

Some Unpleasant Euro Arithmetic*

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Summary

Current estimates of misalignments in real effective exchange rates show that euro area imbalances are still large: Germany exhibits a 20 percentage point undervaluation compared to the rest of the euro area (EA). Within a monetary union, rebalancing requires price adjustments through differentials in inflation rates. The rebalancing process therefore involves a 2 percentage point higher inflation in Germany than in the rest of the EA over a decade, or a 1 pp over two decades. It also requires above 2% inflation in surplus countries to meet the 2% ECB inflation target. At the current pace, rebalancing is a 20 year process and requires sustained very low inflation rates in the rest of the euro area.

* This Policy Brief reflects the opinions of the authors and do not necessarily express the views of the Banque de France.



Introduction

Current account imbalances have been at the heart of the euro area crisis (Baldwin and Giavazzi, 2015). Over the last five years, crisis countries have drastically reduced their current account deficits to the point that they post surplus or are near balance in 2016 whereas the level of surplus of northern countries has not weakened. Upon this background, we ask three simple questions in this policy brief:

- How far has the process of current account rebalancing been?
- What is the current state of current account imbalances or alternatively real effective exchange rate misalignments within the euro area?
- How long will rebalancing take?

The short answers are: the process of current account rebalancing has not gone far, imbalances are still large, and rebalancing will take a long time. Corrections of current account imbalances are still on the agenda of the euro area and a long term process. The current adjustment through unprecedented

imbalances are still large, and rebalancing will take a long time

surplus of the euro area only exports excess savings to the rest of the world. Without internal rebalancing, external adjustment of the euro area will push some members into deficit, fueling similar

risks of quasi sudden stop at the heart of the euro area crisis, particularly so given cumulated divergence in net foreign assets positions. Dealing with such legacy of the first decade of the euro should therefore be full part of any credible plan for the future of the EA.

Within a monetary union, rebalancing requires price adjustments through differentials in inflation rates. Current estimates of misalignments in real effective exchange rates

show a gap of 20 percentage points between Germany and the rest of the euro area. The rebalancing process therefore involves a 2 percentage point higher inflation in Germany than in the rest of the EA over a decade, or a 1 pp higher inflation over two decades. It also requires above 2% inflation in surplus countries to meet the 2% ECB inflation target.

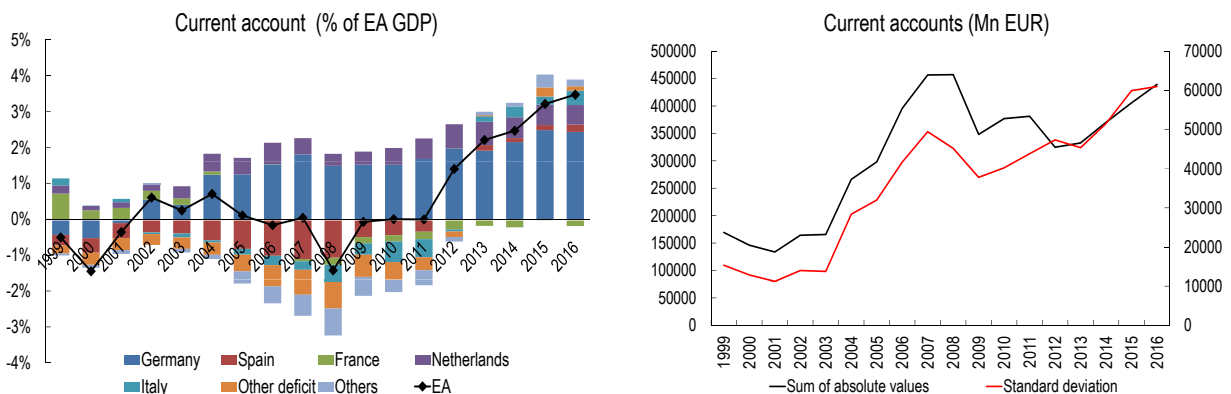
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1. Current account deficits are gone but imbalances remain

The first decade of the euro area has been characterized by growing divergences of current accounts across country members, creating large and sustained current account surpluses and deficits at the national level while the euro area as a whole remained near balance. Before the financial crisis, Greece, Portugal, Spain and Ireland posted deficit reaching 15%, 12%, 9% and 7% of GDP respectively, while Germany, the Netherlands and Luxembourg posted current account surpluses larger than 5% of GDP.

