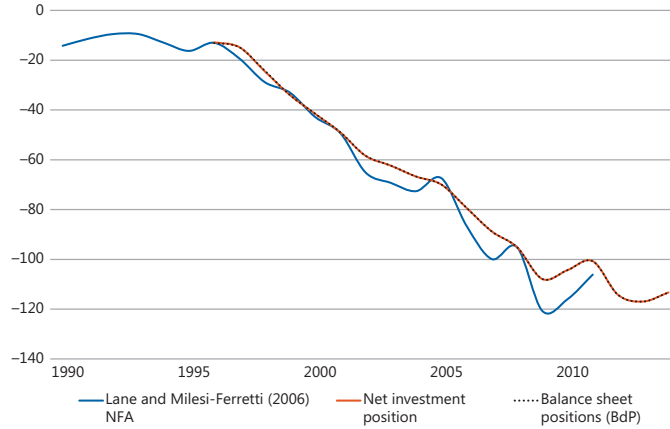


Source: IMF, *WEO* (October 2015).

percentage of GDP. In 1995, the trade deficit was entirely due to the savings gap in the public sector (Figure 9.8). But the sharp deterioration of the trade deficit that ensued was due entirely to a fall in private sector savings. The public sector savings gap actually improved during this period. We infer that Portugal's growing external imbalances were being driven by private rather than public sector behavior.

As a consequence of the deteriorating current account deficit, Portugal saw its net foreign assets decline from –16.3 percent of GDP in 1995 to roughly –43 percent in 2000 (Figure 9.9). A similar decline took place in Portugal's international investment position—that is, the consolidated (net) balance sheet positions of Portuguese households, corporations, and government vis-à-vis the foreign economy.

Figure 9.9. Portugal: Net Foreign Assets and International Investment Position
(In percent of GDP)



Sources: Updated version of Lane and Milesi-Ferretti's (2007) data set; Banco de Portugal; and IMF, *WEO* (October 2015).

Expansion of credit by domestic banks and reliance on wholesale funding

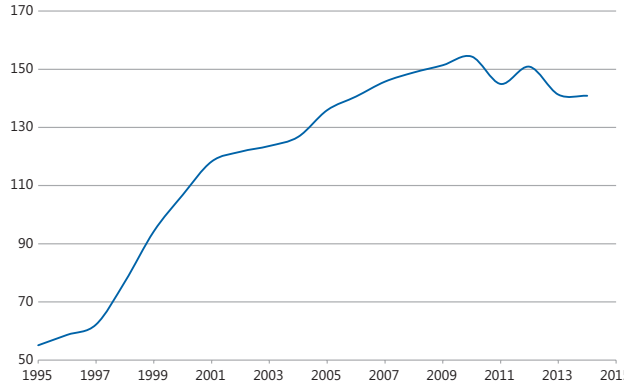
The widening of the private sector savings gap was financed by an explosion of borrowing. Household debt as a fraction of disposable income rose from 55 percent in 1995 to 107 percent in 2000 (Figure 9.10), and mostly took the form of mortgages. The rise in private debt was not confined to households: the consolidated debt of nonfinancial corporations rose from 59 percent of GDP in 1995 to 84 percent in the last quarter of 2000 (Figure 9.11).

In contrast to private sector debt, public sector debt did not increase substantially during the 1995–2000 period; indeed, the average overall government deficit declined from 6.8 percent of GDP in 1990–95 to 4 percent in 1995–2000. Granted, most of this decline reflected a fall in government bond yields rather than an improvement in the primary deficit. The latter actually deteriorated from an average surplus of 0.4 percent of GDP in 1990–95 to 1.3 percent in 1995–2000. Nevertheless, the combination of the lower government deficit and the relatively high growth rate of the economy reduced gross government debt from 56.5 percent of GDP in 1990 to 47.9 percent in 2000 (Figure 9.12).

The explosion of borrowing by the private sector was financed by domestic banks, which became increasingly dependent on external wholesale funding. The loan-to-deposit ratio rose from an average of 86 percent in 1997 to 105 percent in 2000 (Figure 9.13).[1]

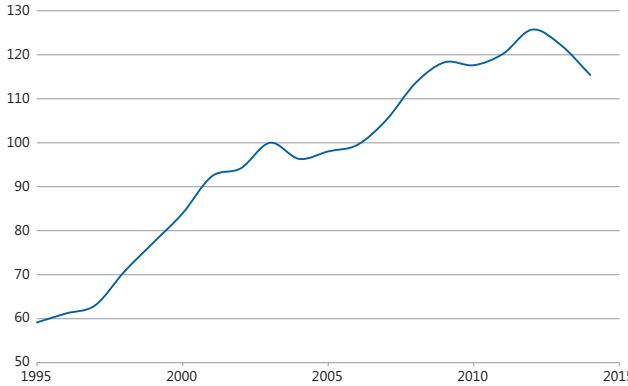
[1] Data for the loan-to-deposit ratio are not available before September 1997.

Figure 9.10. Portugal: Household Debt as Share of Disposable Income
(In percent)



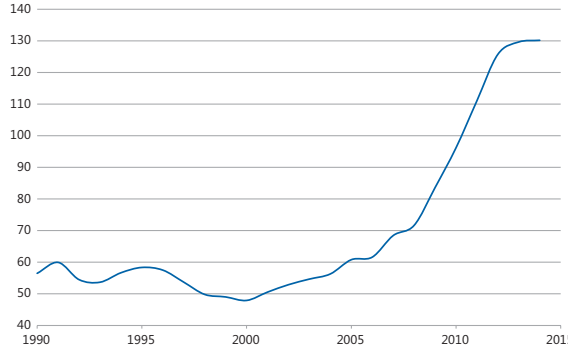
Source: OECD.

Figure 9.11. Portugal: Consolidated Debt of Nonfinancial Corporations
(In percent of GDP)



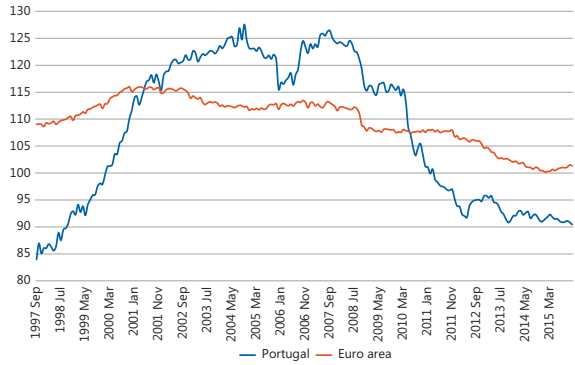
Sources: Bank of Portugal and IMF, *WEO* (October, 2015).

Figure 9.12. Portugal: Government Debt
(In percent of GDP)



Source: *IMF*, WEO (October 2015).

Figure 9.13. Portugal: Loan-to-Deposit Ratio



Source: ECB.

2000–07: The Great Slowdown

In this seven-year period Portugal's economic performance sharply deteriorated. The great slowdown was marked by six key features: low growth, a decline in investment, ongoing large trade and current account deficits, a rise in the government deficit, continued low interest rates, and continued reliance on wholesale funding by the banking sector.

Low growth

Though it was part of a general slowdown in the developed world, the decline in Portuguese growth was particularly large (Table 9.4).[2] The average growth rate of Portugal's real per capita GDP slowed to 0.7 percent in 2000–07 (Table 9.1). The slowdown was most marked in industry, particularly in the construction sector. The average annual growth rate of Portugal's industrial output declined from 3.8 percent in 1995–2000 to 0.3 percent in 2000–07, while construction output, which had grown at an average annual growth rate of 3.8 percent in 1995–2000, contracted at 1.8 percent in 2000–07.

Despite the slowdown in growth, both the private and the public sectors continued to borrow. The net results were large current account and government deficits. Household debt as a percentage of disposable income and corporate debt as a fraction of GDP rose between 2000 and 2007 (Figures 9.10 and 9.11). The former rose from 107 percent to 146 percent, and the latter from about 84 percent to 105 percent.

Weak investment

After its rapid growth in the preceding five years, residential investment declined in real terms at an average annual rate of 4.5 percent (Table 9.3).

[2] See Reis (2013) for an interesting analysis of this period.

Table 9.4. Selected Countries: Average Annual Growth Rate of Real Per Capita GDP
(In percent)

	1995–2000	2000–07	Difference
Austria	2.4	1.5	–0.9
Belgium	2.2	1.4	–0.9
Finland	4.0	2.5	–1.5
France	2.1	1.0	–1.1
Germany	1.5	1.2	–0.3
Greece	2.7	3.3	0.6
Ireland	7.4	2.9	–4.5
Italy	1.6	0.7	–0.9
Portugal	2.9	0.7	–2.2
Spain	3.0	1.6	–1.4
Sweden	2.9	2.2	–0.7
United Kingdom	2.3	2.1	–0.3
United States	2.6	1.3	–1.3

Source: IMF, WEO, October 2015.

While nonresidential investment grew at roughly the same rate as GDP, total investment as percentage of GDP fell from roughly 29 percent to about 23 percent (Figure 9.15).

Ongoing large trade and current account deficits

Despite the slowdown in overall growth, Portugal continued to run large trade deficits, averaging 8.7 percent of GDP (Figure 9.5). There are no marked trends in the ratio of exports and imports to GDP over the 2000–07 period (Figure 9.6). Still, there were interesting patterns in the behavior of both exports and imports. Imports as a percentage of GDP fell from 2000 to 2003. This decline reflects a sharp drop in the growth rate of real GDP during that time period. As the growth rate of real GDP recovered, the ratio of imports to real GDP returned to its 2000 level. The ratio of exports to GDP dropped from 29 percent in 2000 to a trough of 26 percent in 2005. Thereafter, the ratio began a strong recovery, reaching 31 percent by the end of 2007.[3]

Consistent with Portugal's large trade deficits during this period, the current account deficit averaged 9.4 percent of GDP between 2000 and 2007 (Figure 9.4). The ratio of net foreign liabilities to GDP increased from 43 percent in 2000 to about 100 percent of GDP in 2007 (see Figure 9.9).[4]

[3] An important driver of these dynamics was the product cycle at VW's Autoeuropa plant. The initial decline in the ratio of exports to GDP reflected the end of a product cycle at that plant. New investments and the introduction of a new product cycle led to a rise in production and exports that began in 2005. See *OECD Economic Surveys: Portugal* (2008).

[4] By comparison, according to Lane and Milesi-Ferretti (2007) the analogous 2007 numbers for Spain and Greece are 84 percent and 104 percent.

This extraordinary rise left Portugal vulnerable to a sudden stop in capital inflows.

Ongoing fiscal deficits

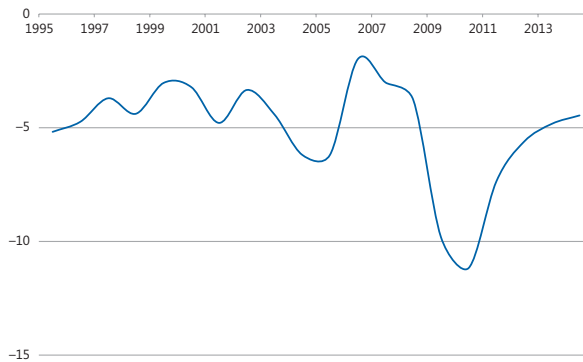
The government did not adapt fiscal policy to the new slow-growth environment, and general government gross debt as a percentage of GDP rose from 47.9 in 2000 to 68.4 in 2007 (Figure 9.12). To understand the source of this increase, note that the instantaneous change in the debt to GDP ratio is given by:

$$d(B/Y)/dt = D/Y + (B/Y)(R-g)$$

where *B, Y, D, R,* and *g* denote the nominal government debt, nominal GDP, the nominal government deficit, the nominal yield on government debt, and the growth rate of nominal GDP, respectively. This formula shows that a rise in the debt to GDP ratio can result from two forces. The first is the government deficit as a percentage of GDP, *D/Y*. The second is a nominal yield on government debt that exceeds the growth rate of nominal GDP, *(B/Y)(R-g)*.

In 2000–07, the primary driver of the increase in Portugal's debt to GDP ratio was an average annual deficit equal to 4.1 percent of GDP (Figure 9.14).[5] This ratio was roughly the same as in 1995–2000. The difference between the two periods is that *R-g* was higher in the later period. The rise of *R-g* occurred primarily because of a large drop in the growth rate of nominal GDP, from 7.7 to 4.9 percent. It is clear that the government did not adapt fiscal policy to the new slow growth environment.

Figure 9.14. Portugal: General Government Balance
(In percent of GDP)



Source: *IMF*, WEO (October 2015).

[5] In our view, the official government deficit figures understate the structural imbalances in public finances because the government used one-off measures to raise revenue. These measures included a tax amnesty in 2002, the transfer of the postal pension fund in 2003, the transfer of the state enterprises' pension funds in 2004, and sales of assets.

Continued public and private borrowing

Despite the increases in public and private debt, both the government and the private sector continued to be able to borrow at low interest rates. The average yield on a ten-year government bond in this period was 4.5 percent, down from 5.6 percent in 2000 (Figure 9.2). The average spread in 2000–07 between a Portuguese and German ten-year government bond was only 20 basis points (Figure 9.3).

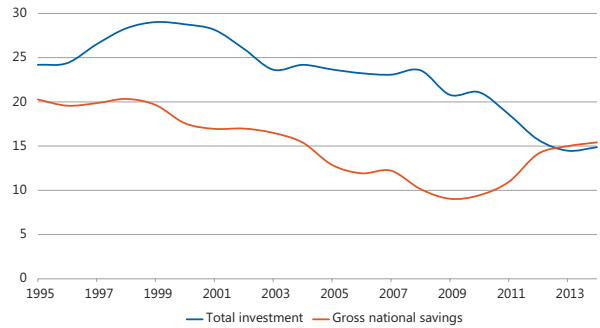
The low interest-rate spreads may have reflected lenders' optimism about growth prospects, a surplus of savings in the current account surplus countries of Europe, and/or optimism about the possibility of a bailout in the event of a Portuguese default. In evaluating the importance of these factors, it is useful to keep in mind the standard national income accounts identity:

Current account = national savings – national investment.

As noted above, Portugal's current account markedly deteriorated during the 2000–07 period relative to the 1995–2000 period. To interpret this deterioration, note that both investment and savings as a percentage of GDP were lower in 2000–07 than in 1995–2000 (Figure 9.15). But savings clearly fell by more than investment. Perhaps savings declined because the Portuguese were optimistic about the future. In this scenario we would expect interest rates on Portuguese debt to have increased, whereas they actually fell (Figure 9.2).

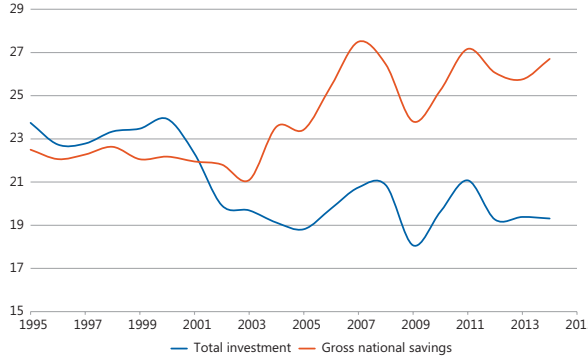
The fall in interest rates suggests that there was a rise in the supply of funds to Portugal. This hypothesis is consistent with the increase in savings and the decline in investment that occurred in Germany during this period (Figure 9.16). The net increase in the supply of German funds is likely to have affected all of the European periphery countries. Figure 9.17 displays Germany's current account surplus as a percentage of German GDP, along

Figure 9.15. Portugal: Savings and Investment
(In percent of GDP)



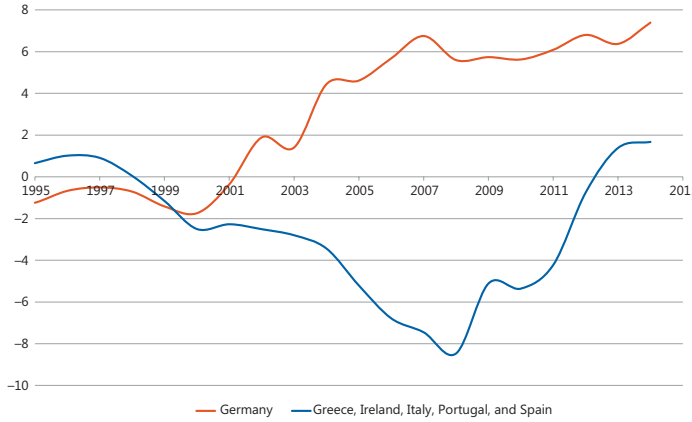
Source: *IMF*, WEO (October 2015).

Figure 9.16. Germany: Savings and Investment
(In percent of GDP)



Source: *IMF*, WEO (October 2015).

Figure 9.17. Selected Countries: Current Account
(In percent of Germany's GDP)



Source: *IMF*, WEO (October 2015).

with the combined current account deficits of Italy, Spain, Portugal, Greece, and Ireland as percentages of German GDP. Strikingly, the two lines mirror one another. This pattern lends credence to the view that the deterioration in Portugal's current account was fueled in part by an increase in German savings.

Continued reliance on wholesale funding

During the 2000–07 period, Portuguese banks continued to fund domestic loans by borrowing abroad. As a result, the loan-to-deposit ratio of Portuguese banks rose from 85.5 percent in the second half of 1997 to 124.8 percent in 2007 (Figure 9.13).

2007–11: The Global Financial Crisis and the Run-Up to the 2011 EFF-Supported Program

The global financial crisis began in the United States but quickly led to a global recession. The downturn had a powerful impact on the Portuguese economy: real GDP growth, which was 2.5 percent in 2007, fell to 0.2 percent in 2008 and to –3.0 percent in 2009, before recovering to 1.9 percent in 2010. The trade deficit widened from 7.6 percent of GDP in 2007 to 9.7 percent in 2008, before recovering to 7.6 percent in 2010 (Figure 9.5). The current account deficit widened from 9.7 percent of GDP in 2007 to 10.2 percent in 2010, after reaching 12.1 percent in 2008 (Figure 9.4). The result was an increase in net foreign liabilities to roughly 116 percent of GDP (Figure 9.9). The government deficit increased dramatically during this period, rising from 3.4 percent of GDP in 2007–08 to 10.5 percent in 2009–10 (Figure 9.15).[6]

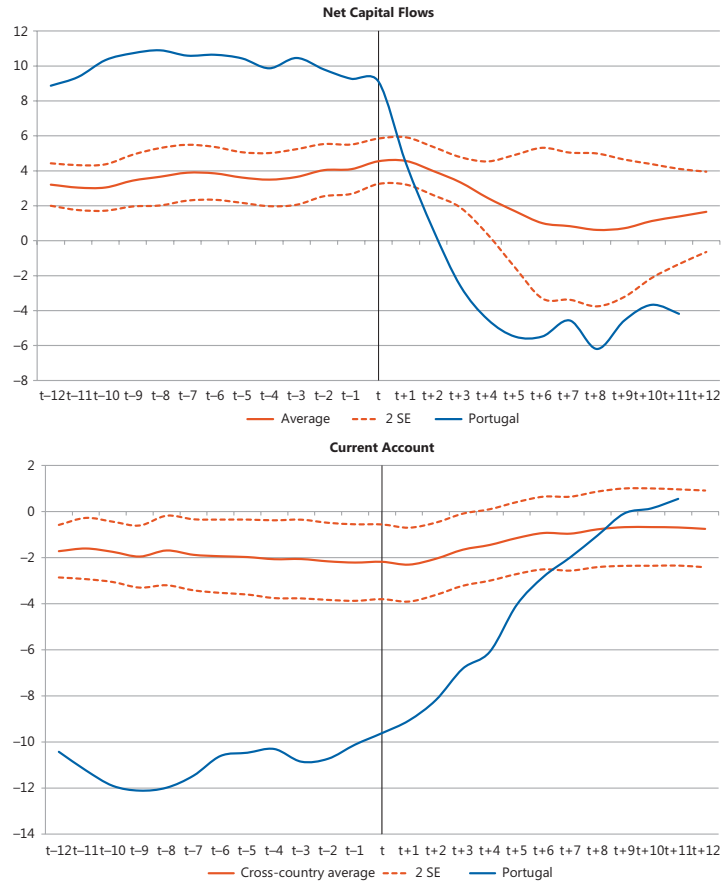
The era of low interest rates on Portuguese debt ended during this period (Figure 9.2). In reaction to the U.S. financial crisis, spreads on sovereign debt of European periphery countries and emerging markets rose, peaking in the first quarter of 2009. Consistent with this pattern, the spread between German and Portuguese ten-year government bonds rose from 26 basis points at the end of 2007 to 166 basis points in March 2009 (Figure 9.3).

The Greek crisis began in October 2009, when the newly elected government raised the fiscal deficit estimate for the year from 3.6 percent of GDP to 12.8 percent of GDP. This event led to a new rise in Portugal's interest rate spreads. In May 2010, when the first adjustment program for Greece was approved, spreads on Portuguese ten-year government bonds versus German bonds widened to 229 basis points, and then, with some fluctuations, continued to widen (Figure 9.3). In emerging markets, by contrast, bond spreads generally narrowed during this period.

In March 2011, spreads reached 459 basis points and the main credit rating agencies (Moody's, S&P, and Fitch) downgraded Portugal's sovereign rating. Portugal's Prime Minister José Socrates resigned after the opposition rejected his austerity package—the fourth austerity package announced within a year. The following month, the credit rating of Portuguese sovereign debt was downgraded once again. The sovereign spread versus German bonds widened dramatically to 585 basis points and capital inflows fell sharply. Relative to past episodes among IMF members since 1990, this sudden stop was very severe (Figure 9.18).

[6] The deficit measure reflects reclassifications, agreed to by the authorities and Eurostat, which brought the debt of some state-owned enterprises and public-private partnerships into the general government budget. The measured 2009 deficit would have been even higher were it not for a one-off transfer of Portugal Telecom's pension fund, representing 1.6 percent of GDP.

Figure 9.18. Net Capital Flows and Current Account Balances During Sudden Stops
(In percent of GDP)



Source: Authors' calculations using IMF, *WEO* data. For details, see Annex 9.2.

The government's fiscal position was growing increasingly dire. Data available at the time (*WEO,* April 2011) showed the government debt and deficit as 90.6 percent and 5.6 percent of GDP, respectively. According to the revised data (*WEO,* October 2015) the actual fiscal situation was even worse, with these percentages equal to 111.1 and 7.4, respectively. The revisions primarily reflected the reclassification of state-owned enterprise (SOE) and public-private partnership (PPP) debt as government debt.

In response to the sudden stop in capital inflows and to its own fiscal troubles, the government requested financial assistance from the troika, setting the stage for the 2011 arrangement under the Extended Fund Facility (EFF) for Portugal.

Pre-Crisis IMF Surveillance

This section provides an overview and evaluation of the IMF's surveillance of the Portuguese economy in the lead-up to the 2011 crisis. Though the reports of the early 2000s were very insightful about Portugal's economic problems, those from 2005 onwards underestimated some of the key emerging dangers.

The 2001–03 IMF Article IV Reports

As early as 2001, the IMF's Article IV consultation report (IMF, 2001) flagged the critical issues that Portugal would face in the coming years: (i) a slowdown in growth; (ii) expanding macroeconomic imbalances; (iii) financial sector risks; (iv) a need for fiscal consolidation; and (v) issues related to competitiveness and medium-term growth.

