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Progress Towards External Adjustment in the Euro Area Periphery and the Baltics

Joong Shik Kang and Jay C. Shambaugh

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Progress Towards External Adjustment in the Euro Area Periphery and the Baltics

Prepared by Joong Shik Kang and Jay C. Shambaugh[1]

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Abstract

The euro area periphery countries and the Baltic countries, which had large current account deficits in the run-up to the crisis, needed adjustment of relative prices to achieve both internal and external balances. Thus far, tangible progress has been made through lower wages and/or higher productivity relative to trading partners ("internal devaluation"), which contributed to narrowing current account deficits and shifting output towards the tradables sector. While some early adjusters cut wages more rapidly followed by productivity improvement, others have only slowly improved productivity largely through labor shedding. This adjustment for most countries has come along with a substantial recession as the unit labor cost improvement has largely come from falling employment and much of the current account improvement from import compression. Going forward, these countries still need to generate growing tradables sector employment and to continue adjustment to prevent imbalances from returning as output gaps close.

JEL Classification Numbers: F24, F32, F41

Keywords: Current account deficit, Internal devaluation, Competitiveness, Unit labor cost

Author's E-Mail Address: jkang@imf.org, jshambaugh@gwu.edu

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I. INTRODUCTION

On the eve of the global financial crisis, the euro area periphery countries[2] and the Baltic countries faced large and growing current account deficits. Regarding the underlying causes for these large current account deficits, the literature has indicated both poor export performance (Chen, Milessi-Ferreti, and Tressel, 2012; Berger and Nitsch, 2010; Bayoumi, Harmsen, and Turunen, 2011), and domestic boom and structural factors (Ivanova, 2012; Lane and Pels, 2012; Jaumotte and Sodsriwiboon, 2010). Kang and Shambaugh (2013) sort through different developments across these countries in the run-up to the crisis and highlight additional non-trade factors including the role of declining transfers and net income balances.

However, regardless of the underlying causes of external imbalances, as the crisis hit, these countries needed depreciation to reduce the large current account deficits. That is, even though deterioration of competitiveness in their export sector was not a major factor behind large current account deficits, they still need depreciation for a number of reasons. First, for some economies, the large trade deficits have been a persistent problem for several decades. Thus, while trade performance did not worsen during the 2000–07 period, it still needed to improve. Second, the persistent large current account deficits generated large net income payment needs for these economies, requiring improved export sector performance to meet these net income payment needs. Third, as output remains below potential, export improvements are needed to avoid a re-emergence of external imbalance as they recover towards full potential output. Fourth, as unemployment rates still remain very high, the production and employment in the tradables sector need to be increased.

To achieve both internal and external balances, these countries need devaluation in order to shift spending towards domestic goods and services, to reorient productive resources to the tradables sector, and to increase output to their potential levels. However, given that they use the euro (or fix to the euro), devaluation has to be achieved via a fall in domestic prices relative to trading partners' prices ("internal devaluation"). One way to achieve these goals is for tradable goods unit labor costs to fall. This makes them more attractive to produce relative to non-tradables and makes them less expensive than foreign tradable goods.[3]

Five years after the onset of the global financial crisis, many studies are analyzing postcrisis adjustment in European countries under fixed exchange rates. Among others, Atoyan, Manning, and Rahman (2013) linked the difference of current account adjustment between periphery Euro area and emerging Europe countries to different developments in savings and investment, availability of financing, and the composition of adjustment between exports and imports. Bakker and Klingen (2012) provide an extensive country-by-country analysis,

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[2] This paper will focus on Greece, Ireland, Portugal, and Spain as they were the euro countries with the largest current account deficits on the eve of the crisis. Often Italy is included in the group based on issues with sovereign debt. But, Italy's current account did not move into large deficit prior to the crisis and is thus not as relevant to this discussion.

[3] More generally speaking, prices in these economies need to adjust along two dimensions: (i) a fall of relative price of non-tradables to tradables to reorient production towards tradables, and (ii) a decline of domestic tradables prices relative to foreign tradables to boost exports.

including scrambles during the crisis, the stabilization and recovery, and the remaining challenges. ECB (2012) studies the implications of competitiveness adjustment using various model simulations and shows that a fiscal reform, productivity-enhancing measures in tradables sector, and improving wage competitiveness would contribute to external balance improvement. Nkusu (2013) analyzes the inter-linkages between competitiveness, exports, growth, and fiscal performances and finds that boosting and maintaining both price and non-price competitiveness would be critical for Ireland to return to its path of strong growth and low imbalances. Tressel and Wang (2013) study the pattern of relative price and current account adjustment in the euro area countries and note that a significant share of the current account adjustment appears to be driven by cyclical factors, suggesting more needs to be done to make the adjustment sustainable.

Our paper adds to this literature by studying how unit labor cost adjustments have been made across countries and sectors and linking these to quantity adjustment thus far. While current account deficits have narrowed significantly in these economies and unit labor costs have fallen in every country we find that since the global financial crisis began, there has been considerable variation in the process across countries with some early adjusters cutting wages more rapidly and others only slowly improving productivity (largely through labor shedding). Comparing wage dynamics before and after the crisis, it is apparent that countries with large wage run-ups prior to the crisis have experienced more compressing wages after the crisis. Looking across sectors, in every country but Greece, unit labor costs have declined more in the tradables sector, and real outputs in the tradables sector are higher than the pre-adjustment levels. But, employment remains below the pre-crisis level even in the tradables sector in all countries, implying that internal devaluation is taking place, but against the backdrop of a sustained recession.[4] Low global and regional growth is making the adjustment far more difficult. Falling costs have led to improved relative international costs and trade shares and volumes have increased. Still, much of the adjustment has taken place via import compression. Given the high unemployment rates in these countries, it appears unit labor cost improvement will need to continue for both the sake of internal and external adjustment.

The remainder of the paper is structured as follows. Section II discusses the adjustment of unit labor costs in overall economy focusing on both static and dynamic aspects. Section III presents empirical results that link postcrisis wage adjustment to precrisis developments. Adjustment of unit labor costs across different sectors and its implications are discussed in Section IV, followed by quantity responses to these price adjustment in Section V. Section VI briefly discusses how much more adjustment would be needed and Section VII concludes.

II. Overall Adjustment

Current account deficits have narrowed significantly across these countries over the last five years (Figure 1).[5] However, significant improvement in external positions has been

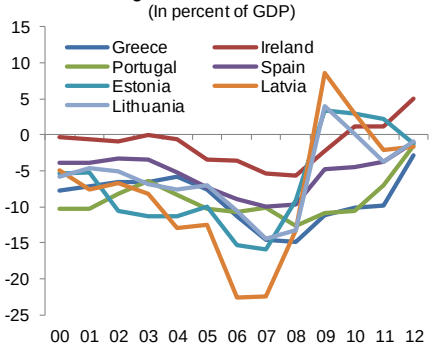
[4] Shambaugh (2012) notes that there have been few episodes of internal devaluation that were not associated with extensive economic pain.

[5] The official current account data overstate the current account improvement for Ireland significantly in recent years as undistributed profits of redomiciled companies are also captured in the balance of payment statistics.

(continued…)

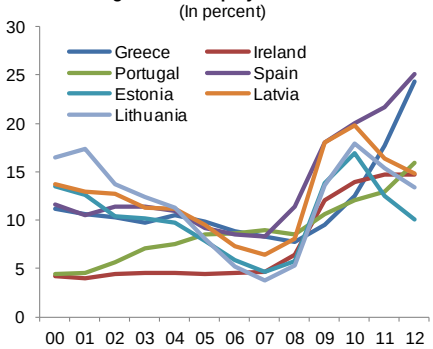
associated with large decline in output and sharp increase of unemployment. Five years since the onset of the crisis, output still remains below potential and unemployment rates are in double digits in 2012 (Figure 2). The high unemployment rates indicate significant underutilization of labor, and falling unemployment rates in some countries partly reflect declining labor forces.

Figure 1. Current Account
(In percent of GDP)



Source: IMF, *World Economic Outlook*, April 2013.

Figure 2. Unemployment Rates
(In percent)

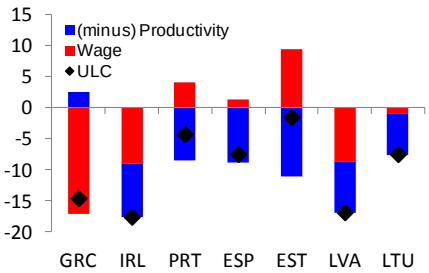


Source: Haver Analytics.

Static

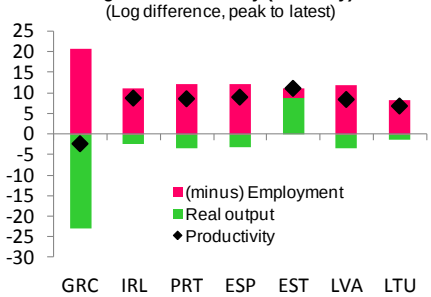
Unit labor costs have improved across all countries since they began adjustment. Except in Greece, productivity gains has made significant contribution to improving unit labor costs as large labor shedding has more than offset the output decline (Figures 3–4).[6] For Greece, their productivity has actually decreased as the decline of real output has overwhelmed the decline in employment. In some countries such as Greece and Latvia, large wage cuts have contributed significantly to improving unit labor costs during the adjustment period.

Figure 3. ULC (economy)
(Log difference, peak to latest)



Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), EST(08Q4), LVA (08Q3), LTU(08Q3).
Latest: GRC (13Q1), All others (13Q2).
Sources: Haver Analytics; and IMF staff calculations.

Figure 4. Productivity (economy)
(Log difference, peak to latest)



Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), EST(08Q4), LVA (08Q3), LTU(08Q3).
Latest: GRC (13Q1), All others (13Q2).
Sources: Haver Analytics; and IMF staff calculations.

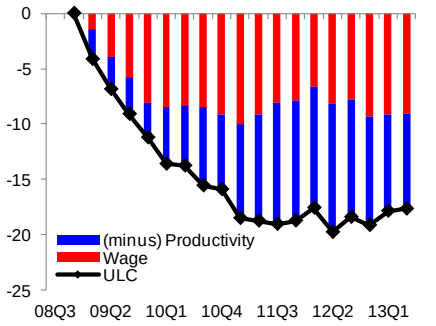
Adjusted data show that Ireland's current account is close to balance rather than a surplus of about 5 percent of GDP in 2012. See Box 2 in IMF (2013b) for detailed discussion.

[6] As discussed in detail in Section IV, we used employment data for ULC breakdown following the Eurostat. While we used the spliced series for Latvia and Lithuania due to structural breaks in their labor force survey, Blanchard, Griffiths, and Gruss (2013) used occupied post series from the survey of enterprises and reports more significant role of productivity gains in Latvia's ULC adjustment.

