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OPTIMUM CURRENCY AREA THEORY AND EMU: LESSONS FROM THE EURO CRISIS

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Abstract
The theoretical literature on monetary integration has been traditionally dominated by the theory of optimum currency areas (OCA). This analysis has its origins in a debate, during the 1960s, between Mundell, McKinnon and Kenen about the criteria which delineate the optimal domain of a currency area. Between the 1980s and early-1990s the traditional OCA theory was gradually modified in line with new theoretical developments. This new phase led to a "new" OCA theory with very different policy implications compared with the traditional approach. The Treaty of Maastricht symbolized the triumph of the new OCA paradigm. The euro crisis has, instead, represented the revenge of the traditional approach. This paper traces how the optimum currency area theory has evolved over time and uses the OCA theory as a framework within which the Eurozone's governance, crisis and future are examined. Evidence presented in this paper suggests that the Economic and Monetary Union (EMU) has had asymmetric effects on its member States while it lacks of adequate instruments to deal with them. The fact that the EMU did not constitute an OCA, according to the traditional paradigm, contributed to the crisis of the euro area. The paper leads to the conclusion that, without the introduction of supranational adjustment mechanisms, the Eurozone will not survive its own imperfections.

Keywords
Optimum Currency Area Theory, European Monetary Union, EMU Governance, Asymmetric Shocks, Euro Crisis, Fiscal Union, Unemployment Insurance Scheme

1. Introduction

The theoretical literature on monetary integration has been traditionally dominated by the theory of optimum currency areas (OCA). The official start of the OCA theory is the seminal contribution by Robert Mundell[1] in 1961, although some of the original insights were present already in earlier contributions, such as Friedman[2] and Meade[3]. That period was characterized by the Bretton Wood fixed exchange rate regime and the incipient process of European integration. The OCA theory emerged as a by-product of the theoretical debate between those who favored fixed and those who favored flexible exchange rates[4]. The pioneering authors had a Keynesian stabilization framework in mind and believed that, at least in the short run, flexible exchange rates could facilitate the adjustment in the wake of some adverse shocks. Therefore, the perceived costs from losing direct control over monetary policy and the exchange rate, followed the entry in a monetary union (or a currency area), seemed substantial and they should be offset by the presence of other powerful correcting mechanisms, the so-called OCA properties. The first blueprints for a monetary union in Europe, such as the Marjolin Report[5] and the MacDougall Report[6], incorporated the prescriptions of the conventional optimum currency area paradigm, such as the need of a Community budget with macroeconomic stabilization functions.

However, in the mid-1970s the OCA theory lost momentum due to the failed attempts for monetary integration in Europe, and the weakening of the Keynesian analytical apparatus behind the traditional OCA approach. In the 1980s and early-1990s the theory of optimum currency areas was gradually modified in line with new theoretical developments in expectations formation, the time inconsistency and credibility problems. This new phase led to a reassessment of the effective costs from monetary integration and the loss of control over the exchange rate. At the end of this phase a "new" OCA theory emerged[7]. This new paradigm, by shifting the focus of economic policy from the demand-side to the supply-side of the economy, inevitably entailed completely different policy implications compared with the traditional approach. The new theory recognized that the main costs associated with a monetary union emphasized in the early literature, i.e. the loss of autonomy of domestic macroeconomic policies, were not valid, and there were, instead, somewhat more benefits associated with monetary integration, e.g. gains in inflation credibility and endogenous effects provoked by the adoption of a single currency.

[1] Mundell R.A. (1961).
[2] Friedman M. (1953).
[3] Meade J. E. (1957).
[4] Mongelli F. P. (2002).
[5] Marjolin R., *et. al*. (1975).
[6] MacDougall D., *et al.* (1977).
[7] Tavlas G. S. (1993).

In the second half of the 1980s, in Europe interest in monetary integration was revived and the Community member States faced a new "EMU question" concerning the timing and modalities of implementing a monetary union. This question was brought out forcefully by the "One Market, One Money" Report in the early 1990s[8]. The authors of the Report held a critical view of the "old" OCA theory, while they proceeded, instead, by using the elements of the "new" theory of optimum currency area.

In the early 1990s, when the Treaty of Maastricht was being negotiated, the "new" OCA paradigm formed the prevailing theoretical framework in Europe, and the EMU governance was designed on the basis of the doctrine behind such paradigm. In the meantime, the traditional OCA approach had been dismissed as "one of the low points of post-World War II monetary economics"[9], or derided as "a scholastic discussion which contributes little to practical problems of exchange rate policy and monetary reform" [10].

However, various authors, in particular American economists, who continued to be inspired by the traditional OCA approach and used the US monetary union as the benchmark for Europe, pointed the flaws in the Eurozone's design, including asymmetries between member States and the lack of suitable adjustment mechanisms[11]. Since the Eurozone sovereign debt crisis the traditional theory of optimum currency areas, after remaining dormant in Europe for three decades, has been resurrected as a means of analyzing the EMU project.

The aim of this paper is to trace how the optimum currency area theory has evolved over time, and use the OCA theory as a framework of analysis within which the Eurozone, its theoretical basis, governance, crisis, and future, are examined. The structure of the paper is as follows. Chapter 1 revisits the traditional OCA theory and the various OCA properties that would support the launch of a single currency and ensure that the benefits from monetary integration exceed the costs. Chapter 2 describes the theoretical underpinning of the new OCA theory. Chapter 3 is devoted to an analysis of the EMU governance. Three main principles that shape the Eurozone governance are identified: price stability, fiscal discipline and labour market flexibility. Chapter 4 deals with the recent literature on the EMU's crisis. Two are main narratives of the euro crisis described: the first one, "the German view", is consistent with the tenets of the new OCA paradigm, while the second one, "the academic view", highlights the shortcomings in the EMU governance, some also overlooked by the traditional OCA theory. The same Chapter discusses the economic policies applied in Europe since the beginning of the sovereign debt crisis, and how these have been recently chal-

[8] Emerson M., Gros D., Italianer A., Pisani-Ferry J., *et al.* (1990).
[9] Buiter W. H. (1999: 15).
[10] Ishiyama Y. (1975: 378).
[11] For a survey on how US economists looked upon European monetary unification from the publication of the Delors Report in 1989 to the introduction of euro notes and coins in January 2002, see: Jonung L., Drea E. (2009); and Jonung L., Drea E. (2010).

lenged by the International Monetary Fund's Staff. Chapter 5 evaluates the EMU with respect the fulfillment of the traditional OCA criteria in a comparative prospective with the US. In relation to each criterion, the Chapter both recalls the literature from the pre-EMU period and examines the developments in the Eurozone since 1999. Finally, it tried to identify what the EMU needs to become more resilient and move closer to forming an optimum currency area.

Chapter I
Optimum Currency Areas
1. Benefits and Costs of Monetary Integration

The pioneering work by Robert Mundell defined a currency area as a "domain within which exchange rates are fixed"[1]. This means that a currency area is a territory, composed by regional or national entities, with a single currency, or several currencies whose values are permanently pegged. A problem arises when defining the geographic domain within which exchange rates are fixed, and when selecting the criteria that would qualify a domain as "optimum" to form a currency (monetary) area. "Optimality" means the ability to achieve automatic internal (full employment and price stability) and external (balance of payments equilibrium) balance. Because a monetary union implies both costs and benefits for its member countries, the OCA theory suggests the conditions that ensure that benefits of sharing a currency exceed its costs. In this sense, a monetary area that satisfies such conditions, rather than "optimum", can be better defined as an "advantageous monetary area"[2].

While benefits are mostly situated at the microeconomic level, costs of a common currency are related to the macroeconomic management of the economy.

The benefits are quite obvious theoretically, but often hard to quantify in practice. Eliminating national currencies and moving to common currency can be expected to lead to gains in economic efficiency. These gains arise from the elimination of transactions costs and the suppression of exchange rate risks. The most visible and most easily quantifiable gain from a monetary union concerns the elimination of the costs associated with converting one currency into another. The larger part of these gains is financial, consisting of the disappearance of the exchange margin and commission fees paid to banks. The other gains take the form of reductions in costs and inefficiencies inside firms. However, it should be noted that these gains that benefit the general public have a counterpart in the banking sector that loses the revenue related to the conversion of national currencies. Another benefit connected to the elimination of transaction costs originates from the fact that a single currency allows a greater transparency, and possibly greater competition because prices are easier to compare. Gains related to the disappearance of exchange rate volatility are likely to be more important. A monetary union reduces the uncertainty for investors associated with the existence of national currencies and independent monetary policies. A reduction in overall uncertainty may lower the risk premium that firms have to pay on equity and potentially greatly increase investment. This will lead to a higher capital accumulation, and lastly an increase in the economy's growth rate. Finally, both the elimination of transaction costs and the removal of exchange rate

[1] Mundell R. A. (1961: 657).
[2] Emerson M., Gros D., Italianer A., Pisani-Ferry J., *et al.* (1990: 28).

uncertainty can potentially stimulate trade among member States of the currency area.

These potential benefits of a monetary union were particularly highlighted by a European Commission's group of study in the influent Report "One Market, One Money" in 1990. The Report estimated the direct savings related to the elimination of the cost of currency conversion at about 0.4% of Community GDP, while it recognized that "the gains from the suppression of exchange rate variability in terms of increased trade and capital movements are difficult to measure because firms can in many cases insure against this risk using sophisticated foreign exchange market operations"[3].

With regard to the costs of a monetary union, they derive from the fact that when a country abandons its national currency it also gives up an instrument of economic policy. It loses the ability to conduct an independent monetary policy. This implies that this country will not be able to affect the exchange rate, to determinate the quantity of national money in circulation, or to change short-term interest rates.

The "traditional" approach of OCA focus more on the cost side of the cost-benefit analysis of a monetary union, by identifying economic, financial and institutional factors that may mitigate those costs and make a common currency acceptable for its member states. Founding fathers of this theory are considered Mundell, McKinnon and Kenen. Several other important contributions followed highlighting a wide range of OCA "properties".

2. Mundell's Model: Asymmetric Shocks

Mundell, in line with the optimal exchange rate debate, investigates the stabilization argument for flexible exchange rates. He distinguishes three policy objectives: full employment, price stability and external balance. His concern is the cost that a common currency area can cause when the economy is confronted with a shock. In order to examine such a cost, he considers the simplest case of two countries. He assumes that such countries pursue both internal and external balance. These countries are initially in such a situation, i.e. in full employment and balance-of-payments equilibrium. Mundell also assumes that nominal wages and prices are rigid in the short-run, so that they cannot be reduced without causing unemployment, and that monetary authorities act to prevent inflation. Then, he supposes that both countries are unexpectedly disturbed by a shift in aggregate demand (*from D to D'*) from country *B* to country *A*, that is a fall in the demand for goods in *B*, and an increase in the demand for goods in *A*[4]. This is a situation of asymmetric shock on the demand side. Both countries have an adjustment problem. *B* is

[3] Emerson M., *et. al*. (1990: 62-63).

[4] These are the hypotheses set in the original Mundell's 1961 article. However, Mundell illustrated his theory not considering two countries, but "two entities (regions or countries)", and he proposed three alternative scenarios: countries with national currencies; regions with a common currency; regions of both different countries and currencies. Mundell R. A. (1961: 658).

troubled with a higher unemployment and current account deficit, while *A* with an over-full employment, inflationary pressure and current account surplus.

In a flexible exchange rate regime, in country *B* the central bank will likely react to the adverse shock by lowering its interest rates. The expansionary monetary policy stimulates aggregate demand. The opposite happens in *A*. The inflationary pressure created by the boom leads the national central bank to raise the interest rates. This restrictive monetary policy reduces aggregate demand in *A*. Furthermore, these opposite monetary policies conducted by *B* and *A* lead to a depreciation of the currency in *B* and an appreciation of the currency in *A*, thereby making the products of *B* sold in *A* cheaper, and goods produced in *A* more expensive in *B*. In *B* the external deficit narrows, while in A the surplus shrinks. Both interest rate and exchange rate changes tend to boost aggregate demand in *B* and reduce aggregate demand in *A*. The ultimate effects of these demand shifts (*from D' to D*) are that *B* solves its unemployment problem, while *A* avoids accepting upward pressure on its price level (*Figure 1*). In other words, national monetary policies can be effective to stabilize the economy after an asymmetric shock.

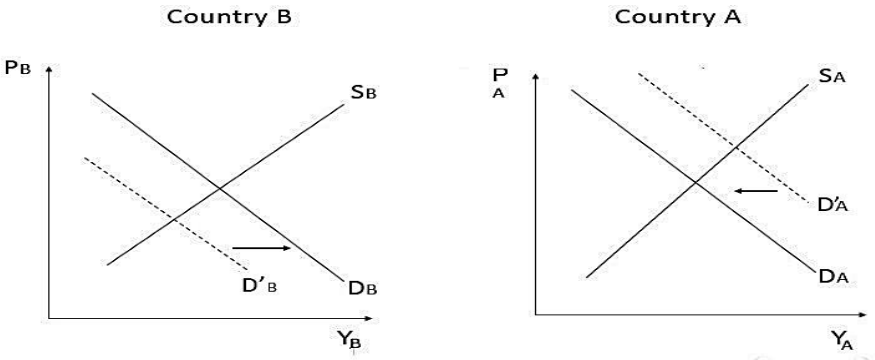

Figure 1 - Monetary expansion in B and monetary restriction in A

Assuming, instead, the case that the two countries form a monetary union the scenario becomes extremely different. These countries abandon their national currencies and use a common currency, which is managed by a common central bank. The latter is responsible for maintaining price stability and for stabilizing the economy in the monetary union as a whole. In case of a symmetric shock, i.e. highly correlated, the central bank observes a decline in output and in prices in the monetary union as a whole. Given its desire to stabilize, it lowers the interest rates. This tends to stimulate aggregate demand in both countries. However, if the shock is asymmetric (adverse shock in country *B*), the common central bank faces a dilemma. On the one hand, if it decides to support the demand in *B*, by lowering interest rates, it exacerbates inflationary pressures in *A*. On the other hand, if it raises interest rates

to curb inflation in *A*, it will deteriorate unemployment in *B*. It is likely that when observing the economic conditions prevailing in the union, the common central bank will decide that since prices and output have remain unchanged as a whole, no changes in policies are required. Therefore, the best monetary policy response to asymmetric shocks in a monetary union is to "do nothing"[5]. In case of asymmetric shocks, a supranational central bank never stabilizes or stabilizes too little from the point of view of individual member countries. Accordingly, this also means that fiscal policy has to play a more important role in macroeconomic stabilization.

However, disequilibria can do not last forever. In the Mundell's framework, wages and prices are assumed to be rigid in the short run, but over time, they are expected to be flexible. In country *B* excess of supply will lead to a decline in prices until the real exchange rate depreciates and the country reaches its equilibrium level. This will require a harsh recession and unemployment will rise, putting downward pressure on wages. In country *A* the opposite happens. Prices will rise and real exchange rate appreciates back to its equilibrium. The adjustment is likely to be neither easy, nor quickly. It requires a sustained unemployment and deflation in country *B*, and inflation in country *A*: these may be the costs of a monetary union when asymmetric shocks occur[6].

3. OCA Properties

Sharing OCA properties reduces the usefulness of nominal exchange rate changes, and therefore the cost of a monetary union, by reducing the likelihood of asymmetric shocks, or lessening their impact or facilitating their adjustment thereafter. The literature about the OCA properties usually reports the individual contributions as they have taken place over time[7], or by presenting them as a list of criteria apparently without any connection among them[8]. Here, instead, the OCA criteria are analyzed following a logical approach rather than a chronological one. This is because the OCA properties answer to different questions. In a logical path, the first question is related to the conditions that allow to avoid severe asymmetric shocks, or at least to minimize their frequency and intensity. Asymmetric shocks are the main problem within a currency area, if it is possible to reduce their likelihood, the costs of sharing a common currency almost disappear. The second question is whether the exchange rate is an useful instrument in presence of asymmetric shocks. If not, little is lost by giving it up. Finally, the third question is whether there are alternative mechanisms within a monetary area that allow to deal with asymmetric shocks.

1. What makes asymmetric shocks less likely?

[5] Lane P. R. (2000).
[6] Baldwin R., Wyplosz C. (2012: 409).
[7] See: Mongelli F. P. (2002).
[8] See: Tavlas G. S. (1993).

The traditional OCA theory has identified two main sources of asymmetric shocks: specialization of production and differences in inflation rates.

According to Kenen[9], the main origin of adverse shocks is external, related to shifts in spending patterns, which may be a consequence of changing tastes. Countries most likely to be affected by severe shocks are those that specialize in the production of a narrow range of goods, given that a decline in demand of a specific sector has significant aggregate consequence. Conversely, a country that produces a wide range of products will be little affected by a good-specific shock because that good weights relatively little in total production. In order to reduce the likelihood of asymmetric shocks, member States should be highly diversified and with comparable industrial structure. In this case a sector-specific shock is likely to be both symmetric and of little aggregate consequence. Accordingly, economies well-diversified and of similar structure are better candidates for currency areas.

External imbalances can arise also from persistent differences in national inflation rates. Fleming[10] notes that when inflation rates between countries are low and similar over time, terms of trade will also remain fairly stable. This will foster more equilibrated current account transactions and trade, reducing the need for nominal exchange rate adjustments. Giovanni Magnifico[11] introduces a broader concept of inflation, "national propensity to inflation" (NPI), as the relevant criteria to determine whether a group of countries should form a currency area. An optimum currency area is one that is composed by countries with similar national propensities to inflation. This "propensity" is a function of the inflation-unemployment trade-off existing in each country, with some countries having a stronger preference for inflation than others do. Magnifico's concept of national propensity to inflation opens many vistas when compared to the concept of inflation rate, because it refers to a set of structural and institutional elements which constitute building blocks of national economic sensibilities. From this perspective, the formation of an optimum currency area is not directly derived from maintaining equal inflation rates but, mostly, from the convergence of the economic structures of the member countries. As Magnifico stated: "Differences in the NPI would seem to depend inter alia on historical and social factors, on the system of industrial relations and the militancy of trade unions, on the structure of industry and its regional deployment, as well as on the building into the general public psychology of expectations of inflation or price stability generated by demand-management policies, which in the past consistently may, or may not, have aimed at guaranteeing the full-employment level of monetary demand, with little regard to changes in external competitiveness and payments balance"[12].

[9] Kenen P. B. (1969).
[10] Fleming. J. M. (1971).
[11] Magnifico G. (1971).
[12] Magnifico G. (1971: 12).

Divergences in inflation rates are considered a valid indicator of asymmetric shocks as they affect external competitiveness and therefore the need of exchange rate adjustments. Similar NPIs indicate not only that national monetary authorities have similar anti-inflationary preferences, but also that the production structure and labour market institutions of the participating countries are similar, so that it is unlikely that these countries have different monetary policy requirements when sharing a common currency.

2. Is exchange rate helpful to adjust asymmetric shocks?

McKinnon[13] raises an argument against the benefits of having exchange rate flexibility to deal with asymmetric shocks. He proposes that a group of regions or countries could comply with the definition of optimum currency area provided they are highly open economies. Economic openness has various dimensions. The most commonly referred ones are the degree of trade integration (i.e. the ratio of exports plus imports over GDP) with the countries contemplating to share a single currency, or the ratio of tradable to non-tradable goods and services. Openness is generally high in most small- or medium industrialized countries.

According to McKinnon, the more open an economy is, the less effective flexible exchange rates to both correct external imbalances and stabilize prices will be, because "A devaluation would be associated with a large domestic price-level increase and hence money illusion would not be much help in getting labor to accept a cut in real wages"[14]. In other words, the higher the degree of openness, the more changes in international prices of tradable goods are transmitted to the domestic cost of living, and the smaller the potential for money and/or exchange rate illusion by wage earners.

However, a "problem of inconsistency" emerges between the Kenen criterion and the McKinnon criterion[15]. Small economies are generally more open and, therefore, according to the economic openness property (McKinnon), they should preferably adopt a fixed exchange rate, or even integrate monetarily, with their main trade partners. However, the same small economies are more likely to be less differentiated in production than larger ones. In this case they would be better candidates for flexible exchange rates according to the diversification of production property (Kenen). Conversely, more differentiated economies are generally larger and have smaller trade sectors. On the one hand, they would form an optimum currency area according to Kenen; on the other hand, they would be better candidates for flexible exchange rates according to McKinnon.

In addition, if open economies, on the one hand, might prefer exchange-rate stability, on the other hand, they also require the ability to rapidly correct any fundamental misalignment of their exchange rate to adjust external disequilibria[16]. The McKinnon's mechanism of adjustment may happen in a

[13] McKinnon R. I. (1963).
[14] McKinnon R. I. (1963: 723).
[15] Tavlas G. S. (1994).
[16] Baimbridge M., Whyman P. B. (2014: 61).

relatively long period. Such over- or under-valuation might occur gradually, over time, as the competitiveness of the economy changes relative to others with whom the country has a fixed exchange rate. In the meantime, nominal exchange rate depreciation might produce its countercyclical effects, alleviate the immediate costs and give more time to affect the needed adjustment. De Grauwe identifies "several devaluations in the European Union prior to the start of the monetary union that were successful in restoring domestic and trade account equilibrium at a cost that was most probably lower than if it had not used the exchange rate instrument. The French devaluation of 1982-3 stands out as success stories. Similarity, the Belgian and Danish devaluations of 1982 were quite successful in re-establishing external equilibrium without significant costs in terms of unemployment"[17]. Mongelli adds that: "The Italian devaluation after the exit from the ERM in 1992 also contributed to a revival of the economy. These and other episodes illustrate that some nominal exchange rate adjustments can actually be quite effective under very specific circumstances: i.e., if they are accompanied by a serious attempt to correct the sources of the external disequilibrium, and if they are seen as one-off remedies"[18].

3. Are there mechanisms within a monetary union that make it easier to deal with asymmetric shocks?

The traditional OCA theory has identified four mechanisms within a monetary union that may lessen the impact of asymmetric shocks or facilitate their adjustment thereafter: wage flexibility; labour mobility; financial integration; fiscal integration.

When prices and wages are flexible between and within countries contemplating a single currency, the transition towards adjustment following a shock is less likely to be associated with sustained unemployment in one country and inflation in another. This will in turn diminish the need for nominal exchange rate adjustments, because wage-price flexibility takes the place of exchange rate variations. Unemployed workers in country *B* will reduce their wage claims, while in country *A* the excess of demand for labour will push up the wage rate. The reduction of wages in country *B* shifts the aggregate supply curve downwards, while the increase in wages in country *A* shifts the aggregate supply upwards (*from S to S'*). In *B* prices decline, making the country *B*'s products more competitive, and stimulating demand. The opposite occurs in *A (Figure 2)*. Therefore, countries in which the degree of wage and price flexibility is high, experience lower costs when they move towards a monetary union. Conversely, if nominal prices and wages are downward rigid, the adjustment is borne by employment and the loss of direct control over the nominal exchange rate instrument represents a substantial cost. In such a scenario Milton Friedman, by using an analogy between daylight savings time and floating exchange rates, observed that: *"it is far*

[17] De Grauwe P. (2014: 37).
[18] Mongelli F. P. (2002: 16).

simpler to allow one price to change, namely, the price of foreign exchange, than to rely upon changes in the multitude of prices that together constitute the internal price structure"[19].