A slowdown in growth

IMF staff characterized the end of Portugal's fast-growth era during the late 1990s as the result of "the waning effect of the euro-entry-related decline in interest rates, and the completion of related stock adjustments in consumer durables and housing" (IMF, 2001: 5) as well as of the decline in the provision of EU structural funds (IMF, 2001: 21). The report also cites the decline in exports as a factor in the slowdown in growth. The staff attributes that decline to a fall in external demand, not to a loss of competitiveness.

Expanding macroeconomic imbalances

The staff stressed that Portugal was running "one of the largest current account deficits (relative to GDP) among advanced economies." They attributed "well above half" of the deterioration in the current account between 1995 and 2001 to a fall in national savings and the rest to a rise in investment. Moreover, they noted that a substantial fraction of the investment that took place between 1995 and 2000 was directed to the housing market and did little to expand Portugal's export capacity (IMF, 2001: 3–5). The same report also observed that the large current account deficits were financed predominantly by bank borrowing from international capital markets.

Staff noted that the Portuguese authorities believed these imbalances could be resolved by boosting exports, but they worried about an alternative scenario in which macroeconomic imbalances "could precipitate an extended period of slow growth—reducing indebtedness and saving-investment imbalances through domestic demand compression rather than an export-led expansion, with possibly adverse effects on the financial sector" (IMF, 2001: 10).

To its great credit, the 2001 Article IV report noted that "within a monetary union, the current account remained a useful, albeit less proximate, indicator of macroeconomic imbalances" (IMF, 2001: 13). Unfortunately, the 2005–08 Article IV reports placed less emphasis on current account imbalances.

Financial sector risks

The 2001 Article IV report stressed the risks associated with fast credit growth and the reliance of banks on wholesale funding. For example, it observed that fast credit growth was "pushing the ratio of private sector bank credit to GDP well above the euro-area average" (IMF, 2001: 3); that the "credit boom [had] by far outstripped the growth of core deposits," forcing banks to tap into international capital markets and wholesale funding extensively (IMF, 2001: 5); and that "household and enterprise indebtedness [were rising] at unsustainable rates" (IMF, 2001: 24). In a prescient observation, the report noted that the way external imbalances were being financed would "leave the economy vulnerable to a liquidity squeeze in the euro market." That said, it noted that "market participants and the authorities considered the likelihood of such a squeeze as remote" (IMF, 2001: 13).

The staff also noted that Portugal's financial sector was undiversified with large exposures to mortgage loans, credit to construction, and equity interests in infrastructure companies. The 2001 report warned that this lack of diversification made the financial sector vulnerable to a downturn in economic activity. These risks "could create financial sector stress should economic conditions suffer a prolonged deterioration." However, the report downplayed the likelihood of this scenario because "all available indicators suggested that banks were adequately provisioned and reasonably profitable" (IMF, 2001: 19) and that "credit growth was not producing high asset price inflation" (IMF, 2001: 5).

Need for fiscal consolidation

The 2001 Article IV report focused attention on emerging problems in the public sector: rapid growth in wages of civil servants relative to wages in the private sector, the prospective growth in health and pension expenditure related to an aging population, "sizable expenditure commitments [that were] incurred outside the annual budget" (e.g., contingent liabilities related to infrastructure projects undertaken by PPPs), and the need to improve budget planning, monitoring, and control.

In general, the IMF staff viewed fiscal policy execution in Portugal as "poor" (IMF, 2001: 13) and thought that improving the design and execution of fiscal policy was important for facilitating an orderly unwinding of macroeconomic imbalances (IMF, 2001: 24).

Competitiveness and medium-term growth

The same report noted that Portugal's rapid growth prior to 2001 had been fueled by increases in factor inputs. The report argued that these increases were unlikely to continue because labor participation and investment rates were already quite high, and that Portugal's growth prospects depended on its ability to raise productivity growth. In the staff's view, "sustaining high growth while also narrowing the large external current account deficit would require substantial gains in export markets" (IMF, 2001: 21).

To redirect factor inputs to the tradable goods sector, the staff stressed the need for structural reform to increase competition in product markets, particularly in electricity and telecommunications. The staff also argued that dismissal costs for workers needed to be reduced to increase labor market mobility. In addition, they emphasized the importance of increasing training and education to raise Portugal's productivity.

The report discussed the deterioration in standard measures of competitiveness such as unit labor costs (ULC) and the ULC-based real exchange rate. It did not attribute the current account imbalances to a decline in Portuguese competitiveness, but pointed to a fall in the savings rate as the root of the problem. Nevertheless, it argued that an increase in competitiveness and an improvement in export performance was a potential way to deal with both the current account and the low growth problem.

Comparing the 2001–03 Article IV reports

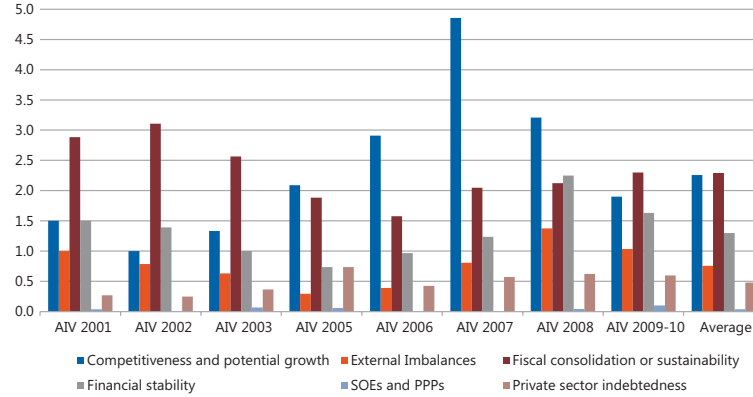
The 2002 and 2003 Article IV reports made points very similar to those in the 2001 Article IV report, but they increasingly emphasized the need to take measures to stabilize the government's fiscal position.[7] The 2002 Article IV report argued that Portugal's large current account deficits were not sustainable (IMF, 2002b: 9), but this warning was not repeated until the late 2000s.

In comparing different Article IV reports, it is useful to quantify the emphasis placed on different issues. Figure 9.19 shows the frequency per page of keywords associated with selected themes in different reports. In the 2001–03 Article IV reports, terms related to "competitiveness and potential growth" and "external imbalances" are mentioned much less often than terms associated with "fiscal consolidation or sustainability." The latter are mentioned at least twice as often as any other selected subject (almost three times more often per page, on average).[8]

[7] There was no Article IV report for 2004.

[8] For each broad subject, along with words describing that category, we considered a non-exhaustive list of related keywords or terms in the word search. For example, the category "competitiveness and potential growth" also included terms related to legal or justice or judicial system/framework, labor market, institutional conditions, TFP or productivity growth, competition in goods markets, business environment, innovation, bureaucracy, regulation, education achievements, real exchange rate, unit labor costs, income catch-up or convergence, income gap, export growth, and structural reforms. The other five categories we used were (related terms in parentheses): (1) "Fiscal consolidation or sustainability" (debt overhang and indebtedness, fiscal balance or deficit, primary balance or deficit, government or public debt, public sector wages, public expenditure or spending, revenue, budget, and subsidies); (2) "SOEs and PPPs" (public or state-owned enterprises, public-private partnerships); (3) "Private sector indebtedness" (household or corporate debt and leverage); (4) "external imbalances" (macroeconomic imbalances, net foreign assets or liabilities, net international investment position, external vulnerabilities, sovereign debt, sudden stop, disruptive scenario, disruptive adjustment, forced external adjustment, current account, and trade balance or deficit); and (5) "financial stability" (financial system, credit supply or growth, credit/liquidity risk, asset price inflation, deposits, loans, bank

Figure 9.19. Frequency of Selected Topics in Article IV Reports for Portugal
(Average number of mentions per page)



Source: Authors' calculations.

The 2005–08 Article IV Reports

The 2005 Article IV report marked the start of a substantial shift in the focus of surveillance in regard to the underlying causes of Portugal's large external imbalances. Though the 2005–08 reports touched on many of the points raised in previous reports, they placed substantially less emphasis on low savings rates as the root causes of the trade and current account deficits.[9] They placed more emphasis on structural reforms that could improve the competitiveness and long-run growth rate of the Portuguese economy. Consistent with this shift in emphasis, unlike the 2001–03 reports the 2005–08 Article IV reports did not even contain separate sections on external imbalances.

As shown in Figure 9.19, terms related to "competitiveness and potential growth" are mentioned on average once every 1.3 pages in the 2001–03 Article IV reports, and occur much more often in the 2005–08 Article IV reports (3.3 times per page, on average). In the 2005–08 reports, this category replaces "fiscal consolidation/sustainability" as the most frequently discussed issue in surveillance for Portugal.

Selected Issues Papers

The Selected Issues Papers (SIPs) that typically accompany Article IV reports also reflected the emphasis given by staff to competitiveness and productivity growth. Out of the eight SIPs that were associated with Article IV

capital or equity, wholesale funding, bank profits, bank exposure, solvency, balance sheets, and nonperforming loans).

[9] For instance, the 2007 Article IV report mentions (p. 4) that the current account deficit reflects "weak competitiveness, sustained high private sector borrowing and declining household savings, and large fiscal deficit." It is interesting to note the prominent place given to competitiveness in the ordering of factors underlining the external imbalances.

reports in 2005–08, all but two were directly related to productivity, the role of fiscal reform in promoting growth, export performance, or competitiveness. The new emphasis was typified by the following quote from the 2007 Article IV report's executive summary: [10]

> …The underlying economic situation remains difficult: productivity growth continues to lag, the loss of competitiveness has not been regained, and the income convergence process with the EU is in reverse. At root, Portugal's challenges can be traced to low levels of human capital, investment in R&D, and information and communication technology (ICT) penetration, but also to shortcomings in the business environment, insufficient competition in domestic markets, and labor market rigidities.

The 2007 and 2008 Article IV reports described Portugal's financial system as healthy and well regulated. The staff did identify three sources of vulnerability—high levels of household and corporate debt, high levels of bank dependency on wholesale funding, and a high level of bank exposure to the real estate sector and a few large corporates—but viewed the financial system as resilient. Fiscal sustainability issues were discussed at length, but relatively less space was devoted to the deterioration of the net foreign liabilities position. Moreover, very little attention was paid to the possibility of a sudden stop in capital flows.

The 2009 Article IV Report

The tone and substance of the 2009 Article IV report reflected the impact of the global financial crisis and the beginning of a recession in Spain. Showing a new sense of urgency, the report focused sharply on the sustainability of the government deficit and on the possibility of a disruption in capital flows to Portugal.

The staff forecast a 2.7 percent decline in GDP in 2009 followed by modest growth of 0.5 percent in 2010. They projected a large fiscal deficit for 2009 (at 8 percent of GDP) and noted that, without new fiscal measures, the deficit would probably increase in 2010 before declining to 5.7 percent of GDP by 2013. They also projected that the debt-to-GDP ratio would approach 100 percent by 2013. In light of these considerations, they argued that Portugal's fiscal stance would "test the limits for Portugal's sovereign rating…" (IMF, 2009: 12), and hence that it was important for the Portuguese government to immediately start a program of fiscal consolidation to reduce the deficit.

[10] In a similar vein, the 2008 Article IV report noted, "At the root of Portugal's economic problems lies anemic productivity growth and a significant external competitiveness gap" (IMF, 2008: 3). The IMF staff's emphasis on structural weaknesses underlying a competitiveness problem was a matter of some dispute with the authorities. For example, staff and the authorities disagreed on the priority of further labor market reform, with the latter being skeptical about the degree of inflexibility in the Portuguese labor market as characterized by staff. In addition, the Bank of Portugal contested the staff's quantitative assessments of the "competitiveness gap" faced by Portugal.

The staff noted how the vulnerabilities of the banking system were being exacerbated by the global financial crisis. However, they pointed out that the stress tests conducted by the Bank of Portugal suggested that banks would be able to withstand large shocks.

Consistent with the staff's new sense of urgency about the need for fiscal reform and heightened concern about the financial sector, the 2009 Article IV report gave more weight to the possibility of a disruptive scenario:

> Eventually, incomes and spending need to be aligned. The longer the imbalance persists, the greater the risk that the adjustment will be sudden and disruptive, affecting all sectors of the economy. This could be further exacerbated by risks of contagion from other highly indebted advanced countries, especially in the region.

To explore the consequences of such a disruptive scenario, the IMF simulated its model to assess the impact of a permanent increase in Portugal's risk premium of 175 basis points. Nevertheless, the staff felt that "…the most likely scenario is one of gradual adjustment of Portugal's imbalances; the longer they persist, the greater the risk that the adjustment could become disruptive" (IMF, 2009: 3).

Assessment of IMF Surveillance

The IMF surveillance reports from the early 2000s were very insightful about Portugal's economic problems. As early as 2001, the IMF flagged the critical issues that Portugal would face in the coming years: a slowdown in growth, expanding macroeconomic imbalances, growing risks in the financial sector, the need for fiscal consolidation, and, to a smaller extent, issues related to competitiveness and medium-term growth.

But the IMF's post-2005 surveillance was deficient along three dimensions. First, the Article IV reports did not give enough weight to the possibility of a sudden stop in capital flows to Portugal. Second, they over-emphasized the role of competitiveness in explaining Portugal's current account deficits, and should have paid more attention to the pre-crisis deterioration in private savings behavior. Finally, the IMF should have consolidated data on government debt to include debt from the PPPs and SOEs. Below we discuss each of these criticisms in detail.

Insufficient attention to the possibility of sudden stops

The fundamental shortcoming of the Fund's pre-2009 surveillance was a failure to imagine that Portugal might face a disruptive loss of access to international capital markets. As we stress below, the idea that sudden stops were very unlikely to occur in developed economies was the conventional wisdom in the profession.

The 2000 and 2001 surveillance reports argued that sudden stops were unlikely in a monetary union. In the 2000 report, the staff wrote (p. 16) that: "with monetary union reducing individual countries' vulnerability to shifts

in market sentiment, adjustment [to fundamentally unsustainable current account positions] can probably be spread out over a longer time horizon." In the 2001 report, the staff wrote (p. 13) that: "within a monetary union, the current account remained a useful, albeit less proximate, indicator of macroeconomic imbalances, but the financing risks had been sharply reduced with euro entry." The staff noted that a sizable portion of the deficit was financed with short-term bonds, leaving the economy vulnerable to a liquidity squeeze. But at the same time they remarked that market participants and authorities considered the likelihood of such a squeeze as remote.

From a practical perspective, it was reasonable not to worry about a sudden stop in the early 2000s, when Portugal's net foreign liabilities and net government debt represented less than 50 percent of GDP. But it became increasingly unreasonable as net foreign liabilities and net government debt rose. The 2007 Article IV report notes that the current account deficit is very large. But it is striking that, as late as 2008, the reports did not mention that Portugal's large, negative net foreign asset position exposed it to a possible sudden stop. In the 2008 Article IV report, the IMF staff wrote that "A credit crunch seems unlikely except in a rather extreme scenario where banks cannot roll over maturing securities and a large proportion of interbank loans, for example, due to a worsening of the global liquidity situation." The 2009 Article IV report, written after the spread between Portuguese and German government debt had begun to widen, did place more emphasis on the possibility of a disruptive sudden stop. But even that report seems optimistic in hindsight.

The lack of concern about a disruptive stop in capital market access reflects a profession-wide failure to consider the possibility of a sudden stop in developed economies. While Calvo (1998) emphasized the importance of this phenomenon in emerging markets, few economists argued that his analysis was applicable to developed economies, especially members of the euro area. Indeed, in our interviews we were told that some policymakers took umbrage at the notion that one should be concerned about the size of Portugal's trade deficit or net financial liabilities. These policymakers, as well as some IMF senior staff, appealed to what turned out to be a false analogy between states in the U.S. and countries like Portugal.[11]

Sources of Portugal's trade and current account deficits

As outlined in the section "Background to the Crisis" above, Portugal began to run large current account deficits in the 1990s when the growth rate of real GDP was high. These deficits persisted in the 2000s despite a sharp slowdown in economic growth.

In our view, the IMF staff misdiagnosed the root cause of these deficits. An ongoing theme of the 2005–08 surveillance reports was that the root cause

[11] For an extended discussion of this issue, see Arellano, Atkeson, and Wright (2015).

Table 9.5. Selected Countries: Average Annual Rate of Growth of Total Multifactor Productivity, 2000–11
(In percent)

Australia	0.4	Japan	0.7
Austria	0.7	Korea	3.2
Belgium	0.3	Netherlands	0.4
Canada	0.5	New Zealand	0.5
Demmark	0.2	Portugal	0.0
Finland	1.2	Spain	–0.1
France	0.6	Sweden	1.0
Germany	0.8	Switzerland	0.5
Ireland	1.6	United Kingdom	0.9
Italy	–0.3	United States	1.1

Source: Organisation for Economic Co-operation and Development.

of Portugal's current account deficits was a lack of competitiveness. We agree with the staff that Portugal's productivity growth was weak relative to that of its peers (Table 9.5). But we disagree that an increasing competitiveness gap was the key driver of Portugal's current account deficit. While some measures of competitiveness declined, the ratio of exports to GDP actually rose (from 26.7 percent in 2005 to 31.1 percent in 2008).

It is true that that prior to 2009, the export to GDP ratio was lower in Portugal than in many other European countries. But in analyzing the root cause of the crisis what is important is the *change* in the ratio of exports to GDP, not the *level*. The IMF surveillance reports never provided direct evidence of declines in the level of exports, in the exports to GDP ratio, or in Portugal's share in export markets. Instead, they emphasized the rise in various measures of Portugal's unit labor costs relative to those of its competitor countries.

Unit labor costs in Portugal did rise by 21 percent between 1995 and 2000. But they rose the most in the nontradable sectors, led by real estate activities (75 percent) and construction (56 percent). In sharp contrast, they remained relatively stable in the manufacturing sector, rising by only 6 percent. According to World Trade Organization data, manufacturing accounted for roughly 63 percent of Portuguese exports of goods and services during 1995–2000. The relative stability of unit labor costs in this sector is consistent with the stability of exports as a fraction of GDP.

We see the same pattern in the 2000–07 period. Unit labor costs rose by 17 percent over this period, with the main increases concentrated in nontradable sectors.[12] In industry and manufacturing, unit labor costs remained roughly constant (increasing 3 and 2 percent, respectively).

[12] The largest increases from 2000 to 2007 were, in order (percentages in parentheses): 1) Arts, entertainment and recreation (43); 2) Construction (39); 3) Wholesale and retail trade, transport, accommodation and food service activities (28); 4) Public administration, defense, education, human health and social work activities (23); 5) Real estate activities (23).

To be clear, we agree with the staff that a good way to resolve Portugal's current account imbalance would have been to increase exports. But, as documented above, the trade deficits were driven by rising imports, not by declining exports. Had IMF surveillance correctly analyzed the root cause of the trade deficits, the authorities might have moved more aggressively to curb the boom in the nontradable sector, a boom that was financed by borrowing in the international capital market.

The results from the IEO survey of Portuguese economists broadly support our view. When asked to attribute percentages to the importance of some pre-selected factors in explaining the current account deficit before 2008, they ranked "easy credit conditions since the adoption of the euro" first—ahead of "lack of competitiveness in the tradable goods sector" and "optimism about future income."

A closely related shortcoming of IMF surveillance during the period 1995–2007 was a lack of emphasis on the fall that took place in private sector savings and its role as a driver of Portugal's current account deficits. We certainly agree that the large public sector deficits contributed to the current account deficits. But the *rise* in the current account deficit was almost exclusively driven by a fall in private sector savings (Figure 9.8).

Recognizing government liabilities stemming from SOEs and PPPs

Another important shortcoming of the Fund's Article IV consultation for Portugal is that they were late in acknowledging the magnitude of the government's liabilities associated with SOEs and PPPs. By 2014 those liabilities represented 15 percent of GDP (Table 9.6). The treatment of SOE and PPP debt is not simply an accounting issue: the associated liabilities had to be financed, thereby enhancing the risk and consequences of a sudden stop. Moreover, the size of access under the IMF program was agreed before SOE and PPP debt was reclassified as general government debt, and not enlarged afterwards; the need to finance this debt meant that less financing was available to the rest of the economy.

The timing of when Portugal's SOE/PPP debt was recognized provides interesting evidence on the efficacy of the pre-crisis surveillance. The April

Table 9.6. Portugal: Contribution of SOE/PPP Reclassifications to Gross Government Debt
(In percent of GDP)

Debt	2010	2011	2012	2013	2014
WEO April 2011	83.3	90.6	94.6	97.5	100.8
Program request, May 2011	93.0	106.4	112.2	115.3	115.0
WEO October 2014	94.0	108.2	124.1	128.9	130.3
SOE/PPP Reclassification (as of October 2014)	9.7	10.6	12.4	12.4	15.0

Sources: IMF (2011a, 2014b); IMF, *WEO,* April 2011 and October 2014; and authors' calculations.

2011 *WEO* reported that the debt/GDP ratio was 83.3 percent by the end of 2010. One month later, in the program request, the debt to GDP ratio for the same period was reported as 93 percent. The increase was due entirely to the recognition of the SOE and PPP debt. This timing is consistent with the notion that surveillance was remiss in its treatment of SOE/PPP debt.

The IMF staff should have known that the government had large unrecognized liabilities associated with SOEs and PPPs. In fact, a well-known study by Banco Português de Investimento (BPI), released in January 2010, estimated the government's liabilities associated with the SOEs, the PPPs, and the local governments of Madeira and Azores. According to Banco Português de Investimento (2010), these liabilities represented 18 percent of GDP. This number turned out to be an overestimate, but it should have alerted the IMF staff to the importance of these liabilities.

The 2011 Program: Design and Implementation

Prime Minister Socrates resigned on March 23, 2011 and the President called for general elections. The government requested EU/IMF assistance on April 8. A letter of intent was signed on May 13 by the outgoing Minister of Finance and the Governor of the Central Bank. The IMF staff helped to foster ownership of the program by bringing both the government and the opposition party on board with the proposed policies.

The size of the program was €78 billion, which represented 45.9 percent of Portugal's 2011 GDP. The IMF contributed one-third of the total funding through its Extended Fund Facility (EFF). The choice of a three-year EFF-supported program, instead of the more common two-year Stand-By Arrangement–supported program, was driven by the view that structural reforms should form an important part of the program. Such reforms require time to implement.

The program aimed to strike "a balance between re-gaining credibility and debt stabilization, and limiting adverse impacts on growth." Its three main elements were: short-term financial assistance to finance the current account deficit; fiscal reforms aimed at reducing the government deficit in the short and medium run; and structural reforms aimed at improving Portugal's growth prospects.

The program's objectives and key policies received support from the major political parties in Portugal. Support for the program is also reflected in our survey of Portuguese economists. A large majority of the respondents (90 percent) agreed that, at the time the program was introduced, Portugal's current account deficits were not sustainable; 75 percent of respondents agreed that Portugal needed a program; and 55 percent did not see any better alternative than the program.

Table 9.7. Average Interest Charges on IMF Loans
(In percent)

Fiscal Year	Greece	Ireland	Portugal
2011	2.70	2.16	
2012	2.88	2.42	2.57
2013	2.75	2.60	2.73
2014	3.64	2.93	2.80
2015	3.59	3.32	3.59

Source: IMF Finance Department.

