IMF Working Paper

Rebalancing in the Euro Area and Cyclicality of
Current Account Adjustments

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European Department

Rebalancing in the Euro Area and Cyclicality of Current Account Adjustments[1]

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Abstract

The paper examines progress with the external rebalancing of euro area deficit countries.
Relative prices are adjusting at different pace across countries and with different compositions of
wage cuts and labor shedding. There is so far limited evidence of resource re-allocation from
non-tradable to tradable sectors, while improved export performance is still dependent on
external demand from the rest of world. Current account adjustments have taken place, reflecting
structural changes but also cyclical forces, suggesting that part of the improvements may unwind
when cyclical conditions improve. Looking ahead, relying only on relative price adjustments
(which adversely affects demand) to rebalance the euro area could prove very challenging.
Structural reforms will play an important role in the reallocation of resources to the tradable
sector and the associated relative price adjustment, while boosting non-price and price
competitiveness.

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I. INTRODUCTION

Since the start of the Global Financial Crisis, the countries of the euro area with large external deficits—Greece, Ireland, Spain, and Portugal – have experienced large current account reversals (or reduction of current account deficits), up to 10 percent of GDP from their peaks.[2] This external adjustment, which contributed to the current account improvement of the euro area into a surplus of 2.3 percent of GDP at the end of 2013, has happened on the back of a systemic financial crisis. The spark of the euro area debt crisis started in Greece, it then spread to Ireland and Portugal, before becoming a threat to the survival of the euro area after Italy and Spain's sovereigns and banks experienced severe financial stress in 2011–12. The crisis was intensified by intertwined public debt and banking sector fragilities made worse by weak growth prospects, but also by substantial gross and net external liabilities in these countries, suggesting the external balance of individual countries as a major factor of stability risk. For example, net external liabilities reached about 100 percent of GDP in Greece, Ireland, Portugal, and Spain on the eve of the euro crisis.

Euro Area: Current Account Balances (Percent of euro area GDP)

Legend: Germany, France, Italy, Spain, Netherlands, Other Surplus EA, Other Deficit EA, Adjustment for Intra-EA trade, EA CAB
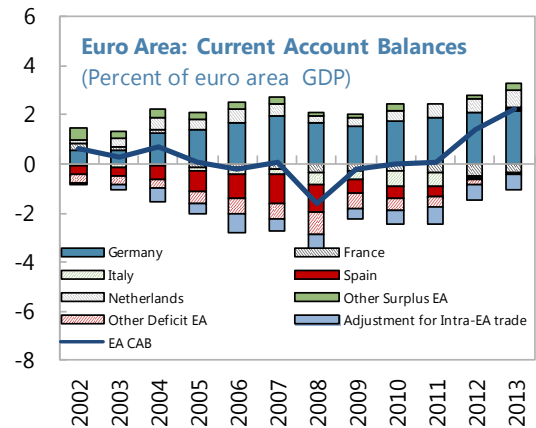
In this context, the objective of this paper is to describe and analyze the extent and nature of the external adjustment that euro area deficit countries have undertaken since the start of the crisis. While doing so, we highlight common factors but also differences across these countries including Italy. For the sake of comparison, we also include the two largest euro area countries France and Germany in the analysis.

To start with, we document the external and internal rebalancing of these countries, looking at various indicators to understand what is happening along the two important dimensions. Indeed, to the extent that net foreign liabilities have become very large, these countries must improve trade performance to improve their external position and being able to service their net foreign expense payments. This requires persistently raising export performance and/or reducing imports. This can be achieved by a combination of a real depreciation and of productivity gains in tradable sectors which will improve the competitiveness of exports relative to competitors and help substitute domestically produced tradable sectors for imports. In absence of a nominal exchange rate at the country level, achieving a real depreciation requires an internal devaluation. Everything else equal, a decline in tradable prices relative to trading partners' tradable prices is

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[2] We focus on these five countries while acknowledging and documenting differences between these countries. In contrast to the other countries, Italy did not have a large current account deficit to GDP ratio at the start of the crisis, and had modest net foreign liabilities in percent of GDP but these are still large in absolute terms. In this paper, we follow Chen et al. (2012) and include Italy in the country sample.

needed to improve export performance, and a decline in non-tradable prices relative to tradable prices is needed to reorient production from non-tradable goods to tradable goods.

Second, we analyze the determinants of export performance since the start of the Global Financial Crisis to uncover what are the main drivers but also the main constraints on the growth of exports of the debtor countries.

Third, we analyze the determinants of the current adjustments since the crisis to disentangle the cyclical and structural components of the change in current accounts in light of the current and forecasted paths for potential output and unemployment. This empirical exercise has important implications. If the adjustment was mostly cyclical—reflecting for instance weaknesses of internal demand and large output gaps— external imbalances would return as soon as output recovers and grows at potential. If on the contrary the adjustment was mostly structural—which would include an internal rebalancing of production toward tradable goods as described above—the countries would progressively return to a potential growth that is consistent with a tighter external constraint and that is strong enough to lower unemployment to acceptable levels.

Fourth, in the last part of the paper, we discuss likely paths for the net foreign liabilities of the debtor countries.

The evidence presented in the paper suggests that, while relative price adjustments have been proceeding, there is little evidence that the internal rebalancing (which would require a reorientation of production to tradable sectors) has taken place. [3] Moreover, while unit labor costs have significantly corrected, labor shedding has played a major role in this adjustment on the back of slumping activity, with wage declines in some countries.

Export recovery has varied across countries. While being satisfying in Spain and Ireland, it has been weak in Greece. This performance, stimulated by some gains in price competitiveness, has been very dependent on external demand. In particular, we find that the weakness of demand in other euro area countries has acted as a brake on the export recovery in debtor countries, particularly for countries such as Italy and Portugal that have a high share of their exports to the euro area.

Next, we find that current accounts of debtor countries have adjusted significantly since the crisis, owing to both structural and cyclical factors. We also find that the current account adjustment is partly driven by cyclical factors, with some differences across countries. This

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[3] If measured by relative CPI, real exchange rate adjustments have been moderate in spite of wage declines in some countries (in particular in Ireland and Greece). If measured by GDP deflators, they have been more substantial. Moreover, relative price adjustments have more substantial relative to non-euro area trading partners than relative to euro area trading partners reflecting the weakness of domestic prices in the euro area during the period. In spite of some relative price adjustments at the sectoral levels, there is thus far and in general limited evidence of resource re-allocation from non-tradable to tradable sectors, suggesting that the internal rebalancing is only very slowly taking place.

suggests that current account deficits may return as output recovers unless internal rebalancing and reallocation of production from non-tradable to tradable sectors proceeds. In other words, more needs to be done to make the current account adjustments sustainable. Last, a simple forecasting exercise for debtor countries suggests that the net foreign liabilities cannot be expected to be brought down to more "normal levels" in the near term, particularly in Greece, Portugal and Spain.

There is a rich literature in international economics on the determinants of current accounts, on export competitiveness and on the gross and net foreign positions of countries, and our paper relates to the three strands of the literature. A substantial literature has studied the causes of the external deficits of the euro area deficit countries before the crisis.[4] The existing literature has emphasized various aspects of the current accounts before the crisis, but few have studied the more recent developments. A number of papers have emphasized the contribution from trade performance (see among others, Berger and Nitsch, 2010, Chen et al., 2012, Bayoumi, Harmsen and Turunen, 2011) , overvalued exchange rates and their structural determinants (Blanchard, 2007; Jaumotte and Sodsriwiboon, 2010; Ivanova, 2012; Lane and Pels, 2012), or declining transfers and net income balances (Kang and Shambaugh, 2013). Other recent papers including Atoyan, Manning, and Rahman (2013) and Nkusu (2013) have analyzed export performance, the saving-investment balances and the financing of the current accounts in several EU countries since the crisis.

Another strand of the literature has focused on the financing of the external deficits in the monetary union. A commonly held view at the start of EMU was that the removal of exchange rate risk and of other transaction costs would trigger "downhill" capital flows, leading to the convergence of income levels within the euro area (Blanchard and Giavazzi, 2002; Schmitz and von Hagen, 2007). More recent papers concluded that exuberant investors fuelled domestic demand booms in deficit economies in search of higher yields (IMF, 2011). Capital flowed steadily from core euro area countries, especially Germany and France (and the United Kingdom in the case of Ireland), mostly towards deficit countries' sovereigns or banks (Chen et al., 2012). As sovereign ratings converged, markets adopted pro-cyclical behaviors, and risks were not priced in (Laeven and Tressel, 2013).

Again this backdrop, this paper provides the following contributions to the literature:

- First, to the best of our knowledge, it is one of the few papers providing a detailed assessment of the ongoing internal and external rebalancing in the deficit countries of the euro area since the start of the Global Financial Crisis.[5]

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[4] A review of this literature can be found in Tressel et al. (2014) and in Chen et al. (2012).

[5] The paper by Kang and Shambaugh (2014) is close to ours, and they also document the relative adjustment that the euro area deficit countries are undertaking. But our paper is focusing more on analyzing progress with the internal reallocation of production and with export competitiveness.

- Second, the paper extends the analysis of export performance undertaken by Chen, Milesi-Ferreti and Tressel (2012) and quantifies the contribution to export growth of relative prices and external demand from euro area and non-euro area trading partners of the debtor countries. It suggests that extra-euro demand is the most important driver for euro area exports in the crisis period, while weak intra-euro demand has slowed down exports and therefore growth.

- Third, we present a decomposition of the change in the current account into its cyclical and structural components. The analysis builds on the IMF inter-temporal approach to the current account (see among others Lee and al. (2008), Christiansen et al. (2009) and Phillips et al. (2013)) to assess how much the improvement could be explained by permanent structural changes. While doing so, we enrich the IMF External Balance Approach of Phillips et al. (2013) by quantifying the impact on the current account of unexpected and permanent changes in potential output.

- Finally, empirical evidence provided by the paper shows that the current accounts of the euro area deficit countries–Greece, Ireland, Portugal and Spain – exhibited common reversal patterns unexplained by standard observed determinants of the saving-investment balance. While not conclusive by itself, this result is suggestive that the common reversal of capital flows in the euro area may have contributed to the improvement of current accounts.

The paper is organized as follows. Section II documents the evolution of several external indicators– including current accounts, unit labor costs, real effective exchange rates and different measures of relative prices and resource flows for the total economy and various sectors. Section III focuses on the performance of exports. It documents indicators of price and non-prices competitiveness and presents the empirical analysis of the determinants of export performance since the start of the crisis. Section IV presents the empirical analysis decomposing the change in current accounts in structural and cyclical factors. Section V discusses forecasts of the net foreign liabilities and of the internal balances of the debtor countries. Section VI concludes.