Dynamics

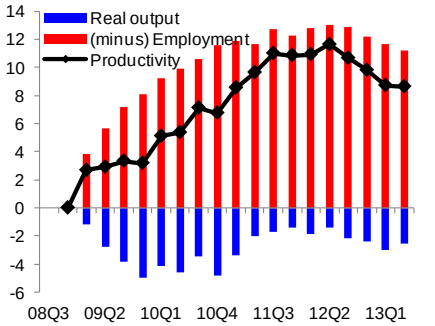
There have been more interesting differences across countries in the evolution of adjustment. That is, these countries have shown different paths of adjustment in relative contribution of wage, real output, and employment and their evolution over time.[7] For example, Ireland has made very persistent and significant improvement in unit labor costs on the back of wage cuts and labor shedding-driven productivity growth over the last four years (Figures 5–6). After the end of 2011, wages recovered somewhat (the red columns are less negative in figure 5), but have declined again in the most recent quarters. Still, sustained productivity improvements have meant unit labor costs have remained lower than the peak by 15 to 20 percent.

Figure 5. Ireland: Cumulative ULC
(Log difference, peak (08Q4) to 13Q2)



Sources: Haver Analytics; and IMF staff calculations.

Figure 6. Ireland: Cumulative Productivity
(Log difference, peak (08Q4) to 13Q2)



Sources: Haver Analytics; and IMF staff calculations.

The Baltic countries share the similar adjustment pattern in the sense that unit labor costs had declined significantly over the first two years after they began adjustment and then increased again on rising wages (Figures 7–12).[8] Latvia experienced a sharp wage decline first before productivity eventually increased on the back of labor shedding and output recovery. Subsequently, wages have recovered to some extent but unit labor costs are not rising as much due to continued improvement of productivity. Lithuania also experienced the similar path of adjustment with substantial wage cuts during the early adjustment period, followed by improving productivity with labor shedding and output recovery. In Estonia, wage cuts have played a limited role, and adjustment has been made largely due to productivity growth through large labor shedding in early periods and output recovery in recent years.[9] Wages did fall modestly at first, but by the end of the sample, they are above the pre-adjustment level (red columns are above zero in figure 11).

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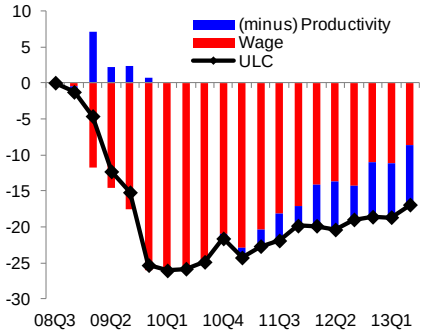
[7] One important note is that as the composition of industry or workers employed changes, there may be changes to productivity or wages without any actual changes to productivity or wages for a given worker. These compositional effects seem large in Ireland in particular. See Box 5 in IMF (2011) for details.

[8] Reflecting large wage cuts and labor shedding during this initial adjustment period, labor share (defined as total compensation for employees divided by nominal GDP) for these economies declined sharply over this period before stabilizing or recovering in later period.

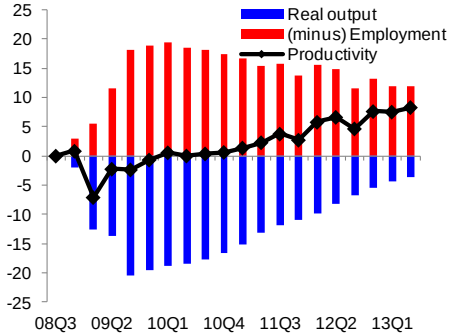
[9] Estonia experienced much more output contraction before they began adjustment (ULC-based as we defined) than the other two. Estonia's output declined by 12 percent from 07Q4 (output peak) to 08Q4 (ULC peak), while it declined by 7.4 percent from 07Q4 to 08Q3 in Latvia and only by 0.8 percent from 08Q1 to 08Q3. Accordingly Estonia's ULC increased by about 15 percent over this period before adjustment began.

Figure 7. Latvia: Cumulative ULC
(Log difference, peak (08Q3) to 13Q2)



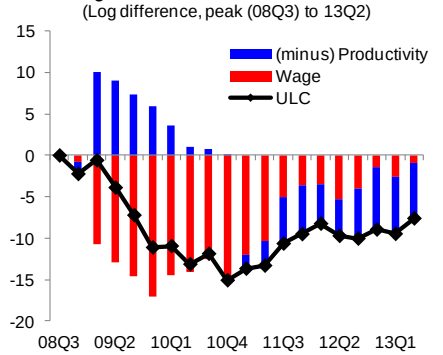
Sources: Haver Analytics; and IMF staff calculations.

Figure 8. Latvia: Cumulative Productivity
(Log difference, peak (08Q3) to 13Q2)



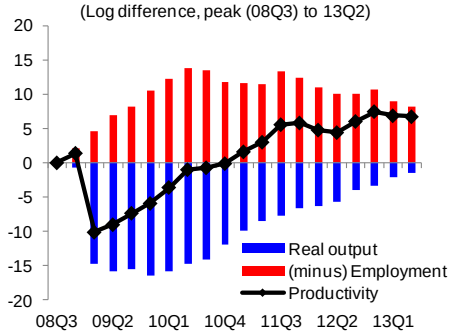
Sources: Haver Analytics; and IMF staff calculations.

Figure 9. Lithuania: Cumulative ULC
(Log difference, peak (08Q3) to 13Q2)



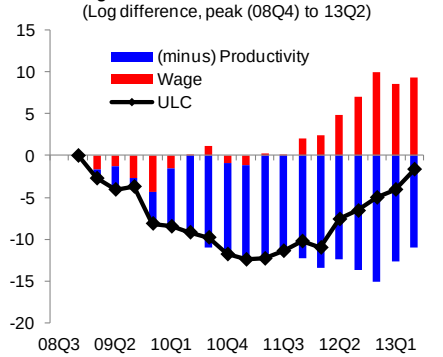
Sources: Haver Analytics; and IMF staff calculations.

Figure 10. Lithuania: Cumulative Productivity
(Log difference, peak (08Q3) to 13Q2)



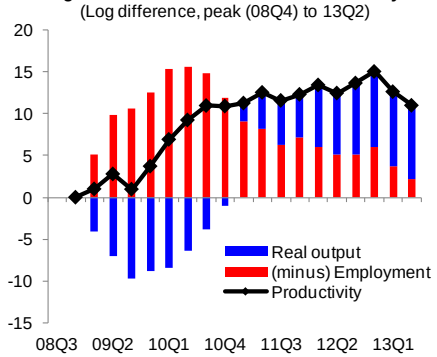
Sources: Haver Analytics; and IMF staff calculations.

Figure 11. Estonia: Cumulative ULC
(Log difference, peak (08Q4) to 13Q2)



Sources: Haver Analytics; and IMF staff calculations.

Figure 12. Estonia: Cumulative Productivity
(Log difference, peak (08Q4) to 13Q2)



Sources: Haver Analytics; and IMF staff calculations.

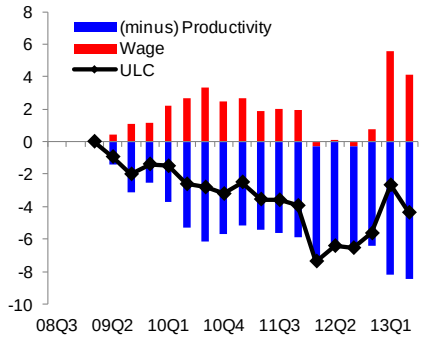
One important difference between Ireland and the Baltics is that, after an initial rush of labor shedding, employment began to recover from earlier the period in the Baltics and, as output is growing faster as well, productivity also continues to improve. Employment is lower by only 2½ percent from the peak in Estonia, far better performance than any other countries under consideration.

Adjustment in Portugal and Spain began a few quarters later than in the Baltics and has been largely based on productivity gains (Figures 13–16). In both countries, improvement in unit labor costs has been mostly coming from large labor shedding as there has been little adjustment in wages. Real output began to decline since the second half of 2010 and more recently fell below pre-crisis level. In fact, towards the end of the sample, the renewed

recession and falling output has meant that increasing employment cuts have been needed to simply stabilize productivity. In some ways, Estonia, Portugal, and Spain began in a similar manner – with falling employment generating productivity and little contribution from wages. But, then Estonia's output expanded and employment recovered whereas it continued deteriorating in the Iberian Peninsula.

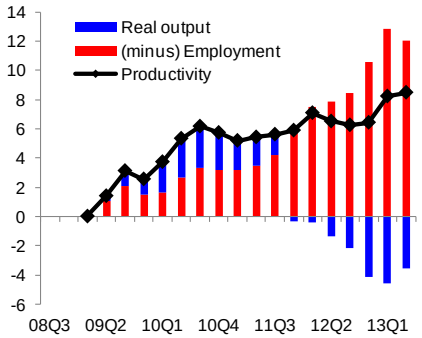
In contrast, adjustment started much later in Greece and wage cuts are generating all of the adjustment without improvement in labor productivity as output fell more than the employment (Figures 17–18). As of the end of the first quarter of 2013, productivity is still lower than before the adjustment began.

Figure 13. Portugal: Cumulative ULC
(Log difference, peak (09Q1) to 13Q2)



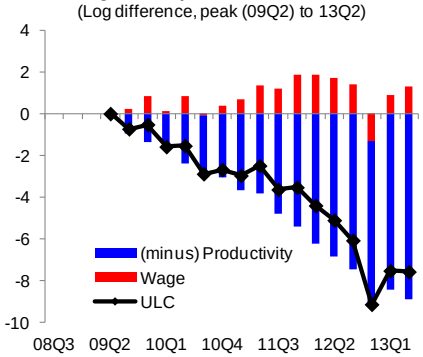
Sources: Haver Analytics; and IMF staff calculations.

Figure 14. Portugal: Cumulative Productivity
(Log difference, peak (09Q1) to 13Q2)



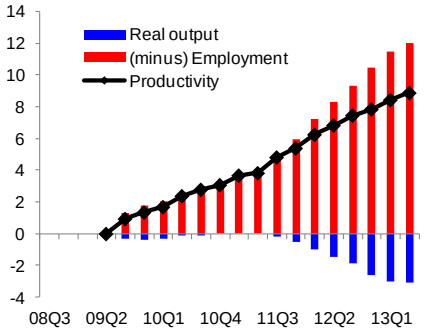
Sources: Haver Analytics; and IMF staff calculations.

Figure 15. Spain: Cumulative ULC
(Log difference, peak (09Q2) to 13Q2)



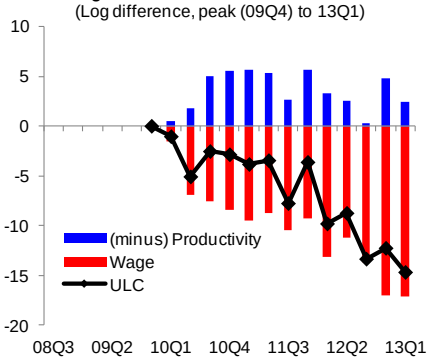
Sources: Haver Analytics; and IMF staff calculations.

