

# The signatures of Euro area imbalances<sup>1</sup>

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## Abstract

Growing current account imbalances within the euro area were not driven by divergences in export performance between surplus and deficit countries. While current account dynamics are highly correlated with unit labor costs (ULC) and imports, this is not the case for exports. Rising unit labor costs were not a cause but a symptom of the demand shock triggered by the inflow of capital and they were not necessarily associated with losses in export competitiveness. Detailed sectoral data on ULC confirm that the bulk of the appreciation in unit labor costs is due to price developments in the non-tradable sector.

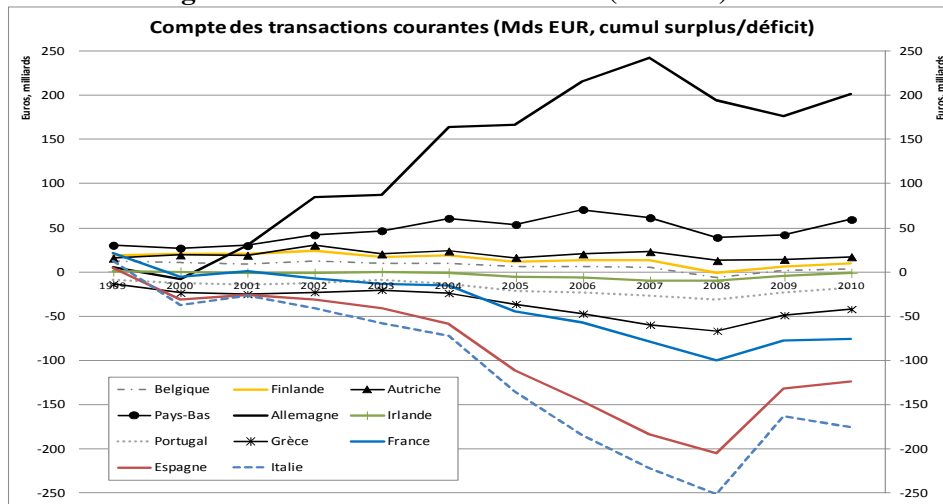
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<sup>1</sup> This paper represents the views of the authors and does not necessarily reflect those of Banque de France.

## Introduction

The widening of intra-euro-area imbalances since the creation of the euro has gone hand in hand with a balanced current account of the euro area (EA) with the rest of the world (Figure 1). Growing current account deficits in crisis countries have been matched by growing surplus in Germany, the Netherlands and Austria. Countries structurally in current account deficit (Spain, Greece and Portugal) experienced a deepening of their current account deficits, exceeding 10% of GDP in 2007, while France and Italy went from a surplus to a deficit (respectively -1.0% and -2.4% in 2007). These long lasting current account imbalances are central to the understanding of the current euro area crisis (Lane and Milesi-Ferretti, 2011).

**Figure 1: Current account balances (bn EUR)**



Source: Eurostat

Current account deficits or surplus are not by themselves markers of economic performance or vulnerability, and their progressive widening inside the euro area has been neglected for long (Giavazzi and Spaventa, 2010). Imbalances may be “good” or “bad”, depending on whether they reflect convergence forces (flows of capital from rich EU to poorer catching-up EU countries) or the misallocation of capital (private credit booms not backed by productive investments, housing bubbles...). While at the global level capital does not flow systematically from rich to poor countries, it does within the EU (Blanchard and Giavazzi, 2002), in line with a convergence process driven by the European integration of capital and goods markets. Lane & Pels (2012) confirm that capital flows from rich to poor EU countries since the advent of the euro, and show that growth forecasts are strongly linked to the current account balance. Determinants of intra-euro-area imbalances of current account are however difficult to identify *robustly*, ex-ante as well as ex-post (Eichengreen, 2010). In this policy paper, we look for markers of the sources of imbalances, focusing on the signatures of the crisis on the real side of the balance of payment and the link between trade performance and unit labor costs.

Current account dynamics hides differences in developments between tradable and non-tradable sectors.<sup>2</sup> Indeed, while the current account balance in euro-zone countries is highly correlated with unit labor costs (ULC) and imports, this is not the case for exports. The latter are very weakly correlated with both the current account and with the ULCs: deficit countries like Spain or Greece had similar growth of exports of goods and services over 1999/2007 than Germany. Deficit countries are however those where ULC grew the fastest, suggesting an explanation of imbalances through the bottom of the balance of payments. The link between growing current account deficit and ULC therefore goes

<sup>2</sup> Other components of the current account than the trade balance have also played a role in some countries. Growing current account deficits in the 1990s.

through increasing demand for imports fueled by increasing domestic demand in the periphery following financial integration inside the euro area.

Detailed sectoral data on ULC confirms that ULC growth was largely driven by the growth of value added (VA) price indices in non tradable sectors: the bulk of the appreciation in unit labor costs is due to price developments in the non-tradable sector, with the effect being largest in the crisis-countries of the EA. Exports were largely unaffected by the shock in domestic demand because they respond primarily to foreign demand and exogenous international prices. Moreover, German firms did not pass through most of their cost competitiveness gains (due to wage moderation) onto prices. Rising unit labor costs were therefore not a cause but a symptom of the demand shock triggered by the inflow of capital and they were not necessarily associated with losses in export competitiveness.

The partial rebalancing since 2007 mainly reflects demand (and import) contraction in deficit countries. Faster growth of extra-EU goods exports in Spain, Portugal and Greece than the rest of the EA also contributed to deflate current account deficits in 2011. The recent performance of exporters in the periphery confirms that competitiveness in the tradable sector is not at stake in deficit EA countries, and that exports are likely to respond to symmetric demand rebalancing involving surplus countries. A compression of demand addressed to deficit countries, due to generalized contractionary policies in their main markets within the EU, would, unnecessarily, make the adjustment through demand reductions and prices more painful.

A proper and complete understanding of the source of current account imbalances following the creation of the EA is essential to the future design and management of the euro area. The new surveillance mechanism aims at complementing the EC monitoring of budget deficit rules by an additional monitoring of external imbalances and trade competitiveness. The identification of “good” and “bad” current account imbalances requires complementary information to assess their potential risks. Focusing on current account balances ignores important gross dynamics of exports and imports. Moreover, the significant contribution of prices deflators in the non tradable sector to the growth of aggregate ULCs since the creation of the euro calls for caution when using unit labor costs as indicator of trade performance. First, aggregate ULCs growth may hide divergences between tradable and non-tradable sectors and are not straightforwardly linked to ULCs of individual exporters, absent firm level prices indices. Second, the link between firms’ ULCs and export performance can be dampened by the incomplete pass-through of costs into prices and by non price competitiveness effects.

The paper proceeds as follows. Section 1 presents evidence on export competitiveness and the dynamics of unit labor costs. Section 2 focuses on unit labor costs and their decomposition.

