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Eurozone: original weaknesses, wrong policies and possible perspectives[1]

Enrico Marelli (University of Brescia) and Marcello Signorelli (University of Perugia)

Abstract

The Eurozone has been hit by a "double crisis" (the 2008-09 financial crisis and Great Recession followed by the 2010-12 sovereign debt crisis), with huge real effects in several countries, and is currently characterized by a stagnation scenario. However, even before the crises, the vitality of euro was questioned because of the original weaknesses in EMU's construction, in particular being a monetary union not really supplemented by an economic union.

In this paper, we provide, first of all, some empirical evidence on the long-run performance of the Eurozone, also in comparison with the wider EU, in terms of real convergence (per capita GDP), cycle correlation, trade integration: we shall see that euro's adoption did not significantly improve its relative performance. Then, in the second empirical part, we shall focus on the impact of the crises, on the collapse of aggregate demand – with particular reference to investment – and we shall present new evidence on output and (un)employment gaps.

We argue that some causes of Eurozone's stagnation, deflation and persistently high unemployment are to be found in the uncertain, delayed or inadequate responses by the EU institutions. Thus, the short-run policy implication is that the Eurozone needs an "aggregate demand shock", e.g. a massive investment plan (much bigger than the unsatisfactory "Juncker plan"). A more definite solution for the long-run problems is to realize some vital reforms in EMU's construction and in the governance of the EU. Otherwise, the risks of implosion and euro's ceasing will be high.

Keywords: euro, Eurozone, convergence, output gap, investment, EU governance
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1. Introduction

In this paper, we analyse two different issues concerning the economic performance and policies in Europe after the introduction of the euro: the long-run real economic convergence (or divergence) across Eurozone countries and the impact of the recent crises. We refer not only to the Global financial crisis (2007-08), with the consequent Great Recession (2008-09), but more particularly to the Eurozone's sovereign debt crisis (2010-12), that caused a "double-dip" recession in many countries of the euro area followed by a weak recovery. The crises had a long-lasting impact on real economies, thus we can talk of a real "stagnation". In some peripheral countries, output and employment levels are still below the pre-crisis figures.

The long-run problems are caused, in our view, by some original weaknesses of EMU's construction, being a monetary union not supplemented by a fiscal union; thus the "economic union" envisaged by the Maastricht's Treaty has still to be build. We present in the paper some empirical investigations focused on ex post assessments of developments in the EMU, based on OCA's and related theories. Our results show that the role of the monetary union in favouring real economic convergence is disputable.

Moreover, EMU has proved to be a fragile union, hardly resilient to large economic shocks, such as the recent sovereign debt crisis. Besides the lack of appropriate crisis management instruments, the

[1] This paper is partly based on a presentation made at the 80th Conference of the International Atlantic Economic Society, Boston, 8-11 October 2015.

stagnation scenario has also been produced by the uncertain, delayed or inadequate macroeconomic policies. In particular, the austerity measures undertaken to face the debt crisis have been too harsh and widespread, causing a collapse of aggregate demand, especially investment. On such evolutions we also provide new empirical evidence.

The structure of the paper is as follows. In Section 2 we provide some empirical evidences, firstly on real economic convergence and cycle correlation in the long-run, then on the contraction of aggregate demand (especially investment) as well as on output and (un)employment gaps. In Section 3 we critically discuss the macroeconomic policies – monetary and fiscal – followed by the EU institutions and by the individual countries in the recent years, suggesting alternative solutions that could (and still can) be adopted. Section 4 turns to the long-run issues and to the vital reforms to "complete" the monetary union, including reforms in the EU governance. Section 5 briefly concludes.

2. Empirical evidence

2.1 Long-run real convergence and cycle correlation

It is known that the Maastricht Treaty has purported the view that nominal convergence[2] is a pre-requisite for candidate countries to enter the EMU. The monetary union itself would produce real economic convergence, thanks to macroeconomic stability (price stability and fiscal discipline), the removal of the exchange-rate risk, the reduction of uncertainty (concerning inflation and interest rates) and the encouragement of international investment and trade, eventually leading to stronger economic growth.[3]

On the contrary, established theories like the "optimum currency areas" (OCA) theories[4] maintain that the similarity in real economic conditions of candidate countries is a requirement to accomplish an effective monetary union. Homogeneity in economic structures (and institutions) makes economic shocks more symmetric, so real variables tend to respond more similarly to possible economic shocks. Moreover, possible asymmetric shocks could be counteracted in presence of an adequate degree of flexibility in prices and wages, high labour mobility and a sufficiently centralized public budget. We should also recall that the "endogeneity of OCA's criteria" proposition maintains that, even if such criteria are not satisfied ex ante, they come to be endogenously confirmed ex post: it is the monetary union itself that leads both to trade integration and to "structural convergence".[5]

The "similarity" of different economies has been empirically assessed in different ways. In some empirical studies, for example, the degree of synchronisation of business cycles between countries has been estimated by computing the correlation coefficients of output or GDP; an increasing correlation of real variables would mean that shocks have become more symmetric across countries.[6]

As to the most common results concerning the Eurozone, we can say that the synchronicity of business cycles has increased – before the crises – not only in the European "core" (the area of Central Europe embracing Germany and the surrounding countries), but also in a wider area including some "peripheral" countries (for example countries in Southern Europe) and even many "new" members of Eastern Europe (NMS). Therefore, the general empirical evidence in the first decade of EMU (i.e. until 2007-08) made the concept of a "core" of European countries – more integrated than the "periphery" – less meaningful. Nevertheless, even in that period, some macroeconomic imbalances were mounting; in fact, many peripheral countries (mostly in the South of Europe) were suffering because of an increasing competitiveness gap and, without the possibility to devalue the national currencies, trade and current account deficits increased, while Germany and the other "core" countries exhibited large surpluses.[7]

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[2] The justification for nominal convergence criteria has been critically assessed by many authors (e.g. Buiter, 2004; De Grauwe and Schanbl, 2005). In particular, the excessive insistence on fiscal conditions has been criticized (Buiter et al., 1993).

[3] For formerly "deviating" countries, the hope was that they could be rewarded by the gains of the EMU: disinflation and financial stability, lower interest rates and debt service; in addition, of course, to the general benefits of monetary unions, in terms of lower transaction costs, lesser uncertainty, reinforced competition, etc.

[4] The seminal works are by Mundell (1961), McKinnon (1963), Kenen (1969).

[5] See the empirical contributions by Frankel and Rose (1998) and Rose (2000).

[6] Real convergence has also been evaluated in terms of per capita income, productivity, labour market indicators, trade links, business cycle behaviour, etc. See the review in Marelli and Signorelli (2010), where the connections between real convergence, nominal convergence and institutional convergence are investigated.

[7] See Berger and Nitsch (2010). Some authors also emphasized a possible link between persistent external imbalances and the sovereign debt risk (Giavazzi and Spaventa, 2010).

If we consider the specific OCA's criteria, a first evidence is that price rigidity in the Eurozone, though still higher than in the US, has actually been decreasing; in fact, structural reforms in the product market have accelerated since adopting the euro (Alesina et al., 2008). Wage moderation also increased in the new monetary regime, despite the lack of significant reforms in the primary labour market; as a matter of fact, wage rigidity for newly hired workers is lower and similar to the US's (Pasimeni, 2014). As regards labour mobility, it is true that the geographical mobility of workers, as an adjustment mechanism to shocks, has increased over time in the EU; however, it is still weaker than in the US (Dao et al., 2014) and too limited to offset huge rises in unemployment caused by large economic shocks and its persistence. Capital mobility has been fully realized in the Eurozone (Hale and Obstfeld, 2014), although the sovereign debt crisis caused a new segmentation in the financial markets. We must finally observe that the lack of fiscal capacity – that could be mechanism of shock absorption and risk-sharing – has probably been the "greatest design failure of the EMU" (De Grauwe, 2013), despite what was suggested by theorists (starting from Kenen, 1969, and many others) and advocated, a good twenty years before the start of the euro, by the MacDougall Report (EC, 1977).

We can conclude these introductory notes by affirming that, since the birth of the euro (1999) and until the global financial crisis (2008), nominal convergence was prevailing, financial and macroeconomic stability was dominant in the area: inflation and interest rates were low in all countries, public debts were generally sustainable. At the same time, real economic growth was not only lower compared to other world partners, but diverse across its members. So, the question is whether there was real economic convergence rather than divergence.[8]

We are now going to present the empirical analyses we have made concerning long-run "real convergence", similarity of business cycles and trade integration within the euro area, as compared to the wider EU. The first investigation refers to the so-called *beta-convergence* approach (Barro and Sala-I-Martin, 1995), by investigating whether the per capita GDP of different countries is converging to a unique level. The regression can be specified as follows (*i* stands for an individual country):

$$1/n \ln (Y_{it} / Y_{i\,0}) = \alpha + \beta \ln (Y_{i\,0}) + \varepsilon$$

where Y is per capita GDP[9], 0 is the initial year, t the final year and n is the number of years from 0 to t (and ln stands for natural logarithm). If the estimated coefficient β is negative and significant, there is absolute convergence.

We have estimated this regression for both the Eurozone countries and the EU as a whole, using annual per capita GDP data from Eurostat. We distinguished between the pre-crisis period (2001-2007)[10] and the crisis period (2008-14), in addition to the full period. The Eurozone refers to the initial 11 countries for the pre-crisis period and to 19 countries for the crisis period.[11] Table A1 in Appendix shows that for the full period (2001-14), as well as for the two sub-periods, there has been a convergence in per capita GDP, statistically significant for the EU as a whole. The key reason is the catching-up by the NMS, which initially exhibited very low per capita GDP but recorded very high growth rates in the new century. On the contrary, for the Eurozone (EZ11) we find a (partially significant) divergence in the pre-crisis period; some convergence (significant, at 10%) appears only for the EZ19 in the recent sub-period: the reason, once more, is higher growth and less impact of the recession in some NMS recently adopting the euro.

In order to exploit the full time-series information and using quarterly data, we also implemented an *"extended" beta-convergence* approach (Canova and Marcet, 1995), which estimates some regressions of the following type:

$$(\ln Y_{i,t} - \ln Y_{i,t-1}) = \alpha + \beta \ln Y_{i,t-1} + \varepsilon$$

This equation can be estimated as a pooled regression, with fixed effects, and using as $Y_{i,t}$ the normalised per-capita income, i.e. national per capita income divided by the average (EZ11, EZ19, EU28) per capita income. The meaning is that each country may converge toward its own steady-state. The results

[8] In the same period, before the crises, there was also a "structural divergence" (Buti and Turrini, 2015).

