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## External Adjustment and Breakup Costs

Fiscal imbalances (especially in Greece) and banking crises (especially in Ireland) contributed to the sovereign debt crisis in the euro area periphery. Large external current account deficits (except in Italy) did so as well, by creating vulnerability to a cutoff in external financing once a break in confidence in sovereign creditworthiness had occurred. This chapter examines the role of the external imbalances both in causing the crisis and in influencing its resolution going forward. One of the prominent constraints in correcting the imbalances is the inability to depreciate the exchange rate because of membership in the single currency. This chapter thus concludes with a review of the likely costs involved if the euro were to break up.

The evidence suggests that large current account deficits (except in Italy) prior to the crisis contributed to sovereign risk by imposing a financing squeeze once foreign capital flows reversed. However, by 2012–13 these deficits had been largely eliminated, and not solely through contraction of imports because of recession but also from rising exports. Going forward, large additional increases in current account balances do not seem necessary to reestablish sovereign creditworthiness; nor would even heroic surpluses make much difference in sovereign risk spreads based on their limited observed relationships to the net international investment positions. The analysis also places greater emphasis on competitiveness on a trade-weighted basis including with the rest of the world, whereas the more usual analysis focuses more narrowly on the past loss of competitiveness of the periphery vis-à-vis Germany. With respect to a euro area breakup, a review of the various quantitative studies tends to support the mainstream view that the consequences could be extremely costly, justifying the case for doing “whatever it takes” to maintain the euro.

## Current Account Deficit, Sudden Stop, and Sovereign Liquidity Squeeze

Before either the Great Recession or the euro area debt crisis, current account deficits reached relatively high levels in four of the five periphery economies. In 2007–08, the current account deficit averaged 14.8 percent of GDP in Greece, 11.4 percent in Portugal, 9.8 percent in Spain, and 5.5 percent in Ireland. The deficit was smaller in Italy, an average of 2.1 percent of GDP (IMF 2013n). Private capital inflows were the counterpart of the current account deficit. A substantial portion of these inflows helped finance government deficits, especially in Greece. Foreign capital has the wrong “home bias” from the standpoint of a borrowing government. Several of the periphery economies were thus vulnerable to a sudden-stop liquidity squeeze once the euro area sovereign debt crisis caused a collapse in confidence. As noted in chapter 3, in the case of Greece, the outflows of foreign bank claims on the government from end-2009 to the third quarter of 2011 (before the private sector involvement [PSI] haircut) amounted to 62 percent of the short- and long-term government debt coming due in 2010–11, exerting great pressure on the government to obtain alternative financing.

Figures 4.1a and 4.1b are suggestive of the dual influences of the precrisis external imbalance on the one hand and the level of public debt on the other in causing the sovereign debt crisis in the periphery. The severity of the debt crisis is measured on the vertical axis by the level of the sovereign risk spread on 10-year bonds (above the German bund) on average in 2012, the year of the most severe crisis. As causal factors, the horizontal axis shows the average current account balance as a percent of GDP in 2007–08, in figure 4.1a, and the ratio of gross public debt to GDP in 2012, in figure 4.1b. For Greece, the debt ratio is for 2011, prior to the PSI haircut. Both panels suggest a meaningful influence of each of the respective causal variables on the severity of the sovereign debt distress.

As shown in figure 4.1a, all of the countries that reached distressed levels of sovereign spreads had sizable current account deficits in 2007–08 (except Italy), whereas of the 11 large euro area economies, none of those with current account surpluses entered into sovereign debt stress. In figure 4.1b, it is also evident that based on public debt alone, France and Belgium might have been expected to encounter greater difficulty than Spain, but they did not, so the additional explanatory role of the external deficit is needed.

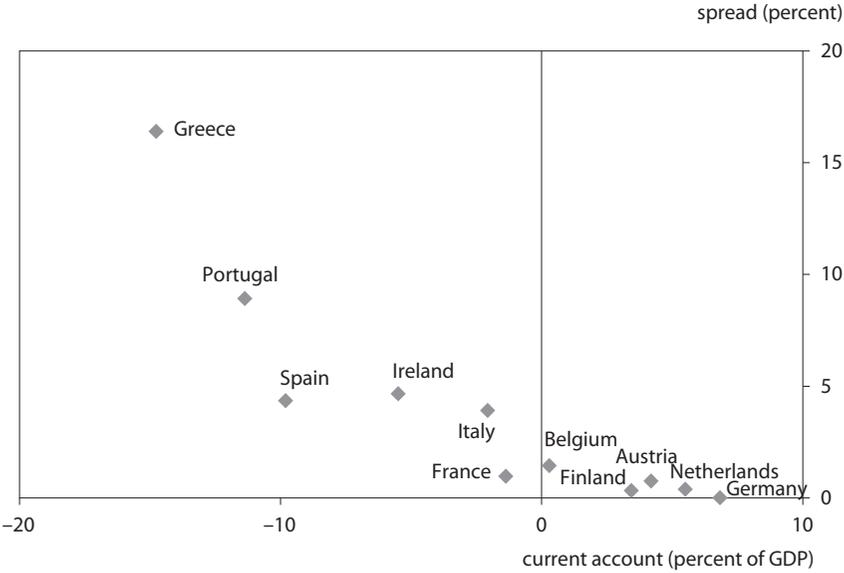
A simple regression using the data in the figures yields the following results (with *t*-statistics in parentheses):

$$s = -4.6 - 0.33 CA + 0.077 D; \text{ adj. } R^2 = 0.85 \quad (4.1)$$

(-1.7) (-2.5) (2.6)

where *s* is the sovereign risk spread in percentage points above the 10-year

**Figure 4.1a Sovereign risk spreads, 2012, and current account balance, 2007–08**



Note: For Greece, spreads are as of 2011.

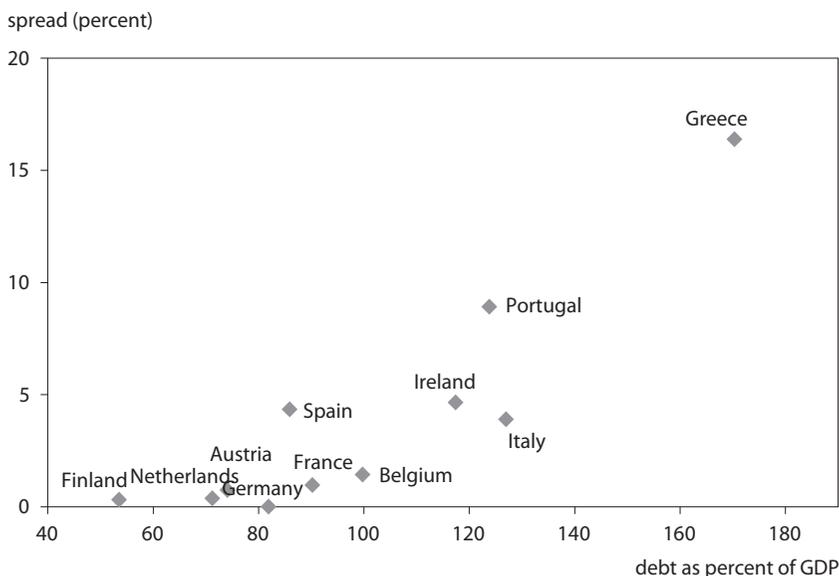
Source: Thomson Reuters Datastream; IMF (2013n).

German bund,  $CA$  is the current account balance as a percent of GDP (2007–08), and  $D$  is gross public debt as a percent of GDP (2012 or, for Greece, 2011). Both the current account and debt variables are statistically significant at the 5 percent level. An additional percentage point of GDP in the current account deficit boosts the risk spread by 33 basis points. An additional 10 percent of GDP in public debt boosts the spread by 77 basis points. In short, the evidence seems relatively strong that both the potential vulnerability to a sudden stop associated with a large precrisis current account deficit and the relative level of public indebtedness played a role in the differential severity of the sovereign debt crisis in the euro area.<sup>1</sup>

Despite the influence of the precrisis external deficits, there are good reasons for judging that the impact of the “sudden stop” of foreign capital inflows was not as predominant as in past emerging-market debt crises. In the context of the euro area, a key component of the sudden-stop shock is missing. The cutoff of external capital from the private market does not

1. David Greenlaw et al. (2013, 20) also find that for 20 advanced economies in 2001–11, the current account deficit mattered for the sovereign borrowing rate, with a nonlinear interaction with the debt-to-GDP ratio. At a debt ratio of 100 percent of GDP, their corresponding estimate is that in this period an extra percentage point of GDP in the current account deficit boosted the risk spread by 64 basis points, about twice as much as the estimate here.

**Figure 4.1b Sovereign risk spreads and gross public debt, 2012**



Note: For Greece, spreads are as of 2011.

Source: Thomson Reuters Datastream; IMF (2013n).

trigger a currency depreciation so long as the economy remains in the euro. As a consequence, the adverse balance sheet effect that features prominently in emerging-market sudden stops, whereby debt (including of the government) is denominated in foreign currency and suddenly becomes much more expensive in domestic currency, is missing. Moreover, the monetary arrangements within the euro area provide automatic sources of financing for the current account deficit—if not to the government directly—through “Target2” liabilities in the bank clearance system and through European Central Bank (ECB) financing of country banking systems. So the “stop” associated with the cessation of private foreign capital inflows has been neither as sudden nor as severe as, for example, those in the East Asian currency crises of the late 1990s, or the Argentine default at the end of 2001. The parallel implication is that the crisis either was not as severe (which has broadly been the case except for Greece) or that there was a greater role of vulnerability of government credit risk (as suggested by contrasting the periphery experience with that of Korea in 1998, where government debt was never in doubt).

### **Role of Current Account Adjustment in Resolving the Crisis**

Several authors emphasize the presence of large external current account deficits in euro area periphery economies as having been a major factor in causing their sovereign debt crises (for example, Guerrieri 2012, Merler and Pisani-Ferry

2012b, Sinn and Valentinyi 2013, Gros 2013). Some correspondingly see major reversals of intra-euro-area competitiveness and current account imbalances as essential to resolution of the crisis. Paolo Guerrieri (2012, 10) provides a sharp articulation of this point of view:

A smooth adjustment of the intra-euro area divergences in competitiveness and macroeconomic imbalances is key to the solution of the Eurozone crisis... increases in savings and exports in Eurozone deficit countries need to be offset by equal increases in spending and imports in surplus ones. Peripheral Europe cannot possibly succeed in reducing its borrowing substantially unless surplus countries such as Germany pursue policies that allow their surpluses to contract.