Figure 16. Spain: Cumulative Productivity
(Log difference, peak (09Q2) to 13Q2)



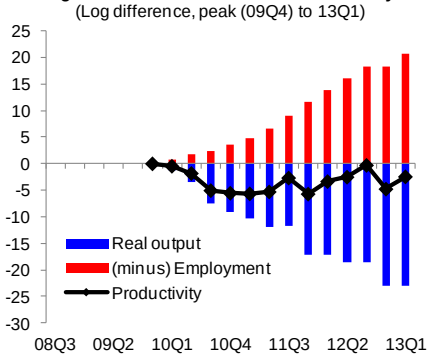
Sources: Haver Analytics; and IMF staff calculations.

Figure 17. Greece: Cumulative ULC
(Log difference, peak (09Q4) to 13Q1)



Sources: Haver Analytics; and IMF staff calculations.

Figure 18. Greece: Cumulative Productivity
(Log difference, peak (09Q4) to 13Q1)

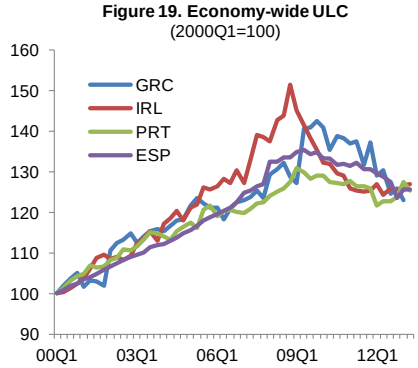


Sources: Haver Analytics; and IMF staff calculations.

III. Timing and Extent of Wage Adjustment

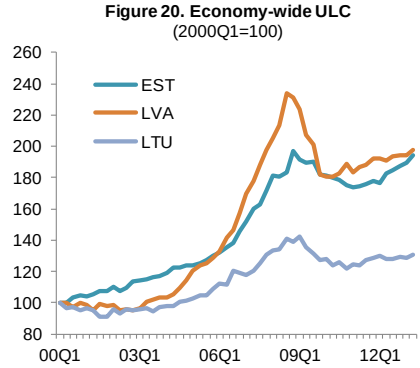
All of these economies and sectors experienced large increase of unit labor costs in the run-up to the crisis, with varying degrees (Figures 19–20). To understand wage response in different countries and sectors during the adjustment period, we regress the percentage change of wages over the first, second, and third years after the adjustment to the current account began in 2007Q4 (for the Baltics) and 2008Q4 (for the Euro area periphery) on the wage growth from 2000Q1 to the beginning of the current account adjustment. We use disaggregate data for 10 sectors in these economies, consistent with the sectoral analysis in the following section.[10]

Figure 19. Economy-wide ULC
(2000Q1=100)



Sources: Haver Analytics; and IMF staff calculations.

Figure 20. Economy-wide ULC
(2000Q1=100)



Sources: Haver Analytics; and IMF staff calculations.

Thus, the specification is:

$$\Delta w_{is} * post = \alpha + \beta * \Delta w_{is} * pre + \text{controls} + u_{is}$$

where *i* represents a country and *s* represents a sector. *post* and *pre* represent wage growth before and after the crisis as noted above. The controls used range from none to country dummies – effectively testing whether once one controls for country cycles, the sectors with the fastest wage growth prior to the crisis had different wage dynamics – to sector dummies – testing whether controlling for differences across sectors, those countries with faster wage growth prior to the crisis had different wage patterns.

Regression results show that wages fell more, by the second and the third year, in those countries and sectors that experienced higher wage growth in the run-up to the crisis (Table 1, upper panel). This pattern is more apparent when we control for country or sector. The results also hold if we include productivity growth both prior to and after the crisis(lower panel), implying that countries/sectors with more excess wage growth before the crisis have experienced more wage declines during the adjustment period. These results suggest that countries with the largest pre-crisis buildups (the Baltics and Ireland) may have had more flexibility to cut wages after the crisis.

[10] See Appendix I for details.

Table 1. Wage Adjustment Over Time Relative to Precrisis Wage Increases
(Coeffficient on precisis wage growth)

Controls	1 year	2 years	3 years
	Without controlling for productivity growth		
None	0 .03**	-0.05**	-0.05***
Country dummies	-0.12***	-0.12**	-0.19***
Sectoral dummies	0.004	-0.08**	-0.09**
Country & sectoral dummies	-0.11**	-0.13***	-0.18**
	With additional control for productivity growth		
None	0.03	-0.04***	-0.06***
Country dummies	-0.09**	-0.10***	-0.16***
Sectoral dummies	0.01	-0.06***	-0.08***
Country & sectoral dummies	-0.10**	-0.11**	-0.18***

Notes: *, **, *** indicate statistically significant coefficients with 10%, 5%, and 1% confidence levels, respectively.
Sources: Haver Analytics; and IMF staff calculations.

On the other hand, the coefficients on pre-adjustment wage growth are much smaller than -1 (in absolute term), implying that wages have fallen much less than they increased before, partly because these are nominal wages that usually rise over time. The fact that wage growth relative to productivity growth in the non-tradables sector in the run-up to the crisis has been larger than in the tradables sector may help explain why the non-tradables sector has experienced more wage cuts during the adjustment period (see next section).

IV. Sectoral Adjustment

We examine sectoral ULC series to better understand the progress of external adjustment. As discussed above, these countries need falling prices relative to their trading partners and falling ULC in tradables in order to shift resources to the tradables sector and to increase output to their potential levels. So, we do not expect the same size of wage adjustment in both tradable and non-tradables sectors or in both public and private sectors. For this end, we construct ULC for tradables and non-tradables sectors and examine the developments of output, employment, wages, and ULCs across sectors. Following the methodology of Eurostat, sectoral ULC are constructed as follows:

$$ULC = \frac{total\ compensation\ for\ employees / number\ of\ employees}{real\ output / number\ of\ employment}$$

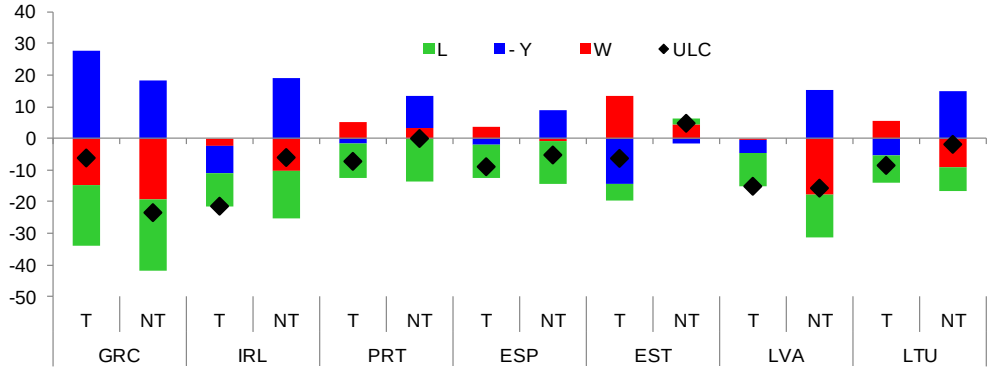
All data series are from Eurostat except Greece's sectoral real output and compensation for employees which are from national statistical authority. In Latvia and Lithuania, revised employment series based on new population census data are used since 2011 and 2010, respectively, and those for previous years were constructed using year-on-year growth rate in old series.

Sectoral classification follows the European industry standard classification system (NACE) as in Appendix I. As a broad measure of tradables sectors, we include 'agriculture, forestry & fishing', 'industry excluding construction', 'trade, travel, accommodation & food', 'information & communication', and 'financial insurance.' All other sectors including public sector are classified as non-tradables sectors. Alternatively, as a narrow measure, we also consider tradable goods sector that includes only 'industry excluding construction.'[11]

Static

Relative price adjustment is taking place as it should be in most countries, and reorientation from the non-tradables sector to the tradables sector has been made in many countries, helping real outputs in the tradables sector recover and surpass the pre-adjustment levels (except Greece), though with different degrees. But, there is yet to be a strong enough expansion in the tradables sector to help stimulate the overall economy and absorb employment. Effectively, relative price adjustment is set against a backdrop of severe overall recession. The Figure 21 below shows the change in employment (green), wage (red), output (blue, reversed), and unit labor cost (black dot) from the country-specific peak of economy-wide unit labor cost to the latest period in the tradables and non-tradables sectors.

Figure 21. ULC Adjustment Between Tradable and Non-tradable Sectors
(Log difference, economy-wide ULC peak to the latest)



Peaks: GRC(09Q4),IRL(08Q4),PRT(09Q1),ESP(09Q2),EST(08Q4),LVA(08Q3),LTU(08Q3). Latest: IRL(12Q1),GRC (13Q1), Others (13Q2).
Sources: Haver Analytics; and IMF staff calculations.

First, wages fell more in the non-tradables sector in every country (red columns are more negative in the non-tradables sector), and some countries observe rising wages in the tradables sector over this period. But, in many countries, unit labor costs have declined more in the tradables sector driven by larger productivity gains. In Greece, as we discuss in more detail below, unit labor cost in the tradables sector has not shown a sign of sustained improvement yet as falling wages and employment are offset by output contraction.

[11] ECB (2012) considers much narrower and non-comprehensive classification of tradable and non-tradable sectors. They include only 'manufacturing' as a tradable sector and include only 'construction', 'trade, travel, accommodation & food', 'financial insurance', and 'real estate' as non-tradable sectors. Empirical results in this section are broadly similar with this narrower classification.

Second, real outputs in the tradables sector have surpassed the pre-adjustment levels for most countries (blue columns are negative, showing that an increase in output is pulling down unit labor costs), in particular in Estonia and Ireland. In contrast, outputs in the non-tradables sector still remain below pre-adjustment period in every country.

Third, employment remains below the pre-crisis level even in the tradables sector for all countries (green columns are negative), implying that adjustment so far has not yet led to meaningful improvement in the labor market. Thus, external adjustment is taking place, but it is not on its own sufficient to lift these countries towards economic growth.

Dynamics

Beyond these broad patterns, each country has experienced different dynamics of adjustment over the last a few years, partly reflecting different paths to the large imbalances and different structure of labor market. In general, early adjusters (the Baltics and Ireland) experienced large fall in output and employment during the initial period of adjustment, followed by strong recovery in the tradables sector. In contrast, the other countries have experienced continued decline in employment and slow recovery in the tradables sector.

Estonia provides the most optimistic example. The tradables sector experienced large labor shedding during the initial period of adjustment, and output fell, but not as much as employment, leading to immediate productivity gains (Figure 22). In the non-tradables sector, wages bore the initial brunt of decline, but employment declined sizably from the following quarter, contributing improvement in ULC despite a large output decline (Figure 23). While private sector responded mainly through labor shedding during this period, the public sector counted largely on wage cuts – though these wage cuts were never more than 10 percent (Figures 24–25). Since then, the tradables sector, in particular the tradable goods sector, has recovered quickly with a significant rebound in output and rising wages (Figure 26). With a continued strong recovery in the tradables sector, labor market conditions also have improved in the non-tradables sector as well, with employment losses more than halved and real output showing a sign of recovery. Thus, in the overall economy, employment has fallen but gains have been seen in the last two years (Figure 27).