[9] In Marelli and Signorelli (2015), convergence is assessed not only in terms of per capita GDP, but also of other real variables (e.g. unemployment) and also nominal variables (interest expenditure, deficit/GDP, debt/GDP, etc.); the methods employed include both beta-convergence and sigma-convergence (i.e. an analysis of trends of a dispersion measure).

[10] Notice that for the first two years since euro's adoption (1999 and 2000) Eurostat's data set has a lot of missing data.

[11] Although the new members of the Eurozone entered gradually from 2007 to 2015 (in addition to Greece in 2001), they had to satisfy the requirement of fixed exchange rates (with the euro) for at least two years before entering, but many of them had opted for fixed exchange rates even before that period.

(Table A2) of the estimations with Fixed Effects show a significant convergence for all groups of countries and for all periods. On the contrary, estimations without fixed effects produce outcomes similar to the previous ones, relative to the absolute beta-convergence; in fact, real convergence in GDP is dominant (although less statistically significant in the crisis period), but in the Eurozone convergence disappears, apart from a partially significant convergence in the recent period (for EZ19).

Then, in order to investigate the *similarity in business cycle evolutions*, we computed the *correlation coefficients* of quarterly GDP growth at constant prices (Table A3). We considered the usual three periods and three territorial aggregates. The coefficients are generally positive and almost always statistically significant. As expected, the coefficients of the second sub-period (2007-15) are generally higher than those of the first sub-period (1999-2007): this reflects the fact that the fall in GDP during the Great Recession (2008-09) has been generalized. The highest coefficients are found in the EZ11 group, i.e. the original core of countries adopting the euro since 1999.[12] This may be an indication that EMU was established within a group of homogeneous countries from a cyclical point of view or that the euro's adoption has favoured their homogenization, consistently with the "endogeneity of OCA" proposition. However, a puzzle remains, since the correlation coefficients seem higher in some "other EU members", i.e. in the non-euro countries, than in the "latecomers" in the Eurozone.

A further analysis focuses on the *sensitivity of the business cycle* of individual countries with respect to the average European cycle (i.e. the "average" cycle of EZ11, EZ19 and EU28). By using quarterly data of real GDP, we can estimate some regressions of the following type:

$$\Delta \ln(Y_{i,t}) = \alpha_i + \gamma_i \, \Delta \ln(Y^{EU}_{t}) + \varepsilon_{i,t}$$

where Y is the GDP at constant prices, t is the quarter, i is the individual country (and ln stands for natural logarithm). The γ coefficient represents the *elasticity* of each country's quarterly growth with respect to the average European growth (EU28, EU11 or EU19 alternatively).

Results are in Table A4, organized as usual by considering three periods and three groups of countries. We are not so interested in the absolute values of the coefficients, that tend to be higher, other things being equal, in fast-growing countries. Instead, we are more interested in their statistical significance and in the overall goodness of fit; if the Adj. R2 is high, it means that the European cycle is by itself an important explanation of individual country performance (in terms of GDP), independently from idiosyncratic elements. According to Decressin and Fatàs (1995), a 20% of total variance explained by the regression is a good benchmark (DF condition hereafter). In the EZ11 group the DF condition is respected in all countries for the full period, with the only exception of Ireland; however, in the first period the goodness of fit was generally worse, i.e. in 1999-2007 idiosyncratic elements played a greater role in explaining the GDP dynamics. In the latecomer group, the DF condition was not respected in two countries: Cyprus and Greece (but also in many more countries in the first period). In the non-EZ group, the elasticities w.r.t. EU28 cycle were significant for the full period in almost all countries (with the only exception of Poland); but in the first period the DF criterion was mostly rejected.

If the business cycle investigation seems to show that the degree of integration is higher in the EZ-11 group, although it has increased everywhere (independently from whether one country belongs to the "euro club" or not), a last question is whether the adoption of the euro has significantly increased trade within the countries joining the monetary union (consistently with the "endogeneity" principle). A simple investigation (see Figure A1) shows that the ratio of intra-EU trade on GDP has increased in most EZ countries[13], both in the 1999-2008 period and in the 2008-14 period; however the increase has been greater in some non-EZ countries, especially in the second period. Nevertheless, if we compute the simple means of the ratios for the two groups, we find that in the first period the intra-EU trade ratio increased from 25% to 27% in the EZ and from 24% to 28% in the non-EZ; while in the second period it decreased (from 27% back to 25%) in the EZ, but it further increased (to 34%) in the non-EZ. Thus, it seems that the crises halted the intra-EU trade relations within the Eurozone, but they reinforced trade integration in some EU countries that did not adopt the euro.

A provisional conclusion on long-run convergence is that the adoption of the euro did not apparently favour convergence trends. Moreover, although correlation of business cycles seems higher in

[12] Concerning individual countries, the coefficients relative to the EZ range from 0.919 for Italy to 0.647 for Luxembourg. In the latecomer EZ-group the lowest figures are found for Greece and Cyprus. In the non-EZ group correlations have increased in the recent period, becoming similar to those of the Eurozone countries, reaching for example 0.847 in the United Kingdom.

[13] In fact, some other authors (e.g. Mongelli and Vega, 2006) detected a moderate increase in intra-euro trade (by 5% to 10%, without any evidence of trade diversion) in the first years after the introduction of the euro.

the original group of euro-area countries, it seems also high in some non-euro EU members. Finally, intra-EU trade intensity in some non-euro members seems higher and soaring, compared to some Eurozone's members.

2.2 Recession, demand contraction, output gap and (un)employment gap

After the global financial crisis (2007-08) and the Great Recession (2008-09), the policy response in the world has been prompt. It involved monetary policies, soon become accommodative in the US, Japan, the UK and other leading economies. Fiscal policies were also expansionary, thanks to the operation of automatic stabilizers and active packages of fiscal stimuli. Thanks to the mentioned policies, the world economy was able to recover quickly enough from the crisis between the end of 2009 and 2010 and this recovery intensified in the following two years; a deceleration was only recorded since 2014, because of the crises in some emerging economies (that initially were barely affected by the Great Recession).

In Europe, however, and especially in the Eurozone, a second crisis erupted in 2010-11: the sovereign debt crisis. This has caused a second recession in 2012-13, that in some countries continued up to 2014. The more recent recovery is also extremely weak and, in some peripheral countries of the euro area, production and income are still below the pre-crisis levels. Notice that among 12 advanced economies that in 2008 began a systemic crisis, only two (US and Germany) in 2013 recovered the pre-crisis levels (Reinhart and Rogoff, 2014).[14] At the end of 2015, GDP's volume was almost equal to the pre-crisis level in the whole euro area (EA in Table 1), but it was still below in Spain, Portugal, Italy and Greece (listed in ascending order of the gap).

Table 1 – Gross Domestic product, vol. (Index number : 2005=100)

	max.	*min.*	*2015Q3*	*max.date*	*min.date*	*n.quarters Recession*
EU	108,1	102	109,8	2008Q1	2009Q2	5
EA	107,8	101,7	107,4	2008Q1	2009Q2	5
DE	109,2	101,6	115	2008Q1	2009Q1	4
IE	114,6	101	125,7	2007Q4	2009Q4	8
EL	110,1	80	80,3	2007Q2	2013Q4	26
ES	110	99,8	104,9	2008Q2	2013Q2	20
FR	106	101,8	108,5	2008Q1	2009Q1	4
IT	*104,2*	*94*	*94,9*	*2008Q1*	*2014Q4*	*27*
PT	105,2	95,1	98,4	2008Q1	2012Q4	19
UK	106,7	100,2	113,2	2008Q1	2009Q2	5

Source: our elaborations on Eurostat data.

As a consequence, unemployment has risen and seems rather persistent. As we shall discuss in the next section, the new recession and current stagnation have also been determined by the delayed, inadequate or wrong policy responses undertaken by the EU institutions and individual countries of the euro area. In particular, the strict austerity measures, added to the uncertainty created by the same systemic sovereign debt crisis, depressed aggregate demand.

The problem does not concern external demand[15], since exports returned in 2015 to pre-crisis levels in all Eurozone's countries; this good export performance was followed even by the peripheral countries (i.e. the "Piigs", except for Greece), also thanks to the "internal devaluations" – i.e. wage compression accompanied in some cases by productivity increases – thus favouring the reduction in the

[14] The same authors emphasize that, out of 100 financial crisis episodes recorded in 150 years, the Italian crisis has been less severe only of the Greek one (and also the Irish one, that has however recovered well in the most recent years). They compute a severity index, based both on the depth of the recession and on number of years necessary to return to pre-crisis levels.

[15] A visual picture of the relative contractions in the different components of aggregate demand, as well as of the increases in the recovery period, is provided by the Figures A2 to A6 in the Appendix. The comparison is made between the four largest EU economies (Germany DE, France FR, Italy IT and UK), four peripheral economies (Spain ES, Portugal PT, Ireland IE, Greece EL), in addition to the EU and Euro area (EA) averages. The recession period goes from the max. value – for each variable – preceding the crisis (2007 or 2008) to the subsequent min.; the recovery period from the min. to the last available data (2015Q3). Quarterly Eurostat data have been used.

competitiveness gaps.[16] Within internal demand, public expenditure has not been able to play an effective counter-cyclical role because of the austerity approach: only in the three big economies (Germany, France, the UK) the public expenditure levels in 2015 were partly higher than the pre-crisis levels; on the contrary, in all "Piigs", apart from Spain, they were lower in real terms. A similar trend can be found also regarding private consumption (of households), although in this case the real increase has been tiny even in the mentioned three big countries (less than 5% over seven years) and the fall in the "Piigs" even greater.

Investment expenditure has suffered most: -15% is the cumulated loss in the 2007-15 period in the Eurozone (EA), but the fall has been bigger in individual countries (see Table 2). The collapse of gross fixed capital formation has been equal to ¾ in real terms in Greece, around or above 30% in Italy, Spain and Portugal (it was even larger in Ireland until 2011, but then there was a good recovery). It is probably even more astonishing that total investment in 2015 was still lower than the pre-crisis levels both in France and the UK, while in Germany it was a little higher. Of course, the falls have been especially large in particular sectors, such as constructions. It is true that a recovery in investment took place since 2013, but it is still extremely weak, also because of the high level of private debt: financial resources have been used to reduce the debt of firms and families rather than starting new investment projects.[17]

Table 2 – Fixed Capital Formation, vol. (Index number: 2005=100)

	max.	*min.*	*2015Q3*	*max.date*	*min.date*
EU	113,9	94,5	101,2	2008Q1	2013Q1
EA	112,6	92,2	96,5	2008Q1	2013Q1
DE	115,8	102	119,5	2008Q1	2009Q2
IE	117,3	55,6	103,4	2007Q1	2010Q3
EL	154,8	42,5	42,5	2007Q3	2015Q3
ES	113	71	79,6	2007Q4	2013Q2
FR	113	99,5	102,8	2008Q1	2009Q3
IT	*106,1*	*72,5*	*73,1*	*2007Q1*	*2014Q3*
PT	105,3	64,2	69,1	2008Q1	2013Q1
UK	111,8	84,6	109,9	2007Q4	2009Q2

Source: our elaborations on Eurostat data.