Even though the financing squeeze provoked by a sudden stop for countries with large current account deficits contributed to the sovereign debt crisis, the analysis below will suggest that going forward a sharp further improvement in the current account adjustment beyond that already achieved by the periphery is not needed for debt sustainability. The basic reason is that once confidence can be reestablished by the overall adjustment program, especially including progress toward primary fiscal surplus targets, government borrowing conditions should normalize and not face further pressure from capital flight of foreign lenders. Moreover, the large current account deficits of the periphery economies have already disappeared, so the force of the concern about external imbalances going forward must depend on a diagnosis of whether these corrections are illusory and transitory and stem solely from recession and its curbing of import demand, or whether instead more sustainable adjustment is on track. Analyses such as that by Guerrieri (2012) also would appear to attribute too much weight to the north-south imbalances and intra-euro-area real effective exchange rates and too little weight to the overall (global) balances and real effective exchange rates of the periphery in identifying corrective policies.

Going forward, the main role of the external imbalance would seem instead to be in its influence on domestic growth, and through growth, on the sustainability of debt. The principal problem is that in the single currency, there is no scope for currency depreciation as a means of carrying out growth-oriented adjustment based on expansion of exports and substitution of imports. Domestic demand previously financed by private capital inflow, particularly in the nontradable sector (especially housing construction), is thus difficult to replace with new demand from an increase in net exports. So far the effort to arrive at a workable substitute for exchange rate flexibility has focused on “internal devaluation,” through the curbing of domestic labor costs and such mechanisms as “fiscal devaluation,” whereby (for example) labor taxes are replaced by the value-added tax (VAT) in an effort to reduce domestic unit labor costs.

It turns out that there has been considerable adjustment in the external imbalances already, despite the straitjacket of the single currency. This

adjustment has included a sizable contribution from export gains, rather than stemming solely from compression of import demand as a consequence of falling incomes. In broad terms, it would appear that the obstacles to sovereign debt recovery posed by external imbalances are not insurmountable, and are less severe than some analysts have suggested.

## Current Account Balances and Trade Performance

Figure 4.2 shows the course of current account balances for the five debt-stressed economies as well as France and Germany, from the mid-1990s prior to the single currency through 2012, and International Monetary Fund (IMF) estimates for 2013. The advent of the single currency was indeed associated with a large swing into current account deficit in Greece, Portugal, Spain, and to a lesser degree Ireland. The debt crisis has also been associated with a sudden stop in the sense that there has been a sharp reduction in these current account deficits and the foreign capital inflows that financed them. Thus, the deficit in Greece reached 14.9 percent of GDP in 2008, but fell to 2.9 percent in 2012 and narrowed to 0.3 percent in 2013. The path for Portugal was similar, with the deficit reaching 12.6 percent of GDP in 2008 but narrowing to 1.5 percent in 2012 and a surplus of 0.1 percent of GDP in 2013. Much of the discussion of the role of external imbalances does not seem to have caught up with the faster than expected elimination of the deficits despite the lack of exchange rate flexibility.<sup>2</sup>

Nor is the recent improvement in current accounts solely attributable to a reduction of imports. Adjustment only on the import side would be a sign of deterioration rather than improvement because it would reflect falling demand as economies entered recession. For the five debt-stressed economies shown in figure 4.3 (all except France and Germany), aggregate real exports of goods and services (deflating by GDP deflators) rose by 8.4 percent from 2006–08 (before the Great Recession) to 2011–13. Real exports rose the most in Ireland (23.6 percent), Spain (17.4 percent), and Portugal (14.6 percent).

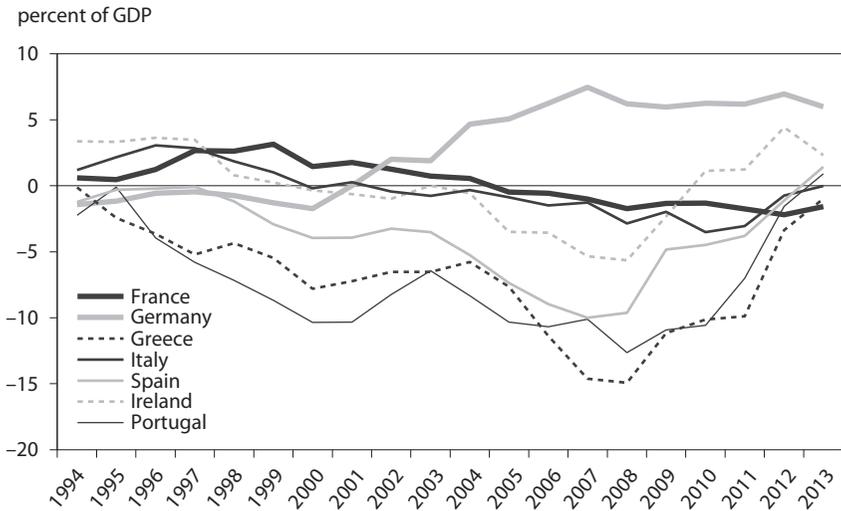
Real imports also rose over this period for Ireland (by 9.7 percent). However, for the five periphery economies in the aggregate, real imports declined by 6.5 percent. This decline was almost the same as their combined decline in real GDP, amounting to 5.8 percent (2006–08 to 2011–13; IMF 2013n). The overall picture is thus that about half of the external adjustment was accomplished in a positive fashion—on the export side—whereas the other half was the consequence of the negative influence of recession in compressing imports.<sup>3</sup>

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2. An exception is Raphael Auer (2013, 1), who notes that rapid improvement in the current account deficits of Greece, Italy, Spain, and Portugal mean that “a key requirement for a return to a post-crisis Eurozone is thus on its way to being met.”

3. Average annual aggregate real exports of goods and services for the five economies (deflating by GDP deflators) rose from €903 billion to €978 billion from 2006–08 to 2011–13, whereas aggregate real imports fell from €988 billion to €925 billion.

**Figure 4.2 Current account balances for euro area periphery, Germany, and France, 1994–2013**



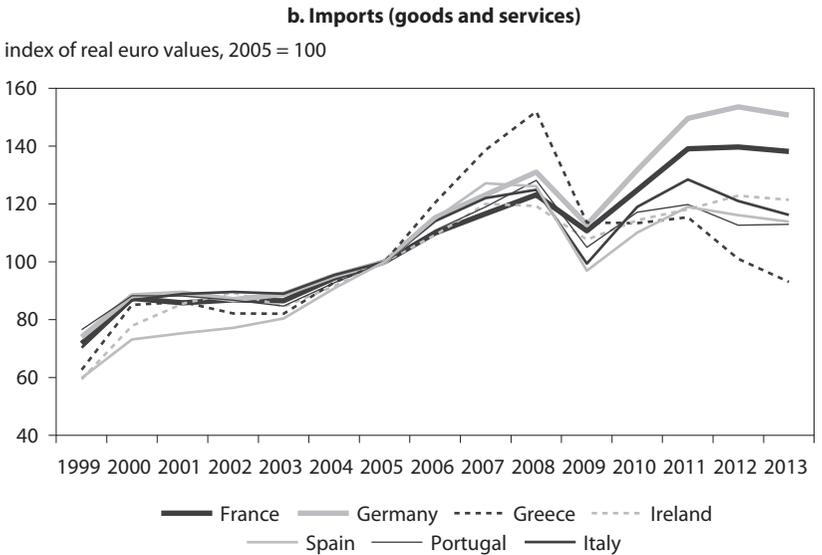
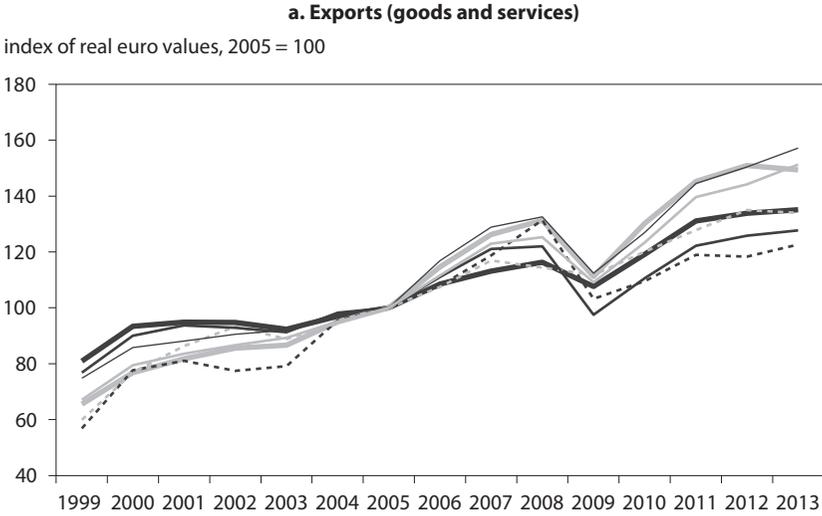
Source: IMF (2013n).

Once again Greece proved to be the exception to the general pattern. From 2006–08 to 2011–13, real exports of goods and services in Greece fell by 6.7 percent instead of rising. Real imports fell by even more: by 30.2 percent. Real GDP fell by 18.4 percent from 2006–08 to 2011–13. So far, then, the external adjustment in Greece does indeed conform to the diagnosis of recession-based import compression rather than export expansion. It is only a slight consolation that despite falling, exports have held up much better than the economy as a whole.

### Real Exchange Rates

The stylized facts about external imbalances within the euro area describe a process in which the entry of the single currency was accompanied by price increases in the periphery that caused it to experience a severe loss of competitiveness relative to the north and Germany in particular. Figure 4.4 presents what had become a popular graphic in euro area policy circles circa 2011 (see, for example, Wolff 2012, 239), showing a serious rise in unit labor costs, relative to the euro area 15-country average, for the periphery, and a major decline in relative unit labor costs for Germany. The process of adjustment has involved significant real depreciation in the periphery economies subsequent to the crisis, however. An update of this chart through 2013 shows substantial correction in this divergence. Thus, whereas by 2008 the ratio of the individual country index to the index for Germany stood at 153 percent for Ireland, 139 for Spain, 132 for

**Figure 4.3 Trade performance of euro area periphery, Germany, and France, 1999–2013**

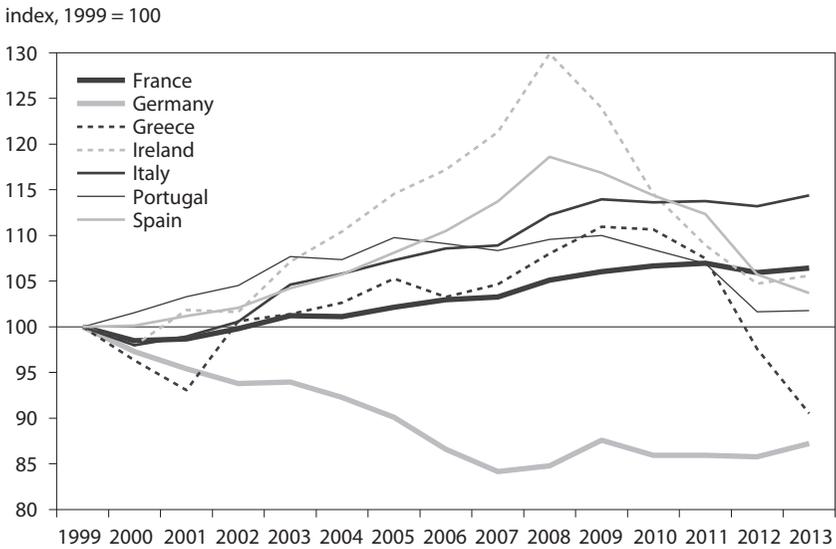


Source: IMF (2014).

