Is the reduction of macro imbalances in the Euro area worth a deflation?

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Abstract
In this paper, we argue that the risk of deflation in the Eurozone should be dealt with by using appropriate policies (more expansionary fiscal and monetary policies) and after a reform of the macro imbalance procedure. Regarding the latter, more attention should be paid to the symmetry of its indicators. Moreover, the scoreboard has to be made more comprehensive in order to detect the lack of demand. Even if a macroeconomic surveillance of Eurozone countries may be helpful to prevent harmful imbalances, the Eurozone governance should take into account the fact that the Eurozone is not a small open economy. Growth must be balanced and current account surplus may be sought, but only insofar as they do not mirror a lack of internal demand and of private investment which are harshly needed to foster future growth prospects.

Keywords: Deflation – Macroeconomic imbalances – European Governance
JEL Codes: E31 – E61 – F42

The current European crisis has long focused on sovereign debts. More recently however, risks of deflation emerged and the question of macro imbalances came out as being as important as public imbalances. Indeed, macro imbalances which developed before the global financial crisis (GFC) have threatened the sustainability of public finances in peripheral countries of the Euro area. Due mostly to competitiveness losses, peripheral countries underwent macro imbalances and rising external indebtedness which impaired growth and growth prospects. After the upsurge of the GFC, public deficits and debts soared, somewhat mitigating the drop in private aggregate demand and private deleveraging. In 2007, macro imbalances were already substantial: current account deficits (in percentage points of domestic GDP) reached -5.3% in Ireland, -9.0% in Portugal, -10.0% in Spain and -14.4% in Greece. Those deficits have now shrunk in line with the fall of internal demand and with improving competitiveness.

The relative lack of interest about macro imbalances in the Euro area was initially related to the perceived disappearance of the external constraint for countries sharing the same currency. In a country which creates its own money, it is usual that no one cares about regional trade imbalances: regions do not face an external constraint, and the external constraint is managed at the country level, drawing on net trade between the country and the rest of the world. What works for a country should also have worked for a group of countries sharing the same currency: countries should not face an external constraint and the external constraint should be managed at the monetary union level. As stated by Giavazzi and Spaventa (2010), it was thought that a common currency would prevent from speculative attacks. Moreover, higher public and trade
deficits in some peripheral countries (Spain and Ireland were exceptions with their public surpluses) were considered parts of the catching up process in these countries where new public and private investments were required. A kind of benign neglect attitude towards twin deficits thus arose (see, e.g. Blanchard and Giavazzi, 2002; Ahearne et al., 2007).

The GFC has proved that a benign neglect attitude towards current account imbalances was ill-suited to the Euro area. The pass-through from external (lack of) demand to (higher) public deficits has been empirically strong and macro imbalances have finally weakened peripheral economies to such an extent that it impinged on the whole Euro area. Recent evidence presented by Alessandrini et al. (2012) suggests that past current account deficits have contributed to the surge in sovereign debt spreads. European governments and institutions, like the Commission and the Parliament, have thus elaborated a new economic governance approach in the Euro area, ambitioning to monitor macro imbalances. Nevertheless, despite an improvement in the macroeconomic surveillance of Euro area Member States, the cures to macro imbalances remain deflation-prone. We argue that the asymmetry in the new indicators, associated with a low-growth bias at the Euro area level, is responsible for the mismanagement of the Euro area which leads to economic stagnation and fuel deflation risk.

The objective of this paper is twofold. First, after a short presentation of current account imbalances in the Euro area, we highlight the linkages between trade deficits and public deficits in Euro area Member States. These linkages are strong enough to legitimate the recourse to a “scoreboard”: an effective macroeconomic supervision and control of the Euro area economy by the European Commission certainly requires to draw on a wider set of indicators than public finances. We discuss these new indicators. Second, based on a simple theoretical model of three countries where two form a monetary union, we review the shocks that have led to the crisis and the different policies implemented so far by the peripheral countries to reduce imbalances. While these policies are consistent with the letter or spirit of the “scoreboard”, we show that it misses an important point that currently explains the deflation trend in the Euro area: trade deficits are not all alike. This deflation bias does not only call for a reversal in economic policies in the Eurozone but also for a (relatively small though important) reform of the “scoreboard”.

I. Macroeconomic imbalance in the Eurozone: does it really matter?

The divergence between Euro area member states has remained high since the adoption of the Euro. Despite nominal convergence, related to the fulfilment of Maastricht criteria, real convergence has never been achieved. EEAG (2013), Guerrieri and Esposito (2012), or Holinski et al. (2012), among many others, have pointed out the weaknesses of peripheral countries of the Euro area during their convergence process to the Euro and beyond. Whereas EEAG (2013) and Holinski et al. (2012) mainly argue about productivity gains having remained below wages, hence producing a sharp deterioration in competitiveness, Guerrieri and Esposito (2012) argue that the

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1 Maastricht criteria referred to the prior convergence among Euro area candidates in terms of inflation, long term interest rate and exchange rate, plus a limit to public deficit (at 3% of GDP) and a limit to public debt (at 60% of GDP).

2 See also Blanchard (2007) for the case of Portugal.
lack of policy coordination at the Euro area level has been a strong determinant to external imbalances. Therefore, they insist on the opposition between creditor countries, like Germany, which accumulated current account surpluses, and debtor countries, like Italy, which accumulated current account deficits.

1. Growing current account imbalances

Indeed, current account imbalances were substantial in 2007 in half of the Euro area Member States (see figure 1). By substantial, we mean a current account deficit above 4% of GDP, which is the benchmark adopted by the Commission in the “scoreboard” (see infra). In this respect, Italy’s deficit was not high enough to be part of this group. Slovenia’s, Slovakia’s, Ireland’s, Malta’s, Portugal’s, Spain’s, Cyprus’, Greece’s and Estonia’s were and they formed a group of “Southern countries” where current account deficits grew steeply between 1999 and 2007, whereas in Luxembourg, the Netherlands and Germany, current account surpluses grew rather sharply over the same period. Hence, the gap between these “Northern” Member States and “Southern” ones increased despite the adoption of the euro.

We do not intend to review extensively the economic mechanisms which have contributed to raising imbalances, except the convergence process. It must yet be reminded that several explanations have been proposed. Belke and Dreger (2013) notably oppose the role of convergence and the competitiveness gap, resulting from cost-push shocks. Contrary to the optimistic view (or benign neglect view) of Blanchard and Giavazzi (2002), they emphasize the competitiveness channel. Gaulier and Vicard (2012) argue that losses in competitiveness have not caused current account deficits per se. The starting point resulted from a demand shock in the non-tradable sector, which has pushed prices up. Barnes et al. (2010) also highlight the housing booms in Ireland and Spain to explain current account deficits in those countries. The roots of macro imbalances would then be linked to increasing financial imbalances and inadequate financial regulation (Lane and Pels, 2012). Finally, different trade specialization may explain that Germany has benefited from an increasing demand of machinery and equipment from China whereas Spanish, Greek or Portuguese exports have been in direct competition with emerging countries exports (see Chen et al., 2013).