II. PROGRESS WITH ADJUSTMENT: STYLIZED FACTS

Since the start of the crisis, the euro area deficit countries have experienced large current account adjustments. Between 2008 and 2012, the current account balance of Greece, Ireland, Portugal and Spain improved by 8 to 10 percent of GDP. These current account reversals reflect a combination of imports compression, in particular in Greece and Portugal, and also higher exports in Ireland, Spain and Portugal. In Greece, the decline in imports was the main contributor to the current account improvement, while exports had a lower contribution than the decline in imports in Spain until 2012.

From a saving-investment balance perspective, a major contributor was the significant decline of investment after the crisis in both private and public sectors in the context of fiscal

consolidation.[6] Sharp decline in residential investment made significant contribution to improvement in the current account balances, especially in Greece. Higher private saving was more or less offset by lower public saving over this period, except in Greece and Ireland where public savings increased sharply while private savings declined. Going forward, with recovery in train, planned large fiscal consolidation would continue to contribute to improving external balances by more than offsetting higher private investment or lower private saving. In contrast, Germany's external surplus has remained high in a context of weak investment due to uncertainty about economic prospects and stable savings including as a result of fiscal consolidation.
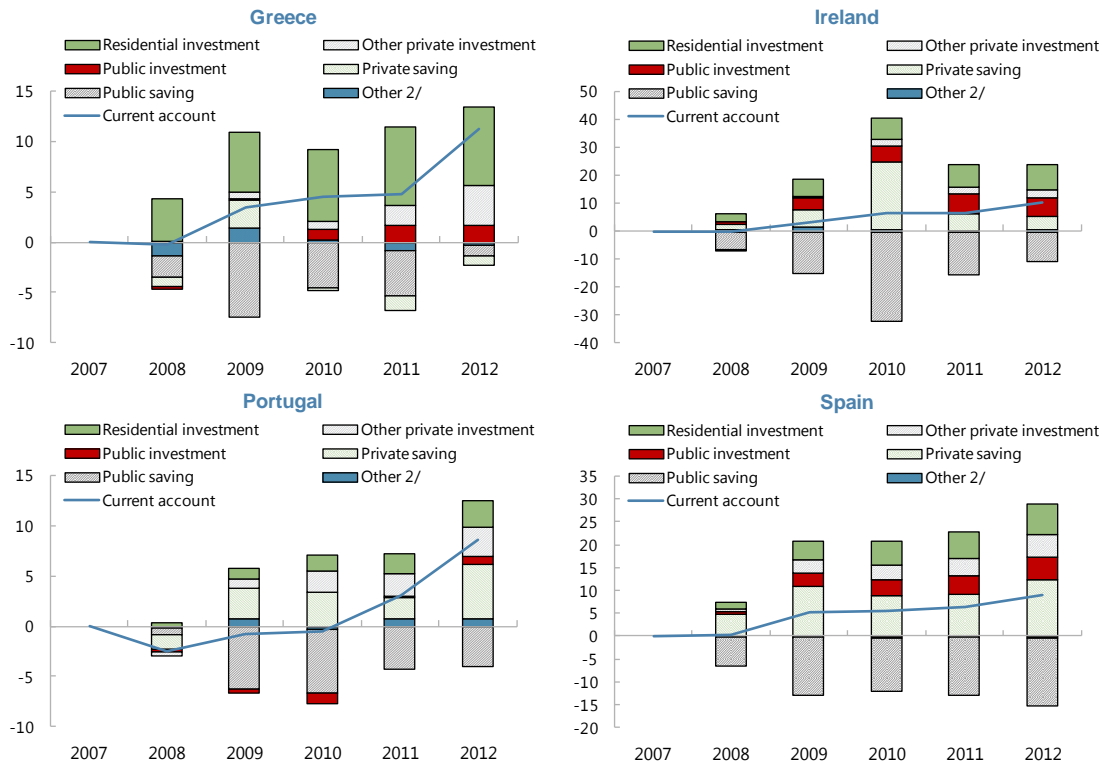
Sources: IMF WEO. 1/Negative signs indicate increase in investment; 2/ Represents changes in inventories and discrepancies.

The evolution of the real effective exchange rate (which is an aggregation of tradable and non-tradable prices) contains information combining the two price adjustments described in section I. While CPI-based REER are useful to document the evolution of final consumption prices relative to trading partners, unit labor costs – based REER (or GDP deflator-based REER) are appropriate to assess the evolution of production costs relative to trading partners. [7] The economy-wide ULC-based real effective exchange rates (REER) depreciated by about 10 to 25

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[6] See "Update of Staff Sustainability Assessments for G-20 Mutual Assessment Process (September 2013)" for more detailed discussion (http://www.imf.org/external/np/g20/map2013.htm).

[7] Value-added REER (or similarly GDP deflator-based REER) REER are good proxies for value-added REER that reflect the vertical integration of trade. See Bems and Johnson (2012) for detailed discussion.

percent since the beginning of the adjustments. GDP deflator-based REERs also depreciated, though somewhat less than ULC-based REERs, implying that price competitiveness for these economies have improved over this period. Ireland made adjustments in the earlier period while adjustment in Greece began relatively later. It is notable that nearly all of the REER depreciation is coming from the relatively large improvement in unit labor costs rather than a depreciation of the nominal exchange rate. In contrast, ULC-based REER increased moderately in Germany (and were broadly stable in France and Italy), but GDP deflator-based REER declined in all deficit countries and in Germany and France.

ULC-based REER
(log difference, ULC peak to 13Q2)

Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), 08Q4 for DEU, FRA, and ITA.

GDP deflator-based REER
(log difference, ULC peak to 13Q1)

Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), 08Q4 for DEU, FRA, and ITA.

ULC (Economy)
(log difference, peak to latest)

Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), 08Q4 for DEU, FRA, and ITA. Latest: IRL (12Q4), GRC (13Q1), all others (13Q2).

Productivity (Economy)
(log difference, peak to latest)

Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), 08Q4 for DEU, FRA, and ITA. Latest: IRL (12Q4), GRC (13Q1), all others (13Q2).
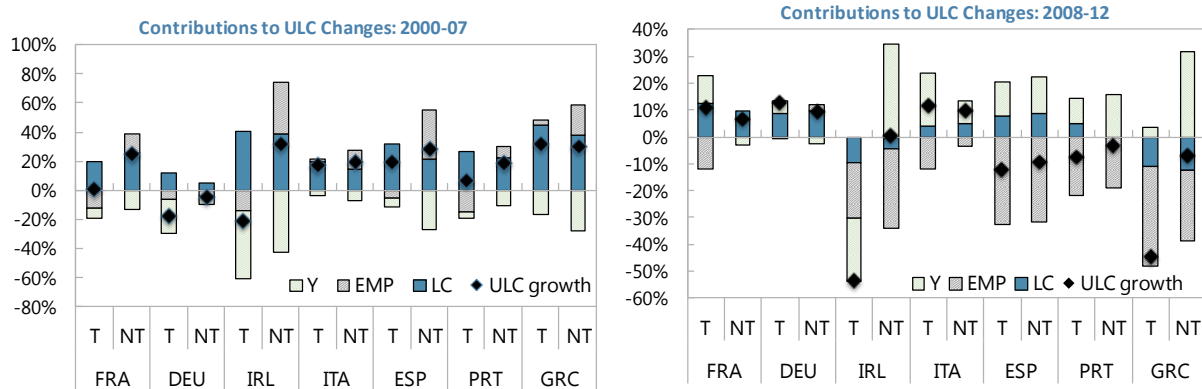
Sources: Eurostat and IMF staff calculations.

Unit labor costs have improved across all deficit countries since they began adjustment. The evolution of unit labor costs, defined as the nominal labor cost of producing one unit of real output, in turn reflects combinations of wage adjustments and labor productivity changes. Except in Greece, productivity gains has made significant contribution to improving unit labor costs reflecting large labor shedding than more than offset the output decline (Figures). For Greece, there has been little productivity gain as the decline of real output and employment have offset each other. In Greece, large wage cuts have contributed significantly to improving unit labor costs during the adjustment period. However, there have been more interesting differences across countries in the evolution of adjustment. That is, these countries have shown different paths of adjustment in relative contribution of wage, real output, and employment and

their evolution over time. In Germany (but also in Italy and in France), unit labor costs have risen, while productivity gains have been more muted.

Because unit labor costs are a combination of tradable and non-tradable productivity and costs, analysis of sectoral price data is required to have a precise understanding of the price adjustments between tradable and non-tradable sectors. For this purpose, we classify sectors in tradable and non-tradable sectors. Following ECB (2012), manufacturing is used as a first order approximation for tradable sectors, and non-tradable sectors include construction, wholesale and retail, hotel, transportation. In some cases, it would make sense to consider other sectors as tradable. For example, in Greece, service exports are important. Reallocation of some of these services in the tradable sector for Greece would make the decline of the tradable sector ULC less prominent since the crisis.[8]

Sources: Eurostat and IMF staff calculations.

We find evidence that before the crisis, non-tradable ULCs grew faster than tradable ULCs in Italy, Spain and Portugal, perhaps as demand for non-tradable goods was expanding relatively faster. In Germany, tradable ULCs declined faster than non-tradable ULCs.[9] Relative price adjustments are taking place although progress is quite uneven across countries. In particular:

- Since the crisis, ULC declined as a result of labor shedding. Greece, Ireland, Portugal, and Spain experienced larger reductions of ULCs in the tradable than non-tradable sector, which is conducive to the reallocation of production. However, reduction in ULCs are sometimes achieved by large scale labor shedding and do not reflect price adjustments ((as in Greece and Portugal). Ireland has been a good example of external adjustment, e.g., output in the tradable sectors is now recovering and supporting growth. Spain has a bigger drop in ULC of its non-traded goods sector and has relatively sticky labor costs. Most of the adjustment is through output loss and unemployment.

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[8] See for instance, Kang and Shambaugh (2014) that adopt such a definition, and find that tradables output has expanded relative to non-tradables output in Ireland, Portugal, and Spain, but not in Greece.

[9] Following ECB (2012), manufacturing is used as a proxy for traded sector, and non-traded sectors include construction, whole sale and retail, hotel, transportation.

- There are signs of divergence in competitiveness for large economies. For instance, Italy's ULC in tradable sectors has risen faster than in non-tradable sectors since the crisis, a worrying sign of further deterioration of competitiveness. In Germany, ULC have increased somewhat more in the tradable sectors than in the non-tradable sectors.