By 2016, all deficit countries were near balance (in the case of Greece) or in current account surplus (in the cases of Ireland, Spain, Portugal), after having experienced a drastic adjustment of more than 10 percentage points of GDP. Italy also switched from a current account deficit to a surplus, experiencing a similar adjustment of more than 5 percentage points over the last five years. In most cases, such corrections have been costly, owing more to expenditure contraction reducing imports than expenditure switching towards tradable sectors.

Figure 1 – Current accounts imbalances within the euro area



Source: Eurostat.

The rebalancing process has however remained asymmetric, with no symmetric adjustment in surplus countries. After a decade of near balance, the euro area as a whole leans toward surplus, standing at 3.5% of euro area's GDP in 2016 (Figure 1, panel a). Excess savings in Northern Europe, now unmatched by financing needs in Southern Europe, are now exported to the rest of the world.

Even more so as not only have current account surpluses not been reduced but heightened, reaching unprecedented levels in excess of 8% of GDP in 2016 in Germany and the Netherlands. Increasing surpluses matched the decrease in deficit so that imbalances within the euro area have not been reduced despite the disappearance of deficits in most countries.¹ Overall, the absolute value of surpluses and deficits of EA countries has not been reduced but has concentrated on some countries. The right panel of figure 1 shows that the sum of absolute values of current account balances (in euro) of EA members as well as the standard deviation between countries have increased up to 2008 and have not decreased significantly afterwards.

2. Misalignments in real effective exchange rates have not corrected

An alternative way of considering imbalances, in a more normative way, is to look at real effective exchange rate misalignments, *i.e.* the divergence with respect to an equilibrium or desirable long term norm that depends on an economy's fundamentals and/or the state of the business cycle. We focus here on one such exercise, the External Balance Assessment conducted every year since 2012 by the IMF for 28 countries, including 6 EA members and the euro area as a whole. The External Sector Report assesses excess imbalances at the global and national level based on a methodology developed by the IMF research department and provides (range of) estimates of the REER gaps/misalignments and the associated current account gaps as reported in Table 1.²

In 2016, the IMF estimates the euro area to be broadly aligned with the norm, despite its strong current account surplus. This alignment however hides wide misalignments between euro area members. Germany stand out as strongly undervalued (-10% to -20%), as are the Netherlands. On

1. In 2016, all deficit were lower than (Belgium, Greece, France, Lithuania Slovakia) or close to (Finland) to 1% of GDP except for Cyprus (-5.3%).

2. See IMF (2013) for the methodology. Note that the norm considered accounts for structural determinants of the current account such as demographic factors, productivity or domestic institutions, and cyclical factors (output gap, commodity terms of trade,...).

Table 1 – REER and current account gaps

	Current account		REER gap (wrt. norm)	
	level	gap (wrt norm)	midpoint	range
	(% of GDP)		percentage	
Euro area	3,3	0,3	-1,0	-5 / 3
Germany	8,3	4,5	-15,0	-20 / -10
France	-1,0	-2,8	11,0	8 / 14
Spain	2,0	-2,0	7,5	5 / 10
Italy	2,6	-2,0	9,0	6 / 12
Netherlands	8,4	3,0	-9,0	-12 / -6
Belgium	0,0	-1,5	6,0	2 / 10

Source: IMF External Sector report 2017.

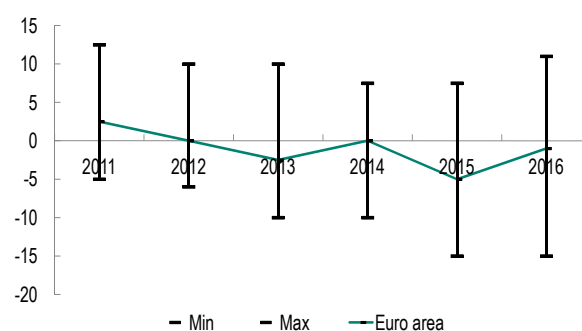
the other side of the spectrum, France, Italy and Spain are significantly overvalued, but on different trends with the Spanish REER gap improving and the French and Italian deteriorating.

