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Integration without convergence in the European currency area

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Abstract

The paper provides statistical evidence showing that the single currency has not promoted *per capita* income convergence within the Eurozone, a currency area that today is far away from optimality. A sluggish market adjustment after a shock, and the weak impact of fiscal policy of stabilization in absorbing national GDP deviations from the EMU-average GDP, have both contributed to increasing divergence of the Peripheral countries vis-à-vis the EMU-wide real effective exchange rate. The mutual exposure of governments to distressed domestic banks after the financial crisis, and of banks to the rising risk on sovereign bonds in portfolios, recently provoked the resurgence of the home bias. The paper finds that the formation of a monetary union, differently from the "endogeneity of OCA", does not *per se* facilitate the participating countries in *ex post* compliance with the OCA criteria. A macroeconomic governance more comprehensive than the surveillance on national budgetary policies and tight fiscal rules should have been set up *ex ante*. An EMU-wide system of mutual risk-sharing represents the viable path to the income smoothing across business cycles, thus prompting the catching-up of the Periphery and furthering compliance with the optimality conditions of a currency area.

JEL Classification: E42; E63: F15, F36, F43; H61.

Keywords: Economic integration; Optimal Currency Areas; European Monetary Union.

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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 among the "advanced" Core[1] and the "backward" Peripheral[2] countries of the European Monetary Union (EMU)[3] 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 of the European currency area by analysing whether the costs of renouncing the exchange rate policy instrument were balanced by the benefits stemming from the appropriate degrees of symmetry and flexibility. While flexibility can be taken as broadly constant in the Eurozone, given moderate changes in labour market institutions, empirical evidence on the evolution of the Real Effective Exchange Rate (REER), as measured by unit labour costs (ULC), points to a declining symmetry, in the form of real divergence of the Periphery from the Core. The result, that the monetary integration did not help the Eurozone to endogenously fulfil the criteria for an optimal currency area, finds confirmation in section 3, where the impact of the switch to the single money on *per capita* GDP convergence within the Eurozone has been singled out. The comparison in terms of beta convergence between the countries establishing the Eurozone (EMU-

[1] Austria, Belgium, Finland, France, Germany, Luxembourg and the Netherlands.
[2] Greece, Ireland, Italy, Portugal, and Spain.
[3] We rely on the Ameco dataset for the first 12 members of the EMU (EMU-2002), excluding the latest accessions for a too short staying in the EMU.

2002)[4] and the remaining EU countries (Non-EMU-2002)[5] shows that the evolution towards more market integration failed to move the Eurozone closer to an optimum currency area (OCA). The role played by the EMU macroeconomic governance has to be taken into consideration, too. In section 4, we enquire whether the evolution of convergence was affected by the loss of monetary policy autonomy and by the end of discretionary fiscal impulses after the macroeconomic guidelines and the constraints on public deficits and debts imposed on governments (from the Maastricht criteria in 1991 to the Stability and Growth Pact (SGP) in 1998 to the quasi-automatic sanctioning of non-compliance included in the Fiscal Compact in 2012). The econometric estimates, we conducted on the fiscal policy of stabilization by the governments involved in the monetary integration process, indicate a very weak shock absorption of deviations from the EMU-average of national GDP growth through the national tax and transfers systems. Section 5 concludes by stressing the need for more institutional coordination through a fiscal union complementing macroeconomic guidelines on lower-tier fiscal policy of stabilization.

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

The conditions needed to guarantee the sustainability of a monetary union were established by the literature on OCA (Kenen 1969; McKinnon 1963; Mundell 1961 and 1973). Following the "endogeneity of OCA" effect put forward by Frankel and Rose (1998), a comprehensive appraisal of optimality conditions has been presented by De Grauwe and Mongelli (2010).[6]

Figure 1

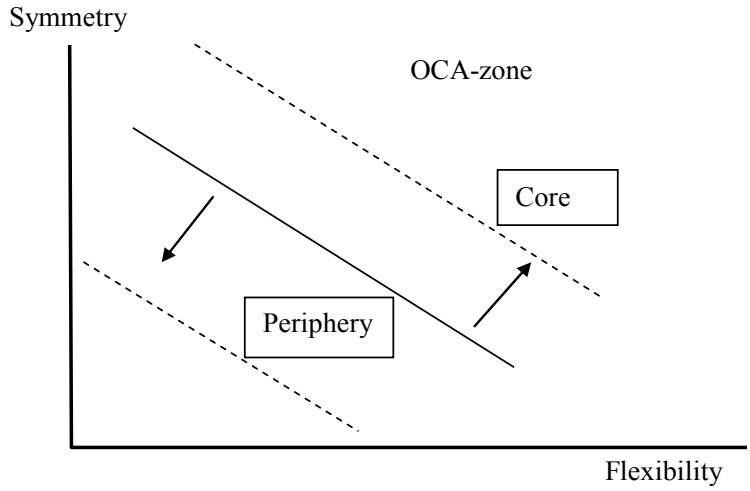


Figure 1 sketches a continuous OCA line, where the costs and benefits of a monetary union just balance. The continuous line is determined *for a given level of integration* by the degree of symmetry (the probability for a country, or a group of countries, to be hit by an asymmetric shock

[4] The twelve EMU-2002 countries are: Austria (AT), Belgium (BE), Finland (FI), France (FR), Germany (DE), Ireland (IE), Italy (IT), Luxembourg (LU), the Netherlands (NL), Portugal (PT), Spain (ES) and Greece (GR), which entered the monetary union in 2001.

[5] The fifteen Non-EMU-2002 countries 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).