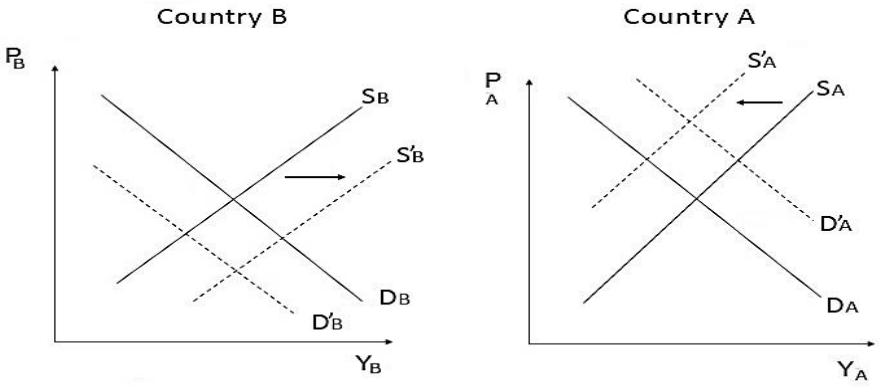

Figure 2 - Effects of Wage Flexibility

Robert Mundell[20] in his pioneering article proposed a second mechanism of adjustment: factor mobility, notably labour mobility. If, in the aftermath of an asymmetric shock, country *B* faces unemployment and country *A* faces inflationary pressure, both problems could be solved by a shift of labour. Unemployed workers in *B* move to *A* where there is excess demand for labour. This reallocation shifts the aggregate supply curve of both countries, upwards in *B*, and downwards in *A*, changing potential GDPs, so that the output gap is zero in both countries. The unemployment problem in *B* disappears, whereas the inflationary pressure in *A* vanishes, without the need to lower wages and prices in *B* and increase them in *A*. By this, Modell meant that labour mobility is the key condition to define a geographic domain as an optimum currency area.

In contrast to the previous criteria focused on the real side of the economies, Ingram[21] considers that what matters to determine the optimum size of a currency area are the financial characteristics of the economies. The mobility of financial resources can ease the financing of external imbalances, e.g. in the aftermath of a shock, and reduce the need for exchange rate adjustments. The higher the degree of financial markets integration the lower the need for exchange rate changes, because even modest changes in interest rates will provoke "equilibrating [capital] movements"[22] across national frontiers. Financial integration allows to cushion temporary disturbance through foreign capital inflows, because households and firms can more

[19] Friedman M. (1953: 153).
[20] Mundell R. A. (1961).
[21] Ingram J. C. (1959).
[22] Ingram J. C. (1959: 631).

easily decumulate financial assets or borrow on wider financial markets; it is not a substitute for adjustment when the asymmetric shock is permanent, but it can soften the real adjustment process.

Financial integration can also work as a "private insurance scheme". This consideration comes from a McKinnon's analysis[23] on the implications of a second contribution by Mundell[24] (the so called "Mundell II"). Financial markets integration allows member countries to cushion asymmetric shocks by diversifying their income sources. Portfolio diversification (i.e. cross-country financial asset holdings) operates as an income insurance, given that the country suffering an adverse shock can share the loss with the country not affected because residents of both countries hold claims on each other's output and assets. "Such ex ante insurance allows the smoothing of both temporary and permanent shocks as long as output is imperfectly correlated"[25].

The authors of OCA theory have identified another way to organize an insurance scheme against bad times in a monetary union: fiscal integration. This property was first stressed, again, by Peter Kenen in the late 1960s. He highlighted that: "It is a chief function of fiscal policy, using both sides of the budget, to offset or compensate for regional differences, whether in earned income or in unemployment rates. The large-scale transfer payments built into fiscal systems are interregional, not just interpersonal [...]"[26]. Countries sharing a budgetary union, or some fiscal transfer system, to redistribute funds to a member country adversely affected are facilitated in the adjustment to such a shock. In the aftermath of an asymmetric shock, a decline in output in country *B* leads to a reduction of income taxes and social security contributions of the supranational budget from that country, while tax revenues from *A* raise as a consequence of an increase in output there. At the same time, the common budget increases its spending (e.g. via welfare support) in *B*, and reduces these in *A*. The net result is that the common budget automatically redistributes income from *A* to *B*. This budgetary centralization allows to support consumption in *B*, while smoothing consumption in the opposite direction in *A*. In this way, such a transfer, stabilizing consumption in both countries, mitigates both the recession in country *B*, and the overheating in country *A*. This gives time for the shock to disappear, if it is temporary, or to work its effects through prices if it is longer lasting. If shocks occur randomly, the country that pays out a transfer today will be tomorrow's beneficiary. However, a fiscal-based insurance scheme requires an advanced degree of political integration, solidarity among member countries and willingness to undertake such a risk-sharing.

Accordingly, Mintz argued that "the major, and perhaps only, real condition for the institution [of monetary integration] is the political will to inte-

[23] McKinnon R. I. (2004).
[24] Mundell R. A. (1973).
[25] Mongelli F. P. (2008: 3).
[26] Kenen P. B. (1969: 47).

grate on the part of the prospective members"[27]. Political will fosters compliance with joint commitments, sustains cooperation on various economic policies, and encourages more institutional linkages.

To sum up the discussion above, according the traditional OCA theory, countries in a monetary union should be of similar production structure (Kenen (a)) and with similar national propensities to inflation (Fleming; Magnifico) in order to reduce the likelihood of asymmetric shocks. Moreover, the more open the member economies are, the less effective flexible exchange rates will be to correct external imbalances, and therefore the smaller the potential loss of giving up autonomous monetary policy (McKinnon). If the monetary union is hit by asymmetric shocks, wage flexibility (Friedman) and labour mobility (Mundell) allow to correct for such shocks. In addition, it helps to have an insurance mechanism between member countries that allows for income transfers to the country experiencing a negative shock. This mechanism can be private, through financial markets integration (Ingram; Mundell II), or public, through fiscal integration (Kenen (b)). These risk-sharing mechanisms do not substitute for adjustment when shock is permanent, but they soften the social consequences of the shock and give countries more time to effect the needed adjustment. Consequently, to the extent member countries face rigidities and have no well-organized insurance mechanisms, the cost of the monetary union may be substantial. If it is, national fiscal policies have to play a major role, given that they are the only available instrument at disposal of member countries to smooth the effects of adverse shocks.

[27] Mintz N. N. (1970: 33).

Chapter II
The "New" OCA Theory
1. Crisis of Keynesian Policies

During the 1950s and 1960s high economic growth and low unemployment were seen as objectives for which monetary and fiscal authorities were responsible. The intellectual paradigm prevailing at that time was that in an imperfect world with rigid prices and wages, monetary and fiscal policies could permanently affect real economic activity. There was a trade-off between inflation and unemployment, described by the Phillips curve[1], where lower unemployment levels are associated with higher inflation rates. This allowed governments to reach lower rate of unemployment by accepting a higher rate of inflation.

The traditional OCA theory was set in this theoretical framework. Like most macroeconomists in the post-Second World War period, Mundell believed that monetary could successfully manipulate aggregate demand to offset private-sector shocks, facilitating the adjustment of relative wages and prices in the aftermath of asymmetric shocks. Underpinning this belief was the assumption of stationary expectations. He assumed that agents behaved as if the current domestic price level, interest rates and exchange rate would hold indefinitely. They did not try to anticipate future movements of these variables, or in government policy itself. Price and wage rigidities and stationary expectations made the Mundell's model very consistent with the Keynesian theory. In these circumstances, entering in monetary union was a substantial cost, given that it implied the loss of exchange rate flexibility and the loss of an independent monetary policy and thus the possibility to choose the desired mix between inflation and unemployment[2].

However, the 1970s was a turning point. Confidence in the Keynesian model eroded as the OPEC's oil price shock created an economic scenario in which most industrial economies experienced a combination of both growing unemployment and inflation. This new phenomenon, the so called "stagflation", was ignored by the demand-oriented Keynesian approach. The temporary confusion caused by the apparent inability to solve the new economic problems generated widespread dissatisfaction with Keynesian economics and resulted in a sudden surge of interest in alternative paradigms[3]. Notably, the monetarism and the new classical macroeconomics, led by Milton Friedman and Robert Lucas respectively[4]. The monetarist critique and the rational expectations revolution postulating the ineffectiveness of monetary policy changed the perception on cost and benefits of a monetary union. The analytical framework behind the traditional OCA theory started to weaken: all its main tenets were called into question by new theoretical and empirical

[1] Phillips A. W. (1958).
[2] McKinnon R. I. (2004: 691); and Tavlas G. S. (1993: 669).
[3] Greenwald B., Stiglitz J. E. (1987).
[4] Two reference are: Baimbridge M., Whyman P. B. (2014); Verde A. (2012).

advancements. As a result of this whole reassessment, a "new" OCA theory emerged and the balance of judgments shifted in favor of monetary unions[5].

2. The Monetarist Counter-Revolution

Milton Friedman[6] incorporated in the Phillips Curve the "adaptive expectations" hypothesis, according to which economic agents form their inflation expectations for the future based on the past history of inflation. Therefore, if inflation has been higher than expected in the past, agents will revise their expectations for the future, thereby correcting the forecast error. This implies that there is always a temporary arbitrage between inflation and unemployment, but there is not any permanent arbitrage. Monetary authorities, by accelerating inflation, can only lower unemployment in the short-run; in the long-run, agents correct their inflation expectation errors and the Phillips Curve becomes vertical, meaning that the trade-off between inflation and growth vanishes. In other words, central banks cannot systematically lower the unemployment rate below its "natural level" by increasing money supply. If they seek to do that, they will generate a systematic inflation bias. Related to this, is the assertion that inflation is ultimately a monetary phenomenon. This is the "long-term monetary neutrality" principle. In the long run, i.e. after all adjustments in the economy have worked through, a change in the quantity of money in the economy (all other things being equal) will be reflected in a change in the general level of prices and will not induce permanent changes in real variables, such as real output and employment. The only way to lower unemployment permanently is by lowering the "natural rate of unemployment" (NRU), and this can only be achieved by "structural reforms". As a consequence, Friedman concluded that central banks must occupy themselves only with what they can effectively control, namely the price level.[7]

In parallel with the evolution of ideas, the policy of central banks also evolved. In the early 1980s, the Federal Reserve, led by Paul Volcker under the Reagan Administration, tamped the rising inflation by severely restricting monetary creation and changing market expectations. In the same period, the Bank of England, under the Thatcher government, did the same[8].

The monetarist paradigm also led to a new view about the nature of the relations between central banks and governments. The abandon of the idea that a central bank could choose between inflation and unemployment paved the way to a de-politicization of monetary policy and hence to greater emphasis on the technical rather than political role of central banks[9]. Since the

[5] Tavlas G. S. (1993).
[6] Friedman M. (1968).
[7] "[…] monetary authority should guide itself by magnitudes that it can control […] exchange rates, the price level as defined by some index, and the quantity of a monetary total"; Friedman M. (1968: 14-15).
[8] Magazzino C. (2010).
[9] Padoa-Schioppa T. (2004b: 18-19).

pressure to follow expansionary monetary policy aimed at stimulating economy typically came from politicians pursuing short-term electoral gains, the central bank must be protected from these political pressures by being independent. These theoretical prescriptions were given a strong empirical support by a series of econometric studies. The latter demonstrated that industrial countries in which central banks had a greater political independence had maintained a lower rate inflation on average, without experiencing costs in terms of higher unemployment or lower real output growth[10]. These results led to label central bank independence "*a free lunch*"[11].

In the wake of the "monetarist counter-revolution" of the 1970s, also Mundell changed his perspective. According to the so called Mundell II[12], entering in a monetary union was not any more a cost. On the contrary, in a world of full capital mobility exchange rate fluctuations are a source of instability and asymmetric shocks, instead of being a mechanism that allows to better deal with them.

3. The (Re)emergence of Neoclassical Economics

In contrast to the Friedman-monetarist hypothesis of "adaptive expectations" that allow for economic agents making systematic errors in their forecasts that, in turn, caused outcomes temporarily unequal to the natural equilibrium position, the new classical macroeconomics (NCM) introduced the alternative hypothesis of "rational expectations"[13]. When forming expectations about the future value of a variable, economic agents are assumed to make the most efficient usage of all available information about those factors they believe will determine the behavior of that variable, on the basis of what they collectively believe to be the true macroeconomic model of the economy. Thus, it is assumed that outcomes that are being forecast by agents do not differ systematically from the market equilibrium results. That is, they do not make systematic errors when predicting the future, and deviations from the natural equilibrium are only random. The latter are possible only because of incomplete information, uncertainty and the existence of "surprises" (e.g. unexpected changes in inflation) which may result in temporary forecasting errors. However, whilst not absolutely without error in every individual case, in aggregate (on average) the rational formation of expectations produces the correct results. Given that economic agents are forward-looking, aggregate demand management policies lose their ability to manipulate real economic activity, because there is no exploitable short-run Phillips Curve that policymakers can use[14].

[10] Two reference are: Grilli V., Masciandaro D., Tabellini G. (1991); Alesina A., Summers L. H. (1993).
[11] Grilli V., Masciandaro D., Tabellini G. (1991: 375).
[12] Mundell R. A. (1973).
[13] See Muth J. F. (1961).
[14] Baimbridge M., Whyman P. B. (2014: 27-28); Verde A. (2012: 95).

Based upon the neoclassical Walrasian tradition, the economy is perceived as being in continual short- and long-run equilibrium due to the interaction of fully rational agents and perfect price flexibility. When combined with classical assumptions of perfect competition and continuous market clearing, this new classical approach dismisses the existence of involuntary unemployment. Markets "if left free to operate without distortions, tend to converge spontaneously to "optimal" equilibria, characterized by full employment of resources and the maximization of a representative agent's welfare (the so-called Pareto efficiency). Price and wage flexibility, then, ensures that demand adapts to full employment supply (a principle known as Say's Law)"[15]. In such a condition, observed unemployment is voluntary, depending on preference of workers for leisure at the current real wage.

The policy implications of the NCM model are unequivocal: since the absence of involuntary unemployment, there is no need of discretionary demand-side interventions. The economy operates at the (unique) natural equilibrium level (apart from random disturbances), both in the short- and long-term, so that any increase in government spending causes the "crowding out" of an equal amount of private expenditure, implying the absence of a role for fiscal policy. In addition, money is considered just "*a veil*"[16]. Given the principle of money neutrality, an increase in money supply directly increases all prices and wages proportionately without effects on real variables. As a consequence, a monetary policy based on the objective of price stability is the best thing that a central bank can do to promote growth. The role of central banks is to keep the price level on a steady course in order to anchor private sector expectations and minimize deviations from the optimal path of the economy. In other words, by stabilizing inflation, the central bank also brings the output gap to zero, the so called "divine coincidence[17].

The NCM formed the bedrock of the neo-liberal doctrine that prevailed in the early 1990s by shifting the focus from the demand-side to the supply-side of the economy. Real income and the level of employment in the economy are essentially determined by supply-side factors[18]. These are technology, population growth, the preferences of economic agents and all institutional aspects of the economy (i.e. regulations determining the flexibility and competition of labour and product markets and incentives to supply labour and capital). The result is that the only effective economic policy relates supply-side measures aimed at increasing the potential output of the economy. Thus, the role of government is to implement "structural reforms" aiming at removing or minimizing those obstacles to free competition (i.e. informational asymmetries, externalities, excessive market power, rigidities)

[15] Saraceno F. (2015: 4).
[16] Lucas R. E. (1972).
[17] This term was coined by Blanchard and Galì: Blanchard O., Galì J. (2005).
[18] Kydland F. E., Prescott E.C. (1982).

that prevent markets from producing the best possible outcome in terms of resource allocation and growth[19].

4. The Credibility Issue

Following the incorporation of the rational expectations hypothesis into macroeconomic models, the theoretical literature on economic policy was dominated by the game-theoretic approach with policymakers seen to be engaged in a complicated dynamic game with private agents. In particular, the criterion of policy credibility became very important in evaluating the costs and benefits of a monetary union.

In this view, first stressed by Kydland and Prescott[20], and Barro and Gordon[21], governments that are free from rules can use discretionary policies, but they will be unable to persuade rational agents that they will keep low-inflation policies. Agents understand that if they lower their inflation expectations the government will have an incentive to "cheat" and, by creating an inflation "surprise", exploit the short-run Phillip Curve to increase employment temporarily. However, because people know the policymaker's incentives, these types of "surprises" cannot arise systematically in equilibrium. Economic agents adjust their inflationary expectations in order to eliminate a consistent pattern of surprises. In this case, the potential for creating inflation shocks, *ex post*, means that, in equilibrium, the average rates of inflation will be higher than otherwise. Thus, if a government has discretion, low-inflation declarations are time-inconsistent and not credible. Solutions to the time-inconsistency problem include contractual arrangements, monetary or price rules, delegation of decisions and institutional and legal constraints. These eliminate the potential for ex-post surprises. "Therefore, the equilibrium rates of inflation and monetary growth can be lowered by shifts from monetary institutions that allow discretion to ones that enforce rules"[22].

The question is whether these rules are credible. A country (*B)* with a track record of high-inflation could fix its exchange rate with a country (*A*) with a low-inflation reputation. This fixes the inflation rate of *B* at the *A* level. However, if country *B* has a reputation for breaking low inflation promises, economic agents will expect a devaluation and will adjust their expectations, so that the equilibrium inflation rate in *B* will end up being the same as before the exchange rate was fixed. Thus, the merely fixing exchange rate does not solve the problem because the fixed exchange rate rule is not more credible than a fixed inflation rate rule. Accordingly, Giavazzi and Giovannini[23] in the late 1980s proposed that for a country with a track record of high-inflation and a reputation for breaking low-inflation promises a way to

[19] Fitoussi J. P., Saraceno F. (2004: 6).
[20] Kydland F. E., Prescott E. C. (1977).
[21] Barro R. J., Gordon D. B. (1983).
[22] Barro R. J., Gordon D. B. (1983: 102).
[23] Giavazzi F., Giovannini A. (1989). In the same period, two other references are: Giavazzi F., Pagano M. (1985); and Giavazzi F., Pagano M. (1988).

immediately gain a low-inflation credibility was to "tie its hands" by giving up national monetary sovereignty and establishing a complete monetary union with a low-inflation country. Since country *B* has no more an independent monetary policy, it cannot devaluate, and the low-inflation commitment becomes credible. The establishment of a monetary union changes agents' inflation expectations so that the output and employment costs of attaining a low-inflation equilibrium are reduced. In other words, country *B* by joining a monetary union with the low-inflation country (*A*) has "borrow" credibility from that country, and has solved its high-inflation problem (providing that the new central bank of the monetary union has the same low-inflation credibility of *A*'s central bank). The direct implication is that what had been identified by the traditional OCA theory as a major cost of monetary unification, namely the loss of the ability to use a nationally-tailored monetary policy, ceases to be a cost. On the contrary, for inflation-prone countries joining a monetary union only leads to gains, given that this provides a quick transition to low-inflation equilibrium without heavy costs of disinflation[24]. This analysis was very influential prior the start of the EMU, especially in high-inflation countries (e.g. Italy) that perceived the entry in the euro area (i.e. sharing a currency with a country with strong low-inflation reputation like Germany) as "a free-lunch allowing them to introduce macroeconomic stability at zero cost"[25].

5. Endogeneity of OCA Properties

From the mid-1970s until the mid-1980s the traditional OCA theory was consigned "*to intellectual limbo*"[26]. In 1990 the *One market, One Money* Report pointed out that: "There is no ready-to-use theory for assessing the costs and benefits of EMU. Despite its early insights, the theory of optimum currency areas provides a too narrow and somewhat outdated framework of analysis"[27]. Paradoxically, that Report, although it held a critical view of the traditional OCA theory, greatly revitalized interest in the debate about the theory of monetary integration[28].

In the mid-1990s several authors started raising the issue of the endogenous effects of monetary integration: i.e., whether sharing a single currency may set in motion forces bringing countries closer together, thereby improving the rating of one or more OCA properties. This argument implies that even if a monetary union is established with non-optimal members, it will shift towards an optimal currency area "ex post". In particular, four main potential endogenous effects have been identified[29].

[24] Tavlas G. S. (1993); Dellas H., Tavlas G. S. (2009: 28).
[25] De Grauwe P. (2014: 46).
[26] Tavlas (1993).
[27] Emerson M., *et al.* (1990: 31).
[28] Mongelli F. P. (2002: 14).
[29] See: De Grauwe P., Mongelli F. P. (2005).

First, endogeneity of trade and similarity of shocks. Frankel and Rose[30] were the first to introduce the idea of endogeneity of OCA. Their argument was grounded on two main insights. The first insight is the so called "Rose effect" that argues that monetary integration, thanks to the elimination of exchange rate volatility, leads to a very significant deepening of reciprocal trade between the currency area's members States. Thus, the McKinnon criterion (the degree of economic openness) would be endogenous. In particular, Rose[31] found that pairs of countries that were part of a monetary union had trade flows among themselves that, on average, were 200% higher than those among pairs of countries that were not part of a monetary union. The Rose's findings were highly debated at the time because in contrast with previous empirical studies. For instance, in the mid-1980s an IMF's survey had found no robust evidence of a large negative effect of exchange rate volatility on trade[32]. The second insight postulates a positive link between trade integration and income correlation. This "optimistic view" argues that trade integration leads to less divergence among members of a currency union. Business cycles' synchronization will improve among member states after the adoption of the single currency; therefore, the cost of giving up their own national-level monetary policy will be minimized. The implication is that countries that join a monetary union "no matter what their motivation, may satisfy OCA criteria ex post even if they do not ex ante!"[33].

Second, endogeneity of production diversification. Frankel and Rose assumed that trade integration leads to a synchronization of business cycle, however, more trade integration within the monetary union may have a disquieting effect. If trade integration leads to more diversification of production, then also the Kenen criterion is endogenous and shocks more likely to be symmetric. If, instead, trade leads to more specialization, then the Kenen's diversification criterion may become less fulfilled and shocks within the monetary union will be asymmetric rather than symmetric.

The first view was defended by Emerson, Gros, Italianer, Pisani-Ferry and others in the already mentioned *One Market, One Money* Report. According to the EC report, asymmetric shocks in demand would occur less frequently in a monetary union, because trade between European countries is to a large degree intra-industry trade, and "Since intra-industry integration is characterized by the occurrence of economies of scale and product differentiation, the removal of barriers obstructing the exploitation of these advantages will increase intra-industry integration. Consequently, the completion of the internal market is likely to render the effects of sector-specific shocks more symmetric".[34] Again, the first Kenen criterion would be endogenous.