We can observe similar dynamics in other early adjusters (Latvia, Figures 28–33; Lithuania Figures 34–39; Ireland, Figures 40–45). In Latvia and Lithuania, both tradables and non-tradables sectors responded to output collapse through wage cuts and labor shedding – with Latvia's wage cuts far exceeding the other early adjusters. This initial adjustment led to output recovery in the tradables sector, though notably less than in Estonia, and employment has begun to recover in recent periods with wages reaching to the pre-adjustment levels. While the private sector responded to the crisis with both large wage cuts and labor shedding, the public sector counted largely on wage cuts. In Latvia in particular, the wage cuts in the non-tradables and public sectors were dramatic – reaching nearly 40 percent. Employment and wages in the non-tradables sector are slowly recovering in recent periods but outputs still remain well below precrisis level in both Latvia and Lithuania.

In Ireland, both large wage cuts and labor shedding in both sectors have contributed to significant improvement in unit labor costs, leading to substantial output recovery in the tradables sector, in particular the tradable goods sector. But it has not yet led to improvement

in wages and employment even in the tradables sectors, in contrast to the Baltic countries. And, the non-tradables sector has continued to contract leading to rising unit labor costs there in recent quarters.

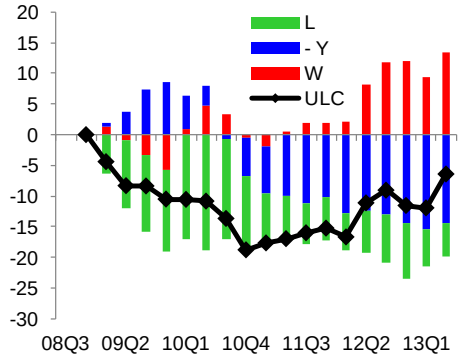
The slower adjusting countries show different patterns. In Spain (Figures 46–51), while labor productivity improved in the tradables sector during the initial adjustment period due to rising output and labor shedding, output began to fall after 2010. Employment continued to decline stabilizing unit labor costs. There have been no wage reductions, and in fact wages are up slightly in the tradables sector despite sizable job declines. The non-tradables sector initially saw no change in unit labor costs as job losses mirrored output declines. Over time, labor shedding drove some unit labor cost declines and very recently wage cuts have contributed, in particular in the public sector. Portugal shows a similar pattern (Figures 52–57). The pace of declining employment is accelerating while output, which did not fall during the initial adjustment period, began to fall in recent periods. Large labor shedding is mainly occurring in the private sector as the public sector counts largely on wage cuts for adjustment.

In Greece, output continues to fall (Figures 58–63). The adjustment across tradables and non-tradables sectors is not taking place in a way to foster external adjustment. Unit labor costs in the tradables sector have not shown a sign of sustained improvement as falling wages and employment are offset by output declines. In the tradable goods sector, there have been ULC declines due to large employment cuts, but this sector is relatively small in Greece. In the non-tradables and public sectors, wage cuts have driven improvement in unit labor cost. Neither the tradables nor non-tradables sectors show sign of output recovery.

Estonia: Cumulative ULC

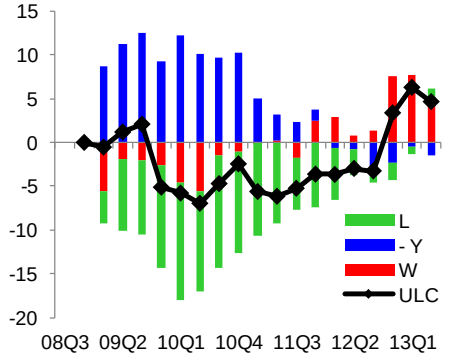
(Log difference, peak (08Q4) to 13Q2)

Figure 22. Tradables Sector



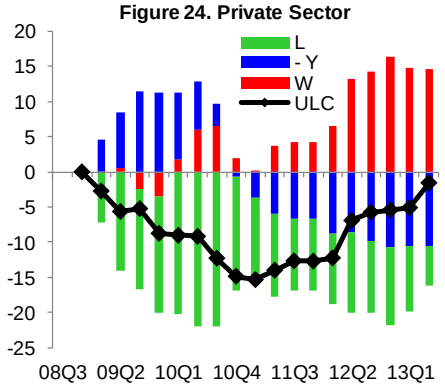
Sources: Haver Analytics; and IMF staff calculations.

Figure 23. Non-tradables Sector



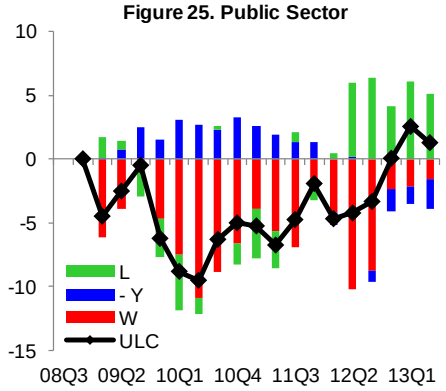
Sources: Haver Analytics; and IMF staff calculations.

Figure 24. Private Sector



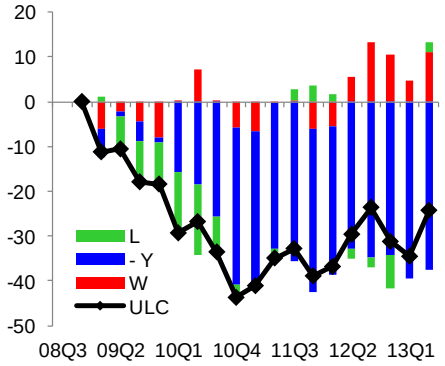
Sources: Haver Analytics; and IMF staff calculations.

Figure 25. Public Sector



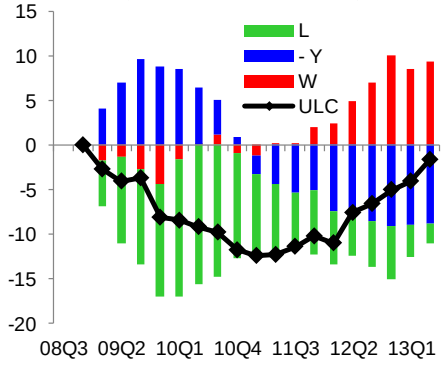
Sources: Haver Analytics; and IMF staff calculations.

Figure 26. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

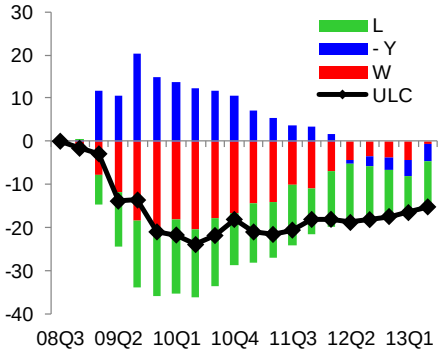
Figure 27. Overall Economy



Sources: Haver Analytics; and IMF staff calculations.

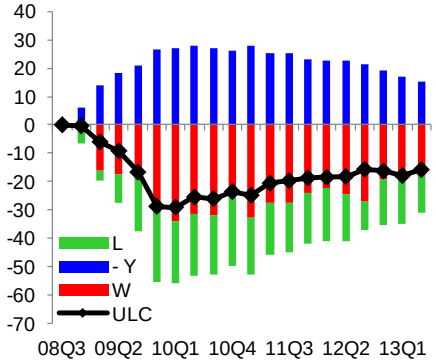
Latvia: Cumulative ULC
(Log difference, peak (08Q3) to 13Q2)

Figure 28. Tradables Sector



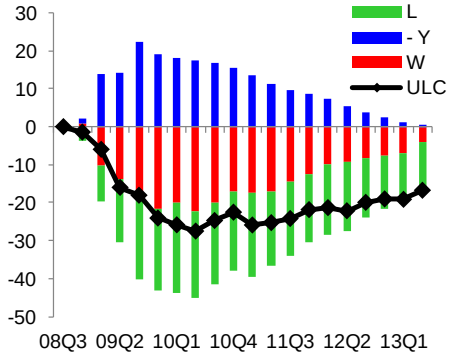
Sources: Haver Analytics; amd IMF staff calculations.

Figure 29. Non-tradables Sector



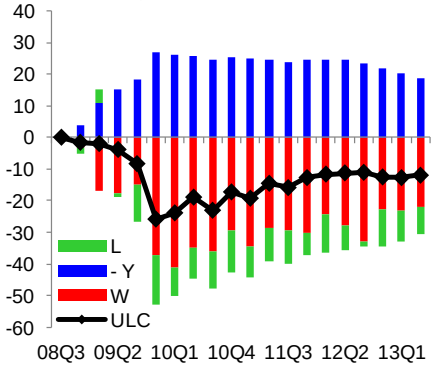
Sources: Haver Analytics; and IMF staff calculations.

Figure 30. Private Sector



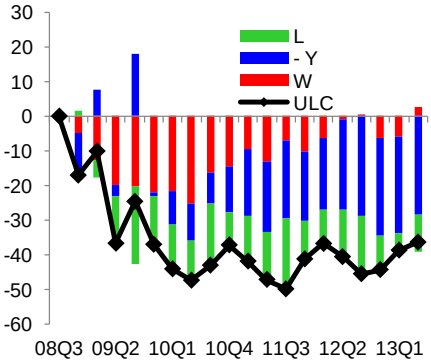
Sources: Haver Analytics; and IMF staff calculations.

Figure 31. Public Sector



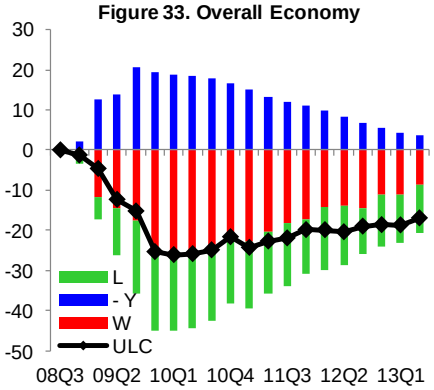
Sources: Haver Analytics; and IMF staff calculations.

Figure 32. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

Figure 33. Overall Economy

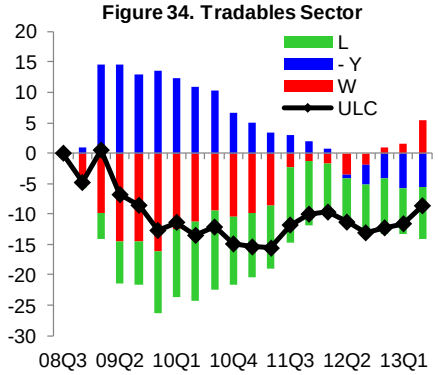


Sources: Haver Analytics; and IMF staff calculations.