## **1. Trade competitiveness imbalances?**

### **a. Current accounts, unit labor costs and trade performance.**

Changes in national current account balances between 1999 and 2007 are correlated with developments of unit labor costs (ULC): as shown by Figure 2, countries that improved their current account over the period (in percentage point of GDP) are those whose ULC stagnated (Germany, Austria, Netherlands) while countries whose current account deteriorated experienced large increases in ULC (Greece, Spain, Ireland). Portugal is an exception among peripheral countries since its current account deficit largely pre-existed to the euro.<sup>3</sup>

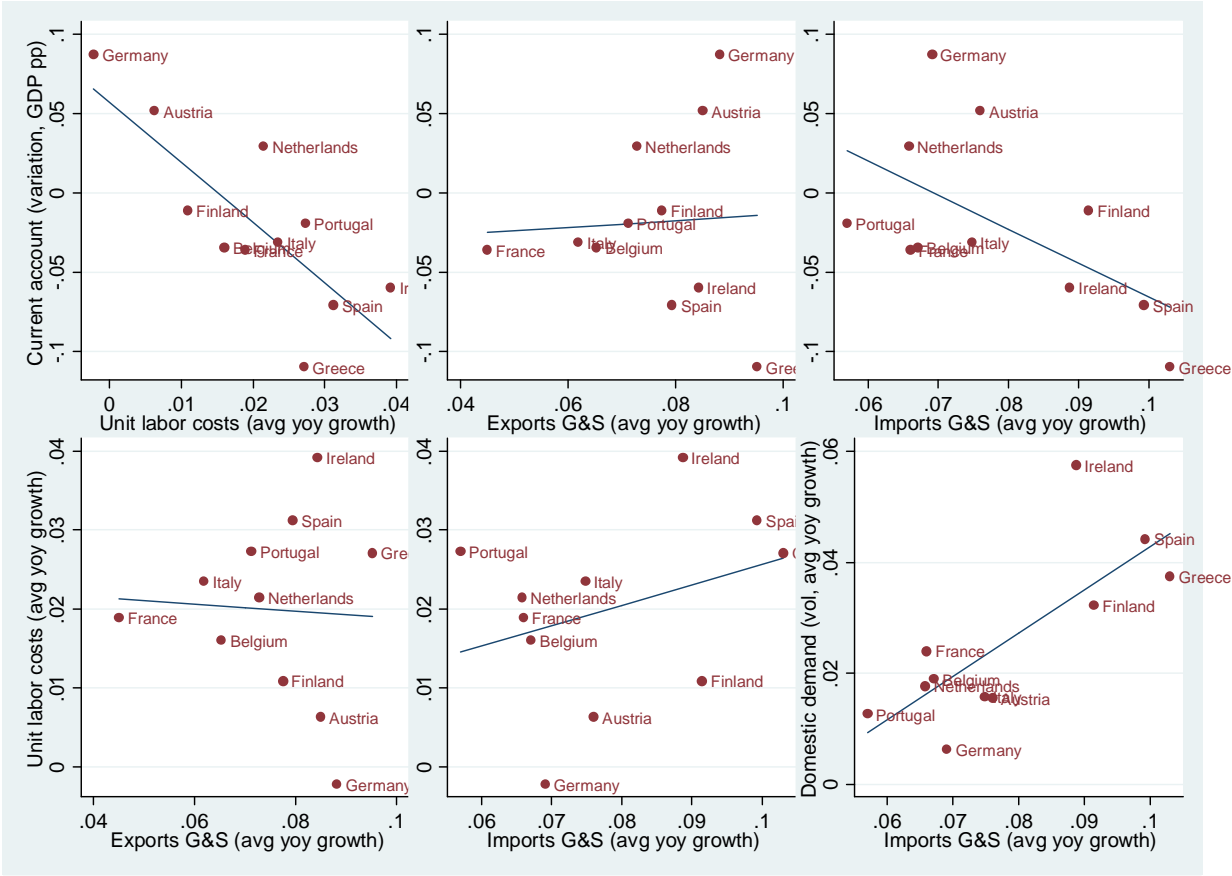
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<sup>3</sup> In Portugal, and to a lesser extent Greece, structural deficits of the trade balance were matched from 1980 to mid-1990s by large surplus in public transfers and remittances, representing up to 10% of GDP for Portugal and 5% for Greece. The erosion of the public transfer balance (in particular EU structural and cohesion funds, also reported in the capital account) and remittances prior to the creation of the euro generated a large, structural, current account deficit reaching 10% of GDP in Portugal and more than 5% in Greece, while the trade deficit remained stable (Figure A1 in appendix).

Export performance do not appear to be a channel of transmission between current account and ULC since changes in world export markets shares are mostly uncorrelated to both of them (correlation of 0.05 and -0.05 respectively). Germany and Austria, atypical by their stagnation of ULC, exhibit average growth of exports similar to those of Greece or Spain, whose ULC increased more than 3% a year on average. On the other side, France had an increase in its ULC similar to the euro area average and a sluggish growth of its exports.

On the contrary, imports appears correlated to current account developments: the coefficient of correlation between the annual growth rate of imports and changes in current account is -0.58. Furthermore, changes in domestic demand are correlated to both current accounts and ULC changes (-0.69 and 0.71 respectively).

**Figure 2: Changes in current accounts, ULC and exports and imports, 1999/2007**



Source: Eurostat. Exports and imports in current euros.

**b. Shift-share analysis:**

The picture is even clearer when the geographical and sectorial specializations of countries are taken into account. Following Gaulier et al., (2012), we decompose export growth based on a weighted variance analysis of bilateral export data, disaggregated by product. Specifically, we estimate:

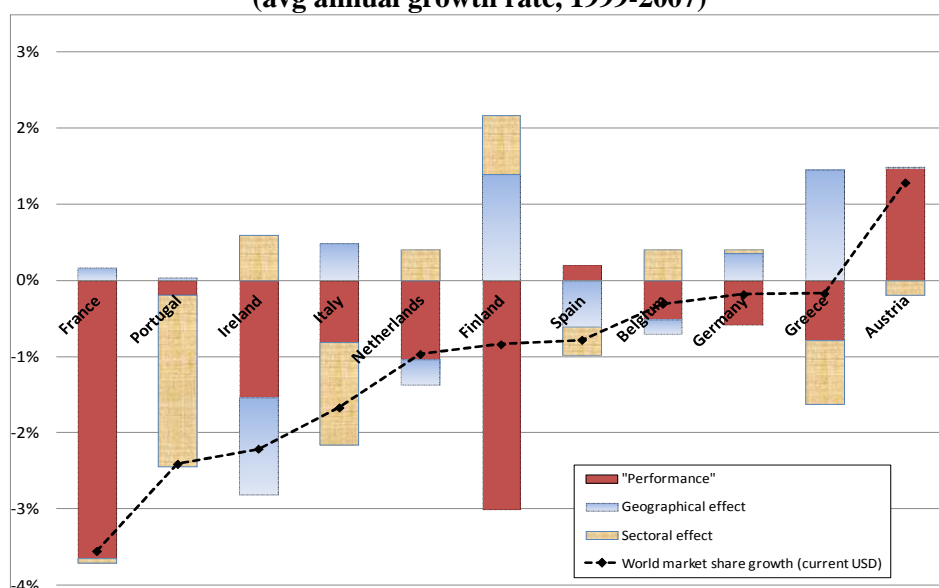
$$X_{ijkt} = \alpha_{it} + \beta_{jt} + \gamma_{kt} + \varepsilon_{ijkt}$$

where  $\alpha_{it}$ ,  $\beta_{jt}$  and  $\gamma_{kt}$  are fixed effects by exporter  $i$ , importer  $j$  and product  $k$  specific to time  $t$ .  $X_{ijkt}$  is disaggregated export growth<sup>4</sup>. The model identifies the export growth of each exporting country as if all exporters had the same geographical and sectorial specialization. This is important for export data, as export growth rates are affected by structural effects: exporters with strong positions in the most dynamic destination markets or specialized in high growth sectors benefit *ceteris paribus* from stronger growth. With this methodology, “pure” exporter performance can be assessed separately from geographic and sectorial effects. Export growth is composed of two different types of effects: “pull” (or compositional) effects and “push” (or performance) effects. Two countries may actually have similarly competitive bundles of export firms, but overall export performance of one country will be higher because it has a more favorable (at the time) composition of exports, in terms of both geographical markets and sectors.

