Optimum Currency Area Theory, Nominal and Real Convergence Controversies and the European Experience After the Recent Global Economic Crisis

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Abstract The traditional theory of Optimum Currency Areas (OCA) has provided the conceptual explanation of currency unions for nearly half a century and played a dominant role in shaping the idea of the European monetary integration, whereas it further offered a basis for the creation of the eurozone. Nominal convergence, in accordance with the OCA theory, represents the final stage of the process and involves monetary and fiscal variables, while its relationship with real convergence turns out to be complex and insufficiently defined both in contemporary economic theory and empirical research. The emergence of the world economic crisis in 2008 further accentuated the problem of the relation between nominal and real convergence especially following the worsening of the macroeconomic disequilibria of many "old" and "new" member states. This article firstly aims to approach the Optimum Currency Areas theory in its evolution and to underscore its weak points. We shall then consider the criteria and the main suggested methods of estimating real convergence. We shall finally attempt a meta-analysis of the often contradictory results of empirical researches on real convergence, both within the context of the eurozone and the European Union in view of the above mentioned theoretical controversy. Our conclusions lead to skepticism on the evolution of the real convergence process, in particular since the recent global economic crisis erupted.

Keywords OCA • Nominal real convergence controversy • E.U

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1 Introduction

As early as 1958, and when the process of economic integration started in Europe, the idea of a common currency was present, yet without being included in the Treaties of the time. As the collapse of the Bretton Woods system was approaching, the Werner Report proposed in 1970 the creation of the Economic and Monetary Union (EMU), but its realization was delayed due to exchange rate volatility in the 1970s and due to oil crises. Subsequently, monetary cooperation was confirmed by the creation of the European Monetary System in 1979. Eventually, with the signature of the Single European Act in 1986 and its implementation in the following year, the path towards the monetary union was open, a fact that was documented in the Emerson Report of the Commission in 1990. The creation of the EMU aimed at preserving real convergence obtained by the European Economic Community, and appeared to be the only alternative.

The issue of European integration was framed by theoretical analyses most of which were undertaken as part of the orthodoxy of Optimum Currency Areas. The traditional OCA theory holds that in a monetary union of countries which meet certain criteria, namely a minimum level of convergence, less developed economies are expanding faster than developed ones. As a result, there is convergence of the levels of per capita income with the one of developed economies, namely real convergence. The arguments of this theory received strong criticism, thus giving rise to the endogenous OCA theory, according to which these criteria can be met ex post. The MT imposed criteria of monetary inspiration for entrance in the EMU, related to monetary and fiscal variables, sparking debate around the already controversial relationship between nominal and real convergence and the chances of success of the European project. The empirical verification of the theory of OCA- despite the problems of the methods used- did not prove the 'absolute' convergence supported by the 'old' approach, except in cases of relatively homogeneous economies. In most cases the term 'conditional' convergence was verified, which depends on important structural factors of the economy, like human capital, capital accumulation, innovations and other institutional factors. Cases of divergent economies and signs of 'club' convergence have also been examined. The problems of effectiveness of the EMU and future entrance of other members of the EU worsened after the recent global economic crisis and brought the weaknesses of the monetary union to the foreground, enforcing internal imbalances of and between member states.

2 The Optimum Currency Areas Theory and Its Evolution

The initial formation of the Optimum Currency Areas theory, inspired by Keynesian theory and based on the negative slope Phillips curve, is mainly the result of the contribution of Mundell (1961), Ingram (1962), McKinnon (1963) and Kenen

(1969). Nevertheless Milton Friedman (1953), supporting the position in favor of flexible exchange rates as early as the 1950s, was in fact referring to the notion of OCA.[1] This early period of construction of the theory concerns the formulation of the most significant criteria and the cost-benefit analysis of monetary integration. It is already well known that the criteria in hand are free mobility of production factors, flexibility of prices and wages, the degree of openness of the economies, the number and intensity of asymmetric shocks, the size of the economy, the degree of diversification of production and consumption, the similarity of economic structures, the similarity of inflation rates, fiscal policy and financial integration. These criteria should be met by the prospective members of an OCA, which implies the cost caused by the abandonment of the national monetary policy and the adjustments of exchange rate of these countries. The conduct of monetary policy now belongs to a transnational authority (Central Bank) and we have either an implementation of an irrevocable exchange rates structure, or an introduction of a common currency. Pegged exchange rates or the common currency can only fluctuate relative to the rest of the world.

The anticipated benefits from the creation of an OCA, which must outbalance the relative cost, concern the reinforcement of internal and external equilibria and must facilitate the response to shocks. The main benefits include the elimination of the uncertainty involved in the exchange rate fluctuations – as trade between the members of the OCA and specialization are reinforced and scale economies are created – and the elimination of transaction costs and exchange rate risks.

The neoclassical growth theory, as expressed by the model developed initially by Solow (1956), Swan (1956), Cass (1965) and Koopmans (1965), was based on the notion of diminishing return on the productive capital which was leading directly to a convergence process. This constitutes the natural growth boundary. More specifically, because of capital flows towards it, an open and poor economy would tend to converge with richer ones, under similar circumstances of population growth, saving behaviour, and exogenous technology. The comparatively faster growth rate would be guaranteed by the higher marginal productivity of capital, due to a lower capital-output ratio. Free mobility of production factors and free trade are considered necessary conditions for the acceleration of the process of growth. The same rationale would also apply to a closed economy, through the domestic saving effort and the respective investment. As expected, economic policy should be restricted to ensuring the smooth operation of market forces and macroeconomic stability. The assumptions behind the neoclassical theory of growth by Solow have been severely criticized as unrealistic, as evidenced by the relevant literature. Part of the criticism is the unrealistic assumption that technology is an exogenous and public good accessible to all economies. As stated by Abramovitz (1986), the convergence results from the 'social capability' of a country to absorb and exploit

[1] Some writers, such as Lerner, Meade and Scitovsky, analyzing in previous decades the effectiveness of interregional adjustments within a country in the Keynesian framework, mentioned some features of the theory of OCA (Cesarano 2006).

new technologies, namely from a number of structural factors such as education, technological competence, knowledge and business organizational culture.

