Euro area external adjustment and real exchange rate movements: the role of firm productivity distribution

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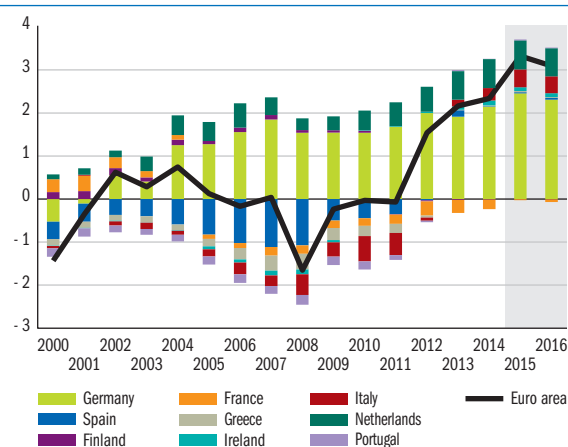Directorate Economics and International
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*External imbalances in the euro area require real exchange rate adjustments.
This* Rue de la Banque *explores the consequences of the euro area external
adjustment in a framework where (i) the extensive margin (new exporting
firms) contributes to aggregate trade flows, and (ii) cross-country differences
in terms of firms' productivity distribution are taken into account. Surplus
countries in the euro area have larger and more productive firms than
deficit countries. When deficit countries adjust their external imbalances,
the magnitude of the required real exchange rate depreciation may be
larger than traditional calculations might suggest.*

In the aftermath of the crisis, the euro area (EA) as a whole
has experienced an unusually large current-account
surplus, resulting from a combination of mild recovery of
external demand and, above all, a fall in domestic demand,
in particular in the EA countries that had previously
accumulated large deficits.

As shown in Chart 1, the post-2008 external
adjustment of larger deficit countries (Greece, Italy,
Portugal and Spain) contributed largely to the current
account surplus of the EA as a whole together with the
persistent German external surplus. Consequently, there
is a renewed interest in analysing the drivers and the
patterns of external rebalancing, which, for EA countries,
has two dimensions: within the euro area itself and
vis-à-vis the rest of the world.

C1 Euro area current account imbalances
(% of euro area GDP)

Legend: Germany, Spain, Finland, France, Greece, Ireland, Italy, Netherlands, Portugal, Euro area

Source: IMF WEO, April 2015.
Note: Shaded areas are forecasts.

C2 Intra- and extra-euro area dimension of CA imbalances
(% of GDP)
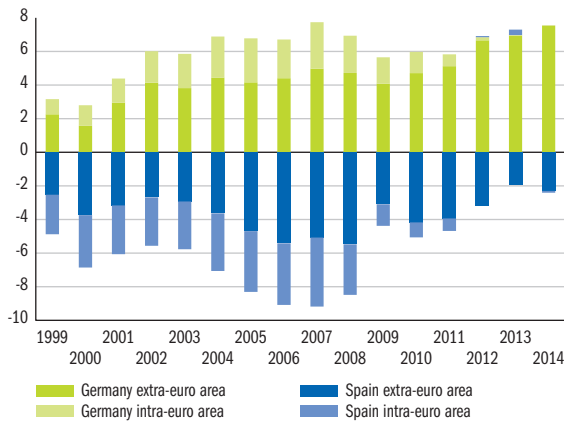
Source: Eurostat.

Chart 2 shows the intra and extra-EA dimension of the external rebalancing for Germany and Spain. In 2014, both the German trade surplus and the Spanish trade deficit rely uniquely on the extra-EA dimension. Since 2008, there has been a complete intra-EA trade rebalancing, as both the German surplus and the Spanish deficit vis-à-vis other EA countries have balanced.

What are the consequences of an external rebalancing?

The macroeconomic costs of external rebalancing may be divided conceptually into two parts: the decrease in domestic spending and welfare, and the real exchange rate depreciation. While there is a consensus in the literature on the fact that rebalancing a current account deficit requires a real exchange rate depreciation – that is a decrease in the relative price of domestic vs. foreign goods –, the size of the depreciation is subject to debate.[1]

In Di Mauro and Pappadà (2014), we study the macroeconomic implications of the EA's external rebalancing in a three-country general equilibrium model with a tradable and a non-tradable sector. In both sectors, firms are heterogeneous in terms of their productivity. The adjustment of the external accounts position of the deficit country is associated with a decrease in its demand for imports, and an increase in the demand for exported goods.

The higher relative demand for tradable goods produced by the deficit country leads to a decrease in the productivity threshold of exporting firms, and a simultaneous increase abroad. The larger demand allows less productive firms in the deficit country to pay the fixed cost exporting. The changes in aggregate exports in response to the external adjustment therefore reflect extensive and intensive adjustments, as the sales of new exporting firms (extensive margin) contribute to the external adjustment along with the sales (old and new) of existing exporting firms (intensive margin). The thickness of the right tail of the productivity distribution (i.e. the most productive firms) determines the extent to which the extensive margin of trade contributes to the increase in aggregate exports that drives the trade rebalancing. For a given external adjustment, the larger the contribution of the extensive margin, the lower the required change in relative prices (i.e. the real exchange rate).