Figure 3 presents the shift-share analysis of export market share dynamics for EA countries using bilateral trade data at the HS6 level of disaggregation from BACI over the period 1999/2007. The dimension of export performance specific to the country is particularly negative in the case of France and Finland only (and Ireland to a lesser extent). Portugal, Italy and Greece suffer from their sectorial specialization (textile, competition from emerging countries) but have a country specific performance close to the German one. Spain outperforms Germany once its relatively detrimental specialization is averaged out.

Export competitiveness is likely to be the main determinant of growing current account deficits in France only.<sup>5</sup>

**Figure 3: Shift-share analysis of export performance  
(avg annual growth rate, 1999-2007)**



Source: BACI.

The decomposition can be further extended to separate quantity from price effects using unit-values (see Table A1 in Appendix). The main part of heterogeneity in adjusted export dynamics is due to volumes, with very little differences in price developments between ‘core’ countries (Germany, France, Belgium, Austria, and the Netherlands). Slight increases in unit-values in countries like Italy

<sup>4</sup> We use a measure that as the statistical properties of a change in logarithm but allows us to take into account entries and exits, i.e the extensive margin of trade (Gaulier et al 2012).

<sup>5</sup> The strategies of multinational firms may have played a role in the collapse of the French export market share. Indeed to gain access to worldwide markets French MNE seem to have favored (horizontal) FDI over export. It is not clear to what extent those choices were determined by the lack of cost competitiveness of their establishments in France. In the French current account, FDI incomes partially offset the drop in net export revenues, dampening the deterioration of the net external position.

and Spain could be the result of a quality upgrading rather than that of a lack of price competitiveness (that would be consistent with good adjusted performances in value terms for Spain in particular).

### **c. Exports and current account adjustment since 2008**

Since the peak of intra-euro-area imbalances, current accounts partially re-adjusted through a (limited) decrease in the absolute value of surplus and deficits. Current accounts improved by close to 5% of GDP in Ireland, Spain, Greece and Portugal between 2008 and 2011 (Figure 4). This initial adjustment reflects largely the specific dynamics of the trade collapse following the financial crisis in 2008/2009: base effects involve a contraction of current account surplus and deficit for proportional drops in exports and imports. Moreover, Spain, Greece, and Ireland to a lesser extent, also adjusted their current account through a sharp decrease of imports in line with the compression of domestic demands. In 2011, further adjustment through the import side has been reinforced by good export performance in Spain and Portugal. Growth rates of exports of goods and services close to 13% in the latter countries in 2011 are related to better than average exports of goods, especially to extra EU destinations. Greece also experienced large growth of good exports (+18.4%) but its exports of services (dominant in Greek trade, 13% of GDP against 9% for goods) remained sluggish.<sup>6</sup> Ireland is an exception since its exports resisted better than the rest of the world during the trade collapse, thanks in particular to its specialization in pharmaceutical products, but export growth remains weak since then.

The shift-share analysis on exports of goods presented in Figure 5 over the period 2008Q2-2011Q2 confirms the latter. Greece, the Netherlands, Portugal, Spain and Austria exhibit better country specific 'performance' than other EA countries. Ireland benefits from a positive sectoral specialization, particularly during the crisis. The geographical specialization on European markets is detrimental to all euro-area countries since 2008.

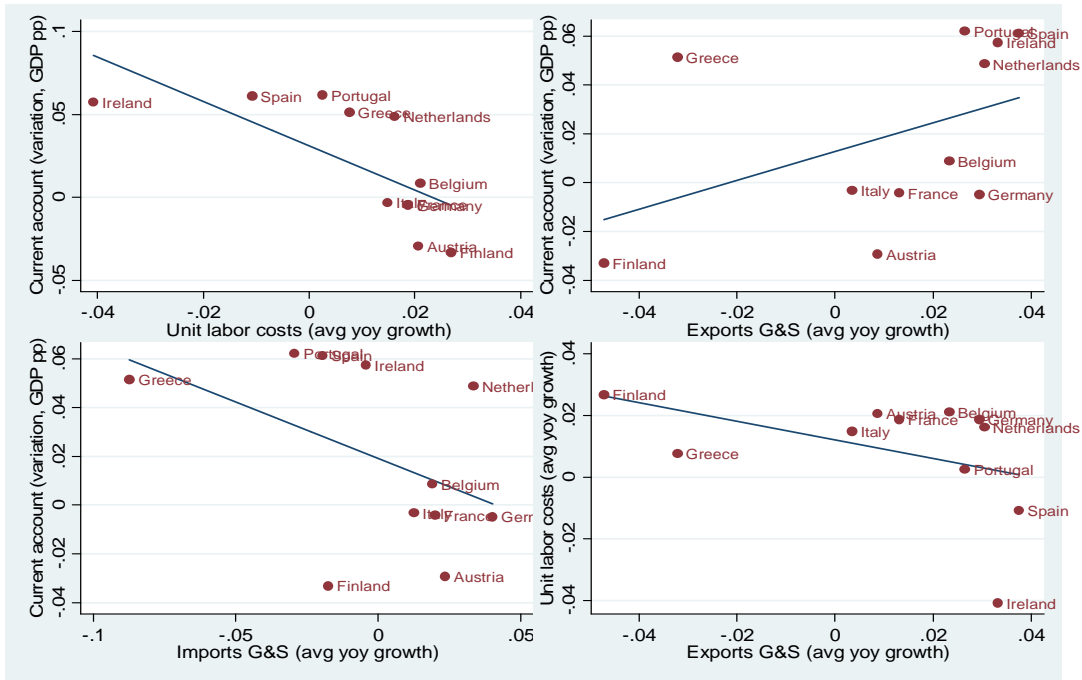
Overall, Figure 4 confirms that both exports growth and imports compression contributed to current account adjustments since 2008. The South-East panel of Figure 4 shows significantly larger increases of ULCs of surplus countries, with a quasi stagnation (Portugal) or a decrease of ULCs (Spain and Ireland) in deficit countries.<sup>7</sup> Export growth and ULCs growth are therefore negatively correlated since the crisis, in line with recent evidence by Darvas (2012).