Figure 2 shows that REER have even diverged between large euro area countries since 2011. The difference in percentage points between the most overvalued and the most undervalued large EA countries increased from 17.5 percentage points in 2011 to 26 pp in 2016, the most undervalued being

Germany all along and the most overvalued Spain until 2015, overtaken by France in 2016. This widening of REER misalignments reflects the fact that some of the current account adjustments in deficit countries have been driven by cyclical factor (*e.g.* output gap), deficit therefore being

increasing surpluses matched the decrease in deficit so that imbalances within the euro area have not been reduced despite the disappearance of deficits in most countries.

Figure 2 – REER misalignments within the euro area (2011-2016)



Source: IMF External Sector reports 2012 to 2017.

likely to resume with sustained growth in Southern European countries.³

In the following, we take stock of the estimated divergence in REER between Germany and the rest of the euro area, and investigate the required price adjustments to achieve rebalancing under different scenarios.

3. Rebalancing will take time and require inflation significantly above 2% in Germany

Within a monetary union, the REER misalignments across member countries cannot be adjusted through the nominal exchange rate. Rebalancing therefore requires price adjustments through differentials in inflation rates sustained over a long period of time.⁴

Let's illustrate the challenge ahead of the EA with some back of the envelope calculations on the required inflation differentials depending on the overall EA inflation rate and the time horizon. We consider 2 different time horizons – 10 and 20 years –, and 3 assumptions regarding the overall EA inflation rate – 1%, 2% and 3% a

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year –, for a total of 6 scenarios presented in Table 2. Going into the details of the calculations, we take the midpoint gaps from the IMF external report 2017 presented in Table 1, which implies a gap of close to 20 percentage points between Germany and the rest of the euro area.⁵ Note that the gap is slightly larger (21%) when considering Germany and the Netherlands together.⁶

Table 2 presents the implied (average) price growth in Germany and the rest of the EA during the adjustment

3. Desbordes *et al* (2017) show that cyclical factors explain more than half the explained adjustment of current account of EA countries over the 2008/2013 period. Focusing on Spain, Moral-Benito and Viani (2017) show that cyclical factors explain almost 60% of the adjustment between 2008 and 2015.

4. We use the growth in GDP deflator as our measure for inflation. The GDP deflator depends on factor prices which are mainly domestic whereas the consumer price inflation (CPI) also depends directly on foreign prices (including oil price) and exchange rates, volatile factors that enter the terms of trade with weights varying across countries according to their openness and specialization. In the long run both measures converge. Note that the IMF's REER are computed using CPI.

5. The 20 pp German REER gap with respect to the rest of the EA is computed as follows: $(REER\ gap\ DE - weight\ DE * REER\ gap\ EA) / (1 - weight\ DE) = (-15 - 0.3 * (-1)) / (1 - 0.3)$. Using an alternative methodology to compute equilibrium exchange rates (behavioral equilibrium exchange rate), the CEPII's EQCHANGE database provides a similar order of magnitude (*i.e.* a 17 percentage points misalignment between Germany and the rest of the EA); see Couharde *et al.* (2017).

6. The Netherlands are less undervalued (12 pp vs 20 pp for Germany) but its weight (6% of EA GDP) adds to that of Germany (30% of EA GDP).

Table 2 – Inflation in Germany and the rest of the EA under different adjustment scenarios

Duration	Inflation Euro Area	Inflation Germany	Inflation Rest of euro area
10	1.0	2.4	0.4
10	2.0	3.4	1.4
10	3.0	4.4	2.4
20	1.0	1.7	0.7
20	2.0	2.7	1.7
20	3.0	3.7	2.7

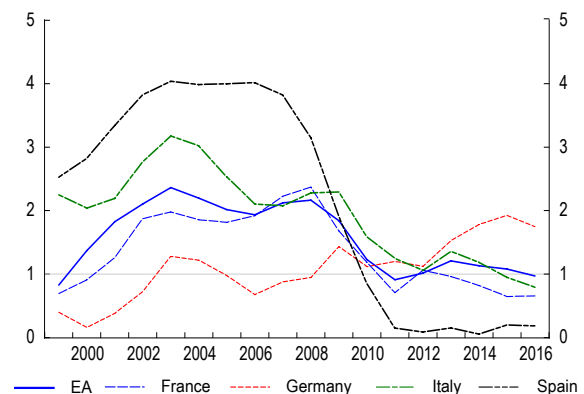
Source: Author's calculation.

