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A Monetary Hope for Europe

The Euro and the Struggle for the Creation
of a New Global Currency

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Integration without Convergence in the European Currency Area

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1. Introduction

The monetary union was expected to boost convergence within the European currency area. Harsher competition among firms in wider goods' markets would have promoted homogeneous prices and fostered trade. After the end of the exchange rate risk and the reduction in the default risk, much lower interest rates and higher asset substitutability in capital markets would have favoured cross-border interconnections among banks and improved the financing conditions for the corporations. While these developments did occur, the financial crisis and the subsequent Great Recession have provoked the rolling-back of many progresses in market integration within the Eurozone. The worrying lack of convergence between the 'advanced' Core[1] and the 'backward' Peripheral[2] countries which joined the European Monetary Union (EMU) since its beginning has put back on stage the question about whether the Eurozone fulfils the optimality criteria for a currency area.

In section 2, we assess the optimality conditions for the European currency area and analyse whether the costs of renouncing the exchange rate policy instrument were balanced by the benefits stemming from the appropriate degrees of symmetry and labour market flexibility for a given degree of integration, and present evidence of a widening divide between Core and Periphery. Through the comparison in terms of β convergence between the 12 Eurozone countries (EMU-12)[3] and the remaining 15 European Union

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countries (other-EU)[4], section 3 shows that the monetary integration process, which started after the completion of the single market in 1993, has not accelerated the catching-up by the Peripheral EMU countries, as *per capita* GDP convergence has happened among the EU-27 but not among the Eurozone countries. In section 4, we analyse the fiscal policy of stabilization by the governments involved in the monetary integration process. Our estimates indicate that in the EMU countries the absorption through the tax and transfer systems of national permanent shocks *vis-à-vis* the EMU-average GDP has been negligible. In section 5 we point to the weaknesses in the EMU institutional design to explain why the fiscal policy of stabilization failed to prompt real convergence within the Eurozone. The macroeconomic guidelines dictated by the European Commission have imposed rigid constraints upon public deficits and debts – from the Maastricht criteria set in 1991 to the Stability and Growth Pact (SGP) introduced in 1998 and then emended and strengthened – thus putting an end to discretionary fiscal impulses[5]. Section 6 concludes by stressing the need for more institutional coordination within the Eurozone through the fiscal union and the banking union complementing the monetary union.

2. Assessing conditions for the optimality of the European currency area

As early as in 1961, Robert Mundell warned that the loss of the exchange rate policy instrument would have resulted in an overwhelming problem for a country joining a currency area. The Nobel Prize 1999 highlighted the difficult task to cope with a high exposure to asymmetric shocks for a country where labour market flexibility was prevented by employment and real wage rigidity. For a country belonging to the fixed exchange rate agreement of the European Monetary System (EMS)[6], the recovery of competitiveness through the adjustment of bilateral parities was severely limited. The completion of the liberalization of capital movements magnified the exposure to speculative attacks, making virtually impossible for EMS countries to face a loss of credibility in the commitment to defend their fixed parities. Once aware of the 'impossible triplet' (free capital markets,

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[4] The fifteen remaining countries (other-EU) are those opting-out the monetary union: Denmark (DK), Sweden (SE) and the United Kingdom (UK) and the newcomers: Bulgaria (BG), Czech Republic (CZ), Cyprus (CY), Estonia (EE), Hungary (HU), Latvia (LV), Lithuania (LT), Malta (MT), Poland (PL), Romania (RO), Slovakia (SK) and Slovenia (SI).

[5] Furthermore, the Fiscal Compact, signed by the EMU countries in 2012, entails the quasi-automatic sanctioning of non-compliance or failure to carry on the abatement of the public debt exceeding the 60% of GDP through a 20-years plan of surpluses in the public budget.

[6] The EMS was the fixed but adjustable exchange rates agreement in place from 1979 to 1999 when the EMU started.

fixed exchange rates, monetary policy autonomy), most EMS countries agreed on the start of the monetary unification process.

Let us adapt to the EMU the framework that Mundell (1961) set up for analysing conditions for a common currency to be optimal for a group of sovereign countries.

Figure 1 sketches a continuous OCA line. In all points of the OCA line the costs and benefits of a monetary union just balance, whereas points above it signal that the benefits of entering a common currency exceed costs and points below it that keeping the national currency is more advantageous. The continuous line is determined by a combination of the degree of symmetry (on the vertical axis) i.e. the probability of a country to be hit by an asymmetric shock (depending on the overall efficiency of the economic system) and the degree of economic integration (on the horizontal axis). The negative slope indicates that any decline in the degree of symmetry – i.e. a higher probability of asymmetric shocks (e.g. the exposure to harsher price competition after the end of competitive devaluation) – has to be offset by a higher level of integration to avoid a country falling below the OCA line. Economic integration improves only in the medium term, delivering substantial benefits in the long run. An exogenous factor is then needed in the short run to restore a country's advantage in participating in a monetary union. A real depreciation is one among possible antidotes against a rise in the exposure to a negative shock. This market adjustment, which has the effect to compensate for a negative shock by moving the OCA line downwards, stems from a lowering in unit labour costs (so that the wage dynamics goes below the productivity dynamics). This result will be produced by a higher degree of labour market flexibility[7]. Given the degree of symmetry, the degree of economic integration will be again sufficiently large for the optimality of the currency area to be fulfilled, so that the country remains above the OCA line. In the opposite case, that is when conditions for the optimality of the currency area are not fulfilled, the country will fall below the OCA line[8].

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[7] After a decentralized system of labour contracts is bound to lower the wage level, heading to a higher unemployment-elasticity of the nominal wage rate and/or reformed institutions of social protection (e.g. weaker regulatory constraints on firing workers).

[8] The same effect of restoring the excess of benefits over costs for participating in a currency union will result in case the 'quantity' instead of the 'price' of labour adjusts. Were a country unable to reduce the rigidity of the labour market, the market adjustment might take place through the labour mobility across member countries, which by definition cancels out the unemployment cost. As well known, labour mobility is sufficiently high across the States in the federation of the United States, while is hindered in Europe by linguistic and cultural reasons.
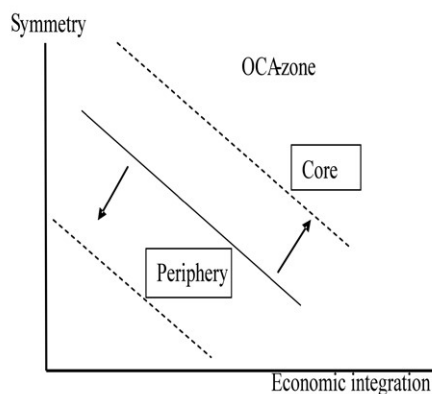
Figure 1 – The OCA line.