Also public investment has been slashed during the crisis period, with a fall of about 1/5 in the Eurozone, concentrated in the 2010-14 period; its share on GDP decreased from 3.4% in 2009 to 2.7% in 2014 (this share remained unchanged until 2016).

In addition to the analysis on the actual GDP growth, the concepts of potential growth and output gap should be investigated due to the significant policy implications, especially relevant in the Eurozone context. In short, potential growth refers to the capacity of an economy to have non-inflationary GDP growth; so, it is not directly observable and a large debate exists on how to calculate potential output (e.g., EC, 2014).[18] From a policy perspective, potential output can be affected – in the medium/long run – by structural policies, while the output gap (difference between actual and potential GDP) can be reduced – in a short-term perspective - by macroeconomic (counter-cyclical) policies. So, those concepts and calculations are crucial to define the cyclical position of an economy and its productive capacity and, in the Eurozone context, they are used as instruments for the fiscal surveillance process deriving from the reformed Stability and Growth Pact (SGP) and for the evaluation of the effectiveness of the structural reforms agenda.

More specifically, to compute the structural balance (i.e. the cyclically-adjusted public budget) – a key indicator for defining the fiscal consolidation effort in accordance to EU rules – it is necessary to estimate the potential output. As showed by Cottarelli et al. (2014), the model and methodology used by

[16] Now, however, export cannot be a primary source of demand because international trade is slowing down (as a consequence of the deceleration originated in many emerging economies since 2014).

[17] See also Bundesbank (2016). According to this report, in 2015 the gap vs. pre-crisis levels was still 70% in Greece and Cyprus, 30% in Italy, Spain and Portugal, 10% in France (only Germany returned to pre-crisis levels). In the construction sector, gaps of 90% are reported for Greece, 70% for Ireland, 50% for Spain.

[18] Due to its relevant policy implications, the EU's Economic Policy Committee (EPC) has created the "Output Gap Working Group".

the EU Commission for its calculation tend to underestimate the magnitude of the economic cycle – by assuming pronounced hysteresis effects - and led to the determination of low output gaps in all countries. The pro-cyclical policy implications are evident; in particular, in the period 2008-2013 about 70 percent of the Eurozone's fall in GDP was considered as structural (i.e. connected to a loss of potential output) and only 30% as cyclical. Notwithstanding the literature on the "hysteresis effects" suggests that a growing unemployment rate could be accompanied by an increase in the "structural unemployment" (for example, due to lower employability of long-term unemployed people), the above calculations seem largely unrealistic and they crucially depend on the methodological assumption of the model used. In other words, a very high correlation between actual and structural unemployment is assumed.[19]

Moreover, the very low price dynamics, with cases of deflation in several countries, is an additional indication of firms' difficulties to sell their products, not to produce, i.e. it would suggest to give much more weight to the fall in aggregate demand with respect to the fall in potential output. It should be further stressed the fiscal policy implication of the above considerations in the Eurozone context: an underestimation of potential GDP produces a too low output gap which in turn implies too high structural deficits, thus requiring an excessive budgetary adjustment.[20] As suggested by Cottarelli et al. (2014), an economy with negative potential growth (like Italy in 2013-14) implies that any positive actual growth rate would reduce the output gap and, therefore, would require a reduction of the nominal deficit just to maintain the structural balance.[21]

Estimations of the potential growth rates, output gaps and cyclically adjusted government accounts are presented and discussed in EC (2014 and 2016).[22] In OECD (2014) the effect of the global financial crisis on OECD potential output is calculated by substantially assuming a continuation of pre-crisis productivity and employment trends. Different sources (i.e., different methodologies and estimation methods) produce quite different results, especially for some countries.

Notwithstanding the mentioned critiques on the methods employed by the EU Commission, it is interesting to present a comparative analysis, in order to highlight the significant differences that do exist between Eurozone's countries. On the basis of EC (2016) calculations, some evidence about potential GDP growth rates and output gaps are presented with reference to a selection of Eurozone countries plus the UK (Table 3). As for potential growth, a persisting huge negative trend emerges for Greece and, substantially, also for Italy. In the case of Greece the above trend produces a recent reduction in the output gap (expected at -2.4% in 2017, according to EC). In general, with the only exception of Ireland since 2014, the potential growth is estimated as very low (or negative) for all post-crisis years and, as a consequence, the output gaps tend towards zero or even positive values. It seems at least controversial to accept that in few years some countries significantly reduced potential output. As above mentioned, these estimations have relevant effects on the computation of structural budget values and the consequent short-term policy margins according to the new GSP rules.

The decline of potential output since 2008, dramatic in the case of Greece and very relevant for Italy and Portugal, can be considered as a proxy of the "permanent" output impact of the financial crisis. In other words, especially for the countries more hit by the double crisis in the Eurozone, the most recent tendency towards positive output gaps cannot be necessarily assumed as a significant macroeconomic improvement. In fact, if the (lower) potential output is correctly estimated (i.e. reflects the real situation), this can be compared to the pre-crisis level (or, much better, to the expected dynamics) of potential output in order to detect the "permanent" (or cumulative) real impact of the crisis in terms of potential GDP; but if the output gap is underestimated (with respect to real values), this mistake hides a less negative situation in terms of potential output. Moreover, in the latter case, this error deternines wrong policy implications,

[19] For example, in the Italian case near 60 percent of the increase in unemployment would be structural (with the structural unemployment rate rising from 7 percent in 2007 to almost 11 percent in 2014). In Spain the structural unemployment rate resulted higher than 20 percent.

[20] As well known, a balanced structural budget is the medium-term objective of the GSP and of the Fiscal Compact. In addition, the size of the output gap is also relevant in order to approve some margin of flexibility within the framework of the Stability and Growth Pact.

[21] The authors also conclude that – paradoxically - if the impact of the recession on potential growth is actually of the huge size described by the model agreed at the European level, this would suggest a much more gradual fiscal consolidation than that recommended by the European Commission.

[22] Mink et al. (2011) also focus on measuring consistent output gaps, with an application for the Eurozone and implications for the common monetary policy. See also D'Auria et al. (2010).

by attaching too much importance to structural policies with respect to aggregate demand policies, with further negative real consequences in the following years.

Table 3 – Potential growth rates and output gaps

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*
Germany	1.3 (1.8)	1.2 (1.7)	*0.7* *(-4.7)*	*1.0* *(-1.8)*	*0.7* *(1.1)*	*0.8* *(0.8)*	*1.4* *(-0.3)*	*1.5* *(-0.2)*	*1.7* *(-0.3)*	*1.9* *(-0.6)*	*1.6* *(-0.6)*
Ireland	3.6 (5.2)	1.6 (1.4)	*0.0* *(-4.3)*	*0.2* *(-4.1)*	*0.7* *(-2.3)*	*1.3* *(-3.4)*	*1.9* *(-3.9)*	*3.1* *(-1.9)*	*4.0* *(1.6)*	*4.8* *(1.7)*	*4.8* *(0.6)*
Greece	1.7 (5.6)	0.5 (4.7)	*-0.6* *(0.9)*	*-1.7 (-* *3.0)*	*-2.8 (-* *9.3)*	*-3.5* *(-12.9)*	*-3.4* *(-12.7)*	*-2.9* *(-9.5)*	*-2.1* *(-7.7)*	*-1.9* *(-6.3)*	*-1.4* *(-2.4)*
Spain	3.7 (3.0)	2.8 (1.3)	*1.0* *(-3.3)*	*1.0* *(-4.2)*	*0.4* *(-5.5)*	*-0.6* *(-7.5)*	*-0.8* *(-8.3)*	*-0.3* *(-6.7)*	*0.0* *(-3.7)*	*0.4* *(-1.5)*	*0.7* *(0.3)*
France	1.7 (2.9)	1.5 (1.6)	*0.9* *(-2.3)*	*1.1* *(-1.4)*	*1.1* *(-0.4)*	*0.9* *(-1.2)*	*0.9* *(-1.4)*	*0.9* *(-2.1)*	*0.8* *(-1.8)*	*1.0* *(-1.5)*	*1.1* *(-0.9)*
Italy	*0.9* *(2.4)*	*0.2* *(1.1)*	*-0.4* *(-4.1)*	*-0.4* *(-2.1)*	*0.1* *(-1.6)*	*-1.1* *(-3.4)*	*-0.8* *(-4.3)*	*-0.7* *(-3.9)*	*-0.3* *(-2.9)*	*-0.2* *(-1.6)*	*0.1* *(-0.4)*
Portugal	0.9 (0.9)	0.7 (0.4)	*0.0* *(-2.6)*	*0.1* *(-0.8)*	*-0.5* *(-2.2)*	*-1.2* *(-5.0)*	*-1.0* *(-5.1)*	*-0.5* *(-3.8)*	*-0.1* *(-2.3)*	*0.3* *(-1.1)*	*0.6* *(0.0)*
U.K.	1.9 (2.3)	1.5 (0.3)	0.8 (-4.7)	1.0 (-4.2)	1.0 (-3.2)	1.0 (-3.1)	1.1 (-2.0)	1.3 (-0.6)	1.5 (0.2)	1.6 (0.3)	1.7 (0.5)

Source: EC, Spring 2016.
Note: output gap in parenthesis; potential growth as percent change on previous year; output gap calculated as percent of potential GDP.

More generally, we cannot even consider that the real impact of the crisis would be overcome when the GDP real level will return to pre-crisis levels. In fact, the most important effects regard the labour market performance. In other words, we can say that the long crisis will be concluded only when (un)employment levels will return to pre-crisis levels: for this to happen, it will take a much longer time with respect to the time for real GDP to return to pre-crisis levels, mainly due to positive labour productivity dynamics. Moreover, in the case of unemployment rates, it would be important to assess the likely behaviour of participation rates, that in many countries of Southern Europe are extremely low and in future might (and should) increase when labour demand will increase at a satisfactory pace.