### **Figure 4: Changes in current accounts, ULC and exports and imports, 2008/2011**

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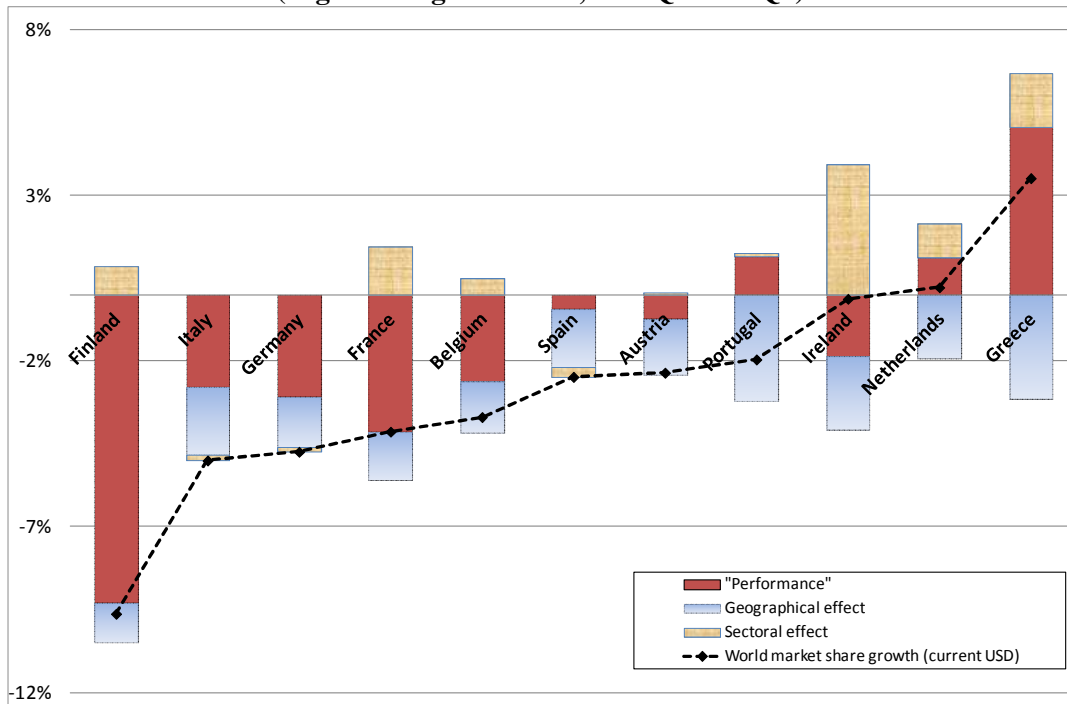
<sup>6</sup> Poor performance of the export oriented tourism sector in Greece is likely to be related to a non-cost competitiveness issues.

<sup>7</sup> The drop in Irish unit labor costs may also be accounted for by composition effects (Irish Central Bank Quarterly Bulletin 2011:1, p.22-24).



Source: Eurostat.

**Figure 5: Shift-share analysis of export performance (avg annual growth rate, 2008Q2-2011Q2)**



Overall, the evidence presented in this section - decorrelation between export performances on the one side and dynamics of current accounts and ULC on the other over 1999/2007-, suggests that the creation of the euro area, by deepening financial integration, led to positive demand shocks in the periphery, fueling imports of goods and services together with domestic demand. Exports have played a minor role in the degradation of current accounts of the periphery, since the demand shock has not

translated into unsustainable price competitiveness gaps in the tradable sector.<sup>8</sup> The rebounds of Spanish, Portuguese and Greek exports of goods in 2011 confirm that the competitiveness in the export oriented sectors did not worsen during the period of widening imbalances.

## 2. Unit labor costs and trade competitiveness

How to reconcile good export performances with rising wage costs in the periphery of the euro area? The explanation of current account imbalances driven by asymmetric demand shocks following the creation of the euro involves an increase in the price of non-tradable goods whose supply is relatively rigid, following booming domestic demand. The export and import competing sectors would have been relatively isolated from this process because domestic demand of tradable can be absorbed by world supply without price increase, and domestic firms in the tradable sector are price takers.

To be more specific on the channels by which the demand shock led to unit labor cost gaps we propose to decompose ULC changes in a way we believe is more adequate than the usual. The traditional decomposition relates changes in ULC to changes in nominal wages and labor productivity. An alternative way of decomposing ULC, proposed by Felipe and Kumar (2011), is the following:

$$ULC = \frac{\sum_i w_i}{\sum_i VA_i} P_{VA}. \quad (1)$$

where  $w_i$  is total labor compensation in sector  $i$  and  $VA_i$  is nominal value added. ULC changes result from two mechanisms: either from changes in the repartition of value added between labor and capital or from changes in price competitiveness (the price of VA).

### a. Price and cost competitiveness

Table 1 presents ULC average growth rates between 1999 and 2007 by broad sectors of activity and each component of ULC using the EU-KLEMS database. EU-KLEMS reports complete data over the 1999/2007 period for 62 sectors of activity and 11 EA countries.<sup>9</sup> We assimilate the manufacturing sector to the tradable sector and the rest of the economy to the non-tradable sector.<sup>10</sup>

The top panel of Table 1 shows that dynamics of ULC differ widely across sectors of activity: the average growth rate of ULC is lower in the manufacturing sector than in rest of the economy. This is particularly true in Germany, France, Ireland and Portugal. Part of this difference is related to the strong increase of ULC in the construction sector in Spain, Ireland, Portugal and France (contrary to the German case). The German premium in terms of cost competitiveness however remains when measured on the manufacturing sector alone.

These differences in cost competitiveness however do not systematically translate into differences in price competitiveness. Between 1999 and 2007, the price of VA in the manufacturing sector indeed decreased in Ireland and France whereas it increased slightly in Germany, as in Portugal. In the former countries, firms in tradable sectors reduced their profit margins in order to cope with international competition despite rising relative labor costs. The price competitiveness of the manufacturing sector in France, Netherlands or Portugal did therefore not worsen compared to Germany. Italy and Spain have experienced price competitiveness losses vis-à-vis Germany in the manufacturing sector. Prices

<sup>8</sup> However an increase in the price of non tradable (services, particularly real estate and building) spreads out to the tradable sector through wages and input prices. However firms in the tradable sector reacted by cutting their margins (France) or reducing their wage share (Spain).

<sup>9</sup> For a summary overview of the methodology and construction of the EU KLEMS database, see O'Mahony and Timmer (2009) and [www.euklems.net](http://www.euklems.net).

<sup>10</sup> This interpretation is obviously restrictive: some non-manufacturing sectors, related to tourism or international transport for instance, are also tradable sectors in some countries, while some manufacturing sectors are mostly non-tradable.



competitiveness gaps in the manufacturing sectors are therefore smaller than cost competitiveness divergences. In the medium to long run, such profit margins compressions could reduce the ability of firms to invest in non-price competitiveness (R&D, quality, marketing, foreign market penetration...).<sup>11</sup> Differences in VA prices dynamics between Germany and deficit countries are significantly larger in non-tradable sectors. For instance, the price of VA increased from 2.8% in Greece to 7.7% in Spain and 9.3% in Ireland in the construction sector and from 3.0% in Italy to 6.9% in Ireland in Community social and personal services.

Wage shares in total value added remained fairly constant in most countries between 1999 and 2007, except Germany and Spain where they decreased by 0.9% on average per annum. In the manufacturing sector, the decrease of the German wage share is starker (-1.7% yearly). As German firms only partially passed through wage moderation into their prices, the sluggish wage growth fuelled an unprecedented displacement of value added toward the owners of capital in Germany (Askenazy et al, 2011).