Coming back to the previously mentioned criteria for the creation of an OCA, one can observe an inability to safely assess the effects between some of them (Robson 1987) as well as the absence of a single analytical framework, which results from the fact that the options proposed depend on which criteria are taken into account (The 'problem of inconclusiveness' and the 'problem of inconsistency', Tavlas 1994).

The scientific interest for the theory of the OCA dropped for almost 20 years, namely in the 1970s and 1980s. As Ishiyama (1975) has typically stated, the theory of the OCA was now seen as a pedantic conversation, not offering any effective solutions to the practical problems concerning monetary policy and monetary reform. For instance, the comparison between costs and benefits for participation in a monetary union should be examined according to the interests of each country. Moreover, depending on the level of openness of each country's economy, the ability to use discretional macroeconomic policy for the maintenance of internal balances might be restricted by the external limits the union as a whole is facing (Tower and Willett 1976). Despite the fact that the discussion about the criteria for the creation of an OCA and the subject of economic policy choices by the national governments was intensified during this period, empirical analysis for some other criteria had not yet achieved any progress.

Since the early 1990s, growing interest in the experience of the European currency union and developments in academic thinking brought attention back to the theory of OCA (Dellas and Tavlas 2009). The publication of the work of Emerson et al. in 1992 reaffirmed the belief that the 'old' theory of OCA could not offer the analytical framework for the assessment of cost and benefit of an economic and monetary union. The revival of interest in the OCA was accompanied by a shift of focus from the requirements each country should satisfy to the reliability and the instruments of the monetary policy. As a result, the Keynesian analytical framework was abandoned. This framework, according to which the aim of an economic policy is the search for the most appropriate point along the long-term Phillips curve, was attacked by 'new classical economy'.[2]

In theory the monetarist views prevailed, and under the influence of the rationale expectations hypothesis, they supported that the long-term Phillips curve is vertical. Consequently, the interest was shifted to the 'natural rate of unemployment' (NRU) rendering the loss of independence of the monetary policy, caused by the involvement in a monetary union, less important than was thought before. The focal point of macro-economic policy was now the maintenance of price stability under an OCA, displacing the target of the desired level of employment and economic activity (Artis 1991). More recent publications, having approached the issue of

[2] See notably Friedman (1968) and Phelps (1970).

the loss of independence of the monetary policy from different perspectives, reach the same conclusions. There were, however, opposing views.[3]

Other views which were developed within the framework of the 'new' approach of the OCAs[4] concern, first and foremost, the benefits of obtaining reliability in an economic policy, without the similarity of inflation rates being a prerequisite, as it can be obtained ex-post under the framework of a union. In addition, the effectiveness of adjusting the exchange rate for the restoration of external balance was challenged, and there was a study of the impact of a single currency on the labour market of a member state, which depends on the institutional structure of each country.

This 'new' approach to OCA revealed a new issue which restricts the power of this theory significantly: the endogenous nature of an OCA. The discussion begun with the works by Romer (1986, 1987), Lucas (1988) and Frankel and Rose (1998, 2002), in which the correlation between two of the criteria for membership of a country in an OCA is explored – and more specifically the impact of the trade integration level on the degree of the cross-country correlation of business cycles. The authors claim that this relationship is dubious. The endogenous growth theory supports that growth is the result of endogenous rather than exogenous forces, namely of human capital, innovation and of knowledge, and was based on the notion of constant returns. Since technology is now treated as endogenous, the factors which determine it – namely the higher transmission efficiency of production methods and the benefits from the elimination of economic boundaries – explain the continuous product growth, supporting nevertheless that the differences between countries will remain. Convergence, according to the endogenous growth theory is not the norm but the exception.

Yet in particular these authors support that trade integration can possibly lead to an increase in the specialization of each country (depending on a country's comparative advantage) and consequently to greater sensitivity towards a shock in the industrial sector, leading to more asymmetric business cycles. The authors believe that the latter is more plausible, but leave the question open. They also conclude that the creation of the EMU is easily justified ex-post. This conclusion is also supported by the argument of the endogenous nature of financial integration,[5] as well as by considering as endogenous characteristics the necessary criteria of the degree of openness of an economy, the labour and product market flexibility, and the similarity of economic policies.

The overall conclusion is that the monetary union can strengthen trade integration and the synchronization of business cycles. Thus according to the theory of endogeneity, a process of structural transformations renders the member states more capable of satisfying the criteria of optimization ex-post.

[3] See, for example, Akerlof et al. (2000).

[4] For a detailed presentation, see Mongelli (2002).

[5] See Schiavo (2008).