As for the unemployment rates (UR), Greece and Spain are the most dramatic cases, with unemployment rates persistently above 20%, but several other countries still have two-digits rates (Table 4). Notice that 2015 figures, with the Germany and the UK exceptions (that respectively improved or returned to the pre-crisis situation), are far from pre-crisis levels, with huge changes and differences for Greece and Spain; however, also Italy in 2015 exhibited an UR almost double with respect to 2007 and 5.8 p.p. higher. In the Eurozone as a whole the current UR is still approximately 50 per cent higher than the pre-crisis levels.

The double crisis especially increased the long term unemployment (i.e., unemployed searching for a job for more than one year). This indicator more than doubled in the Eurozone: from 2.9% in 2008 to 6.0% in 2014, with a slight reduction to 5.5% in 2015 (Table 5). It increased from less than 4% in 2008 to almost 20% in 2014 in Greece. In 2015, in addition to Greece, also Spain had a two-digit value, with Portugal and Italy showing values more than double with respect to 2008. On the opposite side, in Germany the values declined for the whole period up to 2%.

Table 4 - Unemployment rates

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	**UR % change***	***UR-gap****
Germany	8.5	7.4	7.6	7.0	5.8	5.4	5.2	5.0	4.6	**-37.8**	**-2.8**
Ireland	4.7	6.4	12.0	13.9	14.7	14.7	13.1	11.3	9.4	**46.9**	**3.0**
Greece	8.4	7.8	9.6	12.7	17.9	24.5	27.5	26.5	24.9	**219.2**	**17.1**
Spain	8.2	11.3	17.9	19.9	21.4	24.8	26.1	24.5	22.1	**169.5**	**13.9**
France	8.0	7.4	9.1	9.3	9.2	9.8	10.3	10.3	10.4	**40.5**	**3.0**
Italy	6.1	6.7	7.8	8.4	8.4	10.7	12.1	12.7	11.9	**95.1**	**5.8**
Portugal	9.1	8.8	10.7	12.0	12.9	15.8	16.4	14.1	12.6	**43.2**	**3.8**
Eurozone	7.5	7.6	9.6	10.2	10.2	11.4	12.0	11.6	10.9	**45.3**	**3.4**
U.K.	5.3	5.6	7.6	7.8	8.1	7.9	7.6	6.1	5.3	**0.0**	**0.0**
E.U.	7.2	7.0	9.0	9.6	9.7	10.5	10.9	10.2	9.4	**34.3**	**2.4**

Source: European Commission (European Economic Forecast, Spring 2016).
Note: UR % change*= 100 [UR2015-minUR(2007, 2008)]/ minUR(2007, 2008); UR-gap**= UR2015- minUR(2007, 2008).

Table 5 – Long-term unemployment rates (as percent of labour force)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	**LTUR % change***	***LTUR-gap****
Germany	4.9	3.9	3.5	3.3	2.8	2.4	2.3	2.2	2.0	**-48.7**	**-1.9**
Ireland	1.4	1.7	3.5	6.8	8.6	9.0	7.8	6.6	5.3	**278.6**	**3.9**
Greece	4.2	3.7	3.9	5.7	8.8	14.5	18.5	19.5	18.2	**391.9**	**14.5**
Spain	1.7	2.0	4.3	7.3	8.9	11.0	13.0	12.9	11.4	**570.6**	**9.7**
France	3.0	2.6	3.0	3.5	3.6	3.7	4.0	4.2	4.3	**65.4**	**1.7**
Italy	2.9	3.0	3.4	4.0	4.3	5.6	6.9	7.7	6.9	**137.9**	**4.0**
Portugal	3.8	3.6	4.2	5.7	6.2	7.7	9.3	8.4	7.2	**100.0**	**3.6**
Eurozone	3.2	2.9	3.3	4.3	4.6	5.2	5.9	6.0	5.5	**89.7**	**2.6**
U.K.	1.3	1.4	1.9	2.5	2.7	2.7	2.7	2.2	1.6	**23.1**	**0.3**
E.U.	3.0	2.6	2.9	3.8	4.1	4.6	5.1	5.0	4.5	**73.1**	**1.9**

Source: Eurostat database
Note: LTUR % change*= 100 [LTUR2015-minLTUR(2007, 2008)]/minLTUR(2007, 2008); LTUR-gap**=LTUR2015-minLTUR(2007, 2008).

It should be surely mentioned that, since the 2000 Lisbon Agenda, the employment rate became the main indicator of the European Employment Strategy, launched by the Amsterdam Council in 1997. The new "Europe 2020" plan, started in 2010, has fixed a set of new quantitative targets, to be reached by the EU by the year 2020: one of them refers to the employment rate (defined on the population 20-64 years). The individual countries agreed on specific targets to be reached by the same year.

As showed in Table 6, in 2015 the Eurozone value was still lower by 1.2 percentage points than 2008 maximum. Notice the huge "employment gap" in Greece (more than 10 percentage points) and the astonishing evidence that the employment rate continued to increase in Germany for the whole 2007-2015 period: it has now already surpassed the 2020 target.[23] Greece and Spain are to a large extent (much more than 10 percentage points) below their 2020 national targets, but also Italy, Portugal and France are significantly below (around 6 percentage points). If we assume for the Eurozone the same target as for the EU as a whole, the gap relative to the 2020 target is also about 6 percentage points. This is an ultimate confirmation of the striking and lasting impact of the double crisis on the labour market performance.

[23] It should also be noted that this indicator could underestimate the "employment gaps" with respect to pre-crisis values, at least for some countries, due to working hours reductions as a strategy (labour hoarding) for reducing firings. In other words, the "labour gap" could be higher in terms of "overall yearly working hours", especially in some economies more hit by the crisis and with a higher diffusion of short-time work-agreements (for example, in Italy also as a consequence of the so-called "*Cassa integrazione guadagni*").

Table 6 – Employment rates (20-64 years)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	***ER % change****	*Target 2020*	***ER-gap***	***ERT-gap****
Germany	72.9	74.0	74.2	75.0	76.5	76.9	77.3	77.7	78.0	**5.4**	77	**4.0**	**1.0**
Ireland	73.8	72.2	66.9	64.7	63.8	63.7	65.5	67.0	68.8	**-6.8**	69	**-5.0**	**-0.2**
Greece	65.8	66.3	65.6	63.8	59.6	55.0	52.9	53.3	54.9	**-17.2**	70	**-11.4**	**-15.1**
Spain	69.7	68.5	64.0	62.9	62.0	59.6	58.6	59.9	62.0	**-11.0**	74	**-7.7**	**-12.0**
France	-	-	-	-	-	-	-	69.4	69.5		75	**-**	**-5.5**
Italy	62.7	62.9	61.6	61.0	61.0	60.9	59.7	59.9	60.5	**-3.8**	67	**-2.4**	**-6.5**
Portugal	72.5	73.1	71.1	70.3	68.8	66.3	65.4	67.6	69.1	**-5.5**	75	**-4.0**	**-5.9**
Eurozone	69.9	70.2	68.8	68.4	68.4	68.0	67.7	68.2	69.0	**-1.7**	-	**-1.2**	**-**
U.K.	75.2	75.2	73.9	73.5	73.5	74.1	74.8	76.2	76.9	**2.3**	-	**-**	**-**
EU	69.8	70.3	69.0	68.6	68.6	68.4	68.4	69.2	70.1	**-0.3**	75	**-0.2**	**-4.9**

Source: Eurostat database and our calculations.
Note: calculated on 20-64 population; ER % change*= 100 [ER2015-maxER(2007, 2008)]/ maxER(2007, 2008); ER-gap** =ER2015-maxER(2007, 2008); ERT-gap***=ER2015-Target2020

3. Recent economic policies and the needed radical changes

As already anticipated in the previous section, the repeated recessions and weak recovery in the Eurozone have also been determined by the delayed, inadequate or wrong policy responses undertaken by the EU institutions and individual countries. The point at issue, here, is not the austerity approach per se. Of course, the markets, even before the EU Commission, would punish an opportunistic behaviour of national governments, in particular of highly-indebted countries. However, the real issue concerns the extent of the austerity measures, that in the euro area have been too concentrated in a short span of time, too diffused and too persistent.

We have also emphasized that many countries – especially in the periphery – have suffered because of the collapse in internal demand. Consumption has been reduced because of the wage restraint, high unemployment and the high fiscal pressure (consequent to fiscal consolidation measures), which cut down disposable income. In addition, negative expectations and a growing uncertainty about the future increased the propensity to save. As to the fiscal variables, the deficit/GDP ratios have been reduced because of the forced "austerity", but the debt/GDP ratios have been growing in most countries, due to the prevalence of the contractionary real effects on the GDP with respect to the fiscal consolidation effects. In this sense austerity has been “self-defeating”.

Expansionary macroeconomic policies to sustain aggregate demand are, thus, urgently needed. They have been advocated not only by economists but also by international organizations. The IMF, as early as 2012 (IMF, 2012), suggested not only maintaining a very accommodating monetary stance, but also smoothing the fiscal adjustments. This is all the more true now, when most of the Eurozone countries are respecting the 3% ceiling of the GSP for the deficit/GDP ratio. Fiscal discipline should be assessed within a medium term horizon, also because “structural reforms” can have a positive impact on growth and on debt sustainability only in the medium/long run.[24]

As for monetary policy, soon after the global crisis ECB’s policy was more cautious compared to many other central banks in the world; however, now it is sufficiently accommodative. We recall, among the manifold unconventional measures, the 2012 OMT plan that has been crucial to reduce interest rates on sovereign debt and to guarantee, so far, the euro’s survival. Then, the “quantitative easing” operations (commenced in March 2015 and extended in April 2016) and the new TLTROs have tried to ensure that the liquidity created by the ECB really flows to businesses and the real economy. The new unconventional measures have been induced both because of the deflationary conditions that inflicted the Eurozone since the end of 2014 and the worsening of the growth prospects.[25]

[24] There has also been a long discussion on the value of the fiscal multipliers; it is not possible to fully discuss this issue here: we just point that underestimating their value has led authorities to set unachievable debt (and deficit) targets (see, among many others, Eyraud and Ankle, 2013). Therefore, fiscal adjustment should be rebalanced and made more “growth-friendly” (Cottarelli and Jaramillo, 2012).