3 In their paper, they mainly insist on cost-competitiveness while Zemanek et al. (2009) also point out non-price competitiveness (quality competition).
Under the catching up hypothesis, growing current account deficits are not meant to be a threat to macroeconomic stability. Rather, they go hand-in-hand with stability. In relatively poor countries, capital is scarce and investment opportunities are numerous: capital inflows can thus reduce the rate of interest and give an impetus to households’ consumption and firms’ investment. An improvement in standards of living and in productivity may ensue. Larger consumption and larger demand for intermediate products raise imports and create a current account deficit.

What do the data tell about convergence of Euro area peripheral countries vis-à-vis the Euro area average? In 1999, the Greek GDP per head amounted to 57.5% of Euro area average, and it increased by 11.2 percentage points until 2007. The Spanish GDP per head grew from 72.1% to 75% of the Euro area average on the same period. Only Portugal evidenced a diverging process vis-à-vis the Euro area average. Besides, only in Greece could the determinant of the convergence process be attributed to a rise in total factor productivity (TFP). The average growth of TFP between 2000 and 2008, estimated by the European Commission, was 1.5% in Greece against -0.2 for Spain, 0.0 in Italy and Portugal and 0.6 for Ireland. By comparison, TFP average growth in Germany reached 0.8 and it exceeded Greek performance only in a few Eastern countries (Baltic countries, Slovakia and Slovenia). Then, if in some countries, capital inflows and current account deficits have increased because of expectations of higher future growth, these expectations have been over-optimistic. In Spain, economic growth followed the real estate boom rather than investments in the tradable sector. The crisis then revealed that the Spanish external deficit was not sustainable. Though Ireland was no longer “converging”, - its GDP per head was above the Euro area average -, the roots of growth could not be found in large productivity gains.

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*Figure 1. Euro area, current account balance, in % of GDP*

Source: Eurostat

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4 Estimates are from AMECO database.
either, but also in a boom. As for Portugal and Italy, they achieved low improvements in global factor productivity before the GFC.

Thus, the argument of a nicely-going convergence process was a tale. Deeper European integration did not produce the expected growth impetus and, finally public deficits increased. It is striking that in 2007, the public deficit in the Euro area, at -0.7% of GDP, was exactly equal to the average trade deficit of Euro area Member States. Indeed, figure 2 reports the trade and public balances of the first 12 Members of the Euro area. Balances are expressed in percentage of domestic GDP. On average, trade and public balances have been positively correlated, with a correlation coefficient of 0.6 on this time sample. Figure 3 depicts the large incidence of the GFC on public deficits: the occurrence of a fiscal surplus is now relatively much scarcer than on the previous horizon. According to the data of figure 3, the correlation is a bit lower on this shorter horizon, at 0.5 (figure 3). According to this number, either “twin deficits” or “twin surpluses” would be expected. This is not to say that high trade deficits produce high public deficits, or the reverse. Causality would require taking into consideration the impact of a change in the public (or trade) deficit on either savings or investment which is out of the scope of this section.

The key element that this correlation raises is the necessity to recourse to the study of both public and current account imbalances to perform a thorough analysis of the economic situation of a Member State of the Euro area. Data show that one imbalance does not go without the other.

**Figure 2. Current account and public balances in the Euro area-12, 1999-2012**

Source: Eurostat

N.B.: the figure does not report the 2010 public deficit of Ireland which achieved 30% of GDP.

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\(^5\) Barnes et al. (2010) pointed out that twin deficits notably emerged in Portugal and Greece.
In accordance with the usual accounting identity, relating net (public and private) savings to net exports, it is easy to show how complementary indicators of public finances and external trade can be to analyze the state of an economy. Given a public deficit, the state of the economy can be different whether a trade surplus or deficit occurs. Under trade balance (or a trade surplus), there is evidence of a lack of private investment (vis-à-vis savings) or an excess of private savings (vis-à-vis investment). This is the kind of situation that depicts the Euro area as a whole, or Euro area creditor countries like Germany. The same public deficit associated with a trade deficit of a larger size reveals an opposite situation: a lack of private savings (vis-à-vis investment) or an excess of private investment (vis-à-vis savings). This is a situation that depicts Euro area debtor countries like Spain. Then, in 2008, the outbreak of the crisis has triggered a fall in private demand. Given the current account deficits of those countries, accounting identity could not be respected without a rise in public deficits. Public finances were not only the symptom of the sovereign debt crisis but they actually mirrored the external imbalances. It became clear that fiscal rules had been misleading and failed to signal other macroeconomic imbalances. Although public deficits were below the 3% threshold in 2007 for all EMU countries but Greece and Portugal, new divergence in private-sector behaviors had built up. This is the trend which Holinski et al. (2012) highlight in the Euro area since 1999. In this context, policies targeted at modifying private-sector behaviors seem more appropriate than a rough and simplistic appeal to “fiscal contraction”.

Figure 3. Current account and public balances in the Euro area-12, 2007-2012

Source: Eurostat

N.B.: the figure does not report the 2010 public deficit of Ireland which achieved 30% of GDP.

2. The 6-pack

In December 2011, the EU established a new set of rules, the “6-pack”, which adds to the preventive and corrective tools of the Stability and Growth Pact a Macro Imbalance Procedure (MIP) drawing on indicators pertaining to current account positions, competitiveness, and financial stability. The envisaged purpose is “to establish a surveillance procedure to prevent and correct macroeconomic imbalances” and “to provide an early-warning signalling of potentially harmful macroeconomic imbalances in MS”. The surveillance is based implicitly on a 2-step
procedure. First, the scoreboard provides a “reliable signalling device for potential harmful imbalances”. Then it is followed by an “economic reading” taking into account country specific circumstances and institutions. This second step implicitly relies on an in-depth analysis to assess precisely whether or not the signalled disequilibria may challenge future prospects for growth, price and financial stability. In-depth analyses are then published by the European Commission and they may give rise to economic policy recommendations to address macroeconomic imbalances.

The list of indicators (see table 1) fits well in the purpose of signalling macro imbalances. But it must be stressed, first, that there is a risk that the surveillance puts too much emphasis on the respect of numerical thresholds which might lead to fallacious recommendations. Second, part of the assessment will rely on an asymmetric view of imbalances.

A new exercise in numerology?

A first stage of the MIP resorts to pinpointing the position of countries regarding thresholds, an approach close to the one already used for identifying excessive deficits in the Stability and growth pact (SGP). A first remark is that an over-interpretation of a numerical target should be avoided. Otherwise we may fear the risk of a new exercise in numerology that will create new rules of conduct without a clear and stable meaning as regards the numbers to be targeted. Within the SGP, the rule of conduct has long focussed on a public deficit at 3% of GDP, though this threshold lacks a theoretical and empirical basis. The proposed thresholds of the MIP are not based on sound theoretical or empirical conclusions which may show that breaching the thresholds echoes an unsustainable macroeconomic situation. A second remark relates to the identification of imbalances: it should not only rely on figures but it has to be based on in-depth economic analysis. The financial crisis has made clear that countries like Spain and Ireland which fulfilled the 3%-of-GDP limit on public deficit have also undergone a deep crisis.