[30] Frankel J. A., Rose A. K. *(*1996).
[31] Rose A. K. (2000).
[32] International Monetary Fund (1984).
[33] Frankel J. A., Rose A. K. *(*1996: 3).
[34] Emerson M., *et al.* (1990: 142).

The second and opposite view is the "Krugman specialization hypothesis" that is based upon "Lessons of Massachusetts"[35], i.e., the economic developments experienced by the US over the last century. This hypothesis is rooted in trade theory and increasing returns to scale as the single currency removes some obstacles to trade and encourages economies of scale. According to Krugman, trade integration enhances specialization of each country's production ("regional specialization") since countries will tend to export more of those goods where they possess a comparative advantage. This, in turn, will reduce the income correlation so that if the country did not fully satisfy OCA criteria before they joined the monetary union, then trade integration may not generate a move towards satisfaction *ex post*. On the contrary, members of a currency area will become less diversified and less similar, and more vulnerable to asymmetric shocks. Thus, the Kenen criterion would not be endogenous and the "first" Mundell's analysis cannot be discarded. This "counter-endogeneity view" was defended, apart from Krugman, also by Bayoumi and Eichengreen[36]. The Krugman regional concentration hypothesis was partially contested by an OECD's study[37] in the late 1990s, which came to the conclusion that regional concentration of economic activities in the US had started to decline after decades of increasing concentration, thus giving further support to whom argue for a rapid monetary integration in Europe.

Third, endogeneity of private insurance mechanism. Monetary integration fosters financial integration, which in turn will play a central role in the functioning of monetary union. The argument is as follows. The elimination of the exchange rate risks eliminates an obstacle to free flow of financial assets and services. This promotes the integration, for instance, of banking sectors, money, bond, equity and mortgage markets. Financial integration has three main effects. Firstly, a well-integrated financial system contributes to a smooth and effective transmission of monetary policy throughout the currency area. Secondly, financial integration fosters an improved allocation of capital, higher efficiency and higher economic growth. Thirdly, fully integrated financial markets and diversified portfolio may be a significant source of insurance against asymmetric shocks. To the extent that monetary unification enhances financial integration, it will endogenously strengthen insurance against asymmetric shocks through different risk-sharing channels, thereby reducing the costs of giving up direct control over the exchange rate. In other words, the Mundell II criterion mentioned above would be endogenous.

Fourth, endogeneity of product and labour markets flexibility. By relinquishing the control of monetary policy to a supranational authority, member countries become unable to use their monetary policy to accommodate negative shocks. This will create incentives to liberalize the product and labour

[35] Krugman P. (1993).
[36] Bayoumi T., Eichengreen B. (1999).
[37] OECD (1999: 107).

market in order to rely more heavily on market-based adjustments[38]. In particular, Obstfeld[39], and Bertola[40] argued that a monetary union, by increasing the cost of labour rigidities, reduces the opposition to labour market reforms. When a country has its own currency, unions ask to use monetary policy in order to allow a nominal devaluation of exchange rate to regain competitiveness and boost the economy. A monetary union, by eliminating this possibility, may put pressure on labour unions to be more flexible about allowing adjustments to nominal and real wages. A second argument was raised by Blanchard and Giavazzi[41]. They highlighted that product market regulation create rents, which are enjoyed both by incumbent firms and labour unions. Unions would strenuously oppose to labour market reforms that reduce their rents. However, a single currency increases price transparency across member countries, and this, together with product market deregulation, improves competition, reducing the rents in the market to be shared by monopolistic firms and unions. The incentives for workers to appropriate such rents then decrease, reducing insider power, making labour unions weaker and leading to labour market deregulation. Which in turn increases price and wage flexibility. In this way, also the Friedman's OCA criterion becomes endogenous.

To sum up the discussion above, the so called "new" OCA theory formed the prevailing theoretical framework when the Treaty of Maastricht was negotiated. How interpreted here, it comprises four main elements: the monetarist view, the rational expectations revolution, the credibility theory, and the endogeneity of OCA paradigm. All four dramatically reduced the perceived costs from the loss of control over monetary policy and exchange rate. In this way, they shifted the balance of judgments in favor of monetary unions. The monetarist critique of the Phillips Curve restricted the objective of central banks to price stability. The rational expectations hypothesis, incorporated into the so-called new classical macroeconomics, greatly changed the role of economic policies, by shifting the focus from the demand-side to the supply-side of the economy. The credibility theory gave countries with a track record of relatively high inflation a strong argument for sharing a currency with low-inflation countries. Finally, the endogeneity of OCA criteria provided a theoretical argument for creating a currency area even amongst non-optimal members, thereby widening the geographic domain of any potential monetary union.

[38] Bean C. (1998).
[39] Obstfeld M. (1997).
[40] Bertola G. (1999).
[41] Blanchard O., Giavazzi F. (2001).

Chapter III
The Eurozone Governance
1. Maastricht Convergence Criteria

The Treaty of Maastricht was negotiated in 1991 on the basis of the Delors Report[80] and was signed in February 1992. Finally, it entered into force on 1 November 1993. With the exception of the United Kingdom and Denmark, which obtain an "opt out" clause, the signatories committed themselves to start the single currency at the fixed final date of 1st January 1999. The Treaty specified that all EU member States were expected to join the Economic and Monetary Union, however, it also introduced, for the first time, the idea that a major integration move could leave some countries out.

This decision reflected the previous debate on how to achieve monetary integration in Europe. The discussion was between the so-called "monetarists", championed by France, and the so called "economists", championed by Germany. The monetarists thought that monetary integration would have promoted economic convergence. Nominal convergence was not indispensable as EMU represented a change in policy regime. The credibility of the new common central bank would shape future expectations while past expectations would become irrelevant. Such a central bank could secure low inflation in all member countries. Instead, the economists stressed the need for a higher level of coordination of economic policies and they advocated a long-converge process prior to the establishment of a monetary union[81]. In the early 1990s, the macroeconomic situation differed widely from one country to another, and Germany, which was reluctant to abandon its highly stable currency, was concerned that some countries were not quite ready to adopt a currency that should have been "as strong as the Deutsche Mark"[82]. It insisted for a non-automatic admission to the EMU.

Finally, Maastricht resulted as the outcome of a deal between Germany, which agreed to abandon its strong currency, and the other countries, notably France, which wished to deal with the "impossible trinity principle"[83], moving from the Deutsch Mark-dominated and unstable Exchange Rate Mechanism (ERM) while keeping exchange rates stable. France received a quasi-irreversible agenda (with a very precise calendar) towards the EMU, in order to anchor post-reunification Germany to the EU, while Germany obtained

[80] Committee for the Study of Economic and Monetary Union (1989).
[81] Mongelli F. P. (2008: 10).
[82] Padoa-Schioppa T. (2004b: 67).
[83] This concept in macroeconomics refers to the impossibility for a group of countries to aim simultaneously at: i) fixed exchange rates; ii) full capital mobility; iii) independent domestic monetary policies. In the early 1980s, Tommaso Padoa-Schioppa turned this trio into the "inconsistent quartet", by adding a fourth element, free trade. By the adoption of the European Single Act (1986), capital movements were gradually liberalized within the Community, and this, together with the fixity of exchange rates provided by the ERM, made the Bundesbank *de facto* the only central bank free to pursue an its own monetary policy in Europe. See: Padoa-Schioppa T. (1982: 34-54).

some entry conditions, that it saw as a guarantee for a prior convergence of preferences towards its own economic culture by the other member States[84].

A transition process, built on three phases, was identified to certify which countries had adopted a culture of price stability, meaning that they had durably achieved the Bundesbank-style low inflation. In order to join the EMU, a country had to comply with five macroeconomic requirements. The requirements, the so called "Maastricht criteria", included convergence towards price stability, low long-term interest rates, exchange rate stability, and sound public finances (i.e. budget deficit and public debt targets)[85].

The entry criteria are a first clear example of the monetarist ideology of the Maastricht Treaty. They consist in five financial tests of convergence rather than the examination of real variables. The negotiators who prepared the Treaty basically ignored the traditional OCA prescriptions[86]. Except for the inflation rates requirement, the "Keynesian-inspired" OCA theory was silent about the EMU's convergence criteria. The Keynesian intellectual framework is, indeed, explicitly challenged by the entire construction of the EMU governance that is organized according to the neo-liberal doctrine that was prevailing in the early 1990s[87]. In particular, the "Maastricht philosophy" can be summarized with three main principles: price stability, fiscal discipline, labour market flexibility.

2. Price Stability: ECB Design and Strategy

In the early 1990s the architects of Maastricht Treaty designed the European Central Bank (ECB) following the theoretical prescriptions of monetarism and rational expectations. The establishment of an independent central bank with strong anti-inflationary preferences was seen as a way to bind politicians' hands against the electoral temptation of inducing unanticipated increases in price level. As commitment increases credibility, orthodox theory predicts that divergences between the central bank's policies and agents' expectations will become smaller. Therefore, lower costs and fewer delays are incurred when adjusting to monetary policy shifts.

These theoretical perspectives have given the ECB two fundamental features. On the one hand, a hierarchy between price stability and the other eco-

[84] Torres F. (2007).

[85] A country can join EMU only if (Article 140 TFEU): i) its inflation rate is not more than 1.5% higher than the average of the three lowest inflation rates among the EU member States; ii) its long-term interest rate is not more than 2% higher than the average observed in the three lowest inflation countries; iii) it has joined the ERM II and has not experienced a devaluation during the two years preceding the entrance into the EMU; iv) its government budget deficit is not higher than 3% of its GDP (if it is, the ratio should decline "substantially and continuously" and come close to the reference value; or, alternatively, the excess over the reference value should be "exceptional and temporary" and remain close to the reference value); v) its government debt do not exceed 60% of GDP (if it does, the ratio should "sufficiently diminish and approach the reference value at a satisfactory pace").

[86] Baldwin C., Wyplosz C. (2012: 427).

[87] Fitoussi J. P., Saraceno F. (2004: 2).

nomic objectives, on the other hand, a de-politicization of monetary policy and hence a greater independence of the central bank. This design is very consistent with the Bundesbank's model, of which the ECB claims the heritage. Not surprisingly, the ECB's statute is in many respects similar to the Bundesbank 1957 Act[88].

Article 127 TFEU specifies that "The primary objective of the European System of Central Banks (ESCB) shall be to maintain price stability". The same article adds: "Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union as laid down in Article 3 of the Treaty on European Union"[89]. The concept is reiterated in Article 2 of the ECB's Statute where an identical text is reproduced. Therefore, the Treaty recognizes that the monetary policy is part of a broader set of policies; however, it defines a hierarchy among the objectives of the central bank. First, price stability, and only insofar as price stability is not endangered, the ECB can support the other objectives of the Union. These include: "the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress" (Article 3 TEU).

To protect the ECB and the price stability objective from political interference, the Treaty erects a "wall" around the central bank. Article 130 TFEU states that "[…] neither the European Central Bank, nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Union institutions, bodies, offices or agencies, from any government of a Member State or from any other body […]". Thus, the Treaty removed monetary policy management from the realm of actions directly conducted by governments, and hence from the pressure of the day-to-day political process. Further protection to the independence of the ECB and its objective of maintaining price stability is provided by Article 123 TFEU which introduces the principle of no public debt monetization: "Overdraft facilities or any other type of credit facility with the European Central Bank or with the central banks of the Member States in favor of Union institutions, bodies, offices or agencies, central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of Member States shall be prohibited, as shall the purchase directly from them by the European Central Bank or national central banks of debt instruments". Through its incorporation in the Treaty, central bank independence was given the most solid constitutional basis. Its amendment goes

[88] See: Alesina A., Grilli V. (1991); and Magnifico G. (2008).

[89] For instance, the Bundesbank's 1957 Statute in Article 3 states that the Bundesbank functions "aim to safeguarding the currency" (i.e. price stability). In Article 12, it states that "The Deutsche Bundesbank shall be bound, in so far as is consistent with its functions, to support the general economic policy of the Federal Government", however, the same Article adds that "In the exercise of the powers conferred on it under this Law it shall be independent of instructions of the Federal Government".

beyond the power of individual member States and the European Parliament. It requires unanimity among all EU governments, and a ratification process in all member States in accordance with national constitutional requirements.

In spite of a great degree of independence, the Treaty does not request to the ECB a comparable degree of accountability. Formally, the ECB operates under the control of the European Parliament. Its statute requires that an annual report must be sent to the Parliament, as well as to the Council, the European Commission and the European Council. Moreover, the ECB President appears before the European Parliament's Economic and Monetary Affairs Committee every quarter. However, when the President of the ECB appears before the European Parliament, he faces an institution that has no power to change the statute of the central bank. On the contrary, when the Chairman of the U.S. Federal Reserve or the President of the Deutsche Bundesbank appear before their respective parliaments, they face an institution that can change their statutes by a simple majority. In addition, except for extreme cases for serious misconducts, which included the intervention of the European Court of Justice, there is not possibility of sanctions against the ECB. No political institutions in Europe are capable to exerting a control over the performance of the ECB's Executive Board members. Therefore, the ECB is probably the most independent central bank among the major central banks in the world, while the degree of accountability to which it is subjected appears to be weaker than in others central banks[90].

A further concern about the lack of democratic accountability of the ECB emerges in relation to the definition of the objectives of monetary policy. The Treaty does not give to the concept of price stability a precise content, and it is vague about the secondary objectives. This has allowed the ECB to give its own interpretation of its mandate. In October 1998 the ECB's Governing Council announced that a key aspect of monetary policy strategy was a quantitative definition of price stability. Furthermore, in order to assess risks to price stability, the ECB would make use of "two pillars": a monetary analysis and an economic analysis[91].

In relation to the quantitative definition, the ECB defined price stability as "a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2%", which is "to be maintained over the medium term". Such an announcement is supposed to enhance the transparency of the overall monetary policy framework and provide a clear and measurable benchmark against which to hold the ECB accountable. Furthermore, it gives guidance to economic agents' expectations of future price developments, thereby helping to stabilize the economy[92]. However, as this definition did not have a lower bound, it led at some point of fears that the ECB would not be concerned with deflation. Therefore, a gradual change occurred in the ECB's communication and strategy. First, in early 2002, the

[90] De Grauwe P. (1999).
[91] ECB (1998a).
[92] ECB (2011: 64).

ECB ceased to claim that it was aiming at an inflation rate "safely below 2 percent"[93]. Second, in May 2003 the Governing Council further clarified the definition of price stability by stating that it "will aim to maintain inflation rates close to 2%"[94]. The focus was maintained "over the medium term". This means that if inflation suddenly increases above the target range due to large disturbance (for instance, for a supply shock, such as an increase in oil price), the ECB will not immediately react with a fine-tuning operation; it will allow for a gradual adjustment back to the target[95].

With regard to the first pillar of the strategy, its key characteristic is the announcement of a reference value for the annual growth of M3[96]. Here, it is clear the reference to the Bundesbank. Money stock targeting, in fact, was (at least officially) the strategy adopted by the German central bank, which itself was much influenced by the monetarist "counter-revolution"[97]. Since, in the monetarist view, inflation is ultimately a monetary phenomenon, money should be given a prominent role in the central bank's strategy. Furthermore, by signaling continuity of the Bundesbank's strategy, the ECB hoped to quickly establish comparable low-inflation credibility[98]. However, the role of money and monetary analysis has generated controversy regarding the robustness of the chosen leading indicator's properties with respect to price developments, on the grounds that the correlation between money growth and inflation appears very weak. During the pre-crisis period (1999-2008) the ECB was successful to keeping inflation around the target, despite the annual growth rate of M3 systematically exceeded the reference value of 4.5% that the ECB had said should not be surpassed to maintain inflation below 2%[99]. There is strong evidence that the Bundesbank itself was not very successful in its money stock targeting, although it was successful to keeping inflation low[100].

In regard to the second pillar, it consists in a wide range of economic and financial variables that provide important information to forecast price developments in short-medium term. These variables include measures of real activity, wages, exchange rate, asset prices, fiscal policy indicators, together with indicators of business and consumer confidence. Financial market prices, for instance, incorporate investors' expectations about future economic

[93] Padoa-Schioppa T. (2004b: 79).
[94] ECB (2003).
[95] ECB (2011: 67-68).
[96] The reference value for money growth is defined according to the quantity theory equation: $mv=py$, where m is the money stock (M3), v is the velocity of money, p is the price level, y is real GDP. In terms of annual variations: $\Delta m = \Delta p + \Delta y + \Delta v$. In December 1998, the ECB announced its reference value for M3 growth, based on the following medium-term assumptions: Δv = - 0.5% / - 1%; Δy 2% / 2.5%. Given the euro area inflation target (Δp) which is at most 2%, the Governing Council decided to set the reference value for M3 growth (Δm) at 4.5% per annum. ECB (1998b).
[97] Baldwin R., Wyplosz C. (2012: 447).
[98] Baimbridge M., Whyman P. B. (2014: 118).
[99] De Grauwe P. (2014: 192-196).
[100] See: Clarida R., Gertler M. (1996); and Bernanke B. S., Mihov I. (1996).

developments. As such, they are a valuable source of information for monetary policymakers. In particular, the term structures of nominal and real bond yields can be used to gauge private sector expectations of future interest rates and inflation[101].

The ECB has (arbitrarily) given to the price stability target a quantitative definition, and has designed a strategy to best serve this objective, however, it has not given elaboration for the Treaty's provision to "support the general economic policies of the Union". The other objectives, i.e. full employment that the ECB should pursue (provided price stability is guaranteed) have been left quite vague in the Treaty and the ECB has basically interpreted this to mean that it has to pursue only price stability. It has restricted its area of responsibility to inflation, so that it is accountable only for inflation performance. One could argue that this is inconsistent with the Maastricht Treaty[102].

Surely, this represents a major difference with the U.S. Federal Reserve (FED). The latter has a "dual mandate", price stability and full employment. There is no hierarchy between the two objectives. When in the early 1980s the FED was pursuing very restrictive monetary policies to fight inflation, its Chairman, Paul Volker, came under scrutiny of the Senate for ignoring the employment side of the dual mandate[103]. The different approach between the FED and the ECB reflect the intellectual environment in which they emerged[104]. The "Full Employment and Balanced Growth Act", which amended in the 1970s the Federal Reserve Act, was adopted in a period in which the Keynesian approach was still prevalent in the academic and policy debate. On the contrary, the ECB's focus on price stability is consistent with the neoclassical prescriptions prevailing when its statute was being defined.

According to the ECB's philosophy, inflation targeting is supposed to gives guidance to expectations of future price developments, thereby making it possible for the central bank, not only to stabilize inflation, but also to do the best in stabilizing output around its natural level (the already mentioned "divine coincidence"). As stated in the first *ECB Monthly Bulletin* of January 1999, "maintaining price stability in itself contributes to the achievement of output or employment goals. The logic underlying both the Treaty and the Eurosystem's stability oriented monetary policy strategy is therefore that output and employment goals are best served by a monetary policy that focuses on price stability"[105]. Coherently with its theoretical foundations, the ECB argues that the major part of the Eurozone's high unemployment originates from structural deficiencies on the supply-side of its member states' economies. It would be "caused mainly by the inflexibility of euro area labour and goods markets resulting, in part, from excessive or inappropriate

[101] ECB (2011: 71-77).
[102] De Grauwe P. (2014: 184).
[103] Steelman A. (2013).
[104] Saraceno F. (2015a: 3).
[105] ECB (1999: 40).

regulation in these markets"[106]. Consequently, the ECB denies responsibility for increasing aggregate demand to lower unemployment, since no scope exists to reduce unemployment without accelerating inflation. This rhetoric has been present basically in all ECB documents and Presidents' speeches since 1999.

3. Fiscal Discipline: the Stability and Growth Pact

The Eurozone is based on a unique arrangement of public-finance relations whereby fiscal policies remain decentralized with regard to EU member states, but they are subjected to rules which restrict national autonomy and flexibility. This is provided by the Stability and Growth Pact (SGP), which complements and tightens the fiscal provisions laid down in the Treaties.

The Delors Report stressed the importance of avoiding "unsustainable differences between individual member countries in public-sector borrowing requirements and place binding constraints on the size and the financing of budget deficits". It argued that given the potential impact of national fiscal policies "on the overall domestic and external economic situation of the Community and their implications for the conduct of a common monetary policy", there was the need for "binding procedures and rules" and for the "transfer of decision-making power from member States to the Community"[107].

The rationale commonly asserted in favor of fiscal rules is to correct the so-called "deficit bias" of fiscal policy[108]. This bias reflects the tendency of governments to run budget deficits for electoral reasons, and spend more than they can afford today, passing the burden of this spending on to future tax payers[109]. Moreover, proponents of fiscal rules argue that a monetary union is likely to increase the fiscal profligacy of national governments[110]. When a sovereign country issues debt denominated in the domestic currency, the interest rate it has to pay reflects a risk premium which takes into account, apart from the risk of default, the expected risk of currency devaluation. Excessive government borrowing in a given country with a tradition of lax economic policies normally contributes to expectations that its currency will devalue. Purchasers of this country's government debt demand a risk premium to compensate for this, and in this way exert a form of discipline on the government's fiscal behavior. However, the adoption of a single currency eliminates exchange rate risk. As a result, there is no longer any devaluation risk for the holder of this debt. The risk of default remains, however, investors could consider the membership to a monetary union as a kind of implicit bailout guarantee provided by the other member countries, and there-

[106] ECB (1999: 41).
[107] Committee for the study of economic and monetary union (1989: paragraph 19).
[108] Persson T., Tabellini G. (1999: chapter 24).
[109] Hallerberg M., Von Hagen J. (1999: 209-232).
[110] González-Páramo J. M. (2005).

fore do not correctly price the risk of default of the single countries[111]. The elimination of both risk of default and risk of devaluation may convince investors to consider different currency union's government bonds as close substitutes. National authorities are no more penalized by the market, and this may lead to excessive budget deficit and debt. This distrust in the ability of markets to impose fiscal discipline upon member governments was part of the Delors Report. The latter highlighted that "experience suggests that market perceptions do not necessarily provide strong and compelling signals and that access to a large capital market may for some time even facilitate the financing of economic imbalances". This conclusion provided a strong argument for the adoption of fiscal rules in the EMU during the negotiation in Maastricht[112].

High deficits and growing debt levels are a cause for concern in a monetary union because of their negative spillover effects on the other member countries. There is a broad consensus in the literature about four main potential spillovers.

First, excessive spending in one or several member states will increase the recourse to the capital markets of the monetary union, thereby pushing up interest rates for the entire union. Hence, governments will not incur the full cost of additional spending, since the cost is shared by the union as a whole. Higher financing costs increase the costs of government debts of the other countries, requiring them to undertake more restrictive fiscal policies. Moreover, higher interest rates discourage private investment. Consequently, higher interest rates will lead to an inefficient intertemporal resource allocation and lower growth rates[113].