[6] "(E)ndogeneities of OCA are a set of interacting processes improving the OCA ratings of a currency area (i.e., a group of sovereign countries sharing a single currency). Against this background there are four areas that we analyse in this context: the endogeneity of economic integration, and primarily at evidence on prices and trade; the endogeneity of financial integration or equivalently of insurance schemes provided by capital markets; the endogeneity of symmetry of shocks and (similarly) at synchronisation of outputs; and the endogeneity of product and labour market flexibility" (De Grauwe and Mongelli, 2010, p. 8).

decreases if the wage dynamics do not exceed the labour productivity dynamics) and the degree of flexibility (the efficient functioning of the labour market in adjusting after a negative shock, depending on its regulatory institutions). The negative slope indicates that a declining degree of symmetry – i.e. a higher exposure to asymmetric shocks - rises the costs of a single currency and asks for more labour market flexibility (reformed institutions of social protection and more decentralised labour contracts heading to a higher unemployment-elasticity of the nominal wage rate), also considering the very weak market adjustment through labour mobility across the EMU-2002. Hence, to the right of the OCA line, given the degree of symmetry, the degree of flexibility is sufficiently large, while to the left of the OCA line, given the level of symmetry, the degree of flexibility is insufficient. 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 is placed in the "OCA zone", that is above the OCA line.

After fifteen years of monetary union, we explore whether the Eurozone is becoming an OCA *ex post*, or the Periphery remains still far away from catching-up with the Core. The two dotted lines represent the two opposite - downward or upward – moves, possibly following the evolution of markets within the Eurozone. We gauge the "endogeneity of OCA" effect by focusing on a downward shift of the OCA line: the boost to market, trade and financial integration could have permitted more symmetry and/or more flexibility, so to rise net benefits from EMU and help Periphery in satisfying the OCA optimality conditions.

As to flexibility, the influence of institutions on the functioning of the EMU-2002 labour markets has not significantly changed during the first twelve years of monetary union. During the monetary integration process the employment protection legislation (EPL) and the institutions sustaining real wage rigidity (RWR)[7], prevented a robust rise of labour demand after a negative shock (Blanchard and Wolfers, 2000). Similarly, the sluggish growth in EMU-2002 economies did not help with the problem of the insiders-outsiders divide. Empirical evidence provided by Nickell *et al*. (2005) reckons it as the most important cause of mismatching between labour demand and supply. Some labour market developments have occurred, such as wage moderation in Germany from 1992-93 onwards (so that its competitiveness could benefit from real depreciation and intra-EMU-2002 exports were boosted) and the diffusion of temporary contracts reducing unemployment rigidity in Italy and Spain. However, the degree of flexibility has remained broadly constant in the Core as well as in the Peripheral countries. Considering that in the Eurozone labour market institutions are complementary rather than substitutes, the steepness of the Phillips curve was not at variance in countries where either EPL or RWR have decreased *vis-à-vis* countries where both unemployment and real wage exhibit higher flexibility (Abbritti and Weber, 2010).

The evaluation of the degree of symmetry is more complex. At the inception of the monetary union, the further integration across product markets was expected to become the key factor for optimality within the European currency area. In Figure 1, an increased symmetry for the same level of flexibility within the Eurozone, is portrayed by a downward shift of the OCA line (e.g. to the lower dotted OCA line in Figure 1), which could have created the opportunity for the Periphery to join the Core in the OCA zone.

Along the rationale McKinnon had put forward, Frankel and Rose (1998) were predicting that more intra-EMU trade would have delivered the harmonization of Periphery business cycles with those in the Core. A survey study based on a gravity model has found that the switch to the single money should bring 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). This findings suggest that the impact of the EMU on trade reminds more of an unilateral move towards multilateral openness rather than the participation to a custom union. However, as most of the increase in intra-EMU trade had already been achieved before 1999, the forecast of the long-term impact of the EMU on trade is highly tentative.

[7] Along with high union density and centralization of wage negotiations, unemployment benefits and minimum wage are considered the main cause of a high reserve wage of the unemployed.

Along the rationale Kenen had put forward, a higher correlation across demand shocks could result from product diversification prompted by higher financial integration. In fact, empirical evidence shows a negative relationship between openness and inter-industry specialization, as more intra-EMU trade triggers more closeness among productive structures (Alvarez Lopez and Myro Sanchez, 2005).

Another important impulse to an endogenous improvement of insurance against asymmetric shocks, i.e. a lower degree of symmetry needed for each level of labour market flexibility, 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, until the outbreak of the financial crisis triggered by the Lehman Brothers bankruptcy in September 2008.

Some clues in this direction were offered by the acceleration in the *per capita* income growth *vis-à-vis* the rest of the Eurozone which took place in Ireland and Spain before the burst of the financial crisis. The huge expansion of credit creation in these countries, where the real interest rates was very low or even negative,[8] along with the copious availability of cross-border inter-bank financing and the more financially diversified portfolios of European investors, all boosted production.[9] However, the excess investment over private savings did not consist of a lasting catching-up process, but resulted in the moral hazard of speculative trends in housing and financial markets, which worsened the trade balance through a rapid increase in imported consumption goods. The likely reason was that financial integration, far from fostering inter-industry diversification, promoted a further GDP expansion mainly in traditional sectors (Giavazzi and Spaventa, 2010).