depending on the length of the adjustment and the overall EA inflation rate. The conclusions are clear: rebalancing would require a large inflation differential sustained over a long period of time. It requires a 2 percentage point higher inflation rate in Germany over a 10 year period and a 1 percentage point inflation differential over a 20 year period. Moreover, an average inflation close to the ECB 2% target involves an inflation rate significantly above 2% per year in Germany. Were the overall EA inflation at 1%, the rebalancing process would involve near stagnating prices in the rest of the euro area. With EA inflation at 3%, the adjustment is obviously much easier for the rest of the EA but inflation would be close or above 4% in Germany.

gap of close to 20 percentage points between Germany and the rest of the euro area

How do such scenarios compare with historical records of inflation? Figure 3 plots the 3-year moving average inflation of the EA and its largest members. The 1% inflation scenario corresponds to the post-crisis EA average inflation. In this period price adjustments

Figure 3 – 3-year moving average inflation (GDP price)



Source: Eurostat

occurred but were associated with low growth, with the exception of Germany which posted GDP growth close to its (low) pre-crisis record. During this period, inflation has been 1.7% on average in Germany and 0.8% in the rest of the EA, which corresponds to the 20 year adjustment scenario in Table 2. The current inflation pattern therefore involves: (i) an horizon of adjustment of 20 years and (ii) a below 1% inflation in the rest of the EA.

To place such inflation targets in a broader perspective, 1% corresponds to the pre-crisis German inflation rate, and 1.7% corresponds to the French or average EA inflation pre-crisis. On the other side, an inflation close to 3%, as implied for Germany when EA inflation is set at 2%, while lower than the inflation recorded in Spain over the pre-crisis period, is obviously very challenging: it happened in Germany only in the 1980s at a time when monetary policy was independent, inflation in most other high income countries was in the two digits and when the reunification took place (3.8% on average from 1989 to 1993).

4. Past episodes of price adjustment in the euro area are associated with low growth

We review here two episodes of significant price adjustments achieved between EA members since the inception of the euro.⁷ We consider episodes when domestic inflation remained below that of the EA for at least six years. Most of them entailed low growth, consistently with the Phillips curve that shows a negative relationship between the level of

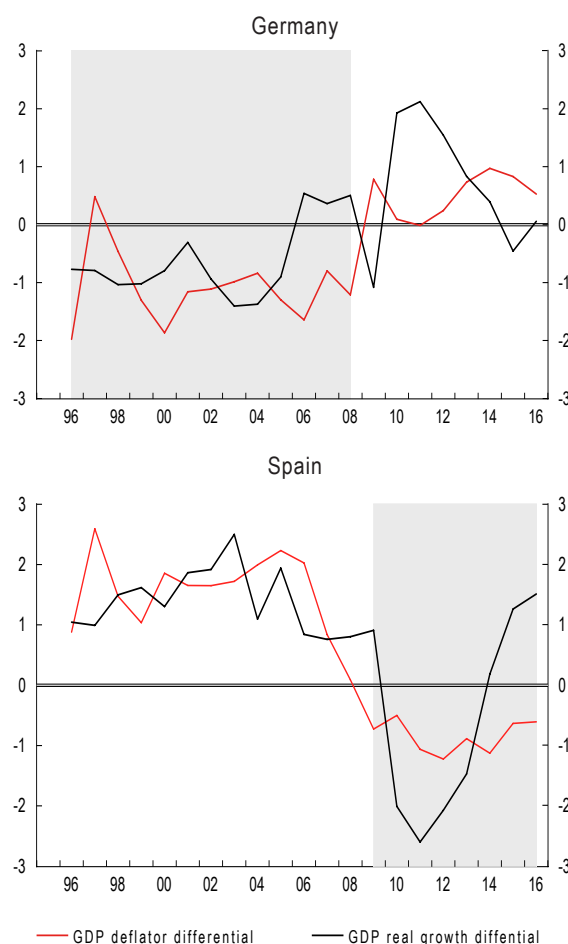
7. Three other recent episodes involving EA countries appear less representative. Finland depreciated vis-à-vis the EA from 2002 to 2006, cumulating a 7 pp inflation gap, while real GDP growth remained above that of the EA by 1 pp. The sectoral specialization may largely explain that episode: Nokia was booming in a sector experiencing a rapid price fall due to technological progress. Until 2003 Austria followed the German depreciation, but at a lesser pace (-0.6%/year versus -1.1%), which combined with the openness rate of this small economy may have helped preserving growth slightly above the EA. Ireland devaluation was very stark but relatively short, from 2007 to 2010; real growth fell in 2009 (with respect to the EA) and 2011, then strongly recovered from 2013 onwards. The Irish economy is also too specific (very high openness and specialization, major role of foreign multinationals, etc.) to be taken as illustrative for the rest of the EA. Before the Euro, France went through 6 years (1990-1995) of significant price adjustment vis-à-vis Germany. Following the reunification Germany posted relatively high inflation whereas France, had engaged in what was called "désinflation compétitive", lowered its inflation to 1.8%. The cumulated 9pp inflation differential during this period was associated with a 6pp GDP growth differential in favor of Germany. Growth has however been higher in the post reunification Germany in years 1990 and 1991 only, so that on average France managed to keep the German growth pace during the rest of the period. Having large trade partners accumulating current account deficits facilitates or is a condition for rebalancing without recession.