Table 9.8. Comparison of Access Size
(In percent of GDP at date of program approval)

	IMF Funding	Total Funding
Asian crisis programs*	3.9	n.a.
GRA programs (2007–13)	6.4	n.a.
Portugal (2011)**	15.3	45.9
Greece (2010)**	13.8	41.4
Greece (2012)**	14.7	44.1
Ireland (2010)**	13.7	41.1

Source: IMF.
* Mongolia, Thailand, Indonesia (two programs), Korea, Philippines, and Cambodia.
** Total access size including funds from IMF, EU, and ECB.

Table 9.7 shows the effective interest rates on the IMF loans to Portugal, computed using actual interest charged each year. The interest rates on Portuguese loans were higher than those paid by Ireland and lower than those paid by Greece.

The EFF-supported adjustment program for Portugal was unusually large, representing 15.3 percent of GDP (Table 9.8). While similar in size to the Irish and Greek programs, it was large relative to other IMF GRA-supported programs, including those implemented in the countries affected by the Asian currency crisis of 1997 (see Park, 2016).

Program Design

In designing the Portuguese program, the IMF faced four critical constraints. First, being a member of the euro area, Portugal could not use a currency devaluation to help achieve external balance. Second, being a member of the World Trade Organization, Portugal could not pursue the alternative to a currency devaluation suggested by Keynes (1931): tax imports and subsidize exports. Third, debt restructuring was considered off the table, in view of legal complications, political constraints, moral hazard considerations, and fear of contagion. The last of these concerns featured prominently in IMF internal documents and summaries of staff and Board member discussions. Fourth, the program had to be agreed to by the European Union and the European

Table 9.9. Fiscal Adjustment Measures in the 2011 IMF Program for Portugal
(In percent of GDP)

Measures	2011	2012	2013	Total
Revenue	2.0	0.9	0.5	3.4
Income taxes	0.4	0.3	0.3	1.0
VAT	0.8	0.2	0.0	1.0
Social contributions	0.3	0.1	0.0	0.4
Excise taxes	0.0	0.1	0.1	0.2
Property taxes	0.0	0.1	0.1	0.2
Other (including tolls, capital revenue)	0.5	0.1	0.0	0.6
Expenditure	3.7	2.1	1.4	7.2
Wage bill	0.9	0.3	0.2	1.4
Intermediate consumption	0.5	0.4	0.4	1.3
Pensions cut	0.0	0.3	0.0	0.3
Social transfers	0.6	0.0	0.1	0.7
Savings in health/pharmaceutical expenditure	0.3	0.3	0.3	0.9
Savings/transfers to SOEs, funds, and local/regional government	0.6	0.5	0.2	1.2
Investment	0.3	0.3	0.2	0.8
Other	0.4	0.0	0.0	0.4
Total	5.7	3.0	1.9	10.6

Source: IMF (2011a).

Central Bank—institutions whose own objective functions might have led them to take different views about the optimal program design.

Fiscal policy

The program envisaged a front-loaded fiscal consolidation strategy to quickly restore credibility and allow Portugal to regain access to international capital markets. Table 9.9 summarizes the IMF's estimates of how the proposed fiscal measures would affect government revenue and expenditures. For the period 2011–13, the program request document (IMF, 2011a) envisaged discretionary tax revenue increases and discretionary revenue cuts equal to 3.4 percent and 7.2 percent of GDP, respectively. Thus roughly 32 percent of the planned fiscal adjustment was to come from tax revenue increases and 68 percent from government spending cuts.

On the tax side, the higher value-added, personal, and corporate income tax rates that Portugal introduced in the 2011 budget were to remain in effect until 2013. Other revenue measures included higher taxes on property, vehicles, and tobacco, and a new electricity tax. A special contribution levied on pensions above €1,500 was proposed for 2012.

On the expenditure side, the program froze public sector wages and pensions until 2013. This freeze kept in place the 5 percent cut in public sector wages that the government had introduced prior to the program. The program also called for a reduction, over the period 2011–14, of at least 5 percent in the fringe benefits granted by SOEs to their employees. Large infrastructure projects were suspended, including the new Lisbon airport and the high-speed train project. All new PPPs were suspended. Transfers

to local and regional governments were reduced and the defense budget was cut. In addition, the program proposed cost-saving measures in healthcare and other sectors. Finally, the program called for annual reductions in the number of civil servants (1 percent per year in the central government and 2 percent per year in the local and regional governments).

The program also included structural fiscal reforms aimed at making the government's medium-term fiscal position sustainable. These reforms included improving tax compliance and incorporating the debt of SOEs, PPPs, and social security into the government budget. The program also stressed the importance of monitoring the contingent liabilities of SOEs and PPPs. In addition, it urged the government to accelerate its privatization program.

An important component of the program was a "fiscal devaluation," of the type analyzed in Farhi, Gopinath, and Itskhoki (2014). The idea was to mimic the effect of a currency devaluation by raising consumption taxes and using the proceeds to lower employers' social security contributions, with a view to increasing import prices and reducing the export prices.

Financial sector policy

The program included a series of measures to strengthen the financial sector:

- To boost capital buffers, it imposed substantial increases in the core Tier 1 capital ratio. This ratio, which was 8 percent prior to the program, was to rise to 9 percent by the end of 2011 and to 10 percent by the end of 2012.
- A new €12 billion Bank Solvency Support Facility was introduced to help recapitalize banks that could not raise capital from private sources to reach the new core Tier 1 capital ratios.
- The program required banks to achieve stable market-based funding positions and bring loan-to-deposit ratios to sustainable levels. The idea was to help achieve a smooth deleveraging process.
- To improve the liquidity of the banking system, the government raised from €20 billion to €35 billion the government guarantee fund for bank bond issues that banks could use for refinancing from the ECB.[13]
- The program proposed measures to reform and streamline the operations of Caixa Geral de Depósitos, a state-owned bank that accounted for roughly 20 percent of the banking system.
- The program called for improvements in the solvency and liquidity assessment frameworks, as well as in the bank regulation and supervision frameworks. In addition, the program prescribed an overhaul of the deposit insurance and bank resolution regime.

[13] This item was not part of the IMF program conditionality measures.

- A new Special On-Site Inspection Program enabled independent firms to conduct asset quality reviews.
- The program also called for improvements in in-court and out-of-court systems for corporate debt restructuring.

Structural reforms

The program prescribed a wide range of detailed structural reforms involving many sectors of the economy.

The IMF faced three constraints when designing the program of structural reforms. First, important political impediments to these reforms stemmed from the opposition of affected interest groups and the fact that many such reforms may have contractionary effects in the short run. For example, reducing firing costs or making it easier for firms to declare bankruptcy could increase unemployment, at least in the short run. Second, the government had limited technical resources with which to implement reforms in a wise, judicious, and timely manner. Third, the program's three-year time span limited the amount of time available to implement a broad and complex reform agenda.

In light of these constraints, a key question the IMF had to confront was whether to focus on a small set of important reforms or pursue a broader agenda. In its Guidelines on Conditionality (IMF, 2002c), the IMF leans heavily towards parsimonious programs that have an important macro effect: "Program-related conditions governing the provision of Fund resources will be applied parsimoniously." The same guidelines also recommend focusing on key macroeconomic criteria:

> Conditions will normally consist of macroeconomic variables and structural measures that are within the Fund's core areas of responsibility. Variables and measures that are outside the Fund's core areas of responsibility may also be established as conditions but may require more detailed explanation of their critical importance. The Fund's core areas of responsibility in this context comprise: macroeconomic stabilization; monetary, fiscal, and exchange rate policies, including the underlying institutional arrangements and closely related structural measures; and financial system issues related to the functioning of both domestic and international financial markets.

In Portugal, the troika chose to prescribe an ambitious, broad, and detailed set of reforms that went well beyond the recommended focus on macroeconomic criteria. There are at least two possible reasons for this choice. First, each member of the troika had different objectives and constraints. The memoranda of understanding from both the EU and the IMF suggest that the EU favored a much more detailed reform agenda—a notion that is supported by our interviews with the Portuguese authorities as well as the ECB, EU, and IMF staff. Second, the IMF may have felt that, since a currency devaluation

was not feasible, more reforms had to be implemented in order to restore the sustainability of the current account. We do not have sufficient information to take a stand on the relative importance of these two explanations.

The structural reforms agreed upon are listed in Annex 9.3. Some of these conditions were straightforward to implement; others, summarized below, were much more ambitious.

Labor market reforms

- Reduce the level and duration of unemployment benefits for future recipients.
- Impose a substantial reduction in severance payments for new contracts and a modest reduction for existing contracts.
- Increase the flexibility of working time arrangements and reduce the pay and time off associated with overtime work.
- Reduce vacations and holidays.
- Improve wage-setting mechanisms by limiting automatic extensions of collective agreements to firms that did not participate in the agreements.
- To reduce the short-term social costs of the reform as well as the pain associated with the recession, the program called for a reduction in a worker's contribution period necessary to be eligible for unemployment insurance.

Judicial reforms

- Introduce a new insolvency code similar to the Chapter 11 provision of the U.S. bankruptcy code.
- Introduce a new arbitration procedure, along with measures to expedite the judicial process.

Competition reforms

- Introduce a new competition law.
- Eliminate guarantees to electricity producers.
- Reduce barriers to entry into the telecommunications market.

Housing markets

- Introduce a new urban lease act that would phase out rent controls and reduce the advance notice needed for a landlord to terminate a lease.

Other reforms

- The program prescribed many other reforms, including the liberalization of the postal sector and reforms to the railway sector and the ports.

Table 9.10. Portugal: Selected Macroeconomic Indicators, 2009–16
(In percent of GDP, unless otherwise indicated)

	2009	2010	2011	2012	2013	2014	2015	2016
Real GDP (percent change)	–2.5	1.3	–2.2	–1.8	1.2	2.5	2.2	2.0
Consumer prices (percent change)	–0.9	1.4	3.5	2.1	1.4	1.5	1.5	1.6
Unemployment rate (percent)	9.6	11.0	12.1	13.4	13.3	12.0	10.8	9.8
General government balance	–10.1	–9.1	–5.9	–4.5	–3.0	–2.3	–1.9	–1.8
General government debt	83.0	93.0	106.4	112.2	115.3	115.0	112.9	111.0
Current account balance	–10.9	–9.9	–9.0	–6.7	–4.1	–3.4	–2.7	–2.2
Net international investment position	–110.4	–107.5	–116.9	–123.3	–123.4	–121.4	–119.0	–116.4

Source: IMF (2011a).

Forecast Net Effects of the Programmed Measures

Table 9.10 summarizes the initial IMF forecasts of the performance of the economy inclusive of the program measures. Six features of this table are worth noting:

- the IMF projected a relatively mild recession and a return to growth in 2013;
- unemployment was expected to peak at 13.4 percent in 2012 and decline thereafter;
- the government deficit was forecast to decline to 2.3 percent by 2014;
- the government gross debt was predicted to peak in 2013 at 115.3 percent of GDP and decline thereafter;
- the current account deficit was predicted to decline to 3.4 percent of GDP by 2014;
- net foreign liabilities were expected to peak at 123.4 percent of GDP in 2013.

Program Implementation

Inevitably, the program had to be modified in response to ongoing developments. Both the IMF and the authorities responded to the changing circumstances of the Portuguese economy.

Fiscal policy

The key modifications in fiscal policy were driven by several factors. The IMF's initial forecasts regarding the severity of the recession and the strength of the recovery turned out to be too optimistic. Constitutional Court rulings had a major impact on the government's ability to cut public spending. The large contingent liabilities of the government associated with the SOEs,

PPPs, and the government of Madeira became clear. Finally, internal political developments prevented the government from implementing the hoped-for "fiscal devaluation" (see above).

The net effect of these developments was to shift the nature of the fiscal adjustment away from cuts in government spending and towards tax increases. The initial plan, as noted above, was that roughly two-thirds of the fiscal adjustment would occur via cuts in government expenditures and one-third via tax revenue increases. In the program as actually implemented, 60 percent of the adjustment came from revenue increases and 40 percent from spending cuts.

Table 9.11 reports the projected government revenues, expenditures, and fiscal balances provided in the first program review (September 2011), together with their realized values.[14]

Early in the program, it became clear that government revenues were lower and expenditures were higher than expected. The lower revenues reflected the severity of the recession. The higher expenditures reflected three factors. First, the economic contraction was more severe than anticipated, so cyclical expenditures like social transfers were higher than expected. Second, due to poor administrative controls, wages and purchases of goods and services were higher than anticipated. Third, the government needed to finance the operational losses of the SOEs and of a failed PPP, which had not been fully included in the funds made available by the program.

The government partially compensated for the larger expenditures and lower revenues with various one-off measures, whose value was estimated at the time to represent 1.1 percent of GDP. They included a one-time personal income tax surcharge, advancing in time the planned VAT rate increase, additional sales of concessions, and use of revenue resulting from the transfer of the banks' pension funds to the state social security system.

Table 9.11. 2011 Fiscal Performance and Offsetting Measures
(In percent of GDP)

	Revenue	Expenditure	Total
Performance[1]	0.2	0.9	1.1
Tax revenue	–0.2		
Nontax revenue	0.4		
Compensation of employees		0.2	
Intermediate consumption		0.3	
Social transfers		0.1	
Fixed capital formation		–0.1	
Support to SOEs and PPPs		0.4	
Offsetting measures	1.1		1.1
Advancing VAT rate increase	0.1		
One-time surcharge on personal income tax	0.5		
Additional sales of concessions	0.4		
Transfer of banks' pension funds, as previously planned	0.2		

Note: Negative numbers indicate over-performance.
Source: IMF (2011b).
[1] Magnitude of revenue under-performance and expenditure overruns.

[14] Realized values are measured as of end-2011. These values were later revised.

The program target for the 2011 deficit was 5.9 percent. This target was very ambitious relative to the 2010 deficit, which was 9.1 percent of GDP. Perhaps not surprisingly, Portugal missed the target: the 2011 deficit excluding one-off measures was 7.4 percent of GDP. Similarly, Portugal missed the target for 2012. The target and realized deficits for 2012 in percent of GDP, were 4.5 and 5.6, respectively.[15]

Two events in 2012 underlined the political difficulty of implementing key program measures. First, in July 2012 the Constitutional Court rejected as unconstitutional the government's proposal to cut by one-seventh the salaries of civil servants and beneficiaries of the public pension system.[16] The magnitude of these cuts was just over 1 percent of GDP in 2012. The Court's decision did not affect the budget for that year but did affect that for 2013 (IMF, 2012: 7). Second, on September 7, 2012 the government announced a "fiscal devaluation" for 2013.[17] Large-scale protests led the government to abandon its proposal on September 21, 2012. The proposal involved reducing the share of payroll taxes paid by firms (from 23.75 percent to 18 percent) and increasing the share paid by workers (from 11 percent to 18 percent). A standard result in public finance is that, in a world of flexible prices and wages, this type of fiscal devaluation would have no impact on labor market outcomes. But in a world where nominal wages are initially too high and rigid downwards, the proposed fiscal devaluation would have brought the initial wage closer to the equilibrium wage, thereby boosting employment.

It should be acknowledged that some of the initial support for the fiscal devaluation stemmed from fears that Portugal might face the possibility of leaving the euro area. By the fall of 2012 these fears had dissipated, in part because of determined actions by the ECB. As a consequence, the ownership of the program weakened, no doubt contributing to the abandonment of the fiscal devaluation proposal.

In the 2013 budget, the government proposed a one-fourteenth cut in the wages of civil servants and pensioners. The government also proposed new contributions towards illness and unemployment benefits. The IMF estimated the value of these measures to be 0.7 percent of GDP (IMF, 2013a: 10). The Constitutional Court ruled against both provisions. To compensate, the government reduced expenditures and reprogrammed EU structural funds.

---

[15] In contrast to 2011, there were no one-off measures in 2012.

[16] Traditionally, Portuguese workers received 14 months of salary (an extra monthly payment in the summer and another before Christmas). The government proposed eliminating 2 of the 14 months of salary for a total reduction in pay of 1/7.

[17] The fiscal devaluation proposed by the government differed from that proposed in the IMF program. The IMF staff had called for a "reduction in unit labor costs via deficit-neutral reduction in labor taxes" and also for a revenue-neutral increase in the VAT. An important problem with the VAT proposal was that the VAT rate for most consumer goods was already high, at 21 percent, before the program. (There was a reduced rate of 6 percent for food and other essential goods and a 13 percent intermediate rate for another class of goods and services that included restaurants.) A sizable increase in the VAT rate might not have raised revenue because of noncompliance and Laffer-curve type considerations.

In August 2013 the Constitutional Court also ruled that the government's proposal to dismiss public employees was unconstitutional. The IMF estimated the effect of this ruling on public spending to be 0.1 percent of GDP (IMF, 2013a: 10).

As before, the government compensated for the higher-than-planned expenditures by raising taxes. The new tax measures included a surcharge of 4 percent on taxable income above the minimum wage and a reduction in the number of personal income tax brackets.

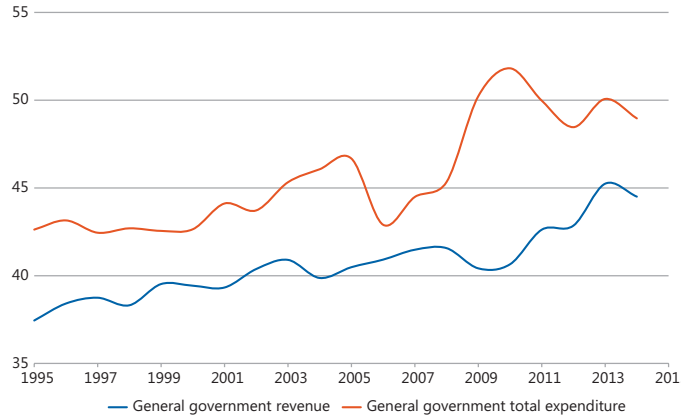
Government revenue rose from 42.9 percent of GDP in 2012 to 45.2 percent of GDP in 2013. Government expenditures increased from 48.5 percent of GDP in 2012 to 50.1 percent of GDP in 2013 (Figure 9.20). With government revenue up by more than spending, the overall deficit as a percentage of GDP fell from 5.6 in 2012 to 4.8 in 2013. The original goal for the government deficit in 2013 was 3 percent of GDP. By 2013 this goal had been revised to 5.5 percent of GDP, allowing the government to achieve the new target (IMF 2013a: 12).

Gross government debt as percentage of GDP increased from 111.1 in 2011 to 125.8 in 2012 and 129.7 in 2013 (Figure 9.12). The large increase between 2011 and 2012 was mostly due to the reclassification of the debt of the SOEs as public debt. According to the 2014 Fiscal Transparency Evaluation (IMF, 2014b), debt of the SOEs worth 12.4 percent of GDP was reclassified as public debt in 2012 (Table 9.6).

In December 2013 the Constitutional Court ruled against the provisions in the 2014 budget aligning the rules and benefits of the public sector pension fund with those of the general pension regime. According to the IMF, the fiscal impact of this ruling was 0.2 percent of GDP (IMF, 2014a: 9).

Table 9.12 summarizes how the IMF's goals for the deficit evolved over time and what actually occurred. In hindsight, the initial deficit targets clearly

Figure 9.20. Portugal: General Government Revenues and Expenditures
(In percent of GDP)



Source: IMF, *WEO* (October 2015).

Table 9.12. General Government Balance
(In percent of GDP)

	2011	2012	2013	2014
Program request (May 2011)	–5.9	–4.5	–3.0	–2.3
Sixth review (January 2013)			–4.5	–2.5
Seventh review (June 2013)			–5.5	–4.0
Eighth and ninth reviews (November 2013)			–5.9	–4.0
Realized data (October 2015 *WEO)*	–7.4	–5.6	–4.8	–4.5

Source: IMF.

appear to have been over-optimistic. Indeed, some of the Portuguese authorities whom we interviewed felt that the IMF's initial targets for the government deficit had been unrealistic. The original targets were not achieved in any of the program years. In 2013, the IMF revised the 2013 and 2014 deficit goals twice. While these changes enabled the government to reach its revised 2013 target, it failed to achieve its 2014 target.

The IMF must choose between setting ambitious and realistic targets. The advantage of ambitious targets is that they incentivize the authorities to implement politically costly fiscal reforms. The disadvantage is that consistently missing the targets endangers the credibility of the program. In our interviews with the authorities, many people expressed the view that the IMF had erred on the side of initially unrealistic goals that were costly to the credibility of the program. In addition, in the face of a fixed financing envelope and optimistic budget projections, the authorities had to make hasty ad hoc adjustments.[18]

Financial sector policy

As noted above, the program set up a Bank Solvency Support Facility (BSSF) with €12 billion worth of funds. The facility was a backstop mechanism to provide temporary capital injections to banks that might not have been able to reach the higher capital requirements imposed by the program. In June 2012, two leading Portuguese banks (Millennium BCP, Portugal's largest private bank in terms of assets; and Banco BPI) drew on funds from this facility. The recapitalization of state-owned Caixa Geral de Depósitos occurred in the same period, but the funds came from the general budget and not directly from the Bank Solvency Support Facility.

In addressing the problems of the financial sector, the IMF had to confront four challenges: clean up banks' balance sheets; ensure that the banks were sufficiently capitalized; reduce loan-to-deposit ratios; and avoid a credit crunch.

[18] For instance, in an interview with Sociedade Independente de Comunicação (SIC), a television channel, on July 14, 2015, then-Prime Minister Passos Coelho cited the "enormous discrepancies between projected and realized fiscal deficits for 2010 and 2011" to deem the original memorandum of understanding for the 2011 program "unfeasible."

These objectives were incompatible, at least in the short run. Cleaning up banks' balance sheets would have required writing off bad loans, thereby reducing bank capital. The banks were reluctant to increase write-offs arguing that the quality of their assets was good. Had the banks written off their bad loans they would have had to either raise more capital or reduce their loan portfolios in order to restore their capital ratios. Raising more capital was difficult because the Portuguese banks had limited access to international capital markets. An alternative might have been to use program funds to recapitalize the banks. But the Portuguese authorities had no appetite for pursuing this option. The banks could have also reduced the capital ratios by cutting the size of their loan portfolios. Doing so is very difficult in the short run because of pre-existing commitments. In any event, a drastic reduction in loans would have created a severe credit crunch. Taken together, these considerations reduced the government's incentive to clean up the banks' balance sheets.

In our interviews, both government officials and private sector managers raised the possibility that bad loans were being ever-greened to avoid recognizing them as delinquent. Blattner, Farinha, and Rebelo (2016) provide some evidence in favor of this view. They find that, in the period 2010–14, 23 percent of the firms in their sample have negative equity. Strikingly, 18 percent of these firms have access to bank loans. To the extent that ever-greening was widespread it would have had clear negative social consequences owing to an inefficient allocation of scarce credit.

The IMF faced conflicting pressures regarding its policy towards the Portuguese financial sector. In our interviews with economists from the Bank of Portugal and private sector managers we heard conflicting views about whether the IMF balanced those pressures correctly. Some interviewees felt that the Fund's actions exacerbated the credit crunch associated with Portugal's loss of access to international capital markets. Others argued that the main reason why total credit declined was a fall in the demand for loans. In principle, one could evaluate these competing hypotheses by analyzing the behavior of interest rates on new loans. In practice, though, such an analysis is complicated by the fact that one would have to control for default risk, which obviously increased during this period.

One piece of evidence that credit was tight comes from the Global Competitiveness Report for 2012–13 (WEF, 2012). According to this report, Portuguese managers considered "access to financing" the single most problematic factor for doing business in Portugal (Table 9.13). By 2015 access to financing had dropped to third place on their list of problematic factors for doing business (WEF, 2015).