[25] As a matter of fact, economic recovery in the Eurozone, already feeble in 2014 and 2015, was weakened at the beginning of 2016 by new downsize risks: deceleration of emerging economies, very low price of oil, volatility in financial markets, uncertainty

Yet the huge liquidity created by the ECB has not adequately reached the real economy. Banks are not always willing to give easy credit[26], also in consideration of the situation of their balance sheets (with a high proportion of non-performing loans in some countries) and the incompleteness of the "banking union" (waiting for the third pillar, the European Deposit Insurance Scheme). Furthermore, demand for credit is also short – despite the extremely low level of interest rates – because of the depressed condition of the economy.

Thus, the monetary policy should be integrated with a real "growth policy" at the EU level. This involves both structural policies, whose impact on economic growth can be grasped in the medium or long run. The reform strategies should aim at raising potential output, productivity (labour and total factor productivity), participation and employment rates (particularly in the countries where they are extremely low). Even on the supply side, however, growth-oriented policies should be grounded not only in "structural reforms" (liberalisations, reduction of the fiscal pressure, pro-market legislation, etc.) when necessary, but also in new industrial policies, putting R&D and innovation processes at the core.[27] Even so, we need shortly a demand-management strategy supporting both consumption and investment (as discussed below).

Another issue refers to the need of an effective coordination of national macroeconomic policies: such a coordination was required by the Maastricht Treaty, but not realized yet. Countries with sound fiscal positions and room for fiscal manoeuvre – like Germany – should accept expansionary policies, through a coordinated domestic demand-led policy (De Grauwe, 2013). The new "macroeconomic imbalance procedure" of the EU should also be finalised to this end, for instance warning also the countries with excessive surplus in current accounts (a first move in this direction has been taken by the EU Commission in 2016); the Eurozone as a whole has now a current account surplus, but this condition cannot be maintained forever.[28]

Let us focus now on the need to relaunch investment, both private and public. The benefit of investment expenditure – that (as shown in Section 2.2) has collapsed in the Eurozone in recent years – is manifold: it supports aggregate demand in the short run and bolsters supply in the long run; by this way, it increases production capacity, potential output, productivity and employment. Private investment should be adequately sustained by industrial, fiscal and monetary policies. In the medium run, it should also benefit from the reversal of expectations (following the demanded growth-oriented policy) and from a more efficient working of the credit mechanism.

As for public investment, that might also be crucial in sustaining recoveries, we have seen that it has been pro-cyclical (also because it is less politically costly to postpone public investment than to reduce current expenditures). To stimulate public investment at the national level, some forms of "golden rule" in the GSP rules – by excluding public investment, properly defined on a standardised basis, from the deficit definition – should be introduced. In the meanwhile, all the "flexibilities" that the current GSP allows should be fully exploited.

The best solution would be, however, to collect adequate resources at the Eurozone level by using debt financial instruments, such as the "project-Eurobonds" (see the next Section). From this point of view, the so-called "Juncker" investment plan has been disappointing: the potential overall amount of 310 billion euro of public and private investments is smoothed over three years; in addition, most of financial resources will be collected in the market through an incredible financial leverage (equal to 15). The timing

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caused by the terroristic attacks, difficulties in managing migration flows, undefined scenario related to the possible Brexit from the EU.

[26] In general, banks are hoarding the additional money supply in the form of excess reserves, rather than lending it; this is, according to Roubini (2016), one of the features of the global economy's "new abnormal".

[27] For peripheral countries, it is better to improve competitiveness by upgrading their industrial structure and specialisation, product differentiation and technological content, rather than just exploiting "internal devaluations", that squeeze wages, perpetuate deflation and depress consumption.

[28] In fact, if all Eurozone countries adopt restrictive policies, who will provide the necessary source of demand? All world regions cannot have a surplus at the same time. The US recovery has been satisfactory, but many emerging economies and even China in 2015-16 exhibited a slowdown in economic growth. A "beggar-thy-neighbour" policy cannot be a proper solution.

of the real implementation of the already approved projects[29] is uncertain and, in any case, the amount of new investment is a very small proportion compared to the previous collapse of investment.

On the contrary, the Eurozone would greatly benefit from an extraordinary "Eurozone plan of public investment", financed by project Eurobonds.[30] Rather than big projects, for instance on colossal public works, that are characterised by long delays in the approval and subsequent realization, many "micro" investment projects could be important for social well-being.[31] An alternative solution would be to allow the EIB to issue new bonds on a large scale and allow the ECB to buy such bonds, thus indirectly financing a big investment plan for Europe. In any case, without a significant demand-shock it is unlikely that the Eurozone will be able to stop the current deflation and stagnation.

4. The vital reforms in EMU's construction and EU governance

We turn now to some enduring problems, already present since the start of EMU although exacerbated by the recent crises.[32] From this perspective, it is clear that the major flaw of EMU's construction is the complete asymmetry between the two key macroeconomic policies: the centralized monetary policy and decentralized fiscal policies. This is why the EMU is sometimes defined as an "incomplete" monetary union.

Some reforms in the EU governance and functioning have been proposed by the EU institutions themselves. In June 2012, EU President van Rompuy presented - together with the Presidents of the EU Commission, Eurogroup and ECB - a document ("Toward a genuine economic and monetary union"), forecasting a stronger integration, by means of: (i) a bank union, (ii) a budget union, (iii) an economic union, and (iv) (at the end) a political union. So far, a limited progress has been achieved only on the bank union, also in this case after many compromises. It is even more disappointing that a fresh and similar document, presented in June 2015 by the "five" Presidents (the President of the European Parliament has been added) is still vague and hesitant (see European Commission 2015); in particular, it escapes from detailing the instruments and resources needed for achieving the stated aims.

More radical reforms are necessary. First of all, a tiny EU budget – 1% of the GDP – is completely inadequate to carry out counter-cyclical or growth policies, not to mention that a specific budget for the Eurozone is lacking. Moreover, the emphasis on monetary and financial stability has triggered a neglect of effective mechanisms favouring long-run convergence among the economies, despite the subsequent plans, such as Lisbon Agenda and Europe 2020, that are hardly effective with inadequate resources. In the long run, a common currency cannot be maintained in a group of countries characterized by huge differences in competitiveness and current account balances. Also the new "macroeconomic imbalances" procedure, within the reformed GSP, is not the right solution: such imbalances cannot be eliminated only by means of new compelling rules and threat of fines.

The long-run longevity of the EMU will require, in addition to an actual support for real convergence, some shock absorption mechanisms and innovative crisis management instruments, more effective than the "save-States" funds now existing. Looking at the future, a principle should be accepted, that an authentic solidarity among the Eurozone countries goes hand in hand with stronger supra-national controls on all members (to deal with the "moral hazard" dilemma) and more effective power allocated to an EU "central Government". Notice that risk sharing is intrinsecally connected with risk reduction. Mutualisation provides incentives to abide by the rules and avoid opportunistic behaviour by individual member states; this, in turn, will strengthen mutual trust in the whole community.

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[29] At the beginning of 2016 some projects were authorised, concerning both "infrastructure and innovation" projects approved by the European Investment Bank (EIB) and financing agreements for small and medium sized firms approved by the European Fund for Strategic Investment.

[30] Various recent studies agree on the role that can be played by public investment as the main policy instrument which can foster employment and end the long recession. See Campiglio (2015) and Cappellin (2016).

[31] For example, investments in local transport, school building/renovation and social housing, energy efficiency, environmental protection, health, tourism, sports infrastructure, museums and cultural resources, social welfare, and many others (see also Marelli, 2015).

[32] In fact, the international financial crisis abruptly revealed the complete absence of an "economic axis" (Delors, 2013). See also (De Grauwe, 2016; Obstfeld, 2013; Mody, 2015).

A separate budget and specific institutions (e.g. a Finance "minister") for the euro area appear appropriate. Common financial instruments based on the principle of mutuality, like the "Eurobonds", should become a solution both to support a huge investment plan (as mentioned in the previous section) and to prevent sovereign debt crises. A more feasible solution – compared to a full mutualisation – is the partial "mutualisation" of national public debts for an amount, for each country, corresponding to a given ceiling, for instance 60% of its GDP; the remaining part of public debt would continue to be "national" (but it will gradually decline with the convergence to 60% requested by the Fiscal Compact).[33]

Concerning the Eurozone Finance Minister, this proposal has been backed by leading policymakers (even in Germany), by the ECB President, by prominent observers and experts. In our view, a Eurozone Finance Minister could be an appropriate solution only if this new person is endowed with a real power and can manage adequate resources: a "common fiscal policy", to complement a common monetary policy, would be meaningless without adequate resources. In a longer run perspective, some economists (e.g. Sapir and Wolf, 2015) have proposed the creation of a "European fiscal institute", to be modelled on principles similar to the ECB's.

A complete "economic and monetary union" should include – according to leading commentators – also a "fiscal union". A far-sighted but still "conservative" view (Tabellini, 2016) maintains that most of the government functions and capacities have to remain national; in fact, the key purposes and priorities of the union would include: (i) instruments for fiscal stabilisation at the Eurozone level; (ii) resources to weather systemic financial crisis (banking crisis and sovereign debt crisis). In more radical proposals, a fiscal union should accomplish risk sharing functions also towards individuals: for example, a European "unemployment insurance" system, i.e. a common mechanism to face asymmetric shocks and mitigate cyclical unemployment. Stabilisation functions, common Defence systems and external policies (including border controls), investment plans, scientific research are examples of public goods with significant international spillovers: they can be more efficiently provided at the community level, consistently also with the Subsidiarity Principle.[34]

5. Conclusions

The first empirical section of this paper showed that, if any real convergence (in terms of per capita GDP) was realized in Europe, it concerned the whole EU rather than the Eurozone. Sensitivity to a common business cycle (elasticities), initially rather low, have increased only as a result of the recent generalized crises. It is true that correlations of business cycles were more significant in the original Eurozone countries (EZ11), but those concerning the current "ample" Eurozone (EZ19) are in some cases lower compared to those of non-euro members. Last, intra-EU trade is higher (and further increasing over time) for many non-euro countries, also in comparison with euro area members.

In the second empirical section, we have illustrated the tremendous impact of the recent crises on the economies of the EU and particularly the peripheral countries of the Eurozone. Output levels are in many countries still below the pre-crisis values, with obvious consequences on employment and unemployment. We have shown that stagnation is chiefly caused by the collapse of aggregate demand. The fall concerns especially internal demand, consumption and even more investment. It shouldn't be neglected that the repeated crises in the Eurozone and the prolonged stagnation already caused not only an economic impact, but also profound social and political consequences.

The policy implications have been spelled out in the last two section. The urgent changes in the macroeconomic policies refer in particular to the need of an aggregate demand shock, for example a large Eurozone plan of public investment, that should soon revitalize also private investment. This plan should be followed rapidly by some vital reforms in the EMU's construction and governance, in order to accomplish a real "economic and monetary" union.