It should be noted however that certain authors, like Krugman (1993), have supported the 'specialization' hypothesis, based on the international trade theory and on increasing returns. In their view, the strengthening of trade relations between monetary partners will inevitably push them towards the specialization of production according to each one's comparative advantages. In that case, it is not possible to support the argument of diversification of the production structures of the economies, resulting in a minor correlation of business cycles. Nevertheless, the instability of the theoretical model of specialization[6] as well as the fact that demand shocks tend to spread to the monetary partners as well (due to interdependencies), reduce the initial asymmetry and make the specialization hypothesis appear weaker.

3 Real Convergence and Its Measuring

The strong interest for a discussion concerning the economic convergence hypothesis was triggered by the need for empirical verification of two of the most significant theories of economic growth that dominated in the late 1980s and early 1990s: the earlier neoclassical growth theory and the much more recent endogenous growth theory. The latter has increasingly attracted the attention of many economists. The issue was of great importance, since the response would suggest the position of economic policy with regard to one of its main objectives: economic growth. Another important reason for this theoretical and practical interest was its role in the expected convergence of the economies within the gradually expanding European Union (EU) and subsequently the Eurozone, as an OCA.

The methods developed for the verification of the above theories concern the measurement of real convergence. The ones used relatively more often are 'absolute' convergence of the neoclassical growth model, 'conditional' convergence of the endogenous growth theory and 'club' convergence, all of which attempt the measurement of the respective country variables – usually in income per capita or in productivity- and participate in a regional integration.

In non-technical terms, according to absolute convergence, which results from the conclusions of the orthodox neoclassical growth theory, there is a long-term convergence of per capita national income towards the same level, regardless of the initial conditions. Conditional convergence – also of neoclassical tradition – constitutes a core notion of the theory of endogenous development (Barro and Sala-i-Martin 1992 and Mankiw et al. 1992): per capita income of the countries of a region with similar characteristics converges towards the same level in the long term, regardless of initial conditions. In essence, this is the case where each economy converges towards its own steady state and the convergence rate becomes greater as economies deviate from it, a fact that depends on endogenous factors. The term

[6] See Frankel and Rose (1998).

'club convergence' corresponds to the view that per capita income of groups of countries with similar structural features, such as preferences, technology, rate of demographic growth, government policy, etc. converge towards the same level in the long term, provided that the initial conditions are sufficiently similar. Despite the fact that club convergence may be considered to differ from the notion of conditional convergence, Galor (1996) proved that they both originate from the neoclassical model. They simply introduce a number of important variables and concepts, such as spillovers and market distortions.

In empirical research and apart from the already known income inequality indexes, like the Gini, Theil and Atkinson indexes, a series of tests have been developed that correspond to some form of convergence. First of all, the concept of "absolute beta-convergence", developed by Barro and Sala-i-Martin (1990, 1991, 1992), is based on the neo-classical growth model and studies the relation between growth and per capita income within a given period and the initial level of per capita income of different regions or economies. The effect of the belief that, according to the theory of economic growth there is a convergence between economies, made beta-convergence extremely famous, although the authors supported that it does not necessarily lead to a reduction in income inequality. This approach received criticism by Friedman (1992) and Quah (1993a), both as to the interpretation of the parameter b, whose classical method of estimation ignores the heterogeneity of economies and other determinants of growth, and as to the use of cross-section data. This resulted to the development of the concept of "conditional beta-convergence", a convergence which is confirmed when the variables determining the steady state are tested. It turns out though that the conditional beta-convergence may be accompanied by decreasing or increasing income inequality (Gluschenko 2012). Acceptance of the conditional beta-convergence has serious consequences for the economy, as far as the effectiveness of economic policy and, consequently, its ability to remove the obstacles for growth is acceptable. In contrast, if the power of absolute beta-convergence had been proved, one might expect economic policy to restrict itself to safeguarding the smooth operation of the market. However, conditional beta-convergence seems not to be able to anticipate the evolution of income inequality, but simply concludes that the behaviour of a group of countries is foreseen by the neoclassical theory without predicting the evolution of income disparities between them. As Gluschenko (2012) has stated, the problem is not that beta-convergence is wrong, but that it has been interpreted in the wrong way, appearing able to answer questions it cannot really address.

Another test, "sigma convergence", which was also introduced by Barro and Sala-i-Martin, examines the reduction of dispersion of real per capita income between regions over time. This technique is an alternative to the beta-convergence, but does not help in understanding the mobility of each region or economy. However, empirical studies have shown that there are cases of beta-convergence, without the presence of sigma-convergence (Barro and Sala-i-Martin 1991). Thus beta-convergence is a necessary, but not a sufficient condition for observing sigma-convergence. According to Sala-i-Martin (1994, 1996), beta-convergence is more important because it allows the identification of pathways and rates of convergence,

and whether it is absolute or conditional. Islam (1995) considers the assessment of the parameter b to be more accurate because the problem of the variables associated with heterogeneity is handled when approached by using panel data.