An additional factor that may have contributed to a credit crunch is the financing of the SOEs and PPPs. According to our interviews with government officials and to the Fund's October 2014 Fiscal Transparency Evaluation for Portugal (IMF, 2014b), the size of the IMF program did not fully take into account the implicit liabilities of the SOEs and the PPPs. The program

Table 9.13. Problematic Factors for Doing Business in Portugal

	2012–13	2015–16
Access to financing	26.3	13.7
Inefficient government bureaucracy	15.2	17.9
Tax rates	13.1	18.7
Restrictive labor regulations	11.2	12.2
Policy instability	9.7	9.9
Tax regulations	9.1	11.2
Insufficient capacity to innovate	5.4	4.7
Corruption	3.2	2.9
Inadequately educated workforce	2.8	5
Poor work ethic in national labor force	1.3	1.3
Inflation	1.2	0.7
Government instability/coups	0.5	0.1
Inadequate supply of infrastructure	0.5	1.2
Foreign currency regulations	0.4	0.3
Poor public health	0.3	0.1
Crime and theft	0	0.1

Sources: World Economic Forum (2012, 2015).

resources were not enlarged after SOE and PPP debt was reclassified as general government debt, and the need to finance this debt meant that less credit was available to the rest of the economy.

Structural reforms

Of the 60 structural conditions specified over the course of the IMF-supported program, all but the fiscal devaluation were fulfilled, according to data from the Monitoring of Fund Arrangements (MONA) database.[19] In what follows, we summarize the major reforms that were implemented:

- *Labor-market reforms* that reduced the duration and level of unemployment benefits while increasing eligibility for those benefits; reduced severance pay for regular employment contracts; and simplified individual and collective dismissal procedures. Constitutional Court decisions affected the implementation of labor market reforms. For example, in 2013 the Court overturned changes that would have made it somewhat easier to dismiss individual workers with permanent contracts.
- *Public sector reforms* included reorganizing local and central governments; improving the efficiency and governance of state-owned enterprises; reforming public procurement procedures; rationalizing public healthcare spending by changing prescription rules; increasing co-payments and enhancing cost accountability in the hospital sector.

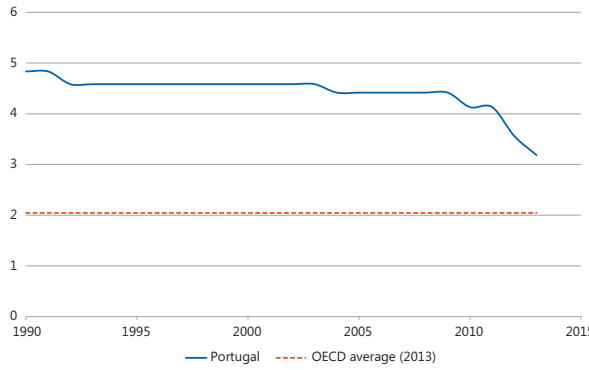
[19] The MONA database is an IMF internal repository for data from countries in IMF-supported programs. It has been recently made available to the public at http://www.imf.org/external/np/pdr/mona/index.aspx.

- *Product-market reforms* included privatizations; strengthening the power of the competition authority; simplifying licensing procedures; phasing out regulated tariffs on electricity and gas; increasing competition in retail trade; and reducing barriers to entry in professional services.
- *Tax reforms* included broadening the base of the personal income tax and the VAT; and increasing property and car registration taxes.
- *Pension reforms* included increasing the pension contributions of public sector workers; raising the retirement age, and indexing it to life expectancy.
- *Financial sector reforms* included measures to help deleverage the banking system by progressively setting higher capital requirements than those imposed by the Basel III rules and requiring them to be met sooner than the schedule proposed by Basel III.

Were the reforms successful? Various interviewees argued that the broad scope of the program's agenda and the scarcity of skilled personnel to implement reforms led, in many instances, to pro-forma rather than actual reforms. According to internal IMF documents pertaining to the 2011 program, this concern was shared by some IMF Executive Directors. For example, one Director urged staff to undertake "a realistic assessment of the capacity of the economy to absorb the front-loaded reforms." A criticism voiced by some Portuguese officials in our interviews was that the cut in public sector wages made it difficult for the government to retain and attract highly skilled workers. This difficulty may have contributed to a reduction in the overall efficiency of the public sector.

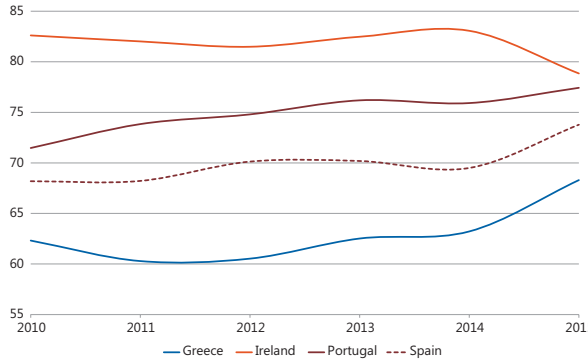
On the positive side, we believe that Portugal achieved real though limited success in making the labor market more flexible and increasing the ease of doing business. Figure 9.21 shows an OECD measure of the strictness of employment protection. Before the crisis Portugal had one of the highest levels of employment protection among OECD countries. It has since closed

Figure 9.21. Portugal: Index of Employment Protection



Source: OECD.

Figure 9.22. Ease of Doing Business Index, Distance to Frontier



Source: World Bank.

some of the gap relative to the OECD average. Still, Portugal has a long way to go. Figure 9.22 shows the distance relative to the frontier in the ease of doing business as computed by the World Bank.[20] Portugal clearly made progress according to this metric after the crisis.

Official IMF documents make clear that the Fund understands that Portugal has made limited progress in implementing structural reforms. For example, in the 2015 Article IV report, the IMF emphasized the country's need to upgrade the quality of public services, fully implement product market reforms, and continue to reform the labor market. The same report stated that structural reforms were already paying off (IMF, 2015a: 21), but it forecast real GDP growth in Portugal for 2019 and 2020 at a modest 1.2 percent. We infer that the IMF is not convinced that the reforms implemented thus far will suffice to substantially improve the growth outlook. This view is shared by the private sector. In the 2015 Article IV report, the IMF cites the results of a survey of Portuguese firms showing that the reforms implemented had had mild but perceptible positive effects. The surveyed firms expressed an urgent need for additional reforms, especially in regard to public and financial sector reforms.

Assessment of the EFF-Supported Program for Portugal

An Overview

In judging the success of the program we use two narrow technical criteria and two broader more substantive criteria.

The first narrow criterion is whether the program was implemented as planned. We believe that the answer is a qualified yes. The three qualifications

[20] See http://www.doingbusiness.org/rankings.

are that a fiscal devaluation was not implemented, the structural reforms were incomplete, and various fiscal targets were either not met or met only because the targets were revised.

The second narrow criterion is whether the program's forecasts about economic outcomes were reasonably accurate and unbiased. As discussed below, the bottom line is that IMF did not do well according to this criterion.

The first major criterion is whether Portugal regained access to capital markets. Here the program was clearly a success, although it is not clear to what extent this outcome was mainly a result of the program, as discussed in the section "Returning to International Capital Markets" below.

The second major criterion, which we view as the most important, is whether Portugal is on a sustainable path in terms of government debt and net foreign liabilities. We discuss this issue in the section "Is Portugal on a Sustainable Path?" below. We argue that the sustainability of government debt and net foreign liabilities is very fragile, leaving the success of the program very much in doubt.

This section concludes with a discussion of the probable causes of the improvement in Portugal's current account, including the possible role of the IMF program in the recovery of exports.

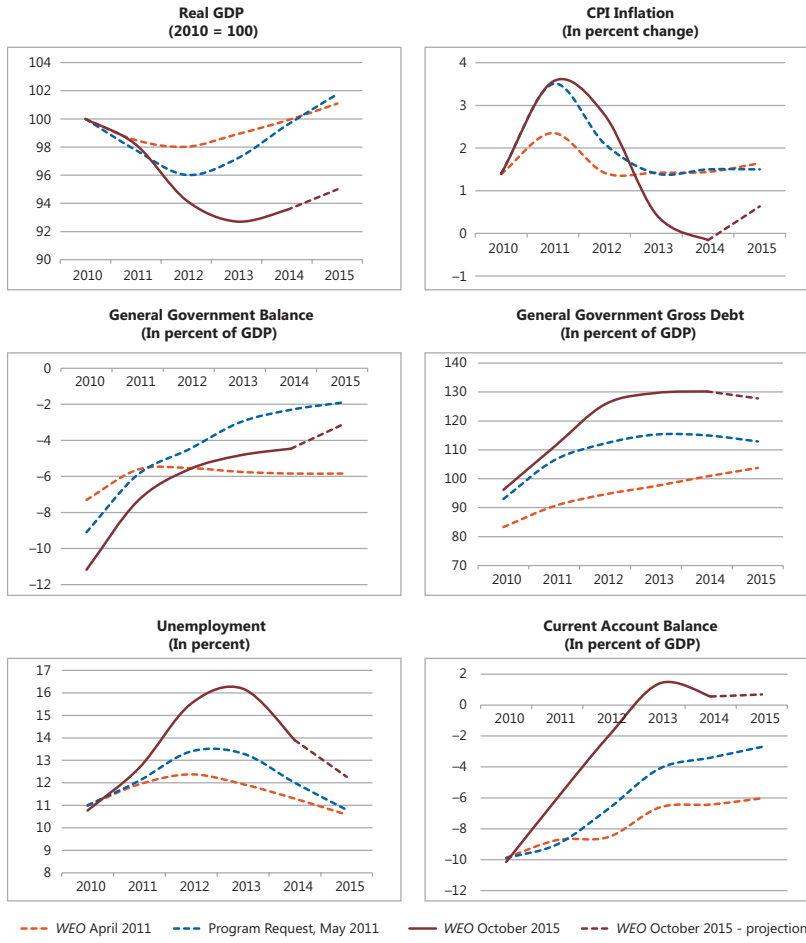
Quality of the IMF's Forecasts

Here we first discuss the IMF's forecasts of Portugal's general economic activity. We also discuss the IMF's views about multipliers and their effect on forecasting performance, and summarize the findings of a statistical analysis of IMF forecasts. We explain these assessments in detail before concluding with a discussion of the probable causes of the improvement in Portugal's current account, including the possible role of the IMF-supported program in the recovery of exports.

Figure 9.23 displays multi-year-ahead forecasts and actual outcomes for six key macroeconomic aggregates. The orange lines depict the IMF forecasts published in April 2011, one month before the approval of the program. The blue lines show the analogous predictions made at the start of the program. Clearly by then the IMF had become more pessimistic, predicting a steeper recession. This revision may have reflected new information the Fund had received in the meantime as well as the evolution of its views about the impact of the program. A reasonable inference is that the IMF recognized that a fiscal contraction would exacerbate the short-run decline in economic activity. But staff also believed that the program would create the conditions for a strong recovery. It is evident from the actual outcomes (shown by the brown lines) that the program's estimates were over-optimistic both about the severity of the recession and the strength of the recovery.

Naturally the IMF revised its forecasts as new data came in. But the forecasts made in 2012 still overestimated the growth rate of real GDP. Not surprisingly, the IMF also underestimated the government deficit and the improvement in the current account.

Figure 9.23. Portugal: IMF Forecasts Versus Outcomes



Sources: Authors' calculations using data from the IMF, *WEO*, April 2011 and October 2015, and IMF (2011a).

By 2013 the IMF had become more pessimistic about the speed of the recovery and its forecasting performance improved. There are several reasons for the IMF's poor forecasting performance. First, as noted in the section "The 2011 Program: Design and Implementation" above, decisions by the Constitutional Court had important effects on the implementation of the fiscal program. These decisions were clearly very hard to foresee. In addition, external shocks had a substantial impact on the Portuguese economy. These shocks included the general slowdown in Europe and the sharp recession in Spain, a country that accounts for roughly 25 percent of Portugal's exports.[21]

[21] In April 2011 the IMF forecast that Spanish real GDP would grow by 1.6 percent in 2012. Instead, Spanish real GDP fell by 2.1 percent.

It is also possible that an unforeseen fall in the supply of credit exacerbated the severity of the recession. Finally, the forecasts were based on a value of the fiscal multiplier that turned out to be incorrect, an issue we now turn to.

Fiscal multipliers

The IMF forecasts were based on a small value of the fiscal multiplier: 0.5.[22] In our view, this value was too small, given that Portugal could not use expansionary monetary policy to cushion the effect of fiscal contraction. We are not alone in this view. Blanchard and Leigh (2013) conclude that "actual multipliers were substantially above 1 early in the crisis." This conclusion is consistent with Christiano, Eichenbaum, and Rebelo (2011), who argue that the size of the multiplier is higher the more binding is the zero lower bound on monetary policy. It is also consistent with Auerbach and Gorodnichenko (2012), who argue that fiscal multipliers increase with the severity of recessions. In addition, it is consistent with the IMF's findings based on models used in various policy institutions (Erceg and others, 2012). In fairness to the staff, the literature on fiscal multipliers was evolving very rapidly in the wake of the Great Recession in the United States and the crisis in Europe.

The IMF staff recognized that their initial estimate of the multiplier was too small, and in their fifth program review, published in October 2012, they raised their estimate from 0.5 to 0.8. We credit the staff for their willingness to respond to ongoing developments in the literature.

Figure 9.24 shows the IMF real GDP forecasts made in April and June of 2011 along with outcomes. The figure also includes two alternative forecasts, which we constructed as follows. First, we assume that the original program forecasts (June 2011) were based on a fiscal multiplier of 0.5. Second, we assume that the contributions of other factors to growth (e.g., developments in the global and regional economies, credit and financial cycles) are orthogonal to the effects of the program's fiscal contraction measures. We compute the alternative forecasts for GDP assuming a multiplier of 0.8 for both spending cuts and tax increases.

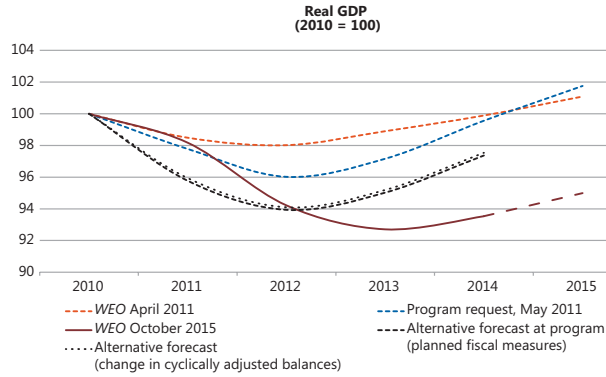
To compute the alternative forecasts we need a measure of the fiscal contractions associated with the program. Our first measure is based on the fiscal actions reported in the program request document (IMF, 2011a).[23] Our second measure corresponds to the projected changes in the cyclically adjusted government primary balances, as published in the September 2011 *WEO*. The two measures are very similar (Table 9.14).

Figure 9.24 shows that had the IMF used a value of the multiplier of 0.8 rather than 0.5 it would have more accurately forecast the depth of the recession and generated smaller cumulative forecasting errors regarding real

[22] See the IMF's fifth program review (IMF, 2012).

[23] The program request document (IMF, 2011a) does not contain an estimate for 2014. Our measure of the projected changes in cyclically adjusted government primary balances for 2014 is based on data from the September 2011 *WEO*.

Figure 9.24. Portugal: Original and Alternative IMF Forecasts of Real GDP Growth



Sources: Authors' calculations using *WEO* and MONA data.

Table 9.14. Portugal: Measures of Fiscal Impulses
(In percent of GDP)

Assumption	2011	2012	2013	2014
Change in cyclically adjusted primary balance	5.2	3.3	1.6	0.2
Program request	5.7	3.0	1.9	0.2

Sources: IMF (2011a) and *WEO*.

GDP.[24] The forecasted cumulative fall in real GDP between 2011 and 2014 would have been 2.5 percent instead of 0.4 percent. Since the actual fall was 6.5 percent, a higher multiplier would have eliminated roughly 40 percent of the forecast error. Over the 2011–14 period, the average forecast error would have shrunk from about –1.5 percentage points to about –1 percentage point. In our view, one could make a good argument for using an even larger value of the multiplier than 0.8.

There is a different channel through which the multiplier used by the IMF could have affected the accuracy of the IMF's forecasts. The initial program envisaged that two-thirds of the fiscal adjustment would occur via a cut in government expenditures and one-third via increases in tax revenues. In practice, 40 percent of the fiscal adjustment came from expenditure cuts and 60 percent from tax revenue increases. There is an important literature arguing that the multiplier is larger for tax increases than for government spending (see e.g. Romer and Romer, 2010; Ravn and Mertens, 2013). To the extent that this asymmetry exists, the change in the fiscal mix would have resulted in a more severe recession than the IMF anticipated in designing the program.

[24] Forecasts based on the larger multiplier would still miss the size and the timing of the trough in real GDP.

Statistical analysis of the IMF's forecasts

Annex 9.4 describes our statistical analysis of the IMF's forecasts for Portugal. We show that the forecasts for real GDP growth and the government surplus tended to be over-optimistic. The average forecast error during the 2000–14 period is 0.8 percent for real GDP growth[25] and 1.7 percent for the government balance as percentage of GDP. These averages are statistically different from zero. In contrast, the forecast errors for the current account balance and government debt as percentage of GDP are not statistically different from zero over the same period. But, in the period 2008–14 there is a statistically significant under-prediction bias in government debt forecasts.[26]

In Annex 9.4 we also compare the Fund's forecasts with those of *Consensus* Forecasts[27] and the OECD. We find that the IMF's real GDP growth forecasts were slightly less biased, and more accurate than the *Consensus* forecasts for predictions made *before* the 2011 program, but not during the program period. When the sample is restricted to the program period, IMF forecasts were found to be more biased and no longer more accurate than *Consensus* forecasts.

Taken together, our results are consistent with the findings in IEO (2014) that IMF forecasts during program periods are more optimistic than those made during surveillance periods. The same IEO evaluation finds that these results are particularly strong in cases of exceptional access to IMF resources—that is, large programs such as the 2011 Portuguese program.

We are not alone in questioning the accuracy of the IMF's forecasts. The IEO's survey of Portuguese economists included the question: "During the [IMF] program [for Portugal], do you think that the IMF's forecasts about the future of the Portuguese economy were reasonably accurate?" Only five out of forty survey participants answered "yes."

---

[25] Formal tests of forecast efficiency for the forecasts of GDP growth in Portugal over the 1990–2014 period show that both the mean and median forecast error are negative, statistically significant, and robust to small sample distortions—that is, indicating over-prediction. These forecast errors, depending on the method used, range from –0.74 percentage points to –1.27 percentage points.

[26] The IMF staff's underestimation of the government debt-to-GDP ratio during 2008–14 is also large: about 12 percentage points, on average, and not inferior to about 6 percentage points.

[27] Consensus Economics produces *consensus* forecasts for many emerging and developed economies twice a year, in Spring and Fall. See http://www.consensuseconomics.com. Since fair comparisons of forecasts made by different institutions critically depend on whether forecasts are made using the same information set, we either used the forecast vintage that minimizes information advantage for any particular forecaster or controlled for the differences in the information set used in the forecasts.

Returning to International Capital Markets

A major metric by which we judge the success of the program is whether and how quickly Portugal regained access to international capital markets. By this metric the program was a resounding success.

In 2013, the Portuguese government returned to the international debt market, issuing medium- and long-term bonds. The government also managed to increase the maturity of its existing debt by exchanging some bonds that were due to mature in 2014 and 2015 with bonds that will mature in 2017 and 2018.

A related measure of success is the decline in yields on Portuguese government debt. Initially, markets did not react favorably to the program. The yields on Portugal's ten-year bonds increased from 10.9 percent in June 2011 to a peak value of 13.9 percent in January 2012 (Figures 9.2 and 9.3 above). Thereafter yields did decline, reaching 3.7 percent when Portugal exited the program (May 2014). The spreads relative to Germany tell a similar story, peaking in January 2012 at 12 percent and then declining to 2.3 percent by May 2014 (Figure 9.3).

It is difficult to know how much of the decline in yields was due to the IMF program and how much was due to the actions of the European Central Bank. The latter included: (i) two long-term financing operations (LTRO) (December 2011 and February 2012) and (ii) ECB President Mario Draghi's famous "whatever it takes" speech in July 2012, followed by the ECB's establishment of the outright monetary transactions (OMT) program.

Portuguese banks participated actively in both LTROs. Perhaps not coincidently, Portuguese yields and spreads vis-à-vis Germany started to decline when the second LTRO was established. These facts suggest, but do not prove, that the LTRO programs played an important role in reducing the yield on Portuguese sovereign bonds and facilitating Portugal's return to international capital markets.

The evidence regarding the impact of the Draghi speech and the announcement of the outright monetary transactions program is more ambiguous. The decline in yields on Portuguese bonds began well before the Draghi speech, and seems to have stalled by June 2012, but it resumed after the Draghi speech in July. Viewing the Portuguese data in isolation, it is hard to argue that the Draghi speech and the OMT had a major effect. However, yields on Greek, Irish, Italian, and Spanish debt had been rising since April 2012, and after the speech they began falling again. To the extent that the OMT prevented a larger crisis in Europe, it would have certainly benefited Portugal. But we have no evidence on this counterfactual scenario.

In sum, there are good reasons to believe that both the IMF program and the ECB's actions helped Portugal regain access to international capital markets. But it is difficult to disentangle the quantitative impact of the program and the ECB actions.[28]

[28] A number of authors have tried to disentangle the role of Portugal-specific factors from euro-area-wide factors in the decline of Portuguese sovereign debt spreads. See, for example, De Grauwe and Ji (2014) who argue that euro-wide factors played a dominant role in this decline.

Is Portugal on a Sustainable Path?

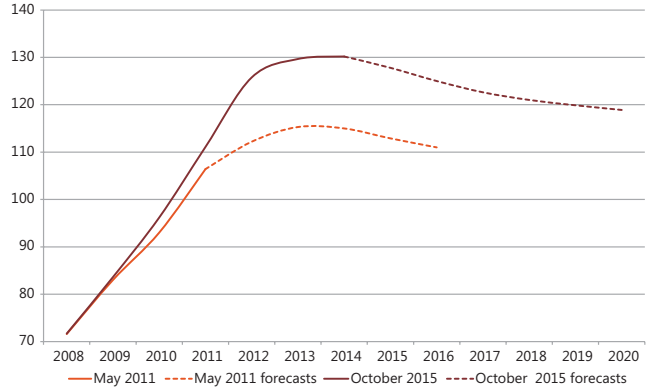
To answer this question, we use two metrics: the ratio of government debt to GDP and the ratio of net foreign liabilities to GDP. For a plausible benchmark scenario, we find that Portugal is on a sustainable path in the sense that both of these ratios will eventually start to decline. But this sustainability is fragile. Relatively modest changes in assumptions about future growth rates, government deficits, and interest rates on government debt would put Portugal on an unsustainable path.

Consistent with our analysis, at the time of writing only one rating agency (DBRS, based in Canada) rates Portugal's public debt as investment grade. Standard & Poor's, Moody's, and Fitch rate Portugal's debt as junk.