[33] The mutualised bonds would surely have a lower average interest rate and a lesser overall interest expenditure, mainly due to a large secondary market and the Eurozone level security. In order to reduce the political opposition of some countries, the burden of interest payment would (proportionally) remain on the national budgets.

[34] See also the document of the Italian Government: Ministero dell'Economia e Finanze, A Shared European Policy Strategy for Growth, Jobs, and Stability, February 2016.

As in previous occasions of the history of European integration, "more Europe" is not a choice.[35] Unless there is a vigorous step forward in the direction of more integration, the present situation cannot be preserved and there is a high risk of moving back or even of a total disintegration. In a globalized world, where the economic and political power is shifting to other world regions (in America, Asia and other emerging areas), a fragmented Europe would certainly fail: but this would be a shameful sin that will be borne also by future generations.

References

Alesina A., Ardagna S., Galasso V. (2008), "The euro and structural reforms", *National Bureau of Economic Research*, WP 14479.

Barro R.J. and X. Sala-i-Martin (1995), *Economic growth*, New York, McGraw-Hill.

Berger H. and Nitsch V. (2010), "The euro's effect on trade imbalances", *IMF Working Papers*, 10/226, 1-30.

Buiter W.H., Corsetti G., Roubini N. (1993), "Excessive Deficits: Sense and Nonsense in the Treaty of Maastricht"*, Economic Policy*, 1.

Buiter W.H. (2004), "To Purgatory and beyond: when and how should the accession countries from Central and Eastern Europe become full members of EMU?", *CEPR Discussion Paper Series*, 4342.

Buti M. and A. Turrini (2015), "Three waves of convergence. Can eurozone countries start growing together?", *Voexeu.org*, 17 April.

Bundesbank (2016), "Zur Investitionstätigkeit im Euro-Rum", January 2016.

Campiglio L. (2015), "Unemployment and the 'Investment Gap': An Econometric Model of the European Imbalances", Quaderno Istituto di Politica Economica n. 71, Universita' Cattolica, Milano (https://ideas.repec.org/p/ctc/serie5/ispe0071.html).

Canova F. and A. Marcet (1995), "The poor stay poor: non-convergence across countries and regions", *CEPR Discussion Paper* 1265.

Cappellin R. (2016), "Investments, balance of payment equilibrium and a new industrial policy in Europe", Paper presented at the Regional Studies Association Annual Conference 2016, 3rd – 6th April 2016, Graz, Austria.

Cottarelli C., Giammusso F. and Porello C. (2014), "Politica di bilancio ostaggio della stima del Pil potenziale", *lavoce.info*, 4-11-14.

Cottarelli, C. and L. Jaramillo (2012), "Walking Hand-in-Hand: Fiscal Policy and Growth in Advanced Economies", *IMF Working Paper* 12/137.

Dao M., Furceri D., Loungani P. (2014), "Regional Labor Market Adjustments in the United States and Europe", *IMF Working Paper*, 14/26.

D'Auria F., Denis C., Havik K., Mc Morrow K., Planas C., Raciborski R., Roger W. and Rossi A. (2010), "The production function methodology for calculating potential growth rates and output gaps", ECFIN Economic Paper, 420.

De Grauwe P. (2013), "Design Failures in the Eurozone: Can they be fixed?", *LSE 'Europe in Question' Discussion Paper Series*.

De Grauwe P. (2016), "The legacy of the Eurozone crisis and how to overcome it", *Journal of Empirical Finance*, available online 3 February 2016, forthcoming.

De Grauwe P. and G. Schnabl (2005), "Nominal versus real convergence – EMU entry scenarios for the New Member States", *Kyklos*, 4, 537-555.

Decressin J. and Fatàs (1995), "Regional labor market dynamics in Europe", *European Economic Review*, 39, 1627-1655.

[35] At the end, a monetary union cannot be maintained without continuous progress toward an economic and political union (O'Rourke and Taylor, 2013).

Delors J. (2013), "Economic Governance in the European Union: Past, Present and Future", *Journal of Common Market Studies*, 51(2), 169-178

EC, European Commission (1977), "Report of the Study Group on the Role of Public Finance in European Integration" (*MacDougall Report*).

EC (2014), "The production function methodology for calculating potential growth rates & output gaps", *Economic Papers*, 535.

EC (2015), *Completing Europe's Economic and Monetary Union*, Report by J.C. Juncker, D. Tusk, J. Dijsselbloem, M. Draghi and M. Schulz.

EC (2016), *Cyclical adjustment of budget balances*, Directorate-General for Economic Affairs, Spring.

Eyraud L. and Anke W. (2013), "The Challenge of Debt Reduction during Fiscal Consolidation", *IMF Working Paper* 13/67, March.

Frankel J., Rose A.K. (1998), "The endogeneity of Optimum Currency Area criteria", *Economic Journal*, 108: 1009-25.

Giavazzi F. and Spaventa L. (2010), "Why the current account may matter in a monetary union: Lessons from the financial crisis in the Euro area", *Centre for Economic Policy Research*, Discussion Paper 8008.

Hale G. and Obstfeld M. (2014), "The Euro and the Geography of International Debt Flows", *NBER Working Paper*, 20033.

IMF, International Monetary Fund (2012), *World Economic Outlook: Coping with High Debt and Sluggish Growth*, October.

Kenen P. (1969), "The Theory of Optimum Currency Areas: An Eclectic View", in R. Mundell and A. Swoboda, eds., *Monetary Problems in the International Economy*, University of Chicago Press.

Marelli (2015), "Investimenti per uscire dalla crisi", in R. Cappellin, M. Baravelli, M. Bellandi, R. Camagni, E. Ciciotti, E. Marelli (a cura di), *Investimenti, innovazione e città: Una nuova politica industriale per la crescita,* EGEA, Milano.

Marelli E. and M. Signorelli (2010), "Institutional, nominal and real convergence in Europe", *Banks and Bank Systems*, 5 (2): 41-57.

Marelli E. and M. Signorelli (2015), "Convergence, crisis and unemployment in Europe: the need for innovative policies", *Croatian Economic Survey*, 17, 2.

McKinnon R. (1963), "Optimum Currency Areas", *American Economic Review*, 53, 717-724.

Ministero dell'Economia e Finanze (2016), *A Shared European Policy Strategy for Growth, Jobs, and Stability*, February.

Mink M., Jacobs J.P.A.M. and De Haan J. (2011), "Measuring coherence of output gaps with an application to the euro area", *Oxford Economic Papers*, 64, 217-236.

Mody A. (2015), "Living (Dangerously) without a Fiscal Union", Bruegel Working Paper No. 2015/03.

Mongelli F.P. and Vega J.L. (2006), 'What effects is EMU having on the Euro area and its member countries? an overview', *European Central Bank*, *Working Paper Series*, 599.

Mundell R. (1961), "A theory of optimum currency areas", *American Economic Review*, 51, 4, 657-665.

Obstfeld M. (2013), "Finance at center stage: some lessons of the euro crisis", *European Economy* Economic Papers, 493.

OECD (2014), "The effect of the global financial crisis on OECD potential output", OECD Working Paper, 1166.

O'Rourke K. H. and Taylor A.M. (2013), "Cross of Euros", *Journal of Economic Perspectives*, 27(3), 16792.

Pasimeni P. (2014), "An Optimum Currency Crisis", *The European Journal of Comparative Economics*, 11, 2,173-204.

Reinhart C.M. and Rogoff K.S. (2014), "Recessions and Recoveries. Recovery from financial crises: evidence from 100 episodes", *American Economic Review*, 104(5), 50-55.

Rose A. (2000) "One money, one market: the effect of common currencies on trade", *Economic Policy*, 15, 7-45.

Roubini N. (2016), "The Global Economy's New Abnormal", *Social Europe,* February.

Sapir A. and Wolf G. (2015), "Euro Area Governance: What to Reform and How to Do it", *Bruegel Policy Briefs,* February.

Tabellini G. (2016), "Which fiscal union?", *VoxEU.org,* February.

Appendix

Table A1 – Absolute convergence in per capita GDP (Beta coefficients)

Eurozone EZ11			**EZ19**	**EU28**		
Full period^ 2001-2014	**Pre-crisis** 2001-2007	**Crisis** 2007-2014	**Crisis** 2007-2014	**Full period** 1999-2014	**Pre-crisis** 1999-2007	**Crisis** 2007-2014
0.0106	0.0114**	0.0051	-0.0119*	-0.0206***	-0.0195***	-0.0117***

Significance levels: 1%***, 5%**, 10%*
Complete statistical results of the regressions are available upon request.
Source: Elaborations on Eurostat data.

Table A2 – Extended beta convergence in per capita GDP (Beta coefficients)

	Eurozone EZ 11			**EZ19**	**EU28**		
	Full period^ 2001.1-2015.1	**Pre-crisis** 2001.1-2007.1	**Crisis** 2007.1-2015.1	**Crisis** 2007.1-2015.1	**Full period** 2001.1-2015.1	**Pre-crisis** 2001.1-2007.1	**Crisis** 2007.1-2015.1
With FE	-0.3854***	-0.6440***	-0.5721***	-0.3898***	-0.2661***	-0.4246***	-0.528***
Without FE	-0.0021	0.0007	-0.0032	-0.0058*	-0.0077**	-0.0081**	-0.0049*

Significance levels: 1%***, 5%**, 10%*
Complete statistical results of the regressions are available upon request.
Source: Elaborations on Eurostat data.