A rise in inter-industry specialization, threatens GDP growth correlation according to the relevant literature[10] and could have contributed to the failure of the Periphery's catching-up process, too. In Figure 1, more specialization is portrayed by the dotted OCA line shifting upwards, and asking for higher flexibility and/or higher symmetry. More inter-industry specialization would penalize the Peripheral countries, less endowed with innovative sectors *vis-à-vis* the Core countries, so that their distance from the OCA zone would enlarge. The danger of heterogeneity across the Eurozone's productive systems was stressed by Mundell (1961), highlighting the impossibility to cope with asymmetric shocks. After the completion of capital movements' liberalization, labour market flexibility was prevented by low labour mobility as well as employment and real wage rigidity, and monetary policy autonomy was ruled out by definition once the single currency replaced the fixed exchange rates.

Mundell was correctly forecasting the serious impact of the end of devaluations on the less efficient Periphery's industrial systems, after the European Monetary System (EMS)[11] had already slowed down the competitiveness recovery through frequent realignments of bilateral parities with Germany. Figures 2.a and 2.b present the evolution of the ULC in Eurozone countries relative to EMU-2002 average. This empirical evidence highlights a remarkable departure from symmetry after twelve years of the Eurozone. The Peripheral countries exhibit an increasing upward ULC divergence during the 2000s *vis-à-vis* the EMU-2002 average, while Germany - a country that succeeded in pursuing both wage moderation and a steady growth path of total factor productivity

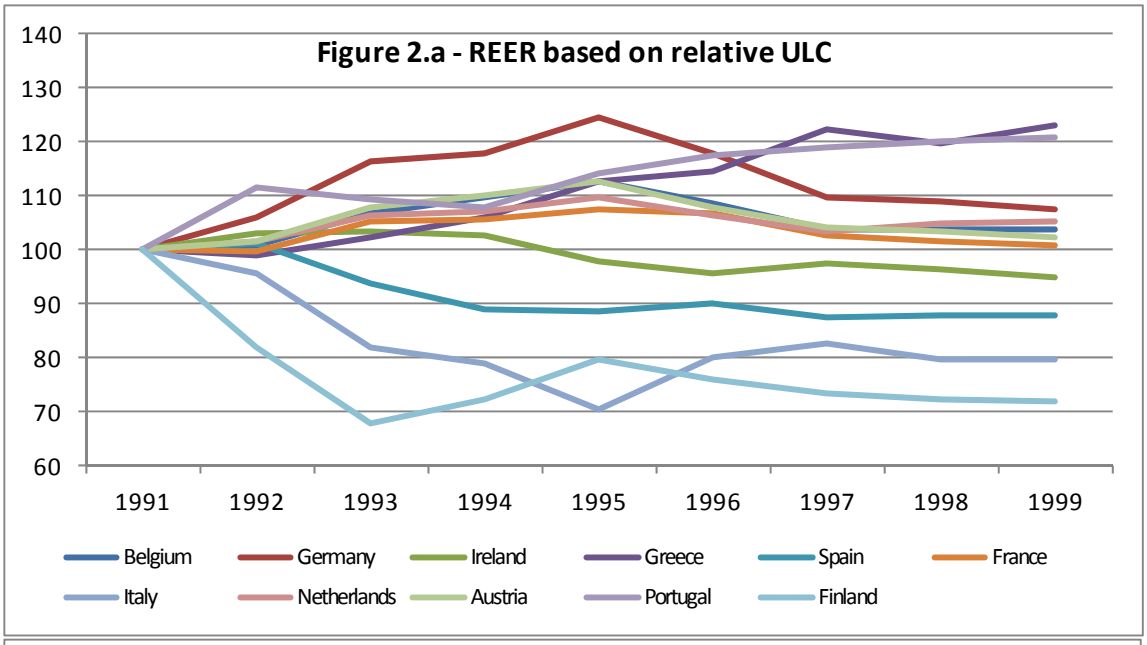
[8] The ECB's reaction function derives from the Taylor rule, in which the deviation of inflation from target is measured on the EMU-average, which entails a lower real interest rate for higher than EMU-average inflation countries.

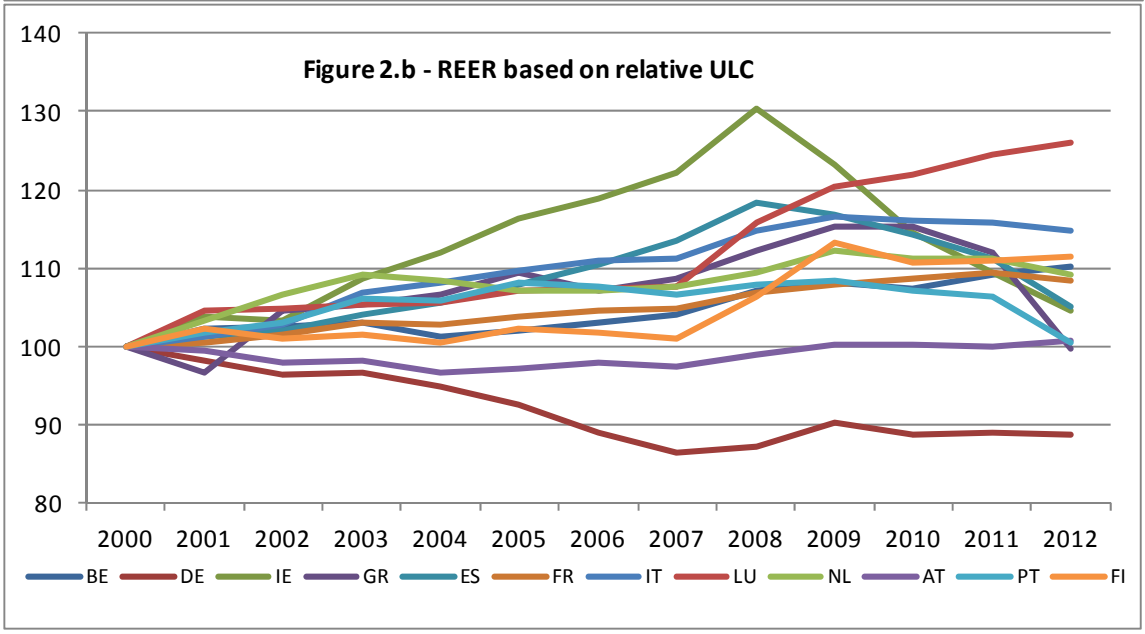
[9] Ireland and Spain started accumulating trade deficits, due to the increase in their imports more than to nominal rigidities causing a competitiveness loss (European Commission, 2009), as it is shown by a flexible labour market and fiscal competition boosting exports in the former country, and by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