Eventually, the general surveillance of a Member state’s macro imbalances must go beyond a few targeted numbers which are without clear economic rationale and it should rely on an in-depth economic analysis. Yet, we must recognise that the MIP makes it clear that a thorough “economic” reading will complement the surveillance. In that view, the list of indicators will only serve as an early-warning signal. The scoreboard is an alert system but main decisions and major recommendations will result from “economic reading” and “in-depth analysis”. Considering the distinction between indicators of the scoreboard and in-depth analysis, questions about the hierarchy can emerge. On the one hand, if surveillance of macro imbalances relies mainly on the scoreboard, it will be difficult to avoid an excessive number of false alarms: a so-called “excessive” current account deficit may finally reflect a catching-up process. On the other hand, if surveillance relies mainly on “in-depth analysis”, recommendations by the Commission will be discretionary. In case of discrepancy between recommendations and the scoreboard, the MIP will not deliver a clear and transparent message to the misleading country.
An asymmetric assessment of imbalances

Currently, most indicators are asymmetric. For instance, the current account threshold is set between a surplus of 6% of GDP and a deficit of 4% of GDP. There is no economic rationale for that numbers in particular; and there is no economic rationale as well for introducing an asymmetry in the current account threshold. What makes a deficit above 4% more dangerous to the stability of the Euro area than a surplus above 4% (but below 6%)? It seems difficult to argue that German current account surpluses, above 4%, are more innocuous to the Euro area than a deficit above 4% in a small country like Greece. The reverse is certainly more correct.

Table 1. Indicators and thresholds of MIP

<table>
<thead>
<tr>
<th>Label</th>
<th>Threshold Geo Area</th>
<th>Threshold Lower Value</th>
<th>Threshold Upper Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 year average of Current Account balance as % of GDP</td>
<td>EU27</td>
<td>-4</td>
<td>6</td>
</tr>
<tr>
<td>Net International Investment Position a % of GDP</td>
<td>EU27</td>
<td>-35</td>
<td></td>
</tr>
<tr>
<td>% change (3 years) of Real Effective Exchange Rates (42 IC) with HICP deflators</td>
<td>EA</td>
<td>-5</td>
<td>5</td>
</tr>
<tr>
<td>% change (3 years) of Real Effective Exchange Rates (42 IC) with HICP deflators</td>
<td>Non EA</td>
<td>-11</td>
<td>11</td>
</tr>
<tr>
<td>% change (5 years) in Export Market Shares</td>
<td>EU27</td>
<td>-6</td>
<td></td>
</tr>
<tr>
<td>% change (3 years) in Nominal ULC</td>
<td>EA</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>% change (3 years) in Nominal ULC</td>
<td>Non EA</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>% y-o-y change in Deflated House Prices</td>
<td>EU27</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Private Sector Credit Flow as % of GDP – consolidated</td>
<td>EU27</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>General Government Debt as % of GDP</td>
<td>EU27</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>3 year average of Unemployment Rate</td>
<td>EU27</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>% y-o-y change in Total Financial Sector Liabilities</td>
<td>EU27</td>
<td>16.5</td>
<td></td>
</tr>
</tbody>
</table>

Source: European Commission, Economic and Financial Affairs

To make things clear, let us switch from ratios to levels. The level of external debt that a German surplus of 4% of its GDP entails is far higher than the level of external debt that a small-country deficit of 4% of its GDP entails. Hence, the disequilibrium forces, and thus the systemic risk, of a large country surplus are stronger than a small country deficit’s. An indicator of trade imbalances which manages to monitor their impact on growth, price and financial stability should rely on levels rather than percentage points of GDP. The trade surplus of a large country will fuel credit by domestic banks to smaller countries; if it is huge, the availability of credit in the latter countries will produce easy money and a boom-bust situation. Portugal, Greece, Cyprus and even Spain are certainly good examples in this respect. Their external deficits were largely financed by capital flows from Northern countries and notably Germany and France (Chen et al., 2013). To illustrate this point further, one can compare the respective amounts of (current) euros that a
current account surplus of 6% of 2013 GDP in Germany and current account deficits of 4% of 2013 GDP in Greece, Portugal and Spain mean. The German surplus will amount to more than 160 € billion (109 € billion if the surplus achieves only 4% of the German GDP), whereas the deficits will amount to € 7, 6 and 40 billion in Greece, Portugal and Spain respectively. It is straightforward that the impacts on the Euro area are not comparable! Then, if the German surpluses mirrored weak investment opportunities and weak internal demand, the deflationary forces would have been very powerful in the Eurozone if they had not been partially absorbed by deficits in other Euro area countries.

In comparison with the indicator referring to the current account position, others relating to competitiveness and market shares are even more asymmetric: the burden of responsibility is exclusively borne by deficit/debtor countries. This is notably the case for the net international investment position which is, by construction, the accumulation of past current account balances. Because of this bias in signalling only a certain type of imbalances, it is possible to miss the fact that a market share loss by a given Euro area country may have as counterpart a market share gain by another one. Therefore, there is a risk that recommendations will be geared toward deficit countries urging them to adjust wage costs downward or to implement restrictive policies. Conversely it will fail to signal that surplus countries have run competitive disinflation policies, as confirmed recently. Indeed, the European Commission decided not to put Germany into surveillance for macroeconomic imbalances despite its current account surplus exceeding 6% for two consecutive years. As stressed by De Grauwe (2012), the current governance of macroeconomic imbalances in the Euro area endorses the “tyranny” of creditor countries. The result will be that the Euro area as a whole will continue to implement a global deflationary policy. By only signalling competitiveness losses, the MIP will actually miss to signal a coordination problem among Euro area countries.

The same remarks hold for indicators of internal imbalances. By considering only the increases in private sector credit flows, the scoreboard will only signal member states facing overheating although weaknesses in internal demand may also be a source of disequilibrium. For macro surveillance to be consistent with article 2 of the Consolidated EU Treaty (stipulating that the general objectives of the EU are to promote a high level of employment and social protection, the raising of standard of living and quality of life, and economic and social cohesion and solidarity among Member states), it should not only point out the risks of an excess development in credit and asset prices. For instance, a growth slowdown in credit flows may signal a situation of credit crunch or weakness in internal demand. It would then be useful to consider a lower limit to the credit flows to the private sector.

