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EURO AREA REAL EFFECTIVE EXCHANGE RATE MISALIGNMENTS

The resolution of the eurozone crisis requires, amongst other things, successful relative price adjustments between member states. We estimate here the scale of the adjustments needed using fundamental equilibrium exchange rates. We suggest two scenarios of adjustments, depending on the levels of inflation tolerated in surplus countries and at the Euro Area level. If the ECB doesn't temporarily increase its inflation objective, Portugal and Greece will be unable to significantly reduce their overvaluation by the end of the decade.

The sovereign debt crisis in the Euro Area: a twin deficits problem

Two reasons may be put forward to explain the severity of the sovereign debt crisis in the Euro Area. First, debts could *de facto* be considered as being denominated in foreign currencies: the country in crisis does not have the ability to monetize it. Secondly, a significant part of the debt is held by nonresidents: the crisis is akin to a sudden stop in external financing, but the country doesn't have the ability to devalue[1].

Under these conditions, can countries in crisis simultaneously rebalance their fiscal and external balances? The remedy advocated by the "Troïka"[2] rests on three pillars: fiscal adjustment, structural reforms and wage reductions. The three pillars are not independent: by compressing demand, fiscal adjustment reduces imports (the trade balance recovers) and prices (the real exchange rate depreciates). But the trade balance improvement may not be sustainable if it is based on a fall in demand relative to supply. Conversely, an upturn in the trade balance carried by a sharp depreciation of the real exchange rate, as observed in Ireland, can ease the burden of fiscal adjustment by reducing the contraction in demand. Therefore it is essential to have an idea of the magnitude of the needed real effective exchange rate adjustment.

Considering the Euro Area as a whole, the deficit is at an appropriate level, given the economic climate, and the current account is balanced. This is why we can consider that the real effective exchange rate of euro is at an adequate level, but that adjustments are necessary within the Euro Area. Countries facing a crisis should depreciate, while northern countries, in particular Germany, should appreciate their exchange rate. This paper estimates the scale of internal adjustments needed within the Euro Zone.

Which reference for the real effective exchange rate?

There is an extensive literature concerning how to calculate equilibrium exchange rates. Two main approaches stand out. The first[3] consists of estimating a long run relationship between the real effective exchange rate[4] of a country and its determinants – the "fundamentals" (productivity and net foreign assets in particular) – and then measuring the deviation between the current real exchange rate and its long-term value as predicted by the model. This first method has the advantage

1. D. Gros (2011), "Speculative Attacks within or outside a Monetary Union: Default versus inflation (what to do today)", Policy Brief 257, CEPS.
2. The European Commission, the European Central Bank and the International Monetary Fund.
3. This methodology is known as the Behavioural Equilibrium Exchange Rate (BEER). B. Clark & R. MacDonald (1998), "Exchange Rates and Economic Fundamentals – A Methodological Comparison of BEERs and FEERs", *IMF Working paper* 98-67.
4. *i.e.* the average real exchange rate against its trade partners.

of being based on a robust econometric relationship. However, it is conservative in that it assumes that behaviors observed in the past remain valid. For example, the relationship has been estimated over a period during which the country-risk was underestimated in Europe, distorting the relationship between net foreign assets and real exchange rate.

The second[5] approach relies on foreign trade equations. The idea is to calculate the level of real effective exchange rate needed to reduce the current account balance at a "target" judged to be sustainable. It is assumed that the output gap (particularly large in the Euro Area today) is cleared so that the internal (output at its potential level) and external (current account at its "target") balances are simultaneously reached. This second approach is more demanding than the first one in the sense that the current account target must be achieved even if deficit financing was not problematic in the past. It is more openly normative, but also more transparent than the first approach. However it is based on necessarily fragile demand and price elasticities of international trade as well as inevitably questionable trade balance targets.

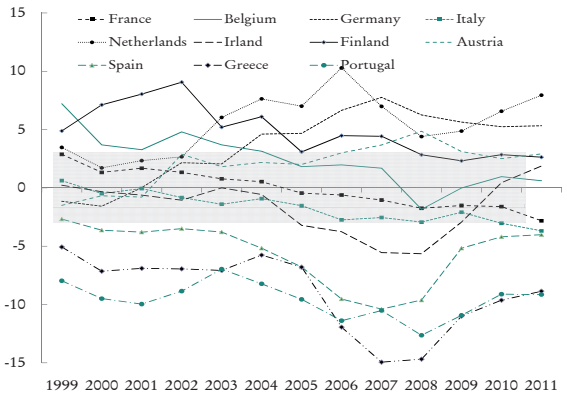
A measure of misalignments in Euro Area

We follow the second approach, which we apply consistently for 11 member countries[6] of the Euro Area and for the rest of the world. The method is presented and detailed in Carton and Hervé (2012)[7].