The two dotted lines in Figure 1 represent the two opposite – downward or upward – possible developments within the Eurozone. Following an assumption often made in the literature, it is assumed that at the inception of the EMU only the group of the Core countries was located in the 'OCA zone'. The sharing of a common currency was expected to promote – through more product market flexibility and price convergence – a higher degree of economic integration, as the boost to the synchronization of business cycles would have increased the benefits of the common currency[9]. The 'endogeneity of OCA' effect (Frankel, Rose 1998; De Grauwe, Mongelli 2005) can be portrayed in Figure 1 by a downward shift of the OCA line, that is the progressive increase in benefits as the 'dividend' expected *ex post* from the participation in the currency area.

The evaluation of developments in the degree of symmetry within the Eurozone is a complex issue, also considering that a significant increase in intra-EMU trade had already been achieved before 1999.

Krugman (1991, 1993) put forward the view that an economic and monetary integration process points to higher inter-industry specialization. The main drivers of specialization are economies of scale and agglomeration factors, prompting a lower degree of symmetry of GDP fluctuations across countries, and higher exposure of countries to asymmetric shocks, which make *per capita* GDP growth rates across countries diverge. Kalemli-Ozcan, Sorensen and Yosha (2003) complemented this view by adding possible de-

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[9] Sharing a currency is expected to promote economic integration through higher product market flexibility and price convergence; the ensuing rise in the symmetry of shocks and in the synchronization of business cycles will increase the benefits of the common currency.

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velopments in the financial sector. More liquid credit and capital markets after financial integration could function as a signal of stronger risk-sharing, heading to lower uncertainty on the profitability of investment projects. In fact, an important impulse to the endogenous creation of insurance against asymmetric shocks was expected from integration in financial markets and cross-border mergers among banks, which enormously improved the liquidity and cost conditions for the financing of investment projects. The most noticeable confirmation of this view was offered by the huge expansion of credit creation which took place in Ireland and Spain before the burst of the financial crisis with the Lehman Brothers bankruptcy in September 2008. In these countries, the copious availability of cross-border inter-bank financing and the more financially diversified portfolios of European investors, along with very low or even negative real interest rates[10], boosted the *per capita* income growth *vis-à-vis* the rest of the Eurozone[11]. A trend towards more specialization points to the effect opposite to the 'endogeneity of OCA' view, which is reflected in Figure 1 by the upward shifting of the continuous OCA line.

On the contrary, according to the rationale put forward by McKinnon (1963) and by Kenen (1969), an economic integration process is expected to promote the fulfilment of the OCA conditions. As for the first, a boost to intra-EMU trade prompted by the monetary union should deliver the harmonization of Periphery business cycles with the Core's ones, so decreasing the probability of asymmetric shocks. A survey study based on a gravity model suggests that the impact of the EMU on trade reminds more of a unilateral move towards multilateral openness rather than the participation in a customs union. In fact, the switch to the common currency brings about an increase in bilateral intra-EMU trade by 4%-10% and in bilateral world trade with non-EMU countries by 8%-16% (Micco *et al.* 2003). As for the second, a higher financial integration following the switch to the common currency improves the correlation across demand shocks, which in turn increases product diversification as a shield against asymmetric shocks. Since the increase in openness should bring about a reduction in inter-industry specialization, trade integration and sectoral diversification are factors favouring the optimality of a currency area that

[10] The ECB's reaction function derives from the Taylor rule, in which the deviation of inflation from target is measured on the EMU-average, which entails a lower real interest rate for higher than EMU-average inflation countries.

[11] Ireland and Spain started accumulating trade deficits, due to the increase in imports more than to nominal rigidities causing a competitiveness loss (European Commission 2009). This is shown by a flexible labour market and fiscal competition boosting exports in the former country, and by labour market reforms leading to a huge increase in temporary jobs in the latter country. In addition, the recourse to tax competition has been shielding Ireland's share of intra-EMU trade.

are likely to mutually reinforce. Empirical evidence shows that the rise in intra-EMU trade is triggering more closeness among productive structures (Alvarez Lopez, Myro Sanchez 2005).

However, as anticipated by Mundell (1961) theoretical analysis of conditions for the optimality of a currency area, the two main institutional changes in Europe – the free circulation of capitals (1990) and the completion of the single market (1993) – did not represent a substitute for exchange rate flexibility. The delayed correction of the Peripheral countries' real divergence *vis-à-vis* Germany through the realignment of the EMS bilateral parities had been effective in slowing down the competitiveness, but from 1990 onwards capital markets' liberalization made currency devaluations impossible, which prompted the move towards a monetary union. However, the comparison between Figure 2.a and Figure 2.b indicates that the divide across the unit labour costs (ULC) of the very heterogeneous European countries has enlarged after the switch to the common currency. The Peripheral countries suffered during the 2000s from an increasing divergence as for the REER measured by ULC *vis-à-vis* the EMU-12 average. On the contrary, Germany – a country that succeeded in pursuing both wage moderation and a steady growth path of total factor productivity (TFP) – exhibits an impressive downward path of the REER up to 2007 and subsequently keeps that level. The increasing divide between Core and Periphery after twelve years of the Eurozone highlights the analytical framework by Mundell (1961) that correctly forecasted the serious impact of the end of devaluations on the less efficient productive systems.