Sustainability of government debt

Figure 9.25 shows the forecast and actual evolution of Portugal's government debt as a percentage of GDP. The solid orange line in the figure displays actual data as reported in May 2011. The dashed orange line shows the IMF's forecasts as of May 2011 for the debt to GDP ratio from 2011–16. According to these forecasts, the debt to GDP ratio should have peaked in 2013 at 115.3 percent and then slowly declined. So, the IMF thought the Portuguese government debt was sustainable. The solid brown line shows the historical path for the debt-to-GDP ratio from 2008–15.[29] The dashed brown line shows the IMF's forecasts as of October 2015 for the debt to GDP ratio

Figure 9.25. Portugal: IMF Forecast and Actual Gross Government Debt
(In percent of GDP)



Sources: IMF (2011a) and IMF, *WEO* (October 2015).

[29] The historical paths of debt/GDP as reported by the IMF in May 2011 and October 2015 differ for the period 2009–11 due to data revisions.

Table 9.15. Portugal: IMF Debt Sustainability Analysis

Baseline scenario	2013	2014	2015	2016	2017	2018	2019	2020
Nominal debt (in percent of GDP)	129.7	130.2	127.1	124.4	122.0	120.4	119.4	118.6
Debt service (in percent of GDP)	23.6	25.6	24.0	21.5	16.8	18.7	20.1	24.1
Gross financing need (in percent of GDP)	23.5	25.1	22.4	19.6	14.9	16.9	18.3	22.3
Nominal debt (in percent of revenue)	286.6	292.5	284.3	277.8	272.5	269.1	267.1	265.7
Debt service (in percent of revenue)	52.2	57.4	53.7	47.9	37.4	41.9	45.0	54.0
Gross financing need (in percent of revenue)	52.0	56.3	50.1	43.8	33.2	37.8	41.0	49.9
Real GDP growth (in percent)	−1.6	0.9	1.6	1.5	1.4	1.3	1.2	1.2
Inflation (in percent)	2.2	1.3	1.0	1.3	1.3	1.4	1.5	1.6
Primary balance (in percent of GDP)	0.1	0.5	1.6	1.8	1.9	1.8	1.8	1.8
Effective interest rate (in percent)	3.9	3.9	3.8	3.7	3.6	3.5	3.6	3.7

Source: Authors' calculations using the IMF DSA template and information in IMF (2015b).

from 2015–20.[30] According to the Fund's view in 2015, the debt to GDP ratio should have peaked in 2014 at 130.2 percent and should fall to 118.9 percent by 2020.

Two key facts emerge from Figure 9.25. First, despite the tough austerity measures associated with the 2011 program, the debt to GDP ratio in 2014 was roughly 19 percentage points of GDP *higher* than at the beginning of the program. Second, the absolute level of the debt to GDP ratio at the end of the program in 2014 was 15 percentage points of GDP higher than the IMF had forecast. Clearly, the IMF understated how difficult it would be to bring the ratio of government debt to GDP under control.

A central question is: how sensitive are the IMF's forecasts about the future path for government debt to changes in assumptions about the growth rate of the economy and the size of government deficits?

To answer this question we began by reproducing the baseline scenario used in the IMF's debt sustainability analysis (DSA) as of October 2015.[31] Table 9.15 displays the benchmark assumptions underlying that analysis and projected outcomes. We then analyze the sensitivity of the debt-to-GDP projections to changes in assumptions about the growth rate of the economy, the government deficit, and the yields on government bonds.

Our analysis is based on the template used by the IMF to conduct its DSA.[32] That template ignores general equilibrium effects. For example, when

[30] These forecasts are available in the October 2015 vintage of the *WEO* database.

[31] The IMF's debt sustainability framework is described in its "Staff guidance note for public debt sustainability analysis in market-access countries" (https://www.imf.org/external/np/pp/eng/2013/050913.pdf).

[32] The template can be found at https://www.imf.org/external/pubs/ft/dsa/templ/dsatempl2.xlsm. We thank IMF staff for their assistance in using this template.

the IMF changes its assumptions about the growth rate of the economy, it does not take into account the effects of this change on the government deficit or on sovereign bond yields. Similarly, when the IMF changes its benchmark interest rate assumptions, it does not take into account the implications for the growth rate of the economy, inflation and the government deficit. Despite these drawbacks, we think that this sensitivity analysis sheds light on the robustness of the benchmark scenario for the path for the government debt to GDP ratio. We understand that the DSA is not used in a mechanical way by the IMF staff, who supplements the analysis by using a general macroeconomic framework.

In our first experiment, we assume that the growth rate of real GDP is 0.5 percentage points lower than the IMF benchmark scenario. This value is quite plausible, considering that the average one-year-ahead forecast error associated with the IMF's forecasts for Portuguese real GDP growth ranges from -0.74 to -1.27 (see Annex 9.4). The brown dashed line in Figure 9.26 displays the implied ratio of debt to GDP path up to 2020. This new scenario implies that the debt-GDP ratio stabilizes at around 123 percent in 2019.

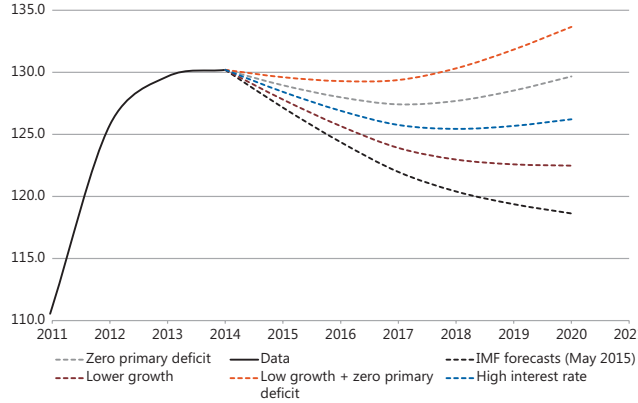
In our second experiment, we assume that the primary deficit is zero. According to this new scenario, depicted by the gray dashed line in Figure 9.26, the debt to GDP ratio starts to rise in 2017 and is on an explosive path.

Our third experiment is a permanent increase of 100 basis points in the interest rate on government debt. In this case, the level of debt falls to 125 percent in 2018 but explodes thereafter.

As noted above, a shortcoming of these exercises is the assumption that deviations of different variables from their benchmark values are uncorrelated. We believe that allowing for realistic correlations would make the sustainability of the government debt more tenuous. It is beyond the scope of this publication to develop a model for the Portuguese economy that allows for these feedbacks. But we can illustrate the importance of allowing for such correlations by combining the low growth and zero primary-surplus scenarios discussed above. One obvious justification for considering this combined scenario is that low growth would generally lead to lower government primary surpluses. The orange dashed line in Figure 9.26 displays the implied path for the debt-to-GDP ratio up to 2020 in the combined scenario. The debt-to-GDP ratio starts to rise in 2016 and then explodes.

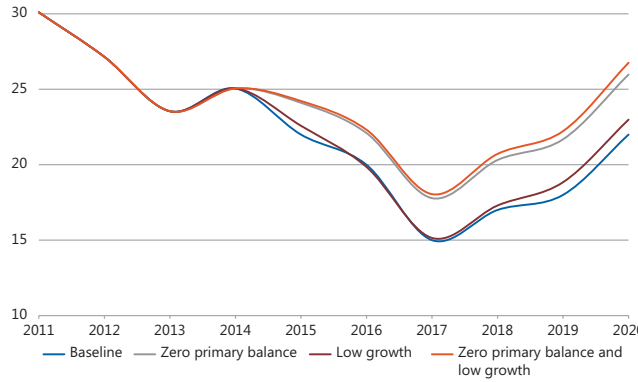
A different way to assess sustainability is to consider the gross financing needs of the government. The blue line in Figure 9.27 displays the IMF's estimates of those needs from 2011 to 2020. Gross financing needs fall until 2017 but rise thereafter. We conducted a sensitivity analysis using the same DSA template used by the IMF to generate the benchmark estimates and the same alternative scenarios discussed above. Figure 9.27 shows that the gross financing needs are not very sensitive to the low growth scenario. In contrast, gross financing needs are quite sensitive to assuming that the primary balance of the government would be zero. The inflection point stays the same but the overall level of gross financing needs increases.

Figure 9.26. Portugal: Gross Government Debt Under Alternative Scenarios
(In percent of GDP)



Sources: Authors' calculations using the IMF DSA template and information in IMF (2015b).

Figure 9.27. Portugal: Gross Government Financing Needs Under Alternative Scenarios
(In percent of GDP)



Sources: Authors' calculations using the IMF DSA template and information in IMF (2015b).

Taken together, our analysis suggests that the sustainability of Portugal's public debt is tenuous: modest adverse shocks to the Portuguese economy or discretionary increases in the government deficit could easily place the government debt-to-GDP ratio on an explosive path. These experiments also suggest that maintaining fiscal discipline is paramount in ensuring that the public debt is sustainable. Overall our analysis is consistent with the IMF's second post-program discussion, published in August, in which the IMF writes (IMF (2015b), p. 30): "Portugal's sizable debt burden and gross financing needs continue to pose significant risks to debt sustainability and leave debt dynamics very sensitive to macro shocks."

Interestingly, the Portuguese economists who participated in the IEO survey seem to be much more pessimistic about the sustainability of Portugal's public debt even than we are. Asked to evaluate the following statement: "Currently, with the program completed, the public debt is sustainable," not a single participant agreed with it.

Sustainability of external liabilities

We now consider the sustainability of Portugal's external liabilities. Figure 9.9 displays our measure of net foreign assets, which is the net international investment position (NIIP) computed by the IMF.[33] For comparison, we also display the net foreign asset (NFA) series constructed by Lane and Milesi-Ferretti (2007) and updated by these authors until 2011. It is clear that the two time series are highly correlated.

In principle, we would like to evaluate the sustainability of the NIIP using the same approach used for the government debt. Unfortunately, the only external debt sustainability analysis performed by the IMF for Portugal pertained to gross external liabilities—presumably because the required information about the maturity and returns of Portugal's gross foreign assets was not available. Nonetheless, studying the gross debt is of interest.[34] In a world where financial inflows and outflows are imperfectly synchronized, the characteristics of gross debt can provide useful signals about the likelihood of sudden stops and other forms of rollover risk.[35]

Figure 9.28 displays Portugal's total (public and private) gross external debt as a percentage of GDP since 2007. For convenience, we refer to this percentage as the external debt ratio. The solid orange line displays that ratio as reported in May 2011. The dashed orange line shows the IMF's forecast, as of that date, for the external debt ratio from 2011 to 2016. According to that forecast, the debt ratio would peak at 249.3 percent in 2012 and decline thereafter. Clearly the IMF judged Portugal to be on a sustainable path with respect to its external debt ratio. The solid brown line shows the historical path of the external debt ratio from 2007–14.[36] The dashed brown line shows the IMF's forecasts of that ratio as of May 2015.[37]

A natural question is: how sensitive are the IMF's forecasts to changes in assumptions about the growth rate of the economy, and the size of current account deficit? We address this question in Annex 9.5 by perturbing key

[33] According to the IMF's *Balance of Payments Manual* (6th edition), the NIIP is the difference between external financial assets and liabilities.

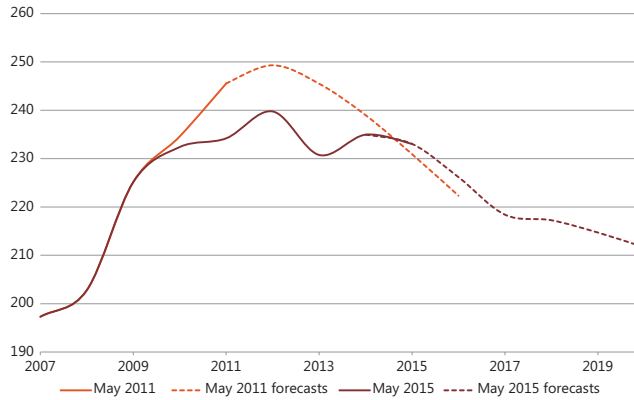
[34] According to the IMF's definition, gross external debt is the outstanding amount of current, non-contingent liabilities that require payment of principal and/or interest by the debtor at some point in the future and are owed to nonresidents by residents of an economy.

[35] See Bruno and Shinn (2013) for a discussion of the importance of gross capital flows.

[36] The historical path of external debt/GDP reported by the IMF in May 2011 and May 2015 differ for the period 2009–11 due to data revisions.

[37] These forecasts are included in the Second Post-Program Monitoring report for Portugal.

Figure 9.28. Portugal: IMF Forecasts and Outcomes of Net External Debt
(In percent of GDP)



Sources: Authors' calculations using the IMF DSA template and information in IMF (2011a; 2015b).

parameters of the IMF analysis (Figure 9.A5.1). In contrast to the sustainability of government debt, we find that the sustainability of Portugal's external debt is quite robust.

As noted above, the IMF does not do a formal sustainability analysis for the current account. Interestingly, very few participants in the IEO survey believed Portugal's current account position to be sustainable. Asked to evaluate the following statement, "Currently, with the program completed, the current account is sustainable," only 5 percent of the respondents agreed.

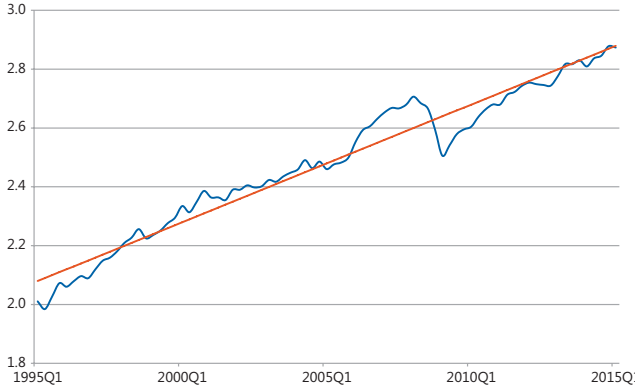
What Caused the Dramatic Improvement in Portugal's Current Account?

Portugal's current account improved dramatically during the implementation of the IMF program. Here we argue that most of the improvement reflected a decline in imports which was the concomitant of the large recession that Portugal experienced. Portugal had been running current account and trade deficits for many years prior to the crisis. Between 1995 and 2011 each of these deficits averaged roughly 8.3 percent of GDP (Figures 9.4 and 9.5). By the time Portugal regained access to international capital markets in 2013, both the trade and the current account surpluses were positive for the first time in 20 years.

Broadly, the improvement in the current account reflected the improvement in the trade balance. Imports accounted for roughly 30 percent of the adjustment in the trade deficit. The large fall in imports almost surely simply reflected the severity of the recession.

It is more difficult to pinpoint the cause of the rise in exports. A number of Portuguese officials whom we interviewed attributed this rise to structural

Figure 9.29. Portugal: Exports
(In billions of euros of 2011 in logs)



Source: Instituto Nacional de Estatística, National Income Accounts.

reforms, though this view is not generally reflected in official IMF documents. Other officials argued that the fall in domestic demand spurred producers to venture into new foreign markets, including Angola, Brazil, and the United States.

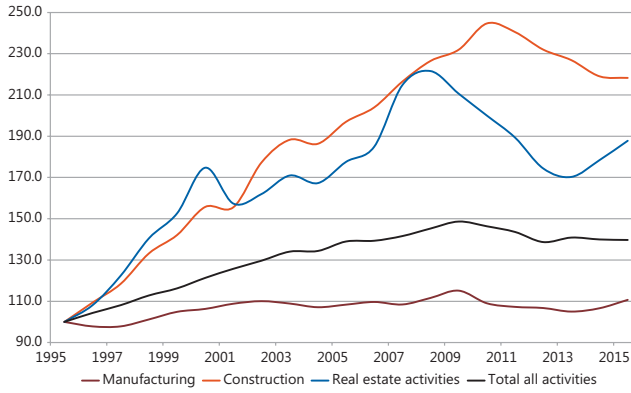
To assess the quantitative importance of these arguments, Figure 9.29 displays the log of Portugal's actual exports in euros and a linear trend estimated using quarterly data for the 1995–2014 period. We see that, by the end of 2014, exports had returned to trend.

Annex 9.6 reports the robustness of our results to different ways of estimating the trend in exports and to different starting points. We show that the inference that most of the growth in exports represents a return to trend is very robust.

A complementary way to assess the performance of exports is as follows. At the end of 2007, the ratio of exports to GDP was 31.1 percent. Suppose that GDP had grown along its trend path calculated from 1995 to 2007 using quarterly data. Then, at the end of 2014 GDP would have been €227.5 billion. Actual exports divided by trend GDP amount to 30.7 percent. So, nominal exports grew at approximately the same rate as pre-crisis trend nominal GDP.

To assess whether growth in exports reflected increased competitiveness, we look at the behavior of unit labor costs, displayed in Figure 9.30. Across the economy as a whole, unit labor costs fell by a modest 4.4 percent between 2010 and 2014. It is even more instructive to focus on the behavior of unit labor costs in the tradable goods industry. Roughly 73 percent of Portuguese exports are goods, most of which are produced in the manufacturing sector. Unit labor costs in manufacturing fell by only 2.2 percent between 2010 and 2014. It is implausible that such a modest fall could account for the

Figure 9.30. Portugal: Unit Labor Costs (1995 = 100)



Source: Eurostat.

34 percent increase in real exports of goods that occurred between the first quarter of 2010 and the fourth quarter of 2014.[38]

Figure 9.29 shows that, by the end of 2014, exports had returned to trend. Given the behavior of unit labor costs, it seems more likely that the strength in exports reflected firms' response to the fall in domestic demand rather than the short-run effects of structural reforms.

Viewed as a whole, our evidence suggests that most of the post-2010 rise in exports reflects a return to trend behavior. The IMF program might still have played a role in the recovery of exports. Had there been no program, Portugal might have had to default on its debt. The resulting financial disruption would have made it very difficult for exporting firms to obtain working capital. In this scenario it would have taken longer for exports to return to trend.

Was the Troika Structure a Problem?

The Portugal program was unusual in that it involved three major institutions. It is difficult to formally assess whether the troika structure was problematic in designing and implementing the program. We have no hard evidence that it was a serious problem. Indeed, Kincaid (2017) argues that:

> . . . the troika arrangement proved to be operationally efficient, although areas for improvement were also identified. Conditional lending programs

[38] We do not have data on unit labor costs for tourism and other export services. Unit labor costs in "wholesale and retail trade, transport, accommodation, and food service activities" fell by 8.7 percent. Exports of services rose by 28 percent between 2010 and 2014. It seems unlikely that the fall in unit labor costs accounts for the bulk of this rise in exports, though it certainly could have played a quantitatively meaningful role.

were negotiated quickly by the troika with the country authorities and program reviews were by and large completed expeditiously; program delays could not be attributed to the troika process itself.

In our view, the basic contours of the program were driven by the constraints discussed in the section "The 2011 Program: Design and Implementation" above. However, the decision to specify highly detailed conditions may well have been driven by the different objectives of the EU and the IMF.

Some of the government officials we interviewed argued that the level of technical expertise and experience of the IMF staff far exceeded that of the EU staff. This gap may have substantially affected the design and implementation of the program. For example, we learned from interviews that the IMF wanted to impose nominal targets for the government budget, but the European Commission had imposed targets as percentages of GDP. The latter decision was clearly problematic since it forced the government to contract fiscal policy further when GDP fell. We were also told that the IMF revised its estimates of the fiscal multipliers well before the EU did.

An additional issue that came up in our interviews was that the different members of the troika pursued different communications strategies. Numerous interviewees stressed that the IMF and the EU could have coordinated their public communications better. We also heard criticisms of the way that the IMF communicated its goals and its rationale for program revisions. Our survey evidence is consistent with our interview evidence. When asked, "Was the IMF's communications strategy effective at explaining to the Portuguese public the rationale for the measures that were implemented?" 72.5 percent of survey respondents answered "No."

Lessons

In this section, we discuss the lessons that, in our view, should be learned from the Portuguese experience. First we focus on lessons about surveillance, and then summarize lessons about program design and implementation.

Lessons About Surveillance

A fundamental lesson from the Portuguese crisis is that disruptive sudden stops can affect countries that are members of currency unions, even when the union members are advanced economies.

In an important article, Cole and Kehoe (2000) argue that the size and maturity structure of government and foreign debt create the possibility of self-fulfilling debt crises. Such crises can take the form of sudden stops in access to international capital markets as well as defaults on foreign debt. The Portuguese crisis fits well into this paradigm. A large stock of government

debt and foreign liabilities made Portugal very vulnerable to a loss of access to capital markets. This vulnerability was painfully exposed in 2011. The economics profession and the IMF did not give enough weight to the possibility of a sudden stop in a euro area country.

Prior to the crisis, the IMF monitored the level, maturity, and composition of government debt and foreign liabilities. But, at least in the euro area, it did not place a great deal of emphasis on countries' current account deficits or the maturity structure of liabilities. Judging from the Article IV reports written since the crisis, the IMF has internalized this lesson. It is important to retain this emphasis.

A second lesson is that the narrative about the Portuguese economy that framed the IMF's post-2005 reports was flawed. According to that narrative, Portugal's lack of competitiveness and its large government deficits led to a large increase in the country's demand for credit. If this narrative was entirely correct, the yields on Portuguese debt should have gone up in the years prior to the crisis. In fact, interest rates (both level and spread) on Portuguese debt declined. Hence the supply of credit to Portugal must have increased by more than the demand. As discussed in the section "Background to the Crisis" above, there are many possible reasons why supply increased. The most obvious is that foreign lenders anticipated they would be bailed out if Portugal was in danger of defaulting. But it is also possible that lenders were optimistic, rationally or irrationally, about Portugal's future growth. No doubt there will be other episodes of large increases in the supply of credit to IMF member countries. It is critical to monitor and understand the drivers of large increases in both net and gross capital flows to member countries.

A final lesson for surveillance is that the IMF should urge country authorities to consolidate data on all sources of government debt, making an effort to include all the SOEs and PPPs. This practice is routine for developing economies. It should be routine for developed economies.

Lessons About Program Design and Implementation

Once a balance of payments crisis occurs in a monetary union, policymakers have four non-mutually-exclusive options. The first is to restructure the country's debt. This restructuring can take a variety of forms, including a haircut to the face value of the debt, a maturity extension, and a reduction in coupon payments. The second option is to implement a fiscal devaluation designed to mimic the effects of depreciating the currency. The third option is to put in place an adjustment program supported by official financing that is large enough and long enough for structural reforms to bear fruit in the form of higher productivity and faster growth. The fourth option is to enforce a sharp fiscal contraction.

The institutional and political realities both in Portugal and in the euro area meant that debt restructuring was never seriously on the table; the fear of contagion and moral hazard were simply too great. This is a critical point to which we return below.

A fiscal devaluation was attempted but proved to be politically unfeasible. Portugal's pre-crisis tax rates were already so high that further increases in the VAT or a redistribution of tax burdens between firms and workers were politically infeasible.

The third option—a long, large program—faced two key obstacles: it would have required a much larger financial envelope, and the Portuguese government would have had to be willing to enter a long-term arrangement involving close supervision by the troika. Neither of these conditions was satisfied.

The fourth option—a severe fiscal contraction—has two effects. It reduces the government's need to borrow funds, and it depresses aggregate output, reducing imports and increasing the incentive to export. The net result is a reduction in the need for external finance.

We infer that, in the absence of a mechanism that allows for orderly debt restructuring, resolving future balance of payments crises in countries that are members of a monetary union will likely involve large fiscal contractions which will contribute to large recessions. Making this harsh reality clear to members of a monetary union could help prevent future balance of payments crises by reducing incentives to borrow from abroad.

In the case of Portugal, the IMF underestimated the size of the fiscal multiplier (see the section "Assessment of the EFF-Supported Program for Portugal" above). Arguably this error played an important role in the IMF's underestimates of the severity of the recession. It meant that significant real-time adjustments had to be made to the program, and was costly to the IMF's credibility. To the IMF staff's credit, the estimate of the multiplier was raised in October 2012. Looking forward, we hope that the IMF will continue to recognize that fiscal multipliers depend on the monetary regime in effect and the state of the economy.