Lithuania: Cumulative ULC

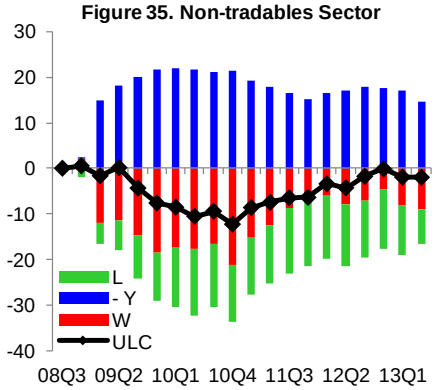
(Log difference, peak (08Q3) to 13Q2)

Figure 34. Tradables Sector



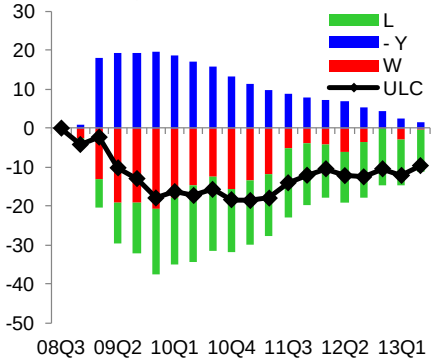
Sources: Haver Analytics; and IMF staff calculations.

Figure 35. Non-tradables Sector



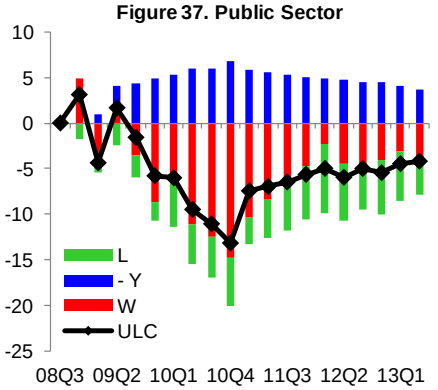
Sources: Haver Analytics; and IMF staff calculations.

Figure 36. Private Sector



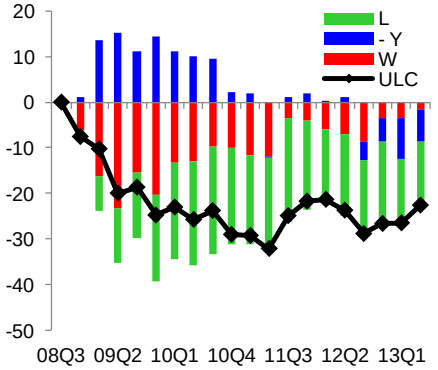
Sources: Haver Analytics; and IMF staff calculations.

Figure 37. Public Sector



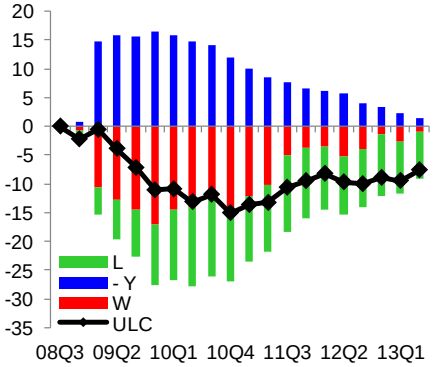
Sources: Haver Analytics; and IMF staff calculations.

Figure 38. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

Figure 39. Overall Economy

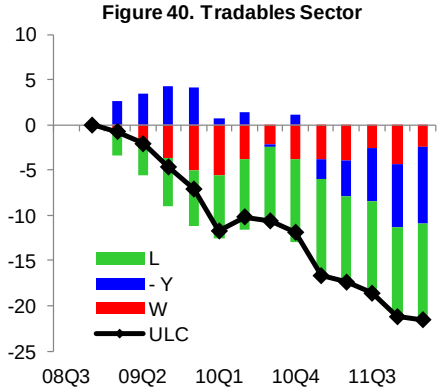


Sources: Haver Analytics; and IMF staff calculations.

Ireland: Cumulative ULC

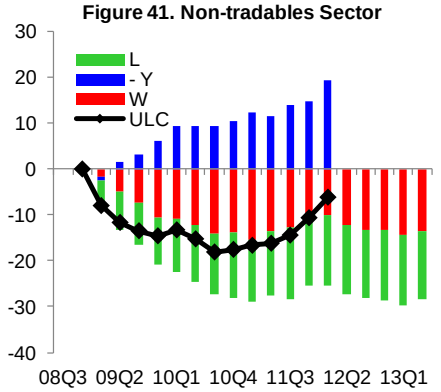
(Log difference, peak (08Q4) to 13Q2)[12]

Figure 40. Tradables Sector



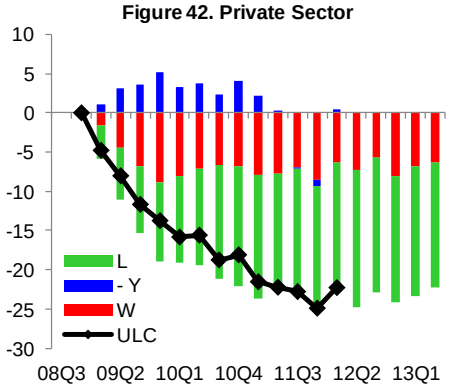
Sources: Haver Analytics; and IMF staff calculations.

Figure 41. Non-tradables Sector



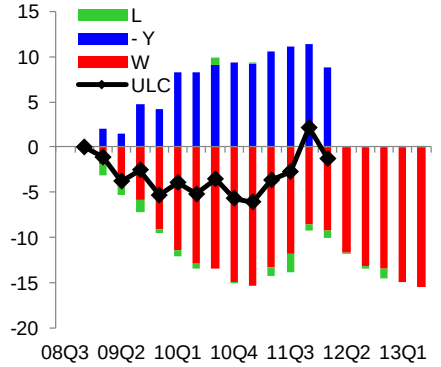
Sources: Haver Analytics; and IMF staff calculations.

Figure 42. Private Sector



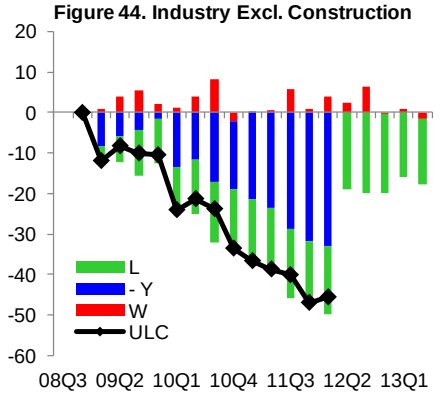
Sources: Haver Analytics; and IMF staff calculations.

Figure 43. Public Sector



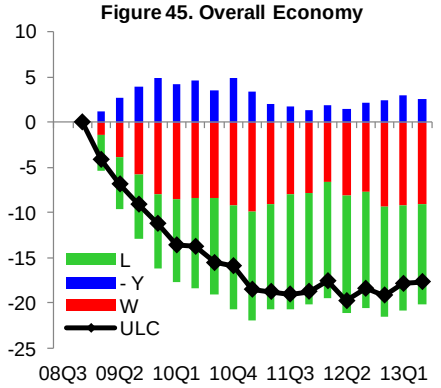
Sources: Haver Analytics; and IMF staff calculations.

Figure 44. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

Figure 45. Overall Economy



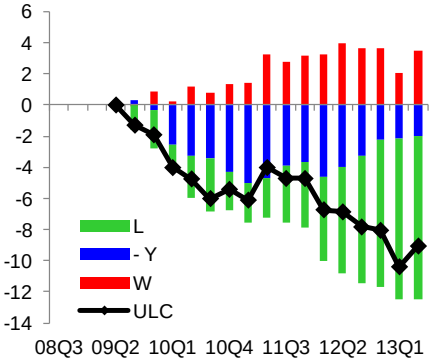
Sources: Haver Analytics; and IMF staff calculations.

[12] Sectoral output data available only up to 2012Q1.

Spain: Cumulative ULC

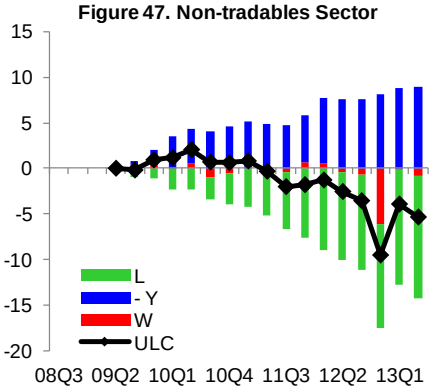
(Log difference, peak (09Q2) to 13Q2)

Figure 46. Tradables Sector



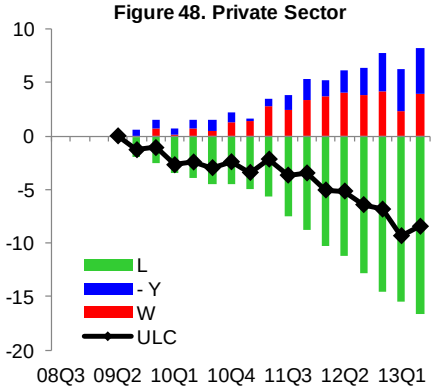
Sources: Haver Analytics; and IMF staff calculations.

Figure 47. Non-tradables Sector



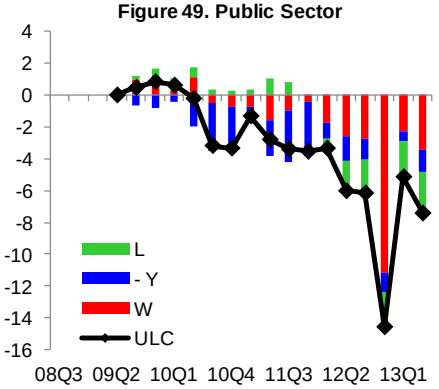
Sources: Haver Analytics; and IMF staff calculations.

Figure 48. Private Sector



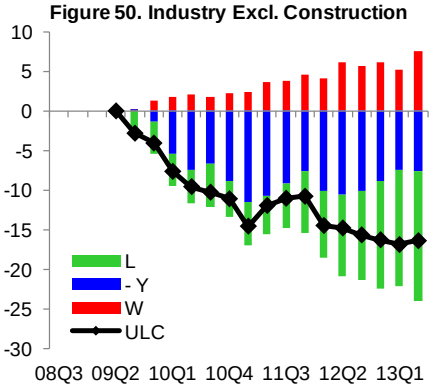
Sources: Haver Analytics; and IMF staff calculations.

Figure 49. Public Sector



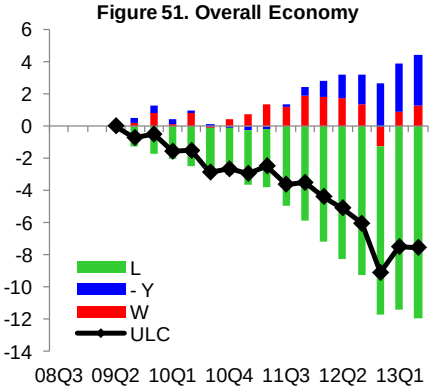
Sources: Haver Analytics; and IMF staff calculations.