Quah (1993a, 1996) showed that neither beta-convergence, nor sigma-convergence can give satisfactory answers to the phenomenon of convergence, and turned his attention to club convergence.[7] The analysis of club convergence highlights trends that lead groups of countries to converge together. As explained by Quah (1996), it is not important whether a single economy tends to converge towards its own steady state. What is important is the behaviour of the distribution of economies that form a group, as a whole. This approach helps in better understanding the problem of economic growth. The relevant empirical findings however cannot be derived from standard cross-section techniques or panel regressions, or even from time series methods, in absolute or in conditional convergence. Friedman (1992) and Leung and Quah (1996) argue that convergence as a concept of "catch-up" is not an effective means of standard regression analysis of a representative economy, as it only describes a representative behavior of the income distribution between countries. It does not help in understanding the dynamics of this distribution. For this reason, other techniques, such as the Markov chains – which allow the detection and estimation of the dynamic evolution of the above distribution – and the Medd (Model of Explicit Distribution Dynamics). This approach revealed, through empirical research by Bernard and Durlauf (1994), Quah (1997) and Epstein et al. (2000), convergence regularities in the form of clubs, polarization or stratification. The literature on club convergence has grown significantly with the construction of advanced models, such as the ones by Azariadis and Drazen (1990) or by Howitt and Mayer-Foulkes (2002). Furthermore, empirical evidence for club convergence using various methodologies has been proposed among others by Desdoigts (1999), Durlauf and Johnson (1995) and Kourtellos (2000).

Addressing the convergence in the distribution dynamics approach is therefore the most appropriate way for the emergence of club convergence. It is based on a comparison of the distribution of real per capita GDP of member states over time. The advantage of this technique is that it identifies not only the possible convergence, but also the existence of club convergence, when the distribution is multimodal. The general observation resulting from numerous empirical studies over the last 25 years is that absolute convergence is not verified, except in certain cases involving homogeneous economies, as sometimes less developed economies fail to cover the distance from more developed ones. As a result they remain low and the gap between them is widening. Alternative tests indicate a world where economies tend to be richer or poorer in the long term, while those situated in the middle income category decrease, thus dispelling the view that poor countries develop faster. The approach of club convergence seems to better and more dynamically

[7] Quah (1993b) shows that standard cross-section regression tests which are used by the classical approach to convergence lead to wrong conclusions, suggesting an analogy to the famous Galton's fallacy.

interpret the issue of real convergence, explaining the factors that determine the differences between countries in the path towards development.

4 Nominal Versus Real Convergence in the European Union's Framework and the Post-Crisis Trends

The term 'convergence' regularly reappears in the E.U. terminology, yet the meaning of the concept has changed over time. In particular, Council Decision No 74/120/EEC of 1974 concerned achieving a high degree of convergence of economic policies and aimed at organizing the coordination of fiscal policies of member states. As noted by Pisani-Ferry (1994), the Keynesian positioning of this decision gave way to another one,[8] which aims at the gradual convergence of political and economic results. The E.U., using this term during the first stage of EMU and after the violent crisis of European currencies in the late 1980s, explains that the principles that should inspire common policy are price stability, sound public finances, monetary conditions and current accounts, the opening of markets and competitive conditions. In other words, what is now called 'nominal' convergence and is confirmed by the MT – regarding exchange rate and price stability, long term interest rate, and the condition of fiscal deficits and debt – has a key role and is a prerequisite for joining the single currency.

The predominance of nominal criteria in the E.U. philosophy coincides, as mentioned in the first part, with the abandonment of the Keynesian view of the OCA and the adoption of monetary views. The shift has fuelled a number of criticisms, and the debate for the relationship between nominal and real convergence continues to this day. Yet there is no consensus as to the nature of this relationship, neither on a theoretical nor on a practical level. For many economists, monetary convergence is the final stage in a real or structural – as is often referred to – convergence process. On the other hand, monetarists view it as a prerequisite stage or the initiation of the process. Moreover, these criteria of convergence were accused of having been designed by countries whose characteristics were very different from those of countries of subsequent enlargements, in terms of structure of economies, development of financial sector, level of prosperity, etc. (Halpern and Wyplosz 2001).

In fact the E.U., with the Delors Report (1989) sought to implement a policy of compromise between these two positions; namely it aimed for both these goals, a fact which was characterized more as an economic policy rather than as an implementation of economic logic (De Grauwe 1993). The belief of many economists, however, that a process of real convergence on a theoretical level would continue, tends to be elusive. This policy arose from the need to reconcile objectives relating both to equal treatment and to the future behaviour of candidate countries, but also their actual capability to implement strict economic policy.

[8] Decision 90/141/EEC.

Clearly this solution did not allow the prevalence of the criteria arising from the theory of OCA, resulting to the adoption of nominal criteria only. However, ignoring the goals of real convergence and necessary adjustments until the entrance in the common currency, was a threat which appeared later and in strong terms after the global financial crisis in 2007. These risks were identified early, by Emerson et al. (1992) for example, and mainly concern the asymmetries observed in the structure and behaviour between the economies of the member states of the union. Since the loss of monetary independence deprives a state of the ability to use the exchange rate for the adjustment of relative prices, after a shock, the existence of asymmetries may have high costs. The same can happen in the case of common shocks, because asymmetries may cause different reactions from member states. These asymmetries were not very evident until the 1990s and when after the successful currency devaluations of the United Kingdom and Italy, the size of the potential costs of the loss of monetary independence was demonstrated. Empirical studies conducted at the time on regional disparities between the United States of America and the European Community (EC) and on shock absorption, by Sachs and Sala-i-Martin (1992), Bini-Smaghi and Vori (1993) and Bayoumi and Eichengreen (1993) among others, showed that asymmetric shocks in the case of the EC reflect less the asymmetries in the production structure than those in economic or political behaviour. Also the absorption of asymmetric shocks in the case of Europe seems to be made through price rather than quantity adjustments and that migration and labour market flexibility are minimally involved. In fact, as shown by many empirical studies (de Grauwe and Vanhaverbeke 1993; Barro and Sala-i-Martin 1990, 1991; Eichengreen 1992), labour mobility in Europe is limited. Therefore what remains, according to the orthodox theory, is only the adjustment through prices, namely through reducing wages and deregulation of the labour market. Moreover, fiscal adjustments have little chance of being implemented in dealing with asymmetric shocks, as they are permanently enacted at a national level, especially after the Stability and Growth Pact (SGP) in 1997 and the Euro Plus Pact in 2011. Of course, according to the IS-LM-BP model, monetary policy is fully effective under a flexible exchange rate regime, such as that of the euro. However, in the short term, a return to fiscal balance requires a primary surplus, which reduces demand and growth in order to be achieved. This is the pro-cyclical policy, especially perilous in a crisis. Therefore, the cost of adjustments in case of an asymmetric shock can be large, especially for less 'virtuous' economies of the union, which for better or worse chose to join the common currency. As addressing their deficits is not effectively connected with collective responsibility, the risk of sovereign default cases cannot be excluded.