II. Fixing the European crisis

In contrast with the MIP scoreboard, policies which have been advocated so far to peripheral countries and which have been implemented by them left no room to interpretation. They reveal a bias in the diagnosis of the current crisis. The bulk of macro balance rests on the countries facing a deficit, not a surplus. Furthermore, the set-up of this new governance has coincided with unprecedented fiscal consolidation amplifying the risk of deflation (OFCE-IMK-ECLM, 2014).
1. A simple model of the euro area

A recent paper by Schmitt-Grohé and Uribe (2013) has shown the different stages peripheral countries have gone through since the adoption of the Euro. According to the authors, these countries faced three different shocks: first, they underwent a positive demand shock stemming from a lower interest rate which generated a boom in private consumption and investment. Second, a negative supply shock occurred after the increase in (unit) labor costs which put back the economy at its initial level of employment, but at a higher price level. Both shocks were domestic shocks. The third one has been a negative demand shock originating in the global financial crisis: aggregate demand plummeted, hence partly curbing inflation, but at a real cost: unemployment increased.

This analysis is extended to provide a narrative analysis of the sovereign debt crisis. A 3-country model is notably developed to this end. The aim is to emphasize the extent to which the policies (fiscal consolidation and structural reforms aimed at improving cost competitiveness in crisis countries) adopted so far to fix the crisis have triggered deflationary pressures in the Eurozone.

Though initially developed by Schmitt-Grohé and Uribe (2013) in a model distinguishing tradable from non-tradable goods, the successive stages of the Eurozone crisis can be easily described in an AS/AD model, with some price and wage inertia. Despite the criticisms it has long gone through (see Colander, 1995; Docherty and Tse, 2009; and debates on the economic blogosphere between, e.g. Paul Krugman and Simon Wren-Lewis), the use of the AS/AD model is convenient here to convey the basic message of the pros of either structural reforms or fiscal and monetary stimuli. We develop a simple 3-country model where 2 form a monetary union (the Eurozone) whereas the third one is “the rest of the world”. We introduce heterogeneity in the transmission channel of monetary policy and exchange rate shocks to cope with some features of Eurozone countries. The model is then solved graphically to illustrate the situation of the two open Eurozone countries: a deficit country (country 1) and a surplus country (country 2). The developments that follow are purely illustrative. They are based on several assumptions aimed at simplifying the analysis and the understanding of the crisis.

Aggregate demand is given by the following reduced-form:

\[
\begin{align*}
\gamma_1 &= k.d_1 - \sigma.(1 + \epsilon).(r - \pi_1) + \mu.bc_1 \\
\gamma_2 &= k.d_2 - \sigma.(1 - \epsilon).(r - \pi_2) + \mu.bc_2
\end{align*}
\]  

(1)

where \(\gamma\) stands for output gap in country 1 and 2, \(d\) represents demand shocks stemming notably from fiscal policy. \(\sigma\) measures the degree of heterogeneity in the transmission channel of monetary policy. Finally, \(bc\) is the current account balance with \(\mu\) the degree of openness, which is supposed to be identical across countries. Current account for countries 1 and 2 are given by:

\[
bc_1 = \omega_b.m.(d_b - d_1) + \omega_b.y.(1 + \epsilon)(s - \pi_1) + \omega_{1.2}.m.(d_2 - d_1) + \omega_{1.2}.y.(\pi_2 - \pi_1)
\]  

(2)

10
\[ bc_2 = \omega_b.m.(d_b - d_2) + \omega_b.\gamma.(s - \pi_2) + \omega_{2,1}.m.(d_1 - d_2) + \omega_{2,1}.\gamma.\pi_1 - \pi_2 \] (3)

The two first components on the right-hand side of equations (2) and (3) represent the external balance with the rest of the world (country b), where \(d_b\) is private demand in the rest of the world and \(s\) is the exchange rate augmented by inflation rate outside the monetary union. Foreign price shocks have also asymmetric effects. \(\omega_b\) and \(\omega_{1,2}\) are the respective shares of country b and country 2 (respectively 1) when country 1 (respectively 2) is considered. By construction, \(\omega_{1,2} = \omega_{2,1}\). The last two components of equations (2) and (3) represent internal trade balances. Their sum is obviously equal to zero.

The exchange rate is exogenous. Given a positive value for \(\bullet\), the pass-through effect of a depreciation of the common currency (a rise in \(s\)) has more impact in country 1 than in country 2. There is indeed evidence in the Eurozone that shocks on the exchange rate have more impact in Spain than in Germany (see Blot and Cochard, 2008) reflecting a higher price-elasticity of exports. Finally, \(\gamma\) stands for the price-elasticity of trade adjusted by the coefficient of heterogeneity and \(m\) represents the revenue-elasticity of imports. The interest rate in the monetary union is supposed to be fixed by an inflation-targeting central bank, as follows:

\[ r = \pi + \lambda.(\pi - \pi^*) \]

where \(\pi^*\) is positive to ensure inflation stability as emphasized in the literature on monetary policy rules. \(\pi^*\) is the level of inflation targeted by the central bank. Finally, inflation rates in the two Eurozone countries are given by Phillips curves:

\[
\begin{align*}
\pi_1 &= \pi^* + \phi.y_1 - c_1 \quad (4) \\
\pi_2 &= \pi^* + \phi.y_2 - c_2 \quad (5)
\end{align*}
\]

where \(c_1\) and \(c_2\) are domestic supply shocks. A positive supply shock drives inflation down and has positive impact on the output.

Two simplifications have been introduced so far. First, current account balances depend directly on private demand and not on the output gap. Hence, we switch off the possible feedback effects from exports (of final goods) to imports (of inputs). Second, exchange rate variations and foreign prices do not fuel domestic inflation directly\(^6\). We only consider their second-round effects through the output gap: a depreciation of the common currency will boost exports in country 1 and 2 and, via equations (1), output gaps will then increase, leading to higher inflation (equations 4 and 5).

Assuming the two Eurozone countries have the same size, we may compute the average sum and difference according to the following rule for any variable \(x\):

\(^6\) Besides, the role of expectations - notably on the Phillips curve - is overlooked here. It would not strongly change the spirit of the model. Deflation risk might even be amplified if it is supposed that expectations of deflation arise because of the zero lower bound, for example.
Accordingly we can compute the external balance of the monetary union ($bc$), the aggregate output gap ($y$) and the divergence of output gap ($\bar{y}$):

$$bc = \omega_b \cdot m \cdot (d_b - d) + \omega_b \cdot \gamma \cdot (s - \pi) - \omega_b \cdot \epsilon \cdot \gamma \cdot \bar{\pi} \quad (6)$$

$$y = (k - \mu \cdot \omega_b \cdot \gamma \cdot (s - \pi) + \sigma \cdot \lambda \cdot \pi^* - (\sigma \cdot \lambda + \mu \cdot \omega_b \cdot \gamma) \cdot \pi$$

$$+ (\sigma - \mu \cdot \omega_b \cdot \gamma) \cdot \epsilon \cdot \bar{\pi} \quad (7)$$

$$\bar{y} = (k - \mu \cdot \gamma \cdot (\omega_b + 2 \cdot \omega_{1,2}) \cdot d + \mu \cdot \omega_b \cdot \gamma \cdot \epsilon \cdot s + \sigma \cdot \lambda \cdot \epsilon \cdot \pi^* - (\sigma \cdot \lambda + \mu \cdot \omega_b \cdot \gamma) \cdot \epsilon \cdot \pi$$

$$- \gamma \mu (\omega_b + 2 \cdot \omega_{1,2}) \cdot \bar{\pi} \quad (8)$$

Thus, the aggregate external balance of the monetary union improves with external demand from the rest of the world and with the foreign price (here the exchange rate). Heterogeneity in the monetary union, via $\epsilon$, may amplify the negative impact of an increase in inflation in country 1 vis-à-vis country 2: the country most sensitive to a monetary shock would bring the Eurozone trade balance down a bit further.