The three possible substitutes for the loss of exchange rate flexibility posed by Mundell I – the viability of internal devaluation, labour mobility and fiscal union – were not in place at the inception of the EMU. Yet, Mundell (1973) revised his previous sceptical view by pointing to the end of the expected decay of the *home bias* in the portfolios of savers and banking institutions after the capital movements' liberalization. Provided that the single currency could succeed in fostering more interconnected European credit and financial markets, cross-border financing and portfolio diversification cancel out the disproportionate concentration of the ownership of equity and government bonds at the Member States' level. According to the so-called Mundell II view, a move towards full financial integration within a currency area magnifies diversification across companies and countries of financial assets in the investors' portfolios. This market risk-sharing should warrant the income and consumption smoothing across upward and downward business cycles. Since capital gains on corporate equities of countries in expansion will compensate for capital losses on the corporate equities of countries in recession, the degree of asymmetry should fall bringing the Eurozone closer to optimality (which in Figure 1 corresponds to a downward movement of the continuous OCA line).
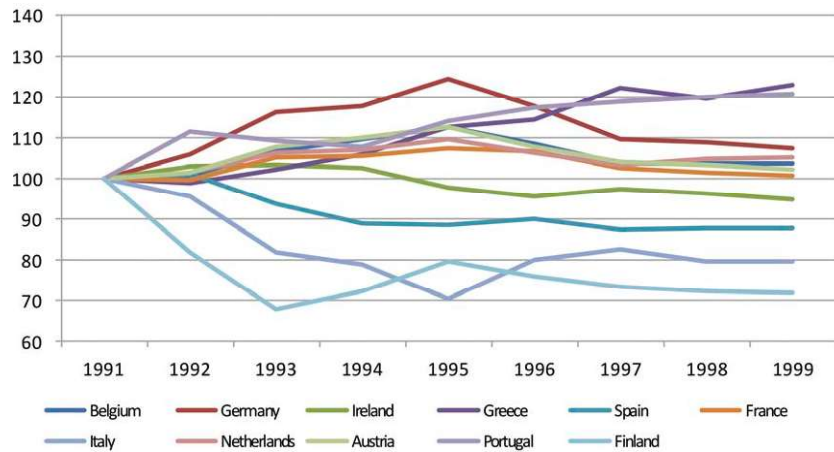
Figure 2A – REER based on relative ULC. Source: Own calculations on Ameco database.
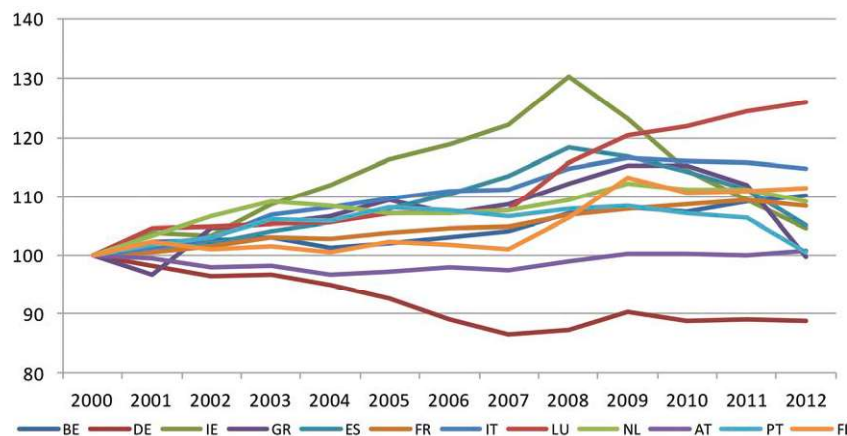
Figure 2B – REER based on relative ULC. Source: Own calculations on Ameco database.

Unfortunately, portfolio diversification across financial assets after the switch to the common currency did not deliver an efficient and lasting risk-sharing of national asymmetric shocks. The rapid process of financial integration, through the merging of banks and financial markets and the abundant liquidity at a very low interest rates, mainly coming from the Core and flooding in the Periphery, permitted in some Peripheral economies the excess investment with respect to private savings, but did not bring about a lasting catching-up process. Following the fall in nominal interest rates, the 'one size fits all' promised by the common monetary policy did not come true. Far from fostering inter-industry specialization, the stronger financial integration

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within the Eurozone promoted a GDP expansion concentrated in traditional sectors, especially in Ireland and Spain. In these high-inflation countries, the moral hazard triggered in credit markets by the excessive reduction of real interest rates caused the huge capital inflows to finance speculative rallies in housing and financial markets, thus worsening the trade balance through a rapid increase in imported consumption goods (Giavazzi, Spaventa 2010). The subsequent burst of the financial crisis in 2008 provoked the re-nationalization of the portfolios of financial assets, so that real divergence eventually widened between the Core and the Peripheral countries (Croci Angelini, Farina 2012). Therefore, the Mundell II prediction that financial integration would have fostered *per capita* GDP convergence has been disproved.

Since the medium-term furthering of economic integration did not deliver real convergence by the laggard economies, let us turn to the evaluation of labour market flexibility. An important indicator, the steepness of the Phillips curve, is not dissimilar in countries where either the employment protection legislation (EPL) or the real wage rigidity (RWR) have decreased *vis-à-vis* countries where both unemployment and real wage exhibit flexibility (Abbritti, Weber 2010)[12]. Some labour market developments have occurred both in the Periphery and in the Core: (i) the diffusion of temporary contracts reducing unemployment rigidity in Italy and Spain; (ii) the incentives for firms and unions to pursue wage moderation deployed by the German government after the switch to the euro, so that this country's competitiveness has benefitted from real depreciation and its intra-EMU-12 exports have been boosted (Boysen-Hogrefe *et al.* 2010). However, after fifteen years of monetary union, the Periphery is further away from catching-up with the Core than in 1999. Labour market flexibility as the short-run remedy to excessive exposure to asymmetric shocks does not seem to be such to compensate for the higher degree of asymmetry of Peripheral countries, as institutional factors determining RWR prevented a robust rise of labour demand after a negative shock. A major structural change would have occurred only in case both a reduction in EPL and a rise in unemployment benefits (UB) had occurred at the same time. All in all, empirical evidence confirms the finding by Nickell *et al.* (2005) that the problem of the insiders-outsiders divide in the labour market is the most important cause of a mismatch between labour demand and supply.