Figure 50. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

Figure 51. Overall Economy

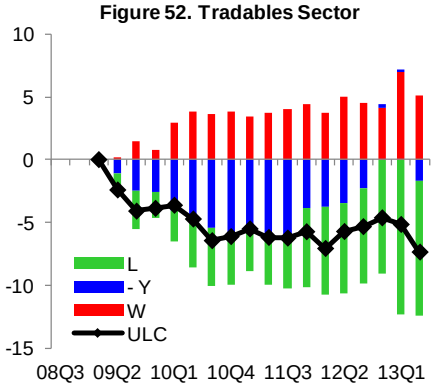


Sources: Haver Analytics; and IMF staff calculations.

Portugal: Cumulative ULC

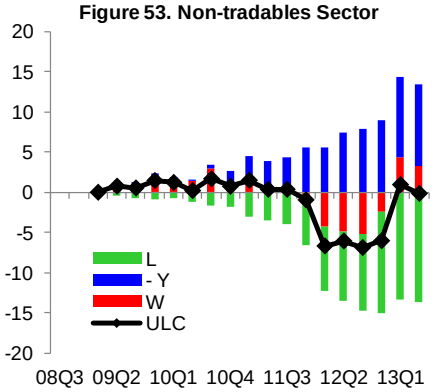
(Log difference, peak (09Q1) to 13Q2)

Figure 52. Tradables Sector



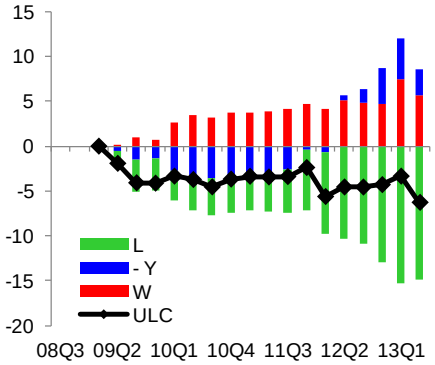
Sources: Haver Analytics; and IMF staff calculations.

Figure 53. Non-tradables Sector



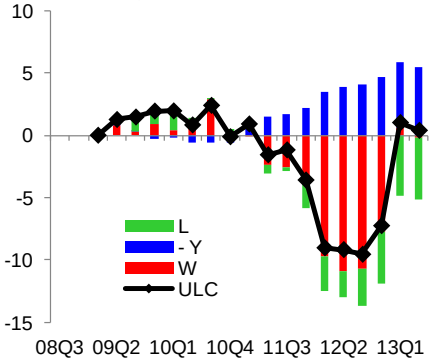
Sources: Haver Analytics; and IMF staff calculations.

Figure 54. Private Sector



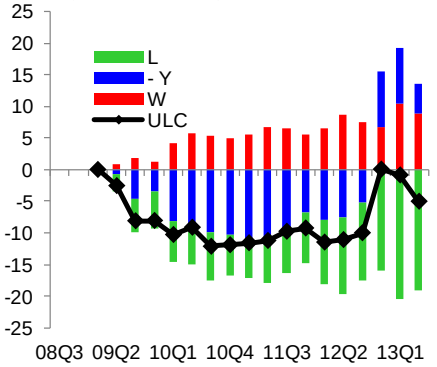
Sources: Haver Analytics; and IMF staff calculations.

Figure 55. Public Sector



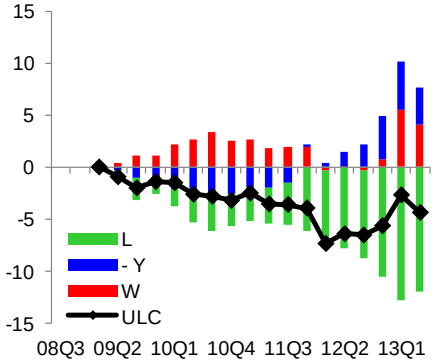
Sources: Haver Analytics; and IMF staff calculations.

Figure 56. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

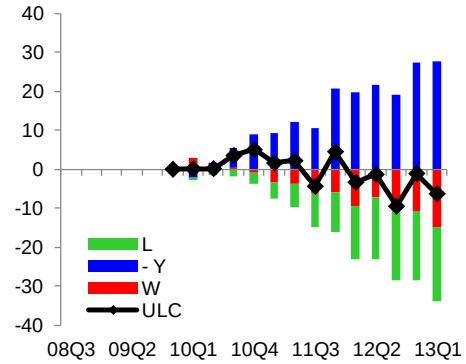
Figure 57. Overall Economy



Sources: Haver Analytics; and IMF staff calculations.

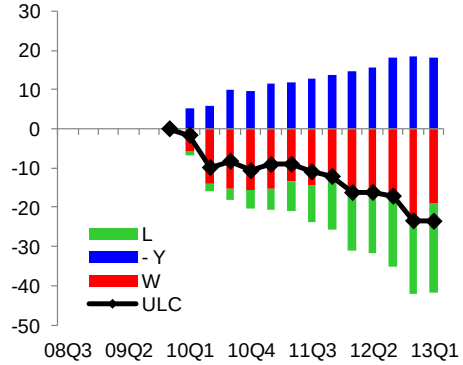
Greece: Cumulative ULC
(Log difference, peak (09Q4) to 13Q1)

Figure 58. Tradables Sector



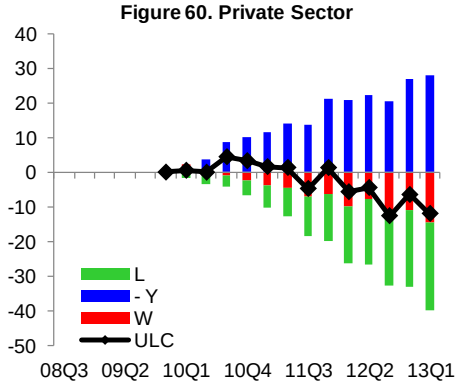
Sources: Haver Analytics; and IMF staff calculations.

Figure 59. Non-tradables Sector



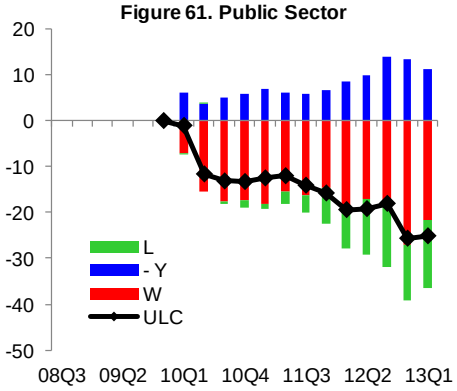
Sources: Haver Analytics; and IMF staff calculations.

Figure 60. Private Sector



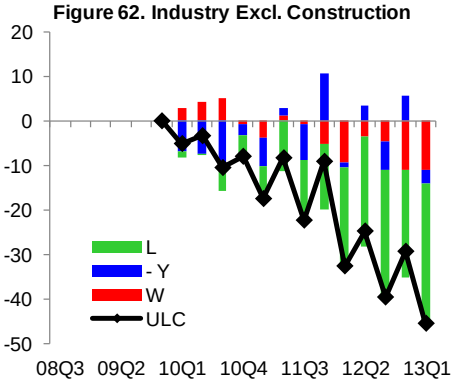
Sources: Haver Analytics; and IMF staff calculations.

Figure 61. Public Sector



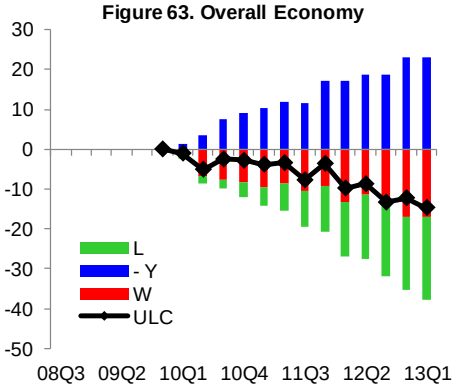
Sources: Haver Analytics; and IMF staff calculations.

Figure 62. Industry Excl. Construction



Sources: Haver Analytics; and IMF staff calculations.

Figure 63. Overall Economy

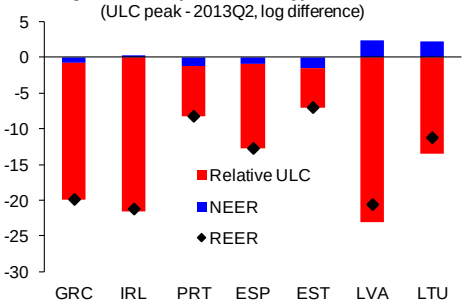


Sources: Haver Analytics; and IMF staff calculations.

V. External Performance

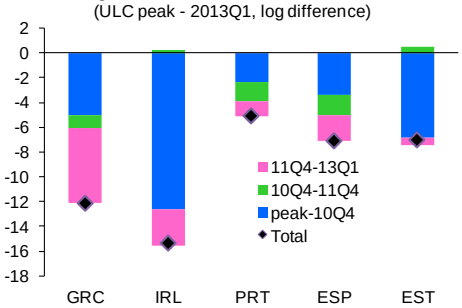
Unit labor costs in these economies have declined more relative to those in trading partners, with economy-wide ULC-based real effective exchange rates (REER) depreciating by about 10 to 25 percent since the beginning of the adjustments (Figure 64). GDP deflator-based REERs for these economies also depreciated, though somewhat less than ULC-based REERs, implying that relative prices have not declined as much as relative labor costs due to larger profit margins (Figure 65).[13] As discussed above, Ireland and the Baltic countries 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 depreciation of nominal exchange rate. It is not only due to the fact that a substantial amount of trade is within the euro area (or with those pegged to the euro) but also due to the fact that the euro itself has not depreciated substantially over this period, perhaps because the euro area overall does not need substantial external adjustment (Figure 66). Similarly, most of the adjustment has been carried out by the deficit countries, while unit labor costs are not rising substantially in surplus countries (Figure 67).

Figure 64. ULC (Total Economy)-based REER
(ULC peak - 2013Q2, log difference)



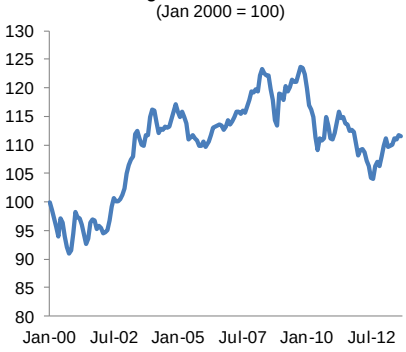
Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), EST (08Q4), LVA (08Q3), LTU(08Q3).
Source: Haver Analytics.

Figure 65. GDP Deflator-based REER
(ULC peak - 2013Q1, log difference)



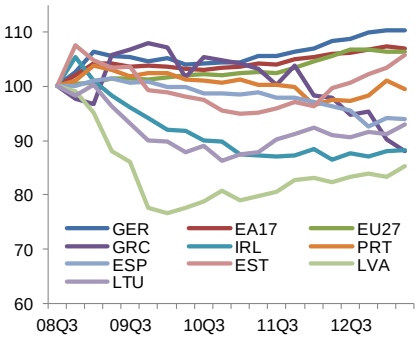
Peaks: GRC (09Q4), IRL (08Q4), PRT (09Q1), ESP (09Q2), EST (08Q4), LVA (08Q3), LTU(08Q3).
Source: Haver Analytics.