We show that the results in the literature must be substantially revised when the country-specific distribution of firm productivity is taken into account. This is particularly important in the euro area, as recent firm-level data (ECB CompNet 2014) suggest that firms' productivity is highly heterogeneous across EA countries and sectors. In particular, the data show that surplus countries such as Germany are characterised by a productivity distribution with a higher mean and a substantially fatter right tail compared to those of deficit countries such as Spain or Italy (see Chart 3).

C3 Labour productivity distribution
Firms above 20 employees
(x axis: labor productivity; y axis: density)
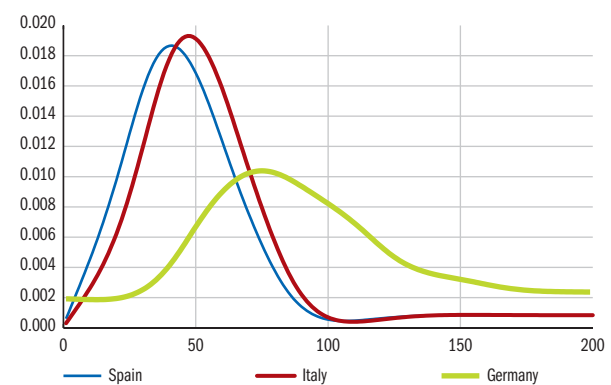
Source: Di Mauro and Pappadà (2014).

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[1] *See Obstfeld and Rogoff (2005, 2007) on the US current-account deficit.*

External adjustment and real exchange rate movements

We calibrate our model using a novel firm-level database produced within a research network of European central banks (CompNet). We consider the larger euro area countries with external imbalances. In our three-country model, Germany is the surplus country, Spain is the deficit country, and the rest of the world is the third country. We then replace Spain by Italy as the deficit country. In our simulations, we reproduce the actual external adjustment process of Spain and Italy between 2007 and 2013 (the benchmark case). Then, we consider a counterfactual scenario meant to capture the hypothetical consequences of the adjustment in a model in which only the differences in average productivity are considered. For both the benchmark and the counterfactual calibration, we compute the real exchange rate adjustment predicted by the model given the observed change in the trade balances of the deficit countries (respectively Spain and Italy) with respect to Germany and the rest of the world between 2007 and 2013. The results are shown in Table 1.

There are two main results:

· A model that does not consider the differences in productivity dispersion (counterfactual) between surplus and deficit countries within the EA may underestimate the required exchange rate depreciation in deficit countries.

· Productivity distribution differences across deficit and surplus countries are informative on the extent to which real depreciations can be expected to be an effective source of readjustment.

Conclusion

In this *Rue de la Banque*, we argue that cross-country differences in firm-level productivity distributions help to assess the extent of real exchange rate movements associated with EA external rebalancing.[2] CompNet firm-level data point to a rather unfavourable level and distribution of productivity for deficit countries: these countries (e.g. Italy and Spain) do not have enough productive firms that could substantially contribute to the external rebalancing for a limited change in the real exchange rate.

The hard policy implication is that, with persistent cross-country productivity heterogeneity in the EA, the extent of the real exchange rate adjustment needed for rebalancing the current account is far larger than what would suggest a model neglecting this dimension. When designing adjustment measures based on real depreciation, policymakers should not neglect the cross-country differences in productivity distribution.

Moreover, the large heterogeneity between surplus and deficit countries may contribute to the persistent differences in the extra-EA trade balances. This, in turn, points to the need to strike a more precise balance between relative price adjustment and structural policies. In particular, structural reforms in deficit countries which aim at boosting productivity and reallocate resources towards more productive and larger firms would foster export performance and reduce the extent of relative price adjustment.

2 *Obviously, the overall real exchange rate response would depend critically on additional factors. These include demand factors, relative trade elasticities, as well as the original sources of the imbalances only discussed in Di Mauro and Pappadà (2014) and left to further extensions.*

T1 **External account rebalancing, 2007-2013**

	Spain		Italy	
	$RER_{ES/DE}$	$RER_{ES/ROW}$	$RER_{IT/DE}$	$RER_{IT/ROW}$
Benchmark (cross-country heterogeneity)	3.63	3.79	1.38	0.87
Counterfactual (no cross-country heterogeneity)	1.26	1.53	0.53	0.44

Source: Di Mauro and Pappadà (2014).
Notes: Percentage changes in real exchange rates. A positive number refers to real exchange rate depreciation. The numerical simulation reproduces the actual rebalancing between 2007 and 2013 within-euro area ($RER_{ES/DE}$ for Spain and $RER_{IT/DE}$ for Italy) and extra-euro area ($RER_{ES/ROW}$ for Spain and $RER_{IT/ROW}$ for Italy).

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