[10] Krugman (1991 and 1993) presents economies of scale and agglomeration factors as drivers of less symmetric fluctuations across countries. Kalemli-Ozcan, Sorensen, and Yosha (2003) argue that 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. Higher expected returns entail higher income insurance, that will encourage corporations to move to more specialization in production, thus reducing the degree of symmetry.

[11] The EMS consisted in the fixed but adjustable exchange rates agreement in place from 1979 to 1999.

(TFP) - exhibits an impressive downward path. Figure 2b suggests that the monetary union by no means did set a more levelled playing field for *per capita* GDP convergence among "backward" and "advanced" countries.





Source: Own calculations on Ameco database

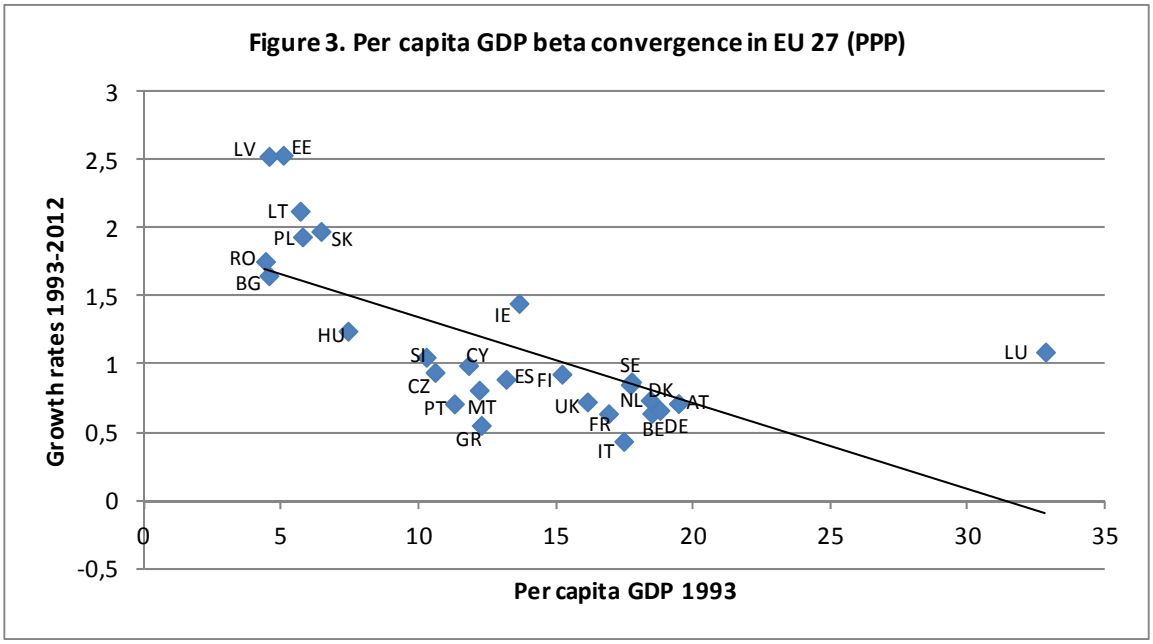
Different weaknesses affected the evolution of ULC in different Peripheral countries. As shown in Figure 2b, in Portugal and Greece, but also in Spain and Italy, the dynamics of wages largely exceeded the dynamics of a sluggish labour productivity trend, till the crisis caused the reversal of the upward ULC trend. Nominal rigidities negatively impinged on market adjustment, as ULC continuously rising above the EMU-2002 average caused a competitiveness loss leading to a fall in exports. The continuous increases in public consumption also contributed to the current account deficits. In particular, the Greek macroeconomic situation was aggravated by too long a delayed switch to fiscal discipline, so that following the financial crisis and the huge increase in its spread, the Greek government was obliged by negative growth in 2009-10 to cut public and private wages, in the struggle to accomplish the relevant real deflation needed to avoid a further fall in the employment and the income levels. As shown in Figure 2b, the huge ULC decline that in Greece

caused the wage and price deflation from 2010 onwards is paralleled by the even steeper ULC downward path which in the much more "flexible" Ireland started as soon as 2008.
In 2009-10 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. A rocketing spread in these countries *vis-à-vis* the German ten-years Bund, through a contagion effect, in 2011-12 has affected Italy and Spain, too. Moreover, these latter countries suffered from a structural break off in productivity growth, which caused a disproportioned ULC rise vis-à-vis with respect to wage increases, and slowed down exports severely hindering growth rates since 2009.