**Table 1: Unit labor costs, VA prices and wage share (1999-2007, annual growth rate)**

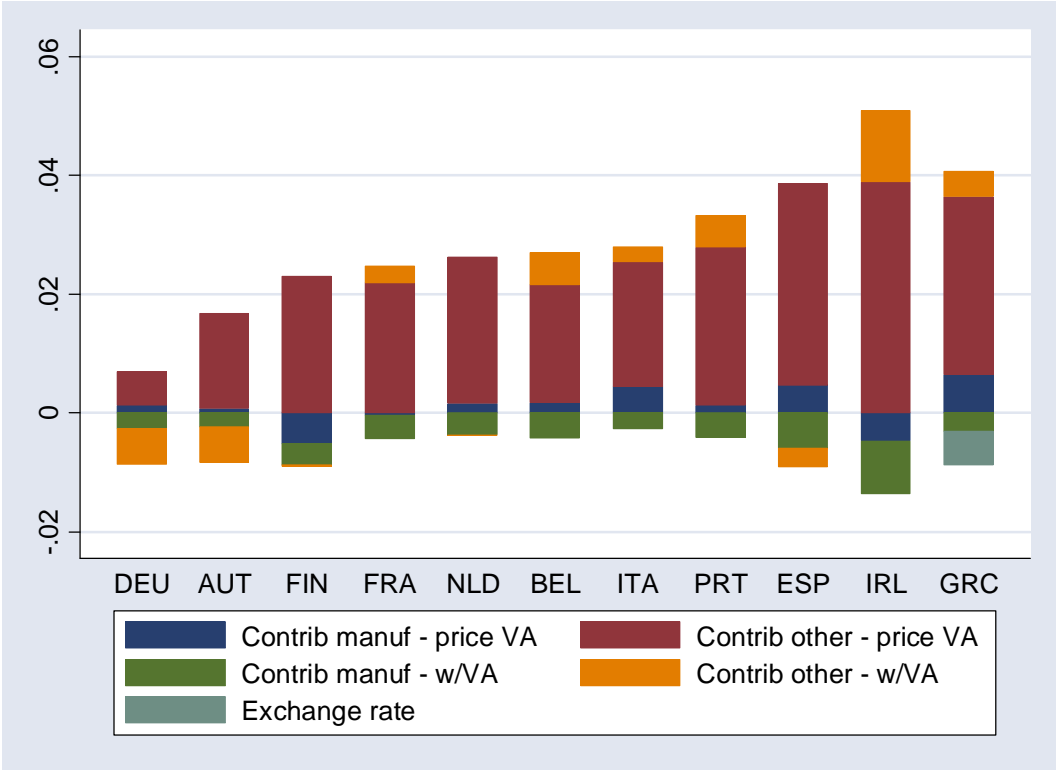
Unit labor costs (1999-2007, annual growth rate)							
	Germany	France	Italy	Spain	Ireland	Greece	Portugal
TOTAL INDUSTRIES	-0.2%	2.0%	2.5%	2.9%	3.8%	3.8%	2.9%
TOTAL MANUFACTURING	-1.2%	0.3%	2.3%	2.4%	-1.8%	3.9%	1.3%
AGRICULTURE, HUNTING, FORESTRY AND FISHING	-1.6%	3.1%	2.1%	1.0%	8.3%	9.1%	3.1%
MINING AND QUARRYING	-1.0%	-4.7%	3.4%	1.3%	-0.1%	2.8%	3.7%
ELECTRICITY, GAS AND WATER SUPPLY	0.6%	0.5%	-0.2%	-1.5%	-0.3%	4.8%	-1.5%
CONSTRUCTION	1.5%	4.4%	3.0%	5.3%	9.0%	4.6%	6.0%
WHOLESALE AND RETAIL TRADE	-0.5%	1.9%	2.2%	3.4%	2.7%	2.9%	4.0%
HOTELS AND RESTAURANTS	-0.2%	3.8%	3.8%	1.1%	3.2%	6.3%	5.3%
TRANSPORT AND STORAGE AND COMMUNICATION	-1.9%	-0.3%	-0.5%	2.6%	1.7%	-1.2%	-0.5%
FINANCE, INSURANCE, REAL ESTATE AND BUSINESS SERVICES	1.7%	2.6%	3.8%	2.7%	2.7%	4.5%	2.2%
COMMUNITY SOCIAL AND PERSONAL SERVICES	0.4%	3.0%	3.0%	3.3%	7.3%	4.2%	4.1%
Wage share (1999-2007, annual growth rate)							
	Germany	France	Italy	Spain	Ireland	Greece	Portugal
TOTAL INDUSTRIES	-0.9%	-0.1%	-0.1%	-0.9%	0.3%	0.2%	0.1%
TOTAL MANUFACTURING	-1.7%	0.7%	0.1%	-0.4%	-0.1%	-1.5%	0.6%
AGRICULTURE, HUNTING, FORESTRY AND FISHING	-1.0%	2.1%	2.1%	-0.9%	5.7%	6.1%	3.1%
MINING AND QUARRYING	-3.7%	-4.9%	3.1%	-4.6%	-5.8%	-1.4%	1.9%
ELECTRICITY, GAS AND WATER SUPPLY	-1.8%	0.1%	-3.1%	-2.6%	-4.0%	1.6%	-2.5%
CONSTRUCTION	-0.4%	-0.5%	-1.0%	-2.2%	-0.2%	1.7%	1.4%
WHOLESALE AND RETAIL TRADE	-0.5%	0.3%	0.8%	0.1%	-3.2%	-0.1%	1.2%
HOTELS AND RESTAURANTS	-2.2%	0.4%	0.4%	-3.9%	-0.1%	-0.2%	0.2%
TRANSPORT AND STORAGE AND COMMUNICATION	-1.7%	-0.8%	-1.3%	0.2%	-1.9%	-1.9%	-1.0%
FINANCE, INSURANCE, REAL ESTATE AND BUSINESS SERVICES	1.0%	-0.2%	0.5%	-1.3%	-1.4%	1.4%	-0.2%
COMMUNITY SOCIAL AND PERSONAL SERVICES	-0.5%	-0.1%	0.0%	-0.4%	0.4%	-0.2%	-0.6%
VA prices (1999-2007, annual growth rate)							
	Germany	France	Italy	Spain	Ireland	Greece	Portugal
TOTAL INDUSTRIES	0.7%	2.2%	2.5%	3.9%	3.4%	3.6%	2.8%
TOTAL MANUFACTURING	0.5%	-0.4%	2.2%	2.8%	-1.7%	5.5%	0.6%
AGRICULTURE, HUNTING, FORESTRY AND FISHING	-0.7%	0.9%	0.0%	1.8%	2.5%	2.8%	0.0%
MINING AND QUARRYING	2.8%	0.2%	0.3%	6.2%	6.1%	4.3%	1.8%
ELECTRICITY, GAS AND WATER SUPPLY	2.4%	0.5%	3.0%	1.2%	3.9%	3.1%	1.0%
CONSTRUCTION	1.9%	4.8%	4.0%	7.7%	9.3%	2.8%	4.5%
WHOLESALE AND RETAIL TRADE	0.0%	1.6%	1.4%	3.3%	6.1%	2.9%	2.8%
HOTELS AND RESTAURANTS	2.0%	3.4%	3.4%	5.2%	3.3%	6.5%	5.2%
TRANSPORT AND STORAGE AND COMMUNICATION	-0.2%	0.4%	0.7%	2.4%	3.7%	0.8%	0.5%
FINANCE, INSURANCE, REAL ESTATE AND BUSINESS SERVICES	0.7%	2.8%	3.3%	4.0%	4.2%	3.1%	2.4%
COMMUNITY SOCIAL AND PERSONAL SERVICES	0.9%	3.1%	3.0%	3.7%	6.9%	4.4%	4.8%

Source: EU-KLEMS. \*1999/2006

<sup>11</sup> The poor French export performance despite a limited increase in export prices may already reflect such margins compressions and their non-price competitiveness effects.