Wage in tradable sectors has declined largely in the deficit countrie since the crisis (relative to EA average), notably in Greece and Ireland, and to a less extent in Portugal, Italy and Spain. Wage of non-tradable sectors (e.g., construction) has followed a similar pattern, with the exception of Spain. In Germany, wages also declined both in tradable and non-tradable sectors (relative to the euro area average).
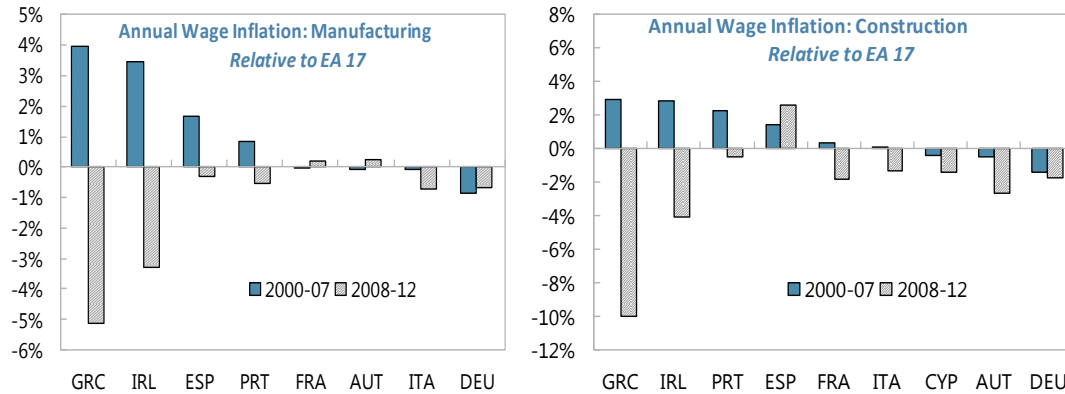
Sources: Eurostat, Haver, and IMF staff calculations.

Beyond price adjustment, it is important to assess the extent to which resource re-allocation is proceeding between tradable and non-tradable sectors, e.g. by looking at employment, credit flows and output. While relative price movements facilitate the adjustment, actual progress in the internal adjustment of the real economy can mainly be gauged by looking at input and output flows at a sectoral level. All in all, the data suggests that there is little evidence that a real reallocation of resources has so far taken place between tradable and non-tradable sectors.[10]

- To rebalance, deficit countries must re-allocate resources from non-tradable sectors to tradable sectors; such a reallocation must be associated with a decline in the price of non-tradable goods relative to tradable goods. But external adjustment also requires a drop in tradable prices to improve external competitiveness. Sectoral labor reallocation to tradable sectors would then respond to improved profitability (resulting from cuts in costs and improvement in relative prices of tradable versus non tradable products), along with higher export demand (resulting from the absolute decline in tradable prices). This will ensure a structural change in the external balance, associated with lower imports and higher exports. But such reallocation could take time and be impeded by rigidities (see text box).

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[10] The text box provides some empirical evidence for non-price factors on export growth for euro area countries. The appendix also provides a definition of traded and non traded sectors.

Box 1. The Role of Non-Price Factors on Exports

A simple approach is applied to assess export growth performance beyond the effect of world demand and relative price changes.

The model. The underlying panel regression takes the form
$$\Delta x_t = \alpha\mu_t + \beta\Delta(P_t/P_t^*) + \delta y_t + \varepsilon,$$
Where export growth is a function of relative prices (expect β to be negative) and external demand y_t, with μt capturing non-price factors such as costs of doing business, regulatory compliance, etc.

Panel regressions are performed over 2008–2012 for 13 euro area economies using a combination of 23 measures of non-price indicators chosen from (i) the World Bank: costs of starting a business; costs of enforcing contracts and costs of insolvency; (ii) the OECD: levels of regulation (PMR); employment protection (EPL); state control; barriers to entry and entrepreneurship; trade and investment.

Results: The largest elasticity is attributed to external demand. Relative price matters with the relative price elasticity ranging from 0.3 to 0.5 across various specifications (also confirmed by quantile regression on medians). Among the non-cost indicators, two stand out: *lower business cost* and *lower employment protection* come out positively as factors explaining export growth. Other non-price costs are generally less significant, but their importance for long-term adjustment may not be well captured given the post-crisis period considered.

Euro Area Economies Export Regressions: Selected Results

Dependent variable: real export growth

Specification 1/	Unrestricted Panel				Quantile
External demand	0.97	0.94	0.98	1.01	1.01
	(13.76)	(23.36)	(14.43)	(20.78)	(12.50)
ULC-REER change	-0.40		-0.47	-0.41	-0.42
	(-2.73)		(-3.21)	(-4.26)	(-2.38)
CPI REER change		-0.32			
...		(-3.27)			
Cost to start a business (WB)			-0.26		
...			(-2.36)		
Employment protection (OECD)				-2.66	
...				(-1.75)	
R^2	0.79	0.77	0.82	0.80	0.56
Obs	70	70	70	126	70

1/ Selected variables are listed.

Source: IMF Staff estimations.

- Adjustments have yet to firmly take hold in the tradable sector of the deficit countries. ULCs have declined both in tradable and non-tradable sectors. Despite adjustment in relative prices, there is limited evidence of resource reallocation from non-tradable to tradable sectors since the crisis, except perhaps in Ireland where tradable output has

recovered from the crisis low. Before the crisis, employment in non-tradable sectors expanded significantly in Spain, Ireland, Greece, and, to a lesser extent, Portugal.

**Employment Changes inTradable and Non-tradable Sectors**
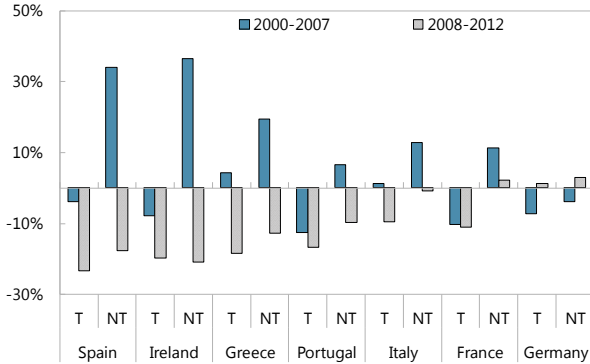
GVA Changes in Tradable and Non-tradable Sectors
(Percentage change)
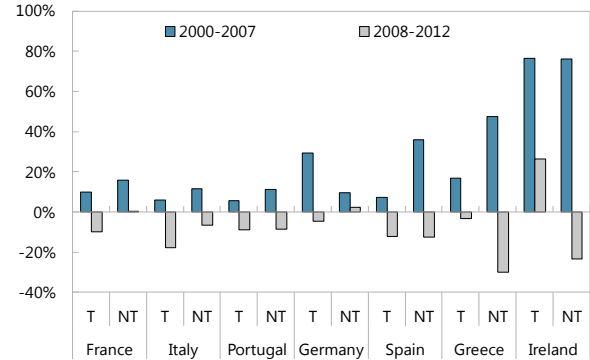
- Evidence from sectoral labor flows and value-added growth show that labor (and output) have declined across sectors (both tradable and non-tradable), and that the decline has often been more pronounced in the tradable sector (with the exception of Ireland), reflecting the general collapse in domestic demand.[11] An additional piece of evidence shows that export margins have increased in several countries with declining labor shares,[12] making these sectors in principle more attractive for producers. But exports prices have not adjusted much compared to trade partners, which could prevent export demand from picking up.

Change in ratio of export deflator to tradeable ULC
(Goods, in percent)

Sources: IMF WEO and DOTs.
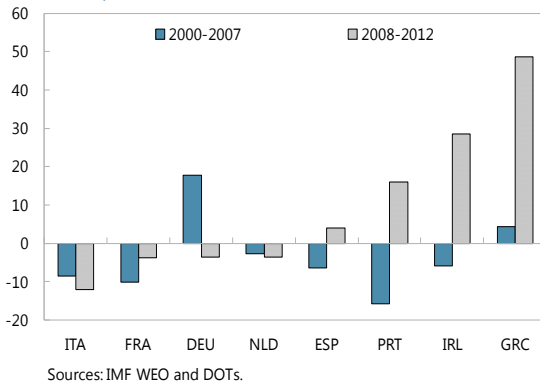
Export Prices / GDP Deflators of Trading Partners
(Percent change)

Sources: WEO, DOTS

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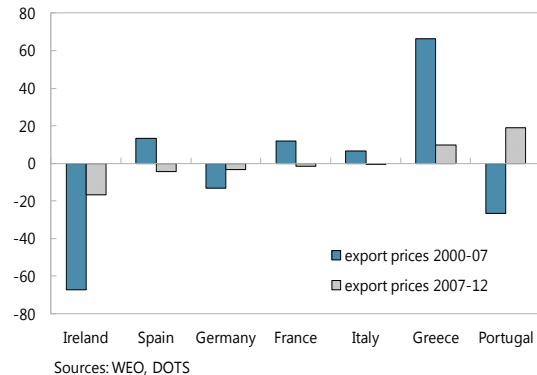
[11] Evidence from bank credit in Ireland and Spain suggests however a sharper decline in the non-tradable sectors and recent data point to a pick-up of credit in the tradable sector.

[12] It is also worth noticing that labor shares in the gross value-added have been declining in the past decade in the euro area, with sharp spikes during the 2008/09 crisis period when output and trade collapsed. In the deficit countries such as Spain, labor share has been declining since the crisis, reflecting both labor shedding and rising profit margins in the tradable sectors.

III. DETERMINANTS OF EXPORT COMPETITIVENESS: BEYOND PRICE ADJUSTMENTS

Export growth picked up significantly after the crisis, mostly as a result of a rebound in external demand. Ireland and Spain experienced relatively solid export recoveries. However, export growth has been—and is forecast to remain——modest, particularly in Greece, but also in Italy and Portugal.