We now return to the controversial issue of debt restructuring. Opponents of restructuring often emphasize the moral hazard implications for borrowers. But for every borrower there is a lender. To the extent that lenders believe they will always be bailed out, they will underprice risk and supply more credit than they would in the absence of bailout guarantees. From this perspective, *not* restructuring debt creates a moral hazard problem in credit markets.

The moral hazard problem associated with bailing out lenders has been long recognized in the domestic banking literature. In their seminal paper, Kareken and Wallace (1978) argue that guaranteeing bank deposits incentivizes banks to take on more risk and increase the supply of loans. A simple-minded solution to this problem is to eliminate guarantees. But, of course these guarantees exist to reduce the probability of bank runs. Kareken and Wallace conclude that, in the presence of guarantees to bank depositors, banks must be regulated.

The analogy with international borrowing and lending is obvious. The prospect of an eventual bailout led Portugal's creditors to supply more credit to that country. The result was a fall in interest rates (level and spreads) and a massive increase in liabilities that made Portugal vulnerable to a sudden stop.

Both the Portuguese authorities and its creditors were willing participants in the process that ended so badly.

We conclude with perhaps the most important lesson from the crisis. If debt restructuring is *off* the table, then the international community must develop institutions to regulate international lenders. If debt restructuring is *on* the table, then the international community must develop institutions to preempt sudden stops.

Annex 9.1. Timeline of Key Events

- *March 2011:* The main credit rating agencies (Moody's, S&P, and Fitch) downgrade Portugal's sovereign rating. Portugal's Prime Minister José Socrates resigns after the opposition rejects his austerity package (the fourth package of austerity measures in a year). Elections are scheduled for June.
- *April 2011:* New rounds of sovereign credit rating downgrading occur. The fast deterioration of the external environment, reflected in the acute retrenchment of net capital inflows and a sharp increase in sovereign spreads (at about 9,000 basis points over German bonds), combined with a delicate fiscal situation—the government debt and deficit stand at 111 percent and 7.4 percent of GDP, respectively—prompt the authorities to request financial assistance from the EU. The troika—composed of the IMF, the ECB, and the European Commission—begins a technical assessment of the situation of the Portuguese economy.
- *May 20, 2011:* The IMF Executive Board approves, under the Fund's fast-track Emergency Financing Mechanism procedures, a three-year SDR 23.7 billion (€26 billion) arrangement for Portugal under the Extended Fund Facility (EFF). The program, negotiated by the socialist party in government, entails exceptional access to IMF resources amounting to about 2,306 percent of Portugal's quota, and forms part of a cooperative package of financing with the troika partners amounting to €78 billion.
- *June 5, 2011:* The Social Democrats win the election and replace the socialist party in the government.
- *July 2011:* Moody's downgrades Portugal's sovereign credit rating to below investment grade. The IMF provides technical assistance (TA) on a diagnostic of Portugal's public financial management systems, risk monitoring of corporate and household sectors, and on the special on-site inspections program for financial institutions.
- *August 2011:* The IMF provides TA on the bank early intervention, resolution, and deposit insurance framework.
- *September 16, 2011:* The Bank of Portugal reports that Madeira island had under-reported its debt since 2004, putting further pressure on the ability of Portugal to meet its deficit targets.

- *September 2011:* The IMF provides TA on streamlining revenue administration organization and strengthening taxpayer compliance management to safeguard revenue collection; and on the corporate insolvency regime and debt restructuring. The first review under the EFF-supported program with Portugal is completed and a €3.98 billion disbursement is approved.
- *October 13, 2011:* Portuguese authorities release the government budget for 2012, containing wage cuts for civil servants, who lose 2/14 months of salary. A 5 percent reduction previously introduced by the socialist government remains. The "Contribuição Extraordinária de Solidariedade"—a tax on pensions—is broadened. The work week goes from 35 to 40 hours, the VAT increases, and some holidays are discontinued.
- *November 2011:* The IMF provides follow-up TA on public financial management and revenue administration; Fitch downgrades Portugal's sovereign credit to below investment grade.
- *December 2011:* The ECB initiates longer-term refinancing operations (LTRO), offering banks low-interest rate financing with a three-year maturity.
- *January 2012:* S&P downgrades Portugal's sovereign credit rating to below investment grade; IMF provides TA on an assessment of private sector financing.
- *February 2012:* Moody's further downgrades Portugal's sovereign credit rating to Ba3 from Ba2; a program review mission by the troika to Portugal concludes that policies are generally being implemented as planned and economic adjustment is under way, but challenges remain.
- *February 29 2012:* The ECB undertakes a second LTRO, which provides €529.5 billion of low-interest rate loans with three-year maturity. Portuguese banks then borrowed €10 billion under this program.
- *March 2012:* The IMF provides TA on the revision of local and regional finance laws.
- *April 2012:* The IMF completes the third review under the EFF-supported program, approves a €5.17 billion disbursement, and provides TA on macro-fiscal issues and tax administration and judicial reform.
- *June 2012:* Three leading Portuguese banks (Millennium BCP, Portugal's largest private bank in terms of assets; Banco BPI; and state-owned Caixa Geral de Depósitos) draw on funds provided either under the program or from the state budget to meet tough new capital requirements. The move leaves only Banco Espírito Santo (BES) among Portugal's leading banks without state funding.
- *July 16, 2012:* The IMF completes the fourth review under the EFF-supported program, approves a €1.48 billion disbursement, and provides TA on judicial reform. Portugal's Constitutional Court

rejects the cut of 2 out of 14 months of salary for civil servants (see footnote 16).

- *July 26, 2012:* Mario Draghi, President of the ECB, makes a speech in which he declares that "the ECB is ready to do whatever it takes to preserve the euro."
- *July 2012:* The European Commission agrees to finance the recapitalization of Spanish banks. Spain then borrowed close to €38.9 billion for this purpose.
- *August 2, 2012:* The ECB announces a new outright monetary transactions (OMT) program. Under certain conditions this program allows the ECB to undertake potentially unlimited purchases of government debt in the secondary market to prevent divergence in short-term bond yields and safeguard "an appropriate monetary policy transmission and the singleness of the monetary policy."
- *August 2012:* The IMF provides TA on bank resolution.
- *September 7, 2012:* The government announces a fiscal devaluation to be included in the 2013 budget. The tax on labor paid by firms would decline from 23.75 percent to 18 percent and the tax on wages paid by the workers would increase from 11 percent to 18 percent.
- *September 15, 2012:* Large protests take place against the fiscal devaluation.
- *September 16, 2012:* Vice-Prime Minister Paulo Portas criticizes the fiscal devaluation.
- *September 21, 2012:* The government abandons fiscal devaluation
- *October 3, 2012:* The government announces an extra 4 percent tax on income, starting in 2013 (this tax is still in place). Tax brackets are reduced from 8 to 5.
- *October 2012:* The IMF completes the fifth review under the EFF-supported program, approves a €1.5 billion disbursement, and provides TA on public expenditure reform options.
- *November–December 2012:* The IMF provides TA on revenue administration and on public financial management.
- *January 2013:* Portugal's President Aníbal Cavaco Silva sends the 2013 budget to the Constitutional Court for review; Portugal sells €2.5 billion of five-year bonds through banks, the first offering of that maturity in almost two years; the IMF completes the sixth review under the program, and approves a €838.8 million disbursement; the IMF Executive Board concludes the 2012 Article IV consultation with Portugal. Directors highlight the uncertain near-term outlook and sizable medium-term economic challenges, and call for sustained efforts to make the tradable sector

more competitive, boost long-term growth, and further advance fiscal consolidation.

- *March 2013:* The IMF provides TA on revenue administration and the troika agrees to give Portugal one more year, through 2015, to cut its budget deficit to 3 percent of GDP.
- *April 5, 2013:* The Constitutional Court declared unconstitutional the cuts in the fourteenth monthly payment to public wage earners and pensioners, the cuts of 90 percent of 2 out of 14 months of yearly payments to pensioners, the 5 percent cut in sick-leave subsidies, and the 6 percent cut in unemployment subsidies. Overall, the Court rejects four out of nine contested austerity measures in the 2013 budget.
- *April 2013:* The troika mission discusses with Portuguese government compensating policy measures for meeting the agreed fiscal deficit targets given the Constitutional Court ruling.
- *May 2013:* Portugal sells €3 billion via banks in its first ten-year bond in more than two years, at an average yield of 5.67 percent; the EU extends Portugal's deadline for correcting the excessive deficit to 2015.
- *June 2013:* The IMF provides TA on corporate tax reform, completes the seventh review under the program, and approves a €657.47 million disbursement.
- *July 1, 2013:* Victor Gaspar resigns as minister of finance and is replaced by Treasury Secretary Maria Luis de Albuquerque; the IMF provides TA on reforming the budget framework law, in order to streamline budgetary procedures.
- *August 29, 2013:* The Constitutional Court rejects proposal to re-qualify civil servants and a bill that would have effectively allowed the state to fire public sector workers.
- *September 26, 2013:* The Constitutional Court rejects labor reforms introduced in 2012 related to the elimination of jobs and the ability to fire workers who did not adapt well to their jobs.
- *November 2013:* The IMF completes the eighth and ninth reviews under the program and approves a €1.91 billion disbursement; Portugal's Parliament passes the 2014 budget, the last under the program.
- *December 19, 2013:* The Constitutional Court rejects the equalization of pension benefits for workers contributing to Caixa Geral de Aposentações and Segurança Social and blocks a key and controversial austerity measure in the 2014 budget that provides for cuts of up to 10 percent in civil service pensions.
- *December 2013:* Portugal swaps €6.6 billion in bonds expiring in 2014 and 2015 for longer maturities; IMF provides TA on reforming the budget framework law.

- *January 2014:* Portugal issues €3.25 billion of five-year bonds at a yield of 4.66 percent; IMF provides TA on the corporate debt restructuring regime put in place under the EFF-supported program.
- *February 2014:* The IMF completes the tenth review under the EFF-supported arrangement for Portugal, approves a €0.91 billion disbursement, and provides TA on reforming the public sector accounting framework.
- *April 2014:* the IMF completes the eleventh review under the program and approves a €851 million disbursement; Portugal auctions €750 million in ten-year bonds at an average yield of 3.58 percent in its first auction since April 2011.
- *May 17, 2014:* Portugal exits the program without completing the twelfth and final review and without receiving the associated final disbursement; Portugal's Constitutional Court strikes down some austerity measures imposed at the start of the year.
- July 2014: Moody's upgrades Portugal's government bond rating to Ba1 from Ba2.
- *August 2014:* The Portuguese government rescues Bank Espírito Santo (BES), the country's leading private bank, at a cost of €4.4 billion.
- *October 2014:* The IMF publishes a Fiscal Transparency Assessment (FTA) report for Portugal.
- *January 2015:* Portugal begins the process of early repayment of IMF loans, following in the footsteps of Ireland.

Annex 9.2. Identifying Sudden Stops

We used quarterly data from the IMF's *International Financial Statistics (IFS)* database, covering 182 countries over the period 1990–2013. The definition of a sudden stop episode follows the methodology in Forbes and Warnock (2012).

Let K_t denote total capital inflows (not net flow, just inflows) in quarter t, consisting of inflows of portfolio capital, direct investment, and "other investment" (which includes bank flows). We first compute the sum of capital inflows over the last four quarters:

$$C_t = \sum_{i=0}^{3} K_{t-i}$$

Then, we compute the change in C_t relative to the same quarter of the previous year:

$$\Delta C_t = C_t - C_{t-4}$$

Let m_t and s_t be the rolling mean and standard deviation of, ΔC_t respectively. These statistics are computed over the past five years ending in quarter t. An episode of sudden stop starts when

$$\Delta C_t < m_t - s_t,$$

that is, when ΔC_t falls below one standard deviation from its rolling mean. That episode ends n periods later when. $\Delta C_{t+n} \geq m_{t+n} - s_{t+n}$ As a secondary condition, the period between t and $t+n$ is only associated to a sudden stop episode if in at least one quarter $\Delta C_{t+n} \geq m_{t+n} - 2s_{t+n}$ (i.e., ΔC_t falls below two standard deviations from its rolling mean).

We identified 138 episodes from 68 countries over the period 1997–2013.[1] Once we identified the episodes of sudden stops across countries, we organized the data using the starting date of episodes (T0) as reference. We then ran 25 cross-section regressions of the variable of interest, V (either net capital flows or the current account balance in percentage of GDP) on a constant, for each period (relative to T0) from 3 years before to 3 years after T0 (i.e., for T0-12, T0-11,…T0,…T0+12). What we report in Figure 9.17 in the main text are the estimated values of the constant and the standard deviations around them. The constant is a measure of the cross-country average of V for horizon h (= -12,…,-1,0,1,…12) relative to T0. We compare it with the sudden stop in Portugal, which we identified as having started in 2011Q1.

Annex 9.3. List of Structural Conditionality Measures for Portugal

1. Prepare a comprehensive inventory of the existing tax expenditures (including all types of exemptions, deductions, and reduced rates), by type of tax, along with their costing estimates.
2. Establish temporary task force of judges to clear tax cases worth above €1 million.
3. Approve a standard definition of arrears and commitments.
4. Prepare a comprehensive report on ten state-owned enterprises (SOEs) posing the largest potential fiscal risks to the state. The report would cover (i) concrete plans, per enterprise, for reducing its operational costs, consistent with an average cut of at least 15 percent in the sector over 2009 levels; (ii) a planned revision of the tariffs.
5. Direct all banking groups subject to supervision in Portugal to reach a core Tier 1 capital of 9 percent by end-2011 and 10 percent by end-2012 and maintain it thereafter, with banks required to present

[1] Because of the lags embedded in the methodology, we can only start identifying episodes in 1997 even if the data start in 1990.

by end-June 2011 plans on how they intend to comply with these requirements.

6. Based on assessment from EU/IMF technical assistance on the budgetary implications of main public-private partnership (PPP) programs, recruit a top tier international accounting firm to complete a more detailed study of PPPs and identify areas for deeper analysis by an international consulting firm.
7. Publish a fiscal strategy document for the general government which will specify four-year medium-term economic and fiscal forecasts, supporting analysis and underlying assumptions, and four-year cost of new policy decisions.
8. Conduct and publish the results of a survey of arrears of general government entities and SOEs for all categories of expenditure as of end-June 2011.
9. Review the efficiency of support schemes for co-generation and renewables and propose possible options for reducing the implicit subsidy.
10. Prepare a report on SOEs based on forecast financial statements assessing their financial prospects, potential government exposure, and scope for orderly privatization.
11. Design a program of special on-site inspections to validate the data on assets that banks provide as inputs to the solvency assessment.
12. Seek evaluation of the enhanced solvency and deleveraging assessment framework by a joint team of experts from the EC, the ECB, and the IMF.
13. Improve disclosure on nonperforming loans by adding a new ratio aligned with international practices to the current ratio that covers only overdue loan payments.
14. Amend legislation concerning credit institutions in consultation with the EC, the ECB, and the IMF to strengthen the early intervention framework and introduce a regime for restructuring of banks as a going concern under official control.
15. Amend the Insolvency Law to better facilitate effective rescue of viable firms and support rehabilitation of financially responsible individuals.
16. Amend the relevant legislation to strengthen deposit insurance framework by authorizing bank resolution financing and introducing depositor preference.
17. Take all necessary legal, administrative, and other steps to make arbitration for debt enforcement cases fully operational.
18. Submit to Parliament a law, already agreed with social partners, to align and reduce severance payments on all new contracts (fixed term and open-ended).

19. Finalize calibration of fiscal reform to reduce unit labor costs via deficit-neutral reduction in labor taxes (fiscal devaluation).
20. Eliminate "golden shares" and all other special rights established by law or in the statutes of publicly quoted companies that give special rights to the state.
21. Submit to Parliament legislation revising the Competition Law, making it as autonomous as possible from the Administrative Law and the Penal Procedural Law and more harmonized with the European Union competition legal framework.
22. Review the Code of Civil Procedure and prepare a proposal addressing the key areas for refinement.
23. Issue an instruction to general government units requiring that from January 1, 2012, (i) commitments must be controlled against available funds recorded in the accounting system and evidenced by authorized commitment documents ("cabimento") bearing valid commitment numbers; (ii) all other commitments would be considered illegal and not eligible for payment; and (iii) any public official incurring such illegal commitment or expenditure will be subject to specified penalties in accordance with the budget framework law.
24. Issue an instruction to general government units to ensure that systems and procedures will comply, by end-December 2011, with the revised budget execution rule, as set out in the above instruction.
25. Amend relevant legislation in consultation with the EC, the ECB, and the IMF to strengthen the early intervention framework, introduce a regime for restructuring of banks as a going concern under official control and strengthen deposit insurance framework.
26. Parliamentary approval of a 2012 budget consistent with the program, in line with paragraph 3 of the Memorandum of Economic and Financial Policies (MEFP).
27. Revise and submit to Parliament the draft regional public finance law.
28. Launch a tender to hire a top tier international accounting firm to review and complete a more detailed study of all 36 PPP contracts at the national level.
29. Prepare a proposal on measures to be used to correct excessive rents in special (co-generation and renewables) and standard regimes. The proposal will consider the merits of a full range of measures and cover all sources of rents.
30. Amend the framework (Law No. 63-A/2008) for bank access to public capital.
31. Pass a resolution of the Council of Ministers on a strategy document to clear the stock of domestic arrears of the general government and

SOE hospitals, establishing the governance arrangements for prioritization and payment decisions.

32. Prepare a proposal to implement identified best international practices in order to reinforce the independence of the main sectoral regulators.
33. Implement a full-fledged large taxpayer office (LTO), to cover audit, taxpayer services, and legal functions concerning all large taxpayers, including the adoption of account managers.
34. Publish the Ministerial Order defining the new reference tariff and formula for updating tariffs in the future for the electricity co-generation regime.
35. Develop a specific program for unwinding Parpublica.
36. Prepare a proposal for encouraging the diversification of financing alternatives to the corporate sector.
37. Submit to Parliament the bill to implement the judicial roadmap to improve the court structure.
38. Make effective the amendments to the Corporate Insolvency Law to better support rescue of viable firms (after completing all necessary legislative and publication requirements).
39. Submit to Parliament amendments to the Code of Civil Procedure to streamline and speed up the court procedures.
40. Eliminate the Power Guarantee investment incentive for the set of power plants existing or already licensed at the time of the approval of the 2007 Decree Law (264/2007) governing this incentive.
41. Develop a public financial management strategy covering the next three years, to be attached to the 2013 budget.
42. Submit to Parliament draft legislation defining the criteria for extension of collective agreements (including a majority representation threshold) and the modalities for their implementation.
43. Submit to Parliament the 2013 budget consistent with ¶5-9 of the MEFP.
44. Submit to Parliament amendments to the law governing banks' access to public capital (MEFP ¶18).
45. Adopt by the Council of Ministers and publish the medium-term fiscal framework that includes fully-specified measures to meet the 2014 deficit target (LOI ¶4 and MEFP ¶7).
46. Submit to Parliament the supplementary budget that includes measures needed to meet the 2013 fiscal objective (MEFP ¶6).
47. Submit to Parliament a new draft public administration labor law that will aim at aligning current public employment regime to the private

sector rules, including for working hours and holiday time, and termination of tenure (MEFP ¶8).

48. Submit to Parliament a draft law on the redesigned mobility pool (MEFP ¶8).
49. Submit to Parliament a legislative proposal that increases the statutory retirement age to 66 years (MEFP ¶8).
50. Submit to Parliament a legislative proposal that aligns the rules and benefits of the public sector pension fund, CGA, to the general pension regime (MEFP ¶8).
51. Update projections of the medium-term energy tariff debt path and identify policy options to eliminate the tariff debt by 2020 (MEFP ¶30).
52. Enact the severance pay reform that reduces severance payments to 12 days per year for all new permanent labor contracts (MEFP ¶28).
53. Submit to parliament a draft 2014 budget consistent with the general government deficit target of 4 percent of GDP (MEFP ¶4-6).
54. Submit to Parliament a draft Law or a budget provision to implement the single wage scale PER measure.
56. Submit to Parliament a supplementary budget to enact the necessary changes to the existing extraordinary solidarity contribution on pensions (CES), consistent with the general government deficit target of 4 percent of GDP (MEFP ¶5).
57. Approve the decree law on the increase in the beneficiaries' contributions to the special health insurance schemes (ADSE, SAD, and ADM) (MEFP ¶5).
58. Specify fiscal measures consistent with achieving the general government deficit target of 2.5 percent of GDP in 2015 (MEFP ¶6).
59. Present measures to tackle remaining excess rents in the energy sector and to deliver cost reduction to be reflected in energy prices (MEFP ¶26).
60. Launch formal negotiations with port concessionaries with a view to modifying existing concession contracts so as to foster efficiency and price reduction (MEFP ¶27).

Source: Memorandum of Economic and Financial Policies (MEFP).

Annex 9.4. Assessing IMF Forecasts for Portugal

Forecasts are an important part of the IMF's work, both in country surveillance and in the context of IMF-supported programs. Perceptions about the quality and integrity of these forecasts are crucial both for the IMF's reputation and for the traction of its advice. In a recent survey of Portuguese economists conducted by the IEO evaluation team for this chapter, in response to

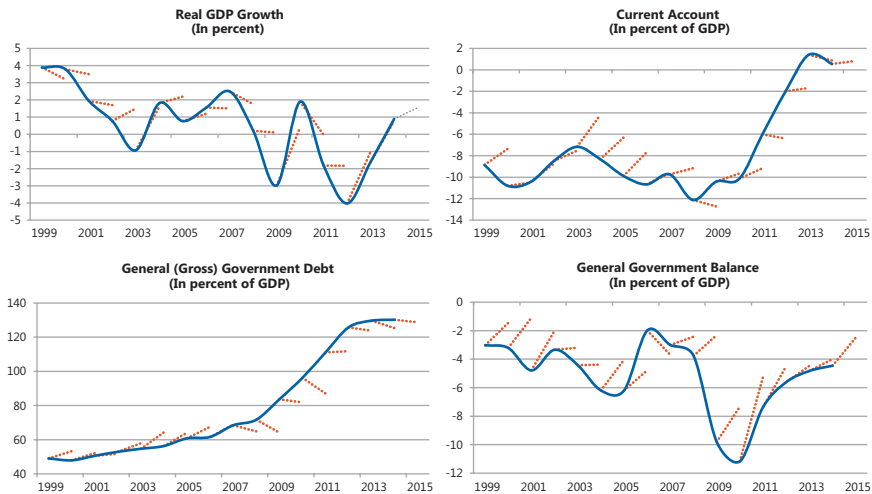
the question, "During the [IMF] program [for Portugal], do you think that the IMF's forecasts about the future of the Portuguese economy were reasonably accurate?" only 5 out of 40 survey participants said "yes." Out of the 33 participants who responded "no," 22 also said that forecast errors reduced the credibility of the program.

This annex discusses IMF forecasts of some selected variables for Portugal. It focuses on one-year-ahead forecasts of four variables—real GDP growth (annual percentage change), current account balance, government fiscal balance, and government debt (the last three variables measured as percent of GDP).