Figure 66. Euro NEER
(Jan 2000 = 100)



Source: Haver Analytics.

Figure 67. Economy-wide ULC
(2008Q3=100)

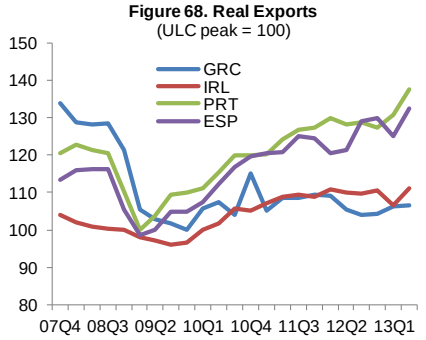


Sources: Haver Analytics; and IMF staff calculations.

[13] Value-added REER (or similarly GDP deflator-based REER) conceptually better capture the competitiveness. See Bems and Johnson (2012) for detailed discussion.

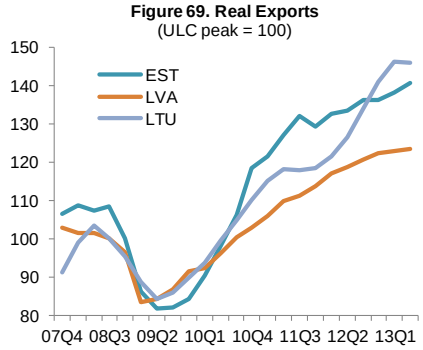
Export quantities have responded to these price adjustments. Real exports rebounded in response to declining unit labor costs as well as the recovery of global trade, with export volume in every country but Greece having recovered and surpassed the 2007Q4 levels (Figures 68–69). Global merchandise export market share, which fell during the crisis, has also begun to rebound in the Baltics and appears to have stabilized in others (Table 2).

Figure 68. Real Exports
(ULC peak = 100)



Peaks:GRC(09Q4),IRL(08Q4),PRT(09Q1),ESP(09Q2).
Sources: Haver Analytics; and IMF staff calculations.

Figure 69. Real Exports
(ULC peak = 100)



Peaks:EST(08Q4), LVA (08Q3), LTU(08Q3).
Sources: Haver Analytics; and IMF staff calculations.

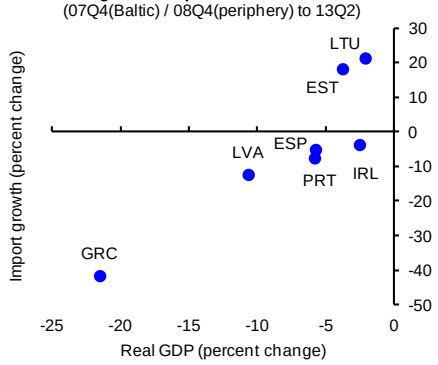
Table 2. Merchandise Export Market Shares (in percent)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Greece	0.180	0.167	0.153	0.157	0.173	0.163	0.173	0.176	0.187	0.191	0.193	0.179	0.182	0.189
Ireland	1.232	1.160	1.305	1.330	1.204	1.107	1.019	0.881	0.851	0.762	0.910	0.732	0.661	0.606
Portugal	0.422	0.354	0.376	0.387	0.411	0.379	0.360	0.362	0.368	0.348	0.349	0.321	0.323	0.314
Spain	1.784	1.644	1.714	1.791	2.015	1.925	1.785	1.720	1.766	1.705	1.782	1.632	1.639	1.562
Estonia	0.052	0.058	0.063	0.066	0.073	0.063	0.072	0.078	0.077	0.076	0.071	0.070	0.084	0.083
Latvia	0.030	0.028	0.032	0.035	0.038	0.042	0.048	0.050	0.058	0.061	0.061	0.061	0.070	0.075
Lithuania	0.052	0.058	0.072	0.083	0.093	0.099	0.109	0.115	0.120	0.144	0.130	0.132	0.150	0.158

Source: IMF, Direction of Trade Statistics; and IMF staff calculations.

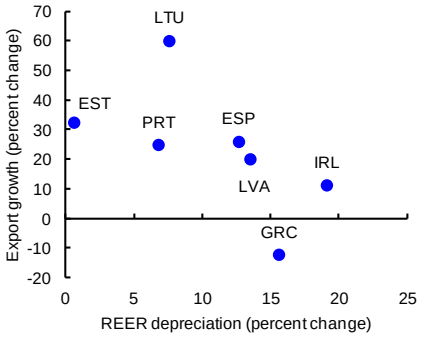
The adjustment has broadly proceeded as standard theory would suggest. Countries with larger output contractions have had larger declines in imports (Figure 70). While there is no perfect relationship between the change in real exchange rate and export performance, real exports are broadly rising (except in Greece) as real exchange rates have depreciated (Figure 71). Interestingly, the countries with the biggest depreciation of real exchange rates (Ireland and Latvia) have actually had smaller export increases.

Figure 70. Imports and Real GDP
(07Q4(Baltic) / 08Q4(periphery) to 13Q2)



Sources: Haver Analytics; and IMF staff calculations.

Figure 71. Exports and REER
(07Q4(Baltic) / 08Q4(periphery) to 13Q2)



Sources: Haver Analytics; and IMF staff calculations.

The large improvements in the current account can be broadly explained by standard trade elasticities with respect to changes in exchange rates and output. In Table 3 below, the first three columns show the size of output contraction, the change in ULC-based REERs as well as the change in actual current account for four years after the beginning of the adjustment (from 2008 to 2012 for the euro area periphery countries and from 2007 to 2011 for the Baltic countries). To calculate a rough estimate of predicted change in current account balances, we apply income elasticity towards trade balance of 2 following (in between estimates in IMF (1998) and Freund (2009)), and export and import elasticities with respect to real exchange rates of .71 and .08 following the IMF CGER methodology.[14] The predicted changes in current account balances in the fourth column show that the actual adjustment was quite close to that predicted for Latvia's and Estonia, while was larger than predicted in Portugal, Spain, and Lithuania. In Ireland's case, predicted adjustment in current account is much larger than actual adjustment due to high export- and import-to-GDP ratios.[15] The last column, which calculates the share of predicted adjustment due to changes in REER, shows that in general less than half of the predicted adjustment comes from real exchange rate adjustment. Given the larger actual than predicted adjustment, this means an even smaller portion of actual adjustment is due to the real exchange rate.[16] This difference in relative contribution from changes in exchange rates and output would be partly due to different timing of adjustment and corresponding lagged effect. Trade elasticities with respect to changes in exchange rates and output could also be different across countries reflecting different mix of products and geographical exposures. Tressel and Wang (2013) also found that strong export demand from outside the euro area has been the main drive of export recovery after the crisis with limited contribution from relative price adjustments while negatively affected by weak external demand within the euro area.

Table 3. Contribution of GDP Decline and REER Depreciation to CA Improvement
(In percent, 2008-12 for periphery Europe and 2007-11 for the Baltics)

	GDP change	REER change	CA change	Predicted CA Change	Contribution from REER
Greece	-20	-13	12.0	12	22%
Ireland	-4	-22	10.6	20	81%
Portugal	-5	-7	11.1	4	45%
Spain	-5	-12	8.6	4	60%
Lithuania	-6	-8	10.8	8	45%
Latvia	-17	-13	20.3	19	25%
Estonia	-8	-3	18.1	9	19%

Sources: Haver Analytics; and IMF staff calculations.

[14] See Lee et al. (2008) for details.
[15] The high export and import shares in Ireland arithmetically generate a very large adjustment share to the real exchange rate. Higher current account sensitivity to REER in Ireland is somewhat overstated in this calculation since substantial amount of imports are inputs into exports.
[16] See Blanchard, Griffiths, and Gruss (2013) for more discussion on how internal devaluation has worked in Latvia's adjustment. Recent work by Bems and di Giovanni (2013) suggests an additional channel beyond the standard price based expenditure switching and income based expenditure reductions. As Latvia became poorer, residents switched to cheaper/lower quality local products – even as relative prices did not change. This "income induced expenditure switching" may help explain the sizable adjustment in some countries.

VI. WHERE ARE WE NOW?

While current account deficits have narrowed significantly, the question still remains whether the relative price adjustments have been sufficient enough to recover external balances for these economies, in other words, to narrow the cyclically-adjusted current account gap. The relatively small portions of adjustment attributable to relative price adjustment are not encouraging. If the output gap is large, then the cyclically-adjusted current account deficit is still large as well, implying that more relative price adjustment is needed to recover external balances. Official estimates by the IMF and European Commission indicate that, as of 2012, the output gaps were less than 2 percent in the Baltic countries, between 2 to 5 percent in Ireland, Portugal, and Spain, and between 8 to 12 percent for Greece (Table 4). These estimates suggest that the cyclically-adjusted current account deficit in Greece was still substantially large at about 6 to 8 percent of GDP in 2012 relative to a headline deficit of about 3 percent. While the cyclically-adjusted current account deficit in Portugal was about 3 percent of GDP, the other countries are estimated to have relatively small cyclically-adjusted current account deficits.[17]

Table 4. Output Gaps
(2012, in percent of potential GDP)

	IMF	EC
Greece	-7.7	-12.2
Ireland	-1.7	-1.3
Portugal	-3.9	-3.5
Spain	-3.6	-4.6
Estonia	-0.1	1.4
Latvia	-2.4	-1.2
Lithuania	-1.2	-0.5

Sources: IMF, *World Economic Outlook, October* 2013; and European Commission.

However, the size of cyclically-adjusted current account deficits could be larger if one considers high unemployment rates in these countries. Employment has declined considerably across all countries and this drop is observed not just in "bubble" sectors like construction but in the overall economy (Figures 72–73 show the extent of employment decline by sector). As noted above, all countries have lost employment even in the tradables sector, and the substantial slack across all sectors suggests a sizable output gap.[18]

One can also obtain current output gaps based on the estimates of country-specific Okun's law coefficients,[19] using several estimates for the steady state level of unemployment including long-run unemployment, HP-filtered estimate through 2012, and HP-filtered series through 2007 and extended up to 2012. We found that, even with relatively high estimates of the steady state level of the unemployment rate, the current output gaps could be still quite large: much more than 10 percent in the euro area periphery countries, and more than 20 percent in Greece (Table 5).[20] Output gaps are estimated to be close to 5 percent in Latvia and

[17] Following the EBA 2.0 approach by IMF (2013a), the cyclical component of the current account-to-GDP ratio for a given country is computed as the difference between the world's output gap and that country's output gap multiplied by a constant coefficient of 0.4. This coefficient is close to the average of country-specific cyclical adjustment parameters used in OECD (forthcoming).