Italy, 129 for Portugal, and 127 for Greece, by 2013 the ratios had fallen to 121 for Ireland, 119 for Spain, 117 for Portugal, and only 104 for Greece—although the ratio remained almost unchanged at 131 percent for Italy.<sup>4</sup>

4. These ratios can be seen in figure 4.4 by comparing each country line to the line for Germany.

**Figure 4.4 Real effective exchange rate: Unit labor costs (total economy) relative to euro area 15-country average (European Commission data), 1999–2013**

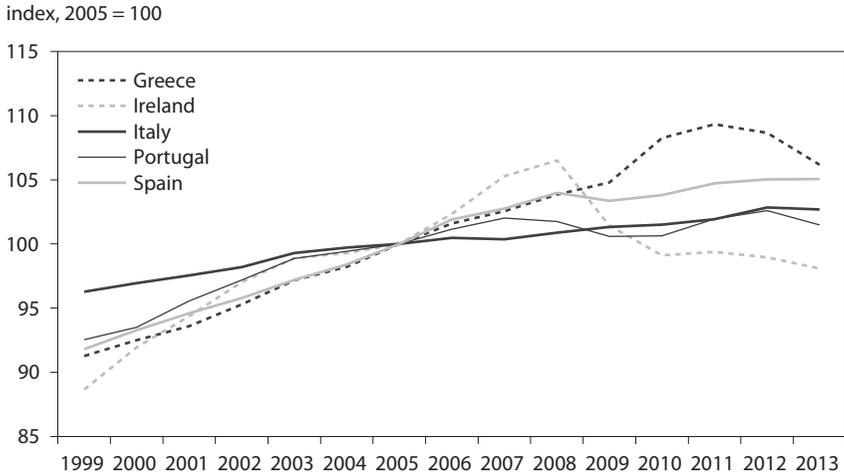


Source: European Commission (EC 2014).

If consumer prices are used as the deflator, and if the periphery countries are compared with a broader group of “northern” euro area countries, the picture is similar if less extreme in the divergence phase, but also somewhat less encouraging in the most recent trends. Figure 4.5 consolidates the consumer price indices (CPIs) of six northern economies (Austria, Belgium, Finland, France, Germany, and the Netherlands) into a single index, weighting by GDP in 2005. The figure shows the ratio of the consumer price index of each of the peripheral economies to this consolidated northern price index, with 2005 = 100. This intra-euro-area comparison shows less acute deterioration of competitiveness than the well-known unit labor cost figure against Germany (figure 4.4). For example, from 1999 to 2008 the unit labor cost for Spain rises by 43 percent relative to that of Germany, but the consumer price index for Spain rose by only 13 percent relative to the consumer prices of the broad “north” of the euro area. However, figure 4.5 also strongly suggests that a rollback in loss of competitiveness has only happened in earnest in Ireland. By 2013 the relative price was about 2 percent higher than it had been in 2008 for Greece, Italy, and Spain, and almost unchanged in Portugal.

Some decline in the real exchange rate of the euro overall against world trading partners has partly provided competitive relief even for the periphery economies other than Ireland, however. Figures 4.6 and 4.7 show broader real effective exchange rate (REER) indices, rather than indices just against euro

**Figure 4.5 Ratio of periphery economies' CPIs to weighted-average northern euro area CPI**



CPI = consumer price index

Note: The northern euro area economies are Austria, Belgium, Finland, France, Germany, and the Netherlands.

Source: IMF (2013d).

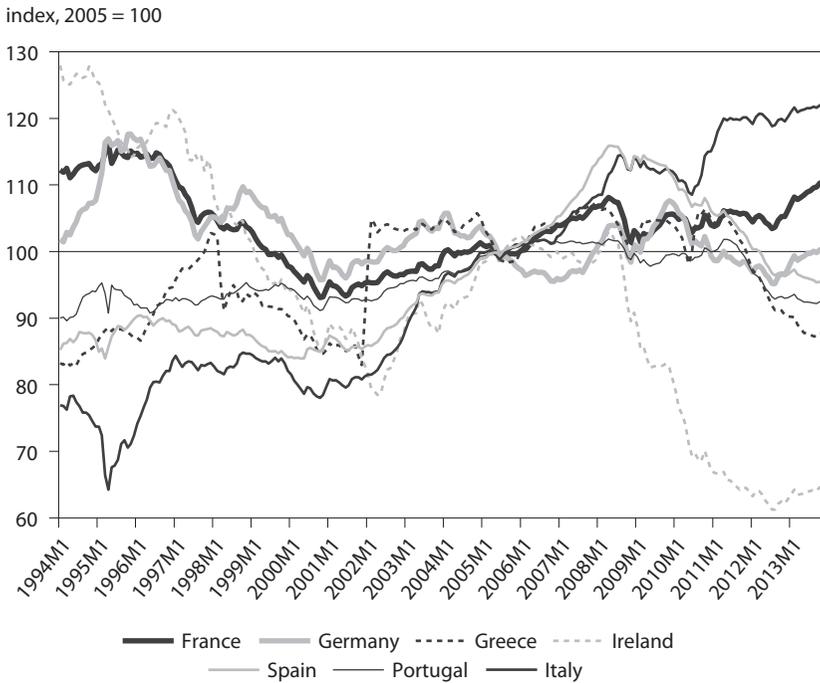
area partners.<sup>5</sup> The unit labor cost series used by the IMF to arrive at the REERs of figure 4.6 show even more dramatic cost adjustments for Ireland than the intra-euro-area REERs (figure 4.4). The falling relative labor costs in Ireland likely reflect the government's public sector wage cuts adopted in 2010–11 to deal with the crisis.<sup>6</sup> For Italy, the IMF unit labor cost series show a more pronounced long-term real appreciation than is apparent in the intra-euro-area REERs of figure 4.4.

The alternative REER series based on consumer prices (Bank for International Settlements [BIS]) tell an important story about the general trend of euro area real exchange rates against the rest of the world (figure 4.7). Namely, there was a substantial appreciation of all of the currencies from 2000 to 2008. The simple average REER index for the seven economies rose from a low of 87.9 in September 2000 (on the eve of the joint G-7 intervention to curb further decline in the new single currency) to a high of 105.1 in April 2008, a rise of 19.5 percent. Even the REER of Germany (BIS-CPI basis) rose 11.5 percent in this period, suggesting that the frequent interpretation contrasting

5. The BIS series is based on trade of 61 economies; the IMF series, 26 advanced economies and the euro area as a group.

6. Public sector wages in Ireland were cut by an average of 13.5 percent over two years, with net pay reductions as deep as 30 percent for those earning over €100,000 (IMF 2012e, 25).

**Figure 4.6 Real effective exchange rate: IMF index deflated by unit labor costs, 1994–2013**



IMF = International Monetary Fund

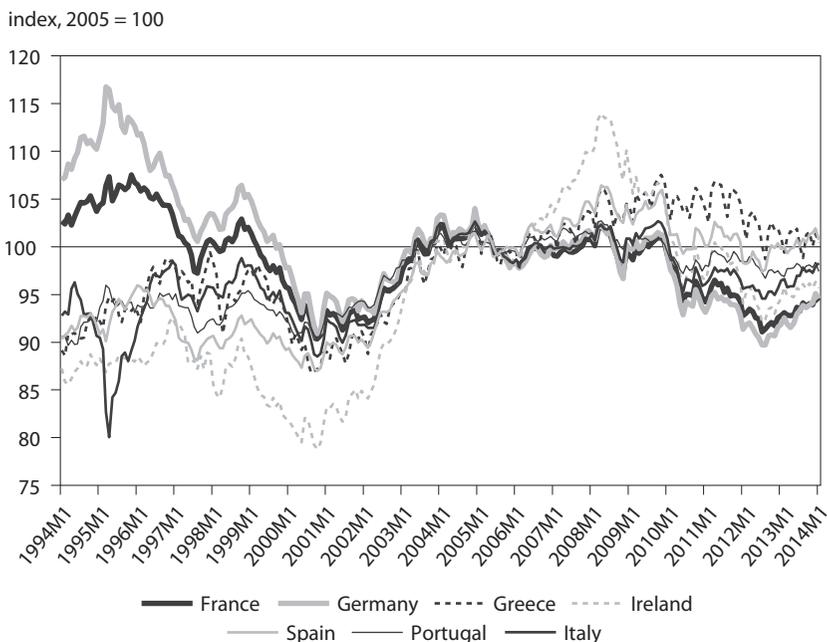
Source: IMF (2013d).

German wage restraint against periphery laxity at the least oversimplifies as an explanation of widening external imbalances in the periphery.

Ruo Chen, Gian-Maria Milesi-Ferretti, and Thierry Tresselt (2012) argue that the usual emphasis on intra-euro-area factors is “incomplete.” They demonstrate that asymmetric impacts of external influences aggravated the intra-euro-area imbalances. The advent of strong competition from China disproportionately eroded the trade performance of peripheral economies such as Portugal while stimulating exports of investment goods from Germany.<sup>7</sup> The shock of higher oil prices adversely affected trade balances of the periphery but boosted investment-good exports from Germany. The authors also find that the bulk of the appreciation between 2000 and 2009 was accounted for by the rise of the euro against other currencies rather than rising costs in the periphery relative to Germany and the rest of the euro area north. Whereas

7. Pedro Lourtie (2012, 56) similarly emphasizes the loss of Portuguese competitiveness as the European Union entered the process of enlargement to include Eastern Europe and as competition from China and India in labor-intensive products increased.