A problem that complicated the situation of countries in transition that have entered the EU was the incompatibility between exchange rate and inflation, due to the Balassa-Samuelson (BS) effect.[9] Various empirical studies, such as the one by

[9] A survey of the existing empirical literature on BS effect for the New Member States is provided in Egert et al. (2006).

Égert (2010) argue that the BS effect is not the most important factor of inflation for the countries of Central and Eastern Europe (CEECs). The rapid growth of productivity in the service sector reduces the distance from the productivity of the tradable sector and contributes to the rise of inflation. Moreover, accumulation of productive capital seems to be leading to the same effect. As shown in the analysis of the general equilibrium model by Bhagwati (Gerard 2008), an increase in capital per capita causes a relative increase in the price of services. This price convergence in CEECs is associated with capital inflows of Foreign Direct Investments (FDI), which until the transmission of the global economic crisis to the region had enabled the creation and maintenance of significant current account deficits. That is, mass imports of intermediate goods and mechanic equipment, which were facilitated by inflow funds, not only contributed to the trade deficits, but to the increase of per capita capital as well, a fact which in turn contributed to inflationist pressures. Especially for countries with a fixed exchange rate or with a peg to a strong currency (euro) or intend to enter the currency union, free capital flow leads to a convergence of real interest rates, namely to their reduction. The result is a reduction in household savings and an increase in borrowing, and in fact in foreign borrowing, and the transmission of upward pressure on demand and prices, as observed in many cases.

Especially for those countries, the impact of rapid productivity growth of the tradable sector on inflation means that inflationary pressures will be retained. In the trade-off between exchange rate stability and inflation target, both in the period of ERM during the process towards the single currency and after entering the EMU, there will be a need for austere restrictive economic policy. However, by doing so, they compromise the development policy and therefore real convergence (Halpern and Wyplosz 2001; de Grauwe and Schnabl 2005; Hein and Truger 2002). The same concerns have been expressed by other researchers, such as Björkstén (2000), who believed that only in the long term can real convergence of per capita income and living standards in the Eurozone be expected, while there are signs of club convergence. The diverging levels of structural inflation however, after further enlargements will be a bigger obstacle to real convergence due to common monetary policy.[10]

Already from the beginning of the first decade of this century, the theoretical and empirical debate about the relationship between nominal and real convergence resulted in more concrete conclusions. Hein and Truger (2002) among others concluded that the operation of the Eurozone was marked by a rather restrictive macroeconomic policy mix which did not achieve the objectives of economic growth and real convergence. Instead, a flexible financial policy, which would abandon monetarist views, would have a greater chance of success. Soukiazis and Castro (2005) conducted a thorough and remarkable study, using panel data analysis, on the effect of the Maastricht criteria and later of the SGP, on the convergence process among EU countries. The study comes to mixed conclusions. Some of them

[10] See also, Jacquelin (2004).

reinforce the view that the post-Maastricht period is characterized by slower convergence of per capita income, due to the adaptation of the economic policy of many countries to the requirements of the above conditions. In contrast, there was a positive effect on the productivity, although the quantitative result was small. The same period had a rather negative effect on the behaviour of investment and unemployment. Finally, convergence is probably conditional and convergence of per capita product continues with a low annual rate, which verifies the convergence estimate of Sala-i-Martin (1996) by 2 %, with the method of cross-section.

More recent empirical studies on nominal convergence, agree that up until the economic crisis of 2008 there was satisfactory progress both at an EU and at a Eurozone level (Marelli and Signorelli 2010), although the new members seem to struggle. As far as real convergence is concerned however, the conclusions are not clear. Initially, there seem to be differences between old and new EU members in the convergence of per capita income and productivity. New members perform better, but diverge mainly in their labour market indicators and specialization. Other authors (Vieira and Vieira 2011) estimate that during the last decade all the characteristics of an OCA are improved for almost all EU countries. EMU does not seem to contribute in any special way. Furthermore, the expected rapid convergence in the EMU was not achieved. Other writers reach similar conclusions, including Christodoulakis (2009), who observes a reversal in the trend prior to the EMU, on convergence of per capita income, while the business cycles seem to converge more after the creation of the union. In line with these conclusions, Zarotiadis and Gkagka (2013) point out that the trend towards per capita income divergence among EU countries, observed during the 1980s, is nowadays confirmed as a continuous process.