Non-price indicators, such as market shares, suggest that competitiveness has generally not improved since the crisis. Most euro area countries (including surplus countries) have continued to lose world market share. This loss could simply be a reflection of growing trade among emerging markets. However, even within the euro area, market shares of Greece, Portugal, and Spain have barely improved or, for Ireland, modestly declined. Looking at the period 2000–07, market shares of exports to the world declined in France, Italy and Ireland, but were broadly stable in other countries.[13]
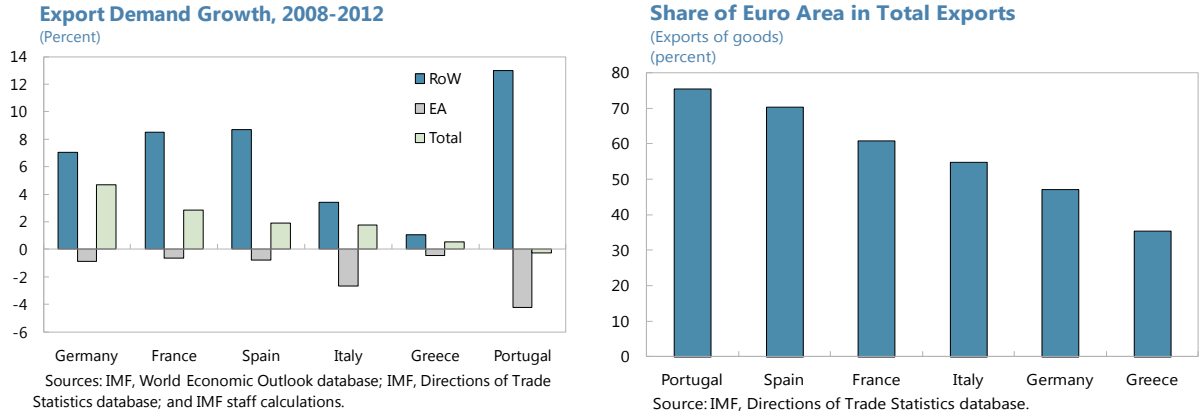
Change in share of exports to World
(In percentage points)

Change in share of world exports to euro area
(in percentage points)

Source: IMF DOTs.

Source: IMF DOTs.
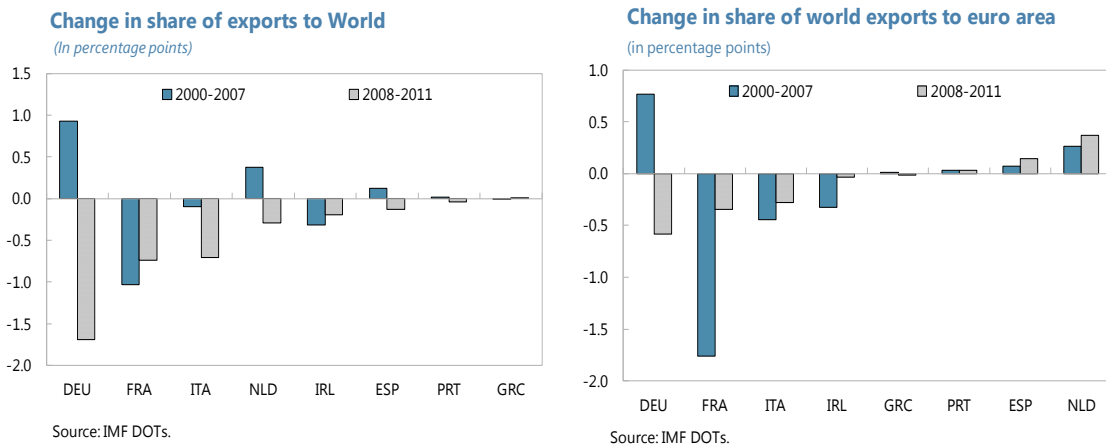
Moreover, since the start of the crisis, euro area countries have experienced significant differences in the demand for their export. For example, between 2008 and 2012, total trading partners' demand for Germany's export grew by 4.7 percent, compared to 2.8 percent for France, 1.8 percent for Spain, 1.7 percent for Italy, 0.5 percent for Greece, and -0.3 percent for Portugal. These differences reflect the country's initial geographical specialization. Germany's relatively large share of exports outside the euro area and in fast growing emerging markets contributed to relatively stronger rebound in exports.[14] In contrast, export demand growth was more sluggish in deficit countries as a result of either specialization in slower growing markets outside the euro area (in the case of Greece and Italy) or lower share of exports to non euro area countries (Spain, Portugal). In all countries, demand from other euro area countries has been declining during the period, contributing to slower export growth.

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[13] Earlier research however found that a significant decline of market shares took place between 1996 and 1999 (IMF, 2008).

[14] For example, in 2007-8, about ¼ of Germany's exports of goods went to emerging Asia.

Export Demand Growth, 2008-2012
(Percent)

Sources: IMF, World Economic Outlook database; IMF, Directions of Trade Statistics database; and IMF staff calculations.

Share of Euro Area in Total Exports
(Exports of goods)
(percent)

Source: IMF, Directions of Trade Statistics database.

To have a better understanding of the determinants of export performance in the debtor countries, France and Germany, we use standard export regressions for individual euro area countries. Specifically, the analysis of the determinants of export performance is founded on standard panel export regressions for euro area countries. The sample comprises 11 euro area countries covering the period of 1990-2013. The export regressions are estimated in level to capture a stable long-term relationship between real exports and a set of determinants.[15] Specifically, the following regression is estimated for bilateral exports of goods vis-à-vis the top 20 export partners:

$$logExport_{ijt} = \alpha \cdot logDemand_{jt} + \beta_{nonEA} \cdot logNER_{ijt} + \gamma \cdot logRel.CPI_{ijt} + \varepsilon_{ijt} \ (1)$$

Where the dependent variable is the log of exports of goods from country i to country j during year t, the determinants are respectively real domestic demand in country j during year t, the log of the bilateral euro nominal exchange rate for non-euro area trading partner j, and the log of the relative CPI between euro area country i and trading partner j. The estimated coefficients are next used to perform a decomposition of quarterly real export performance (for total goods and services) as follows:

$$\Delta \log ExportG\&S_{it}$$
$$= \alpha \cdot (Share_{EA}) \cdot \Delta log(Demand_{EA_{it}}) + \alpha \cdot (Share_{nonEA})$$
$$\cdot \Delta log(Demand_{nonEA_{it}}) + +\beta_{nonEA} \cdot (Share_{nonEA}) \cdot logNEER_{ijt} + \gamma$$
$$\cdot (Share_{nonEA}) \cdot lognonEARel.CPI_{ijt} + \gamma \cdot (Share_{EA}) \cdot logEARel.CPI_{ijt}$$
$$+ RES$$

Where:

- $Share_{EA}$ is the share of euro area destinations in total exports of goods;

- $Share_{nonEA}$ is the share of non-euro area destinations in total exports of goods;

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[15] See Chen, Milesi-Ferretti and Tressel (2012) for a detailed description of the specification.

- $Demand_{EA_{it}}$ is an index of export demand for euro area trading partners, constructed from shares of bilateral good exports in total exports to the euro area and from real import demand of trading partners;

- $Demand_{nonEA_{it}}$ is an index of export demand for non euro area trading partners, constructed from shares of bilateral good exports in total exports to the rest of the world and from real import demand of trading partners;

- $NEER_{ijt}$ is the nominal effective exchange rate;

- RES is the residual.

We find that export demand from the rest of the world and changes in nominal effective exchange rates provided the strongest contributions to export performance, while weak demand from within the euro area dampened exports (Figure 1 and 3). In particular:
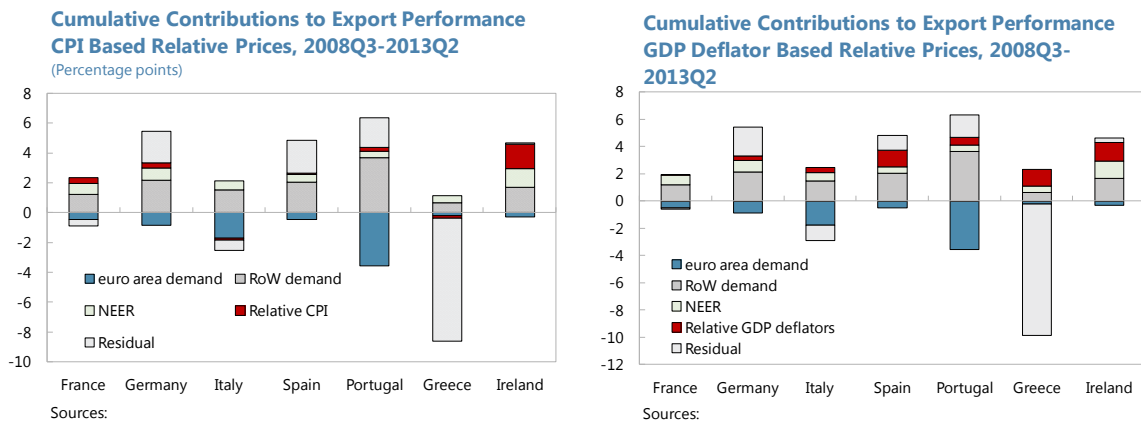
- Initial trade specialization is important as it contributes significantly in explaining the extent to which euro area countries' exports have rebounded. For example, Germany's relatively large share of exports outside the euro area and in growing markets contributed to relatively stronger rebound in exports, and made its export performance less dependent on weak intra-euro area demand than that of Southern EA countries. In the case of Greece, specialization in slow-growing markets and in the case of Portugal a high dependence on euro area demand, have had significant adverse effects on export growth. Hence, the euro area crisis had a direct impact on the export performance of euro area debtor countries, as demand from euro area trading partners declined during the early phase of the crisis in 2008-09 but also more recently. The impact was particularly large for Greece, Italy and Portugal.

- In contrast, demand from the rest of the world is the main pull factor. It contributed to about 47 percent of the relatively strong rebound of both Germany's and Spain exports, about 40 percent of Ireland's exports and to 86 percent of France's exports. It dampened the decline of Italy's exports and was the main driver of Portuguese exports (including to fast-growing African countries).

- We also find that, in spite of the importance of foreign demand in explaining export performance, relative price adjustments also matter – although the precise effect remains uncertain. The estimated contribution depends on the size of the price elasticity of exports but also on the price measure considered.[16] As described in Section II, CPI adjustments have been relatively small (either relative to euro area trading partners or relative to non-euro area trading partners), but the adjustment of GDP deflators relative to trading partners have been more substantial. When measured with CPIs, relative price adjustments (vis-à-vis euro area trading partners or others) appear to have had a small effect on the exports of the deficit countries (with the exception of Ireland where it contributed to about 38 percent of exports' performance), France, and Germany. But when measured with GDP deflators (which may be a better measure from a production perspective) the contribution to export performance

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[16] In this paper we rely on the elasticities estimated by Chen et al. (2012). Using alternative price and demand elasticities (such as for instance those estimated by Bayoumi, Hansern and Turunen (2011)) would lead to quantitatively similar conclusions.

of relative price adjustments was large for Ireland, Germany, Spain and Portugal. For the latter two countries, the changes in relative prices account for 26 and 25 percent of real exports growth between 2008Q3 and 2013Q2. In the case of Ireland, they account for almost half of exports' performance during the same period.