**Figure 4.7 Real effective exchange rate: BIS index deflated by consumer price indices, 1994–2014**



BIS = Bank for International Settlements

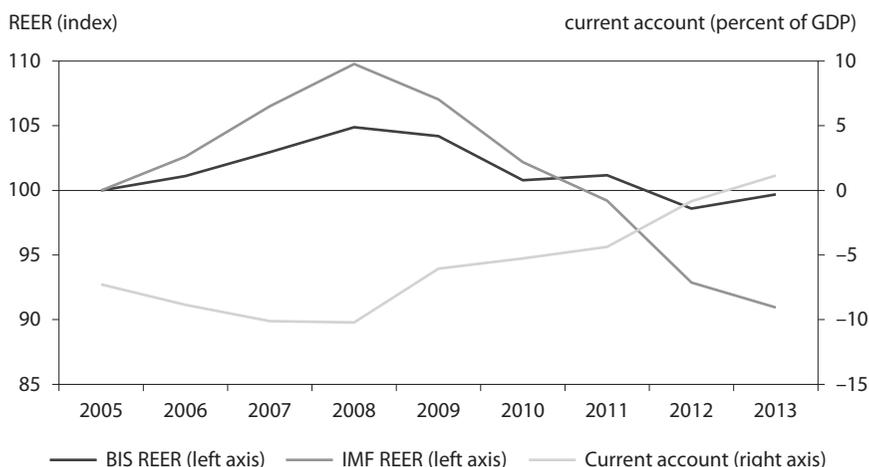
Source: BIS (2013).

the trade shocks would have required real effective depreciations in the debtor periphery, intra-euro-area capital flows and the rising euro instead brought further real appreciation for the periphery.<sup>8</sup> Guerrieri (2012) also emphasizes the role of structural factors, citing the shift of Germany toward outsourcing its intermediate inputs to Eastern European countries, a process that was not replicated in the periphery and to some extent came at the expense of periphery country exports.

Figure 4.8 consolidates four of the five periphery economies into a single group, weighting by nominal GDP in 2005. Greece, Ireland, Portugal, and Spain all had major deteriorations in their current account balances from 2003 to 2008, and then major reductions in deficits from 2008 to 2012. (Italy was not representative in this dimension, as its external deficit never exceeded 3.5 percent of GDP in this period.) For the group of four, the weighted current

8. The authors also find that the periphery's external deficits were financed by capital inflows from within the euro area, especially France and Germany, whereas investors from outside the euro area primarily purchased French and German public debt, apparently considering periphery instruments to be poorer substitutes for such assets than perceived within the euro area.

**Figure 4.8 Weighted average current accounts and real effective exchange rates (REERs) for four euro area periphery economies, 2005–13**



Note: The Bank for International Settlements (BIS) index is deflated by consumer price indices and the International Monetary Fund (IMF) index is deflated by unit labor costs. The four periphery countries are Greece, Ireland, Portugal, and Spain.

Source: BIS (2013); IMF (2013n, 2014).

account deficit stood at 7 percent of GDP in 2003 and deteriorated further to 10 percent of GDP in 2008. The deficit then declined rapidly to only 0.8 percent of GDP in 2012, and the current account was expected to show a surplus of 1 percent of GDP in 2013. Figure 4.8 also shows the weighted average of two alternative real exchange rate indices (BIS based on CPIs and IMF based on unit labor costs). With 2005 = 100, the two series peaked in 2008 at 105 and 110, respectively, and then proceeded to depreciate, reaching 99 and 93, respectively, by 2012. The sizable further current account adjustment from 2012 to 2013 reflects the lagged influence of the substantial real depreciation by 2012. In broad terms, there has been an external current account correction on the order of 11 percent of GDP over just five years. Over the same period there has been a strong price incentive to adjustment from the decline in the real effective exchange rate, also by about 11 percent. The impact is larger than would usually be expected from the real exchange rate change, undoubtedly reflecting the additional influence of domestic recession.<sup>9</sup>

9. For an economy the size of Portugal, a typical impact parameter would be 4 percent of GDP reduction in current account deficit for 10 percent real effective depreciation; for an economy the size of Spain, the corresponding typical impact would be 3 percent of GDP. See Cline and Williamson (2011, appendix B).

## Sovereign Risk Spreads and External Position Going Forward

Although the analysis above finds that large current account deficits before the crisis contributed to sovereign risk spreads after the sudden stop, going forward the role of further current account adjustment in reducing risk spreads is less obvious. Current account deficits have come down sharply and official support programs have bridged the sudden stop. It turns out that there seems to be little remaining influence of the current account on country risk spreads in the euro area based on actual 2012–13 current account balances and expected trends through 2016.

Figure 4.9 shows the average 10-year interest rate in 2013 for 10 major euro area economies. Greece is excluded because its debt restructuring with deep haircuts makes any bond yields incomparable to those on normal sovereign debt. The horizontal axis shows the average current account balance as a percent of GDP for 2012–16 as estimated by the IMF (2013n). Markets presumably take account of the recent actual experience (2012–13) as well as the expected future path (2014–16). As is evident, there is no clear relationship between the average long-term interest rate in 2013 (and hence the sovereign risk spread) and the current account balance. This time a simple regression yields a coefficient that is statistically insignificant but does show a mild influence (1 percentage point of GDP increase in the current account deficit boosts the spread by 10 basis points). The weakness of the relationship is illustrated by the fact that France, with an average current account deficit of 1.7 percent of GDP, has almost the same interest rate as the Netherlands with a surplus of 11 percent of GDP, with both interest rates at about 200 basis points.

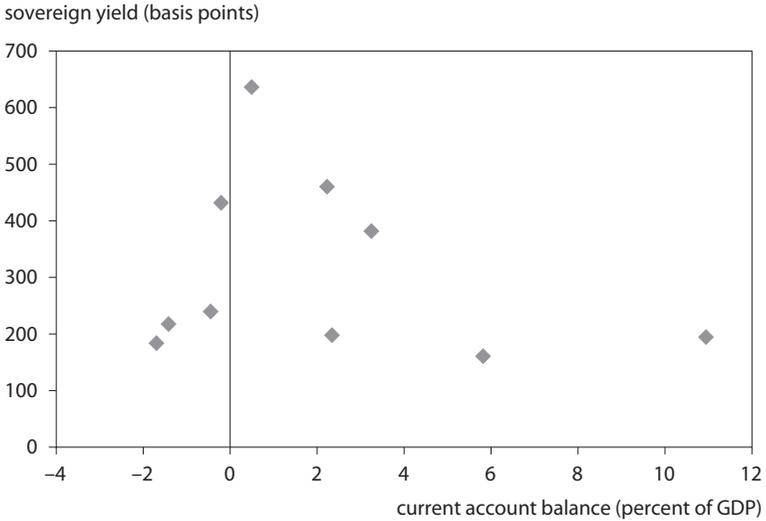
In contrast, the second panel shows continuation of the expected relationship between the interest rate and the debt level. The horizontal axis indicates the average ratio of gross public debt to GDP for 2012–2016, again as estimated by the IMF. Higher public debt is associated with a higher interest rate (and thus sovereign risk spread). There is a statistically significant relationship despite the small number of observations.<sup>10</sup> This relationship indicates that the benchmark 60 percent Maastricht debt-to-GDP ratio would have been expected to translate to a 10-year sovereign yield of 125 basis points in 2013; and that for each additional percentage point of GDP in public debt, this yield would rise by 5.3 basis points, placing the expected rate at 443 basis points for a debt ratio of 120 percent of GDP.<sup>11</sup> With Germany's debt ratio averaging 77.5 percent of GDP for this period, by implication a debt ratio of 120 percent would mean a sovereign risk spread above the German bund of 218 basis points. The lack of a meaningful influence of the current account deficit on the sovereign yield in 2013 may in part reflect the changed environment in the euro area as

10. A simple regression yields:  $R = -192 + 5.3 D$ , where  $R$  is the average 10-year government bond rate in 2013 and  $D$  is the average expected ratio of gross public debt to GDP (percent) in 2012–16, with  $t$ -statistic of 3.8 and  $p$ -value of 0.005 for the debt ratio, and adjusted  $R^2$  of 0.59.

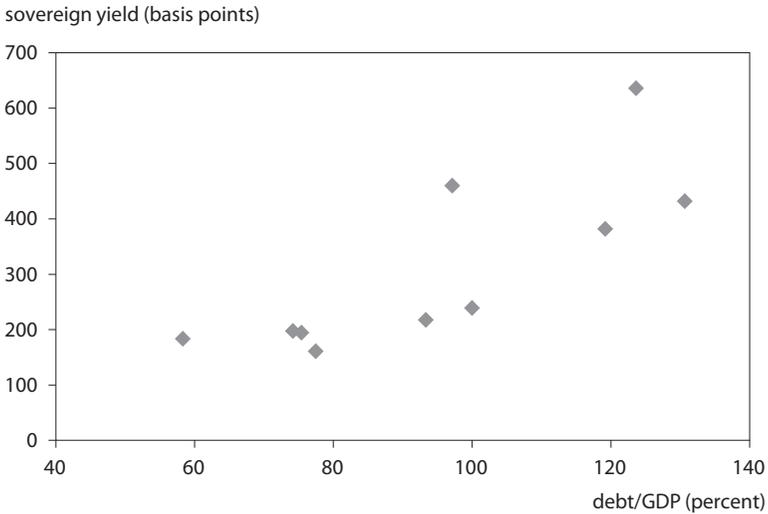
11. The same impact in equation (4.1) above is 7.7 basis points.

**Figure 4.9 Average 10-year sovereign yield in 2013 versus average 2012–16 current account balances and debt/GDP ratios for 10 euro area economies**

**a. Sovereign yield versus current account balances**



**b. Sovereign yield versus debt/GDP ratios**



Note: The 10 euro area economies are Austria, Belgium, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, and Spain.

Source: Author's calculations.

a consequence of Outright Monetary Transactions (OMT). The combination of OMT and assured external finance through Target2 would seem a powerful institutional structure going forward for avoiding negative impacts of current account deficits on the sovereign risk spread. The corollary, however, is that policymakers should not view reaching a current account surplus as the means to reduce the sovereign risk spread. The comparison between France and the Netherlands again suggests that such a pursuit would be fruitless.

Those who emphasize the external dimension of the euro area debt crisis in its prospective resolution also tend to intermix two different concepts of debt: public fiscal debt, on the one hand, and countrywide net external liabilities, on the other. Some at least implicitly assume the sovereign debt crisis cannot be resolved without a sharp reduction in the net external liabilities of the countries in question. It is easy within such a framework to arrive at extreme pessimism about debt sustainability for the euro area debtor countries because the rigidity of the exchange rate is seen as an inherent obstacle to the necessary reduction in net external liabilities.