According to the latest statistic data, the economic crisis in Europe is characterized as an asymmetric shock that affects some countries more than others. This crisis is not only due to the global economic crisis which began in 2007 with the crisis in the mortgage sector in the U.S.A. Part of the cause can also be found in the imbalances that have accumulated within the EU itself and especially within the Eurozone. It is generally accepted that the convergence of member states of the Eurozone did not evolve as anticipated by the theory of OCA. In some cases, as real interest rates remained at low levels in countries with higher rates of price increase, such as Ireland, Greece or Spain, growth was driven by excessive household consumption debt and by the expansion of the construction sector. The result was deterioration in the external imbalances of these countries without increasing their competitiveness. As explained by Christodoulakis (2009), after the entry of these countries into the EMU, current account deficits did not follow fiscal deficits, but are due to the different direction followed by FDI within the union. More specifically, these countries received inflows of capital towards the real estate market, with relative capital intensity in producing non-tradable goods, resulting in housing-bubbles. Instead, the countries that followed the strategy of growth through increasing competitiveness, based on the reduction of wages and domestic demand, attracted capital inflows towards the capital-intensive export industries and exhibited external surpluses. For countries with external imbalances, according to

the rationale of the OCA, there should be labour costs and employment reduction in the short term. Moreover, when confronted with the financial markets, the cost of their external debt soared.

The convergence of CEECs was characterized by a rapid growth, but, as was previously mentioned, with imbalances in inflationary pressure and external balances. Imported initially, the crisis of 2008 became evident in different countries in 2009, depending on the degree of those imbalances, altering substantially the whole progress towards meeting the Maastricht criteria. The propagation of the crisis was based on a pattern with the following characteristics: reduction in exports due to the shock of demand in the Eurozone, reduction in domestic demand, reduction in inflows of investment funds and volatile capital outflow, private loans service needs in foreign currency, reduction of bank credit of foreign banks and depreciation of fluctuating currencies (Gardó and Martin 2010). Of course, in some cases, there was a reduction in external deficits and inflation due to the recession, and extensive readjustments in stock and property markets. But as commitments to fiscal policy do not allow anti-cyclical policy and automatic stabilizers collapsed, external borrowing increased – with higher spreads – and budget deficits widened. These developments reinforce doubts about the success of real convergence and the confirmation of the club convergence trend (Halmai and Vásáry 2010). Despite some improvement in macroeconomic indicators, uncertainty about the recovery of real convergence remains, causing the desire and potential for future entry of more countries in the euro zone to diminish (Milea et al. 2010; Avramov 2009).

Conclusion

Both the 'old' or endogenous approach of Optimal Currency Areas and the relative empirical research produced different conclusions about the issue of the creation and success of the EMU and the E.U. Firstly, it is accepted that the member countries of the EMU do not all meet the criteria for participation in an OCA. These criteria and the assumptions of the traditional theory, proved unrealistic in their majority, ruling absolute real convergence out of non-homogeneous economies. Influenced by the theory of endogenous growth, the relative approach gained more evidential power and was connected with the real conditional convergence, and more appropriate econometric techniques brought the existence of club convergence to light. At the same time, the abandonment of Keynesian principles and the adoption of the monetarist Maastricht criteria, although confirmed by nominal convergence to a great extent, they gave rise to strong concerns about the sustainability of the EMU. Ignoring the heterogeneity of member states of the union and imposing uniform rules of economic policy, in combination with the involvement of political factors, created internal and external imbalances in the member states. These imbalances were reinforced by the global financial and economic crisis both within the EMU, and in the majority of the new EU

(continued)

members, creating debt crises and sovereign default risks. The European institutions have not provided an effective collective solution to the problem of the debt crisis. It was this gap that, within the framework of globalization, allowed dependence of problematic EU countries on international financial markets on high cost. This issue, in conjunction with the revision of the theoretical analytical framework of European integration can be a topic for future discussion.

References

Abramovitz M (1986) Catchinh-up. Forging ahead, and falling behind. J Econ Hist 46(2):385–406

Akerlof G, Dickens W, Perry G (2000) Near-rational wage and price setting and the long-run Phillips curve. Brookings Pap Econ Act 1:1–60

Artis M (1991) One market, one money: an evaluation of the potential benefits and costs of forming an economic and monetary union. Open Econ Rev 2:315–321

Avramov R (2009) Economic and political challenges of acceding to the Euro area in the post-Lehman Brother's World. Sofia: centre for liberal strategies. eupi.iosi.bg/fce/001/0066/files/SummaryReport.pdf. Accessed 8 Jan 2013

Azariadis C, Drazen A (1990) Threshold externalities in economic development. Q J Econ 105:501–526

Barro R, Sala-i-Martin X (1990) Economic growth and convergence across the United States. NBER working papers 3419. www.nber.org/papers/w3419.pdf. Accessed 11 Jan 2013

Barro R, Sala-i-Martin X (1991) Convergence across states and regions. Brookings Pap Econ Act 1:107–182

Barro R, Sala-i-Martin X (1992) Convergence. J Polit Econ 100:223–251

Bayoumi T, Eichengreen B (1993) Shocking aspects of European Monetary Integration. In: Giavazzi F, Torres F (eds) Adjustment and growth in the European Monetary Union. Cambridge University Press, New York

Bernard A, Durlauf S (1994) Interpreting tests of the convergence hypothesis. NBER technical working paper no 159. www.nber.org/papers/t0159.pdf. Accessed 18 Jan 2013

Bini-Smaghi L, Vori S (1993) Rating the E.C. as an optimal currency area. Banca d'Italia, Roma, Temi di discussione No 187

Björkstén N (2000) Real convergence in the enlarged euro area: a coming challenge for monetary policy. Bank of Finland, Economics department working papers no 1. SSRN-id233888.pdf. Accessed 18 Feb 2013