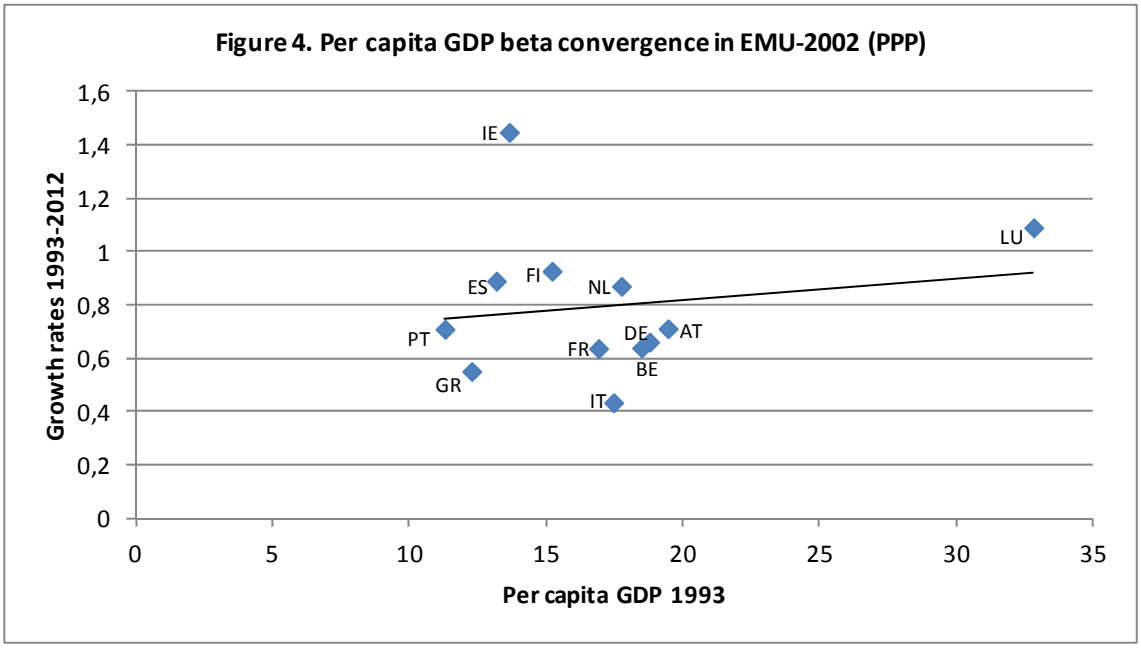
3.The *per capita* GDP convergence within the EMU and the non-EMU economies

According to the celebrated neo-classical growth model (Solow, 1956), the low-*per-capita*-income economies, with initial lower capital-labour ratio and under the assumption of diminishing returns, expand at a faster pace than the high-*per-capita*-income economies, and eventually catch-up in the long run. 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.
A preliminary question concerns whether the passage to an European currency area could have favoured or hindered the convergence process across the group of European countries that in the last decades have been involved in the process of monetary integration. The EMS, and the subsequent monetary unification process culminating in the launch of the EMU, fostered the achievement of nominal convergence, but the TFP remained very dispersed within the Eurozone. It was expected that belonging to the same currency area would have pushed the market forces of productive systems to take 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 more price transparency and the end of transaction costs. The "open method of coordination" set in the Lisbon Agenda 2000 would have promoted the imitation of 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).
In Figure 3, the Solovian view is broadly reflected by a scatter diagram showing the negative correlation between the EU-27 countries' *per capita* income growth rates in 1993–2009 and their initial *per capita* GDP in 1993. The hint is that, after the EU enlargement, a convergence speed manifested, possibly due to the new entrants' catching-up the higher *per capita* income of the incumbents fostered by relatively flexible labour markets, mostly with a decentralized wage setting and a low coverage of collective agreements. (European Commission, 2012).
Figure 4 shows the convergence within the cluster of the EMU-2002 economies whose growth path was influenced by the common macroeconomic guidelines devised for the formation of the monetary union. The comparison with the overall convergence across the EU-27 in Figure 3 is striking. The expected convergence across the EMU-2002 economies does not emerge, the slope of the beta in Figure 4 being positive.[12]

[12] 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 foreigners. Ireland instead 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



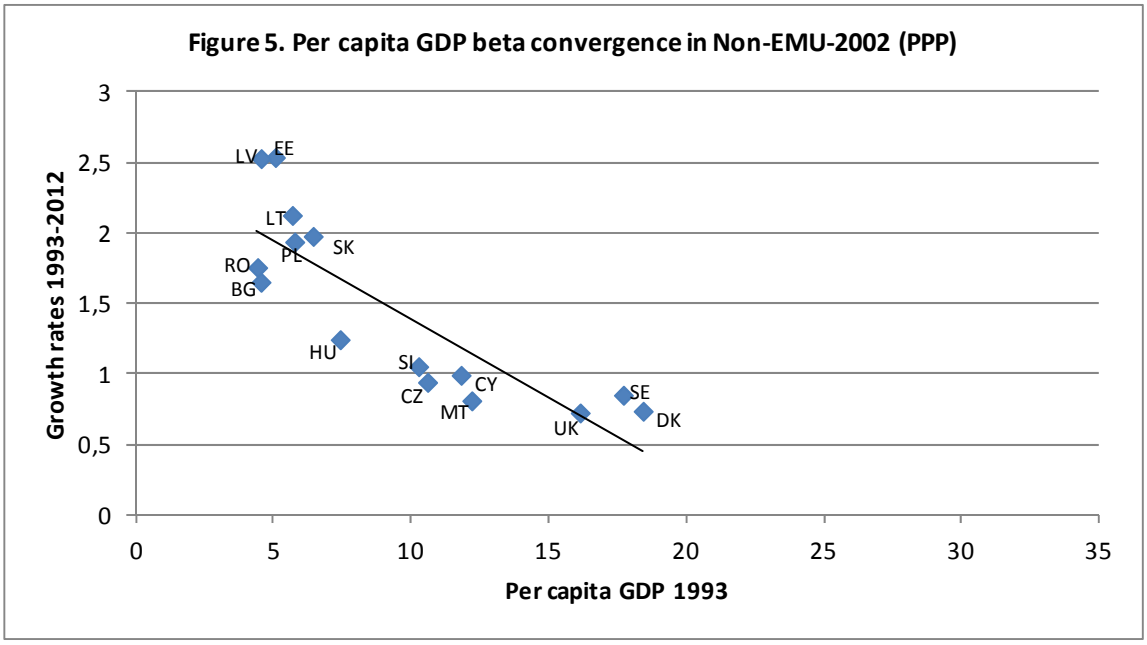
Source: Own calculations on Ameco database