The Eurozone output gap has usual properties: it increases with external demand, and it decreases with inflation. A higher inflation target would impact positively on the output gap via the decrease in the real interest rate. A strong internal demand may boost the output gap of the monetary union except if external leakages are strong (trade openness is high). It is important to notice that the Eurozone output gap does not depend on intra-trade but only on extra-trade. This is perfectly usual and expected: domestic leakages from intra-trade produce a zero-sum game at the level of the monetary union. Consequently, only extra-European trade leakages have an impact on Eurozone output gap. This impact is differentiated across countries as heterogeneity is included in the model. The impact of inflation differential between Eurozone countries on the Eurozone output gap can be twofold: without a (strong) reaction by the common central bank, the reduction in the real interest rate may have a positive impact; but the deterioration in competitiveness of the most sensitive country to a monetary shock may produce a negative impact.

Output divergence between the two Eurozone countries can widen when the exchange rate depreciates or when the inflation target increases, due to differences in sensitiveness to monetary and exchange rate shocks among the two Eurozone countries. Output divergence will decrease if global inflation or inflation differential increases: both deteriorate the external trade balance, at the expense of demand in the two Eurozone countries, hence favoring the convergence in their outputs. The impact of demand divergence between these two countries on output divergence is twofold: first, it directly impinges positively, via equations (1); second, the larger trade leakages,
the lower the feedback effect from demand to output divergence within the Eurozone. Consequently, external trade helps smooth divergences within the Eurozone.

Despite the extreme conceptual simplicity of the model, the analytical solution is complex and not easily tractable, as equations (6) to (8) show. The introduction of extra-zone and intra-zone trade deficits, on the one hand, and of differences in sensitiveness to monetary and exchange rate shocks among Eurozone countries, on the other hand, leads to rather complex issues. A graphical interpretation may help to account for the impact of the shocks on the two countries and on the averaged aggregates. To this end, we build demand and supply curves (see the appendix for details).

The model shows that a positive demand shock – a fiscal expansion or a positive external shock, a depreciation of the common currency – improves the output gap. Due to heterogeneity, domestic demand \( \dddot{d} \) and supply \( \dddot{c} \) asymmetric shocks may also have some impact on the monetary union output gap. If fiscal policy is more expansionary in country 1 than in country 2, the output gap improves when \( \sigma > \mu \omega_b \gamma \). This may hold if trade with the rest of the world is relatively weak. Now if country 1 implements an expansionary fiscal policy while country implements a restrictive fiscal policy \( (\dddot{d} > 0) \), inflation increases in country 1 whereas it decreases in country 2. With constant monetary policy rate, the real interest rate decreases in country 1 and increases in country 2. Besides, competitiveness deteriorates in country 1 and improves in country 2. Then, if the real interest rate effect is stronger (respectively weaker) than the competitiveness effect, the asymmetric shock has a positive (respectively negative) impact on the Eurozone output gap.

In the case of an asymmetric supply shock where country 1 implements structural reforms (i.e. \( c_1 > 0 \), which reduces the inflation rate) while inflation increases in country 2 due to \( c_2 < 0 \), the real interest rate increases in country 1 and decreases in country 2. Competitiveness improves in country 1 and deteriorates in country 2. For \( \sigma > \mu \omega_b \gamma \) (the interest rate channel is stronger than the competitiveness channel) the asymmetric supply shock has a negative impact on \( y \).

Heterogeneity widens – the output gap increases faster in country 1 than in country 2 – after a positive asymmetric demand shock and with foreign prices. The impact on Eurozone inflation is positive (respectively negative) for asymmetric demand (respectively asymmetric supply) shocks, if and only if the real interest rate channel is more powerful than the competitiveness channel.

2. A short narrative of the crisis

The model is useful to provide a narrative analysis of the Eurozone crisis, emphasizing first the growing imbalances which have built up after the adoption of the euro and then the solutions adopted to fix the crisis.

Let us assume that before adopting the common currency, the two countries were at state A with null output gap (figure 4a), with inflation equal to the target and unemployment at its equilibrium value (not defined here). We consider that country 1 is a peripheral country of the Eurozone while country 2 is a core country of the Eurozone. Following Schmitt-Grohé and Uribe (2013), the first shock is a demand shock in the periphery of EMU. It may result from financial
integration which has triggered capital inflows and expectations of future growth, hence shifting aggregate demand in country 1 to the right. The shock moves the equilibrium from A to B (aggregate demand shifts from $AD$ to $AD_1$). For higher inflation and output in country 1, the current account is now in deficit. As the shock is asymmetric, $\bar{y}$ increases. Convergence is then taking place since per capita output was lower in country 1 than in country 2 when the Euro was created. Under condition $\sigma > \mu \omega B \gamma$, the asymmetry resulting from the positive shock in country 1 may also amplify the positive impact on the global output gap. The equilibrium is now at point B, where the output gap and the inflation are higher in country 1 and in the monetary union (figure 4c). As no shock occurs in country 2, its equilibrium is still at point A.

The second shock is a cost-push shock in country 1 fueling wages’ increases. The aggregate supply shifts to the right, from AS to $AS_1$. The output gap of country 1 (point C in figure 4a) is still positive but is below the equilibrium reached at point B. Meanwhile, country 2 implements structural reforms to gain in competitiveness, shifting aggregate supply to the left (from AS to $AS_1$). As in Germany during the 2000s, it may proceed from a reduction in labor protections, a fiscal devaluation, and/or negotiated agreements to dampen wage growth (see Chagny, 2008 for details). A new equilibrium (point C) emerges in country 2 where inflation has decreased, output gap has increased and the current account is now in surplus. The supply shock is strictly anti-symmetric, hence $c = 0$. As a consequence, the shock should have no impact on the average inflation rate unless some heterogeneity remains in the monetary union. Yet, equation (13) in the appendix indicates that inflation in the monetary union increases for $\bar{c} < 0$ and if $\sigma > \mu \omega B \gamma$. Moreover the size of countries’ GDP may matter. Considering that country 2 is bigger than country 1 would lead to a decrease in the average inflation rate. On the one hand, it would amplify the reaction of the common central bank. The interest rate would decrease hence boosting the output gap, notably in the small country where monetary shocks have more impact. On the other hand, the negative competitiveness effect on country 1 would also be stronger. The global effect on country 1 would then depend on trade openness vis-à-vis the pass-through of monetary policy decisions.