In this approach, the real effective exchange rate (REER) misalignment depends mainly on the chosen current account balance target and price elasticity of trade. The further the current account balance is from the target, the larger the misalignment (over- or undervaluation) will be. In the same way, the higher the magnitude of the elasticity, the lower the misalignment will be.

The REER misalignment is mainly measured through the deviation of the country's export prices relative to the prices of its competitors on various export markets in which it participates (competition on third-markets). The current account balance targets are determined by an ad-hoc criterion as suggested by Cline and Williamson (2011)[8]. For each country, the target is the average of the observed current account balances between 1999 and 2011 (Figure 1), under the constraint that the current deficit or surplus does not exceed 3% of GDP[9]. Following this rule, we consider that Spain, Portugal and Greece must reach a -3% target whereas

Figure 1 – Current Account Balances (%of GDP)



Source: OECD.

Germany, the Netherlands and Finland must lower their surplus to +3% (Table 1). For the Euro Area as a whole, the target is nearly achieved[10]. Current account balances should be adjusted within the Euro Area and not vis-à-vis the rest of the world, even if it happens through a redistribution of world market shares among European countries.

The import price elasticities are set at 0.92 for all countries, which is the standard estimate for developed countries. Export price elasticities are set accordingly to the highest standard for most macroeconometric models, ranging between 0.71 and 1.02 (Table 1). These elasticities are not independent one from another as they measure the evolution of international trade market shares of the various countries (these always sum to one). The changes in exchange rate misalignments between 2000 and 2011 are represented in Figure 2.a for Southern European countries and Ireland and in Figure 2.b for countries of Northern Europe. Unsurprisingly, Greece appears massively overvalued since the creation of the Euro. In 2001, this overvaluation exceeded 25%. In 2007-2008, it was close to 50% and would have fallen only

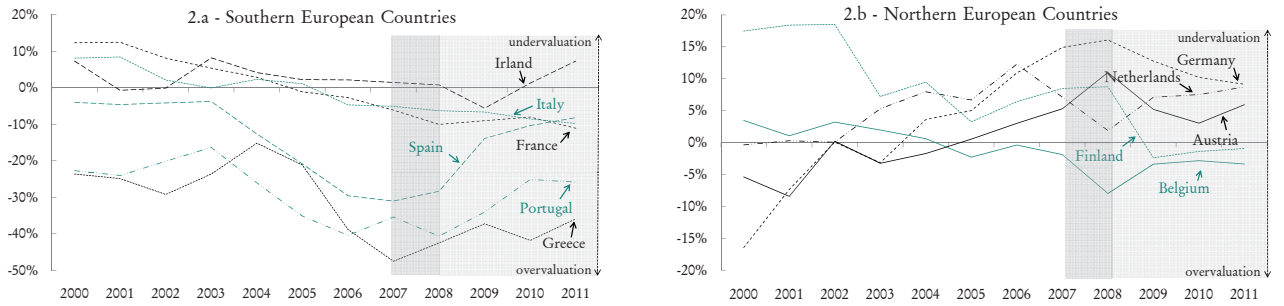
Table 1 – Trade Elasticities and Current Account Balance Target

	Exports	Imports	Target (%)
Germany	0.71	0.92	3.0
France	0.9	0.92	-0.3
Italie	0.9	0.92	-1.7
Spain	0.92	0.92	-3.0
Netherlands	0.92	0.92	3.0
Belgium	0.95	0.92	2.4
Greece	1.02	0.92	-3.0
Austria	0.99	0.92	2.0
Portugal	0.99	0.92	-3.0
Finland	0.97	0.92	3.0
Ireland	1.01	0.92	-1.6

Source: authors' calculations.