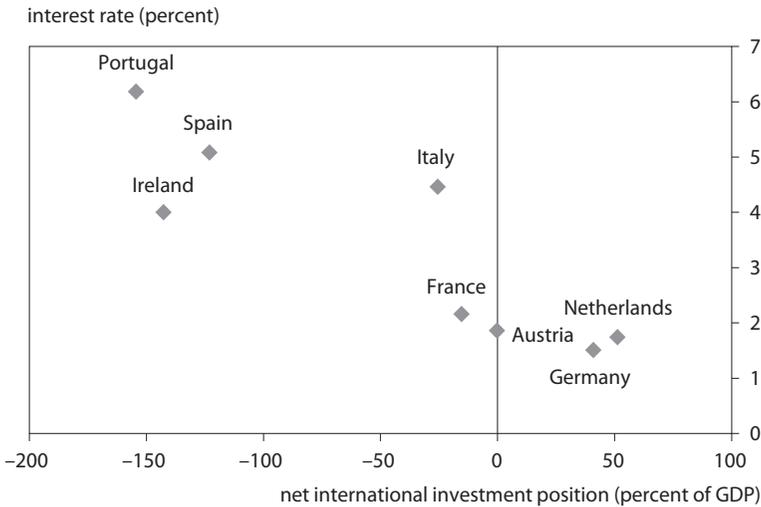
For the euro area, at first appearance there is indeed a substantial relationship between country credit risk and net international investment position (NIIP). Figure 4.10 shows that interest rates on 10-year government bonds in the first quarter of 2013 stood at an average of about 5 percent for Portugal, Ireland, and Spain, and their average NIIP was a large net liability position of 140 percent of GDP. In contrast, for Germany and the Netherlands, the average interest rate was only 1.6 percent, and the average NIIP, +46 percent of GDP. However, the case of Italy suggests that this relationship may be more circumstantial than fundamental. Italy's interest rate is far higher than would be expected if the principal influence were the NIIP, considering that Italy has only a moderate net international liability position (-25 percent of GDP), comparable to that of France. In contrast, Italy's debt metrics, with public debt at about 125 percent of GDP, are much more comparable to those of Portugal, Ireland, and Spain (averaging about 110 percent), strongly suggesting that it is the public debt characteristics rather than the NIIP that determine the sovereign risk spread. Credit default swap (CDS) rates provide a basis for considering the importance of the NIIP versus that of public debt in sovereign debt risk. Using a cross-section test for 18 industrial countries, an equation for average CDS rates on 10-year government obligations in the first quarter of 2013 yields the following equation:

$$r = 22.8 + 1.21 D - 0.704 NIIP + 317 Pd - 202 Jd; \text{adj. } R^2 = 0.78 \quad (4.2)$$

(0.5) (1.96) (-2.43) (4.1) (-1.6)

where  $r$  is the credit default swap rate (in basis points),  $D$  is gross public debt as a percent of GDP in 2012,  $NIIP$  is the net international investment position

**Figure 4.10 Interest rates on 10-year sovereign bonds, 2013Q1, and net international investment position, selected euro area economies**



Source: Thomson Reuters Datastream; IMF (2013d).

as a percent of GDP in 2012,  $Pd$  is a dummy variable for Portugal, and  $Jd$  is a dummy variable for Japan.<sup>12</sup>  $T$ -statistics are reported in parentheses.

Although this equation does confirm an influence of the NIIP, the magnitude of this influence is limited. Thus, a country with net international liabilities of 100 percent of GDP will face a default risk premium that is only 71 basis points higher than a country with a zero NIIP position.<sup>13</sup>

12. Data are from Thomson Reuters Datastream and IMF (2013d, 2013g). The countries are Australia, Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Greece is omitted because its postrestructuring status makes it unrepresentative. The significance levels ( $p$ -value) are 3 percent for NIIP, 7 percent for debt, 0.1 percent for the Portugal dummy, and 14 percent for the Japan dummy.

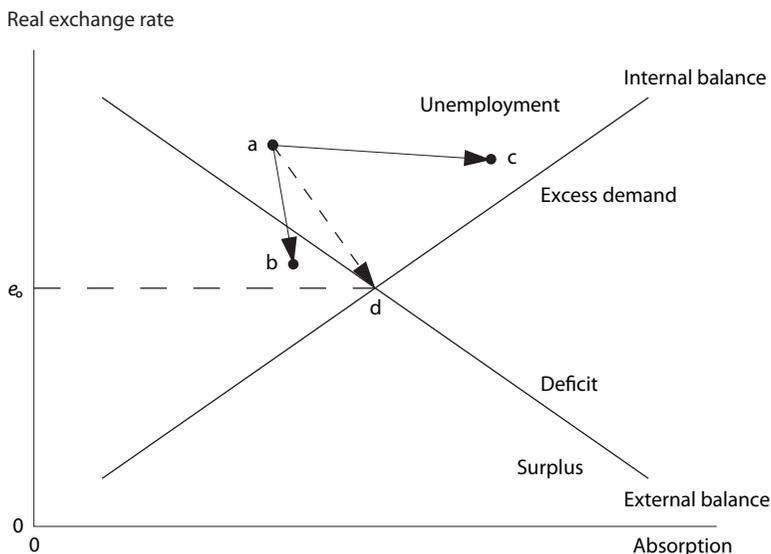
13. In contrast, Daniel Gros (2013, 507) finds a relationship that places this difference far higher, at 270 basis points. However, he includes Greece with a spread of 950 basis points in his February 2013 spreads data. Yet by that time Greek debt had been restructured with a deep haircut, making it not directly comparable to other euro area debt and removing the relevance of the previous current account deficits as a measure of postrestructuring foreign debt. The high spread represented investor distrust after the previous losses as well as fear of further haircuts, with private debt likely subordinate to official claims and with doubts remaining about Greek debt sustainability. In addition, Gros' use of the cumulative current account for 1995–2012 as a proxy for net international investment position seriously understates Ireland's net liabilities, which amounted to 151 percent of GDP in 2012 (IMF 2014) instead of 18 percent using the cumulative current account proxy. Removing the observation for Greece and shifting that for Ireland far to the left on the chart of spreads (vertical axis) against NIIP (horizontal axis) would make the relationship far more gently sloped.

Striving to reduce NIIP liabilities in the European periphery by pursuing large current account surpluses would therefore be a high-cost, low-return strategy for bolstering public debt sustainability. For example, Spain's NIIP is -96 percent of GDP. Suppose it achieved a current account surplus of 10 percent of GDP and sustained it over a decade, bringing net liabilities to zero. The reward would be to reduce its sovereign risk spread by 71 basis points. But the sustainability of Spain's public debt will turn not on 70 basis points, but rather on whether the risk spread is on the order of 600 basis points (as occurred in July of 2012), or instead some 300 basis points (the level in July 2013) or 200 basis points (the level by early 2014) or lower. In short, it seems unlikely that the right path to recovery of debt sustainability in the euro area periphery will need to involve large and sustained current account surpluses for the countries in question.

### **Real Exchange Rate, External and Internal Imbalances, and Growth**

Whereas the direct influence of the NIIP and thus current account on the default risk spread is limited, the level of the exchange rate and the performance of the current account could still affect market perceptions of creditworthiness through an effect on prospective growth. In the classical framework of James Meade (1951), a country below full employment (below "internal balance") and with an excessive current account deficit (below "external balance") should pursue expansionary monetary and fiscal policy in combination with a depreciation of the exchange rate. In the Salter-Swan diagram of Meade's framework (figure 4.11), such an economy is at point *a* (Swan 1955, Williamson 2006). Its current account deficit places it to the northeast of the external balance equilibrium line. Its unemployment places it to the northwest of the internal balance equilibrium line. Depreciation of the currency would move the economy from point *a* to point *b*, providing some additional employment while swinging the external balance into surplus. Pursuing expansionary monetary and fiscal policy would move the economy from *a* to point *c*, largely eliminating unemployment but greatly increasing the current account deficit. The proper policy is a combination of depreciation and monetary-fiscal expansion, along the path *ad* to the intersection of the internal and external balance lines. The debt-stressed euro area periphery economy is, however, severely constrained from following the usual Meade prescription. A cutoff from debt markets makes it impractical to pursue fiscal stimulus; nor is monetary stimulus available because there is no independent monetary policy. A depreciation of the currency is not an option because of the single currency. Real depreciation may be possible to some extent through "internal devaluation" (e.g., wage cuts) or "fiscal devaluation" (shift from labor to product taxation), but the scope for effective depreciation may be limited.

**Figure 4.11 The Salter-Swan diagram of Meade's policy framework**



Source: Author's illustration based on Meade (1951).

### Adjustment in the South or North?

One way out of the dilemma is to convince the euro area partners in the north to pursue fiscal expansion and the ECB to pursue monetary expansion (moving the economy from *a* toward *c*), and to encourage partners in the north to pursue aggressively expansive wage policy, providing a real depreciation for the periphery economy and moving it from *a* toward *b*. In this view, the Meade solution can be pursued, with joint application of the policies moving the economy toward *d*. But the policy changes have to be adopted by the euro area as a whole, with monetary expansion by the ECB and fiscal and wage expansion by the northern members. There are two problems with this solution, however. First, Germany and other northern countries will understandably be loath to embark on a path of high inflation. Second, if the principal source of the external imbalances was not an overvalued exchange rate relative to Germany but an overvalued exchange rate vis-à-vis the world as a whole (as suggested by the discussion above), the price of the strategy could be unduly high in terms of increased inflation in the north for a given amount of success in overall adjustment in the periphery.

Silvia Merler and Jean Pisani-Ferry (2012b) construct a calibrated model to examine the role of north-south imbalances within the euro area, and conclude that it is the differential fiscal stance between north and south that determines the real exchange rate, so the south cannot escape more austerity.

However, unless monetary policy aims at higher inflation in the north, the low inflation or actual deflation in the south necessary to achieve real depreciation becomes self-defeating for debt dynamics (by curbing the rise in the nominal value of GDP). They thus find that “Accepting more inflation at home is therefore a way for the North to contribute to restoring debt sustainability in the South” (Merler and Pisani-Ferry 2012b, 13).<sup>14</sup>

The model the authors develop, however, seems questionable. Output is made a function of the real exchange rate, the primary surplus (with a negative parameter that is a constant multiplier), and the real interest rate (negative coefficient). This framework would seem to tie growth excessively rigidly to the real exchange rate. Although there is some support for this presumption from the Meade framework, the fixed relationship makes no allowance for growth focused in the nontradables sector. Inflation is determined by a Phillips curve, so that faster growth boosts prices. There is no room in the model for real exchange rate change other than through the macro price-level effects. As shown in figure 4.6, Ireland has managed to achieve sharp reductions in its unit labor costs, indicating that linking the real effective exchange rate solely to the macro price level may be misleading. Moreover, the model ignores the real exchange rate relative to the rest of the world, yet this has been more important than the real rate between euro area partners in determining current accounts (as noted above). For its part, the Phillips curve seems an outdated framework, and inherently leads to the recommendation of slow growth in order to achieve real depreciation.