Figure 9.A4.1 provides a general impression of IMF forecasts for these variables since Portugal's adoption of the euro in 1999. The figure compares the IMF's one-year-ahead forecasts with actual outcomes for real GDP growth (annual percent change), current account balance, government surplus, and government debt. The last three variables are expressed as percentages of GDP. The forecasts are shown as dotted orange lines, were published in the annual Fall editions of the *WEO* over the period 1990–2014. The outcomes, shown as solid blue lines, were published in the October 2015 *WEO*.

At first glance, since 1999, IMF forecasts of GDP growth and, especially, government balance (GB) seem over-optimistic. For these variables, more often than not—60 percent and 87 percent of the time in the case of GDP growth and GB forecasts, respectively—projections exceed outcomes. On average, forecasts exceed outcomes by 0.8 percentage points (growth) and 1.7 percent of GDP (GB), respectively, and these averages are found to be

Figure 9.A4.1. Portugal: IMF One-Year-Ahead Forecasts vs. Outcomes



Note: For each date, the orange dotted line shows the forecast of the variable in question that was published in the Fall *WEO* of the previous year.
Source: Authors' calculations using IMF, *WEO* data.

statistically different from zero, suggesting that forecasts for these variables are biased, as further discussed below.

Errors in forecasts of the current account balance and government debt, on the other hand, seem more evenly distributed between negative and positive values and the average forecast errors are not statistically different from zero when considering the full sample over the 2000–14 period. However, when considering subsamples pre- and post-2007, errors in both current account balance and debt forecasts switch from predominantly negative (–1.7 and –3.3 percent of GDP, on average, respectively), indicating over-predictions, to mostly positive (1.3 and 12.8 percent of GDP, on average, respectively). Since the average forecast error for both variables over the two subsamples is statistically different from zero (except for current account balance, over 2008–2014), biased forecasts cannot be ruled out.

Forecast Errors: Unbiasedness, Serial Correlation, and Informational Efficiency

For a more formal assessment of the quality of IMF forecasts, let $e_{t,t+1}$ be the error associated with a forecast made in year t (Fall edition of the *WEO*), for the variable of interest y at year t+1. The forecast error is computed as the difference between the actual outcome, $\hat{y}_{t,t+1}$, and the one-year-ahead forecast made in t, $\hat{y}_{t,t+1}$:

$$e_{t,t+1} = y_{t+1} - \hat{y}_{t,t+1}.$$

For forecasts of y_{t+1} made at time t, in order to accommodate data revisions, the literature—for example, Timmermann (2006), Faust (2013), and Genberg and Martinez (2014)—typically considers the measurement of y_{t+1} taken at some time in the future, t+1+k, to represent the actual outcome corresponding to the forecast. In what follows, we allow the data to be revised during one year before being treated as final and compared with predictions (i.e., we set k = 1).

Under the assumption that the forecaster knows the structure of the economy, typical tests of forecast quality focus on informational efficiency and accuracy. Efficiency is related to whether forecasts are unbiased in the statistical sense (i.e., whether the average forecast error is zero), not serially correlated (i.e., past errors are not correlated with future errors), and whether errors cannot be predicted by making use of any information available to the forecaster at the time of the forecast.

To assess unbiasedness, we estimate the following regression:

$$e_{t,t+1} = \mu + \varepsilon_t, \tag{1}$$

where μ is the mean forecast error and ε_t represents the regression residuals. Forecasts are considered biased if the (null) hypothesis that μ = 0 can be rejected at standard levels of statistical significance. For robustness, we also

test whether the median forecast error is statistically different from zero using a Wilcoxon test.

To assess whether forecast errors are serially correlated, we compute the correlation between errors from current and past forecasts, $\rho = corr(e_{t-1,t}; e_{t,t+1})$. Efficiency requires that $\rho = 0$. A simple two-sided t-test is used to test that hypothesis.[1]

Informational efficiency can also be assessed by checking whether forecasts for Portugal take into account other information that was available to the forecasters at the time the projections were made. Consider the following regression:

$$e_{t,t+1} = c + \beta x_t + \varepsilon_t, \tag{2}$$

where x is another series that may contain information relevant for forecasting y and ε_t is the regression error. Efficiency requires that β = 0, which can again be tested using a t-test.

Tables 9.A4.1–A4.3 show the results of informational efficiency tests in IMF forecasts of GDP growth since the early 1990s. To shed light on the effects of both the 2008-09 global financial crisis and the 2011 IMF program for Portugal, results are reported for three different subsamples, all starting in 1990 and ending in 2007, 2010, and 2014, respectively.

Table 9.A4.1 refers to unbiasedness and serial correlation of errors. For comparison, it also contains information about errors in forecasts of GDP growth in a "peer" country (Spain), and in countries that have regional (Germany), and global importance (United States).

Some caveats should be noted before considering the results. First, as argued by Faust and Wright (2013), statistical tests of unbiasedness, accuracy, and overall efficiency may be a poor assessment of the quality of forecasts for economies in which there are relatively frequent structural changes.[2]

Second, several of the results discussed below may not be robust to generalizations; they vary with the measure of the bias (mean or median) and are affected by considerations related to sample size, forecast horizon, and *WEO* edition (Spring or Fall), especially in light of the 2008–09 global financial crisis.[3] Changes in assumptions along those dimensions affect the sample and may greatly change the results. In addition, many of the results may be subject

[1] The test statistic in this case, $t^* = \dfrac{\rho}{\sqrt{\left(1-\rho^2\right)/\left(n-2\right)}}$, follows a t-distribution with $n-2$ degrees of freedom.

[2] Efficiency tests rely on the assumption that the forecaster knows the structure of the economy being forecast. If there are learning opportunities for the forecaster (e.g., as structural reforms are laid out and their effects are only gradually felt in the economy), a "failure" in these tests may not be caused by factors available to the forecaster that are not considered in the forecasts, but may simply be a result of the time needed for the forecaster to catch up with the changing structure of the economy and for this learning to be gradually reflected in the sample used in the tests.

[3] See Genberg and Martinez (2014).

Table 9.A4.1. Descriptive Statistics for Errors in One-Year-Ahead IMF Forecasts of GDP Growth
(In percentage points)

	Mean	Std. Dev.	H_0: $\mu = 0$		Median	H_0: $m = 0$	Corr($e_{t-1,t}$; $e_{t,t+1}$)	H_0: $\rho = 0$
Country	μ	σ	prob[1]	< 0.05[2]	m	prob[3]	ρ	prob[1]
					1990–2006			
Portugal	–1.01	1.48	0.01	0.83	–0.74	0.02	0.24	0.34
Spain	–0.23	1.04	0.38	0.09	0.20	0.60	0.37	0.15
Germany	–0.74	1.52	0.06	0.47	–0.82	0.08	–0.21	0.41
United States	0.10	1.42	0.78	0.08	0.26	0.64	0.16	0.53
					1990–2010			
Portugal	–1.06	1.46	0.00	0.93	–1.27	0.01	0.09	0.68
Spain	–0.43	1.24	0.13	0.27	–0.02	0.31	0.21	0.35
Germany	–0.65	1.89	0.13	0.33	–0.72	0.15	–0.23	0.31
United States	–0.07	1.49	0.83	0.05	–0.02	1.00	0.14	0.54
					1990–2013			
Portugal	–1.00	1.39	0.00	0.96	–1.00	0.00	0.11	0.61
Spain	–0.43	1.30	0.12	0.31	0.04	0.35	0.16	0.46
Germany	–0.59	1.77	0.12	0.35	–0.47	0.13	–0.22	0.31
United States	–0.02	1.41	0.94	0.05	0.04	0.85	0.13	0.55

Notes:
(1) *p*-value associated with H_0: $\mu = 0$ in a two-sided *t*-test.
(2) Frequency of rejection of H_0: $\mu = 0$ at 5% significance in 10,000 bootstrap estimations of $e_t = \mu + \varepsilon_t$.
(3) *p*-value associated with H_0: $m = 0$ in a Wilcoxon signed rank test.
Source: Authors' calculations using IMF, *WEO* data.

to small-sample distortions, despite our efforts to account for or adjust to them, as explained below.

With those caveats in mind, Table 9.A4.1 suggests that the IMF's one-year-ahead *WEO* forecasts of GDP growth for Portugal were, in general, biased towards over-prediction, but not serially correlated. Regardless of the sample period, both the mean and median forecast error are negative (ranging from –0.74 to –1.27 percentage points) and statistically significant at less than 5 percent. To account for the possibility of small sample distortions in the size of the statistical tests, Table 9.A4.1 also reports the fraction of 10,000 bootstrap estimations of Equation (1) in which the hypothesis H_0: $\mu = 0$ can be rejected at the 5 percent level. For Portugal, this fraction ranges from 83 to 96 percent of replications, depending on the subsample.[4]

For comparison, no statistically significant bias in IMF forecasts can be detected for either Spain or the United States, while the evidence of biased forecasts for Germany is somewhat weaker.[5] Regarding serial correlation, no evidence

[4] A similar exercise was carried out for the current account, government deficit, and government debt over the 1990–2014 period. No statistically significant evidence of either bias or serial correlation was found.
[5] There is no evidence of bias in forecasts when the 2011–13 period is included. Moreover, when biases are found, they are significant at the 10 percent, but not the 5 percent, level. Finally, the frequency of rejection of H_0: $\mu = 0$ in bootstrap replications is always less than 50 percent.

Table 9.A4.2. Portugal: Estimated Value of β in Equation (2)

x = GDP growth from (country)	Subsample		
	1990–2006	1990–2010	1990–2013
Spain	0.94	0.11	−0.03
prob(1)	0.20	0.70	0.90
bootstrap < 0.05(2)	0.25	0.07	0.05
Germany	−0.38	−0.18	−0.22
prob	0.50	0.65	0.52
bootstrap < 0.05	0.10	0.07	0.10
United States	−0.55	−0.02	−0.01
prob	0.40	0.95	0.98
bootstrap < 0.05	0.14	0.05	0.05

Notes:
(1) *p*-value associated with a two-sided t-test; and
(2) frequency of rejection of H_0: $\beta = 0$ at 5% significance in 10,000 bootstrap estimations of equation (2).
Source: Authors' calculations using IMF, *WEO* data.

is found for one-year-ahead forecasts of GDP growth in any of the countries shown in Table 9.A4.1, except weak evidence for Germany over 1990–2010.[6]

Table 9.A4.2 shows the estimated value of β in Equation (2), in which forecasts of GDP growth in Spain, Germany, and the United States are used, one at a time, to represent x. The table displays the ρ-values associated with the hypothesis that $\beta = 0$ along with results from a bootstrap procedure. Results suggest that errors in IMF one-year-ahead forecasts of GDP growth for Portugal seem orthogonal to forecasts of the same variable in the three countries considered, in all subsamples. Efficiency along these lines cannot be rejected.

Taken together, however, the results in Tables 9.A4.1 and 9.A4.2 indicate that IMF forecasts of GDP growth for Portugal are not efficient. Although efficiency cannot be rejected either on the grounds of serially correlated errors or because projections ignore information contained in GDP growth forecasts for other countries, IMF forecasts of GDP growth for Portugal do show signs of a systematic optimistic bias. While this conclusion must be taken with caution in light of the caveats discussed above, it suggests that these forecasts may be improved if IMF forecasters proactively adjust their forecasts, at least partially, by incorporating the measured bias.

Comparison of IMF with Consensus and Other Forecasts

Table 9.A4.3 shows a comparison between one-year-ahead forecasts of GDP growth by the IMF (*WEO*, Fall editions) and *Consensus* forecasts based on the ratio of root-square mean errors (RSME). Only editions of *Consensus* forecasts published in the same month as the *WEO* (September or October,

[6] Serial correlation of forecast errors can also be assessed with the help of equation $e_{t,t+1} = \mu + \rho e_{t-1,t} + \varepsilon_t$, by testing if $\rho = 0$ (see Timmerman, 2006). Results from this approach do not materially change our conclusions as the estimated ρ is not statistically significant in both t-tests and in large shares of bootstrap replications (no less than 44 percent, for Portugal).

Table 9.A4.3. Portugal: Comparative Statistics for Errors in IMF and *Consensus* Forecasts of GDP Growth
(Percentage points)

	Mean	Std. Dev.	H_0: $\mu = 0$		Median	H_0: $m = 0$	Corr(e_{t-1},t;$e_{t,t+1}$)	H_0: $\rho = 0$	RSME		
Forecaster	μ	σ	prob[1]	< 0.05[2]	m	prob[3]	ρ	prob[1]	Ratio	prob[4]	< 0.05[5]
					2001–2006						
Consensus	–1.22	1.36	0.08	0.43	–1.20	0.09	0.11	0.83	1		
IMF	–0.99	1.18	0.10	0.35	–0.95	0.14	0.05	0.93	0.83	0.17	0.43
					2001–2010						
Consensus	–1.30	1.48	0.02	0.71	–1.77	0.03	–0.28	0.43	1		
IMF	–1.11	1.27	0.02	0.71	–1.44	0.04	–0.29	0.42	0.85	0.02	0.93
					2001–2013						
Consensus	–0.95	1.51	0.04	0.55	–1.04	0.06	–0.05	0.86	1		
IMF	–0.98	1.17	0.01	0.82	–1.27	0.03	–0.21	0.49	0.83	0.02	0.82

Notes:
(1) p-value associated with H_0: $\mu = 0$ in a two-sided t-test.
(2) Frequency of rejection of H_0: $\mu = 0$ at 5% significance in 10,000 bootstrap estimations of $e_t = \mu + \varepsilon_t$.
(3) p-value associated with H_0: $m = 0$ in a Wilcoxon signed rank test.
(4) p-value associated with the Diebold-Mariano (DM) statistic.
(5) Frequency of rejection of equal accuracy from 10,000 bootstrap replications of the DM statistic.
Sources: Authors' calculations using data from IMF, *WEO* and *Consensus Forecasts*.

depending on the year) are included, as an attempt, albeit imperfect, to keep the information sets available to the two groups of forecasters comparable. Since *Consensus* has only published forecasts for Portugal since 2001, we restricted the sample to 2001–14.

First, note that the evidence of an optimistic bias of IMF forecasts of GDP growth for Portugal, discussed in the context of Table 9.A4.1, can also be seen in Table 9.A4.3, although the evidence from bootstrap replications for the mean forecast error is substantially weaker in the first two subsamples. Nevertheless, IMF forecasts show over-predictions of GDP growth ranging from 0.95 percentage points to 1.44 percentage points, depending on the measure (mean or median) and subsample. Again, there is no evidence of serially correlated forecast errors.

Second, *Consensus* forecasts, too, are biased towards over-predicting GDP growth. For the first two subsamples, point estimates point to larger biases relative to those from IMF forecasts. Tests of equality of mean and median (not shown) indicate that differences in biases from IMF and *Consensus* forecasts are not statistically significant at the 10 percent level, however.[7]

Forecast accuracy is typically assessed against a benchmark—either forecasts resulting from a purely mechanical method or projections made by other forecasters. Table 9A4.3 also sheds some light on the accuracy of IMF forecasts relative to those of *Consensus*. It shows that the RSME of *Consensus* forecasts is about 20 percent greater than that of their IMF counterparts. Diebold-Mariano tests suggest that, except in the case of the shorter subsample, these differences in accuracy are statistically significant at less than the 5 percent significance level—a conclusion supported by the large share (more than 80 percent) of bootstrap replications rejecting the hypothesis of similar accuracy.

As an alternative approach to comparing bias and accuracy in projections made by different forecasters, we also propose the following fixed-effect panel regression:

$$z_t = c + \mu_t + \alpha MONTH_t + \beta_1 IMF_t + \beta_2 EC_t + \beta_3 OECD_t + \varepsilon_t, \quad (3)$$

where $z_t = e_{t,t+1}$ or $z_t = \sqrt{e^2_{t,t+1}}$, depending on whether the analysis focuses on bias or accuracy, respectively; c is a constant; μ_t is a period-fixed effect; *MONTH* takes the value of 1 to 12, according to the month in which the forecast was made;[8] IMF_t, EC_t, and $OECD_t$ are dummy variables that take the value of 1 when forecasts come from the IMF, the European Commission (EC), or the Organisation for Economic Co-operation and Development (OECD); and ε_t is an error term.

[7] For the mean, we used a *t*-test allowing for different variances across subsamples from the two forecasters. For the median, we used the Wilcoxon/Mann-Whitney test.

[8] This is an attempt to control for the fact that forecasts made late in the year have the advantage of using a larger information set.

Table 9.A4.4. Portugal: Bias and Accuracy of IMF, EC, and OECD Forecasts of GDP Growth Relative to *Consensus* Forecasts

(In percentage points)

	Dependent Variable			
	Bias: Forecast Error		Accuracy: Root-Squared Error	
	Coef.	Prob	Coef.	Prob
Subsample: Feb 2001–April 2011				
Constant	–1.84	0.00	2.40	0.00
MONTH	0.09	0.00	–0.08	0.00
IMF	0.18	0.05	–0.13	0.08
EC	0.34	0.00	–0.10	0.17
OECD	–0.08	0.42	0.11	0.25
# Obs.	184		184	
Adj. R^2	0.96		0.91	
Subsample: May 2011–June 2014 (IMF Program)				
Constant	–0.84	0.00	1.43	0.00
MONTH	0.11	0.00	–0.07	0.00
IMF	–0.76	0.00	0.05	0.83
EC	–0.51	0.02	–0.19	0.27
OECD	–0.22	0.40	–0.14	0.63
# Obs.	60		60	
Adj. R^2	0.78		0.59	

Sources: Authors' calculations using data from IMF, *WEO; Consensus Forecasts;* European Commission; and Organisation for Economic Co-operation and Development.

The constant in Equation (3) captures the (conditional) mean of z_t coming from *Consensus* forecasts, also included in the estimation of Equation (3), while the dummy variables capture the marginal contributions to biases and root-squared errors (RSE) from the remaining forecasters.

Table 9.A4.4 shows the estimation results for two subsamples: one for forecasts made in the context of standard IMF surveillance of the Portuguese economy (February 2001 to April 2011) and another, discussed in the next subsection, for forecasts made during the 2011–14 program. Note that having more information to make forecasts helps to reduce both the optimistic bias and the RSE; the estimated coefficients associated with *MONTH* are positive in the bias regression and negative in the RSE regression, and always statistically significant, regardless of the subsample. Regarding unbiasedness, the results confirm that one-year-ahead *Consensus* forecasts of GDP growth are biased towards over-prediction—the regression constant is always negative and statistically significant.

For the "surveillance period," both IMF and the EC forecasts are less biased than those by *Consensus*, as indicated by positive and statistically significant estimated coefficients associated with the respective dummy variables. The IMF, but not the EC, is also more accurate than *Consensus* and the difference in accuracy is significant at 8 percent, consistent with the RSME comparisons noted in Table 9.A4.3. The bias and mean RSE in OECD forecasts, however, are not statistically different from those in *Consensus* forecasts.

IMF Forecasts for Portugal during the 2011–14 Program

Table 9.A4.4 also shows that IMF forecasts made during Portugal's program period seem very different from those made during the surveillance period: they are more optimistically biased and are no longer more accurate than *Consensus* forecasts. This finding is consistent with the widespread notion (see IEO, 2014) that IMF forecasts during programs are more optimistic than those made in the context of surveillance, especially in cases of exceptional access to IMF resources, as in the 2011 Portuguese program.

Table 9.A4.5 and Figure 9.23 in the main text show IMF forecasts and outcomes for the four variables of interest, as well as for CPI inflation and the unemployment rate, during the IMF program for Portugal. Table 9.A4.5 allows the comparison of outcomes both with historical data since the early 2000s and with two sets of IMF projections, one made just before the 2011 program (in April 2011) and another at program start (May 2011). Because the two sets of forecasts were made just one month apart, their differences can be reasonably attributed to the projected effects of the program.

The IMF forecasts of GDP growth made just before the start of the program projected a cumulative growth rate of –0.1 percent for the Portuguese economy over 2011–14, the period that would cover the duration of the program announced later. In the next round of forecasts, conducted after the program's approval, the IMF revised that projection for the same period downwards to –0.3 percent, showing that the IMF rightly expected the fiscal austerity measures embedded in the program to negatively affect growth prospects. However—consistently with a benign view of how its programs affect growth prospects—the Fund forecast that after completing the program, Portugal would achieve higher real GDP than under the pre-program forecast.

Table 9.A4.5. IMF Forecasts for Portugal: Projections vs. Outcomes

	Historic Data		Projections		
			WEO April 2011 Program, May 2011 Outturns		
	Average 2000–10	2010	2011–14		
Real GDP (% change)	1.0	1.9	–0.1	–0.3	–6.6
CPI inflation (%)	2.5	1.4	6.6	8.5	6.6
			2014		
General government balance (% of GDP)	–5.3	–11.2	–5.8	–2.3	–4.5
General government gross debt (% of GDP)	64.1	96.2	100.8	115.0	130.2
Unemployment rate (%)	7.0	10.8	11.3	12.0	13.9
Current account balance (% of GDP)	–9.8	–10.1	–6.4	–3.4	0.6

Sources: IMF, *WEO*, April 2011 and October 2015 and IMF (2011a).

The upper-left chart in Figure 9.23 in the main text displays Portugal's projected and realized GDP profiles, indicating that the bulk of the contractionary effects of the fiscal austerity measures built into the program was projected to kick in before 2013 and that subsequently, perhaps as a result of the effect of either structural reforms or the closing of the output gap,[9] growth would accelerate (and produce the larger cumulative growth relative to earlier projections, as discussed above). Unfortunately, the outcome was less rosy than pictured by either set of IMF projections and GDP actually shrank by about 6.6 percent during the program years.

Forecast errors for the other variables are consistent with the Fund's sizable over-prediction of GDP prospects (Table 9.A4.5 and Figure 9.23 in the main text). Since the IMF staff underestimated the severity of the crisis that hit the Portuguese economy, it also underestimated both the rise in the unemployment rate—which peaked in 2013 at more than 16 percent (vis-à-vis a projection of just above 13 percent)—and the effect of the depressed domestic demand on the speed of the reversal observed in the current account balance—from a deficit of 10.1 percent of GDP, in 2010, to a surplus of 0.6 percent in 2014, instead of the 3.4 percent of GDP forecast *deficit* for that year (Figure 9.23 in the main text, lower-right chart).

The IMF also had over-optimistic expectations about how Portugal's fiscal situation would improve during the program. It consistently overestimated the government balance (GB) and underestimated debt-to-GDP ratios (Table 9.A4.5 and Figure 9.23 in the main text, mid-left and mid-right charts, respectively). It assumed that the implementation of the program would produce a substantially lower government deficit in percent of GDP than it had forecast before the start of the program—by 1 percentage point in 2012, and by 3.5 percentage points by 2014. The actual profile of the government balance over 2011–14 was closer to the pre-program forecast and so was the end-point in 2014 (Figure 9.23 in the main text and Table 9.A4.2).

Errors in forecasts of both GDP growth and government balance explain a large part of the errors in IMF forecasts of government debt. Table 9.A4.6 shows a decomposition of the errors in IMF forecasts (made in May 2011) of government debt for 2014. The contributions of errors to forecasts of the implicit real interest rate on the debt, real GDP growth, government deficit, and the initial stock (i.e., by 2010) of government debt are computed by replacing, one at a time, the projected profiles of these variables by their actual outcomes. The IMF predicted that the debt ratio would be at 115 percent of GDP by 2014, missing by 15.2 percentage points the actual debt ratio. Forecast errors in GDP growth and government deficit, combined, explain 10.8 percentage points (71.1 percent of the error), while mismeasurement of

[9] During interviews with the evaluation team, IMF staff involved in the design of the program said that the faster growth in the second half of the program period was mostly due to the closing of the output gap. They did not assume there would be an effect of structural reforms before 2016.