From Equation (1), we can compute the contribution of each of the two components of ULCs at the sector level to the growth of aggregate ULCs.<sup>12</sup> Figure 6 shows that the bulk of the appreciation in unit labor costs is due to price developments within the non-tradable sector, with the effect being largest in the crisis-countries of the euro area. The negative contribution of the wage share component of the manufacturing sector corresponds to the declining share of manufacturing in VA in most countries, which is a high wage share sector compared to the rest of the economy. The prominent role of price surges in the non-tradable sector (construction, social and personal services, wholesale trade, etc.) in the apparition of ULC gaps of deficit countries vis-à-vis Germany is the ‘signature’ of a demand shocks rather than that of a competitiveness shocks in the tradable sector.<sup>13</sup>

**Figure 6: ULC decomposition: contribution of manufacturing (avg yoy growth, 1999/2007)**



Note: 1999/2006 for Portugal.

These developments are easy to explain if we consider that European financial integration during the monetary union led to an inflow of capital to the peripheral countries of the EZ. The inflow of capital boosted domestic demand. The increase in demand in turn fueled imports together with the prices of non-tradables. Exports were largely unaffected by the shock in domestic demand because they respond primarily to foreign demand and exogenous international prices.<sup>14</sup> Exports may however be indirectly impacted by increasing prices of non-tradables through wages and input prices (services or real estate). Conversely, decreasing interest rate is also likely to have reduced capital costs for firms. Within a monetary union, larger growth prospects and the associated expected increase in prices of non-tradables in peripheral, catching-up, countries increases especially expected returns for foreign investors in the non-tradable sector.

<sup>12</sup> The contribution of the exchange rate corresponds to the depreciation of the Greek Drachma with respect to the euro between 1999 and 2001.

<sup>13</sup> See appendix for similar decompositions for the pre-euro period.

<sup>14</sup> Besides, large exporters are often foreign owned firms whose prices are set on a global basis, largely disregarding demand conditions on the local market. Decisions to invest should take into consideration cost-competitiveness, but, within the EA those (level) comparisons remain favorable to most peripheral countries.

Rising unit labor costs were not a cause but a symptom of the demand shock triggered by the inflow of capital and they were not necessarily associated with losses in export competitiveness.

### b. Contribution of within sector and between sector compositional changes.

Another potential bias in aggregate ULCs dynamics is related to the potential composition effects due to reallocation of production factors between sectors over time. Recent evidence based on a survey of firm level data suggest that the between component of changes in real ULC dominates at the firm level (Rodríguez et al., 2012). Our data allows us to distinguish the between and within components of ULC growth not only for the wage share or real ULCs<sup>15</sup> but also for price deflator.

We decompose the within and between dimensions of the growth of each component of Equation (1) separately as follows:

$$\Delta \frac{\sum_i w_i}{\sum_i VA_i} = \sum_i \Delta \frac{w_i}{VA_i} * \frac{VA_{it-1}}{\sum_i VA_{it-1}} + \sum_i \Delta \frac{VA_i}{\sum_i VA_i} * \frac{w_i}{VA_i} \quad (2)$$

$$\Delta \ln P_{VA} = \sum_i \frac{1}{2} \left( \frac{VA_{it-1}}{\sum_i VA_{it-1}} + \frac{VA_i}{\sum_i VA_i} \right) (\ln P_{it} - \ln P_{it-1}) . \quad (3)$$

The first term of Equation (2) represents the changes in wage shares within sectors, while the second term represents the contribution of between sector reallocation. The weighting scheme in the price equation, Equation (3), is a Tornqvist-type index, which takes into account both the contemporaneous and the lagged weight of individual sectors in the aggregate. In order to differentiate the between and within components of the growth of VA deflators, we re-compute Equation (3) with constant sectorial shares in VA, fixed in 1999. The difference between the constant share growth of VA deflators and  $\Delta P_{VA}$  equals the between components of the growth of VA prices.

Figure 7 reports the decomposition of ULC growth for the whole economy into the contribution of the between and within components of the wage share and the VA price deflator. The contribution of the growth of VA prices within sectors is dominant in the growth of ULCs and in the divergence of aggregate ULC, peripheral countries experiencing larger average annual growth rate of their VA prices. The between dimension of the growth in VA prices is of second order importance. Ireland is an exception: the between dimension of prices growth contributes yearly to 0.5 percentage point to the growth of ULCs.

Within sectors, wage share decreases play a significant role in Germany, Austria and Spain. In the first two cases, this within sector decrease in wage shares is reinforced by a negative between component (in favor of sectors with lower wage shares). On the contrary, in France, Italy, Portugal, and Greece, the increase in wage shares within sectors is dampened by negative composition effects (partly explained by the decreasing share of manufacturing in VA, whose wage share is on average larger than the rest of the economy).

The within and between components of the growth of wage share both contributes significantly to the growth of ULCs. The within component of wage share growth at the sectoral level is likely to further hides between firms composition effects within sectors (Rodríguez et al., 2012). Overall, the growth of the wage share however plays a minor role in the growth of aggregate ULCs, which overall is mainly driven by within sector VA price indices increases.

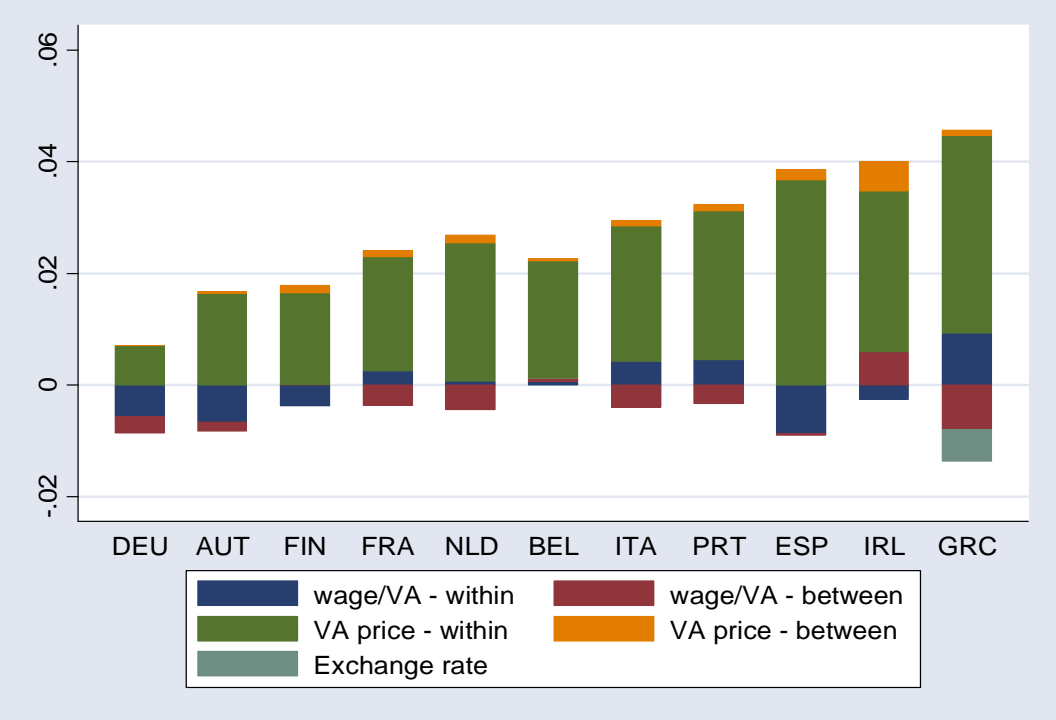
The components of the growth of ULCs in manufacturing sectors are more balanced (Figure 8). The wage share contributes negatively to the growth of manufacturing ULCs in surplus countries, slightly compensated by price increases, suggesting that firms did not passed through into prices their costs

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<sup>15</sup> When using the GDP deflator, real ULCs equal the wage share in nominal VA. The GDP deflator and the CPI generally exhibit similar growth patterns.