Table A3 – Correlation coefficients of GDP growth (quarterly data seasonally adjusted) with European averages (EZ11, EZ19, EU28)

	Correlation with respect to:			Correlation with respect to:			
	EU28			EZ11			EZ19
	1999.1-2015.1	1999.1-2007.1	2007.1-2015.1	1999.1-2015.1	1999.1-2007.1	2007.1-2015.1	2007.1-2015.1
Original eurozone countries (11):	*(0.744)*	*(0.516)*	*(0.793)*	*(0.790)*	*(0.620)*	*(0.827)*	*(0.791)*
Austria	0.602	0.464	0.629	0.685	0.476	0.730	0.647
Belgium	0.795	0.542	0.864	0.853	0.622	0.915	0.860
Finland	0.823	0.434	0.875	0.846	0.583	0.879	0.883
France	0.817	0.631	0.850	0.880	0.767	0.895	0.856
Germany	0.757	0.585	0.908	0.820	0.612	0.931	0.916
Italy	0.878	0.693	0.882	0.919	0.751	0.939	0.873
Luxembourg	0.505	0.356	0.613	0.647	0.654	0.697	0.607
Netherlands	0.807	0.684	0.840	0.790	0.608	0.806	0.842
Portugal	0.623	0.335	0.662	0.702	0.547	0.721	0.644
Spain	0.836	0.439	0.804	0.760	0.578	0.758	0.784
New Eurozone countries (19):	*(0.641)*	*(0.303)*	*(0.619)*	*(0.550)*	*(0.157)*	*(0.554)*	*(0.623)*
Cyprus	0.567	0.440	0.360	0.531	0.511	0.343	0.346
Estonia	0.736	0.480	0.690	0.602	0.172	0.586	0.685^
Greece	0.543	0.192	0.321	0.478	0.133	0.338	0.347^
Latvia	0.555	0.064	0.509	0.367	-0.135	0.333	0.521^
Lithuania	0.818	0.419	0.822	0.756	0.318	0.739	0.840
Malta	0.434	0.272	0.697	0.354	-0.084	0.662	0.701^
Slovenia	0.833	0.251	0.931	0.765	0.185	0.879	0.919^
Other EU members:	*(0.709)*	*(0.317)*	*(0.715)*	*(0.644)*	*(0.202)*	*(0.678)*	*(0.695)*
Bulgaria	0.766	0.423	0.715	0.679	0.337	0.648	0.700
Croatia	0.704	0.155	0.676	0.617	0.043	0.661	0.658^
Czech Republic	0.853	0.537	0.861	0.774	0.261	0.827	0.846^
Denmark	0.628	0.442	0.694	0.565	0.269	0.637	0.658^
Hungary	0.811	-0.178	0.860	0.728	-0.090	0.798	0.830^
Poland	0.407	0.534	0.322	0.416	0.510	0.336	0.295
Sweden	0.715	0.506	0.744	0.656	0.252	0.708	0.736^
United Kingdom	0.786	0.113	0.847	0.717	0.036	0.809	0.838^
Non seasonally adjusted data:							
Ireland	0.295	0.594^	-0.041^	0.384	0.748	-0.131	-0.042
Romania	0.890	0.864	0.913	0.552	0.482	0.631	0.865
Slovakia	0.837	0.753	0.903	0.516	0.435	0.602	0.899

Note: ^denotes a coefficient that is not statistically significant
Complete statistical results of the regressions are available upon request.
Source: Elaborations on Eurostat data.

Table A4 – Elasticities of countries' GDP growth (quarterly data seasonally adjusted) with respect to European averages (EZ11, EZ19, EU28)

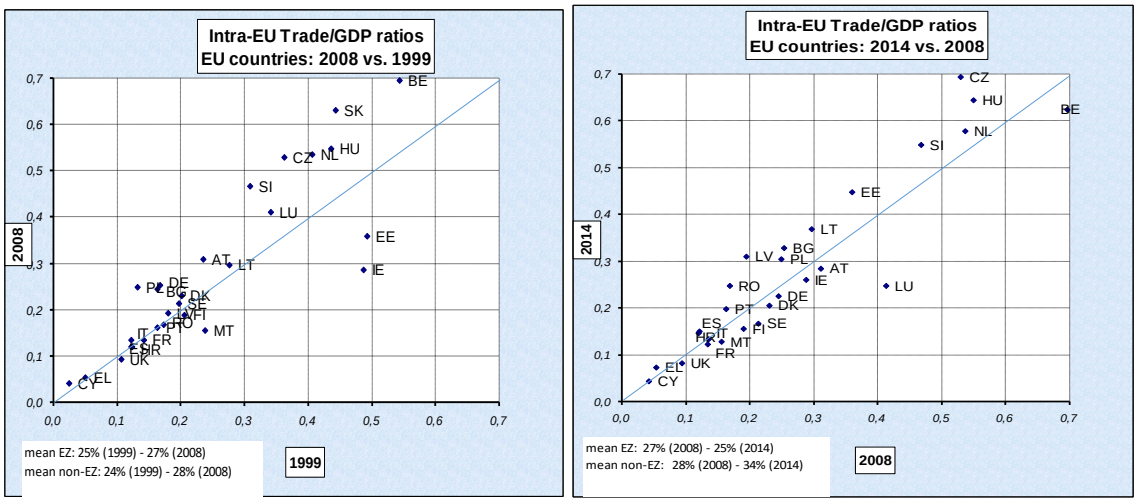
	Elasticities with respect to:			Elasticities with respect to:			
	EU28			EZ11			EZ19
	1999.1-2015.1	1999.1-2007.1	2007.1-2015.1	1999.1-2015.1	1999.1-2007.1	2007.1-2015.1	2007.1-2015.1
Original eurozone countries (11):							
Austria	0.693 (.3)	1.190^(.2)	0.725 (.4)	0.890 (.5)	0.866^(.2)	0.930 (.5)	0.702 (.4)
Belgium	0.622 (.6)	0.934 ^(.3)	0.644 (.7)	0.754 (.7)	0.761 (.4)	0.754 (.8)	0.603 (.7)
Finland	1.432 (.7)	1.286^(.2)	1.599 (.7)	1.663 (.7)	1.227 (.3)	1.776 (.8)	1.519 (.8)
France	0.567 (.7)	0.908 (.4)	0.561 (.7)	0.690 (.8)	0.783 (.6)	0.654 (.8)	0.532 (.7)
Germany	0.895 (.6)	1.367 (.3)	1.170 (.8)	1.095 (.7)	1.014 (.3)	1.327 (.9)	1.111 (.8)
Ireland #	0.165^(.1)	0.350 (.3)	-0.020°(0)	0.342^(.1)	0.641 (.5)	-0.112°(0)	-0.026°(0)
Italy	0.861 (.8)	1.159 (.5)	0.843 (.8)	1.018 (.8)	0.892 (.6)	0.990 (.9)	0.783 (.7)
Luxembourg	1.005 (.2)	2.083^(.1)	1.066 (.3)	1.493 (.4)	2.953 (.4)	1.336 (.5)	0.991 (.3)
Netherlands	0.770 (.6)	1.263 (.4)	0.820 (.7)	0.850 (.6)	0.796 (.3)	0.870 (.6)	0.773 (.7)
Portugal	0.670 (.4)	0.878^(.1)	0.643 (.4)	0.853 (.5)	1.017^(.3)	0.775 (.5)	0.589 (.4)
Spain	0.754 (.7)	0.396^(.2)	0.569 (.6)	0.774 (.6)	0.369^(.3)	0.593 (.6)	0.522 (.6)
New eurozone countries (19):							
Cyprus	0.732 (.3)	1.032 ^(.2)	0.393^(.1)	0.775 (.3)	0.849^(.2)	0.415^(.1)	0.355^(.1)
Estonia	2.178 (.5)	2.195^(.2)	2.065 (.4)	2.068 (.3)	0.607 °(0)	1.941 (.3)	1.931 (.4)
Greece	1.128 (.3)	0.692°(.1)	0.554°(.1)	1.123 (.2)	0.340°(0)	0.641^(.1)	0.562^(.1)
Latvia	1.587 (.3)	0.391°(0)	1.290^(.2)	1.184^(.1)	-0.585°(0)	0.933^(.1)	1.242^(.2)
Lithuania	2.405 (.7)	2.127°(0)	2.684 (.7)	2.588 (.6)	0.973°(0)	2.667 (.5)	2.580 (.7)
Malta	0.638 ^(.2)	1.319°(0)	0.803 (.5)	0.604^(.1)	-0.314°(0)	0.843 (.4)	0.759 (.5)
Slovakia #	1.065 (.7)	0.888 (.5)	1.219 (.8)	1.055 (.2)	0.745^(.2)	1.457 (.3)	1.571 (.8)
Slovenia	1.392 (.7)	0.829°(0)	1.476 (.9)	1.443 (.6)	0.433°(0)	1.542 (.8)	1.372 (.8)
Other EU members:							
Bulgaria	1.134 (.6)	0.597^(.1)	1.122 (.5)	1.165 (.4)	0.368^(.1)	1.125 (.4)	1.034 (.5)
Croatia	1.202 (.5)	0.492°(0)	0.960 (.4)	1.221 (.4)	0.106°(0)	1.037 (.4)	0.879 (.4)
Czech Republic	1.048 (.7)	1.060^(.3)	1.049 (.7)	1.074 (.6)	0.365°(0)	1.115 (.7)	0.970 (.7)
Denmark	0.727 (.4)	1.332 ^(.2)	0.710 (.5)	0.739 (.3)	0.577°(0)	0.721 (.4)	0.634 (.4)
Hungary	1.034 (.6)	-0.287°(0)	1.145 (.7)	1.048 (.5)	-0.103°(0)	1.175 (.6)	1.040 (.7)
Poland	0.295 ^(.1)	1.281^(.2)	0.200^(.1)	0.354^(.1)	0.926^(.2)	0.231^(.1)	0.173°(.1)
Romania #	3.639 (.8)	3.475 (.7)	3.812 (.8)	3.629 (.3)	2.818^(.2)	4.719 (.4)	4.669 (.7)
Sweden	0.928 (.5)	1.146^(.2)	1.043 (.5)	0.962 (.4)	0.405°(0)	1.098 (.5)	0.972 (.5)
United Kingdom	0.694 (.6)	0.168°(0)	0.767 (.7)	0.715 (.5)	0.038°(0)	0.809 (.6)	0.714 (.7)

Significance levels: 1% everywhere, unless otherwise specified (^ means 5%; ° means 10% or less)

Adj. R2 in parentheses: for space limits only the first decimal is shown; # refers to not seasonally adjusted data.