Table 9A4.6. Decomposition of IMF Forecast Errors for Government Debt
(In percent of GDP)

	2010	2011	2012	2013	2014	Error
Forecast (May 2011)	93.0	106.4	112.2	115.3	115.0	
Actual (*WEO* Oct. 2015)	96.2	111.1	125.8	129.7	130.2	15.2
Real interest rate	93.0	107.8	115.3	116.7	115.6	0.7
GDP inflation	93.0	106.5	112.4	115.5	115.1	0.1
Real GDP growth	93.0	106.0	114.4	120.9	122.4	7.4
Debt in 2010	93.0	109.8	115.8	118.9	118.6	3.6
Debt-creating flows	93.0	107.0	117.0	119.1	118.4	3.4
					Total	15.2

Sources: Authors' calculations using data from IMF (2011a), IMF (2015b), and IMF, *WEO*, October 2015.

the debt-to-GDP ratio at the starting point and the underestimation of the (nominal) interest rate account, respectively, for 3.6 percentage points and 0.8 percentage points.

Summary and Conclusions

The main conclusions from this annex can be summarized as follows:

- Survey-based evidence suggests that IMF forecasts for Portugal made during the program are not perceived as reasonably accurate and that they damaged the credibility of the program.
- No statistically significant evidence of either a systematic bias or serial correlation was found in (one-year-ahead) IMF forecasts of the current account, government deficit, and government debt over the full sample covering the period 1990–2014. However, when the sample is restricted to forecasts for the period after the adoption of the euro, only considering statistically significant evidence, IMF forecasts:
  - —Systematically over-predicted the government balance measured as a percentage of GDP, by 1.6 percentage points, on average;
  - —Over-predicted both the government debt and the current account balance (as a percentage of GDP) during 1999–2007 by 3.3 percentage points and 1.7 percentage points, on average;
  - —Underestimated the government debt-to-GDP ratio during 2008–14 by almost 13 percentage points, on average, and by no less than about 5 percentage points.
- Regarding the IMF's one-year-ahead forecasts of real GDP growth for Portugal, statistically significant evidence suggests that:
  - —There was a clear bias towards over-prediction—statistically significant biases are found for different sample periods, regardless of the measure used (mean or median)—but no serial correlation or correlation with forecasts of GDP growth for other countries that could affect GDP growth in Portugal;

—Average overestimation of GDP growth ranged from about 0.98 percentage points to about 1.27 percentage points, depending on the method used;

—IMF forecasts were in general as biased as, but more accurate than, *Consensus* forecasts;

—The overall superiority of IMF forecasts relative to *Consensus* is basically explained by differences in forecasts made *before* the 2011 IMF program, when IMF forecasts were both (slightly) less biased and more accurate;

—When the sample is restricted to the program period, IMF forecasts were more biased and no longer more accurate than *Consensus* forecasts;

—Over the program period, the cumulative error in IMF forecasts was sizable (above 6 percentage points), indicating that the IMF largely missed the depth of the recession hitting the Portuguese economy at the time;

—One possible reason for this large error is that the IMF underestimated the depressive effect of the austerity measures embedded in the program by using a smaller fiscal multiplier than the actual multiplier;

—"Counterfactual forecasts" constructed assuming a larger multiplier (0.8, instead of 0.5) are able to reduce the cumulative forecast error of GDP growth over the duration of the program by about 33 percent.

- During the program, the IMF overestimated the improvement in Portugal's fiscal situation:

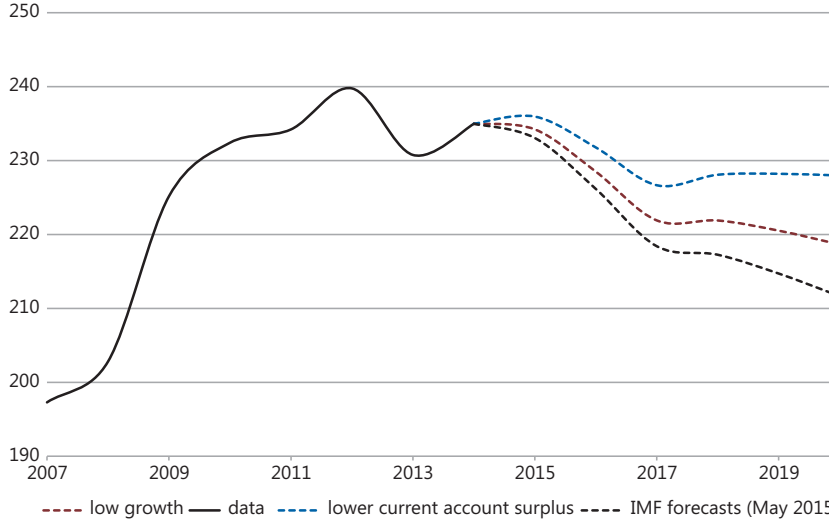
  —Both government debt and the government deficit, both measured in percent of GDP, were largely underestimated (by 15.2 percentage points and 2.2 percentage points, respectively);

  —Considering the forecasts for 2014 that were made at the start of the program, forecast errors in GDP growth and government deficit together explain 71.1 percent of the difference between the actual debt-to-GDP ratio in 2014 (130.2 percent) and the forecast ratio (115 percent).

Annex 9.5. Sustainability of Portugal's External Liabilities

We begin by displaying Portugal's total (public and private) net external debt as a percentage of GDP since 2007 (see Figure 9.28 in the main text). For convenience, we refer to this percentage as the external debt ratio. The

Figure 9A.5.1. Portugal: Net External Government Debt Under Alternative Scenarios
(In percent of GDP)



Source: Authors' calculations using the IMF DSA template and information in IMF (2015b).

solid orange line in Figure 9.28 displays that ratio as reported in May 2011. The dashed orange line shows the IMF's forecast, as of that date, for the external debt ratio from 2011–16. According to that forecast, the debt ratio would peak at 249.3 percent in 2012 and decline thereafter. Clearly, the IMF judged Portugal to be on a sustainable path with respect to its external debt ratio. The solid brown line shows the historical path of the external debt ratio from 2007–15.[1] The dashed brown line shows the IMF's forecasts of that ratio as of May 2015.[2]

As with the government debt, a central question is: how sensitive are the IMF's forecasts to changes in assumptions about the growth rate of the economy, and the size of current account deficit?

We reproduced the IMF's analysis of external debt sustainability as of May 2015. Table 9.A5.1 displays the benchmark assumptions underlying that analysis. Here we report sensitivity of the external debt projections to several changes in the benchmark assumptions. Consistent with our discussion above, our analysis, like that of the IMF, ignores general equilibrium effects when we change a benchmark assumption.

[1] The historical path of debt/GDP reported by the IMF on May 2011 and May 2015 differ for the period 2009–11 due to data revisions.
[2] These forecasts are included in the Second Post-Program Monitoring report for Portugal.

Table 9.A5.1. Portugal: IMF External Debt Sustainability Analysis as of May 2015

Key Macroeconomic Assumptions Underlying Baseline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Baseline: External debt	232.4	234.2	239.8	230.8	235.0	233.0	226.2	218.4	217.2	214.7	211.7
Nominal GDP (euros)											
Real GDP growth (in percent)	1.9	–1.8	–4.0	–1.6	0.9	1.6	1.5	1.4	1.3	1.2	1.2
GDP deflator in euros (change in percent)	0.6	–0.3	–0.4	2.2	1.3	1.0	1.3	1.3	1.4	1.5	1.6
Nominal external interest rate (in percent)	2.3	2.8	2.9	2.4	2	2	2	2.1	2.2	2.3	2.5
Growth of exports (euros, in percent)	13.8	13.8	4.3	6.6	2.5	12.3	5	6	5.4	4.9	4.6
Growth of imports (euros, in percent)	12.6	1.7	–5.3	1.7	4.1	9.4	5.6	6.8	6.2	5.6	4.9
Current account balance, excluding interest payments	–5	0.5	5	7.2	5.2	5.8	5.4	5.2	5	5.1	5.3
Net non-debt-creating capital inflows	–3.6	4.9	–3.8	0.2	–0.6	0.6	0.6	0.4	0.3	0.2	0.1
Nominal GDP	179.9	176.2	168.4	169.4	173	177.5	182.6	187.7	192.6	197.9	203.3
Current account balance	–10.1	–6	–2.1	1.4	0.6	1.1	0.8	0.6	0.3	0.1	0.1
Current account deficit	10.1	6	2.1	–1.4	–0.6	–1.1	–0.8	–0.6	–0.3	–0.1	–0.1
Interest payments	5.1	6.5	7.1	5.8	4.6	4.7	4.6	4.6	4.7	5	5.2

Sources: Authors' calculations using the IMF DSA template and information in IMF (2015b).

In our first experiment, we assume that the growth rate of real GDP is 0.5 percentage points lower than the IMF benchmark scenario. The brown-dashed line in Figure 9.A5.1 above displays the implied external-debt ratio up to 2020. While the lower growth scenario raises the level of the external-debt ratio it does not overturn the conclusion that the ratio is on a sustainable path.

In our second experiment, we cut the current account surplus exclusive of interest payments by 50 percent. The blue-dashed line in Figure 9.A5.1 displays the implied external debt ratio path up to 2020. Despite the large change in the benchmark assumption, the external debt ratio appears to be borderline sustainable.

Allowing for realistic correlations between growth and the current account would make the sustainability of external debt ratio more robust. The reason is that the current account is generally countercyclical. So, lower growth improves the current account surplus.

Annex 9.6. Robustness of Export Trend Estimation

To assess the robustness of our results, we estimated the trend in exports using the Hodrick-Prescott (HP) and the band-pass (BP) filters. We also studied the impact of using different starting points for the linear trend analysis and of controlling for the effects of external economic conditions on Portugal's exports. Our analysis is based on quarterly, seasonally adjusted data.

There is a well-known problem with the sensitivity of inference to end points in small samples detrended with two-sided filters, such as the HP and BP filters. We deal with this problem as follows. First, we estimated an ARIMA (p, 1, q) model—where p and q were selected from the set {0, 1, 2} according to information criteria—using quarterly data of real exports for the period 1995Q1 to 2014Q4. We then used the estimated model to produce out-of-sample forecasts for 2015Q1–2025Q4. We applied the HP and BP filters over the extended sample ending in 2025Q4 (using actual data up to 2014Q4 and forecasts for the remaining extended sample) so that 2014Q4 is no longer the end of the sample.

Tables 9.A6.1 and 9.A6.2 report the cumulative deviation of exports from its trend value during the post-program period (2011Q3–2014Q4)—measured as percentage of Portugal's GDP in 2011—estimated using the different methods and starting points. Table 9.A6.1 was constructed using the raw exports data.

Table 9.A6.2 displays results obtained using residuals from a regression of Portugal's exports on real GDP in Spain. To control for different levels of spillovers, we also studied the residuals of regressions of Portuguese exports on real GDP from the euro area, the United States and the world. There was no material difference relative to the results reported in Table 9.A6.2.

Tables 9.A6.1 and 9.A6.2 show that the inference that most of the growth in exports represents a return to trend is very robust.

Table 9.A6.1. Portugal: Cumulative Deviation of Exports from Trend
(In percent of 2011 GDP)

T_0	Linear	HP Filter	Band-Pass
1995Q1	–2.29	0.44	1.68
1995Q2	–2.10	0.44	1.69
1995Q3	–1.79	0.44	1.66
1995Q4	–1.56	0.44	1.60
1996Q1	–1.42	0.44	1.62
1996Q2	–1.20	0.44	1.59
1996Q3	–1.01	0.44	1.55
1996Q4	–0.82	0.44	1.57
1997Q1	–0.57	0.44	1.50
1997Q2	–0.36	0.44	1.43
1997Q3	–0.21	0.44	1.41
1997Q4	–0.04	0.44	1.36
1998Q1	0.09	0.44	1.32
1998Q2	0.18	0.44	1.29
1998Q3	0.25	0.44	1.27
1998Q4	0.26	0.44	1.28
1999Q1	0.40	0.44	1.28
1999Q2	0.53	0.44	1.29
1999Q3	0.66	0.43	1.32
1999Q4	0.75	0.43	1.35
2000Q1	0.81	0.43	1.43
2000Q2	0.78	0.43	1.38
2000Q3	0.84	0.43	1.48
2000Q4	0.82	0.43	1.59
2001Q1	0.71	0.43	1.52
2001Q2	0.69	0.44	1.52
2001Q3	0.70	0.44	1.49
2001Q4	0.77	0.44	1.58
2002Q1	0.75	0.44	1.58
2002Q2	0.76	0.44	1.60
2002Q3	0.76	0.43	1.60
2002Q4	0.80	0.43	1.60
2003Q1	0.87	0.43	1.59
2003Q2	0.90	0.43	1.60
2003Q3	0.97	0.44	1.56
2003Q4	1.03	0.44	1.53
2004Q1	1.07	0.44	1.50
2004Q2	1.11	0.44	1.38
2004Q3	1.08	0.43	1.50
2004Q4	1.17	0.45	1.40
2005Q1	1.21	0.46	1.51
2005Q2	1.37	0.52	1.44
2005Q3	1.51	0.59	1.42
2005Q4	1.67	0.69	1.36

Table 9.A6.2. Portugal: Cumulative deviation of exports from trend
(In percent of 2011 GDP)
(Only component of exports that are orthogonal to Spain's real GDP)

Beginning of Sample	Linear	HP Filter	Band-Pass
1995Q1	2.10	1.10	1.77
1995Q2	2.22	1.10	1.78
1995Q3	2.45	1.10	1.75
1995Q4	2.60	1.10	1.68
1996Q1	2.64	1.10	1.71
1996Q2	2.75	1.10	1.68
1996Q3	2.85	1.10	1.65
1996Q4	2.95	1.10	1.65
1997Q1	3.07	1.10	1.59
1997Q2	3.17	1.09	1.52
1997Q3	3.21	1.09	1.52
1997Q4	3.27	1.09	1.46
1998Q1	3.29	1.09	1.42
1998Q2	3.27	1.09	1.40
1998Q3	3.23	1.09	1.38
1998Q4	3.14	1.09	1.39
1999Q1	3.15	1.09	1.39
1999Q2	3.18	1.09	1.40
1999Q3	3.20	1.09	1.42
1999Q4	3.18	1.09	1.45
2000Q1	3.14	1.09	1.52
2000Q2	3.02	1.09	1.47
2000Q3	2.98	1.09	1.56
2000Q4	2.87	1.09	1.66
2001Q1	2.67	1.09	1.58
2001Q2	2.57	1.09	1.59
2001Q3	2.49	1.09	1.57
2001Q4	2.46	1.09	1.64
2002Q1	2.37	1.09	1.64
2002Q2	2.29	1.09	1.67
2002Q3	2.20	1.09	1.67
2002Q4	2.14	1.09	1.66
2003Q1	2.12	1.09	1.66
2003Q2	2.06	1.09	1.67
2003Q3	2.06	1.09	1.62
2003Q4	2.01	1.09	1.61
2004Q1	1.97	1.09	1.57
2004Q2	1.92	1.09	1.48
2004Q3	1.82	1.07	1.56
2004Q4	1.81	1.08	1.47
2005Q1	1.77	1.08	1.60
2005Q2	1.85	1.13	1.57
2005Q3	1.94	1.19	1.51
2005Q4	2.04	1.27	1.46

References

Arellano, Cristina, Andrew Atkeson, and Mark Wright, 2015, "External and Public Debt Crises," in *NBER Macroeconomics Annual 2015,* Vol. 30 (Cambridge, Massachusetts: National Bureau of Economic Research).

Auerbach, Alan, and Yuriy Gorodnichenko, 2012, "Measuring the Output Responses to Fiscal Policy," *American Economic Journal—Economic Policy* 4: 1–27.

Banco Português de Investimento, 2010, "Sustentabilidade das Contas Públias Portuguesas," January 6.
Blanchard, Olivier, 2006, "Adjustment with the Euro: The Difficult Case of Portugal," Working Paper No. 06-04 (Cambridge, Massachusetts: Massachusetts Institute of Technology).
Blanchard, Olivier, and Daniel Leigh, 2013, "Growth Forecast Errors and Fiscal Multipliers," IMF Working Paper No. 13/1 (Washington: International Monetary Fund).
Blattner, Laura, Luisa Farinha, and Francisca Rebelo, 2016, "What Holds Investment Back Post-Crisis? Evidence from the 2013 Investment Tax Credit in Portugal" (manuscript; Bank of Portugal).
Burnside, Craig, Martin Eichenbaum, and Sergio Rebelo, 2006, "Government Finance in the Wake of Currency Crises," *Journal of Monetary Economics* 53 (3): 401–40.
Bruno, Valentina, and Hyun Song Shin, 2013, "Capital Flows, Cross-Border Banking and Global Liquidity." No. w19038. National Bureau of Economic Research.
Calvo, Guillermo A., 1998, "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops," *Journal of Applied Economics* 1: 35–54.
Christiano, Lawrence, Martin Eichenbaum, and Sergio Rebelo, 2011, "When Is the Government Spending Multiplier Large?" *Journal of Political Economy* 119 (1): 78–121.
Cole, Harold L., and Timothy J. Kehoe, 2000, "Self-Fulfilling Debt Crises," *Review of Economic Studies* 67 (1): 91–116.
De Grauwe, Paul, and Yuemei Ji, 2014, "Disappearing Government Bond Spreads in the Eurozone—Back to Normal?" CEPS Working Paper No. 396, May (Brussels, Center for European Policy Studies).
Erceg, C.J., C. Freedman, D. Furceri, M. Kumhof, D. Laxton, J. Lind, A. Mourougane, D. Muir, S. Mursula, C. de Resende, and J. Roberts, 2012, "Effects of Fiscal Stimulus in Structural Models," *American Economic Journal: Macroeconomics* 4 (1): 22–68.
European Commission, 2010, "Report on Greek Government Debt and Deficit Statistics," August. Available at: http://ec.europa.eu/eurostat/documents/4187653/6404656/COM_2010_report_greek/c8523cfa-d3c1-4954-8ea1-64bb11e59b3a.
Farhi, Emmanuel, Gita Gopinath, and Oleg Itskhoki, 2014, "Fiscal Devaluations," *Review of Economic Studies* 81 (2): 725–760.
Faust, J., 2013, "A Report of the Predictive Accuracy of the IMF's WEO Forecast," Unpublished (version as of February 5).
Forbes, Kristin J., and Francis E. Warnock, 2012, "Capital Flow Waves: Surges, Stops, Flight, and Retrenchment," *Journal of International Economics* 88 (2): 235-251.
Genberg, Hans, and Andrew Martinez, 2014, "User Perspectives on IMF Forecasts: Survey Methodology and Results," IEO Background Document 1 (Washington International Monetary Fund).
Independent Evaluation Office of the International Monetary Fund (IEO), 2014, *IMF Forecasts: Process, Quality, and Country Perspectives* (Washington: International Monetary Fund).
International Monetary Fund (IMF), 2001, "Portugal: 2001 Article IV Consultation: Staff Report" (Washington).
———, 2002a, Portugal: 2001 Article IV Consultation—Staff Report and Public Information Notice on the Executive Board Discussion, IMF Country Report No. 02/90 (Washington).
———, 2002b, "Portugal: 2002 Article IV Consultation—Staff Report" (Washington).
———, 2002c, *Guidelines on Conditionality*, September (Washington). Available at: https://www.imf.org/External/np/pdr/cond/2002/eng/guid/092302.htm.
———, 2003, "Portugal: 2003 Article IV Consultation: Staff Report" (Washington).
———, 2004, "Portugal: 2003 Article IV Consultation: Selected Issues," IMF Country Report No. 04/81 (Washington).

———, 2005, "Portugal: 2005 Article IV Consultation: Staff Report" (Washington).
———, 2006a, "Portugal: 2006 Article IV Consultation: Selected Issues," IMF Country Report No. 06/386 (Washington).
———, 2006b, "Portugal: Financial System Stability Assessment" (Washington). Available at: https://www.imf.org/external/pubs/ft/scr/2006/cr06378.pdf.
———, 2007, "Portugal: 2007 Article IV Consultation: Staff Report" (Washington).
———, 2008, "Portugal: 2008 Article IV Consultation: Staff Report" (Washington).
———, 2009, "Portugal: 2009 Article IV Consultation: Staff Report" (Washington).
———, 2011a, "Portugal: Request for a Three-Year Arrangement under the Extended Fund Facility," IMF Country Report No. 11/127, June (Washington).
———, 2011b, "Portugal: First Review under the Extended Arrangement," September (Washington).
———, 2012, "Portugal: Fifth Review under the Extended Arrangement," October (Washington).
———, 2013a, "Portugal: Seventh Review under the Extended Arrangement and Request for Modification of End-June Performance Criteria," May (Washington).
———, 2013b, *Balance of Payments Manual*, 6th edition, November (Washington).
———, 2014a, "Portugal: Tenth Review under the Extended Arrangement and Request for Waivers of Applicability of End-December Performance Criteria," January (Washington).
———, 2014b, *Portugal: Fiscal Transparency Evaluation,* October (Washington). Available at: https://www.imf.org/external/pubs/cat/longres.aspx?sk=42386.0.
———, 2015a, "Portugal: 2015 Article IV Consultation: Staff Report" (Washington).
———, 2015b, "Second Post-Program Monitoring" (Washington).
———, 2016, "Portugal: 2007 Article IV Consultation: Staff Report" (Washington).
Kareken, John H., and Neil Wallace, 1978, "Deposit Insurance and Bank Regulation: A Partial Equilibrium Exposition," *Journal of Business*: 413-438.
Kincaid, G. Russell, 2017, "The IMF's Role in the Troika" (Chapter 5 in this volume).
Lane, Philip R., and Gian Maria Milesi-Ferretti, 2007, "The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004," *Journal of International Economics* 73: 223–250.
Organisation for Economic Co-operation and Development (OECD), 2012, *Economic Policy Reforms: Going for Growth 2012* (Paris). Available at: http://www.oecd.org/eco/monetary/economicpolicyreformsgoingforgrowth2012.htm
Park, Yung Chul, 2016, "The Role of the IMF in Managing the Euro Area Sovereign Debt and Banking Crises: Perspectives from East Asia."
Ravn, Morten, and Karel Mertens, 2013, "The Dynamic Effects of Personal and Corporate Income Tax Changes in the United States," *American Economic Review* 103 (4): 1212–47.
Reis, Ricardo, 2013, "The Portuguese Slump and Crash and the Euro Crisis," *Brookings Papers on Economic Activity*, Spring: 143–93.
Romer, Christina D., and David H. Romer, 2010, "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review* 100: 763–801.
Timmermann, Alan, 2006, "An Evaluation of the World Economic Outlook Forecasts," IMF Working Paper 06/59 (Washington: International Monetary Fund). Available at https://www.imf.org/external/pubs/ft/wp/2006/wp0659.pdf.
Van Ark, Bart, and Robert H. McGuckin, 1999, "International Comparisons of Labor Productivity and Per Capita Income," *Monthly Labor Review*, Bureau of Labor Statistics, July.
World Economic Forum (WEF), 2012, 2015, *Global Competitiveness Reports, 2012–13* and *2015–16.* Available at: http://reports.weforum.org/global-competitiveness-report-2012-2013/#= and http://reports.weforum.org/global-competitiveness-report-2015-2016/.