It is difficult to conceive of Germany and other economies of the euro area north accepting inflation any higher than, say, 3 percent over a five-year period in order to help the south. During the past quarter century, inflation of 3 percent or higher occurred in only three years (IMF 2013a). If inflation in the south stayed at 2 percent, the cumulative 5 percent real depreciation of the south relative to the north would boost output in the south by 0.5 percent to 1.5 percent, applying the coefficient range used by Merler and Pisani-Ferry, or 0.8 percent based on an alternative statistical estimate.<sup>15</sup> These changes

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14. Guerrieri (2012, 1) has taken a similar position, sharpening the critique to argue that “The official policy...is that this adjustment should be entirely one-sided. Domestic spending must fall in debtor countries, with no offsetting expansionary policy in the creditors.... The right approach must combine more symmetrical macroeconomic fiscal adjustment with microeconomic policy measures aimed at encouraging productivity increases.”

15. Merler and Pisani-Ferry use a range of  $-0.1$  to  $-0.3$  for the elasticity of output with respect to the real effective exchange rate. An effort to investigate this range yields the following results. Annual real growth is regressed on the real effective exchange rate index (BIS, 2010 = 100) lagged six months, using 1999–2012 data for the five periphery economies plus France and Germany, with dummy variables for the 2009 global recession and for the years of euro area debt crisis (2010–12 for Greece, 2011–12 for Ireland, Italy, Portugal, and Spain). A statistically significant coefficient of growth on the exchange rate is found, amounting to  $-0.21$  or, after omitting outliers (Ireland in 1999–2000, Greece in 2010–11),  $-0.16$ . The (preferred) trimmed estimate is toward the lower end of the Merler and Pisani-Ferry range.

are too small to be decisive in a framework in which baseline debt ratios are falling by some 5 to 10 percentage points over a five-year period (see chapter 6). Doubling or even tripling the relative price change and hence the output effect would not fundamentally change this diagnosis.<sup>16</sup> Debt sustainability thus seems more likely to turn on whether the sovereign credit risk spreads can be held to moderate levels than on whether Germany and the rest of the north can be convinced to undergo a substantial period of unusually high inflation so the south can become more competitive.

In Cline (2013d) I examine the related question of whether Germany's large current account surplus (6 percent of GDP in 2013, projected at 4.6 percent by 2018) is a major source of inadequate demand and hence "a deflationary bias for the euro area" as charged by the US Treasury (2013) in its report to Congress on exchange rate policy. The question is whether plausible increases in Germany's fiscal deficit would boost German growth sufficiently to induce a sizable output expansion in the periphery. Model simulations by the IMF (2013o, 23) indicate that a German fiscal stimulus of 1 percent of GDP sustained for two years would boost real GDP of euro area partners by a maximum of 0.2 percent, with the effect concentrated in the Czech Republic, Austria, the Netherlands, and Belgium, rather than the debt-stressed periphery. Germany's economy is assessed by the IMF (2013n) to have an output gap close to zero, implying a real multiplier of close to zero for Germany itself. In Cline (2013d) I show that in order to adhere to the euro area rules of reducing the excess of debt above 60 percent of GDP by one-twentieth each year, Germany could only boost its fiscal deficit by 1.5 percent of GDP. By implication, even if the higher fiscal deficit were sustained for five years, the impact on the periphery would be to boost output somewhere on the order of 0.4 percent or less, too little for a decisive shift in the debt ratio.<sup>17</sup>

If Germany and the north are not going to reflate massively, however, the question then becomes: How can the periphery maintain the new balanced current account without the euro area as a whole imposing an unacceptable surplus on the world economy? The answer is essentially that the periphery economies are sufficiently small that the elimination of their deficits can relatively comfortably be accommodated within the global totals, especially considering that the surpluses of China and Japan have fallen substantially. Thus, from 2008 to 2013, the combined current account balance of the peripheral five economies will have swung from a deficit of \$318 billion to a surplus of \$29 billion, an increase of \$347 billion. The surpluses of China and Japan will have fallen from \$421 billion and \$160 billion, respectively, to \$238 billion and \$64 billion, respectively, a combined reduction of \$279 billion—on the same order of magnitude as the reversal in the euro area periphery balances. For

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16. Tripling the impact, for example, by setting an inflation target of 4 percent annually for Germany and the rest of the north and only 1 percent for the periphery.

17. That is: somewhat less than the  $0.2 \times 2.5$  two-year periods = 0.5 percent of GDP for the euro area as a whole, given the concentration of the impact on more northerly neighbors.

the euro area as a whole, the current account surplus will have risen from 0.16 percent of world GDP to 0.40 percent, whereas the combined current account surplus of China and Japan will have fallen from 0.95 percent of world GDP to 0.41 percent (IMF 2013n).

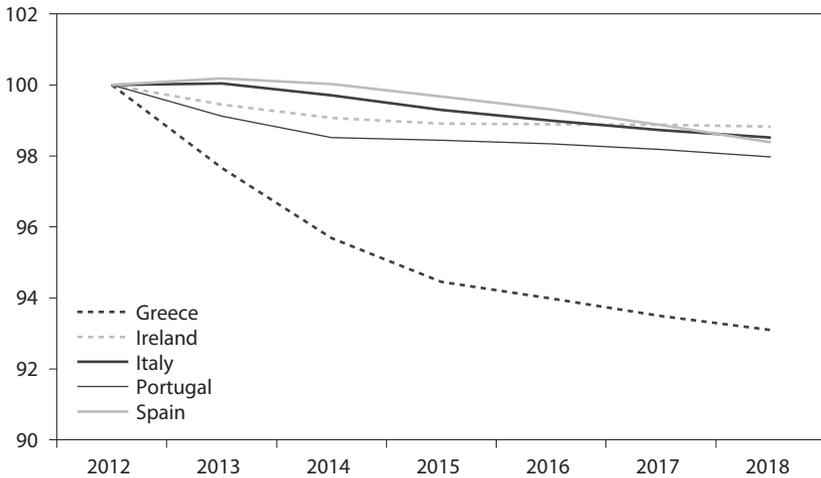
### **Exit and Devaluation?**

Hans-Werner Sinn and Akos Valentinyi (2013) are also among those who consider depreciation in the south to be essential to resolving the euro area debt crisis. They argue that the only question is whether the depreciation should be “internal or external,” that is, accomplished through internal devaluation or through an exit of the periphery economies from the euro and effective devaluation of the replacement currency for each country in question. They observe that the formation of the euro involved an investment and credit boom in the periphery that represented a catching-up process financed by foreign capital and accompanied by rapidly rising domestic prices. The introduction of the euro eliminated exchange rate risk and “induced investors to disregard country-specific bankruptcy risks” (Sinn and Valentinyi 2013, 2). Moreover, the euro area generated optimism about convergence of the periphery with the core of the euro area. The authors show a close correlation between the average current account balance in 2002–07 and the level of per capita GDP in 1995. For example, Estonia, Slovakia, and Portugal had current account deficits in the range of 7 to 12 percent of GDP and per capita income at 30 to 65 percent of the euro area average, whereas Austria, Belgium, Germany, and the Netherlands had average current account surpluses of about 5 percent of GDP and per capita incomes of about 115 percent of the euro area average (Sinn and Valentinyi 2013, 2). By 2007–08, however, private capital financing the imbalances dried up and was largely replaced by ECB Target balances.

The authors maintain that “Internal devaluation through falling prices in the periphery can only be achieved through austerity programs that lead to a period of stagnation and mass unemployment in the periphery due to the downward rigidity of prices and wages” (Sinn and Valentinyi 2013, 2). The alternative of increasing inflation in the core countries could undermine the stability of the monetary union. The option of euro exit, however, would inevitably involve discussions, planning, distributing new currency, and so forth, in a fashion making it impossible to launch by surprise, but widespread anticipation of euro exit would provoke a run on assets. Balance sheets would then be mismatched and there would be negative balance sheet effects at the time of the devaluation. The authors are skeptical of the adjustment achieved by internal devaluation so far, judging that most of the improvements in current accounts have come from income effects rather than substitution effects resulting from a change in relative prices caused by internal devaluation. Nonetheless, they see little alternative to internal devaluation at present because “policymakers have excluded the exit option.”

**Figure 4.12 Relative consumer prices, periphery versus northern euro area economies, 2012–18**

index, 2012 = 100



Note: The northern euro area economies are Austria, Belgium, Finland, France, Germany, and the Netherlands.

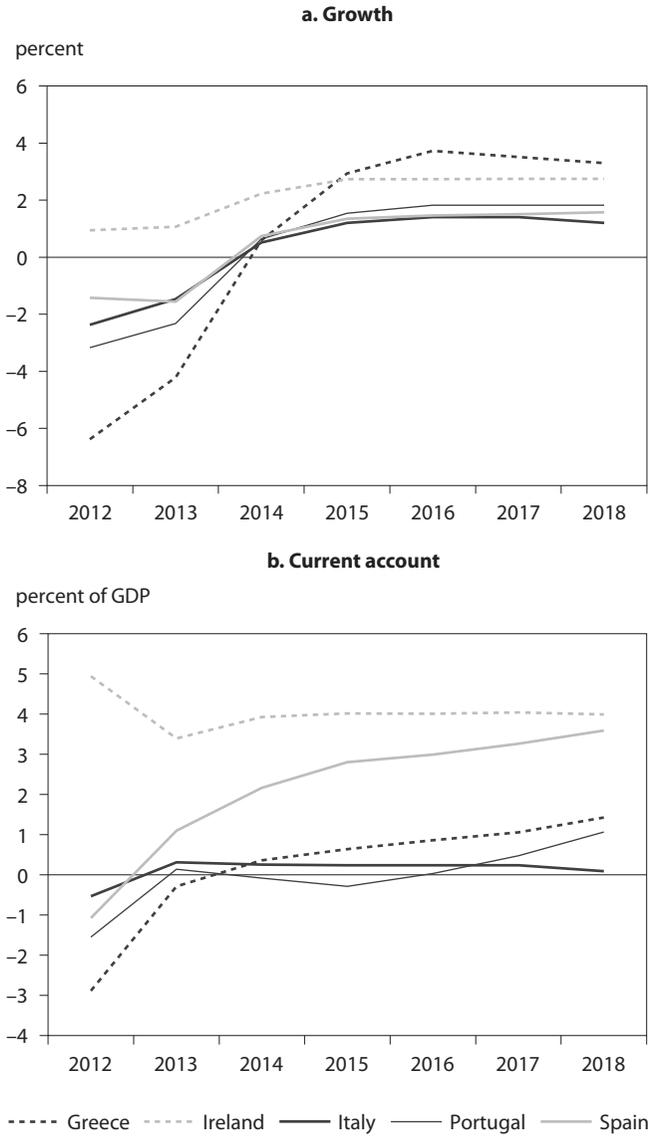
Source: IMF (2013n).