Second, high fiscal deficits in one country might convince markets that its public debt is unsustainable, and start to sell the relative bonds. The price of the bonds consequently will fall. Banks, which generally hold large amounts of sovereign bonds, will lose a lot of capital, possibly violating the minimum capital requirements, which might cause a bank run. While rising interest rates might push the same government into default. Bond markets in other countries might be negatively affected too, as investors could view the whole monetary union with suspicious. The ultimate result would be massive capital outflows, a collapse of the exchange rate and of the stock markets, and a deep recession in the whole monetary union[114].

Third, the mere threat of one member country's default might force the other States of the union to bailout the nearly bankruptcy government in order to avoid the financial instability scenario described above. This may incentivize moral hazard by member countries[115].

[111] De Grauwe P. (2014: 219).
[112] See: Padoa-Schioppa T. (2000: 141-147); and Padoa-Schioppa T. (2004: 287-288).
[113] Neck, R., Sturm J. E. (2008: 4-5).
[114] Baldwin R., Wyplosz C. (2012: 472).
[115] Baldwin R., Wyplosz C. (2012: 472).

Fourth, unsound fiscal policies have the potential to undermine confidence in a stability-oriented monetary policy. Firstly, fiscal expansion which boosts domestic demand can increase inflationary pressures in the country concerned. Given that overspending in one or several member States leads to a heterogeneous inflation pattern across the union, the determination of an adequate monetary policy will be highly complicated[116]. Secondly, and of greater concern, the upward movement of the interest rates in the monetary union, following unsustainable fiscal policies, may put pressure on the central bank to intervene. To prevent the default of a member country and the consequent collapse of the banking system, the central bank could decide to relax its monetary policy and make general credit more abundant at a lower cost, or purchase sovereign bonds of the country in distress[117]. This is likely to lead to higher inflation. Indeed, the mere expectation that government borrowing will ultimately be financed by money creation could result in higher inflation expectations[118].

Given these potential free-rider problems and moral hazard risks arising from the ability of individual member States from borrowing in a monetary union, and following the recommendations from the Delors Report, the founding fathers of the euro incorporated into the Maastricht Treaty several safeguards to help prevent spillovers from national fiscal policies to the common monetary policy. First, the European System of Central Banks has been granted a high degree of independence (Article 130 TFEU). Second, the monetary financing of government borrowing by the ECB or national central banks is strictly forbidden (Article 123 TFEU). Third, under the so-called "no-bail-out clause", each member country is responsible for serving its debt. This implies that the bailing out of a member State in financial difficulty, either by the European Union, or by other member States, is excluded (Article 125 TFEU). Fourth, excessive fiscal deficits by member countries are prohibited. Where it is considered "excessive" an annual government deficit over 3% of GDP, unless the excess is close to the reference value and it is declining "substantially and continuously" or it is only "exceptional and temporary", and a government debt over 60% of GDP, "unless the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace" (Art. 126 TFEU, and the Protocol annexed to the Treaties).

The debate about the definition of quantitative ceilings on debt and deficit was highly complicated in Maastricht. The Delors report stressed the need of "binding rules", but it did not mention precise quantitative thresholds. The economic literature offered no clear criteria to identify "excessive deficits"[119]. Therefore, the particular levels were chosen basically arbitrarily. The reference value for public debt was set at 60% of GDP simply because it was the average debt level in the Community when the Maastricht Treaty

[116] Neck R., Sturm J. E. (2008: 5).
[117] Eichengreen B., Wyplosz, C. (1998).
[118] González-Páramo J. M. (2005).
[119] Padoa-Schioppa T. (2004a: 289).

was being negotiated in December 1991[120]. There were no particular reasons to believe that that average level was optimal for each member State and for the monetary union as a whole[121]. The reference value for fiscal deficits followed. In fact, it could be seen as compatible with a debt ceiling of 60% of GDP. If nominal GDP grows by 5% per year, the budget deficit must not be over 3% of GDP in order to maintain constant the debt to GDP ratio at 60%[122]. At the time, the European Commission's studies hypothesized an average long-run growth rate of real GDP of 3% per year for the member countries[123]. Hence, the implicit assumption was an annual inflation rate at 2%. Indeed, since 1999 the latter has become the inflation target of the "stability-oriented" monetary policy of the ECB[124]. Overall, these assumptions, although they seemed realistic at the time, appear artificial. The entire rule is conditional on the nominal growth rate of GDP. A variable beyond the control of governments and that can greatly differ among member countries and over time.

There may be a further and deeper economic logic behind the choice of the 3% numerical value for the deficit-GDP ratio. In Maastricht there was a long discussion among negotiators on the possibility to adopt a "golden rule", according to which only public expenditure for investments can be financed with borrowing, while current expenditure must be covered with current revenue[125]. In the same period also a number of European Commission documents referred to a "golden rule for public finance"[126]. Here, the rationale for the 3% of GDP deficit ceiling. Germany had long operated a "golden rule" which allowed budget deficits for public investments around 3% of GDP[127]. Moreover, in 1991 the share of general government fixed capital formation in the Community was equal to 3% of GDP[128]. In these sense, the 3% deficit limit could be interpreted as implementing the idea that borrowing should be used for investment purposes. An explicit "golden rule" was not adopted in Maastricht mainly because of a lack of a common definition on the concept of investment among member States[129]. However, Article 126, paragraph 3 TFEU, states that the Commission, when assessing deviations from the 3% of GDP deficit limit by member countries, takes into account "whether the government deficit exceeds government investment ex-

[120] This interpretation is confirmed in Padoa-Schioppa T. (2004a: 291).
[121] Buiter W. H., Corsetti G., Roubini N. (1992: 10).
[122] The formula determining the budget deficit needed to stabilize the government debt is: $d = g/(1+g)\ b$ where b is the (steady state) level at which the government debt level is to be maintained, as a percentage of GDP; g is the nominal growth rate of GDP; d is the government budget deficit as a percentage of GDP. If $b = 60\%$, and $g = 5\%$, then $d = 3\%$. This interpretation is confirmed in Padoa-Schioppa T. (2004a: 291).
[123] Commission of European Communities (1991).
[124] ECB (1998a).
[125] Padoa-Schioppa T. (2004a: 289).
[126] For example, Commission of European Communities (1991)
[127] This interpretation is suggested by Baldwin R., Wyplosz C. (2012: 437).
[128] This interpretation is suggested by Buiter W. H., Corsetti G., Roubini N. (1992: 11).
[129] Padoa-Schioppa T. (2004a: 289).

penditure". This means that public expenditure for investments has the potential to justify government deficits above the reference value. This provision can be considered an outcome of the discussion held in Maastricht about the "golden rule".

Although the Maastricht Treaty provisions made use of numerical targets and emphasized fiscal prudence, they let the practical details on the procedure to be followed in case of "excessive deficits", allowing a considerable room for judgement and interpretation. In the run-up to the introduction of the euro, Germany voiced concerns that member States would backtrack on fiscal consolidation once the 'carrot' of EMU entry would no longer be available, with possible spillovers on other Member States via the common monetary policy[130]. These worries led German Finance minister Theo Waigel to call for virtual automaticity in the EU budgetary surveillance procedures, thus limiting the room for judgment by the Commission and the Council. Automatic procedures leading to large financial sanctions for Member States that did not comply were to provide an important dissuasive effect, and hence an incentive for Member States to pursue more ambitious budgetary targets. At the Dublin European Council in December 1996 an agreement was reached for the "Stability and Growth Pact", where the term "growth" was explicitly requested by the French government as a symbolic addition to the initially called Stability Pact. The SGP was finally set up at the Council meeting in Amsterdam in June 1997 by the adoption of two Regulations, and fully operational by January 1999[131].

The SGP, on the legal basis of Articles 121 TFEU and 126 TFEU, enforced fiscal discipline as a permanent feature of EMU by: i) requiring member States to submit Stability (for euro area countries) or Convergence (for non-euro member States) Programmes with an annual frequency; ii) introducing a medium-term budgetary objective (MTO) of "close to balance or in surplus"; iii) specifying the conditions for the application of the excessive deficit procedure (EDP) established by, but not elaborated in, the Treaty, including strict deadlines for the correction of excessive deficits; iv) imposing financial penalties on member countries which do not promptly correct excessive deficits.

The SGP provisions removed any doubt on the status of the 3% of GDP reference value. If it could be initially perceived as a target, now it was clear that it was to be interpreted as a ceiling[132]. This ceiling could only be breached in "exceptional circumstances", i.e. a severe economic downturn or an "usual event" outside of the control of the country concerned. The MTO was originally set in nominal terms; however, since 2005 it has been defined

[130] Van den Noord P., Döhring B., *et al.* (2008: 5-6).
[131] Council Regulation (EC) No. 1466/97 "on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies"; Council Regulation (EC) No 1467/97 "on speeding up and clarifying the implementation of the excessive deficit procedure".
[132] Van den Noord P., Döhring B., *et al.* (2008: 6).

in structural terms, i.e. a cyclically-adjusted general government budget position, net of one-off and temporary measures. The MTO should remain within a range between -1% of GDP and balance or surplus, in order to provide a "safety margin" with respect to the 3% of GDP deficit limit. The fundamental idea is that the budget should be brought into surplus in good times in order to allow the automatic stabilizers to operate in bad times without trespassing the 3% deficit ceiling[133].

Hence, the SGP seeks to achieve a balance between constraining national fiscal policy to protect the ECB and establishing credibility and permitting limited flexibility for counter-cyclical fiscal policies during economic downturns. Buti and van den Noord have argued that the SGP is "unquestionably the most stringent supranational 'commitment technology' ever adopted by sovereign governments on a voluntary basis in the attempt to establish and maintain sound public finances"[134]. In consistency with the neoclassical theoretical framework, "fiscal discipline" is considered by European policymakers "fundamental" for macroeconomic stability and, therefore, for laying the foundations for future economic growth[135]. While the SGP forces countries to rely solely on automatic stabilizers to cushion cyclical (temporary) fluctuations, at the same time, no active macroeconomic stabilization role is conferred upon the EU budget that "shall be in balance"[136].

4. Labour Market Flexibility: the Lisbon Strategy

In Europe the term "Eurosclerosis" was coined to describe a pattern of high unemployment, slow job creation, low participation to the labour force and weakening overall economic growth during the 1980s and the 1990s[137]. *Eurosclerosis* contrasted with the more dynamic experience of the United States, where economic expansion was accompanied by high job growth. Since then, a rich literature has emerged illustrating the role played by structural rigidities in product and labour markets. Coherently with the neoclassical theory, in Europe the dominant view is that the high and persistent levels of unemployment in most member countries is mainly the result of higher wage rigidity in the EU. The latter arises from rigid labour market institutions, including: wage bargaining arrangements, labour unions power, employment protection, generous unemployment insurance systems, and minimum wage provisions[138]. Low wage flexibility in turn contributes to the lack of price flexibility.

Wage and price rigidities are source of concern for the sustainability of a monetary union. As discussed in Chapter 1, when countries face permanent

[133] European Commission (2013: 20).
[134] Buti M., van den Noord P. (2003: 4).
[135] Duisenberg W. F. (1997).
[136] Article 310, paragraph 1, TFEU.
[137] The term was coined by Giersch Herbert during a lecture delivered at the Regional Meeting of the Mont Pelerin Society in Sydney in August 1985, then published in Herbert G. (1985).
[138] See: Blanchard O. (1999); and Blanchard O., Wolfers J. (2000).

asymmetric shocks, requiring changes in relative prices, the impossibility to use the exchange rate can be a high cost. If nominal prices and wages are downward rigid, the adjustment is likely to be associated with sustained unemployment. As noted by Friedman[139], and later by Mundell[140], countries that experience asymmetry in output and employment growth need much flexibility in their labour markets because this facilitates the adjustment process in the very short-run, thereby making the monetary union more sustainable. The lower the degree of symmetry, the greater is the need of flexibility in the labour markets[141].

According to the "Maastricht philosophy", the EMU can be made more sustainable only by introducing structural reforms aiming at increasing wage and price flexibility. Coherently, the then President of the ECB Willem Duisenberg, in his first speech after the launch of the euro, in January 1999, argued that: "[…] continued wage moderation in both the public and private sectors would contribute to reducing the unacceptably high level of unemployment in many parts of the euro area. Unemployment in the euro area is largely structural in origin. […] Only effective structural policies that improve the flexibility and efficiency of labour and goods markets can reduce unemployment in a successful and lasting manner"[142].

The theory of endogeneity of OCA assumes that a monetary union naturally strengthens the incentives for structural reforms, simply because "there is no alternative": having lost direct control over national monetary policy, euro area countries have to enforce market-based adjustment mechanisms in order to cope with adverse shocks[143]. Moreover, the enhanced price transparency for goods and services (in addition to product market deregulation) enhances competition, reducing the rents to be shared. This decreases the incentives for workers to appropriate such rents, makes labour unions weaker and finally leads to labour market deregulation[144].

In addition to these market-based forces, there are also institutional forces at play. Initiatives to promote structural reforms have been at the center of policy making in the EU over the last two decades. Considering the broad governance structure of EMU, it is possible to identify an "exogeneity of OCA"[145], i.e. institutional processes which pressure countries that score below others (e.g. in terms of growth and employment) to undertake structural reforms in order to improve their performance. Such a pressure comes from the European Commission, the ECB, as well as the governance framework of economic policy coordination in the EU, which includes the peer-reviews among member States within the ECOFIN and the Eurogroup.

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[139] Friedman M. (1953).
[140] Mundell R. A. (1961).
[141] De Grauwe P. (2006).
[142] Duisenberg W. F. (1999).
[143] Bertola G. (1999); and Obstfeld M. (1997).
[144] Blanchard, O., Giavazzi, F. (2001).
[145] Mongelli F. P. (2008: 24).

The "Lisbon Agenda" is one of the clearest examples of the "exogeneity of OCA". It was first adopted by the European Council in Lisbon in March 2000[146] (in relation to the period 2000-2010), then revised in 2005[147] and finally re-launched in 2010[148] (for the years 2010 to 2020). It sets out a strategy that aims at addressing the issues of low productivity and stagnation of economic growth in the EU. In particular, the Lisbon Strategy (today called "Europe 2020") aims to stimulate growth and create more jobs, while making the economy greener and more innovative. The belief is that enhancing knowledge contributes to boosting innovation, enhancing productivity and supporting the economy. In the framework of the Lisbon Strategy's objectives, various reports and guidelines are provided as a part of an annual coordination cycle. These include a set of Integrated Guidelines (IGs), formed by a package of the Broad Economic Policies Guidelines (BEPGs, Article 121 TFEU) and Employment Guidelines (EGs, Article 148 TFEU)[149]. Moreover, member States have to present National Reform Programmes (NRPs) on which the European Commission annually publishes assessments and country-specific recommendations.

The Agenda puts particular emphasis on structural reforms in the labour market; more precisely, it endorses the so-called "flexicurity". In June 2007 the Commission and the member States reached a consensus on four policy components on which flexicurity policies should be designed and implemented: i) flexible and reliable contractual arrangements through modern labour laws, collective agreements and work organization; ii) comprehensive lifelong learning (LLL) strategies to ensure the continual adaptability and employability of workers; iii) effective active labour market policies (ALMPs) to support people cope with rapid changes, reduce unemployment spells and ease transitions to new jobs; iv) modern social security systems that provide adequate income support, encourage employment and facilitate labour market mobility[150]. In 2007 the EU officially included the concept and the policy strategies connected to the flexicurity into its European Employment Strategy. Since then, member countries have to report to the European Commission about their individual improvements related to flexicurity[151]. The fundamental idea is that "a high degree of adaptability is also vital to promote productivity growth and to facilitate job creation in rapidly growing sectors. […] More flexibility combined with security will require a greater ability of workers and enterprises to anticipate, trigger and absorb change. Greater adaptability should also contribute to ensuring that wage la-

[146] European Council (2000).
[147] Commission of the European Communities (2005).
[148] European Commission (2010).
[149] European Commission (2010).
[150] Commission of the European Communities (2007: 5).
[151] Council of the European Union (2008).

bour cost developments do not exceed in line with productivity growth over the cycle and reflect the labour market situation"[152].

Within this framework in the last two decades, member countries have implemented a series of reforms of their labour markets, aiming to relax their employment protection legislation (EPL), tight the conditions for receiving unemployment benefits and increase flexibility in working hours[153]. An outcome consistent with the neoclassical foundations of Maastricht.

In sum, in this Chapter we have argued that the "Maastricht philosophy" is grounded on two main theoretical paradigms: the monetarism and the new classical macroeconomics. More precisely, three main principles can be identified in the EMU governance: price stability, fiscal discipline (labour) markets flexibility. The reasoning is as follow. First, the ECB by focusing on price stability does all that can be done to provide macroeconomic stability in the Eurozone. This is because if output movements are due to demand shifts, inflation targeting will not only stabilize the rate of inflation but also the output movements; if, instead, these output movements are due to supply shocks they cannot be dealt with by monetary policies. Second, the Stability and Growth Pact allows to reduce negative spillover effects for the EMU arising from national budgetary policies. At the same time, it provides all the needs for countries to use national fiscal policies to deal with temporary shocks. In fact, countries that respect their MTO have enough flexibility to allow automatic stabilizers to work during output cyclical fluctuations without trespassing the 3% of GDP deficit limit. Instead, if output movements are permanent (i.e. supply shocks) they simply cannot be dealt with by budgetary policies. Third, high unemployment in the EMU originates mainly from rigidities on the supply-side. The only way to lower unemployment permanently is through structural reforms which remove the existing obstacles to the market forces. Thus, member States should implement structural reforms so as to increase the flexibility of their labour and product markets. An increase in flexibility reduces the costs of adjustment to asymmetric shocks, thereby making sustainable the monetary union.

[152] Commission of the European Communities (2005: 26).
[153] See: European Commission (2008a: 78-82); and Alesina A., Ardagna S., Galasso V. (2010).

Chapter IV
The Euro Crisis
1. The German View: Fiscal Profligacy

The moment of truth for the Eurozone came in October 2009, when the socialist Prime Minister of Greece, George Papandreou, announced that the previous government had masked the size of the budget deficit. The latter was dramatically above the value predicted until that moment. The Greek scandal was a sort of Eurozone's Lehman, leading to the near-collapse of the European Monetary Union.

Increases in spreads started to emerge between interest rates on German government bonds and yields on periphery countries' bonds. Market aversion to Greek debt continued to increase, and by early 2010 it spread to Portuguese and Irish sovereign debts, and more gradually to Spanish and Italian government bonds. While only two years before, peripheral countries' and German government bonds were considered equally riskless by markets. Rapidly, a consensus emerged in the EU identifying the failure of the Stability and Growth Pact to keep a lid on national finances as the root cause of the sovereign debt crises in the Eurozone. The crisis became a story of unsound fiscal policies and excessive sovereign debt. The identified solution was in line with the theoretical foundations of the Maastricht Treaty: fiscal consolidation in the short-run, tighter fiscal-rules in the medium-run, structural reforms in the long-run. The first one was seen as unavoidable to regain markets confidence; a reinforced fiscal framework was considered essential to avoid future crisis; and structural reforms would have increased flexibility in labour and product markets and facilitated wage and price adjustments.

According to this narrative, there was essentially nothing wrong with the architecture of EMU. What had been wrong was the behavior of the some member States. A view rooted in a sort of moralism that distinguished between *innocent* and *guilty* countries. While in the previous decade core countries had saved and implemented structural reforms, peripheral States had spent too much and taken on too much debt. They must cut spending, reduce deficits and improve the functioning of their economies through supply-side measures. If they showed adequate courage and political resolve, markets would reward them with lower borrowing costs[1]. This narrative is very powerful because it is based on the assumption of an asymmetric responsibility that implies that the burden of adjustment must fall exclusively on the *sinner countries*.

In the course of 2010-2011, Greece, Ireland and Portugal accepted a combination of deflationary fiscal and wage policies, imposed by the so-called Troika (European Commission, ECB and IMF), in order to get access to external financial assistance provided by the EFSM and EFSF (two financial vehicles set up by Eurozone's countries in May 2010[2], and in 2012 sub-

[1] Irwin N. (2013).
[2] Council of the European Union (2010).

stituted by a permanent mechanism, the ESM[3])[4]. Meanwhile, under pressure by the German government, member States agreed to strengthen the rules contained in the SGP. The EU fiscal framework was amended through the adoption of the so-called "Six Pack"[5] in 2011, by the conclusion of an international treaty known as "Fiscal Compact"[6] in 2012, and finally through the so-called "Two Pack"[7] in 2013. These acts reinforced the medium-term objective of a structural budgetary position "close to balance or in surplus". The "balanced budget rule" was to be transposed into national legal systems, "through provisions of binding force and permanent character, preferably constitutional"[8]. Deviations from this target were to trigger automatic correction mechanisms at national levels[9]. Moreover, it was agreed to reduce government debt exceeding the 60% of GDP threshold by 1/20 per year[10].