Source: Own calculations on Ameco database

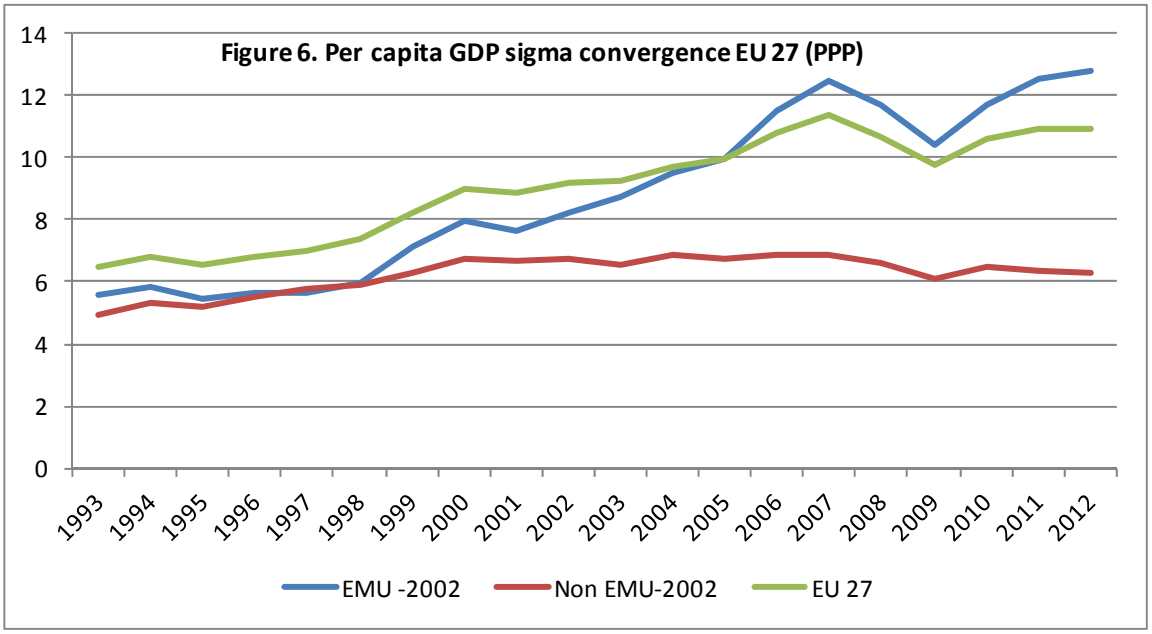
Figure 5 shows a pattern of fast convergence among the Non-EMU-2002. The high value of the negative correlation between the initial *per capita* GDP and the subsequent average *per capita* GDP growth rate reflects strong similarities in the productive structures along the shared path of convergence to the more advanced Eurozone economies (Farina and Tamborini, 2003). Finding a negative slope for the Non-EMU-2002 in Figure 5, while it was positive for the EMU-2002 in Figure 4, highlights the fact that the catching-up taking place in the CEEC countries has been decisive to foster overall GDP beta convergence in EU 27. The lack of convergence within the EMU-2002 countries involved in the monetary integration process begs an explanation.

an example of successful Solovian convergence up to a point, as it was triggered by fiscal competition, a factor much different from those featured by that model.



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-2002 and Non-EMU-2002 subgroups. In the period from 1993 to 2008, the standard deviation progressively increases for the EMU-2002, while remaining on the average constant after an initial increase for the Non-EMU-2002. The combined evidence of a positive beta convergence within the EMU-2002 cluster (Figure 4) *vis-à-vis* the steep negative beta convergence within the Non-EMU-2002 (Figure 5), and of a rising standard deviation in the EU 27 triggered by the EMU-2002 (Figure 6) suggests that the monetary integration to the single currency has created a widening *per capita* GDP dispersion across the EMU-2002 economies till the financial crisis.



Source: Own calculations on Ameco database

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

Mundell (1973) revised his previous skeptical view about an European currency area. Provided that the single currency succeeds in fostering more interconnected European credit and financial markets, cross-border financing and portfolio diversification would 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, financial integration could grant an efficient market risk-sharing by income and consumption smoothing across upward and downward business cycles. The rationale is that the more dispersed are the equities in investors' portfolios across corporations belonging to different jurisdictions, the more capital gains on corporate equities of countries in expansion will succeed in compensating for capital losses on the corporate equities of countries in recession.

After a country is hit by an asymmetric negative shock, the absorption of income deviations from the trend GDP can be accomplished either by credit or capital markets' adjustment, or by intra-EMU risk-sharing through the national fiscal policies of stabilization. As for the income and consumption smoothing through the market risk-sharing, elsewhere we conducted econometric estimates for the Eurozone countries for the whole period 1979-2010, for the 1979-99 EMS sub-period, and for the 1999-2010 EMU years(Croci Angelini and Farina, 2012). The market shock absorption was shown to have slightly improved as an effect of the monetary union; yet much more dispersed degrees of adjustment emerged between Core and Periphery. Since we are interested in investigating how a fiscal policy of stabilization performed by national governments has been effective in stimulating convergence within the Eurozone, this section presents a computation of the capacity of national tax and transfers systems to annul national deviations from the EMU-average GDP.