inflation and unemployment involving that adjustment in a low inflation environment is costly in terms of economic activity.⁸

The first episode saw Germany accumulate a 14 percentage point inflation differential with respect to the EA between 1996 and 2008 (see Figure 4). Germany appreciated since 2009, but at the pace observed up to 2016 (0.4% per year) it would take 35 years to complete the adjustment. Throughout all the internal devaluation period but the last 3 years (2006-2008)

Germany posted significantly low relative real growth.

Figure 4 – Inflation and growth differentials with respect to the EA in Spain and Germany



Source: Eurostat

8. The slope of the Phillips curve, i.e. the relationship between unemployment and the level of inflation, is estimated at 0.2 by Blanchard (2016) and 0.7 by Chatelain et al (2015). On a sample of 9 euro zone countries, we find in a panel setting including country and year fixed effects a slope of 0.45 (sum of the coefficients of unemployment level and unemployment change) on the GDP deflator.

The second episode is the Spanish recent adjustment of 7 pp since 2009. It is still ongoing but it remains to be seen if the internal devaluation can be maintained while relative GDP, thanks to domestic demand, is no longer shrinking. Greece is another illustration of costly internal devaluation (11 pp cumulated inflation gap since 2011; 25 pp for GDP, 32 if the drop in 2010 is taken into account).

Conclusion

This policy brief has shown that current account rebalancing within the euro area has been limited since 2010 because the reduction in excessive current account deficits has been matched by increasing current account surpluses in the rest of the euro area. Therefore, imbalances in real effective exchange rates have not been corrected and, absent nominal exchange rate adjustment, their correction requires price adjustments involving inflation over 3% in surplus countries (*i.e.* Germany and the Netherlands) over a 10 years period and at 2.7% on average over a 20 years period.

In the absence of fiscal transfers within a monetary union, excessive current account imbalances cumulate into net foreign assets imbalances and, in

the end, result in costly price adjustments in deficit countries, particularly in case of asymmetric adjustment. Surveillance

imbalances in real effective exchange rates have not been corrected and, absent nominal exchange rate adjustment, their correction requires price adjustments involving inflation over 3% in surplus countries

mechanisms aim at preventing the creation of imbalances in the future. Given the legacy of the euro crisis; they should also favors symmetric adjustment by both surplus and deficit countries. Currently, the indicators of the Macroeconomic Imbalance Procedure (MIP) of the European Commission are not only biased towards surplus when it comes to the current account (the thresholds are -4% but +6% of GDP

on average over 3 years) but are also inconsistent with a lasting rebalancing in terms of inflation. The MIP defines a 9% threshold on the 3-year percentage change in nominal unit labor costs (ULC); since ULC equal the labor share times the price deflator, the central medium term scenario consistent with the 2% inflation target of the ECB already involves an average 6% cumulated ULC growth over 3 years. The 9% threshold on ULC growth is therefore inconsistent with the over 3% inflation required in Germany for rebalancing in a scenario with an average euro area inflation of 2%.

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