- It is also worth noticing that the nominal exchange rate also played a role. The nominal effective exchange rate contributed to almost half of France's exports, and to 19 percent, 11 percent, 16 percent and 28 percent of the exports of Germany, Spain, Portugal, and Ireland. In Greece and Italy, it had moderately negative contributions arising from different geographical specialization of trade.

- Last, it appears that the export performance of Greece was significantly weaker than predicted by the developments of external demand and relative price adjustments. This could reflect lower than average demand or relative price elasticities (which could be related to structural impediments and non-price competitiveness) or a substantial loss in non-price competitiveness. In contrast, in Spain, Portugal, or Germany, the unexplained residual is relatively large and positive, suggesting that non price factors might have helped support export performance. The unexplained proportion of exports is small for France and Ireland.

Figure 1. Contributions to Changes in Total Exports by Country

Cumulative Contributions to Export Performance CPI Based Relative Prices, 2008Q3-2013Q2
(Percentage points)

Sources:

Cumulative Contributions to Export Performance GDP Deflator Based Relative Prices, 2008Q3-2013Q2

Sources:

IV. CYCLICALITY OF CURRENT ACCOUNT ADJUSTMENTS

This section explores the determinants of the substantial current account adjustments that the euro area debtor countries have experienced since the start of the Global Financial Crisis. A key consideration at this juncture is to try and disentangle the relative importance of structural factors and of cyclical factors in explaining the observed current account adjustment. The nature of the observed current account adjustments has important implications for the dynamics of the net foreign asset position. If the observed current account reversal is mostly structural, e.g.

Contributions to change in current account:
(2008-2012, percentage of *2008 GDP*)

Sources: Haver and IMF WEO.
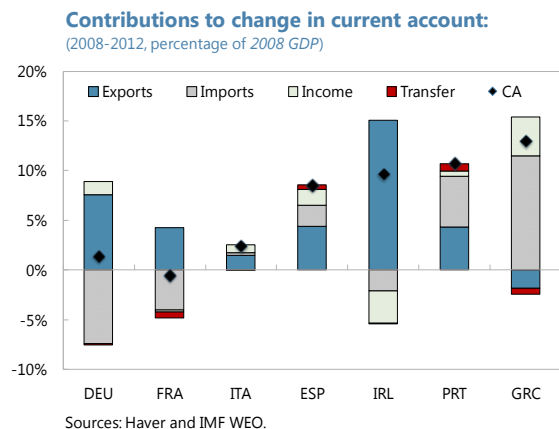
reflects structural changes in the demand and supply of these economies that will allow the economy to grow and lower unemployment to acceptable levels within their external budget constraint, the observed recent dynamics of the current account will be sustainable when the economy recovers and will, over time, progressively reduce the net foreign liabilities of these economies. If, on the contrary, the observed current account reversal is mostly cyclical, e.g. reflects the cyclical position of these countries due to weak domestic demand, the current account will deteriorate when the economy recovers, and the external position may return to its pre-crisis growth dynamics over time, with only a one-off level effect on the net foreign liabilities.

Our approach builds on the standard inter-temporal approach to the current account which identifies medium-term determinants of saving and investment decisions. Following the existing literature (Chinn and Prasad (2003), Lee and al. (2008), Christiansen et al. (2009), Phillips et al. (2013) a panel regression analysis allows us to assess the contribution of structural and cyclical factors to the evolution of current accounts.

Structural determinants include, among others, the medium-term growth prospects, potential output (relative to trading partners' average), demographics and health spending. The impact of the cycle is captured by the output gap, commodity prices and financial conditions. The specification also includes a measure of domestic credit to the private sector and effects common to all deficit countries that we describe below.
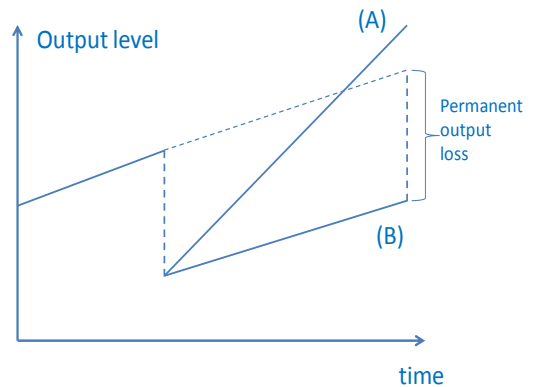
Our starting point is the model derived from the IMF 2013 EBA analysis.[17] Considering the following current account equation derived from the balance-of-payments (BOP) relation,

$$CA = CA(X_S, X_I, X_{CA}, X_{CF}, Z, \Delta R),$$

where X s are all the fundamental factors that may influence saving, investment and capital flows. In particular,

- X_S are the variables that determine the inter-temporal consumption and saving behaviors, which include the output gap, income per capita, demographics, expected income (measured the five-year ahead real GDP growth and the gap to the US GDP per capita), social insurance (public health spending), the budget balance, the institutional environment, and net exports of exhaustible resources;

- X_I are the investment shifters, which include long-term productivity growth and neoclassical catch-up (defined respectively as the five-year ahead real GDP growth and the gap to the US GDP per capita); Governance, financial sector and capital account policies which may affect capital flows;

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[17] See Phillips, Steven *et al*, 2013, "The External Balance Assessment Methodology", WP 13/172, IMF.

- X_{CA} are the exogenous export/import shifters, which include the world commodity price-based terms of trade (itself a function of the respective country's commodity shares in exports and imports);

- X_{CF} are control variables for the determinants of capital flows, which include indicators of global risk aversion, the "exorbitant privilege" that comes with reserve currency status, financial home bias, and capital controls.

- ΔR is the change in foreign exchange reserves; and Zs are other control variables discussed in the next paragraph.

Most of these variables are actually measured as a country's deviation, in a given year, from the relevant "world" counterpart (in that same year). For example, a movement in the output gap or the fiscal balance is hypothesized to affect the CA only to the extent that the same variable in other countries do not move by the same amount. Since in all regressions the individual country's current account is scaled by GDP, the "world" variable is computed as a GDP-weighted average of individual countries' share.[18]

The specification is also enriched by adding several explanatory variables (Zs) that may be relevant to characterize the current account adjustment of the euro area debtor countries:

- *Potential output in levels.* The standard regression approach is augmented to capture the impact of additional structural changes in the economy that would permanently improve the current account. For example, an unanticipated and permanent decline in the level of potential output (for example resulting from a reassessment of productivity) should cause a decline in consumption and investment, thereby resulting in an improved current account balance. Consumption adjusts immediately by the permanent amount of the decline in productivity also reflecting lower investment going forward (and thus exceeds the initial decline in output), causing a temporary increase in saving, while investment also declines. To account for this effect, we include as additional explanatory variable the PPP potential output level per capita relative to the world average, and we show that this variable is significant in the regressions, with the expected sign.

- *Credit-to-GDP ratio* (expressed in deviation from the trend from all countries). This variable has been found to be significantly correlated with the current account.[19] It could reflect the outcome of policies and other determinants of structural financial deepening or credit booms that affect the saving-investment balance of an economy.

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[18] Also note that estimating the CA as a function of REER and other variables would be inappropriate (as would estimating the REER as a function of CA), since the system above implies that CA and REER are both endogenous and simultaneously determined as a function of other variables.
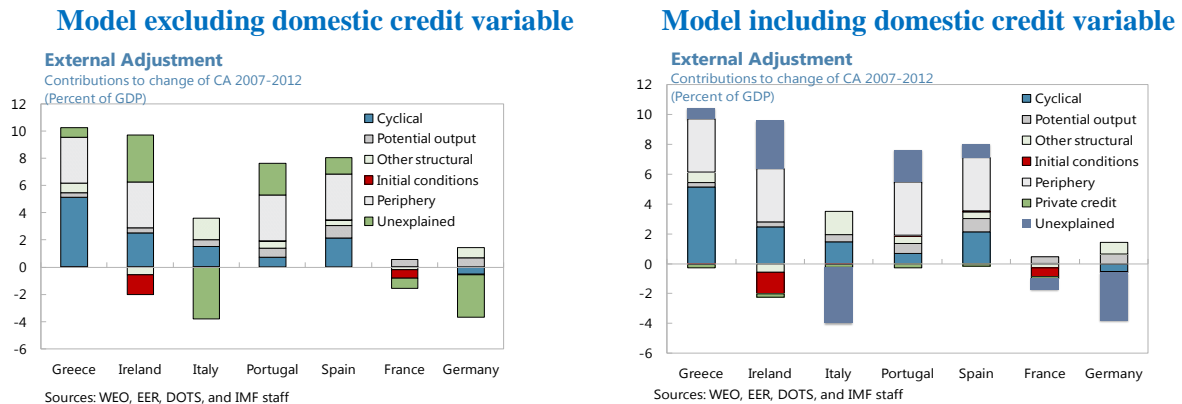
[19] See for instance Christiansen et al. (2008), and Reinhardt, Ricci and Tressel (2013).

- *"Stress factors"*. We also account for common factors underlying the evolution of external balances in the euro area deficit countries (e.g. the program countries and Spain) that are over and above the impact of observed cyclical and structural determinants. These common patterns could be structural or cyclical in nature, and could be associated with the boom-bust cycle of capital flows to the deficit countries. To control for these unobserved (and difficult to measure) determinants of the current account, we include time effects in the regression that are common to all deficit countries.

The results of the regression analysis are reported in Tables A1 and A2. It appears that permanent declines in relative income have a positive impact on the current account as predicted by theory. This effect is the opposite of the effect of the neoclassical catch-up traditionally captured in current account regressions. Our estimations imply that both cyclical and structural factors have contributed to the recent improvement in current account balances (Figure 2 and Table 2).[20] More specifically:

- *Cyclical factors* have had the largest contribution to the current account reversals of Greece, Ireland, and to a less extent Spain, where they account for 64 percent, 50 percent and 30 percent of the explained component of the current account reversal (excluding common stress factor), and for 50 percent, 32 percent and 27 percent of the actual current account reversals.[21]

- In contrast, the contribution of observed *structural factors* (including changes in potential output, and in medium-term expected growth) has generally been more modest. Unexplained residuals are not negligible, perhaps as adjustment is not necessarily well explained by "average" economic relations estimated from panel data. In this specific case, however, we find that a very large share of the unexplained residuals are due to "common stress factors" which arguably reflect combinations of structural and cyclical underlying forces, and account for a significant portion of the external adjustments.

Figure 2. Determinants of the Current Account Changes

Model excluding domestic credit variable   **Model including domestic credit variable**

Sources: WEO, EER, DOTS, and IMF staff

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[20] The assessment is based on the output gap and potential output estimates of each WEO vintage. See also Tables A1 and A2 for detailed estimation results.