5. This methodology is known as the Fundamental Equilibrium Exchange Rate (FEER). J. Williamson (1985), "The exchange rate system", Institute of International Economics. See also L. Hinkle & P. Montiel (1999), "Exchange Rate Misalignment: Concepts and Measurement for Developing countries", The World Bank.
6. France, Germany, Italy, Spain, Netherlands, Finland, Portugal, Greece, Belgium, Austria and Ireland.
7. B. Carton & K. Hervé (2012), "Estimation of consistent multi-country FEERs", *Economic Modelling*, vol. 9, issue 4, p. 1205-1214, July.
8. W. R. Cline & J. Williamson (2011), "The current currency situation", Peterson Institute for International Economics, Policy Brief n° PB11-18.
9. Our targets are stricter than the Macroeconomic Imbalances Procedure, recently introduced in Europe. The MIP requires current account balances to range between -4% and +6 European Commission (2012), "Scoreboard for the surveillance of macroeconomic imbalances", European Economy. Occasional Papers, 92, February.
10. This does not mean that no adjustment should be made *vis-a-vis* the rest of the world. For example, a country like Portugal should reduce its deficit both towards Germany and towards the rest of the world, and conversely for Germany.

Figure 2 – Real effective exchange rate misalignments



Source: authors' calculations.

slightly since, remaining above 35% in 2011. Indeed, the Greek current account deficit has fallen little since 2008. However, this decline is not the result of restoring competitiveness but is only induced by the contraction of domestic demand.

Figure 2.a also shows a strong overvaluation in Spain and Portugal between 2001 and 2008, which has however been substantially corrected since 2008. The 2011 overvaluation is then around 10% for Spain and 27% for Portugal. Before the crisis, Ireland was characterized by a close-to-equilibrium REER. The real depreciation observed since 2009 led to a slight undervaluation in 2011, given the observed current account surplus that year (1.9% of GDP).

Italy and France experienced a continuous deterioration of their export performance since 2001. Today, the Italian and French REERs are overvalued of respectively 5 and 10%. In both countries, the deterioration in competitiveness does not appear to stem from a drift in prices and domestic demand, but rather from a lack of adaptation of their production systems to changes in world trade.

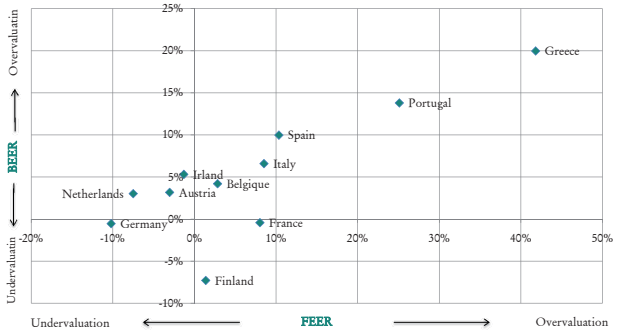
Countries with current account deficits do not face the same challenges. In every country, supply and the export sector should be boosted through structural reforms. However, given the magnitude of the estimated misalignments, these reforms would be insufficient in the cases of Greece and Portugal.

Figure 2.b suggests weaker currency misalignments in the Northern countries of the Euro Area. The undervaluation estimated for Germany and the Netherlands does not exceed 10% in 2011. According to our estimates, Germany's REER – slightly overvalued in 2001 – reached a level of undervaluation of 15% in 2008. The crisis has reversed this trend. The sharp fall in world trade during the 2008-2009 economic crisis stopped the growth in current account surpluses. Germany's undervaluation would now be below 10%. This reversal, concomitant with the global crisis, hides more structural changes at play. If we correct the current account evolution for the economic cycle, the correction in progress in Germany seems to be explained by a more dynamic domestic demand than in the previous decade.

Robustness checks of the equilibrium exchange rate

It is relevant to compare the estimated equilibrium exchange rates (and misalignments) using different methods. We then compare our results for 2010 with those of Coudert, Couharde and Mignon (2012)[11], calculated from a long-term relationship between the REER and two of its fundamental determinants: the net external position and relative productivity (measured as the ratio between GDP per capita in purchasing power parity and the average per capita GDP of trading partners). The results are shown in Figure 3. Both methods yielded the same qualitative diagnoses: overvaluation in Greece, Portugal, Spain and, to a lesser extent in Italy; close-to-balance REER for Austria, Belgium and Ireland; undervalued REER for Finland. However, two differences appear: (1) the degree of overvaluation is much lower in Coudert *et al.*, which is typical given their method, (2) our calculations result in an underestimation of about 10% in Germany and the Netherlands and an overvaluation of the same amount in France, while Coudert *et al.* place these countries close-to-balance in 2010. Our results are directly linked to the different levels of current account balances in all three countries in 2010.