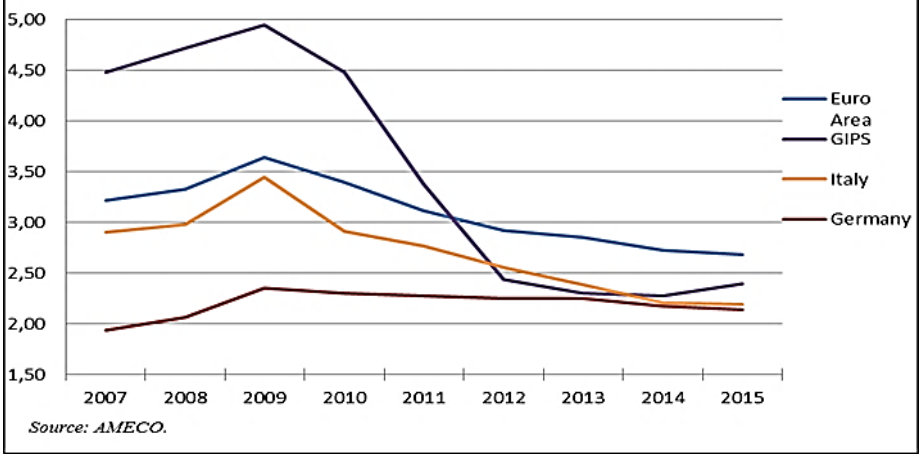
All this translated into a huge policy reversal. In 2008 the EU had officially joined the "global fiscal stimulus" called by the IMF[11] and the G-20[12], through the launch of the *European Economic Recovery Plan*[13]. Actually, discretionary fiscal policies in Europe were lesser extent than in other advanced economies in the World. According to IMF's[14] and OFCE's[15] analysis, automatic stabilizers explained most of government budget deficits in the Eurozone in the post-Lehman period. However, the 2008-2009 counter-cycle fiscal policy worked enough to cushion the major impact of the collapse in private spending on aggregate demand and "prevented the Great Recession from becoming the second Great Depression"[16]. From 2010 the fiscal policy stance suddenly shifted away from counter-cyclical action towards contraction. Fiscal tightening was implemented not only by EMU periphery countries under financial distress, but even by core nations not suffering from the sovereign debt crisis. The Eurozone as a whole saw its primary deficit moving from about 350 billion euro in 2010 to 10 billion euro in 2014. A contractionary shock equal to 4% of the EMU's economy. Government investment was a primary target for fiscal consolidation across euro area countries,

[3] Treaty Establishing the European Stability Mechanism, signed on 2 February 2012
[4] For a summary of the main measures taken by Greece, Ireland and Portugal as a part of the EU-IMF programme macroeconomic conditionality, see: Sapir A., Wolff B. G., de Sousa C., Terzi A. (2014).
[5] Regulation (EU) No. 1173/2011, No. 1175/2011, No. 1177/2011, Directive 2011/85/UE.
[6] Treaty on Stability, Coordination and Governance in the Economic and Monetary Union (TSCG), signed on 2 March 2012.
[7] Regulation (EU) No. 472/2013, and No. 473/2013.
[8] Article 3, paragraph 2, of the TSCG.
[9] Article 3, paragraph 1, letter e), of the TSCG.
[10] Article 4 of the TSCG; and Article 2 of the Regulation (CE) n. 1467/97 as amended by the Regulation (EU) No. 1177/2011.
[11] See: Strauss-Kahn D. (2008); and Spilimbergo A., Symansky S., Blanchard O., Cottarelli C. (2008).
[12] G-20 Washington Summit (2008).
[13] Commission of the European Communities (2008).
[14] IMF (2010a: Box 1.1).
[15] OFCE (2011: 27).
[16] Baldwin R., Giavazzi F. (2015: 46).

which thus approached the German model characterized by a relatively low level of investment. These developments were in contrast to those in other advanced economies in the world, where public investments were considered a powerful counter-cyclical fiscal stabilization tool[17].

Table 1	Pro-cyclical fiscal policy, 2010 to 2014			
	2010 to 2014 swing (% of own potential GDP)	2010 to 2014 swing (billion euro)	Share of Euro-zone swing (%)	Share of Euro-zone 2014 GDP (%)
Greece	7%	14	4%	2%
Ireland	28%	49	14%	2%
Italy	2%	28	8%	16%
Portugal	9%	17	5%	2%
Spain	5%	53	16%	11%
Euro area	4%	340	100%	100%
Austria	1%	2	1%	3%
Belgium	0%	2	0%	4%
Finland	0%	0	0%	2%
France	2%	46	13%	21%
Germany	4%	108	32%	29%
Luxemburg	1%	1	0%	0%
Netherlands	2%	15	5%	6%
Source: Baldwin R., Giavazzi F. (2015).				

Figure 3 Government gross fixed capital formation (% of GDP)



Source: AMECO.

[17] See: Barbiero F., Darvas Z. (2014).

2. The Academic View: External Imbalances and Sudden Stops

The fiscal narrative is still popular in Brussels, in Frankfurt and among the most influential European leaders, notably in Berlin and other core countries. However, among scholars a different consensus view has emerged about what caused the crisis and why[18]. According to this "new" narrative, the reason why several member countries got into a sovereign crisis has little to do with the poor performance of the SGP. The government debt to GDP ratios in most of member States were declining prior to 2008. Two countries that experienced severe sovereign debt problems after 2010, Ireland and Spain, had ran budget surplus for most of the preceding period, and their debt to GDP ratios were well below the 60% reference value still in 2008. On the contrary, Germany and France had breached the 3% deficit ceiling several times, and their government debts were above the 60% threshold at the beginning of the global crisis. Similarly, Belgium had a debt to GDP ratio above 90% but it did not face any pressure from markets. From this evidence is clear that is difficult to argue a relationship between budget deficit and the sovereign debt crisis. The only country where this can be said to be true is Greece.

Most academics agree that the characteristic that periphery countries have in common is that they ran the largest current account deficits in the Eurozone during the pre-crisis period. The sovereign debt crisis was triggered by huge external imbalances followed by a series of "sudden stops" that allowed these imbalances to emerge.

The introduction of a common currency operated as a shock on the national financial systems by establishing strong incentives for arbitraging between member countries' assets and leading to a booming phase in the periphery of EMU[19]. In particular, the disappearance of exchange rate uncertainty after the launch of the euro determined a dramatic convergence in interest rates and a major increase in cross-border bank activity. Huge private capital flows went into Greece, Ireland, Portugal and Spain (GIPS), mostly from elsewhere in Europe and mostly in the form of debt, particularly bank debt[20]. These flows came from countries with excess of savings and weak demand for credit at home, and then flowed to the countries with high strong demand for credit, which appeared to offer investment opportunities with superior returns and at least reasonable safety. Exposures of banks from core countries to peripheral countries quintupled between the introduction of the euro and the financial crisis. While this explosion of financial inflows was unevenly distributed among periphery countries, it affected all of them.

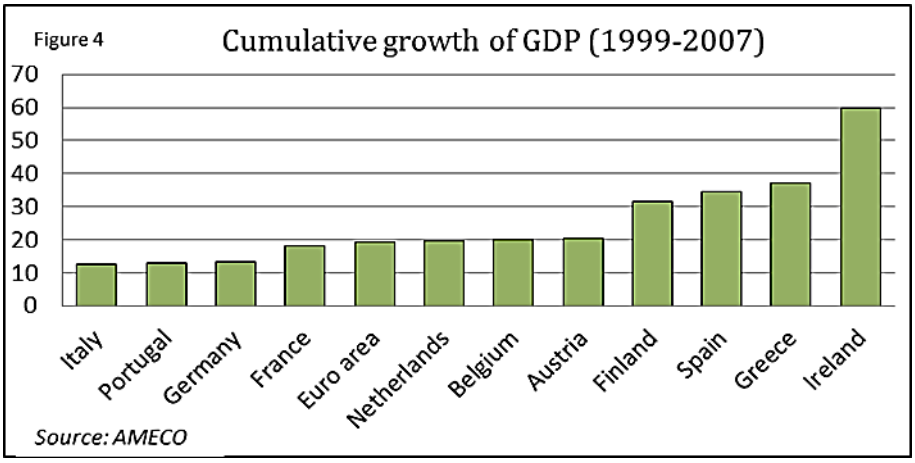
[18] See: Baldwin R., Giavazzi F. (eds.) (2015).
[19] Frenkel R. (2012); and Sinn W. H. (2014).
[20] Constâncio V. (2013).

Table 2	Summary of pre-crisis imbalances						
	1999-2007 (% of GDP)		1999 -2007	Bank assets (% of GDP)		(%)	
	Cumulative current account balance	Cumulative budget deficit	Number of 3% budget deficit Violations	2000-2008 increase (p.p.)	Bank assets, 2008	Debt to GDP ratio, 2008	Cumulative inflation above EZ rate (1999-2007)
Portugal	-96	-36	7	44%	262%	72	7.5
Greece	-84	-47	9	36%	173%	109	9.9
Spain	-60	2	0	121%	296%	39	9.2
Ireland	-21	14	0	464%	783%	43	11.6
Italy	-8	-26	6	85%	235%	102	1.8
Eurozone	-2	-17	-	94%	335%	69	0.0
France	6	-23	4	180%	395%	68	-2.9
Austria	16	-19	1	305%	379%	69	-3.2
Germany	27	-19	5	18%	316%	65	-4.8
Belgium	47	-5	0	83%	392%	92	-1.1
Nether.	48	-5	1	-9%	375%	55	2.8
Finland	61	33	0	101%	197%	33	-4.9
Luxemb.	98	23	0	-577%	2367%	14	5.5

Sources: Baldwin R., Giavazzi F. (2015), and AMECO.

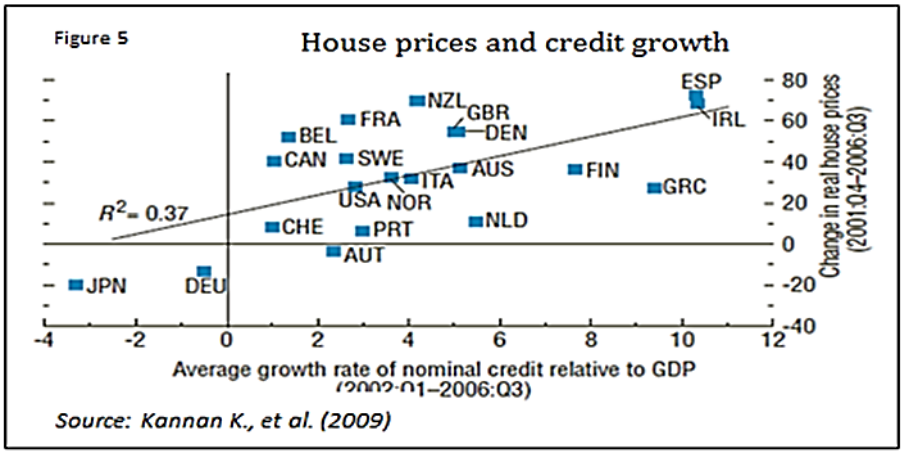
Table 3 Total lending from core countries' banks into the periphery (billion euros)			
	1999 4th quarter	2009 4th quarter	% change 1999-2009
Greece	24	141	491
Ireland	60	348	481
Portugal	26	110	320
Spain	94	613	554
GIPS	204	1,212	495
Italy	259	822	217
Total	463	2,033	340
Note: Eurozone core: Germany, France, Austria, Belgium, Netherlands. *Source:* Baldwin R., Giavazzi F. (2015).			

Actually there was nothing intrinsically wrong with such flows. They were exactly what theory suggests can and should happen when countries become more closely linked in goods and financial markets. They were believed to be part of the natural real convergence within a monetary union. In fact, one of the perceived benefits of the euro was to make it easier for capital to flow from countries with abundant capital, were capital faced diminishing returns, to countries that were relatively capital poor, and therefore offered high returns on investments. The capital-rich countries were at the core of the Eurozone, and the capital-poor countries were at the periphery. Capital inflows in the periphery were expected to trigger an increase in productive investments. In turn, higher investments would have led to higher productivity and finally higher real income which would have permitted to pay-off the initial loans[21].



[21] See: Blanchard O., Giavazzi F. (2002).

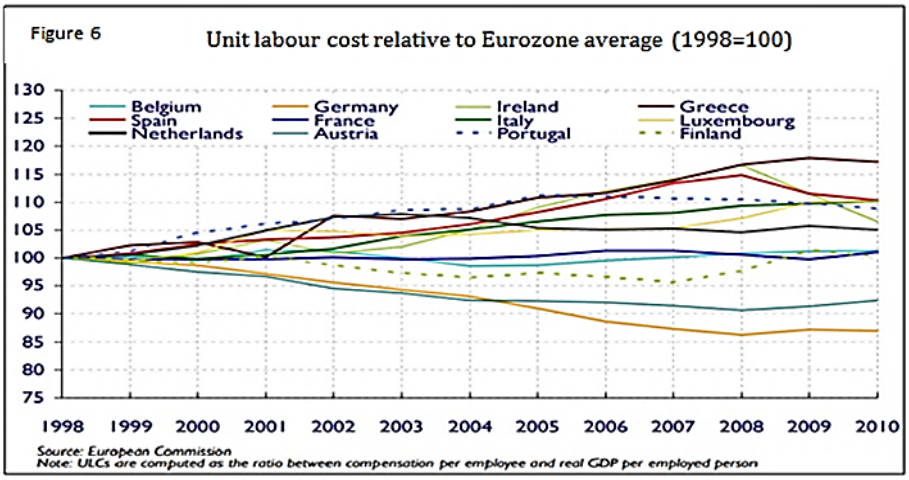
However, to a large extent, this was not the case. In all the GIPS, the funds ended up in various non-traded sectors. The decline in real interest rates and optimism prevailing in peripheral countries triggered a boom in private consumption[22] and a bubble in the housing markets[23]. Between 1999 and 2007, at their peak, house prices doubled in Ireland and in Spain. By contrast, in the same period in Germany house prices were falling, creating incentives for German banks to fund higher-return property investment in the periphery[24]. According to the IMF, the house price boom was related to "large increases in residential investment as a share of GDP, large current account deficits as a share of GDP, and large expansions of credit relative to expansion in output"[25]. The inflows also tended to drive up nominal wages and prices that resulted in competitiveness losses. All four GIPS countries had inflation well above the EMU average. The loss of price competitiveness combined with the debt-finances increase in domestic demand and the associated imports validated huge current account deficits. National governments had no instruments to curb the capital inflows from abroad. They had no control on the ECB that pursued a monetary policy to stabilize the rate of inflation in the Eurozone as a whole and was inevitably unfit for the periphery countries' conditions of fast output growth and rampant credit expansions, thereby contributing to the build-up of imbalances; they could not impose controls on capital movements because prohibited by the EU law; while the required budget surplus to reverse the market's pressure to generate a huge current account deficit would have been completely unrealistic and unfeasible both politically and economically[26].



[22] Higgins M., Klitgaard T. (2011).
[23] Glick R., Lansing K. J. (2010).
[24] Baldwin R., Giavazzi F. (2015: 33).
[25] Kannan K., Rabanal P., Scott A. (2009: 13).
[26] Wolf M. (2014: 181).

External imbalances in the periphery were exacerbated by the behavior of core countries. In the early 2000s Germany adopted policies aimed at generating rapid employment growth through wage moderation[27], restrain in domestic consumption, and reduction in corporate taxation[28]. All this resulted in a neo-mercantilist strategy that subsidized German manufacturing at the expense of manufactures elsewhere in Europe and in the world[29]. Germany started to run higher and higher current account surpluses, permanently above 4% of GDP since 2004. The surplus of production of tradable-goods, relative to domestic demand, in Germany and other core countries was perfectly matched by surpluses of demand over production in the GIPS. The surplus of savings over investment in "creditor Eurozone" was matched by the surplus of investment over savings in the periphery. And finally, the boom of investment in "debtor Eurozone" took the form of investment in non-tradable goods and services, notably property-related investments, also because the most competitive suppliers of tradable goods in the domestic market were those located in core Eurozone.

Figure 6 Unit labour cost relative to Eurozone average (1998=100)

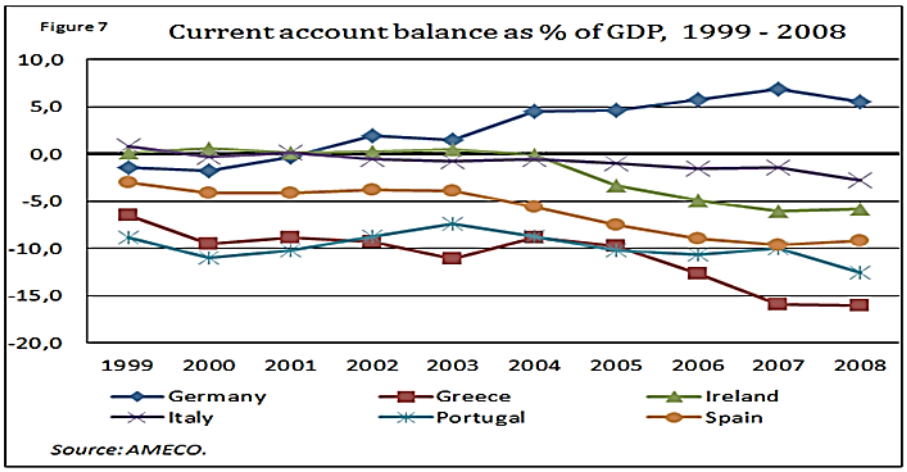


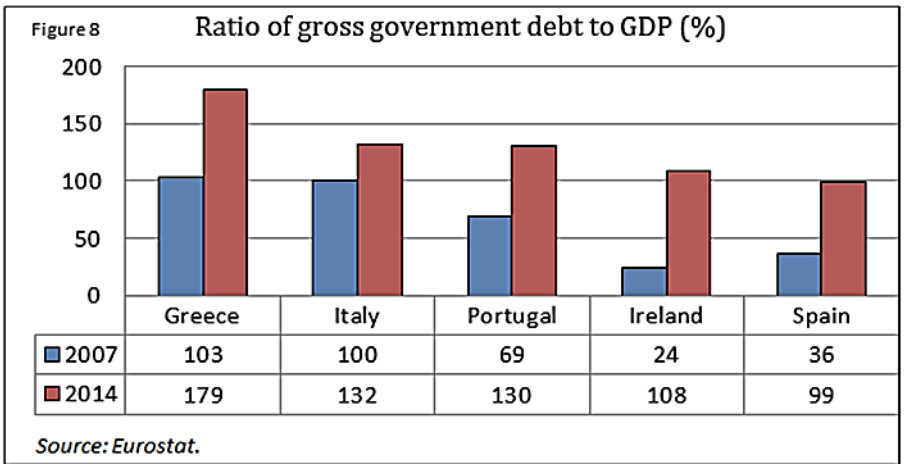
Source: European Commission
Note: ULCs are computed as the ratio between compensation per employee and real GDP per employed person

Current account imbalances started to be a problem after the emergence of the global financial crisis and Lehman Brother's bankruptcy in 2008. Core countries lenders, which had generously borrowed huge amount of money to the GIPS during the previous decade, suddenly interrupted to finance the current account deficits in the periphery. In the GIPS, private sector financial deficit tuned into public deficit. The explanation is that government revenue fell dramatically, crisis-related government spending automatically rose, and banks were also rescued by governments, which was particularly costly in Ireland. Spain and Ireland, whose economies were particularly affected by

[27] See: Caliendo M., Wrohlich K. (2006); and Bagnai A. (2012: 222-232).
[28] See: European Commission (2008b: 88, 144).
[29] Pettis M. (2013: 119-135).

the housing bubble burst, experienced a big shift of the private sector into austerity, and fiscal deficit rose as a consequence. In Ireland this shift led to an annual budget deficit to 30% of GDP in 2010.





Thus, with the exception of Greece that was already insolvent at the start of the crisis[30], fiscal position became a big problem for peripheral countries only after the global crisis, not before. Investors started to lose confidence in some member States and sold their government bonds in an effort to avoid future losses. These sales pushed interest rates up, making it harder for those countries to fund rollover of its debt at reasonable rates. Higher debt-service costs combined with a declining GDP made investors further suspect that pe-

[30] "Strictly confidential" minutes of the IMF Executive Board of 9 May 2010 show that IMF's member countries were aware about the unsustainability of the Greek government debt. Several countries, notably Switzerland and emerging economies, argued the "immense" risk of the rescue program without a prior debt restructuring; see IMF (2010c).

riphery country's debt might be unsustainable. These countries were forced to switch-off the automatic stabilizers in the budget and pushed into austerity programs. Spending cuts and tax increases aggravated the recession which in turn reduced tax revenues and worsened the debt to GDP ratio. Seeing the funding difficulties, markets demanded higher interest rates and the deflationary spiral continued.

Merler and Pisani-Ferry[31] have identified three evident episodes of sudden stops in capital inflows that occurred in the periphery countries: i) during the global financial crisis of 2008, when stops particularly affected Greece and Ireland; ii) in spring 2010, after the controversial agreement on the IMF/EU rescue program for Greece[32], which saw contagion from Athens to Ireland and Portugal; iii) finally, during the second half of 2011, after that the Private Sector Involvement (PSI) on Greek government debt was announced[33], when sudden stops in capital flows involved Spain and Italy.

This scenario was not envisaged by the euro founding fathers. They believed that balance of payments crises would not occur in a monetary union[34]. In one of the earliest papers on EMU, in the early 1970s, Ingram highlighted that in a monetary union "payments imbalances among member nations can be financed in the short run through the financial markets, without need for interventions by a monetary authority. Intracommunity payments become analogous to interregional payments within a single country"[35]. This view was endorsed by the European Commission's "One Market, One Money" Report, which argued that "a major effect of EMU is that balance-of-payments constraints will disappear […]. Private markets will finance all viable borrowers, and savings and investment balances will no longer be constraints at the national level"[36]. This view was so widespread at the time that the Maastricht's negotiators excluded euro-members States from the benefit of the *EU Balance of Payments Assistance Facility* under Article 143 TFEU which conversely remained available for non-euro countries[37]. As a consequence, the EMU was poorly equipped to cope with the reversal in financing of periphery countries.

This argument was particularly stressed by Paul De Grauwe in a seminal contribution in 2011[38]. He highlighted that interest rates on Spanish government bonds were much higher than those on the UK bonds, although Spain had a relatively better debt position than the UK. De Grauwe argued that this difference in the evaluation of the sovereign default risk by markets was related to the fragility of the Eurozone. The reasoning is as follow. Members of monetary union issue government bonds in a currency over which they

[31] Pisani-Ferry J., Merler S. (2012).
[32] Eurogroup (2010); IMF (2010b).
[33] Council of the European Union (2011).
[34] Marzinotto B., Pisani-Ferry J., Sapir A. (2010).
[35] Ingram, J. C. (1973: 10).
[36] Emerson M., Gros D., Italianer A., Pisani-Ferry J., *et al.* (1990: 24).
[37] See: Article 143 TFEU and Council Regulation (EC) No. 332/2002.
[38] De Grauwe P. (2011).

have no control. A problem similar to that faced by emerging countries that issue debt in a foreign currency. This has a profound implication. National governments of a monetary union cannot give a guarantee that the cash will always be available to pay out bondholders at maturity. It is literally possible that these governments find out that the liquidity is lacking to pay out bondholders. This is not the case in a country that issues debt in its own currency. This country had the power to call upon the central bank to act as a lender of last resort in the sovereign bonds market. And there is no limit to the capacity of a central bank to provide liquidity.

The absence of a lender of last resort creates fragility in a monetary union. Member countries are susceptible to movements of distrust. When investors fear some payment difficulty, e.g. trigger by a recession, they sell the government bonds. This raises interests and leads to a liquidity outflow (sudden stop) as the investors look for safer places to invest. Countries are pushed into a "bad equilibrium" of increasing interest rates and debt levels. What started as a liquidity crisis can degenerate, in a self-fulfilling way, into a solvency crisis. The liquidity crisis in a monetary union also makes it possible for the emergence of "multiple equilibria". A country (*B*) that is distrusted by markets and affected by liquidity outflows is forced into a bad equilibrium characterized by high interest rates, austerity measures and recession. Conversely, a member country (*A*) that is trusted by markets is pushed into a good equilibrium, it becomes recipient of liquidity inflows that lower interest rates and boost the economy. Thereby liquidity flows may amplify the effects of the initial asymmetric demand shock (*from D' to D''*)[39].