The monetary union by no means did set a more levelled playing field for *per capita* GDP convergence among 'backward' and 'advanced' countries. As shown in Figure 2.b, in Peripheral countries the path of ULC continuously rose above the EMU-12 average, thus causing a competitiveness loss leading to a fall in exports. The continuous increases in public consumption also

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[12] In the literature, the reserve wage of the unemployed, which triggers the degree of RWR, is traced back to the levels of UB and minimum wage, as well as to EPL, a high union density and the centralization of wage negotiations.

contributed to the current account deficits (European Commission 2010). In Portugal and Greece the dynamics of wages largely exceeded the dynamics of a sluggish labour productivity, until the recession following the financial crisis provoked the reversal of the upward ULC trend. Spain and Italy have been suffering from a structural brake off in productivity growth, which caused a ULC rise disproportioned with respect to wage increases, and slowed down exports thereby severely hindering growth rates. In particular, the Greek macroeconomic situation was aggravated by too long a delayed fiscal retrenchment. After the financial crisis provoked the huge increase in the spread on Greek sovereign bonds, the government was obliged by negative growth in 2009-2010 to cut public and private wages. As witnessed by the huge decline in ULC, in 2010 a relevant wage and price deflation was started by Greece, aimed to avoid a further fall in the employment and the income levels. The public money put in banks distressed by the financial crisis, and the credit crunch contributing to the huge fall in GDP growth during the subsequent Great Recession, generated an enormous increase in the public debt / GDP ratios in Greece, Ireland and Portugal, with rocketing spreads *vis-à-vis* the German ten-years Bund. A contagion effect damaged government credibility in Italy and Spain, which in 2011-2012 also suffered a huge rise in the spread on public bonds.

3. The *per capita* GDP convergence within the EMU and the non-EMU economies

The theoretical rationale ruling on the integration process within the institutional framework of the European Union has been represented by the New Classical Economics, pointing to unfettered product and labour markets and to the abolishment of any separation between commercial and investment banks in deregulated credit and financial markets. The progressive demise of tariff barriers and internal market regulations would have liberated market forces in a fully competitive environment. The complete reliance on the power of competitive markets to attain further efficiency in productive systems, and on the capacity of capital market liberalization to provide the funding for investment fostering convergence with the most advanced countries, asked for policy instruments aimed at preventing that a harsher competition in the European markets could weaken the efforts to catch-up by the laggard economies, or even increase divergence. The renounce to consider macroeconomic governance as an important policy instrument to foster convergence left the Structural and Cohesion Funds devised by the European Commission as the only institutional strategy promoting development in backward Member States and regions.

Therefore, the dominance of the neo-classical and monetarist theories caused the operation of deregulated real and financial markets to develop within a very limited institutional framework. These orthodox theoretical approaches nicely complemented the celebrated neo-classical growth model

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(Solow 1956), whereby the low-*per-capita*-income economies, with initial lower capital-labour ratio and under the assumption of diminishing returns, were expected to expand at a pace faster than the high-*per-capita*-income economies, and eventually to catch-up in the long run. A series of positive externalities were expected to stem from the participation in the common currency area. The market forces of backward economies would have taken advantage from lower uncertainty on returns to investment projects and lower nominal interest rate after the annulment of the exchange rate risk, as well as from price transparency and the end of transaction costs in currency exchanges. Moreover, the 'open method of coordination' would have promoted the imitation of the guidelines put forward by the best performers in goods and labour markets deregulation, and a reformed system of the Structural and the Cohesion Funds managed through the budget of the European Union, would have supported market forces in backward regions and States during the catching-up process (Sapir *et al.* 2004)[13].

In Figure 3, the Solovian process of catching-up is broadly reflected by scatter diagram showing the negative correlation between *per capita* income growth rates in 1993-2009 for the EU-27 countries and their initial *per capita* GDP in 1993. After the latest EU enlargements, the advantages of new entrants in terms of production costs, due to labour markets much more flexible (e.g. a decentralized wage setting and a low coverage of collective agreements) than those of the incumbents, speeded up real convergence (European Commission 2012).
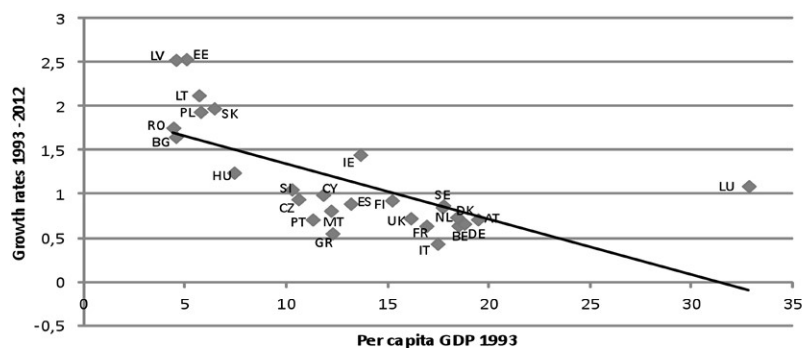
Figure 3 – Per capita GDP beta convergence in EU 27 (PPP). Source: Own calculations on Ameco database.

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[13] A large strand of literature also introduced the concept of conditional convergence, whereby idiosyncratic cultural values and different initial economic conditions (e.g. the saving rate, the capital-output ratio) identify clusters of countries, following different growth paths and eventually heading to their own Solovian steady state. This appraisal of convergence, which stresses long-run causes of heterogeneity across countries, is particularly pertinent to the understanding of the wide dispersion across *per capita* GDP in the European Union (Farina 2012).

Figure 4 shows the convergence within the cluster of the EMU-12, whose growth path was influenced by the monetary union and by the common macroeconomic guidelines and constraints on the national fiscal stances. The comparison with the overall convergence across the EU-27 in Figure 3 is striking. The expected convergence across the EMU-12 countries does not emerge, the slope of the β in Figure 4 being positive[14].
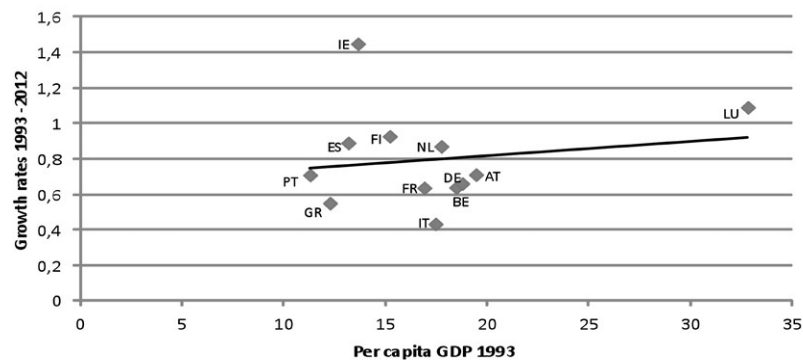
Figure 4 – Per capita GDP beta convergence in EMU 12 (PPP). Source: Own calculations on Ameco database.