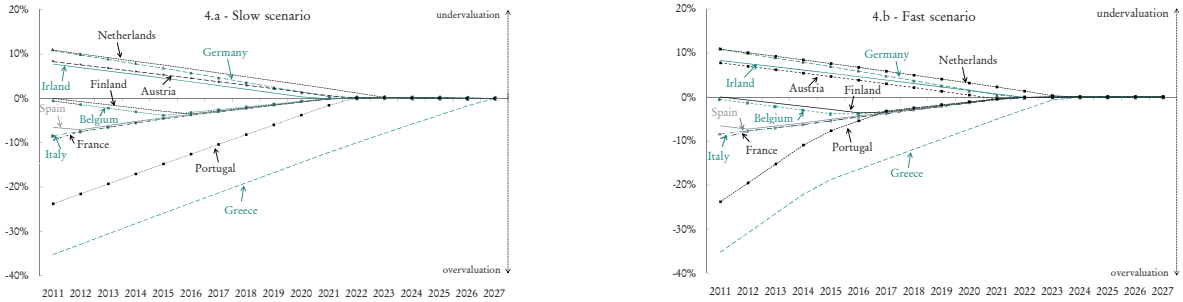
Figure 3 – REER Misalignments in 2010 With the Two Methods (REER and BEER)



Source: Coudert *et al.* (2012) for the BEER and authors' calculations for the FEER.

11. V. Coudert, C. Couharde & V. Mignon (2012), "On currency misalignments within the euro area", *CEPII Working Paper* n° 2012-07, April.

Figure 4 – Evolution of Misalignments – Scenario Analysis



Source: authors' calculations.

Adjustment Scenarios

As countries are unable to adjust trough nominal exchange rates within the Euro Area, the adjustments must take place through inflation differentials. We examine here how long it would take for each country to reach a close-to-balance REER.

Two scenarios are suggested under the assumptions that adjustments can be reached through inflation differentials and that the level of prices cannot decrease (downward wage rigidities).

In the first scenario (slow), the Euro Area aggregate inflation target is set to 2%. In the second scenario (fast), the target is increased to 3% from 2012 to 2014 before going back to 2% in 2016. In both scenarios, the inflation rate in the North cannot be 1% higher than ECB's target.

If Euro Area inflation differentials were oriented in the future to reduce internal imbalances, then most countries could significantly reduce their misalignment over a relative short horizon (2014). However, Portugal and Greece could not halve their misalignment before 2018 and 2020 respectively (Figure 4.a). Increasing the ECB's inflation target by 1 point would enable a faster rebalancing for these two countries (three years faster than the slow scenario), but at the cost of an inflation rate of 4% in Northern countries, which seems impossible (Figure 4.b). In both cases, a difference in inflation of 1.5% for ten years is needed between the North and the three major Southern countries (France, Italy and Spain).

Beyond the relative price adjustment, balance sheet adjustment is required

In 1933, Irving Fisher[12] described the devastating consequences of a fall in prices in highly indebted countries. It seems evident when the fall in prices is achieved through exchange rate depreciation in a country indebted in a foreign currency. To some extent, countries in a monetary union are comparable to countries that are indebted in a foreign currency. Those that today are overvalued would see their debt ratio (percentage of income or GDP) increase dramatically if the adjustment took place only by a fall in domestic prices. The reduction in public debt that occurred on March 9, 2012 may be a prelude to a series of larger public and private defaults. The risk of these defaults weights heavily on the balance sheets of financial institutions in the Euro Area which cannot properly assess the Greek debt they bought. Therefore, financial institutions themselves become victims of spillovers from the crisis. The existing financial tools facilitating these adjustments (the European Financial Stability, the European Stability Mechanism, or the interventions of the ECB) are highly unsatisfactory: they do not prevent the deleterious mechanisms of debt deflation. Only a major financial reform – allowing a quasi-automatic adjustment of debts when the implicit value of the collateral decreases – would provide the Euro Area with a financial architecture resistant to balance of payments crises.

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12. I. Fisher (1933), "The Debt-Deflation Theory of Great Depression", *Econometrica*.
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