[21] Kang and Shambaugh (2014) found larger contributions of cyclical factors, using alternative methods to measure the output gap. Borio et al. (2012) analyze how indicators of financial cycles may help improve the accuracy of the measured output gap.

Table 2. Summary of Country Current Account Decompositions
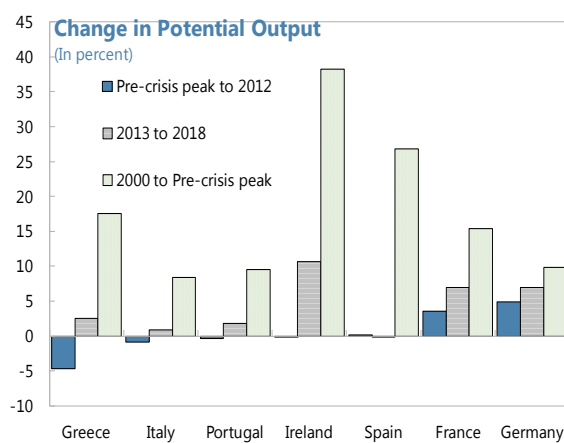**Contributions to Current Account Adjustment: 2007-2012**
(Percentage of GDP)

	CA	Cyclical	Demography	LT development and growth	NFA	Other structural	Potential output	Periphery effect	Credit to the private sector	Unexplained
Greece	10.19	5.15	0.50	-0.11	-0.03	0.21	0.40	3.58	-0.22	0.71
Ireland	7.63	2.50	0.20	-0.19	-1.45	-0.75	0.51	3.58	-0.25	3.22
Italy	-0.23	1.49	0.69	0.07	-0.03	0.88	0.40	.	-0.19	-3.74
Portugal	7.60	0.71	0.39	0.38	0.05	0.12	0.28	3.58	-0.25	2.09
Spain	8.02	2.16	1.13	0.59	0.05	-0.66	0.29	3.58	-0.13	0.88
France	-0.73	0.03	-0.18	0.47	-0.60	-0.06	0.32	.	-0.14	-0.70
Germany	-2.02	-0.52	0.69	0.77	-0.05	0.12	0.16	.	-0.01	-3.19

Note: cyclical includes contribution of output gap, financial conditions, and commodity terms of trade. Potential growth includes the contributions of neoclassical catch up term and expected medium-term growth. Other structural include contributions of the fiscal balance, capital controls, social spending. The model also includes the ratio of private credit to GDP (in deviation from the world average) and periphery common effects.

V. INTERNAL AND EXTERNAL REBALANCING: HOW FAR TO GO?

In this section we discuss the outlook for both internal and external rebalancing. Going forward, strong growth is needed to bring these economies to acceptable levels of unemployment, and this growth must come to a much larger extent from the tradable sector than before the crisis. However, current forecasts show that potential output growth is expected to remain low, and as result, the reduction in unemployment is going to be protracted.

• *Potential output.* At the end of 2012, potential output remained below its pre-crisis level in Greece, Italy and Portugal, and is marginally above its pre-crisis level in Spain. WEO projections show that potential output growth is expected to remain weak in all deficit countries, with the exception of Ireland where potential output in 2018 would be 14 percent above its pre-crisis peak. Germany and France, which do not require such external balance adjustments, are expected to have 2018 potential output levels about 6-8 percent higher than in 2013.

Change in Potential Output (In percent). Sources: WEO

Unemployment rates: pre-crisis and post-crisis changes. Sources: WEO
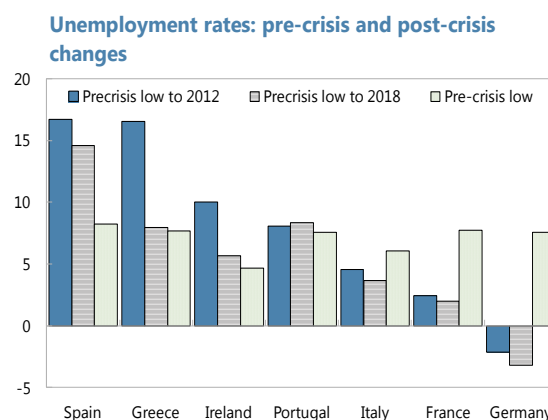
- *Unemployment rates.* Current unemployment rate forecasts assume that the adjustment is likely to be very protracted in most deficit countries. Before the crisis, unemployment rates reached very similar levels (between 7 and 8 percent) in the deficit countries and in France, Germany, and Italy. From these levels to the end of 2012, unemployment rates increased the most in Spain and Greece. Going forward, while unemployment rates are projected to decline, they are not expected to improve by much in Spain and Portugal over the medium run.

- *Sustaining growth.* While there is substantial uncertainty in the measurement of potential output and output gaps, the stylized facts suggest that growth is going to remain low and therefore the reduction of unemployment to acceptable levels is likely to be protracted. Closure of output gaps will first require a rebound in demand. Subsequently, reforms to increase potential output, especially in the tradable sector, will be necessary to reduce unemployment rates to more acceptable levels.

Going forward, the objective is to achieve net foreign liability positions (NFL) that can be deemed sustainable. But this raises a number of questions such as: What is an appropriate NFL position in a monetary union? What further adjustments will be required to achieve it? Unfortunately, there are no definitive answers.

- What NFL target should be for a monetary union? In a currency union complete with risk sharing mechanisms such as those provided by a Banking Union and a Fiscal Union, NFL positions of specific regions are much less relevant than the net indebtedness of individual agents or sectors—there is, for example, much less of a spillover from a local government or a sovereign to its banks and companies (See Goyal et al., 2013). However, in an "incomplete" monetary union—which does not feature fiscal and banking unions, where financial markets are not fully integrated and people do not move—risk sharing mechanisms are more limited and the NFL positions of a country are more relevant. Country-specific macro-financial risk, including the NFL position itself, will continue to determine the inflows of foreign capital.[22]

Net Foreign Asset Position
(Percent of GDP)

- *Outlook.* How far the NFL adjustment has to go is difficult to tell. By way of illustration, under latest projections of current accounts and nominal GDP, and assuming no valuation effects, the NFL positions of Greece, Portugal, and Spain will remain below 80 percent of

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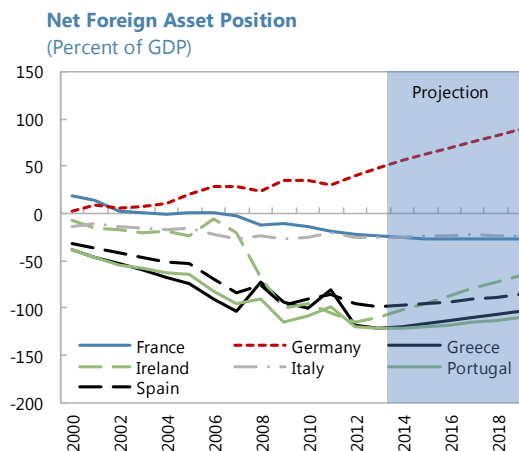
[22] Catao and Milesi-Ferretti (2013) find that the ratio of net foreign liabilities to GDP is a significant predictor of crisis in a large sample of countries.

GDP in 2018, and it will take time only to undo half of the worsening of the NFL position experienced during 2000–12. Reaching the EU Commission scoreboard threshold (of 35 percent of GDP) will take even longer. The high level of NFL could, for some time, act as a detterent to capital inflows and thereby weigh on prospects for investment and growth. At the same time, the net foreign asset position (NFA) of Germany is forecast to continue to grow under the current baseline.

Last, the structure of exports is likely to determine how debtor countries can improve their export performance going forward. Deficit countries produce goods that are closer substitutes of goods produced by fast-growing emerging market economies (such as China), hence facing additional structural challenges to their external rebalancing (Figure 4). Evidence from Trade Correlation Index (TCI) suggests that this is the case for several euro area members (Italy, Portugal, Slovakia, Slovenia, and Spain), e.g., a relatively high correlation of the composition of a country's merchandise exports with China.[23] This means that internal devaluation in these countries (relative to other euro area countries) would help export competitiveness to a more limited extent, since competitiveness gains may have to be vis-à-vis emerging markets.

There is another important element that the euro area is the largest service exporter in the world (a third of world market share) and most euro area members have relatively higher service export ratios, in particular Greece (tourism and transport) and Ireland (Insurance and IT). Some service exports (such as tourism) have stronger links within the euro area and may benefit more from internal devaluation through ULC improvements and wage cuts. Other service exports are more sensitive to non-price factors (labor and product market regulations or other regulations such as taxes) (Figure 5).

VI. CONCLUDING REMARKS

This paper provides an analysis of the progress with external and internal rebalancing in the debtor countries of the euro area. We find that while there are clear signs that relative prices and current accounts have adjusted, there is so far limited evidence of an internal reallocation of production from non-tradable sectors to tradable sectors. Moreover, improvements in export performance remain very dependent on external demand, including from within the euro area. Persistent weaknesses in euro area demand is a significant brake to rapid growth of exports in some countries such as Italy and Portugal that are relatively more dependent on intra-euro area demand.

We also find that the ongoing adjustment in current account balances is partly driven by cyclical factors, which suggests that more needs to be done to make it sustainable. Alternative methods of estimating the output gaps based on Okun's law, which relates output to unemployment, deliver even larger negative output gaps. In sum, various indicators point to significant remaining internal imbalances, although their size is difficult to determine with great confidence. Going forward, converging to net foreign asset positions considered safe elsewhere will prove challenging, while unemployment rates will remain high in the medium-term.

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[23] It is also interesting to see that Greece's top three competitors in the world market are Spain, Portugal, and Italy, with very low correlations of trade specialization with China or Hong Kong.