Figure 5 shows a pattern of fast convergence among the other-EU economies. The high value of the negative correlation between the initial *per capita* GDP and the subsequent average *per capita* GDP growth rate reflects strong similarities in the productive structures along the shared path of convergence to the more advanced Eurozone economies (Farina, Tamborini 2003). The finding that the slope of the other-EU in Figure 5 is negative, while for the EMU-12 in Figure 4 is positive, underlines that the convergence taking place within the latter countries has been decisive to foster overall GDP β convergence in EU 27. However, the lack of convergence within the EMU-12 countries, which started the monetary integration process, begs an explanation.

[14] It should also be taken into account that the picture is affected by the peculiar growth rate in two outliers, Luxembourg and Ireland. The growth performance of Luxembourg is biased by the disproportionate weight of the financial sector in the GDP, with a huge amount of returns accruing to non-residents. Ireland stands out as the best performer for catching-up within the European integration process. During the 1990s, this country, whose EU membership dates back to 1973, manifested growth rates as high as 6-8 per cent per year, so that its *per capita* income growth rate reached the first positions in the EU ranking. However, the Irish growth performance could be considered an example of successful Solovian convergence up to a point, as it was triggered by fiscal competition.
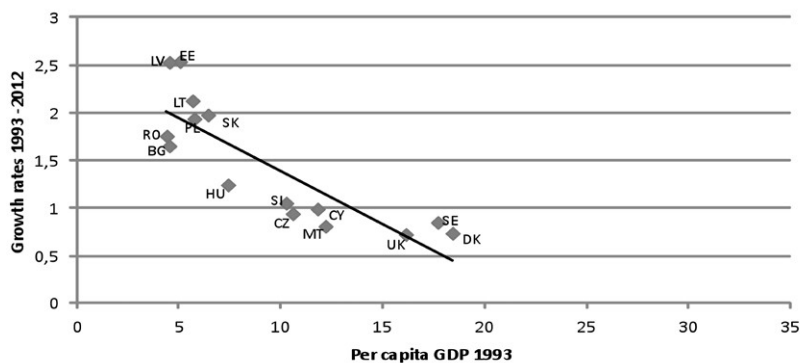
Figure 5 – Per capita GDP beta convergence in other-EU (PPP). Source: Own calculations on Ameco database.

Figure 6 presents the evolution of sigma convergence, i.e. the year by year standard deviation across *per capita* GDP for the EU 27, as well as for EMU-12 and other-EU subgroups. In the period from 1993 to 2008, the standard deviation progressively increases for the EMU-12, while for the other-EU after an initial increase it remains constant on average. The combined evidence of a positive β convergence within the EMU-12 cluster (Figure 4) *vis-à-vis* the steep negative β convergence within the other-EU (Figure 5), and of a rising standard deviation in the EU 27 triggered by the EMU-12 (Figure 6) suggests that the monetary integration process to the single currency has created a widening *per capita* GDP dispersion across the EMU-12 economies up to the financial crisis.

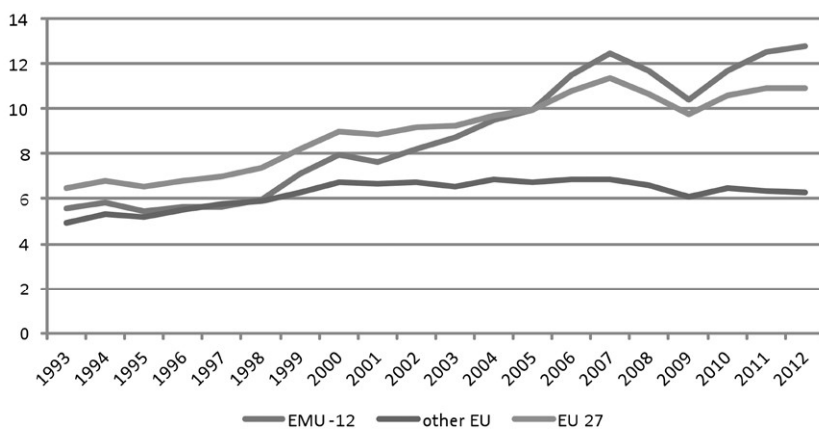Figure 6 – Per capita GDP sigma convergence in EU 27 (PPP). Source: Own calculations on Ameco database.

4. An estimate of shock absorption through fiscal policy of stabilization within the Eurozone

Within a currency area, the absorption of deviations from the trend *per capita* GDP is performed both by the market adjustment and by the risk-sharing implemented by the centralized fiscal policies of stabilization[15]. In the previous sections, we have shown that labour market flexibiity was not sufficient in the Periphery to compensate for the high exposure of these economies to asymmetric shocks; we also stressed that the roll-back of the financial integration which ensued to the switch to the euro has disproved the Mundell II view that a fast diversification across the investors' portfolios could foster optimality conditions so as to pave the way towards the catching-up by the laggard economies. Also the other two possible substitutes for the loss of exchange rate flexibility are lacking. Labour mobility is not a viable instrument for real convergence in Europe. As for a full-fledged public budget in Brussels, the amount of resources available to the European Commission are very far from the resources needed for the centralization of fiscal policy of stabilization[16].

Hereafter we investigate to what extent fiscal policy of stabilization performed by national governments has been effective in absorbing domestic *per capita* GDP deviations with respect to the EMU-average *per capita* GDP after renouncing the policy instrument of currency devaluation. In our statistical exercise, the degree of absorption by national fiscal policies to be assessed does consist of national business cycle deviations not from the national potential *per capita* GDP but from the EMU-12 average aggregate *per capita* GDP. The aim is to evaluate whether each economic system has been helped by the national fiscal policy of stabilization to reduce its *per capita* GDP distance from the EMU-12 average GDP, or has at least been preserved from further real divergence within the Eurozone as an effect of the exposure to asymmetric shocks in increasingly competitive markets. This exercise is particularly relevant for the evaluation of enduring real divergence after fifteen years of monetary union, as in addition to the absence of a centralized fiscal policy of stabilization the correction of permanent shocks has also been hampered by the fiscal rules imposed by the Stability and Growth Pact (SGP). In fact, for the public deficit / GDP ratio to be balanced in the medium term, national governments had often to resort to pro-cyclical fiscal policies, by implementing restrictive fiscal impulses.