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8 Another interpretation of the shock may also be related to the heterogeneity in the transmission of monetary policy, which is accounted for in the model. The expansionary monetary policy shock implemented after 2000 would then have had a stronger effect in country 1 than in country 2. Here, we consider the situation where the shock is positive in country 1 only (figure 4a).
Figure 4a. Growing imbalances and the global crisis in country 1

Figure 4b. Growing imbalances and the global crisis in country 2
The third shock is the global financial crisis which reduces the aggregate demand in both countries, shifting $AD$ to the left. Countries 1 and 2 are stuck at point D, with lower prices and lower output than at point C. Unemployment rate is also higher than in the initial situation (point A). The shock being symmetric, $\bar{d} = 0$, inflation in country 1 may be lower or close to inflation in the initial situation whereas the negative shock has amplified disinflation in country 2. It must also be stressed that the considered demand shock is net of fiscal expansions.

Figure 4c. Growing imbalances and the global crisis in monetary union

3. Discussing solutions to the crisis

Different solutions would have been possible to go back to the former state of the economy, at point A. Schmitt-Grohé and Uribe (2013) rapidly dismiss a structural reform of the labor market by which the minimum wage would be cut. Though the consequent positive supply shock would shift the aggregate supply back to the left, Schmitt-Grohé and Uribe take for granted the downward nominal wage rigidity already discussed by Keynes (1925). But some others argue that a positive supply shock to peripheral countries is required and is feasible. Rather than a wage cut, they promote active-labor market policies (training, incentives to return to work) which they mean would improve productivity (see, e.g. OECD, 2012). Actually, the aforementioned measures have already been implemented in the crisis countries of the Eurozone (see Blanchard et al., 2013, or IMF, 2012, for a list of the structural reforms adopted by crisis countries).

9 In 2008 and 2009, most of Eurozone countries have sought to mitigate the negative consequences of the shock with countercyclical fiscal policies.
Minimum wage has been frozen or even cut in Greece. Automatic extensions of collective agreements have often been suspended in Portugal and opt out clauses have been granted, e.g. in Spain. It must also be emphasized that these reforms were often supported or proposed in MIP reports by the European Commission. In-depth analyses have indeed pointed out the need to restore competitiveness in crisis countries and notably in Spain, Portugal or Greece.

The model presented here may then be helpful to illustrate the impact of these structural reforms and notably to shed some lights on the potential deflationary consequences of the new Eurozone governance, especially after a historical episode of fiscal contractions.

Even though fiscal policies became restrictive in the Eurozone as a whole, the stance of consolidation has been very different from one country to another. Fiscal policy has been weakly restrictive in Germany whereas the most stringent consolidations were implemented in Greece, Spain or Ireland. To simplify the analysis, we consider here that the negative fiscal shock is asymmetric: austerity is only implemented in Spain so that \( D_1 < 0 \) and \( D_2 = 0 \). Then: \( D < 0 \) and \( D \leq 0 \). The impact of the shock on output gaps and inflation rates is represented in figure 5 (a to b), where the analysis starts from the previous equilibrium (point D in figures 4). Demand shifts to the left (from AD2 to AD3). The recession is then amplified in country 1 and the inflation rate is declining further. The equilibrium is now at point E (figure 5a) where the current account of country 1 is now in surplus, notably because of the slump in internal demand. As no shock occurs in country 2, it remains in a situation of low inflation, with an output gap close to zero and a current account surplus\(^{10} \). The fiscal contraction in country 1 triggers a double dip in the monetary union as inflation is decreasing and recession is amplified. The monetary union as a whole is also in surplus when the equilibrium is at point E (figure 5b). Such a situation may also trigger an appreciation of the common currency. This situation is not represented here but it would nonetheless push output and inflation further down with more adverse effect in country 1 than in country 2. The risk of deflation is increasing with country 1’s fiscal contraction as the output gap of the monetary union remains negative.

In that sense, it cannot be argued that the new macroeconomic surveillance, which aims at identifying macroeconomic imbalances beyond the assessment of fiscal positions, is not directly responsible for potential deflation. The improvement in country 1’s trade and fiscal balances is not sufficient to remove the risk of deflation; the reason is that the latter is mainly fed by high unemployment stemming from the real costs of fiscal and trade retrenchments. Besides, it is supposed here that countries' size (in terms of GDP) is the same. For a monetary union with a small and a big country, a negative shock in the smallest country might not be offset by a countercyclical monetary policy as it would have only limited impact on the average inflation.

Yet, the introduction of new indicators in the MIP scoreboard has emphasized the losses of export market shares of Southern European countries and the deterioration of their competitiveness. Consequently in-depths analyses carried out by the European Commission have fostered

\(^{10}\) Spillovers effect from country 1 to country 2 may yet be negative. They would be limited if country 1 were very small relative to country 2. Conversely, it might be argued that a small expansion in a big country (such as Germany) would have helped to cushion the negative demand shock in smaller countries.
structural reforms under the assumption that these reforms would boost competitiveness, make the labor market more efficient, or increase long-term growth.

Finally, the impact of structural reforms is illustrated by a shift of the AS curve (from AS1 to AS2 in figure 5a). Inflation is then further reduced in country 1 while the output gap resumes a bit but insufficiently to prevent the pursuit of the recession, due to the lack of internal demand. Without reverse measures implemented in country 2, the inflation rate would decrease in the monetary union as a whole since $c > 0$ (figure 5b). The final equilibrium is at point F with a potential deflation in country 1 and in the monetary union. Deflation in the monetary union might be mitigated if country 2 implemented reforms aiming at boosting domestic demand (AD would shift to the right) or boosting wage growth (AS would shift to the right). Besides, the adjustment of external imbalances would also take more time if country 2 had no incentive to implement reforms to reduce these imbalances. As long as inflation in country 2 remains close to the target, the only adjustment relies on a prolonged period of deflation in country 1, forcing country 1 to adopt even stricter measures to narrow the competitiveness gap.

![Figure 5a. Fiscal consolidation and structural reforms in country 1](image)

The analogy with the Eurozone makes clear that existing fiscal rules and the macroeconomic imbalances procedure are fueling a deflation risk. More symmetry is needed: countries with a deficit should reduce them; meanwhile, countries with a surplus should also reduce them. Besides, Schmitt-Grohé and Uribe (2013) promote a temporary surge in inflation all over the Eurozone. Though they relate temporary inflation with real wage flexibility (hence a supply shock), without explaining how temporary inflation would be achieved, one can think that unconventional monetary policies, under the liquidity trap, would make it possible to raise the
inflation rate. Besides monetary policy, fiscal policy could play a strong role in pushing the economy back to its initial level (see Arestis, 2012).