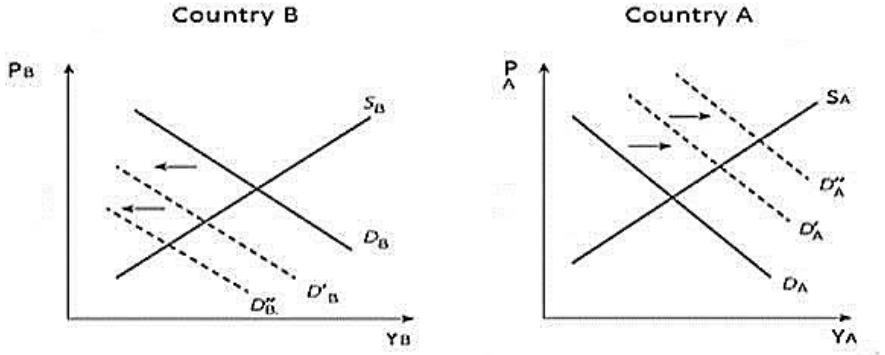
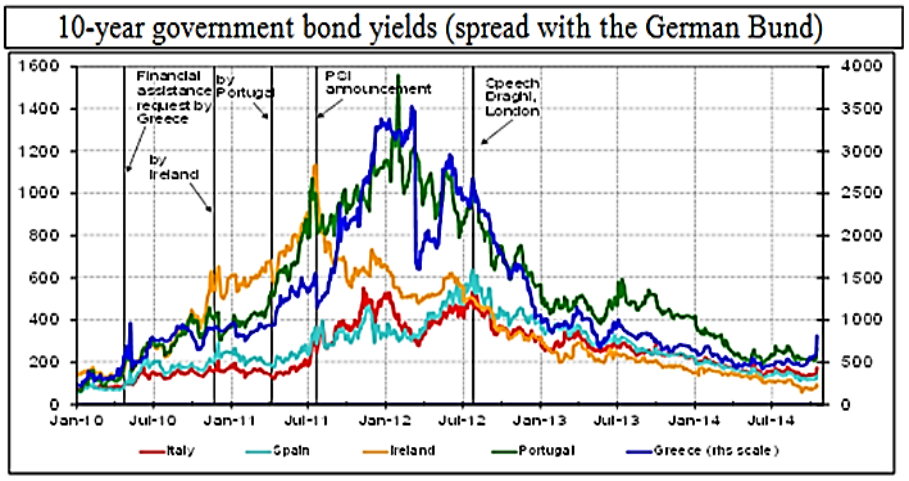


Figure 9 - Amplification of asymmetric shock

The De Grauwe's theory urged for a lender of last resort in the euro government bond markets. However, it was legally forbidden by the EU treaties (Article 123 TFEU). After more than two years from the start of the sovereign crisis, the ECB found a way out to the Maastricht's impediment. In

[39] De Grauwe P. (2014: 11).

summer 2012 the ECB announced the Outright Monetary Transactions (OMT), officially justified from the need to avoid the "risk of redenomination"[40]. The decision of the ECB to commit itself to unlimited support of the government bond (secondary) markets was a game changer in the euro crisis. The turnaround in yields on periphery sovereign bonds that followed the OMT strongly supports the De Grauwe's argument. The panic on government debt markets was solved not through fiscal consolidation programs, but by the firepower of the only European federal institution, the ECB. It could also argue that if the ECB had acted earlier much of the panic in markets may not have occurred and the austerity programs may have been avoided[41]. The EMU's experience has shown that the central bank's lender of last resort function to government debt should be considered a new "OCA property", surprisingly overlooked before the sovereign debt crisis in the Eurozone[42].



4.3 Austerity Meets Reality

The sudden fiscal policy reversal in the Eurozone in 2010 was most the result of the Greek fiscal scandal and a loss of confidence by the German government in leaders of troubled countries[43]. However, influential academic researches about the limits of indebtedness and the benefits of fiscal consolidation played a crucial rule in justifying such a policy[44].

A first argument for austerity came from Reinhart and Rogoff[45], both Professors at Harvard. They published a paper in 2010 where argued that growth was close to zero when the ratio of public debt to GDP exceed 90%. Their

[40] See: European Central Bank (2012); and Draghi M. (2012).
[41] See: De Grauwe P., Ji Y. (2013a); and De Grauwe P., Ji Y. (2013b).
[42] Krugman P. (2012).
[43] For a detailed reconstruction of the political dimension of the Eurozone crisis, see: Bastasin C. (2015).
[44] Krugman P. (2013).
[45] Reinhart C. M., Rogoff K. S. (2010).

paper seemed to show not just that debt hurts growth, but that there was a "threshold," a sort of trigger point. Go beyond that point, their numbers suggested, and economic growth stalls. When the paper was published, several EMU countries had a public debt close or above that level.

A second theoretical argument for orthodoxy policies was provided by the feasibility of an "expansionary fiscal contraction". This was a proposition mainly associated with a group of Italian economists. In 1990 Giavazzi and Pagano[46] were the first to argue that fiscal adjustments large, decisive and on the spending side could be expansionary in the short-run. The two authors reported the cases of Ireland and Denmark of the 1980s. In 2009, Alesina and Ardagna[47] re-launched the argument reporting more episodes in which spending cuts adopted to reduce deficits had been associated with economic expansions rather than recessions. According to its proponents, fiscal austerity can generate expansionary effects through both the demand and the supply side. On the demand side, a major reduction in government spending may be expansionary if agents perceive the fiscal tightening as permanent, as to change their future expectations about taxes. Consumers anticipate a permanent increase in their lifetime disposable income and this induces an increase in current private consumption and in aggregate demand. Moreover, if agents believe that the fiscal stabilization is credible, they ask for a lower premium on government bonds. The reduction in the interest rate on sovereign bonds leads to a reduction in the real interest rate charged to consumers and firms, which in turn leads to the appreciation of stocks and bonds, increasing agents' financial wealth, and triggering a consumption and investment boom. On the supply-side, expansionary effects of fiscal adjustments work via the labor market. A decrease in government employment and in public sector wages reduces the reservation utility of the union members and the wage demanded by the labour unions for private sector workers decreases, increasing profits, investment and competitiveness[48].

Both these arguments were officially endorsed by the EU policy makers. The Commissioner for Economic and Monetary Affairs, Olli Rehn, in a speech at a ILO meeting, in April 2013, explicitly cited the results of Reinhart and Rogoff: "Yet, public debt in Europe is expected to stabilize only by 2014 and to do so at above 90% of GDP. Serious empirical research has shown that at such high levels, public debt acts as a permanent drag on growth. If it is not reduced, it will become an ever-heavier burden on our economies, eating resources that could otherwise be channeled into productive investment needed to support job creation"[49]. Before, in June 2010, the then ECB President Jean-Claude Trichet had argued for expansionary fiscal contraction: "As regards the economy, the idea that austerity measures could trigger stagnation is incorrect […] In fact, in these circumstances, everything

[46] Giavazzi F., Pagano M. (1990).
[47] Alesina A., Ardagna S. (2009).
[48] Alesina A., Ardagna S. (2009: 4).
[49] Rehn O. (2013).

that helps to increase the confidence of households, firms and investors in the sustainability of public finances is good for the consolidation of growth and job creation. […] confidence-inspiring policies will foster and not hamper economic recovery"[50]. Further evidence that the ECB endorsed the hypothesis of "expansionary effects of fiscal consolidation" can be found in the *Monthly Bulletin* of April 2004[51], well before the euro sovereign debt crisis and the new study by Alesina and Ardagna. It should not surprise, given that the arguments raised by Reinhart and Rogoff, and Giavazzi and Pagano were very consistent with the theoretical basis and the governance framework of the EMU. Taken together they suggested a turn towards fiscal austerity. Cuts in government spending and debt would have stimulated growth. Unfortunately, they were soon contradicted by successive studies and evidence.

Three researchers of the University of Massachusetts at Amherst in April 2013 demonstrated that the Reinhart and Rogoff's paper contained a coding error, data omissions and controversial statistical techniques[52]. After correction, the threshold at 90% vanished. According to the three scholars, average annual growth in advanced countries with debt above 90% of GDP was 2.2% between 1945 and 2009. Indeed, there was still a negative correlation between debt and growth, but an association is not a cause. This could be mostly a matter of low growth leading to high debt, not the other way around[53]. As noted by Martin Wolf, "It is very hard to argue that high public debt caused the UK's slow post-crisis growth. After all, in the years immediately prior the crisis, UK net public debt was close to its lowest ratio to GDP in the past three hundred years. Thus, the higher debt today than before the crisis is a result of slow post-crisis growth"[54].

With regard to the phenomenon of "expansionary fiscal contraction", in 2011 Roberto Perotti[55] pointed out that currency depreciation and fast export growth had been offsets to fiscal consolidation in four commonly cited European episodes of "expansionary austerity": Denmark (1982-1986), Finland (1992-1998), Sweden (1993-1998) and Ireland (1987-1990). Nominal exchange rate flexibility was not an instrument available for Eurozone's periphery countries. And in any case, net export boom is not, by definition, a strategy that everyone can pursue at the same time. A conclusion already reached by Paul Krugman at least one year before[56].

However, the most influential criticism to Giavazzi-Pagano and Alesina-Ardagna has come from the IMF Research Department. In 2010-11, the IMF

[50] Trichet J. C. (2010).
[51] ECB (2004: 48-49).
[52] Herndon T., Ash M., Pollin R. (2013).
[53] Krugman P. (2013).
[54] Wolf M. (2014: 269).
[55] Perotti R. (2011).
[56] Krugman P. (2010).

staff identified 173 cases of fiscal consolidation in 17 advanced economies over the past 30 years. The main findings are as follow[57].

First, fiscal consolidation has a contractionary effect on output, and raises both short-term and long-term unemployment. Spending by households and firms also declines, with little evidence of a shift from public to private sector demand. In particular, fiscal consolidation of 1% of GDP reduces real GDP by about 0.6%, raises the unemployment rate by almost 0.5% and reduces real private consumption by 0.75% within two years. Within three years the rise in short-term unemployment due to fiscal consolidation comes to an end, but long-term unemployment remains higher even after five years.

Second, "even large spending-based fiscal retrenchments are contractionary, as are fiscal consolidations occurring in economies with a high perceived sovereign default risk"[58].

Third, the pain is not borne equally. Wage income declines more than profits and rents. For every 1% of GDP of fiscal consolidation, inflation-adjusted wage income typically shrinks by 0.9%, while profit and rents fall by only 0.3%. Moreover, while the decline in wage income persists over time, the decline in profits and rents is short-lasting.

Fourth, reductions in interest rates usually support output during episodes of fiscal consolidation. Central banks offset some of the contractionary pressures by cutting policy interest rates, and longer-term rates also typically decline, softening the impact on consumption and investment.

Fifth, a depreciation of domestic currency typically plays an important cushioning role by boosting net exports. For instance, this happened in Ireland in 1987 and Finland and Italy in 1992. Not surprisingly, "this offsetting channel is less potent in economies with pegged exchange rates"[59].

Finally, a sort of warning to EMU: "[today] in many economies, central banks can provide only a limited monetary stimulus because policy interest rates are already near zero. Moreover, if many countries carry out fiscal austerity at the same time, the reduction in incomes in each country is likely to be greater, since not all countries can reduce the value of their currency and increase net exports at the same time. Simulations of the IMF's large-scale models suggest that the reduction in incomes may be more than twice as large as that [in the past cases] when central banks cannot cut interest rates and when many countries are carrying out consolidations at the same time. These simulations thus suggest that fiscal consolidation is now likely to be more contractionary than was the case in past episodes"[60].

Unfortunately, the warning was ignored. In October 2012[61], and then in January 2013[62], the IMF confirmed that austerity had been far to be expan-

[57] See: IMF (2010d: 93-124); and Guajardo J., Leigh D., Pescatori A. (2011); and Ball L., Leigh D., Loungani P. (2011: 20-23).
[58] Guajardo J., Leigh D., Pescatori A. (2011: 29).
[59] Guajardo J., Leigh D., Pescatori A. (2011: 29).
[60] Ball L., Leigh D., Loungani P. (2011: 22).
[61] IMF (2012: 41-43).

sionary in Europe. On the contrary, fiscal multipliers were not 0.5 as estimated by the Troika at the time of periphery countries bailouts, but 1 point more. This meant that a fiscal consolidation of 1% of GDP was associated with a real GDP loss during 2010-11 of about 1.5%. Fiscal multipliers were "larger than normal" because the situation in the Eurozone was far to be "normal". Austerity measures were undertaken in a scenario where: i) nominal interest rates were near the zero lower bound, thus central banks could not cut interest rates to offset the negative short-term effects of a fiscal consolidation on economic activity; ii) lower output and lower income, together with a poorly functioning financial system, implied that consumption and investment depended more on current than on future income and profits; iii) the economy was already in recession[63].

The IMF Research Department has gone beyond in its critics to austerity. In several studies, it argued that austerity exacerbates the level of inequality[64], because of an increase in unemployment[65], as well as a greater reduction in wages compared with profits[66]. The impact in terms of inequality is particularly high in case of expenditure-based fiscal consolidation[67]. Finally, it noted that countries characterized by higher inequality tend to grow more slowly[68].

After disavowed the benefits of fiscal contraction, the IMF staff challenged also the second main tenet of the adjustment programs applied to the Eurozone's periphery, labour market deregulation. In the World Economic Outlook of April 2015[69], the IMF staff examined the impact of structural reforms on total factor productivity (i.e. on long-term growth and competitiveness). According to the IMF, the largest gains in total factor productivity levels are associated with product market liberalization, increasing R&D and ICT capital, and education reforms. In contrast, labor market regulation was not found to have statistically significant effects on productivity. Moreover, in other studies the IMF have found that increased labour market flexibility[70] and decline in unionization[71] are associated with higher inequality.

Finally, the IMF has called for fiscal expansion. In October 2014 the IMF argued the need for public investments. Increased public investment would raise output in both the short and long term, particularly during periods of economic slack and when investment efficiency is high. This suggests that "the time is right for an infrastructure push": borrowing costs are low and

[62] Blanchard O., Leigh D. (2013).
[63] Blanchard O., Leigh D. (2013: 3-4).
[64] Ball L., Furceri D., Leigh D., Loungani P. (2013).
[65] See: Morsy H., *"Unemployed in Europe"* (2011); and Woo J., Bova E., Kinda T., Zhang Y. S. (2013).
[66] Ball L., Leigh D., Loungani P. (2011: 20-23).
[67] Woo J., Bova E., Kinda T., Zhang Y. S. (2013: 13).
[68] Berg A. G., Ostry J. D (2011).
[69] IMF (2015: 104-107).
[70] Dabla-Norris E., Kochhar K., Ricka F., Suphaphiphat N., Tsounta E. (2015: 24-26).
[71] Jaumotte F., Osorio Buitron C. (2015: 29-31).

demand is weak in advanced economies, and there are infrastructure needs in many countries. Therefore, "debt-financed projects could have large output effects without increasing the debt-to-GDP ratio"[72]. This is completely in contrast with the neoclassical assumption behind the European fiscal framework according to which government spending can "displace private investment"[73]. In April 2015, the IMF argued that fiscal policy would produce "crowding in", not "crowding out". It highlighted that the main factor holding back private investment since the global financial crisis has been the overall weakness of economic activity. Additional public infrastructure investment may "spur demand in the short term, raise supply in the medium term, and thus 'crowd in' private investment"[74].

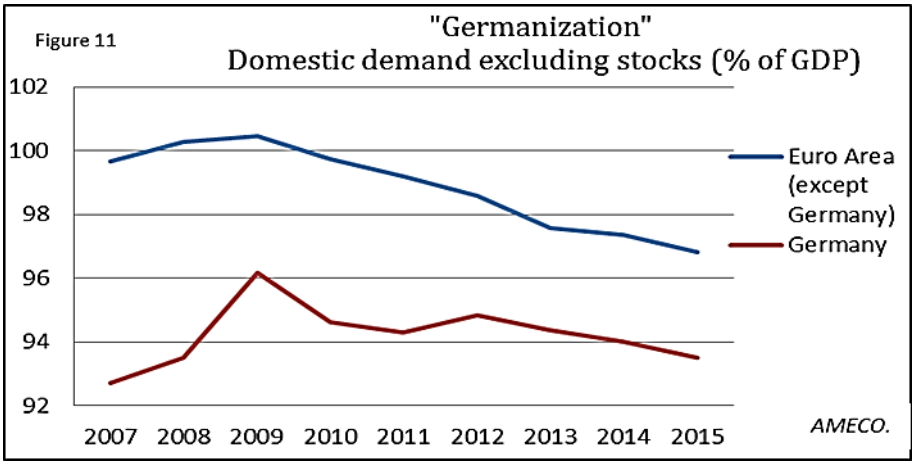
As Francesco Saraceno pointed out, the IMF staff, under the Chief economist Olivier Blanchard, challenged all the main tenets of the "orthodoxy that still shapes European policy making"[75]. Keynesian demand management policies seem to be rediscovered. The IMF has recognized to fiscal policy a role to play both in smoothing business cycle fluctuations in the short-term and in facilitating stable growth in the long-term. However, the EMU policymakers are still very far to achieve such a conclusion.

The Eurozone today remains the sick man of the world economy, and the adoption of the German neo-mercantilist model by the entire EMU does not offer prospects of strong recovery in the future. This model, in fact, is intrinsically fragile because completely based on external demand[76]. In the meantime wage moderation and contractionary fiscal policies have pushed the entire Eurozone into a "close to zero inflation", increasing the burden of debt for member countries. In January 2015, the ECB decided to launch its Quantitative Easing (QE)[77]. The QE is designed to provide monetary stimulus to the economy in a context where key ECB interest rates are already at their lower bound. The intention is to signal to the markets the ECB's commitment to do "whatever it takes" to stimulate the economy and reach its inflation target, thus positively affecting agents expectations. Asset purchases would further loosen monetary and financial conditions, making access to finance cheaper for firms and households. This in turn would support investment and consumption, and ultimately contribute to a return of inflation rates towards 2%. After overcoming the sovereign bond crisis, the Eurozone has entrusted itself to its central bank to solve the growth question. However, the monetary expansion has not worked out as planned. Thus, arguing that the problem is not the medicine, but just the dose, in December 2015 the ECB announced an extension of the quantitative easing program[78]. It is clear,

[72] IMF (2014: 75-114).
[73] European Commission (2013: 47).
[74] IMF (2015: 128).
[75] Saraceno F. (2015d).
[76] Saraceno F. (2015c).
[77] ECB (2015a).
[78] See: Draghi M., Constâncio V. (2015).

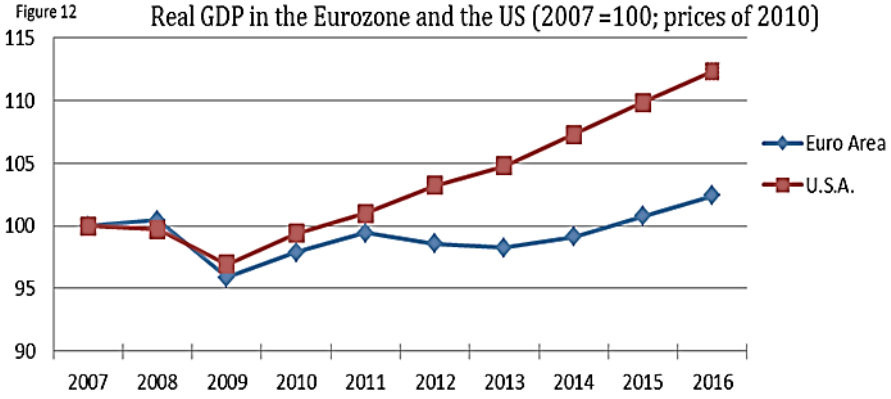
however, that monetary policy today is not the appropriate instrument to boost the economy. When nominal interest rates are at or near zero, i.e. a situation of "liquidity trap", monetary policy is impotent to stimulate demand. If monetary policy loses traction, the only effective instrument to boost the economy is fiscal policy[79]. Academics today agree that the massive Obama's fiscal stimulus package worked well in the US[80]. The US GDP is well above the pre-crisis peak, while unemployment is record-low. Despite the effectiveness of counter-cyclical fiscal policies has been demonstrated, European policy makers continue to rely on the new classical approach that perceives no justification for discretionary fiscal policy, preferring instead to encourage authorities to develop a reputation of economic orthodoxy. This means that the EMU risks to experience slow growth and high unemployment for several years ahead.

Figure 11



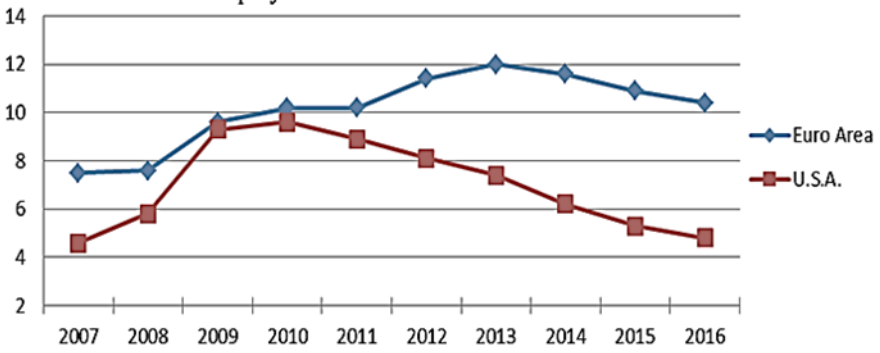
[79] Saraceno F. (2015b).
[80] Wren-Lewis S. (2015).

Figure 12 Real GDP in the Eurozone and the US (2007 =100; prices of 2010)



Source: AMECO.

Figure 13 Unemployment Rate in the Eurozone and the US



Source: AMECO.

Chapter V
In Search of Optimality
5.1 The Revenge of the "Old" OCA Theory

The traditional OCA theory stresses that active monetary policies, including exchange rate polices can be used effectively to stabilize the economy. Conversely, the "new" OCA theory argues that active monetary policies are sources of instability, and that central banks should focus only on maintain price stability. According to the traditional OCA theory entering in a monetary union is a substantial cost, because it implies the loss of fundamental instruments for macroeconomic stability. Instead, according to the "new" OCA theory the costs of a monetary union are small; national central banks do not lose their capacity to stabilize their economies when entering in a monetary union, since they did not have such a capacity before. The traditional OCA theory is a Keynesian-inspired theory; the "new" OCA theory is based on monetarist and neoclassical assumptions. While the Treaty of Maastricht symbolized the triumph of the "new" OCA theory, the euro crisis has represented the revenge of the "old" OCA theory[1].