Econometric estimates were conducted for the years 1995-2012 aimed at casting light on the extent to which national fiscal policies of stabilization have counteracted the lack of convergence within the Eurozone. The objective is to gauge the degree of absorption by national fiscal policies of national business cycle deviations from the average aggregate *per capita* income. The method consists in estimating the relationship between the first differences of *per capita* national income normalized by the *per capita* average market income of EMU countries – the independent variable - and the same ratio referred to disposable income (Y - S) - the dependent variable – where S comes in three different specifications: net of taxes (T); taxes plus social contributions (T+SC); taxes plus social contributions minus social benefits (T+SC-SB).

Regressions have been performed both by imposing the same coefficients to all countries as a pooled panel (see Table 1.a) and by specifying individual national coefficients (see Table 1.b).

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

In the equation, the β coefficient expresses the shock persistence after the fiscal policy of stabilization. Therefore the difference (1-β) measures the degree to which any shock to national convergence towards EMU-2002 average has been absorbed by the operation of the national fiscal system. The method of weighting the GDP, taxes, social contributions and social transfers of each country respectively for the GDP, taxes, social contributions and social transfers of the EMU-2002 as a whole enables us to verify the relationship between each national business cycle and the EMU-2002 business cycle.

First differences among these variables, rather than their levels, allow to single out the fiscal stances oriented to counteract income fluctuations around the trend. This expedient permits to cut off from the computation the redistributive function of public finances. Only the tax and transfer reshuffling aimed at absorbing stochastic shocks is considered, so to eliminate the "moral hazard" problem

connected to the state aid oriented to overcome permanent shocks. We may think of a hypothetical centralised fiscal institution merging the national fiscal impulses of stabilization – implemented through the fiscal system of each country - into a single European budget, and then distributes them across the EMU-2002. The different values of the national beta coefficients point at different degrees of success in covering national shocks as a function of the size of the initial deviation from the EMU-2002 average. This econometric exercise identifies the centralized fiscal policies of stabilization that would be adopted in a hypothetical Fiscal Union, but without forcing any kind of harmonization of fiscal stances across national fiscal systems.

Our econometric estimates indicate that the degree of absorption of the deviation of national *per capita* income with respect to the EMU-2002 average is disappointing.[13] As shown by results in Table 1a, aggregate stabilization in the Eurozone, i.e. the degree to which the shocks affecting the EMU-2002 as a whole are absorbed, is rather low. As for the tax and tax plus social contribution specifications, the overall fiscal impulse within the Eurozone resulted in a widening of real divergence (the values of 1-β are negative). As for the tax plus social contribution minus social transfers specification, the shock absorption is positive (the values of 1-β are positive) but limited. The results regarding the national shock absorption show that in many countries GDP stabilization ($\beta < 1$) applies only in the case of the full operation of the fiscal policy, from the income reduction due to tax and social contributions, to the income increase due to the social transfers. Moreover, in the case of Austria, France, Greece, Luxembourg, and Portugal, a fiscal policy of stabilization is not effective in absorbing shocks in none of the three specifications, so that the distance of national *per capita* income *vis-à-vis* the average EMU-2002 *per capita* income has even enlarged.

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

	beta	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

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

	beta	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**

[13] The statistical estimates by Melitz and Zumer (1999) show that in Europe markets play the most important role in providing insurance against shocks. Sorensen and Yosha (1996) have instead found that shock absorption in the European Union is mainly performed through government stabilization measures, with a coverage of around 25% after three years. According to an empirical study conducted for the United States by Asdrubali et al. (1996), shocks to gross state GDP were mainly absorbed through capital markets (39%), are smoothed through credit markets (23%), while the income smoothing through the federal government was very limited (13%).

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**
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

To explain these unsatisfactory results, which challenge the Mundell (1973) optimistic prediction, many hypotheses can be put forward. First, the capacity of stabilization of national fiscal policies has reduced due to the restrictive macroeconomic policies required to be admitted to the monetary union and by the SGP constraints (Farina and Ricciuti, 2006). Second, the huge current account imbalances which started accumulating between the Core and the Periphery countries were interpreted as a signal of financial integration triggering a safe and sound catching-up path of the backward Peripheral economies (Blanchard and Giavazzi, 2002). Third, as an effect of more interconnected banks and capital markets, financial integration has magnified the diffusion of spillovers within the Eurozone. The strong correlation between Credit Default Swap (CDS) spreads and bond yields which have unfolded across the Peripheral countries has signalled that a contagion could easily develop. Even after the renounce to a national currency, a switch to pessimistic expectations could set up speculative turmoil in motion and trigger macroeconomic instability. In spite of the switch to the single currency, in fully liberalised capital markets the EMU governments are under the threat of the volatile sentiment of financial investors.

Spillovers across countries have also increased because a significant heterogeneity exists across institutions, especially for the fiscal systems and labour market regulation. 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, and so on – has sparked off. institutional competition in the Eurozone, thus provoking an increasingly un-levelled playing field in the currency area. A country which does not partecipate in the "race to the bottom" will suffer an upward shift in production costs relative to competitors, so to find itself at disadvantage *vis-à-vis* the other member states in exploiting the increase in trade opportunities created by the monetary union. Finally, in more recent years, the restrictive fiscal impulses required to many Peripheral countries, severely hit by the financial crisis to enter financial aid programmes

and to restore fiscal sustainability, have provoked a huge real deflation through the fall of wages and prices. As a consequence, domestic demand was depressed and the slowdown in the formation of fiscal revenues has further endangered the sustainability of public finances.