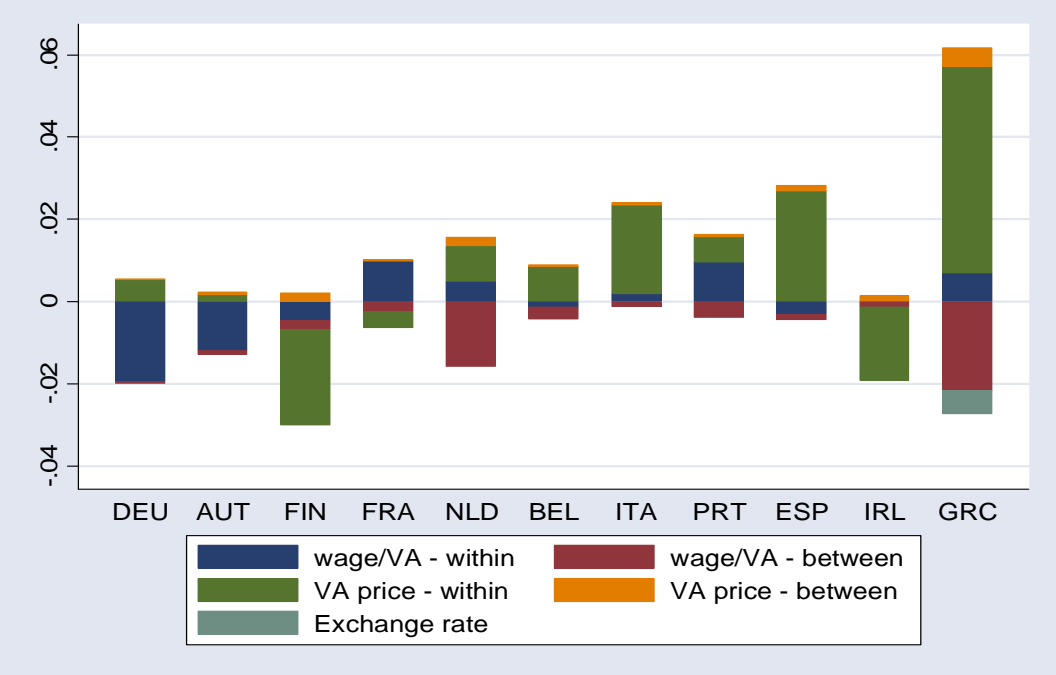
gains. In the Netherlands however, decreasing wage share in the manufacturing sector reflects composition effects, contrary to Germany and Austria where the within sector component dominates. In deficit countries on the contrary, except Spain, increases in wage shares within manufacturing sub-sectors of deficit countries have been partially compensated by negative between sector composition effects. The within sector price deflator increases in Spain, Italy, Portugal, and to a lower extent Greece, parallel the increase in the price component of the adjusted export performance from the shift-share analysis presented in Section 1b (Table A1 in appendix).

**Figure 7: ULC decomposition: wage/VA and VA price (avg annual growth, 1999/2007)**



Note: 1999/2006 for Portugal.

**Figure 8: ULC decomposition: manufacturing (avg annual growth, 1999/2007)**



Note: 1999/2006 for Portugal.

## Conclusion

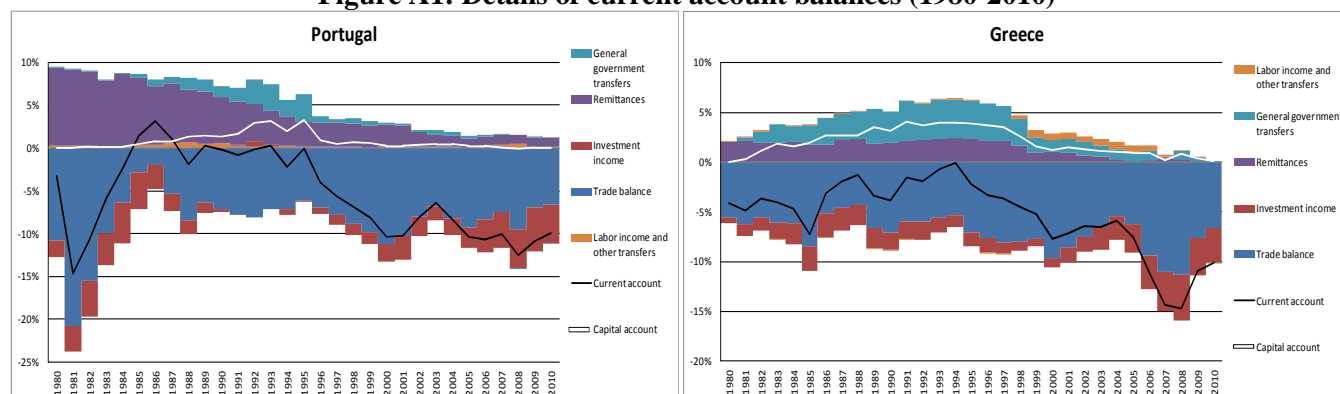
This paper shows that current account imbalances within the euro area were not driven by export performance. Unit labor costs were also de-correlated from export growth: the bulk of their appreciation comes from price developments in the non-tradable sector, with the effect being largest in the crisis-countries. This body of evidence is a marker consistent with (crisis prone) imbalances related to divergence in domestic demand dynamics between deficit and surplus countries within the euro area. The asymmetric shock of the creation of the euro on member countries led to growing current account imbalances up to 2007 fueled by capital flows from rich to catching up (according to expectations) euro area countries. Increasing domestic demands translated into increasing imports of tradable goods and services and increasing prices in the non tradable sectors of peripheral countries. The prominent role of VA price increases in the non-tradable sectors in the divergence of ULC between deficit and surplus countries is the 'signature' of a demand shocks rather than that of a competitiveness shocks in the tradable sector. Exports were largely unaffected by the shock in domestic demand because they respond primarily to foreign demand and exogenous international prices. Rising unit labor costs were not a cause but a symptom of the demand shock triggered by the inflow of capital and they were not necessarily associated with losses in export competitiveness.

The strong growth of Spanish, Portuguese and, for goods only, Greek exports confirms that their export competitiveness did not worsened during the period of widening imbalances. It also emphasizes the capacity of export oriented sectors in these economies to respond to external demand. Symmetric demand rebalancing within the euro area would therefore reduce current account imbalances, with demand contraction in deficit already having largely contributed to the reduction of current account deficits.

Divergences between the tradable and non-tradable sectors caution about using of aggregate ULCs as indicators of trade competitiveness. Moreover, ULCs, for the whole economy as well as for the manufacturing sector, are weakly related to firms' price competitiveness on the export markets. Firm level data would allow a better delineation of exporters and non-exporters. The lack of firm level price indices limits this exercise to real ULCs, which are not necessarily the main driver of ULCs growth and do not account for the decision of exporters to pass-through their costs changes into their prices.