This change of perspective is further confirmed by a recent IMF's study. In October 2014 the IMF staff, by analyzing 181 countries over 1980-2011, found empirically robust results "strongly consistent" with the Friedman's 1953 hypothesis according to which flexible exchange rates facilitate external adjustment. In particular, the IMF found that "trade imbalances under less flexible exchange rate regimes (regardless of whether the peg is direct or indirect) adjust significantly more slowly than imbalances under floats". In relation to the Eurozone, the IMF argued that the "euro adoption has indeed significantly slowed down external adjustment among the Eurozone countries, increasing the half-life of bilateral trade balance adjustment by about 1 year". According to the IMF, these findings have serious implications for EMU countries trying to adjust under fixed exchange rate regime, and "point to the formidable challenges facing them as they seek to regain competitiveness and restore external balance"[2].

Thus, exchange rate flexibility is now recognized to be an effective policy instrument in facilitating external adjustment, and consequently the lack of an autonomous monetary policy a substantial cost at the expense of EMU countries. The Mundell I analytical framework returns to be central in the debate about the European monetary integration. Accordingly, in the following paragraphs will be analyzed the Eurozone within the framework of the traditional OCA theory, in a comparative perspective with the US that can be reasonably considered a well-functioning monetary union and, therefore, a useful benchmark to make the EMU, if not optimum, at least, a sustainable currency area.

[1] Krugman P. (2012).
[2] Ghosh A. R, Qureshi M. S., Tsangarides C. G. (2014).

5.2 Asymmetry of Shocks

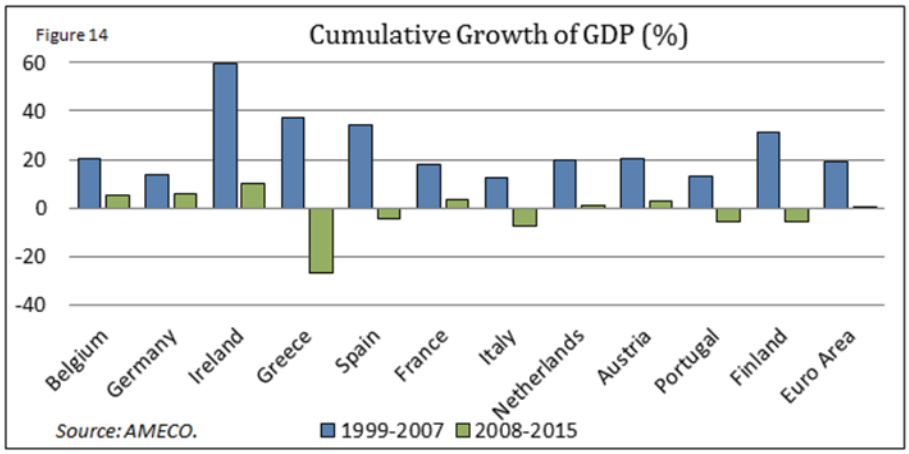
In the late 1980s and early 1990s the debate of similarities of shocks (synchronicity of business cycles) among European member countries acquired a great prominence. The similarity of shocks was considered a "catch all" property or "meta property" capturing the interaction between several other properties[3]. According to the OCA theory, asymmetric shocks are the main problem within a monetary union, therefore, if the incidence of supply and demand shocks are similar across member countries then the need of policy autonomy is reduced and the benefits from adopting a single currency exceed the costs. The literature has generally stressed the persistence of significant differences between EU member States in relation to external shocks. In particular, in the early 1990s Bayoumi and Eichengreen[4] found a strong distinction between the demand and supply shocks affecting the "core" countries (Germany, France, Belgium, the Netherlands and Denmark) and the shocks affecting the "periphery" members (the United Kingdom, Italy, Spain, Portugal, Ireland and Greece). Shocks to core nations were both smaller and more correlated across neighboring countries, while shocks of the periphery were larger and more idiosyncratic. The policy implication was to limit to the core group the establishment of the Eurozone.

However, the endogeneity of OCA hypothesis claimed by Frankel and Rose[5] promised that the adoption of a single currency would have generated greater *ex-post* convergence among EMU member States through deeper trade integration. Unfortunately, the "Rose effect" was significantly overestimated. Several studies have found that the trade effect of monetary integration in Europe is likely to be much smaller than the 200% forecasted by Rose. Estimates of the euro effect on trade found in these studies vary from 5%[6] to 15%[7]. Indeed, the elimination of exchange rate uncertainty exerted much stronger influence on capital movements than trade. It led to a dramatic convergence of interest rates which in turn contributed to divergence in economic developments across the Eurozone countries. A result opposite to that expected by Frankel and Rose.

During 1999-2007 some countries experienced booming economic conditions (Greece, Ireland and Spain), while some others very slow growth (Germany, Italy and Portugal). Very large differences in economic growth have persisted even after the 2008 crisis (*see figure 14*). Some countries have succeeded in overcoming the recession of 2008-2009 and lifting their GDP (slightly) above the pre-crisis level (e.g. Austria, Belgium, France, Germany and Ireland). While in other member States GDP still remains significantly below the level of 2008 (e.g. in Finland, Greece, Italy, Portugal and Spain).

[3] Mongelli F. P. (2002: 25).
[4] Bayoumi T., Eichengreen B. (1992).
[5] Frankel J. A., Rose A. K. (1996).
[6] Baldwin R., Di Nino V., Fontagné L., De Santis R., Taglioni D. (2008).
[7] See: Frankel J. (2010: 169-212).

Thus, one can say that 15 years of common currency have not enhanced the synchronization of national business cycles in Europe[8].

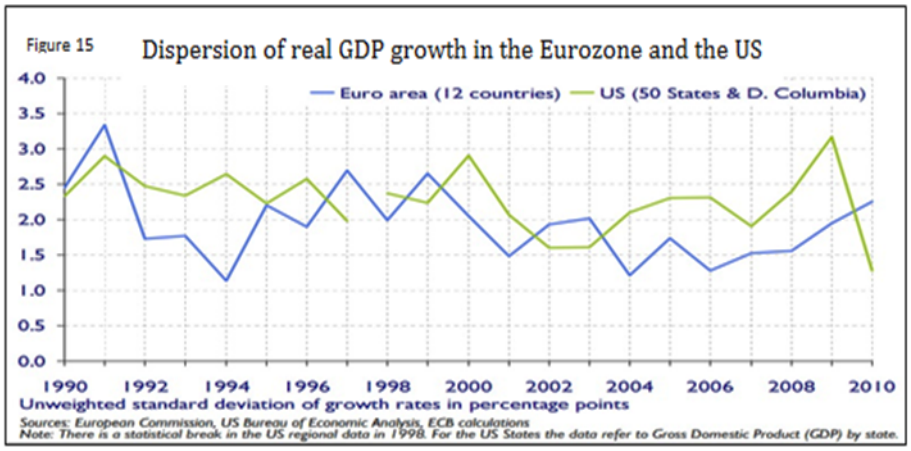


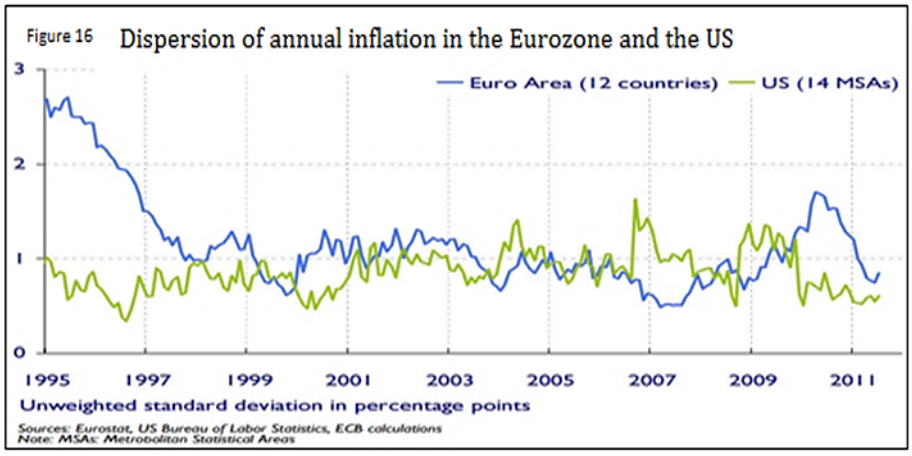
Asymmetric shocks in the EMU have arisen from different sources. For instance, Ireland and Spain benefited from housing bubbles in 1999-2007, while after 2008 they were affected by dramatic bubbles bursts. Italy and Portugal, which had specialized in low-value added goods, suffered from a globalization shock in the early 2000s, and then, during 2010-12, from a loss of confidence on their government debts by markets. Finland, a country on the top in the World Economic Forum's index of global competitiveness, benefited of the expansion of its hi-tech champion Nokia in the early 2000s, while later it was affected by a series of adverse shocks, such as the collapse of Nokia, the slump in forestry and commodity prices, the fall in exports to Russia due to EU-Russia trade restrictions[9].

One could argue that in the EMU asymmetric shocks are more likely because national governments continue to exercise considerable sovereignty in several economic policy areas. Budgetary policies, taxation, wage bargaining systems and legal systems remain national and they may lead to large divergences in the competitive positions of member States and different trends of economic activity. This is certainly a valid explanation, but it does not tell the entire story. The United States is a highly integrated economy and the federal government plays a greater rule in economic policy, so that one should expect a greater uniformity in the American economy than in the economy of the Eurozone. However, economic diversity within the euro area and the United States was not very different in the pre-crisis period. Conversely, regional dispersion of real GDP growth, annual inflation rates and unit labour costs were quite similar between the two monetary areas[10].

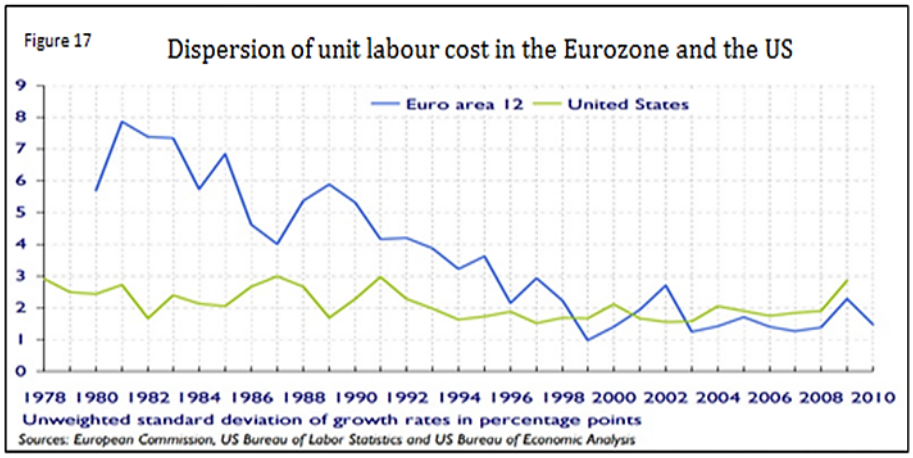
[8] See: Giannone D., Lenza M., Reichlin L. (2010).
[9] Evans-Pritchard A. (2015).
[10] Trichet J-C. (2011).

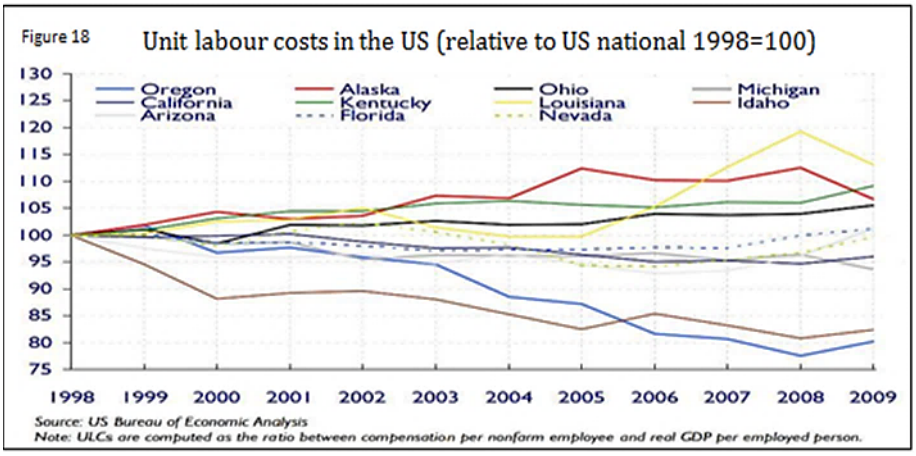
Prior to 2008 Arizona, California, Florida and Nevada (the so-called "Sand States") experienced house boom and bust cycles similar to those in Ireland and Spain[11]. At the same time, Michigan and Ohio, two manufacturing States, suffered the structural shifts of the US economy towards services and they grew well below the US average, similarly to Italy and Portugal. Surprisingly, also the dynamic of unit labour costs in the US was not so far to that observed in the Eurozone before the crisis. Both areas included countries that experienced large and/or persistent increases in unit labour costs, while others member States significantly improved their competitiveness vis-a-vis the monetary union's average.





[11] See: FDIC (2009).





These developments suggest that large asymmetric shocks are likely to occur also in full-fledged economic and political unions like the US. This is because the degree of asymmetry of business cycles is to a large extent dependent on factors over which policy-makers have little influence. For example, the degree of industrial specialization matters in determining how important and frequent asymmetric shocks are. There is very little that policy makers can do, however, to change regional specialization patterns. Moreover, asymmetric shocks are very related to the inherent dynamics of capitalism systems, characterized by periods of optimism and pessimism that capture consumers and investors and lead to booms and busts in economic activity[12]. The existence of the monetary union can exacerbate these booms and busts at national levels, rather than alleviate them, given the "one size fits none" monetary policy. The single interest rates that the supranational central bank imposes on all the member States are inevitably too low for the

[12] De Grauwe P. (2013).

booming countries and too high for countries in recession. Thus, what makes indeed sustainable (optimum) a monetary union is the presence of powerful correcting mechanisms that allow to deal with large country-specific shocks.

5.3 Shock absorbers in the Eurozone and the United States

The standard response to asymmetric shocks by the Maastricht orthodoxy is that monetary union members should do structural reforms so as to make their labour markets more flexible. Reforms focusing on removing downward wage rigidities in deficit countries will increase the speed of adjustment and contain its costs in terms of unemployment, as wages will become more responsive to changes in employment. Higher wage flexibility, in turn, will lead to higher price flexibility. The cost of correction will reduce and the Eurozone will become an optimum currency area (Friedman's OCA criterion). Although the theoretical arguments in favor of labour market flexibility are strong, the available evidence provides some reasons to be skeptical about its therapeutic properties.

Firstly, in the Eurozone's periphery wage deflation has allowed to remove external imbalances, but it also adversely impacted domestic demand and therefore slowed down the return to internal balance. Since 2010 peripheral countries have implemented labour reforms to cut wages, reduce unemployment benefits, lower minimum pays and make firing easier. Dramatic turnarounds of relative labour costs have occurred in Greece, Ireland, Portugal and Spain. This has allowed GIPS countries to adjust their external positions, but it has been a very painful process, implying huge costs in terms of lost output and employment. Large output gaps have, indeed, played a key role in reducing current account deficits in the periphery[13]. Internal devaluation can better work in very small economies that export a large part of their productions. This the case of Ireland, which is currently growing very fast, and unemployment is reducing after that it more than doubled between 2008 and 2012. The same conditions are not met neither in Greece and Portugal, which are more closed to international trade, nor in Spain or Italy, which have larger economies for which the importance of trade is, therefore, much lower[14].

Secondly, the experience of Greece shows that price rigidity is not necessarily linked to wage rigidity. In Greece wages have dramatically adjusted down since the crisis, however prices have not adjusted due to limited product market competition. This means that Greek workers have suffered from a huge loss in purchasing power, which in turn has drastically reduced the domestic demand, and that real income losses have not worked to boost export[15]. Pains without gains. Therefore, more emphasis should be put on product markets flexibility rather than labour market flexibility. Deregulating product markets would lift productivity and lower costs. This in turn

[13] Tressel T., Wang S., Kang J.S, Shambaugh J. (2014).
[14] Pisani-Ferry J. (2013: 119).
[15] See: Arkolakis C., Galenianos M. (2015).

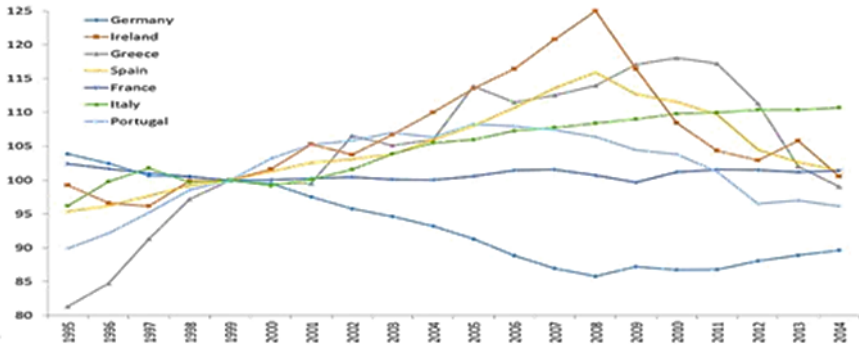
would depreciate the real exchange rate and thus improve demand for labor in tradable industries without requiring further wage cuts.

Thirdly, internal devaluation undermines debt sustainability. The very low or negative inflation that an internal devaluation strategy requires and the recession that it tends to cause both increase the burden of inherited public debt as a proportion of income. The same is true for the private sector. Substantial price reductions push companies into difficulties because the value of their assets as well as their cash flow diminishes, while their debts and their debt service remain unchanged. These companies may go bankrupt, even if the lower prices ought to make them more competitive. Likewise, private households that bought property on credit may be unable to service their debt after a wage cut, and may be driven into insolvency. Thus, peripheral countries struggling with both a competitiveness problem and a public and private debt problem have to pursue two conflicting objectives: to regain competitiveness, which requires real depreciation through wages and prices, and to keep debt dynamics under control, which deflation makes less manageable[16].

Fourthly, adjustment should operate in both the directions. The costs of the adjustment through wages can be reduce if it can be made to operate symmetrically; i.e. if internal devaluation in periphery countries is compensated by "internal revaluation" in core countries. Instead, since 2010 peripheral countries have been forced to reduce wages relative to the core countries without compensating wage increases in the core nations. Germany stopped its well-known internal devaluation in 2007-2008, but since then no significant internal revaluation has taken place. This has led to an asymmetric correcting process where the burden of the adjustment has been borne exclusively by the peripheral States. The latter have reduced their current account deficits, while the current account surpluses of core countries have continued to expand. All this creates a deflationary bias in Europe that explains why the EMU has experienced a very slow growth in the aftermath of the 2008 financial crisis and why periphery countries after harsh wage adjustments continue to show very high unemployment[17]. Wage and price adjustments should be symmetric; this means that European institutions, after having forced periphery countries into wage deflation, should put more emphasis on the "upward rigidity" of wages in the core countries. Unfortunately, European policy-makers continue to present the German wage moderation model as a benchmark for the entire Eurozone[18].

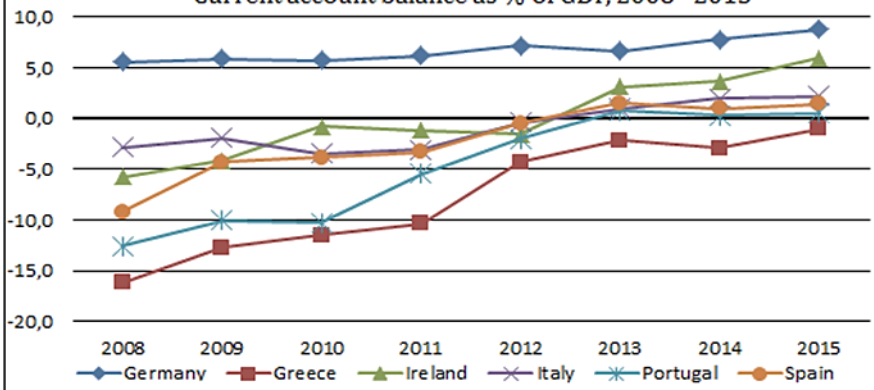
[16] Sinn H.-W. (2014: 139-140).
[17] De Grauwe P. (2013).
[18] For example, in summer 2011 the then ECB President Jean-Claude Trichet argued that: "The remarkable reliance of the German labour market in the last few years, where wage moderation and flexible time accounting shielded the economy from excessive job deconstruction, illustrates admirably the promise of well-structure reforms"; Trichet J. C. (2011).

Figure 19 Nominal unit labour costs (as percent of EMU18, 1999=100)



Source: Benassy-Quéré A. (2015).

Figure 20 Asymmetric rebalancing
Current account balance as % of GDP, 2008 - 2015



Source: AMECO.

Fifthly, evidence shows that wages provide only a marginal assistance to adjust asymmetric shocks also where labour market flexibility is very high. Since the 1980s many empirical studies have put emphasis on the difference in the degree of flexibility of the labour markets in the USA and in Europe. They have generally concluded that in the United States labour unions are relatively weaker, employment protection legislation is much lower, and labour markets are more competitive[19]. Therefore, the Maastricht orthodoxy's supporters tend to explain the difference in performance between the US and EMU by the higher rigidity of wages in Europe, thus, claiming the need to increase labour market flexibility within the euro area. Following these prescriptions, in the last two decades most European countries have experienced a drastic reduction in labour protection and the introduction of several types of contracts that are highly flexible (i.e. part-time, temporary, increasing protection, etc.). However, the experience of the United States shows the limits

[19] See: OECD (2015).

of this argument; already in the early 1990s, Blanchard and Kats[20] found that wage flexibility played hardly any role in US regional adjustments to shocks. In response to an adverse shock in demand, in the US relative nominal wages indeed declined but not by a large enough amount to prevent increases in unemployment. The level of labour market flexibility that the European policy-makers have in mind, i.e. sufficient to compensate asymmetric shocks of the magnitude caused by the capital flow reversals occurred in the periphery, does exist nowhere in the world, not even in Anglo-Saxon countries. The idea that EMU can achieve such a flexibility is neither realistic and, given the social implications that it would require, nor desirable[21].

Blanchard and Katz[22] found that in the US the dominant adjustment mechanism to regional unemployment shocks was labor mobility (Mundell's OCA criterion). According to the two authors in the US "in response to an adverse shock in employment, nominal wages decline strongly before returning to normal after approximately 10 years. This decline triggers some recovery in employment, but the response of job creation to wage declines is not sufficient to fully offset the initial shock […] A State typically returns to normal after an adverse shock not because employment picks up, but because workers leave the State"[23].

In the same period, several studies found that labour mobility in Europe was two to three times lower than in the United States, despite the existence of a much greater variation of regional income and unemployment in Europe, implying that the EU labour mobility was less responsive to employment and income incentives than is the U.S. labour market[24]. The low mobility of labour force across countries, in turn, tended to make unemployment in Europe more persistent. Accordingly, Blanchard argued that "currency unification works in the United States because labor can move between States. The labor mobility in Europe is negligible", thus, European adjustment to the unemployment will be "very long and painful"[25].