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[15] According to an empirical study conducted for the United States by Asdrubali *et al.* (1996), shocks to a state GDP were mainly absorbed through capital markets (39%) and credit markets (23%), while the income smoothing through the federal government was very limited (13%).

[16] As well-known, the European Commission relies just on a budget of a mere 1% of the EU countries' total GDP.

To cast light on the capacity of national tax and transfer systems to counteract a permanent shock, econometric estimates were conducted for the years 1996-2012 by relying on the revenues and the expenditure structure presently in place in each EMU Member State. The method consists in estimating the relationship between the first differences of *per capita* national income normalized by the *per capita* average income of EMU-12 countries (independent variable) and the same ratio referred to disposable income (the dependent variable) in three different specifications: net of taxes (T); net of taxes and social contributions (T+SC); net of taxes, social contributions and social benefits (T+SC-SB). In other words, the value of GDP, taxes, social contributions and social benefits of each country is weighted for the value of GDP, taxes, social contributions and social benefits of the EMU-12 as a whole.

Regressions have been performed both by imposing the same coefficients to all countries as a pooled panel (see Table 1a) and by specifying individual national coefficients (see Table 1b). In the following equation, the β coefficient expresses the shock persistence after fiscal policy of stabilization. Therefore the difference (1-β) measures the degree to which any shock to national convergence to EMU-12 average has been absorbed by the operation of the national fiscal system.

$$\Delta\left(\frac{Y_i - S_i}{Y_e - S_e}\right)_t = \alpha_i + \beta_i \Delta\left(\frac{Y_i}{Y_e}\right)_t + u_t \tag{1}$$

We may think of a hypothetical centralized fiscal institution merging the national fiscal impulses of stabilization – implemented through the fiscal system of each country – into a single European budget, and then distributing them across the EMU-12. The use of first differences among these variables, rather than their levels, effectively tackles the endogeneity problem, thus allowing to single out the fiscal stances oriented to counteract *per capita* GDP distance with respect to the EMU-12 average[17]. Only the tax and transfer reshuffling normalized by the EMU-average, aimed at absorbing stochastic shocks is considered, so to eliminate the 'moral hazard' problem connected to the state aid oriented to overcome permanent shocks. This expedient permits to cut off the redistributive function of national public finances from the computation. The different values of the national β coefficients point at different degrees of success in covering national shocks as a function of the size of the initial deviation from the EMU-12 average.

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[17] Endogeneity is a loop of causality between the independent and the dependent variables which plagues econometric regressions hindering statistical significance. In our regression model, this problem could arise due to the possible feed-back of the *per capita* GDP on the different measures of national policy of stabilization and is counteracted through the normalization with the EMU-wide data.

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Table 1a – Aggregate stabilization in EMU (1996-2012) – pooled panel data model.

	β	t-statistics	p-value	s.e.	R^2
T	1.21802	36.14	0.00000	0.03370	0.88
T+SC	1.23259	32.64	0.00000	0.03776	0.87
T+SC-SB	0.99215	35.60	0.00000	0.02787	0.89

T = Taxes; SC = Social Contributions; SB = Social Benefits

The p-values signal robustness, and the correlation coefficients, are fairly high. As shown by results in Table 1a, aggregate stabilization in the Eurozone, i.e. the degree to which the shocks affecting the EMU-12 as a whole are absorbed, is negligible: the tax plus social contribution minus social benefits specification (the third row) shows almost complete persistence (β = 0,99). As to the tax and the tax plus social contribution specifications (the first two rows), the overall fiscal impulse within the Eurozone resulted in a widening of real divergence (the values of 1-β are negative). Table 1b shows results country by country. In many countries a certain degree of stabilization (0 < β < 1) applies only in case the fiscal policy fully operates, that is when social benefits are transferred into personal income.

All in all, our econometric estimates indicate that the degree of absorption through stabilization fiscal policy of the deviation of national *per capita* income with respect to the EMU-12 average is rather low also at country level. The shock absorption seems to have slightly improved as an effect of the monetary union, but with much more dispersed degrees of adjustment between the Core and the Periphery.

The largest shock absorption occurs in Spain (in all the three specifications) and in the Netherlands, soon followed by Ireland. The likely explanation is that in these countries the width of fiscal impulses was not hindered by the restrictive impulses imposed by the SGP, due to their relatively low public debt / GDP ratios before the rescue of distressed banks by the government increased the issuing of sovereign bonds and the recession following the financial crisis hit the GDP growth. In many of the other countries, instead, national fiscal policy of stabilization was hampered by the 'snowball effect', the self-aggravating accumulation of public debt, due to the nominal interest exceeding GDP growth causing a severe rise in interest payments. As shown by the persistence – in some cases by the further widening – of *per capita* GDP divergence *vis-à-vis* the EMU-12 average (β > 1), the need to balance the public budget during recessions, so to stabilize the public debt, caused the restrictive fiscal impulses to be pro-cyclical. In Austria, France, Greece, Luxembourg, and Portugal, fiscal policy of stabilization was not effective in absorbing shocks *vis-à-vis* the EMU-12 average *per capita* GDP in all the three specifications, so that the distance of national *per capita* income even enlarged.

Table 1b – National stabilization in EMU countries (1996-2012).

	β	t-statistics	p-value	s.e.	R^2
Austria					
T	1.61085	4.95	0.00000	0.32542	0.59
T+SC	1.56984	4.76	0.00000	0.32980	0.57
T+SC-SB	1.39438	5.43	0.00000	0.25679	0.63
Belgium					
T	0.93622	3.91	0.00009	0.23944	0.47
T+SC	0.98564	4.10	0.00004	0.24040	0.50
T+SC-SB	0.87724	5.21	0.00000	0.16838	0.62
Finland					
T	1.01805	6.74	0.00000	0.15105	0.73
T+SC	1.03654	6.67	0.00000	0.15540	0.72
T+SC-SB	0.64327	5.03	0.00000	0.12789	0.60
France					
T	1.16414	3.33	0.00086	0.34959	0.39
T+SC	1.23605	3.37	0.00076	0.36678	0.40
T+SC-SB	1.16767	4.40	0.00001	0.26538	0.53
Germany					
T	1.11728	7.00	0.00000	0.15961	0.74
T+SC	1.13948	7.23	0.00000	0.15760	0.75
T+SC-SB	0.83601	7.47	0.00000	0.11192	0.77
Greece					
T	1.23856	15.69	0.00000	0.07894	0.94
T+SC	1.22254	14.68	0.00000	0.08328	0.93
T+SC-SB	1.09821	17.97	0.00000	0.06111	0.95
Ireland					
T	1.11785	19.16	0.00000	0.05834	0.96
T+SC	1.12433	18.84	0.00000	0.05968	0.95
T+SC-SB	0.83516	14.13	0.00000	0.05910	0.91
Italy					
T	0.81483	2.80	0.00504	0.29101	0.32
T+SC	1.11280	3.84	0.00013	0.28966	0.46
T+SC-SB	1.04191	5.47	0.00000	0.19048	0.64