Figure 3. Determinants of Quarterly Export Performance
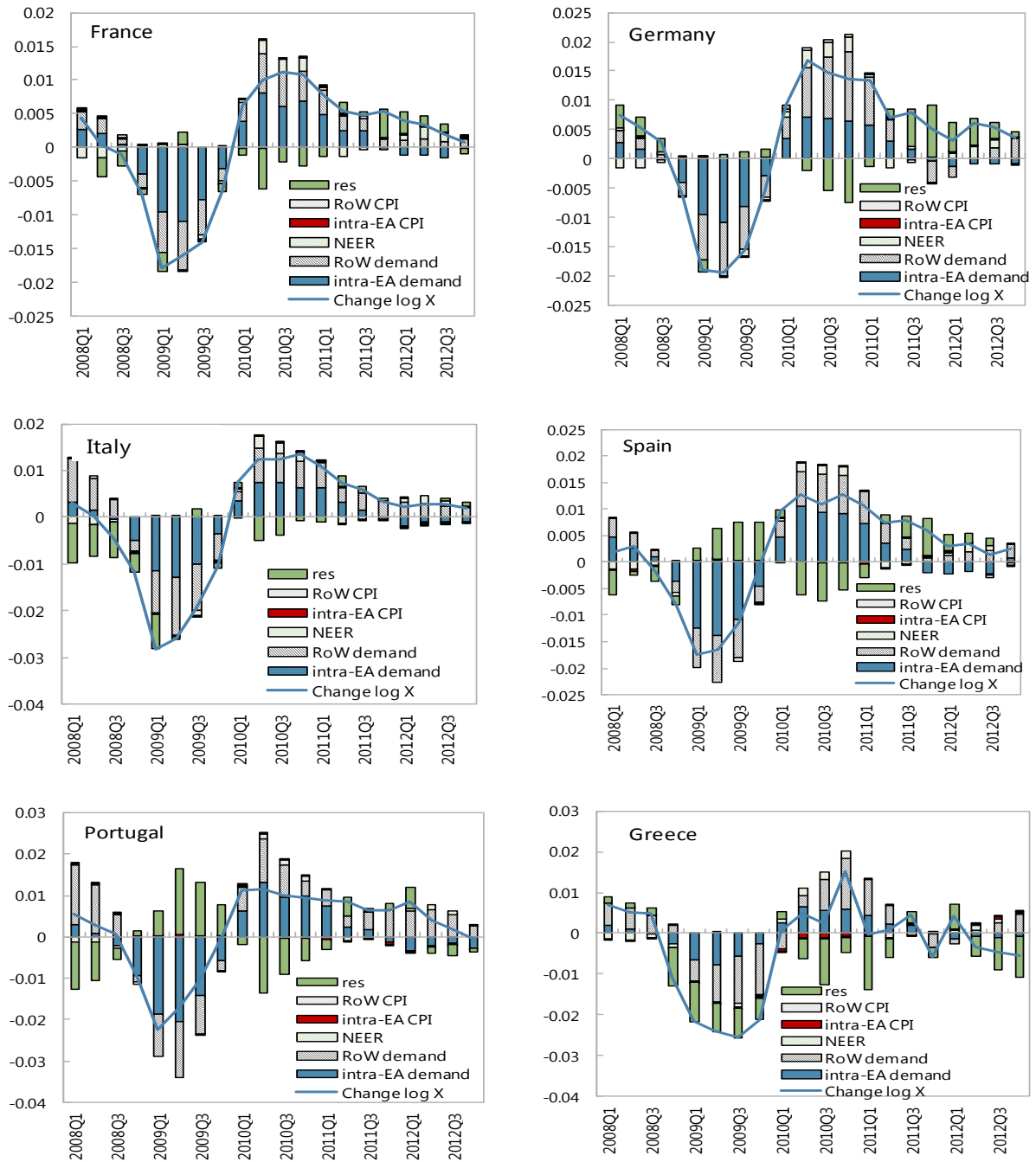
Note: Contributions to quarterly real export growth of intra-euro area demand and demand from the rest of the world, the nominal effective exchange rate and relative price adjustments (based on CPIs) vis-à-vis euro area trading partners and non-euro area trading partners. Demand and price elasticities are those estimated in regression (1). Moving averages of each variable over 4 quarters are considered.

Figure 4. Correlation of Trade Specialization Index: 1995 and 2011

Greece: Correlation of Trade Similarity Index 1995-2011

China: Correlation of Trade Similarity Index 1995-2011

Germany: Correlation of Trade Similarity Index 1995-2011

Italy: Correlation of Trade Similarity Index 1995-2011

France: Correlation of Trade Similarity Index 1995-2011

Spain: Correlation of Trade Similarity Index 1995-2011
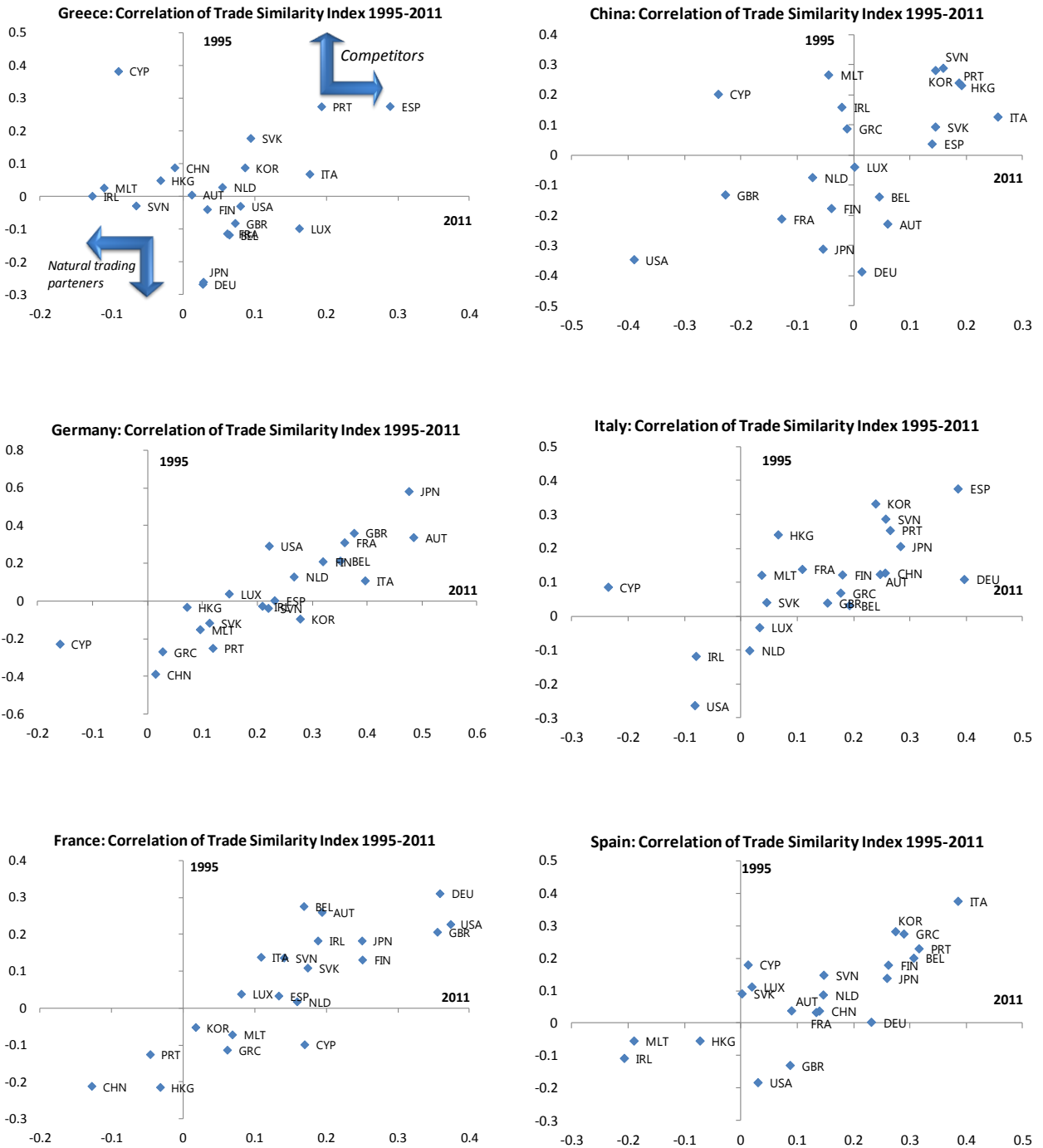
Sources: UNCTAD and IMF staff calculations.
Note: Trade correlation index is a simple correlation coefficient between economy A and economy B's trade specialization index. The resulting coefficient can take a value from -1 to 1. A positive value indicates that the economies are competitors in global market since both countries are net exporters of the same set of products. Consequently, a negative value suggests that the economies do not specialize in the production / consumption of the same goods, and are therefore natural trading partners.

Figure 5. Service Exports in the Last Decade: Trends and Shares
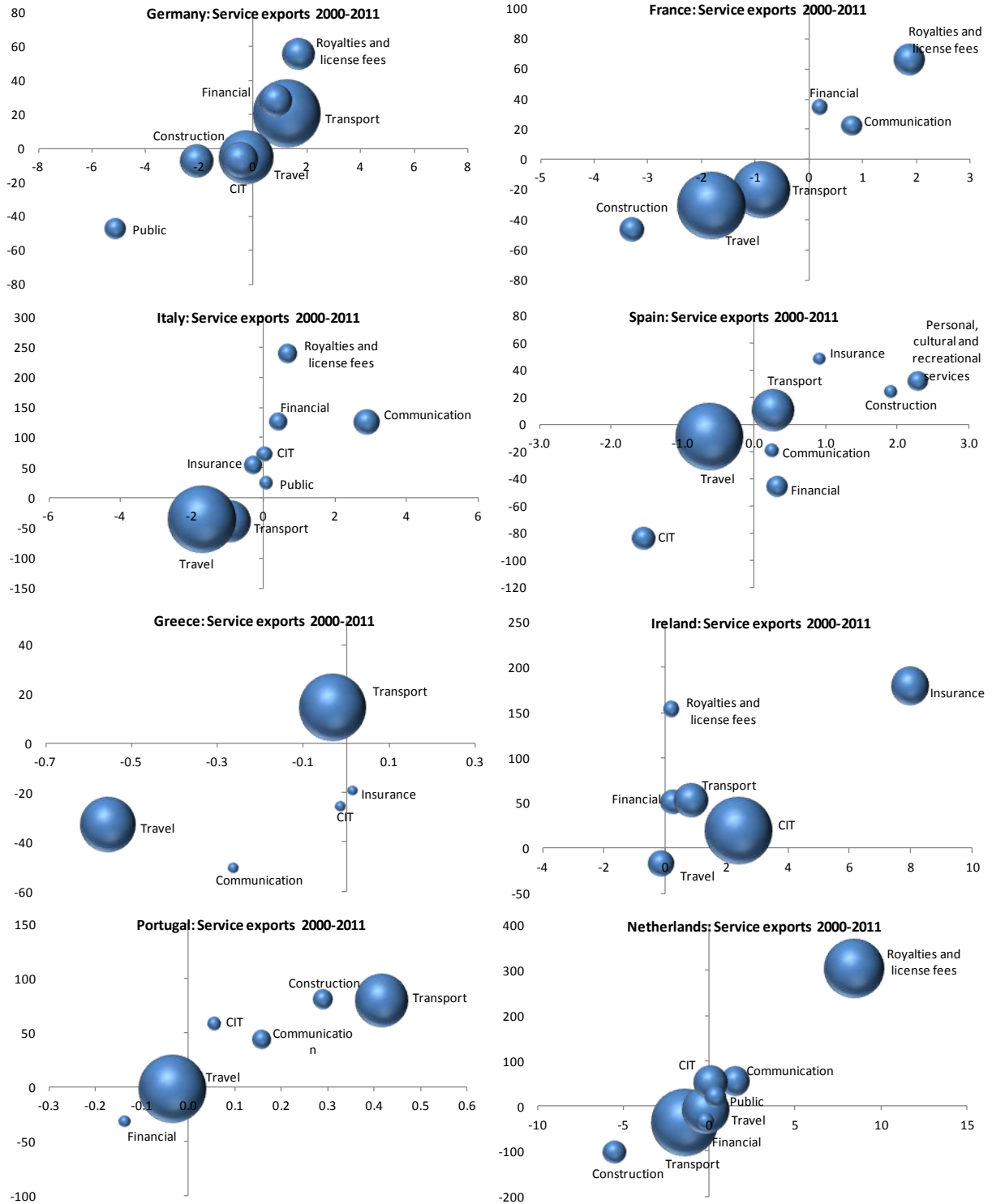
Note: Bubble size represents the share of sectors in total service exports.