Cass D (1965) Optimum growth in an aggregative model of capital accumulation. Rev Econ Stud 32(3):233–240

Cesarano F (2006) The origins of the theory of optimum currency areas. Hist Polit Econ 38 (4):711–731

Christodoulakis N (2009) Ten years of EMU: convergence, divergence and new policy priorities. GreeSE paper no 22, The Hellenic Observatory, The European Insitute. London: The London School of Economics and Political Science. eprints.lse.ac.uk/23192/1/GreeSE_No_22.pdf. Accessed 22 Feb 2013

De Grauwe P (1993) The political economy of Monetary Union in Europe. World Econ 16(6):653–661

De Grauwe P, Schnabl G (2005) Nominal versus real convergence – EMU entry scenarios for the new member states. Kyklos 58(4):537–555

De Grauwe P, Vanhaverbeke W (1993) Is Europe an optimum currency area? Evidence from regional data. In: Paul M, Mark T (eds) Policy issues in the operation of currency unions. Cambridge University Press, Cambridge

Dellas H, Tavlas G (2009) An optimum-currency-area Odyssey. Bank of Greece working paper, 102. www.bankofgreece.gr/bogegdoseis/paper2009102.pdf. Accessed 8 Jan 2013

Delors J (Chairman) (1989) Report on economic and monetary union in the European Community. Committee for the study of economic and Monetary Union, Luxembourg, European Community. aei.pitt.edu/1007/1/monetary_delors.pdf. Accessed 26 Mar 2013

Desdoigts A (1999) Patterns of economic development and the formation of clubs. J Econ Growth 4:305–330

Durlauf S, Johnson P (1995) Multiple regimes and cross-country growth behavior. J Appl Econ 10 (4):363–384

Égert B (2010) Catching-up and inflation in Europe: Balassa-Samuelson, Engel's law and other culprits. CESifo working paper no 3110. http://ebookbrowsee.net/cesifo1-wp3110-pdf-d466994874. Accessed 12 Mar 2012

Egert B et al (2006) Equilibrium exchange rates in transition economies: taking stock of the issues. J Econ Surv 20(2):253–324

Eichengreen B (1992) Should the maastricht treaty be saved. Princeton studies in international finance, no 74. www.Princeton.Edu/~ies/IES_Studies/S74.pdf. Accessed 22 Mar 2013

Emerson M, Gros D, Italianer A, Pisani-Ferry J, Reichenbach H (1992) One market, one money: an evaluation of the potential benefits and costs of forming an economic and monetary union. Oxford University Press, Oxford/New York/Toronto/Melbourne

Epstein P, Peter H, Max-Stephan S (2000) Distribution dynamics: stratification, polarization and convergence among OECD economies. LSE working paper series, Economic History Department, No 58/00, pp 1870–1992. eprints.lse.ac.uk/22380/1/wp58.pdf. Accessed 22 Mar 2013

Frankel J, Rose A (1998) The endogeneity of the optimum currency area criteria. Econ J 108 (449):1009–1025

Frankel J, Rose A (2002) An estimate of the effect of currency unions on trade and income. Q J Econ 117:437–466

Friedman M (1953) The case for flexible exchange rates. In: Friedman M (ed) Essays in positive economics. University of Chicago Press, Chicago

Friedman M (1968) The role of monetary policy. Am Econ Rev 58(1):1–17

Friedman M (1992) Do old fallacies ever die? J Econ Lit 30(4):2129–2132

Galor O (1996) Convergence? Inferences from theoretical models. Econ J 108(437):1056–1069

Gardó S, Martin R (2010) The impact of the global economic and financial crisis on central, Eastern and South-eastern Europe. A stock-taking exercise. Occasional paper series no 114, - European Central Bank. www.ecb.int/pub/pdf/scpopsecbocp114.pdf. Accessed 23 Mar 2013

Gerard M (2008) Rattrapage économique et convergence des niveaux de prix dans les PECO. Trésor-Eco No 46, Direction Générale du Trésor et de la Politique Economique. https://www.tresor.economie.gouv.fr/file/326889. Accessed 11 Apr 2013

Gluschenko K (2012) Myths about beta-convergence. William Davidson Institute working paper no 1040, University of Michigan. SSRN-id2188430.pdf. Accessed 12 Mar 2013

Halmai P, Vásáry V (2010) Real convergence in the new member states of the European Union (Shorter and longer term prospects). Eur J Comp Econ 7(1):229–253

Halpern L, Wyplosz C (2001) Economic transformation and real exchange rates in the 2000s: the Balassa-Samuelson connection. UNECE discussion paper no 2001.1. Geneva, United Nations Economic Commission for Europe. www.unece.org/fileadmin/DAM/oes/disc_appers/ECE_DP_2001-1.pdf. Accessed 5 Feb 2013

Hein E, Truger A (2002) European Monetary Union: nominal convergence, real divergence and slow growth? Wirtschafts und Sozialwissenschaftliches Institut (WSI). Discussion papers no 107. www.boeckler.de/pdf/p_wsi_diskp_107.pdf. Accessed 2 Apr 2013

Howitt P, Mayer FD (2002) R&D, implementation and stagnation: a Schumpeterian theory of convergence clubs. NBER working paper no 9104. http://www.nber.org/papers/n9104