Once again, however, the prior questions have become: (1) How much more real depreciation is needed in the periphery, and (2) are the recent current account corrections sustainable or artificial because of dependence on depressed incomes?

### IMF Forecasts of Real Exchange Rates and Current Account Balances

For its part, the IMF appears to see the imperative of further periphery depreciation as less urgent than the authors just discussed. Figure 4.12 repeats the relative consumer price calculation of figure 4.5, this time using 2012 as the base, weighting the “north” by 2012 GDP, and applying projections in the October 2013 *World Economic Outlook* (WEO) for inflation (IMF 2013n). Figure 4.13 correspondingly shows the WEO projections for current accounts and for growth. The broad picture that emerges is one of steady improvement, in which growth returns to moderate positive rates in 2014 and current account balances continue to improve (especially in Spain) or stay high (Ireland), yet these outcomes do not require sharp intra-euro-area depreciations as measured by the ratios of consumer prices to the aggregate consumer price index in the north. The exception is Greece, where the IMF anticipates that the process of internal devaluation will be more substantial. The 7 percent decline in consumer prices relative to the north in Greece for 2012–18 would approximately reverse the comparable increase from 2008 to 2012 shown in figure 4.5.

**Figure 4.13 Growth and current account projections for euro area periphery, 2012–18**



Source: IMF (2013n).

If these projections turn out to be too optimistic, it would not be the first time, but they remain nonetheless the mainstream outlook.

## Costs of a Breakup of the Euro

By 2013, the perceived risk of an exit from the euro by Greece or any other member had substantially receded. According to one measure, bets placed on the internet-based “InTrade,” in late 2011 and again in the second and third quarters of 2012, the expected probability of a euro breakup, defined as the announcement by end-2013 by any euro member that it would exit from the currency, hovered in the range of 50 to 60 percent. This probability had fallen below 30 percent by the end of 2012 (Nordvig 2012, IMF 2013c).<sup>18</sup> A debate remains, however, on whether some form of breakup would be a good thing or a bad thing and, if the latter (the majority view), just how large the economic costs would be.

## The Qualitative Debate

Among economists, prominent advocates of an exit from the euro by Greece and some other peripheral economies have included Martin Feldstein and Nouriel Roubini. Early in the crisis, Feldstein proposed a “holiday” from the euro for Greece, with the obligation to reenter later at a more competitive exchange rate.<sup>19</sup> His argument was that doing so would enable Greece to increase employment in exports and import substitutes to offset the loss of employment from cutting a large fiscal deficit (see figure 4.11). Roubini suggested in mid-2011 that the only feasible way for countries in the periphery to escape stagnation was to leave the euro and achieve massive real depreciations, even though this would impose trade and capital losses on the core.<sup>20</sup> Subsequently Arnab Das and Roubini argued that “Ideally, five distressed peripherals—Portugal, Ireland, Italy, Greece and Spain—would exit . . .”<sup>21</sup> They contended:

It is far better to restore competitiveness through devaluation than by changing relative prices with a fixed nominal exchange rate, which implies protracted debt deflation, potentially ending in disorderly defaults and exits in any case, or sustained inflation above target in surplus countries. . . . We

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18. Note that in March 2013, the Irish firm InTrade ceased operations in the face of a suit by the Commodities Futures Trading Commission that it was enabling US citizens to place bets on commodities, illegal under US law. See Derek Thompson, “InTrade Shuts Down—Why?” *Atlantic*, March 10, 2013.

19. Martin Feldstein, “Let Greece Take a Eurozone ‘Holiday,’” *Financial Times*, February 16, 2010.

20. Nouriel Roubini, “The Eurozone Heads for Break Up,” *Financial Times*, June 13, 2011.

21. Arnab Das and Nouriel Roubini, “A Divorce Settlement for the Eurozone,” *Financial Times*, April 2, 2012.

would redenominate all contracts made under domestic laws into the new currencies at the time of exit... Pursuing domestication prior to exit would reduce credit losses and currency risk... However, doubts about the strategy might spark capital flight, requiring temporary bank nationalisation, curbs on deposit withdrawals, ... as well as temporary capital controls.<sup>22</sup>

The more usual diagnosis has been that an exit from the euro, especially by a major peripheral economy, would be extremely costly. Writing at the time of the first spike in sovereign risk spreads in Italy in November 2011, the *Economist* spelled out the risks as follows:

What is vastly under-estimated by advocates of euro exit is the financial and social chaos that would ensue both in the departed country and in the rest of the world. A euro break-up would not, as some seem to believe, be a slightly messier version of the ERM crisis of 1992–93. It would be a gigantic financial shockwave. Once departure by Italy were a serious prospect, there would be runs on its banks as depositors scrambled to move savings to Germany, Luxembourg or Britain, in order to avoid a forced conversion into the new weaker currency. The anticipated write-down of private and public debts, much of which is held outside Italy, would threaten bankruptcy of Europe’s integrated banking system. There would be runs on other countries that might even consider leaving. Credit would collapse... Business short of [cash] would go under. Capital controls and restrictions on travel would be needed to contain the chaos. Once the recriminations start, the survival of the European Union and its single market would be under question.<sup>23</sup>

Similarly, writing before the euro area crisis, Barry Eichengreen (2010, 2) argued that a breakup of the euro could be “the mother of all financial crises.” He notes that competitive gains from exit and depreciation would tend to be neutralized by labor union demands for compensatory wage increases, and exiting governments would have to pay higher interest rates on public debt. In principle labor market and fiscal reforms could overcome these induced adverse effects. But the fundamental problem remains that in a democracy very extensive discussion would have to precede redenomination of all contracts (including for wages, bank deposits, bonds, mortgages, and taxes), and time would be required for issuing new currency and coins and changing payment machines. In the interim, households and firms would shift funds to other euro area countries, provoking a systemwide bank run. Investors would shift to bonds of other governments, creating a bond market crisis. The ECB

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22. By August 2012, Roubini had conceded that whether the eurozone is viable remained an “open question,” especially “If Italy and Spain are illiquid but solvent...” He nonetheless argued that “A futile attempt to avoid a breakup for a year or two—after wasting trillions of euros in additional official financing by the core—would mean a disorderly end, including the destruction of the single market...” See Nouriel Roubini, “Delaying a Eurozone Breakup Could Make the Endgame Much Worse,” *Guardian*, August 16, 2012.

23. “Breaking up the Euro: How It Could Happen; Why It Would Be Horrible,” *Economist*, November 10, 2011.

would be unlikely to help because the country would be leaving the euro. If the government were already weak fiscally, it would not be able to borrow to recapitalize banks and repurchase its debt. Hence the mother of all financial crises would ensue.

Willem Buiter, chief economist of Citigroup, predicted in mid-2012 that with a high probability of 90 percent, Greece would leave the euro (see chapter 7). However, Buiter is among those who judge that even a partial exit of one country would be chaotic; and that if Spain and Italy were to exit, there would be a systemic financial collapse and global depression.<sup>24</sup> Anders Åslund (2012, 1, 12) argues, in part based on the experience in the dissolution of the Soviet Union, that “a Greek exit would not be merely a devaluation for Greece but would unleash a domino effect of international bank runs and disrupt the EMU payments mechanism,” with the consequence that the euro area “would probably collapse altogether.”

Yet some of the most powerful euro area politicians seem to have flirted temporarily with the notion of expelling Greece from the euro, only to return eventually to the tenet that the euro must be preserved “at all costs.” In November 2011, German Chancellor Angela Merkel and French President Nicolas Sarkozy confronted Greek Prime Minister Andreas Papandreou over his intended referendum on the euro area support program. Failure of the referendum (cancelled after the meeting) could have implied an exit from the euro, and the comments of the German and French leaders were interpreted as, for the first time, breaking a taboo and placing the stability of the euro above Greece’s ongoing membership in the currency.<sup>25</sup>

In early July 2012, Richard Portes pointed to this meeting as the moment when “Angela Merkel and Nicolas Sarkozy opened the door to a Greek exit.” He warned that “Any country’s exit, with the inevitable loss to depositors, would provoke bank runs elsewhere that could be stopped only with capital controls. And that would be the end of monetary union.”<sup>26</sup> The watershed shift away from the specter of an exit from the euro came in late July 2012, when ECB President Mario Draghi stated that “the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough.”<sup>27</sup> It was the announcement soon after of the ECB’s OMT plan to purchase government bonds of countries in adjustment programs that gave force to this pledge.

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24. Willem Buiter, “The Terrible Consequences of a Eurozone Collapse,” *Financial Times*, December 7, 2011.

25. Stefan Simons, “Merkel and Sarkozy Halt Payments to Athens,” *Spiegel Online*, November 3, 2011.

26. Richard Portes, “Market Forces Will Destroy the Euro If We Do Not Take Action Soon,” *Financial Times*, July 10, 2012.

27. Mario Draghi, speech at the Global Investment Conference, London, July 26, 2012, [www.ecb.int/press/key/date/2012/html/sp120726.en.html](http://www.ecb.int/press/key/date/2012/html/sp120726.en.html).

## Alternative Cost Estimates

The most sanguine estimates of the benefits versus costs of a euro breakup have been those of a team led by Roger Bootle (2012) in a report that won the Wolfson Economics Prize. The competition for that year called for the best plan for a euro breakup that would minimize damages. The report averred that “a break-up of the euro is required to help unwind the structural imbalances” (p. 17). Their optimal reconfiguration would be a core northern euro area including Germany, Austria, the Netherlands, Finland, and Belgium. The peripheral economies, however, would not remain in a single but different currency, in view of their economic diversity and limited trade with each other.

The Bootle study makes estimates for the case of an exit from the euro by Greece. The authors suggest that Greece “would have to default heavily on its international debts,” reducing the debt ratio to around 60 percent of GDP (pp. 27, 48), because otherwise redenomination of the currency and devaluation would impose heavy balance sheet losses. They recommend that all contracts would be redenominated in the new national currency at a rate of 1 to 1 euro. There would be an initial period during the printing of currency when noncash means of payment would be used for most transactions. Continued use of euros would be permitted, along with dual pricing. Banks and ATMs would be closed upon announcement of the exit. Capital controls would be applied if needed.