X-axis: change in country's world market share of a specific market from 2000 to 2011; Y-axis: Relative growth rate of sector exports to total world growth in exports of that sector from 2000 to 2011 (percentage points).

Sources: UNCTAD and IMF staff calculations.

VII. APPENDIX

Table A1: Baseline Results of the Current Account Panel Estimations

Models Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NFA/GDP (t-1)	0.0364***	0.0270***	0.0287***	0.0152**	0.0158**	0.0287***	0.0091
	(0.000)	(0.001)	(0.000)	(0.034)	(0.028)	(0.000)	(0.217)
(NFA/GDP)*(dum=1 if NFA/GDP < -60%) (t-1)	-0.0352**	-0.0380**	-0.0252*	-0.0225	-0.0231	-0.0274*	-0.0228
	(0.015)	(0.013)	(0.066)	(0.123)	(0.110)	(0.052)	(0.109)
Financial Center Dummy	0.0385***	0.0239***	0.0410***	0.0256***	0.0253***	0.0417***	0.0311***
	(0.000)	(0.006)	(0.000)	(0.004)	(0.004)	(0.000)	(0.001)
Own per capita GDP/US per capita GDP (PPP) (t-1)	0.0344***	-0.0457	0.0929***	0.0363		0.1024***	0.1135***
	(0.004)	(0.182)	(0.004)	(0.334)		(0.004)	(0.004)
Potential Output (relative to world)			-0.0114	-0.0294***	-0.0244***	-0.0116	-0.0442***
			(0.105)	(0.000)	(0.000)	(0.123)	(0.000)
Private credit to GDP (deviation from world)						-0.0099**	-0.0376***
						(0.041)	(0.000)
Oil Trade Balance/GDP (if >10%)	0.6045***	0.6540***	0.6128***	0.6638***	0.6648***	0.5981***	0.6221***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dependency Ratio	-0.0311	-0.0102	-0.0705*	-0.0645	-0.0598	-0.0731*	-0.1145*
	(0.468)	(0.874)	(0.067)	(0.318)	(0.357)	(0.057)	(0.070)
Population Growth	-0.2759	-0.4889	-0.7453**	-1.0834***	-1.0466***	-0.7330**	-1.0368***
	(0.501)	(0.336)	(0.034)	(0.007)	(0.009)	(0.035)	(0.009)
Aging Speed	0.1293***	0.1905***	0.1113***	0.1585***	0.1688***	0.1381***	0.2223***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Real GDP growth, 5-year ahead forecast	-0.3949***	-0.4215***	-0.3802***	-0.3867***	-0.3943***	-0.3923***	-0.4238***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Public Health Spending/GDP (t-1)	-0.6086***	-1.0602***	-0.6821***	-1.3256***	-1.3061***	-0.7032***	-1.2180***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VOX*(1-Kcontrol) (t-1)	0.0538***	0.0624***	0.0535***	0.0662***	0.0669***	0.0524***	0.0583***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
VOX*(1-Kcontrol)*(currency's share in world reserves) (t-1)	-0.1610***	-0.1695***	-0.1673***	-0.1969***	-0.1925***	-0.1587***	-0.1645***
	(0.006)	(0.004)	(0.004)	(0.001)	(0.001)	(0.006)	(0.004)
Own currency's share in world reserve stock	0.0044	0.0086	0.0029	0.0041	0.0075	0.0076	0.0139
	(0.777)	(0.655)	(0.850)	(0.832)	(0.694)	(0.620)	(0.449)
Output Gap	-0.4024***	-0.4015***	-0.4362***	-0.4474***	-0.4407***	-0.4387***	-0.4570***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Terms of Trade gap*Trade Openness	0.2392***	0.2243***	0.2368***	0.2277***	0.2273***	0.2346***	0.2222***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cyclically Adjusted Fiscal Balance, instrumented	0.2516***	0.1692*	0.2150***	0.1517*	0.1497*	0.1978***	0.1361
	(0.001)	(0.055)	(0.002)	(0.082)	(0.087)	(0.008)	(0.153)
Capital Control Index ("Kcontrol")	0.0295***	0.0346***	0.0301***	0.0362***	0.0350***	0.0316***	0.0352***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Kcontrol*(Changes in Reserves)/GDP, instrumented	0.4392***	0.4399**	0.4414***	0.4551***	0.4457***	0.4552***	0.4223**
	(0.008)	(0.011)	(0.007)	(0.008)	(0.009)	(0.006)	(0.014)
Number of countries	50	50	49	49	49	48	48
Country fixed effects	No	Yes	No	Yes	Yes	No	Yes
Observations	1,199	1,199	1,167	1,167	1,167	1,152	1,152
R-squared	0.40	0.55	0.39	0.55	0.55	0.36	0.54

P-value in parentheses; *** p<0.01, ** p<0.05, * p<0.1. GLS estimates with panel heteroskedasticity corrected standard errors.

Sources: IMF staff estimates.

Table A2. Impact of Common Effects on the Current Account Adjustments

Models	(8)	(9)	(10)	(11)
Variables				
NFA/GDP (t-1)	0.0286***	0.0137*	0.0282***	0.0096
	(0.000)	(0.061)	(0.000)	(0.203)
(NFA/GDP)*(dum=1 if NFA/GDP < -60%) (t-1)	-0.0308**	-0.0344**	-0.0310**	-0.0308**
	(0.029)	(0.022)	(0.033)	(0.038)
Own per capita GDP/US per capita GDP (PPP) (t-1)	0.0979***	0.0647*	0.0993***	0.1200***
	(0.002)	(0.083)	(0.006)	(0.002)
Potential Output (relative to world)	-0.0130*	-0.0337***	-0.0115	-0.0436***
	(0.070)	(0.000)	(0.130)	(0.000)
Real GDP growth, 5-year ahead forecast	-0.3828***	-0.4228***	-0.3903***	-0.4361***
	(0.000)	(0.000)	(0.000)	(0.000)
Output Gap	-0.4266***	-0.4426***	-0.4281***	-0.4493***
	(0.000)	(0.000)	(0.000)	(0.000)
Private credit to GDP (deviation from world)			-0.0080	-0.0325***
			(0.112)	(0.000)
Periphery 2000	-0.0121*	-0.0177***	-0.0123*	-0.0150**
	(0.082)	(0.008)	(0.080)	(0.023)
Periphery 2001	-0.0058	-0.0131	-0.0060	-0.0085
	(0.501)	(0.122)	(0.491)	(0.308)
Periphery 2002	-0.0028	-0.0130	-0.0029	-0.0073
	(0.766)	(0.163)	(0.757)	(0.427)
Periphery 2003	0.0007	-0.0121	0.0007	-0.0059
	(0.939)	(0.220)	(0.942)	(0.547)
Periphery 2004	-0.0043	-0.0167*	-0.0039	-0.0098
	(0.660)	(0.087)	(0.689)	(0.311)
Periphery 2005	-0.0179*	-0.0301***	-0.0167*	-0.0210**
	(0.067)	(0.002)	(0.092)	(0.031)
Periphery 2006	-0.0255***	-0.0381***	-0.0235**	-0.0258***
	(0.010)	(0.000)	(0.020)	(0.008)
Periphery 2007	-0.0338***	-0.0496***	-0.0309***	-0.0347***
	(0.001)	(0.000)	(0.003)	(0.001)
Periphery 2008	-0.0425***	-0.0625***	-0.0386***	-0.0445***
	(0.000)	(0.000)	(0.000)	(0.000)
Periphery 2009	-0.0270***	-0.0486***	-0.0228**	-0.0290***
	(0.010)	(0.000)	(0.037)	(0.009)
Periphery 2010	-0.0239**	-0.0496***	-0.0189*	-0.0281**
	(0.028)	(0.000)	(0.095)	(0.016)
Periphery 2011	-0.0143	-0.0419***	-0.0094	-0.0210*
	(0.186)	(0.000)	(0.404)	(0.065)
Periphery 2012	0.0001	-0.0267***	0.0049	-0.0072
	(0.992)	(0.009)	(0.654)	(0.504)
Number of countries	49	49	48	48
Country FE	No	Yes	No	Yes
Observations	1,167	1,167	1,152	1,152
R-squared	0.40	0.58	0.37	0.56

P-value in parentheses; *** p<0.01, ** p<0.05, * p<0.1

GLS estimates with panel heteroskedasticity corrected standard errors.

Note: the regressions also include as control variables the other regressors of Table 1a.

Sources: IMF Staff estimates.

Technical Notes

Decomposition of ULC changes

ULC = Labor cost/Labor productivity, where Labor cost = Compensation per employee/Total employees (in persons), and Productivity = Real output (or gross value added) / Total employment. See ECB DG Statistics
http://sdw.ecb.europa.eu/browseExplanation.do?node=2120786

Traded and non-traded sectors

No standard definition can be derived from NACE2 (European Classification of Economic Activities, rev. 2) to have a clear cutoff line between traded and non-traded sectors. This note applied the definition used by an ECB Occasional Paper (ECB 2012) as follows:

Tradeable sector: Manufacturing.

Non-tradeable sectors: Construction; Wholesale and retail trade; Travel and food service; Financial and insurance; Real estate.

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