Ingram J (1962) Regional payments mechanisms: the case of Puerto Rico. University of North Carolina Press, Chapel Hill
Ishiyama Y (1975) The theory of optimum currency areas: a survey. IMF staff papers 22, pp 344–383. www.jstor.org/discover/10.2307/3866482?uid=2&uid=4&sid=21102163077587. Accessed 2 Apr 2013
Islam N (1995) Growth empirics: a panel data approach. Q J Econ 110(4):1127–1170
Jacquelin V (2004) Convergence nominale et convergence réelle des nouveaux Etats membres. Analyses economiques no 45, Ministère de l'Economie des Finances et de l'Industrie – Direction de la Prévision et de l'analyse économique
Kenen P (1969) The optimum currency areas: an eclectic view. In: Mundell R, Swoboda A (eds) Monetary problems of the international economy. University of Chicago Press, Chicago, pp 41–60
Koopmans T (1965) On the concept of optimal economic growth. In: Econometric approach to development planning, vol 4. North-Holland Publishing, Amsterdam, pp 225–287
Kourtellos A (2000) A projection pursuit to cross-country growth data. Mimeo, University of Wisconsin. papers.econ.ucy.ac.cy/repec/papers/0213.pdf. Accessed 3 Apr 2013
Krugman P (1993) Lessons of Massachusetts for EMU. In: Torres F, Giavazzi F (eds) Adjustment and growth in the European Monetary Union. Cambridge University Press, New York
Leung C, Quah D (1996) Convergence, endogenous growth and productviity disturbances. J Monet Econ 38(3):535–547
Lucas R (1988) On the mechanics of economic development. J Monet Econ 22:3–42
Mankiw G, David R, David W (1992) A contribution to the empirics of economic growth. Q J Econ CVII:407–437
Marelli E, Signorelli M (2010) Institutional, nominal and real convergence in Europe. Banks Bank Syst 5(2):140–155
McKinnon R (1963) Optimum currency areas. Am Econ Rev 52:717–725
Milea C, Alina G, Iulia L, Adina C (2010) New challenges for the fulfillment of nominal convergence criteria in the new member states of the European Union in the context of the global financial and economic crisis. Centre for Financial and Monetary Research "Victor Slăvescu", Economic Sciences Series, vol LXII (1), Petroleum-Gas University of Ploiesti, pp 70–80. www.upg-bulletin-se.ro/arcive/2010-1/9.%20Milea,%20Glod,%20Lupu,%20Criste.pdf. Accessed 5 Apr 2013
Mongelli F (2002) "New" views on the optimum currency area theory: what is EMU telling us? European Central Bank, Working paper series, 138. www.ecb.int/pub/pdf/scpwps/ecbwp138.pdf. Accessed 20 Feb 2013
Mundell R (1961) A theory of optimum currency areas. Am Econ Rev 51:657–665
Phelps E et al (1970) Microeconomic foundations of employment and inflation theory. W. W. Norton, New York
Pisani-Ferry J (1994) Union monétaire et convergence: qu'avons nous appris? Centre d'Études Prospectives et d'Information Internationale, Document de travail, 14. www.cepii.fr/PDF_PUB/wp/1994/wp1994-14.pdf. Accessed 20 Dec 2012
Quah D (1993a) Empirical cross-section dynamics in economic growth. Eur Econ Rev 37:426–434
Quah D (1993b) Galton's Fallacy and tests of the convergence hypothesis. Scand J Econ 95 (4):427–443
Quah D (1996) Convergence as distribution dynamics. LSE, Centre for Economic Performance, Discussion paper no 317. cep.lse.ac.uk//pubs/download/DP0317.pdf. Accessed 2 Apr 2013
Quah D (1997) Empirics for growth and distribution: stratification, polarization and convergence clubs. J Econ Growth 2(1):27–59
Robson P (1987) The economics of international integration. Allen and Unwin, London
Romer P (1986) Increasing returns and long-run growth. J Polit Econ 94(5):1002–1037
Romer P (1987) Growth based on increasing returns due to specialization. Am Econ Rev 77(2):56–62

Sachs J, Sala-i-Martin X (1992) Fiscal federalism and optimum currency areas: evidence for Europe from the United States. CEPR discussion paper no 632. www.nber.org/papers/w3855.pdf. Accessed 4 Jan 2013
Sala-i-Martin X (1994) Cross-sectional regressions and the empirics of economic growth. Eur Econ Rev 38:739–747
Sala-i-Martin X (1996) Regional cohesion: evidence and theories of regional growth and convergence. Eur Econ Rev 40:1325–1352
Schiavo S (2008) Financial integration, GDP correlation and the endogeneity of optimum currency areas. Economica 75(297):168–189
Solow R (1956) A contribution to the theory of economic growth. Q J Econ 70(1):65–94
Soukiazis E, Castro V (2005) How the Maastricht rules affected the convergence process in the European Union. A panel data analysis. J Policy Model 27(3):385–399
Swan T (1956) Economic growth and capital accumulation. Econ Rec 32(63):334–361
Tavlas G (1994) The theory of monetary integration. Open Econ Rev 5(2):211–230
Tower E, Willett T (1976) The theory of optimum currency areas and exchange-rate flexibility. International Finance Section, Princeton University, Princeton
Vieira C, Vieira I (2011) Assessing the endogeneity of OCA conditions in EMU. GEE paper no 42. www.gee-min-economia.pt/RePEc/WorkingPapers/GEE_PAPERS_42.pdf. Accessed 8 Apr 2013
Zarotiadis G, Gkagka A (2013) European Union: a diverging Union? J Post Keynesian Econ 35 (4):537–568