A comparison between these solutions and policies which have been implemented by peripheral countries, but also by some core countries, is quite revealing of the preferences of EU authorities. As a matter of fact, peripheral countries implemented stringent fiscal policies under the control of the Troïka (IMF, European Commission and the ECB). Meanwhile, the ECB did not engage in large and sufficient *unconventional* measures to stabilize these economies (Botta, 2014). Finally, peripheral countries endorsed labor-market reforms, like reducing protection against dismissal in Greece, Ireland, Portugal, or Spain, and pension and healthcare reforms in Greece. These policies have had a high real cost. Labor-market reforms have raised unemployment and pushed labor revenues downward. The large wave of austerity that Eurozone countries have adopted since 2010 has sown the seeds of recession (see, e.g., Zezza, 2012; Blot et al., 2014). It is also undoubtedly responsible for the rising risk of deflation in the Euro area: without growth, the average inflation rate has come close to 0 in 2013 and largely below the ECB target at 2%. Jointly with the Stability and Growth Pact, the asymmetry in the 6-pack indicators is responsible for the low-growth bias in the management of the European sovereign crisis.

Figure 5b. Fiscal consolidation and structural reforms in the monetary union
III. Proposals to make the MIP less deflationary

Having identified the potential pitfalls of the MIP, we provide here a few policy recommendations which may improve the governance of the Eurozone and lessen the deflation bias of economic policy. As it has been emphasized, there is a need to strengthen the symmetry of the scoreboard. Then, though it has been already extended, the scoreboard might also include additional indicators. Finally, we claim that attention should also be paid to the global, not regional, consequences of domestic imbalances.

Policy implication 1. More symmetry is needed

Except for the current account and for the real exchange rate, the scoreboard provides an asymmetric view of imbalances. For instance, only losses in export markets shares or increases in nominal unit labor costs may send warning signals. It may clearly engage Eurozone countries in an export-led or mercantilist strategy. This bias has been confirmed in in-depths reviews of several countries which have been urged to improve competitiveness. Such a biased view may lead to a deflation (or disinflation) bias in the Eurozone as illustrated in the previous section. Besides, it must be recognized that if such a strategy may be needed for one country, it may not be generalized to the whole monetary union especially if countries are strongly interconnected through trade. Externalities should be internalized. More coordination is obviously needed. More symmetry in the thresholds would also help to alert on the potential risk of a lack of internal demand. To that end, the threshold of a current account surplus may be reduced to 4% like current account deficits. An upper threshold should be introduced for export markets shares as gains in export market shares may signal a race to improve competitiveness at the expense of the other Eurozone countries. A lower threshold for nominal unit labor costs or for private sector credit flows would signal a lack of internal demand. Output growth for EMU should be balanced and cannot rely only on the external trade contribution.

Considering the intra-trade balance11 may help to better account for non-cooperative strategies inside the Eurozone. There is indeed no reason to take action against a country that has improved competitiveness and export-market shares as long as it reveals a good integration in global trade. Yet, if surpluses in some Eurozone countries are the consequences or the causes of deficits in other Eurozone countries, competitiveness is not the main issue; trade surpluses signal a lack of domestic demand whereas trade deficits signal excessive domestic demand: recommendations on a symmetric change in domestic policies are required.

Policy implication 2. Making the scoreboard comprehensive

The section on the 6-pack has highlighted the fact that the identification of imbalances in the scoreboard may be biased. The scoreboard could fail to point out deflationary trends and may give rise to misleading interpretations. A consistent and comprehensive analysis of the countries’ situation should be made available in order to identify all sources of imbalances.

---

11 Intra and extra Eurozone current account balances are not calculated by national statistical offices whereas Eurostat provides monthly statistics on intra-Eurozone and extra Eurozone trade.
First, other indicators might be included in the scoreboard. In the current scoreboard, “deflated house prices” is the only financial indicator. Global asset price bubbles should be scrutinized as well, as they undoubtedly impinge on the macroeconomy (see Creel et al., 2013). It would then be useful to include a stock price index in the scoreboard, or a wider composite index like the Euro area CISS (composite indicator of systemic stress) formatted to domestic economies.

Second, not all imbalances are alike and the aim of the scoreboard (and of the surveillance) should be to identify (or correct) only those which may threaten the sustainability of growth and debts all over the Euro area. Current account deficit as such is only a symptom, not the cause of the disease. One has thus to answer two questions: where do imbalances come from? How are they financed? Imbalances may indeed proceed from unfavorable developments in competitiveness or from internal demand, hence requiring different medicine. Both causes are also highly dependent on favorable developments in competitiveness or on the lack of internal demand in partner countries. Thus, in-depth analysis of macro imbalances requires taking into consideration international linkages.

Have current account deficits (surpluses) been caused by higher (lower) domestic consumption or by higher (lower) domestic investment? Higher consumption may fuel credit and a bubble. Investment, provided it remains productive, may enhance productivity and generate future economic growth. While the former may end up with ever-growing debts and a financial crisis, the latter may be self-financed over the long-run. Adding an indicator of the growth of total factor productivity (TFP) would help to assess the sustainability of current account deficits. By the same token, for catching up countries the dynamics of relative GDP per capita would also be a relevant indicator.

Have current account deficits (surpluses) been financed by net inflows (outflows) of foreign direct investment, higher (lower) retained earnings or net inflows (outflows) of portfolio investment? The latter can be volatile, hence introducing counter-productive uncertainty in the economy. The former can create positive backward spillover effects in the host countries (see Havranek and Irsova, 2011). It is thus important to know about the structure of capital flows. Once again, this issue has been left to the “economic reading” or in-depth analysis without any further indication on the way it would be implemented.

Policy implication 3. A macro approach of imbalances is needed

The scoreboard is useful to prevent domestic imbalances, which may threaten growth sustainability. If the scoreboard had existed at the creation of the Euro, it could have reported financial and macro imbalances in Spain and Ireland. The house price booms and the buoyant credit growth would have been signaled. But looking beyond domestic imbalances might also prove helpful. A 10% current account deficit in Portugal is not equivalent to a 10% current account deficit in France from a Eurozone perspective. Surely, the current account surplus of Finland does not create a deflation risk for the Eurozone. The consequences of the German

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12 It must be acknowledged that the European Commission made its own propositions to refine the MIP. See Commission (2013).
surplus should not be placed on the same scale. Here an analogy could be made with micro and macro financial regulation. Micro regulation is needed to assess whether a credit institution takes excessive risk without taking into account the spillover effects of the situation of this institution. A macro prudential tool is also needed to take these externalities into account. There are systemic financial institutions which need strengthened surveillance. The same may hold for macroeconomic imbalances. The spillover effects of a lack of internal demand in Germany are strong. They may feed deflation into the whole monetary union. The theoretical model developed above was based on the assumption of countries having the same size. For countries with different size, a deflationary impact of the current governance in the EMU is reinforced. The lack of demand in the biggest countries reduces significantly the potential external demand in smallest countries and forces them to adopt more expansionary policies to boost their own internal demand. Imbalances in small countries are then amplified. In crisis times, restrictive policies implemented in smallest countries have weaker consequences on the union average. There is consequently no reason for the central bank to implement more expansionary monetary policy that would mitigate the impact of restrictive shocks in small countries. It follows that the scoreboard must not only be more symmetrical but also improved by looking at macroeconomic and financial imbalances expressed in terms of Eurozone GDP. For the current account indicator, surplus and deficits would then be analyzed through their global weight in the Eurozone (see figure 6 for an illustration). It would then clearly appear that the Spanish current account deficit was the most significant before the outbreak of the crisis. Furthermore, most deficits were the counterparts of the German surplus. The same logic may be used for credit flows (a bubble in France would have more negative consequences than in Finland). Clearly, the “macro” approach may supplement the “micro” approach endorsed in the current scoreboard.