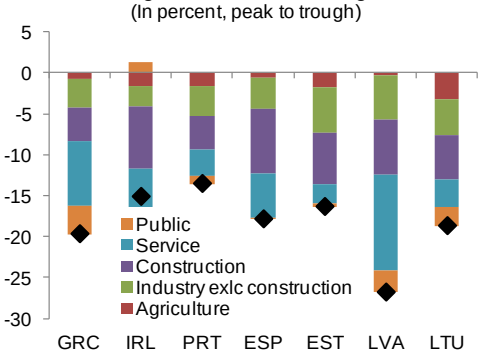
[18] However, if adjustment back to equilibrium is very slow, the current account would not necessarily deteriorate significantly in the short term. Some of these countries (e.g. Spain) could face a slow recovery with subdued employment growth over the medium term with recovery of exports on the back of external competitiveness gains. If the return to full employment is slow and accompanied by competitiveness gains, CA deficits would not re-emerge as the output gap is closed. This would imply, though, an extended period of above equilibrium unemployment.

[19] See Ball, Leigh, and Loungani (2013).

[20] See Appendix II for details including various measures for steady state level of unemployment.

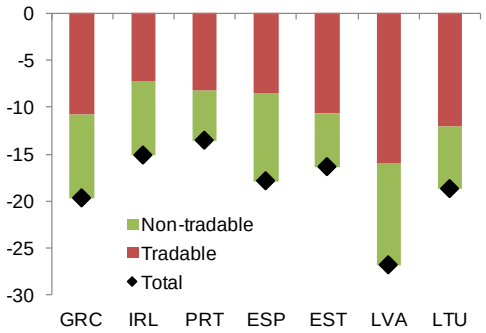
Lithuania and close to zero in Estonia.[21] If we apply these estimates, the cyclically-adjusted current account deficits in these countries are still quite large—2 to 5 percent in Latvia and Lithuania, more than 5 percent of GDP in Portugal and Spain, and over 10 percent in Greece—with the exception of Estonia and Ireland who are almost at balance.[22, 23]

Figure 72. Labor Shedding
(In percent, peak to trough)



Peaks: GRC(08Q4),IRL(07Q4),PRT (08Q2),ESP (08Q1),EST(08Q1),LVA(08Q1),LTU(07Q3).
Sources: Haver Analytics; and IMF staff calculations.

Figure 73. Labor Shedding
(In percent, peak to trough)



Troughs: GRC(13Q1) IRL(12Q2),PRT(13Q1), ESP(13Q1),EST(10Q2),LVA(11Q1),LTU(12Q4).
Sources: Haver Analytics; and IMF staff calculations.

Table 5. Cyclically-adjusted Current Account Balances
(in percent)

	Long-run unemployment rates	Unemployment rates in June 2013	Implied output gap	Current account balances in 2012	Cyclically-adjusted current account balances
Greece	15	27	20 - 30	-3	-10 to -15
Ireland	9	14	10 - 15	5	0
Portugal	10	17	10 - 20	-2	-5 to -10
Spain	15	26	10 - 20	-1	-5 to -10
Estonia	8	8	0	-1	-1
Latvia	10	13	-5	-2	-2 to -5
Lithuania	9	12	-5	-1	-2 to -5

Sources: Haver Analytics; and IMF staff calculations.

[21] These gaps have come down considerably in the last year as unemployment rates fell.
[22] For the lower official estimated output gaps to be accurate, the long run unemployment rate would need to be above 20 percent in Spain and Greece, and about 15 percent in Ireland and Portugal unless unemployment falls without unusual output gains. For this, though, productivity would fall, likely reversing the ULC gains.
[23] If the long-run unemployment rates in Latvia and Lithuania are as high as 12 percent, they would have effectively no output gap at this time.

VII. CONCLUSION

Given the need for relative price adjustment to achieve both internal and external balances, tangible progress in lowering tradables unit labor costs has been made in most countries (except Greece) through lower wages and/or higher productivity relative to trading partners. Furthermore, real exports have rebounded. This, together with import compression, has contributed to significant improvement in current account balances. But, employment even in the tradables sector has not recovered to pre-crisis levels and unemployment rates still remain very high in all countries. That is, the adjustment is not yet triggering benefits to the overall economy, partly because the adjustment is taking place within a sustained recession, and partly because the adjustment itself is not generating enough demand to strengthen the economies (tradables employment is still below pre-crisis). Different response of wages and employment across sectors as well as export performance could be due to many factors including different timing of adjustment, different mix of products and geographical exposures across countries, idiosyncratic shocks within each country (for example political crisis and euro exit fears in Greece), and structural factors such as wage bargaining mechanisms, among others. Given the state of the economy, cyclically-adjusted current account deficits could still be fairly sizable. If the output gaps are in fact larger than being officially estimated, that would be good news for fiscal adjustment as there is more room for growth recovery, but it implies more need for relative price adjustment to avoid a re–emergence of large external imbalance and to reach full employment.

REFERENCES

Atoyan, Ruben, Jonathan Manning, and Jesmin Rahman, 2013, "Rebalancing: Evidence from Current Account Adjustment in Europe," IMF Working Paper, WP/13/74 (Washington: International Monetary Fund).

Bakker, Bas, and Christoph Klingen, 2012, "How Emerging Europe Came Through the 2008/09 Crisis: An Account by the Staff of the IMF's European Department" (Washington: International Monetary Fund).

Ball, Laurence, Daniel Leigh, and Prakash Loungani, 2013, "Okun's Law: Fit at 50?" IMF Working Paper, WP/13/10 (Washington: International Monetary Fund).

Bayoumi, Tamim, Richard Harmseen, and Jarkko Turunen, 2011, "Euro Area Export Performance and Competitiveness," IMF Working Paper, WP/11/140 (Washington: International Monetary Fund).

Bems, Rudolph and Robert Johnson, 2012, "Value-Added Exchange Rates," NBER WP 18498 (Cambridge, Massachusetts: National Bureau of Economic Research).

Bems, Rudolph and Julian di Giovanni, 2013, "Income-Induced Expenditure Switching," manuscript (Washington: International Monetary Fund).

Berger, Helge, and Volker Nitsch, 2010, "The Euro's Effect on Trade Imbalances," IMF Working Paper, WP/10/226 (Washington: International Monetary Fund).

Blanchard, Olivier, Mark Griffiths, and Bertrand Gruss, 2013, "Boom, Bust, Recovery: Forensics of the Latvia Crisis," *Brookings Papers on Economic Activity*, forthcoming Fall 2013.

Chen, Ruo, Gian-Maria Milesi-Ferretti, and Thierry Tressel, 2012, "External Imbalances in the Euro Area," IMF WP/12/236 (Washington: International Monetary Fund).

European Central Bank, "Competitiveness and External Imbalances within the Euro Area," 2012, Occasional Paper Series No. 139 (Frankfurt, Germany: European Central Bank).

Freund, Caroline, 2009, "The Trade Response to Global Downturns: Historical Evidence," World Bank Policy Research Working Paper 5015.

International Monetary Fund, 1998, "Exchange Rate Assessment: Extension of the Macroeconomic Balance Approach," IMF Occasional Paper 167.

_____, 2011, "Ireland: First and Second Reviews Under the Extended Arrangement and Request for Rephasing of the Arrangement," IMF Country Report No. 11/109 (Washington: International Monetary Fund).

_____, 2013a, *External Balance Assessment (EBA): Technical Background of the Pilot Methodology*, www.imf.org/external/np/res/eba/pdf/080913.pdf

_____, 2013b, "Ireland: Tenth Review Under the Extended Arrangement," IMF Country Report No. 13/163 (Washington: International Monetary Fund).

Ivanova, Anna, 2012, "Current Account Imbalances: Can Structural Policies Make a Difference?" IMF Working Paper, WP/12/61 (Washington: International Monetary Fund).

Jaumotte, Florence, and Piyaporn Sodsriwiboon, 2010, "Current Account Imbalances in the Southern Euro Area," IMF Working Paper, WP/10/139 (Washington: International Monetary Fund).

Kang, Joong Shik, and Jay Shambaugh, 2013, "The Evolution of Current Account Deficits in the Euro Area Periphery and the Baltics: Many Paths to the Same Endpoint," IMF Working Paper, WP/13/169 (Washington: International Monetary Fund).

Lane, Philip, and Barbara Pels, 2012, "Current Account Imbalances in Europe," CEPR Discussion Paper No. DP8958.

Lee, Jaewoo, Gian Maria Milesi-Ferretti, Jonathan Ostry, Alessandro Prati, and Luca Ricci, 2008, "Exchange Rate Assessments: CGER Methodologies," IMF Occasional Paper No. 261 (Washington: International Monetary Fund).

Nkusu, Mwanza, 2013, "Boosting Competitiveness to Grow Out of Debt—Can Ireland Find a Way Back to Its Future?" IMF WP 13/35 (Washington: International Monetary Fund).

Organization for Economic Co-operation and Development, forthcoming, *International Imbalances: Recent Developments and Medium-Term Outlook.*

Shambaugh, Jay, 2012, "The Euro's Three Crises," *Brookings Papers on Economic Activity*, Spring 2012, pp. 157–211.

Tressel, Thierry, and Shengzu Wang, 2013, "Rebalancing the Euro Area," forthcoming IMF WP (Washington: International Monetary Fund).

APPENDIX I: SECTORAL CLASSIFICATION

European industry standard classification system (NACE)

- Agriculture, Forestry & Fishing
- Private sector
  - Industry
    - Industry excluding construction
      - Manufacturing
    - Construction
  - Service
    - Trade, Travel, Accommodation & Food
    - Information & Communication
    - Financial Insurance
    - Real Estate
    - Professional, Science & Tech
- Public sector
  - Public Admin, Education & Social Work
  - Arts, Entertainment & Recreation

APPENDIX II: CYCLICALLY-ADJUSTED CURRENT ACCOUNT BALANCES

Cyclically-adjusted Current Account Balances

(in percent)

	Okun's Law Coefficients 1/	Coefficients that were used in this calculation 2/	Long-run unemployment rates from HP through 2011	Long-run unemployment rates from HP through 2007 and extension	Long-run unemployment rates	Long-run unemployment rates that were used 3/	Unemployment rates in June 2013	Unemployment Rate gap	Implied Output Gap	Current account balances in 2012	Cyclically-adjusted current account balances
Greece		2.5	12.7	8.6	11	15.0	26.9	11.9	29.8	-3.1	-15.0
Ireland	2.6	2.5	12.1	4.0	8	9.0	13.5	4.5	11.3	4.9	0.4
Portugal	3.8	2.5	12.0	8.9	7	10.0	17.4	7.4	18.5	-1.5	-8.9
Spain	1.2	1.2	18.0	8.0	14	15.0	26.3	11.3	13.6	-1.1	-6.5
Estonia	2.4	2.4			8.4	8.4	8	-0.4	-1.0	-1.2	-0.8
Latvia	2.8	2.5			9.9	10.0	12.5	2.5	6.3	-1.7	-4.2
Lithuania	2.0	2.0			9.2	9.2	11.7	2.5	5.0	-0.5	-2.5

1/ From Ball, Leigh, and Loungani (2013)

2/ Truncated to 2.5 if estimated coefficients are higher than 2.5 for conservative calculation

3/ For conservative calculation