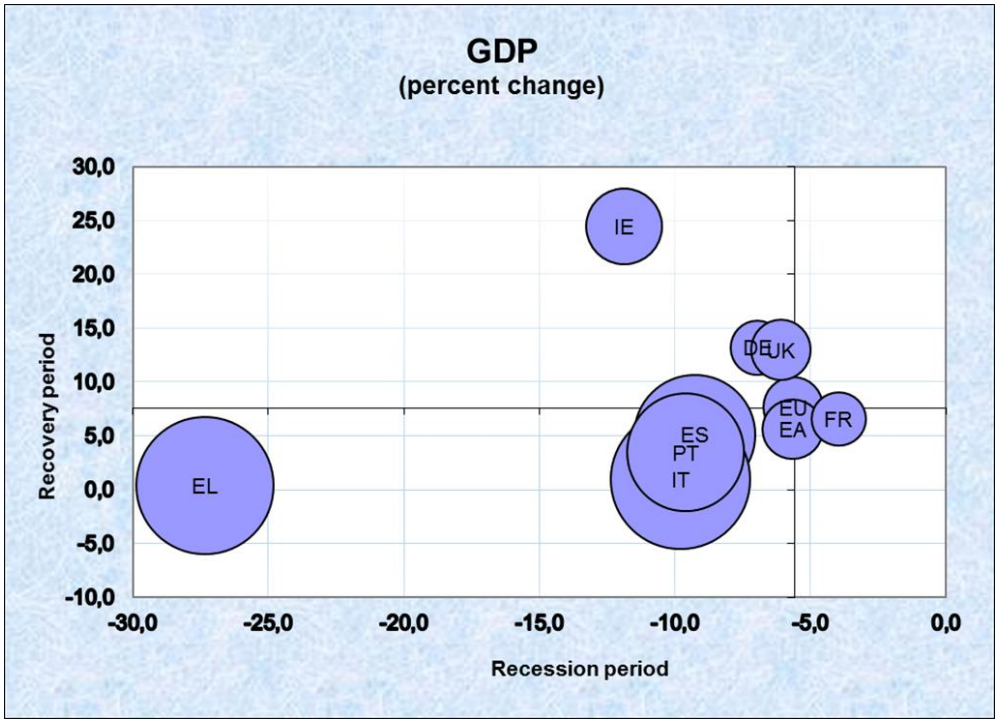
Source: Elaborations on Eurostat data.

Figure A1 – Ratios of intra-EU trade on GDP (1999-2008 and 2008-2014)



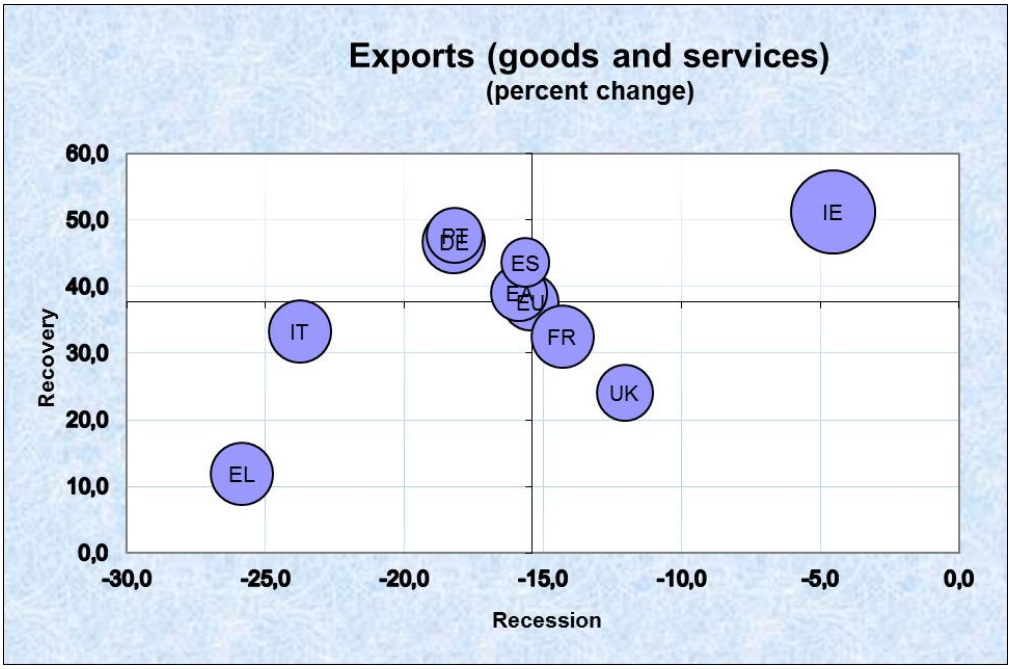
Source: Elaborations on Eurostat data.

Figure A2 – GDP changes in the recession and recovery periods



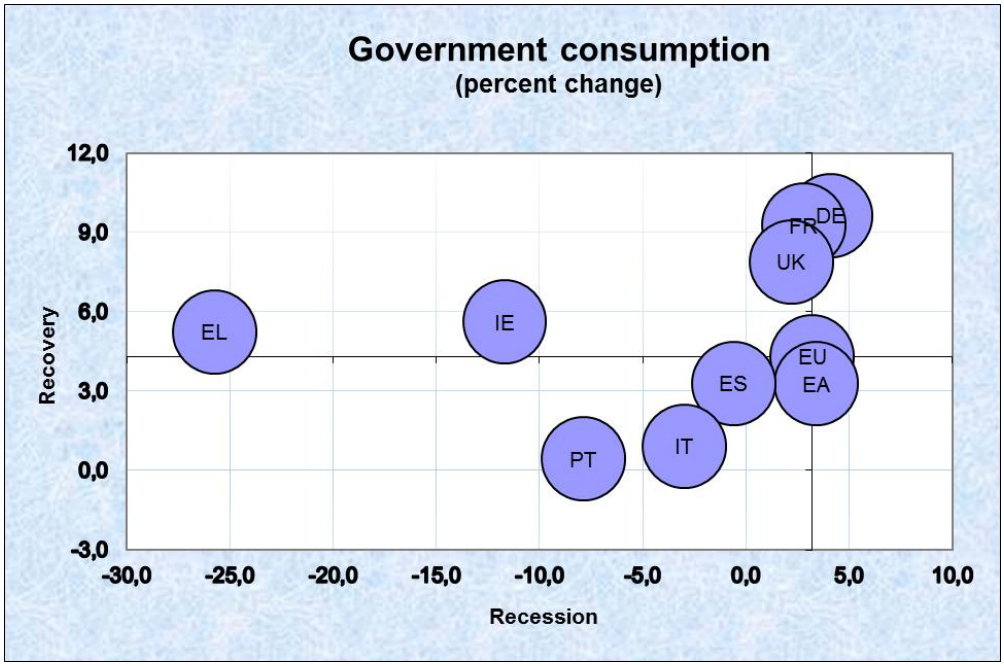
Note: EU benchmark (where the axes cross).
Size of the bubbles: proportional to the number of recession terms.
Source: Elaborations on Eurostat data.

Figure A3 – Exports in the recession and recovery periods



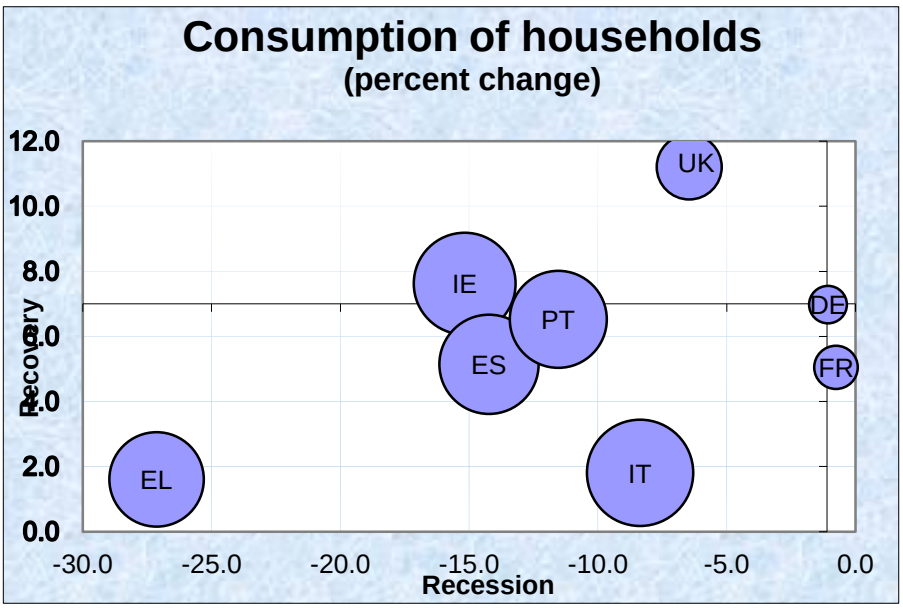
Note: EU benchmark (where the axes cross).
Size of the bubbles: proportional to the number of recession terms.
Source: Elaborations on Eurostat data.

Figure A4 – Government consumption in the recession and recovery periods



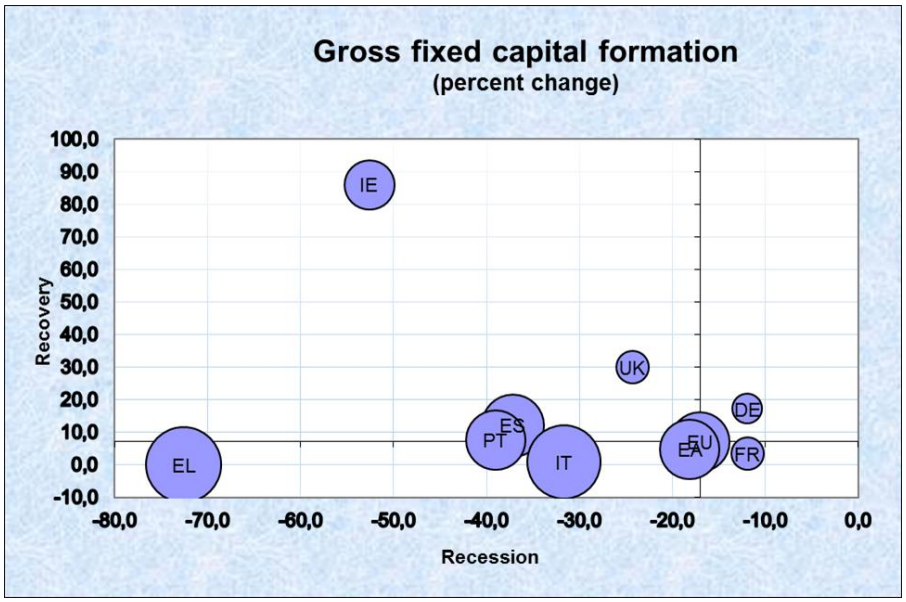
Note: EU benchmark (where the axes cross).
Source: Elaborations on Eurostat data.

Figure A5 – Consumption of households in the recession and recovery periods



Note: DE benchmark (where the axes cross), since EU and EA data were missing.
Size of the bubbles: proportional to the number of recession terms.
Source: Elaborations on Eurostat data.

Figure A6 – Gross Fixed Capital Formation in the recession and recovery periods



Note: EU benchmark (where the axes cross).
Size of the bubbles: proportional to the number of recession terms.
Source: Elaborations on Eurostat data.