5. Concluding remarks

The main finding of the paper is that the distance from optimality of the European currency area appears to have increased, despite the market and financial integration promoted by the monetary union. The gloomy message is that integration processes taking place in Europe in the last decades did not favour the catching-up of less advanced countries, so to hinder the path of the Periphery to satisfying the optimality conditions for a currency area. The empirical evidence offered in the paper indicates that within the Eurozone the *per capita* GDP convergence is thwarted both by the limited magnitude of the market adjustment – with the less advanced Peripheral economies even exhibiting real divergence (measured by ULC) - and by the limited capacity of national fiscal policy of stabilization to annul temporary GDP deviations from the EMU-average GDP. The finding of absence of *per capita* GDP convergence within the Eurozone is confirmed by the comparison between the beta convergence for EMU-2002 and Non-EMU-2002 countries. After the end of currency devaluations, the efficiency divide between Core and Periphery has enlarged, so that the convergence process within the European Union is carried out almost only by the CEEC economies' catching-up. Finally, the weak capacity of national fiscal stances to absorb a temporary shock *vis-à-vis* the average Eurozone's GDP has to be traced back to the restrictive fiscal rules imposed on Eurozone's governments since Maastricht onwards.

The formation of a monetary union - differently from the "endogeneity of OCA" view put forward by Frankel and Rose (1998) - does not *per se* facilitate the participating countries in *ex post* compliance with the OCA criteria, but a macroeconomic governance more comprehensive than the surveillance on national budgetary policies and tight fiscal rules should have been set up *ex ante*. In this regard, the finding of integration without convergence in the European currency area implies that the crisis of the Eurozone urges the deployment of more appropriate institutions backing the functioning of market forces.

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 lender of last resort (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 of a government on the currency in which its public debt is denominated. The very motivation behind the prohibition of excessive public deficits and debts over GDP is not to shield the ECB from a non receivable request of bail-out by a government with uncertain public debt solvency, but to prevent that financial markets lose confidence in the public finances' sustainability 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 Periphery's sovereign bonds after the Governor Draghi's announcement that the ECB is ready to do "whatever it takes"[14] to defend the euro.

A second question is the need to establish a Banking Union , that is expected to amend the ECB's structural weakness. The centralization of European banks supervision, the redemption fund for distressed banks, and the deposit insurance are essential instruments required to avoid that the rise of public debt could worsen the solvency of banks burdened by bonds issued by government with low fiscal sustainability. However, the interdependence between banks and states will not be solved by the Bank Union alone. While the launch of the EMU ended the currency risk so reducing the "home bias" in investors' portfolios, the financial crisis has caused a "re-nationalisation" of sovereign debt. Since the rise of the spread on Peripheral countries' government bonds was followed by the "flight to quality" of the Core countries' banks, a higher share of national public

[14] Mario Draghi speech at an investment conference in London July, 25th, 2012

debt is now owned by Periphery's domestic banks, also taking advantage of the ECB's re-financing operations at 1%. interest rate.

Although the establishment of the Banking Union will allow the European Stability Mechanism (ESM) – the new institution devoted to fund governments under speculative attack – to borrow from the ECB and buy sovereign bonds, the return to "home bias" entails that domestic banks will continue to be exposed to the liquidity and solvency crises of their government's bonds. The drawback of the European financial integration consisting of cross-border interconnections between banks and governments demonstrates that a Banking Union supported by the indirect purchase of sovereign bonds in the primary market by the ECB - with the ESM financing as a substitute for "last resort" function - could not be trusted by investors as an invulnerable shield for the euro. The Banking Union could prevent the Eurozone from being exposed to possible solvency crises hitting Peripheral governments only in the unlikely case that the Core countries would agree on the issuing of Eurobonds with the mutual guarantee of all Eurozone's governments. Here the Fiscal Union comes on the stage. The third question is the need for fiscal institutions of mutual risk-sharing, which constitute a fundamental underpinning of a monetary union.

In the XIX century, the states of the federation of the United States autonomously adopted balanced-budget rules, thus complementing the institutional design of fiscal federalism, where the federal government is committed to provide a system of mutual risk-sharing, whereby states in expansion finance the federal budget and states in recession receive transfers. 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 EMU fiscal rules on national governments has not been complemented by the centralised organization of mutual risk-sharing. This loose approach to fiscal policy coordination was unable to foster convergence (as shown in section 3) and to enhance the disappointing impact of fiscal policy of stabilisation operated by the Eurozone's national governments (as shown in section 4). The choice to centralize the monitoring and sanctioning of public finances, but preserve subsidiarity in budgetary policies, is bound to be reformed.

To overcome the lack of confidence of investors in the Periphery's sovereign bonds and avoid a possible break-up of the Eurozone, the most promising strategy is an agreement on a full-fledged federal budget. As the paper has shown, in the last decades the national fiscal policies of stabilization proved unable to complement the market adjustment after an asymmetric negative shock, thus hampering convergence within the Eurozone. The so-called "Transfer Union", i.e. the continuous cross-states redistribution which would be needed to cope with the permanent shocks hampering the Peripheral countries' catching-up, cannot be unanimously agreed on and has to be excluded. Instead, a mutual risk-sharing, funded by a common tax levied at the member state level and delivering monetary transfers to member states whose short-term GDP variation is below the EMU-average variation, could succeed in smoothing income across business cycles. This possible Fiscal Union could represent the viable path to both strengthen the euro and bring the European currency area closer to optimality.

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