## Appendix

**Figure A1: Details of current account balances (1980-2010)**



Source: IMF

**Table A1: Decomposition of export market share growth (avg annual growth rate, 1999-2007)**

	1999-2007			decomposition of market share growth		Prices (unit-value) / Volumes decomposition of "Performance"	
	World market share growth (current USD)	"Performance"	Geographical effect	Sectoral effect	Prices (UV)	Volumes (Values/UV)	
France	-3.6%	-3.6%	0.2%	-0.1%	-0.6%	-3.1%	
Portugal	-2.4%	-0.2%	0.0%	-2.2%	0.2%	-0.4%	
Ireland	-2.2%	-1.5%	-1.3%	0.6%	-2.4%	0.8%	
Italy	-1.7%	-0.8%	0.5%	-1.3%	0.5%	-1.4%	
Netherlands	-1.0%	-1.0%	-0.3%	0.4%	-0.8%	-0.3%	
Finland	-0.8%	-3.0%	1.4%	0.8%	0.1%	-3.1%	
Spain	-0.8%	0.2%	-0.6%	-0.4%	0.3%	-0.1%	
Belgium	-0.3%	-0.5%	-0.2%	0.4%	-0.5%	-0.1%	
Germany	-0.2%	-0.6%	0.4%	0.0%	-0.5%	-0.1%	
Greece	-0.2%	-0.8%	1.4%	-0.8%	0.1%	-0.9%	
Austria	1.3%	1.5%	0.0%	-0.2%	-0.6%	2.1%	

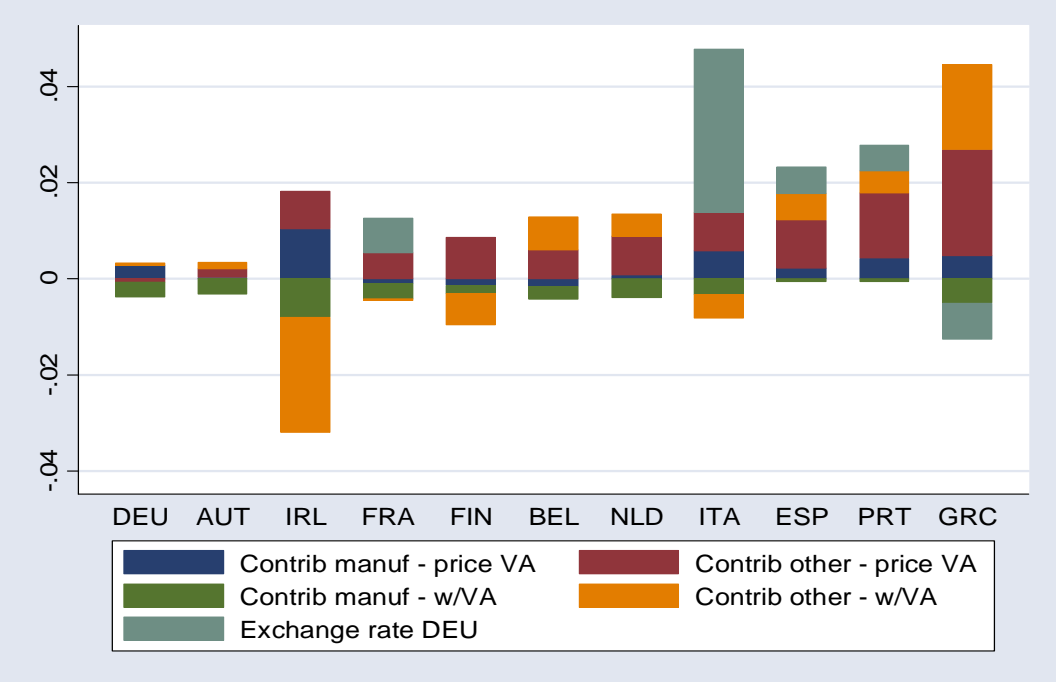
### ULCs growth 1995/1999

The dynamics of ULCs prior to the creation of the euro area differs markedly.<sup>16</sup> Figure 8 and 9 present the decomposition of the average annual growth rate of ULCs between 1995 and 1999 and the contribution of the manufacturing vs. non-manufacturing sectors and the within/between contributions respectively. Since exchange rates were not fixed for all countries during the period, we express ULCs in the same currency, Deutschmark.

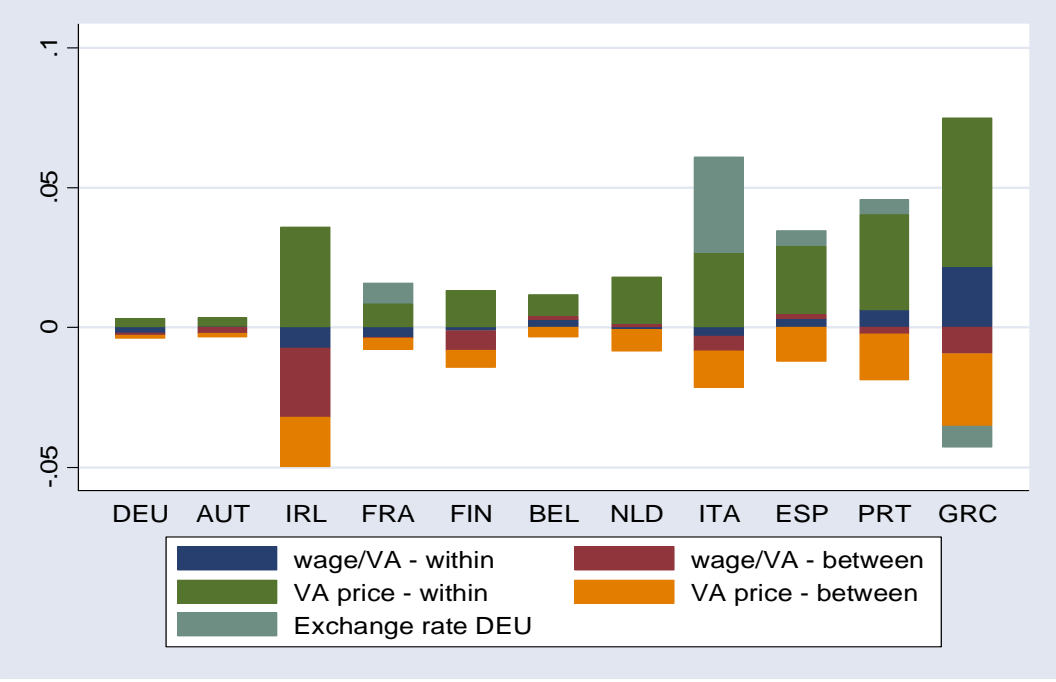
<sup>16</sup> The process of financial and monetary integration of euro area countries was however already taking place in 1995, following the signature of the Maastricht treaty in 1992.

While the ranking of countries by growth of ULCs remains similar before and after the creation of the euro, except for Ireland for which compositional effects were large prior to 1999, the composition of ULCs growth has changed. Figure A2 shows that, contrary to the post euro period, the increases in VA price indices are not the dominant drivers of ULCs growth. The exchange rate also played a role over the period for some countries. The depreciation of the exchange rate in Greece compensated partly increasing ULCs. On the contrary, the currency appreciation against the Deutschmark in Italy, following the 1992 devaluation, and to a lesser extent in France, Spain and Portugal, magnified the growth of ULCs. Finally, Figure A3 shows larger compositional effects on the aggregate growth of the price deflator.

**Figure A2: ULC decomposition: contribution of manufacturing (avg annual growth, 1995/1999)**



**Figure A3: ULC decomposition: wage/VA and VA price (avg yoy growth, 1995/1999)**



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