	β	t-statistics	p-value	s.e.	R^2
Luxembourg					
T	1.61734	16.11	0.00000	0.10039	0.94
T+SC	1.64802	16.22	0.00000	0.10160	0.94
T+SC-SB	1.11009	16.95	0.00000	0.06549	0.94
Netherlands					
T	1.01232	4.93	0.00000	0.20534	0.59
T+SC	1.01466	5.04	0.00000	0.20132	0.60
T+SC-SB	0.63091	3.90	0.00010	0.16177	0.47
Portugal					
T	1.15822	7.70	0.00000	0.15042	0.78
T+SC	1.05778	6.86	0.00000	0.15419	0.73
T+SC-SB	1.07928	11.33	0.00000	0.09526	0.88
Spain					
T	0.79867	2.89	0.00379	0.27636	0.33
T+SC	0.80539	2.85	0.00443	0.28259	0.32
T+SC-SB	0.64195	3.10	0.00192	0.20708	0.36

T = Taxes; SC = Social Contributions; SB = Social Benefits

5. The need for institutional reforms

In searching reasons for the failure of the European currency area in fostering convergence among the Core and the Periphery countries, we have analysed both the market adjustment and the absorption of permanent shocks of national *per capita* GDP with respect to the EMU-12 average through national fiscal policy of stabilization. The unsatisfactory results above presented challenge the Mundell (1973) optimistic prediction that the risk-sharing provided by financial integration is a sufficient condition to make a currency area optimal, so to advance real convergence among its Member States.

In this section, we improve on the tenet that the reason for this failure lays in the very weak institutional setting of the Eurozone. First, the capacity of national fiscal stabilization policies has shrunk due to the restrictive macroeconomic policies required for admission to the monetary union and by the SGP constraints (Farina, Ricciuti 2006). Second, the decoupling between savings and investment was interpreted as a signal of financial integration, which would have triggered the catching-up of the backward Peripheral economies (Blanchard, Giavazzi 2002). Quite on the contrary, the financial integration across the Eurozone capital markets prompting more diversified

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portfolios has been concealing a widening divide between excess savings in the Core and excess domestic demand in the Periphery. Once the financial crisis caused the increase in the public debt / GDP ratios after the rescue of troubled banks, and led banking institutions and financial operators to sell large amounts of the sovereign bonds of distressed Peripheral countries, the trend of capital inflows in the Periphery compensating for the trade deficits was put to an end. In the absence of an ECB endowed with the lender of last resort (LoLR) function and of a full-fledged fiscal union, national governments of the Periphery should have refrained from underestimating the competitiveness problem created by their divergent ULCs *vis-à-vis* the EMU-average, as well as from considering the rise in domestic demand warranted by a large credit creation as an enduring boost to the catching-up process. Third, as an effect of more interconnected banks and capital markets, financial integration has magnified the diffusion of spillovers within the Eurozone. The persistence of heterogeneous conditions of fiscal sustainability within a currency area puts national governments under the constant threat by financial operators since a switch to pessimistic expectations could set in motion a speculative turmoil. In the Eurozone, this is signalled by the strong correlation between Credit Default Swap (CDS) spreads and sovereign bond yields which unfolded across the Peripheral countries Since in fully liberalized capital markets the Eurozone governments depend on the volatile sentiment of financial investors even after the national currency has been renounced, a unification process falling short of including the banking system and the public budgets is at any moment in danger. Fourth, spillovers across countries have also increased as a consequence of heterogeneous institutions, so far as the design of national social protection systems and labour market regulation are considered. The opportunity to exploit potential advantages against competing countries – through capital tax rebate, cuts to the wage wedge, the abolition of job protection, a lower duration of unemployment benefits – has prompted institutional competition in the Eurozone, thus provoking an increasingly un-levelled playing field in the currency area. A country not participating in the 'race to the bottom' will suffer an upward shift in production costs relative to its competitors, so to find itself at disadvantage *vis-à-vis* the other Member States in exploiting amplified trade opportunities following the monetary union. In recent years, many Peripheral countries severely hit by the financial crisis were compelled by the SGP – due to their high public debt and/or as a condition to enter the financial aid programmes organized by the so-called 'Troika' – to engineer hugely restrictive fiscal impulses aimed at restoring fiscal sustainability. While the decay of the competitiveness of many Peripheral countries has required a huge real deflation through the fall of wages and prices, the so-called policy of 'austerity' consisting in large negative fiscal impulses caused a fall in domestic demand, so that the consequent slowdown in the formation of fiscal revenues further endangered the sustainability of public finances.

Therefore, the European process of 'integration without convergence' urges the deployment of more appropriate institutions backing the functioning of market forces. To accomplish the objective to build up an optimal currency area, a macroeconomic governance should have been set up *ex ante*, going beyond the surveillance on national budgetary policies and tight fiscal rules.

There is a string of tightly interlinked questions, the solution of which could give birth to a coherent EMU institutional design pointing to optimality conditions for the currency area. A first question concerns the ECB Statute outlawing the LoLR function, which denies the principle that a central bank is empowered with the prerogative to autonomously create fiat money by virtue of its monetary sovereignty. This weakness magnifies the relevance of the lack of control by an EMU government on the currency in which its public debt is denominated. The motivation behind the prohibition of excessive public deficits and debts over GDP is not just to shield the ECB from a non-receivable bail-out request by a government with uncertain fiscal solvency, but to prevent that financial markets lose confidence in the sustainability of the public finances just as an effect of the absence of the ECB's LoLR function. How relevant is this function has been highlighted by the rapid fall in the spread of the Peripheral countries sovereign bonds after Governor Draghi announced in July 2012 that the ECB was ready to do 'whatever it takes' to defend the euro. The 'quantitative easing' initiatives engineered by the ECB, while more limited than the FED's ones, should not be seen as a substitute for the LoLR function. It is the lack of this function the main reason for the low credibility suffered from Periphery's fiscal sustainability. Had the LoLR function been in the Statute of the ECB, there would have been no need for the funds that the Troika lent to the most distressed countries (Greece, Ireland, Portugal, and Spain) to be conditioned to the 'austerity' measures. The Peripheral countries' fiscal solvency would have been fully warranted, no 'rescue' plans would have been negotiated with the Troika, and the further dampening of the GDP growth would have been avoided.