**Figure 6. Domestic current account balance, in % of Eurozone GDP**

*Source: Eurostat*
IV. Conclusion

The recent crisis in the Eurozone has shown that the former governance based only on fiscal rules has not prevented the rise of macroeconomic and financial imbalances. Housing bubbles, increasing leverage from financial institutions or current account imbalances have grown without any institutional mechanism properly designed to curb them down. With the new MIP, tools have been set up to strengthen the surveillance of Eurozone countries. Yet, the approach is clearly more favorable to creditors than to debtors, which will support the bulk of the adjustment of current account imbalances and competitiveness. There is a risk to create a deflation bias in European economic policies, similar to the restrictive bias created by the Stability and growth pact. It must indeed be reminded that it has been hard to reach a consensus among the Eurozone countries to coordinate a fiscal policy stimulus in 2008, while the world economy was threatened by the worst recession since the Great Depression. In sharp contrast, after 2010, under the aegis of the SGP, the same countries rapidly imposed consolidation though output gaps were still largely negative. The recent developments in competitiveness indicators show unambiguously that competitiveness has improved and that current account deficits have narrowed – or even turned to surplus – in crisis countries, but Germany and the Netherlands have maintained surpluses and the Eurozone is now in surplus whereas it had been close to balance from 2000 to 2007. The deflation risk has also been increasing because inflation has fallen down in crisis countries but not risen in surplus countries (Ubide, 2014). This situation clearly makes the real adjustment harder and longer, and it also feeds deflation in the whole Eurozone.

In this paper, we argue that the risk of deflation should be dealt with by using appropriate policies (more expansionary fiscal and monetary policies) and after a reform of the MIP. More attention should be paid to the symmetry of indicators. The scoreboard has to be made more comprehensive in order to detect the lack of demand. Even if a macroeconomic surveillance of Eurozone countries may be helpful to prevent harmful imbalances, the Eurozone governance should take into account the fact that the Eurozone is not a small open economy. Growth must be balanced and current account surplus may be sought, but only insofar as they do not mirror a lack of internal demand and of private investment which are harshly needed to foster future growth prospects.
V. References


OFCE, IMK, ECLM (2014), From austerity to stagnation: how to avoid the deflation trap, iAGS report.


VI. Appendix. Demand and supply curves in the monetary union

Equations (4) and (5) give:

\[
\begin{align*}
\pi &= \pi^* + \phi \cdot y - c \quad (9) \\
\bar{\pi} &= \phi \cdot \bar{y} - \bar{c} \quad (10)
\end{align*}
\]

whereas, after a few re-arrangements, demand (aggregate and in difference) curves are derived from equations (7), (8), (9) and (10):

\[
y = -(\sigma \cdot \lambda + \mu \cdot \omega_b \cdot \gamma) \left[ 1 + \frac{\epsilon \cdot \phi}{\Gamma_1} \right] \cdot \pi + D + S + \frac{(\sigma - \mu \cdot \omega_b \cdot \gamma) \cdot \epsilon}{\Gamma_1} \cdot (\phi \cdot \bar{D} + \epsilon \cdot S - \bar{c}) + \sigma \cdot \lambda \cdot \pi^* + \frac{(\sigma - \mu \cdot \omega_b \cdot \gamma) \cdot \epsilon^2 \cdot \phi \cdot \sigma}{\Gamma_1} \cdot \pi^* \quad (11)
\]

\[
\bar{y} = -\Gamma_2 \cdot \bar{\pi} + \bar{D} + \left[ 1 - \frac{\phi \cdot (\sigma \cdot \lambda + \mu \cdot \omega_b \cdot \gamma)}{\Gamma_2} \right] \cdot \epsilon \cdot S + \left[ \sigma \cdot \lambda - \frac{\sigma \cdot \lambda + \mu \cdot \omega_b \cdot \gamma}{\Gamma_2} \right] \cdot \pi^* - \frac{\sigma \cdot \lambda + \mu \cdot \omega_b \cdot \gamma}{\Gamma_2} \cdot \epsilon \cdot \bar{c} \quad (12)
\]

where:

\[
\begin{align*}
D &= (k - \mu \cdot \omega_b \cdot m) \cdot d \\
S &= \mu \cdot \omega_b \cdot (m \cdot d_b + \gamma \cdot s) \\
\bar{D} &= (k - \mu \cdot \omega_b \cdot m - 2 \cdot \omega_{1,2} \cdot m \cdot \mu) \cdot \bar{d}
\end{align*}
\]
\[
\begin{align*}
\Gamma_1 &= 1 + \phi.\mu.\gamma (\omega_b + 2.\omega_{1,2}) > 1 \\
\Gamma_2 &= 1 + \phi. (\sigma.\lambda + \mu.\omega_b.\gamma) > 1 \\
\Gamma_3 &= (\omega_b + 2.\omega_{1,2}).\mu.\gamma - \frac{\epsilon^2. \phi. (\sigma.\lambda + \mu.\omega_b.\gamma). (\sigma - \mu.\omega_b.\gamma)}{\Gamma_2}
\end{align*}
\]

Assuming that \( \cdot \) is small enough so that \( \Gamma_3 > 0 \); therefore, demand curve representing the divergence of output gaps is negatively sloped.

Finally, average inflation is simply derived from equations (9) and (11):

\[
\pi. \left\{ 1 + \phi. (\sigma.\lambda + \mu.\omega_b.\gamma). \left[ 1 + \frac{\epsilon.\phi}{\Gamma_1} \right] \right\} \\
= \phi \left[ D + S + \frac{(\sigma - \mu.\omega_b.\gamma).\epsilon}{\Gamma_1}. (\phi.\bar{D} + \epsilon.S - \bar{c}) \right] \\
+ \left[ 1 + \sigma.\lambda + \frac{(\sigma - \mu.\omega_b.\gamma).\epsilon^2.\phi.\sigma^*}{\Gamma_1} \right]. \pi^* \quad (13)
\]