In the cost estimates, the report suggests that there would be 78 percent losses on government debt, 40 percent losses on loans to banks, and 20 percent on loans to private nonbanks (p. 51). Northern core countries would inject capital equal to 40 percent of losses of their banks. On this basis, Bootle and his colleagues estimate that the direct effect of a default and devaluation by the periphery would amount to 0.2 percent of GDP for Germany and France if Greece alone were to exit (and 0.1 percent of GDP for the Netherlands and Austria). If all five peripheral economies (Greece, Ireland, Italy, Portugal, and Spain) were to exit, the loss would amount to 1.5 percent of GDP in Germany, 2.3 percent in France, 1.8 percent in the Netherlands, 1.5 percent in Belgium, and 1 percent in Austria (p. 52). The authors judge that such losses “would not radically transform the public finances of core members,” but recognize that “indirect losses might be much bigger, resulting from economic deterioration and market turmoil” (p. 53).

For the exiting country itself, the Bootle report makes the qualitative judgment that leaving the euro would “support an economic recovery through increased net exports” (p. 13), and that the alternative of adjustment through austerity and internal devaluation would be far worse. The report makes the key assumption that regardless of current EU legal documents, a country that exits the euro would not be thrown out of the European Union and lose its privileges of free market access for capital, labor, and goods. The Bootle report’s central economic assumption is that the peripheral economies “unambiguously need a depreciation of their real exchange rate” for both external balance

and full employment (p. 10), with needed real devaluations of 40 percent in Greece and Portugal, 30 percent in Italy and Spain, and 15 percent in Ireland (p. 48). Yet as argued above, the premise that a much larger current account adjustment is needed than has already happened is dubious. More generally, the casual fashion in which the report passes over likely costs to the exiting country itself from bank closures, contract revisions, and massive uncertainty associated with the exit leaves the case for breakup unconvincing. The principal value of the study is thus to contribute to the set of benchmark estimates of spillover effects on the rest of the euro area.

Among other prominent estimates of euro breakup costs, the most pessimistic is that of economists at Union Bank of Switzerland (UBS) (Deo, Donovan, and Hatheway 2011). They estimated that for a weak euro country exiting from the currency, the cost would amount to €9,500 to €11,500 per person during the first year (40 to 50 percent of GDP), and ongoing annual costs of €3,000 to €4,000 thereafter. For a strong euro member country such as Germany, they estimate that leaving the euro would cost its citizens €6,000 to €8,000 per person in the first year (20 to 25 percent of GDP), and €3,500 to €4,500 annually thereafter. Potentially greater than the economic cost, they argue, would be the political cost, as a breakup of the euro would eliminate Europe's "soft power" (p. 1).

The authors highlight five costs of a breakup. First, default on euro-denominated public debt would be almost certain, whether directly or through redenomination into a new national currency. Default would cause long-lasting economic costs from higher borrowing costs for the government. Parallel corporate default would be likely because of a forced change in the currency denomination of private debt. Corporate borrowing costs would rise because of the sovereign ceiling on credit ratings. Depreciation of the currency would be deep, sharply increasing the burden of debt left in foreign currency denomination.

Second, exit would likely trigger collapse of the domestic banking system, as depositors withdrew money from banks in the face of uncertainties about the new national currency. Only a closure of the banking system could prevent mass withdrawals. There would be contagion to other periphery economies as depositors there also would begin withdrawals. Third, an exiting country could not expect to remain a full member of the European Union. Negotiation to reenter the European Union, with partners sideswiped by spillover damage, would likely take years. Fourth, and most questionably, the authors assume that euro area partners would impose compensatory tariffs equal to the amount of the depreciation of the leaving member; they cite as illustrative a 60 percent depreciation and 60 percent tariff. Fifth, they posit that there could be civil disorder, and that leaving the euro could trigger further centrifugal forces within the country for fragmentation along ethnic or linguistic lines.

To arrive at their estimates, the authors assume a 60 percent depreciation of the currency against the remaining euro area; a 700 basis point increase in the risk premium for borrowing; a decline in trade volume by 50 percent;

a 50 percent runoff in bank deposits; and a 60 percent loss of value of the remaining bank deposits as depositors are forced to recapitalize banks. They do not provide equations or parameters that indicate how these assumptions generate the estimated costs.

For strong countries leaving the euro, there would be no default implications for the government; its fiscal position would improve as the burden of euro-denominated debt would be reduced from appreciation. However, banks would need to be recapitalized, because banks holding euro assets would have new national currency liabilities that would be appreciated. Strong countries would also face cutoff from the EU because the law permits no “halfway house.” On trade, the authors contend that “The strong seceding country would effectively have to write off its export industry.” Appreciation of the new currency would make exports uncompetitive, “exactly the issue that worried Germany pre-Euro” (Deo, Donovan, and Hatheway 2011, 12). The appreciation would be large and rapid, spurred by capital flight from weaker euro countries to quality, the new currency of the leaving strong country.

Overall, the UBS estimates seem substantially exaggerated. The key assumption of a cutoff from the European Union seems implausible, despite the existing treaty provisions. It is even more implausible that (for a weak country leaving) there would be retaliatory tariff increases by partners, and EU tariffs are low enough even for most-favored-nation partners (which leavers would become) that the collapse in trade assumed by the authors would be unlikely. The study is perhaps more helpful in articulating main categories of damages, and in serving to remind that an exit by a strong country would be costly to that country, albeit less costly than the cost to a leaving weak country.

Economists at ING Bank have provided euro breakup cost estimates that are more moderate but still high. In an early study (Cliffe and Leen 2010, 9), the ING team calculated that if Greece alone left the euro, Greek output would fall against baseline by a cumulative 9 percent over three years; the corresponding output losses would be 2 to 4 percent in the rest of the periphery and 1.5 percent even in France and Germany. If there were a complete breakup of the euro, the three-year cumulative output loss against baseline would be 10 percent of GDP for the euro area as a whole, 7 percent in the United Kingdom, and 3 percent in the United States. The euro would fall to \$0.85 in both cases, and temporarily to \$0.70 in the complete breakup.<sup>28</sup> New currencies of the periphery economies would fall 50 percent, spurring inflation. The authors do not set forth the methodology they use to arrive at these estimates, however.

A subsequent study by the group focuses on the asset exposure of the core economies to the periphery economies (Cliffe, Vanden Houte, and van Vliet 2012). The authors first calculate that total official and banking sector

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28. Although it is unclear what “the euro” would be in the complete breakup scenario. Implicitly the authors seem to refer to the new Deutsche mark. Their analysis differs from most, including especially that of the UBS group, in not featuring a strong appreciation of the core economies and especially Germany, and hence negative effects on their exports.

exposure in the “core” countries (Germany, France, the Netherlands, Belgium, Austria, and Finland) to the five periphery economies (Greece, Ireland, Italy, Portugal, and Spain) amounts to €2.2 trillion, or 36 percent of core economy GDP. Exposure of the official sector to the five economies amounts to a surprisingly uniform 20 to 22 percent of GDP for each of the six core economies. In contrast, French banks have much more exposure (20 percent of French GDP), as do Dutch banks (16 percent) and German banks (13 percent), than do banks in Belgium (10 percent), Austria (7 percent), and Finland (1 percent).

The authors emphasize the concentration of official exposure in the Eurosystem. Target2 liabilities of Ireland, Portugal, Spain, and Italy amounted to €832 billion as of mid-2012, and the ECB held an additional €175 billion in bonds of the four economies purchased over the two previous years.

They estimate that even if only Greece were to leave the euro, there would be a GDP growth loss (against the base case) amounting to 1.2 percent of GDP in the first year for the average core economy and 2 percent for the average peripheral economy (excluding Greece). They judge that a Greek exit could cause a wider exit of peripheral economies triggered by bank runs.

The ING study does not provide a formal model of breakup costs, however, and mainly bases its argument on the large numbers for stocks of exposure of core economies to periphery economies. Ideally there would be some methodology for translating these stocks into expected one-time and recurrent losses. The authors instead appeal to the argument that progress is being made, for example in the rapid reduction of Spain’s current account deficit, and thus that fixing the euro is likely to be much cheaper than breaking it up.

For its part, the IMF has made illustrative calculations of the costs of a more limited breakup of the euro: the exit of Greece (IMF 2013c, 78). It judges that “Direct spillover risks have been receding, crisis preparedness in the euro area has improved greatly, and...contagion...risks have been falling... [However] indirect spillover risks from a Greek exit remain substantial.” Because exposure of the private sector to Greece has fallen sharply, direct financial losses from a potential default are a less likely source of spillovers than before. The Fund notes that in case of exit and default, there would be not only an output collapse but also a sharp depreciation of the exchange rate, and both would weigh heavily on Greece’s capacity to service debt denominated in foreign currency. However, external liabilities have fallen to less than 1 percent of euro area GDP. Trade effects would be limited because Greece accounts for only 2 percent of euro area GDP, and for most European countries, exports to Greece are less than 1 percent of their GDP. For the official sector, total exposure to Greece is around 2 percent of GDP, so the scope of even deep writedowns of the Greek Loan Facility (bilateral) and European Financial Stability Facility loans and Eurosystem and ECB claims would be limited. (Exceptions include branches of Cypriot banks in Greece.)

The IMF notes that there has been a falling correlation between spikes in Greek CDS rates and those of other peripheral economies, indicating an easing of contagion risk. Even so, “the potential euro area output cost of a Greek exit

is fundamentally uncertain and of a very large magnitude in certain scenarios” (p. 80). The IMF authors model the historical relationship of a financial stress index (FSI) to growth. The severity of the FSI shock in the event of Greek exit would depend on the effectiveness of the European firewall and the likelihood of bank runs. The IMF note estimates that if the FSI shock were similar to that in 1998 when Long Term Capital Management collapsed, euro area output loss could be 1½ percent of GDP for one year; if the shock were equivalent to that of the Scandinavian banking crisis in the early 1990s, the loss of output would be 3 percent of GDP for one year. But if the Greek exit proved to be as catastrophic as the collapse of Lehman Brothers, the model indicates that output loss would amount to 6 percent of euro area GDP in the first year, another 5 percent in the second year, and another 1 percent in the third year. The Fund concludes that “it is not possible to establish that contagion from euro exit would be limited and manageable” (p. 80).

It is striking that in the severe case, exit by Greece alone could cause damage amounting to 12 percent of euro area GDP over three years. So the real calculus for breakup involves a low (or perhaps not-so-low) probability, high-cost event. Correspondingly, the implication is that the right way to think about the problem is that it behooves the euro area to pay a modest insurance premium (call it “whatever it takes”) to keep the euro intact in order to avoid the risk of a catastrophic outcome.