A second question is the need to establish a Banking Union, so as to avoid that the spread on the public debt issued by a government with low fiscal sustainability could worsen the solvency of banks burdened by Peripheral countries' bonds. The implementation of three essential instruments is in order: (i) the centralization of European banks supervision; (ii) the redemption fund for distressed banks; and (iii) the common guarantee on deposit insurance. The ECB's re-financing operations at 1% interest rate brought about the return to *home bias*, that is a high share of national public debt owned by Periphery's domestic banks, which continue to be exposed to the liquidity and solvency crises of their government's bonds. The establishment of the Banking Union will allow the European Stability Mechanism (ESM) to borrow from the ECB and buy sovereign bonds. However, the interdependence between banks and States cannot be solved by the Bank Union alone. The 're-nationalization' of sovereign debt demonstrates that the purchase

of sovereign bonds in the primary market by the ESM – a substitute for the ECB's 'last resort' function – could not be trusted by investors as an invulnerable shield for the euro. Since the 'flight to quality' of the Core countries' banks ensuing the financial crisis put an end to the cross-border interconnections between banks and governments, the roll-back of the European financial integration has become a new threat to solvency of banking institutions and to the credibility of the Eurozone. To be credible, the planned resolution fund should be complemented by a common fiscal backstop. The Banking Union could prevent the Eurozone from being exposed to possible solvency crises hitting Peripheral governments only in the case that the Core countries would agree on the issuing of Eurobonds with the mutual guarantee of all Eurozone's governments.

Therefore, the third question – the need for fiscal institutions of mutual risk-sharing – stands out as the most fundamental one. In the XIX century, after that in 1790 the Federal government of the United States bailed out some States of the federation, they autonomously adopted balanced-budget rules. The institutional design of fiscal federalism, whereby the federal government organizes a system of mutual risk-sharing (the States in recession through the federal budget receive transfers which are funded by the States in expansion), was complemented by the nationalization of the debt of States in default. In today's Europe, the decision to avoid the 'moral hazard' of large redistributive transfers across the EMU countries has suggested the opposite arrangement, whereby the constraint of SGP fiscal rules on national governments has not been complemented by the centralized organization of mutual risk-sharing. As above pointed up, this loose approach to fiscal policy coordination has been unable to foster convergence and to tackle the negative impact on GDP growth caused by the twist towards restriction imposed by the Eurozone institutions on the governments' fiscal stances.

6. Concluding remarks

The economic and monetary integration processes taking place in Europe in the last decades did not favour the catching-up of less advanced countries, thus hindering the path of the Periphery to satisfying the optimality conditions for a currency area. Differently from the 'endogeneity of OCA' view, the formation of a monetary union did not *per se* facilitate the participating countries in *ex post* compliance with the OCA criteria. The empirical evidence offered in the paper indicates that within the Eurozone the *per capita* GDP convergence is thwarted by both the limited magnitude of the market adjustment – with the less advanced Peripheral economies exhibiting real divergence as measured by ULC – and the insufficient capacity of national fiscal policy of stabilization to annul temporary GDP deviations from the EMU-average GDP. Furthermore, the financial crisis even prompted the 're-

nationalization' of the public debt, thus procrastinating the hike in the degree of risk on sovereign debt.

As for the market adjustment mechanism, the comparison between the β convergence for EMU-12 and for the other-EU countries has indicated the absence of *per capita* GDP convergence within the Eurozone. Since after the end of currency devaluations the national productive systems of the EMU Peripheral countries proved unable to cope with the efficiency divide *vis-à-vis* the Core, the convergence process has been mainly carried out in the European Union by the catching-up of the enlargement economies. As for fiscal policy tackling permanent shocks *vis-à-vis* the EMU-12 average GDP, our econometric exercise has measured the impact on *per capita* GDP convergence of the centralized fiscal policies of stabilization that would be adopted in a hypothetical Fiscal Union (while retaining the functioning of national tax and transfer system of the EMU countries, that is without forcing any kind of harmonization of fiscal stances across national fiscal systems). The shock absorption through the tax and transfer systems turned out to be extremely low, and in many cases the distance from the EMU-average GDP widened. This finding is a hint that the choice to centralize the monitoring and sanctioning of public finances, while preserving subsidiarity in budgetary policies, is bound to be reformed. Since the Maastricht Treaty the restrictive fiscal rules imposed on Eurozone's governments have hampered the capacity of public budgets to accompany the real convergence process within the Eurozone. After the financial crisis, the 'austerity' policies implemented by the EMU governments during the Great Recession have negatively impinged on GDP growth.

The Mundell recipe for the optimality of a currency area states that an internal devaluation, labour mobility and a fiscal union are on an equal basis substitutes for the loss of exchange rate flexibility. Yet, in the present macroeconomic conditions of the Eurozone the first two policy instruments are not operating: the lowering of domestic wages and prices could worsen deflation, and larger migration flows within the EMU could lead to factor misallocation across heterogeneous productive systems. To avoid a possible *break-up* of the Eurozone, the most promising strategy is an agreement on a fully-fledged federal budget. The so-called 'Transfer Union', that is the cross-states redistribution which would be needed to cope with the permanent shocks which prevent the Peripheral countries from catching-up, cannot be unanimously agreed on and has to be excluded. Yet, after the failure of the 'austerity' to restore GDP growth in the distressed Peripheral countries, the need for the recovery of fiscal sustainability has to be reconciled with the objective to orient fiscal policy of stabilization to foster real convergence. A Fiscal Union with a budget corresponding to 5-10% of the overall GDP, funded through a common tax levied at the Member State level, could organize a mutual risk-sharing delivering monetary transfers to Member States whose GDP variation is below the EMU-average variation, thus contributing to the recovery of the catching-up process.

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