There is no evidence that suggests that today labour mobility is a stronger stabilization mechanism in the EMU. Dao, Furceri and Lougani[26] updated the Blanchard-Katz empirical exercise with 20 additional years of US data, and replicated the analysis using data for 173 regions in 21 European countries over the period 1998-2009. They found that in the US out of every 10 workers who lose jobs in a State as a result of an adverse shock, two workers become unemployed, two workers drop out of the labour force and six workers move out of the State within the first year. In Europe, in the period 1998-2009, out of every ten workers that lost employment, one worker became

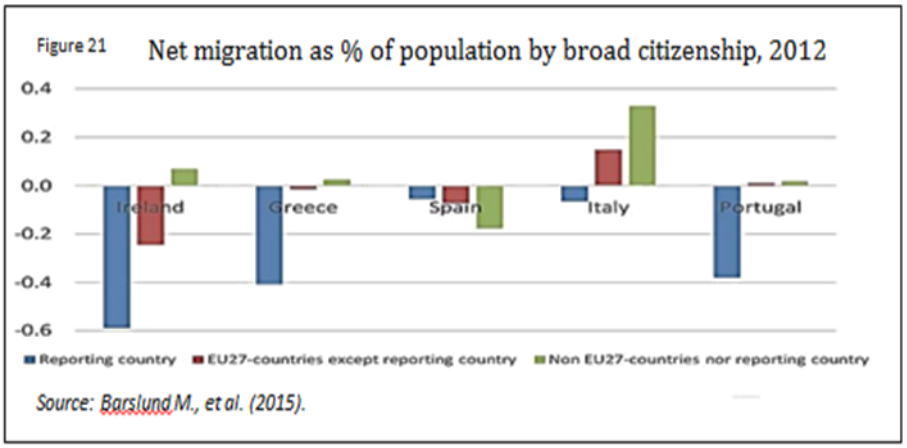
[20] Blanchard O. J., Katz L. F (1992).
[21] Krugman P. (2015).
[22] Blanchard O. J., Katz L. F (1992).
[23] Blanchard O. J., Katz L. F (1992: 3).
[24] See: OECD (1986); and Eichengreen B. (1991).
[25] Neimark M. (1992).
[26] Dao M., Furceri D., Loungani P. (2013).

unemployed, six dropped out of the labour force, and three workers migrated out of the region within the first year following the shock. Thus, when an adverse regional employment shock occurred, in the US most of the drop in employment was met by inter-State migration, instead, in Europe most of the drop in employment was met by a fall in the participation rate. Moreover, in the period examined Europe labour market adjustments due to labour migration occurred mostly due to citizens from Central and Eastern European countries, and much less from workers within the Eurozone. Therefore, restricting the sample to the EMU the role of regional migration as a shock absorber was even weaker than in the case of EU as a whole.

Not even the euro sovereign debt crisis has not induced previously immobile EMU workers to become more mobile, showing that there are clear limits to the potential of labour mobility within the euro area[27]. Several years of intense recession and very high unemployment rates have caused higher outflows of nationals from the periphery, but absolute figures remained very low[28]. An increase of a few tens of thousands in the number of workers moving from Eurozone's periphery to the core countries is not enough to trigger a substantial reduction in the unemployment rates in the periphery, where millions of people have become unemployed over the past few years. At the same time, mobility flows from Central and Eastern European countries to Western European countries have continued after the crisis, even if with weaker intensity and redirected away from the periphery towards Germany, the UK and other Northern European States. This suggests that in the EU wage differences seem to be a much more powerful driver of mobility than unemployment rates in the EU. This might imply that the overall potential for mobility is likely to decrease in the future, given the further convergence of income between East and West[29].

One should not expect too much from any further elimination of administrative barriers to mobility (e.g. full recognition qualifications and portability of social security rights). The free movement of workers in Europe has been ensured since the Treaty of Rome of 1957, but the share of EU citizens who currently reside in another member State is only around 3.0%[30], and annual mobility flows between member States do not exceed 0.3% of EU population, one-tenth of the corresponding US statistic. There are mostly language barriers, cultural differences, and social factors behind the low labour mobility in Europe. Thus, it may require huge unemployment and regional inequality to generate labour mobility on the scale needed to resolve regional imbalances. This would be equally destabilizing for Eurozone cohesion due to the political implications of large-scale migration, together with tensions created by high unemployment within some member countries.

[27] See: Jauer J., Liebig T., Martin J. P., Puhani P. (2014).
[28] Barslund M., Busse M., Schwarzwaelder J. (2015).
[29] Barslund M., Busse M., Schwarzwaelder J. (2015: 5).
[30] European Commission (2014).



In such a scenario where asymmetric shocks are persistent and labour flexibility and mobility are insufficient to sustain full employment equilibrium, the OCA theory prescribes the need of insurance mechanisms that allow for income transfers to regions experiencing a negative shock. In particular, financial and fiscal integration can be of great importance for the smooth functioning of a monetary union, facilitating the adjustment to asymmetric shocks. Cross-border holdings of assets and liabilities allow national economies to share the risk associated with their individual domestic business cycles. The diversification of the financial assets of residents makes their wealth less volatile and less sensitive to shocks affecting domestic output, thereby loosening the link between consumption and domestic output, both on a time and country dimension (Mundell II's criterion). This result can also be achieved by a fiscal-based insurance scheme. A centralized union budget will automatically transfer income from member States or regions that experience good economic conditions to member States/regions experiencing negative shocks, thereby stabilizing consumption in both directions and absorbing a share of the regional shocks (Kenen's OCA criterion).

Sala-i-Martin and Sachs[31] first estimated to what extent the federal government of the United States insured member States against regional income shocks. They found that that a one dollar reduction in a region's per capita income triggered a decrease in federal taxes in the neighborhood of about 34 cents and an increase in federal transfers of about 6 cents. Thus, the final reduction in disposable per capita income was on the order of 60 cents. That is, between one third and one half of the original shock was absorbed by the federal fiscal system. However, their methodology was challenged because it did not allow to distinguish between redistributive (long-term fiscal flows) and stabilization (short-term responses to regional business cycles) effects of interregional fiscal transfers. Bayoumi and Masson[32] expressed the variables

[31] Sala-i-Martin X., Sachs J. (1991).
[32] Bayoumi T., Masson P. R. (1995).

in differences and relative terms to split redistribution and stabilization. They found that in the United States the stabilization effect by the federal budget was about 30% of the initial shock (30 cents out of the initial 1 dollar shock). Thus, in terms of the size of the stabilization effects, the results by Bayoumi and Masson were not far to those estimated by Sala-i-Martin and Sachs, although in terms of composition were radically different, indicating that transfers, and not taxes, were the largest component in stabilization.

In the same period Asdrubali, Sorensen and Yosha[33] sought a wider aim and analyzed the stabilization offered by the federal budget and other channels like financial markets. They focused on shocks to gross state product in the period 1964-1990 and found that financial markets integration in the United States allowed for considerable risk sharing among US regions. More precisely, they found that: 39% of the shocks were smoothed by capital markets, 23% by the credit market, and 13% by the federal government, while 25% of these shocks were not smoothed out at all. Hence, in the U.S. three-fourths of asymmetric shocks would be offset by the federal budget, capital markets and credit markets, where financial markets overall contributed with 62% (i.e. 39% + 23%) to the absorption of State shocks. Few years later, Marinheiro[34] conducted a similar analysis in relation to the period 1970-1999, and compared the risk-sharing capacity between the States in the US with the risk sharing between the member countries of the Eurozone. He found substantial differences between the two areas. Firstly, the amount of the asymmetric shocks in GDP left unsmoothed in the euro area (56%) was almost three times the equivalent amount in the United States (20%). Secondly, while credit markets smoothed 21% of the shocks in output both in the EMU (essentially by government net saving) and in the US, the were main differences between the two currency areas in the amount of risk sharing provided by the federal budgets and by the capital markets. In the US the federal tax and transfer system smoothed 14% of the asymmetric regional shocks, while in the euro area such an interregional fiscal system did not exist. In contrast, the national governments budgets were found to have a decisive smoothing importance in the Eurozone; however, national budgets provided intertemporal smoothing (between generations) and not interregional smoothing. Moreover, the amount of risk sharing provided by capital markets in the euro area was only 25% of the shocks, substantially below that of the US, where capital markets smoothed 45% of shocks in output that occurred at the State level. This was the result of a much lower degree of cross-country ownership of productive assets in Europe than in the United States.

[33] Asdrubali P., Sorensen B., Yosha O. (1996).
[34] Marinheiro C. (2003).

Table 4 Interregional smoothing of asymmetric shocks in the US and Eurozone, %

Channel	US (1964-1990)*	US (1970-1998)^	Euro Area(12) (1970-1999)^
Capital markets	39	45	25
Credit market	23	21	21
Federal government	13	14	-2
Not smoothed	25	20	56

** Asdrubali P., Sorensen B., Yosha O. (1996); ^ Marinheiro C. (2003).*

These pre-euro studies, despite differences in figures, confirmed the importance of fiscal and financial integration in the US to provide risk-sharing mechanisms and promote stabilization in the aftermath of asymmetric shocks within the monetary union. At the same time, they highlighted the weakness of such mechanisms in Europe. Furthermore, these analyses suggested that the constraints imposed by the Stability and Growth Pact in the operation of national fiscal policies in the EMU would have led to a reduction both in the amount of interregional smoothing provided by the credit markets, which was mainly the result of government net saving smoothing, and in the intertemporal smoothing capacity of national budgets, which had played a major role in stabilization in the preceding decades, thereby aggravating the macroeconomic fragility created by the loss of monetary autonomy[35].

However, the architects of EMU expected more smoothing from market forces due to the functioning of the monetary union. The introduction of the euro would have allowed for financial markets to become much more integrated with a substantial gain in the amount of risk sharing provided by capital markets. In case of negative shock in one member country, foreign capital would have offset the lacking domestic credit, while the diversification of financial portfolios would have contributed to sustain national income.

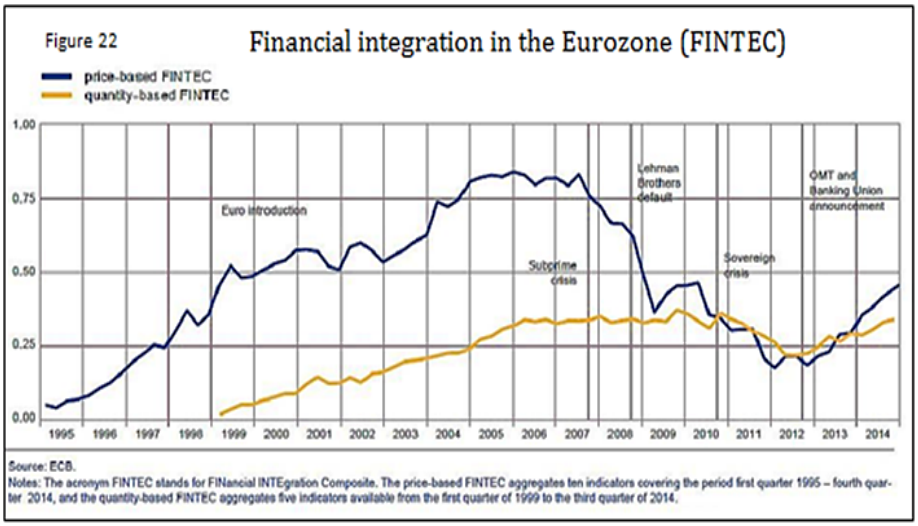
Before the global financial crisis evidence of a significant risk-sharing was considered "modest, but encouraging"[36]. The ECB's financial integration indicators revealed that the progress achieved in the euro area varied considerably across market segments[37]. In particular, integration was more advanced in the areas closer to the single monetary policy. The euro area money market (interbank market) reached a stage of "near perfect" integration almost immediately after the introduction of the euro. Also government bonds market appeared to have been very much integrated since the start of the Eurozone in 1999. Yields on member countries government bonds dramatically converged since they were seen as close substitutes. Similarly, the

[35] See: Marinheiro C. (2003: 26); and Eichengreen B. (1997).
[36] Bini Smaghi L. (2007).
[37] See: ECB (2008: 104-107).

advent of monetary union had also brought progress in the integration of the corporate bond market. Integration in the equity markets, instead, was less advanced, while the retail banking still exhibited a significant home bias and remained largely fragmented. Despite differences in the degree and pace across market segments, prior to the crisis financial integration was widely assumed to be "a structural phenomenon in the euro area, and as such progressive and not easily reversible"[38]. However, when the crisis erupted financial integration did not play at all as an interregional smoothing device. On the opposite, as argued in Chapter 4, credit and capital markets actually played a destabilizing role in periphery countries, as capital flew-in during the boom years and flowing-out massively (sudden stops) when the recession began.

The Lehman brothers default and the subsequent sovereign debt crisis determined a severe reversal of financial integration in the Eurozone. This is shown by the price-based and the quantity-based FINTEC, the new composite indicators of financial integration in the euro area developed by the ECB (*Figure 22*)[39]. The segments that were more integrated before the crisis were the most adversely affected by the financial turmoil that followed the Lehman Brothers default. From 2008-2010 markets started to perceive government bonds to present a great diversity in terms of risks, and interest differentials on sovereign securities increased sharply. Increases in interest rates on government bonds exacerbated the funding costs of domestic banks and severely limited their access to markets. This was because these banks were the main holders of the bonds of the country under stress in which they operated and thus they suffered from a "collateral discrimination" on interbank market. Periphery countries' banks made large losses, which in turn created further distrust by markets. Thus, both sovereign bond market and money market integration receded. In turn, the fragmentation of the single financial market led to a fragmentation of the transmission mechanism of the single monetary policy. Differentials in costs of bank financing led to significant differentials in costs of banks loans for households and firms across the Eurozone, despite identical central banks' interest rates. Separate national financial markets remerged. The disruption of the monetary policy's transmission mechanism finally forced the ECB to announce the OMT program in summer 2012[40].

[38] Praet P. (2012).
[39] For a detailed description of the FINTECs, see: ECB (2015: Statistical Annex, 117-147).
[40] See: Draghi M. (2012).



Since the OMT's announcement the degree of financial integration in money, bond and banking markets in the Eurozone has shown an improvement. However, the euro area has a long way to go to achieve a degree of financial markets integration sufficient to smooth asymmetric shocks within the monetary union in a magnitude equivalent to that in the US. Cross-border holdings by euro area MFIs of sovereign and corporate bonds issued in other euro area countries are still below the pre-crisis level, and the overall portfolio diversification is quite modest in Europe, while banks remain to a large extent national[41]. Moreover, the elevated levels in banks' exposure to risks from domestic sovereign bonds are a crucial dimension of the "doom loop" linking the solvency of banks and that of the sovereign. This is aggravated by the lack of a European Banking Union. In particular, the absence of a European deposit insurance scheme makes it possible that in the future a national government debt crisis can again pull domestic banks into a crisis also, shutting these banks out of the interbank market (e.g. this was the case of Italy in 2011-12), or vice-versa a banking crisis can force a member government to bail out domestic banks under stress, putting unsustainable pressure on national public finances (e.g. the case of Ireland in 2009-2010).

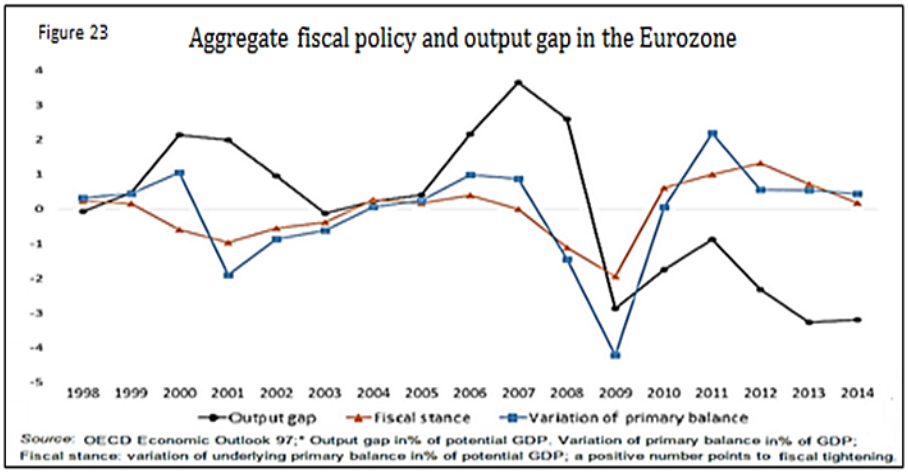
This is another lesson that should be learnt observing the experience of the US where the deposit insurance system is federal and shields individual States from the budgetary fallout of banking resolutions. As mentioned above, Nevada experienced a strong housing boom and bust as Ireland. Local banks in Nevada experienced huge losses (like in Ireland) and many of them became insolvent; however, this led neither to any disruption of the local banking system nor to a nearly default of the State government, as these banks were seized by the Federal Deposit Insurance Corporation (FDIC). It has been estimated that the federal institutions of the US Banking Union

[41] See: ECB (2015).

provided Nevada with a shock absorber over 10% of Nevada GDP, not in the form of loans, but in the form of transfers because losses of this magnitude were borne at the federal level.[42] Until such a system will be not established in the Eurozone the "deadly embrace" between sovereign debt and banks will not be cut, financial integration will not be ensured, and the capital markets will not play as a significant stabilizing mechanism across euro area countries. In other words, a Banking union improves the functioning of a monetary union according to the OCA theory in two ways: i) it cuts the sovereign-banking "deadly embrace" and helps to avoid large asymmetric shocks due to sudden capital flow reversals; ii) it increases private risk-sharing, cushioning such shocks. At the same time, a Banking Union requires some centralized fiscal backstop to sustain deposit insurance and banking resolution, thereby adding also an element of public risk-sharing[43].

However, even in the optimistic assumption that capital markets would become as integrated in the euro area as they are in the US, the amount of shocks left unsmoothed in the Eurozone, according to the studies cited above, would still be considerably larger than that left unsmoothed in the US. The explanation for this result is the already mentioned lack of a federal budget in the EMU. Therefore, in the Europe national fiscal policies must play a significant role as automatic stabilizers when member countries are hit by a recession. Intertemporal smoothing replaces interregional smoothing. Proponents of the SGP argue that once government budgets are kept "close to balance or in surplus" in normal times, an ample operation of automatic stabilizers is ensured in bad times without trespassing the 3% deficit limit. However, the 2008-2009 recession was of such a magnitude that keeping deficits within the 3% limit resulted impossible in many countries. In two years, from 2007 and 2009, Spain moved from a surplus of 2% of GDP to a deficit of 11%; Ireland from balance to a 14% deficit. Higher government deficits and recession increased market worries about the capacity of several member States to service their debts, rising borrowing costs and default premium on the CDSs market. As national governments in a monetary union issue debt in a currency over which they have no control, distrust by markets triggered a liquidity crisis (sudden stops) and potentially a solvency crisis. Once in a bad equilibrium, periphery countries lost the automatic stabilizers in their budgets, and were forced to implement austerity measures in the midst of an adverse shock, thus aggravating the recession. At the same time, the constraints imposed by the European fiscal framework (and *austerian ideology*) prevented to provide some compensation through fiscal expansion in the core countries. Thus, after 2010 the EMU aggregate fiscal stance did not address the widening output gap and fiscal policy became pro-cyclical. This is a problem that is likely to reappear in future economic downturns.

[42] See: Gros D. (2012).
[43] Geeroms H., Karbownika P. (2014).



5.4 An Unemployment Insurance Scheme for the Euro Area

The euro crisis has demonstrated that the monetary union designed in Maastricht is a very fragile construction. After having lost their capacity to stabilize business cycles by the use of the monetary policies and exchange rate adjustments, some member States lost access to capital markets and could not let the budgetary automatic stabilizers sufficiently work. In such a scenario, the adjustment process in the periphery became very painful, and the absence of monetary and national exchange rate policies was felt as a substantial cost. It should be clear today that there is no alternative to create a stabilization capacity at the euro area level in order to make the Union more acceptable. The best solution would be follow the US experience and equip the EMU with a true budget. The benefits would be substantial. Firstly, the supranational fiscal authority would issue debt ("*Eurobonds"*) in currency over which it would have full control. The Union government could not be confronted with a liquidity crisis, since it would be capable of forcing the common central bank into providing for liquidity in moments of crisis (protection function). Secondly, a supranational budget would work as an insurance mechanism transferring resources to countries hit by a negative shock, thereby sustaining domestic demand, reducing the social costs of the adjustment and preventing the destabilization of the Eurozone (stabilization function)[44].

This was also the main conclusion of the MacDougall Report published in 1977. That Report argued: "public finance in existing economic unions plays a major role in cushioning short-term and cyclical fluctuations. […] If only because the Community budget is so relatively very small there is no such mechanism in operation on any significant scale as between member countries, and this is an important reason why in present circumstances

[44] De Grauwe P. (2014: 125).

monetary union is impracticable"[45]. It suggested that asymmetric shocks could be countered by: i) a system of cyclical grants to local or regional governments, triggered by regional unemployment or GDP trend indicators; ii) a "conjunctural convergence facility" aimed at preventing acute cyclical problems for weak member States leading to increasing economic divergences; iii) a "Community Unemployment Fund", in line with the 1975 Marjolin Report[46], that would provide a direct fiscal injection into areas experiencing above-average unemployment. Moreover, the MacDougall Report advocated the need to assign to the EU budget also a redistributive powers. Thus, the MacDougall's combination of stabilization and redistributive policy measures required the gradual extension of the EU budget from 2-2.5% of GDP, in the transition period to the Eurozone formation, to 5-7% of EU GDP in the early years of the euro area, and ultimately expanding to 20-25% of European GDP in a mature Economic and Monetary Union.

This solution would require a far-reaching degree of political unification, i.e. a large transfer of national sovereignty in the field of taxation and spending to a European government and the EU Parliament. It is clear that there is very little prospect for such a centralization of national budgets at European level in the foreseeable future. This unwillingness to go in the direction of a Fiscal Union will continue to make the Eurozone a fragile monetary union in the next years. However, it is possible to move forward taking small steps by setting up "*surrogates of fiscal federalism*"[47] that allow to provide interregional automatic stabilizers and ensure a more equitable distribution of the gains and losses of EMU[48]. This solution was advocated already in 1993, just one year after the signature of the Maastricht Treaty, when a Report prepared by a group of experts for the European Commission proposed the creation within the EU budget of a stabilization mechanism triggered by changes in national unemployment rates to support member States hit by asymmetric shocks[49].

The euro crisis has revived the debate about a deeper fiscal integration in the EMU. Since 2012 the idea of a European unemployment-based shock absorber has moved to the highest policy circles. It was part of the proposals made by the European Commission in the 2012 "Blueprint for a Deep and Genuine EMU"[50] and in the 2013 Communication on the "Social Dimension of EMU"[51], and by the "Four Presidents" in the 2012 Report. The latter called for: "an EMU fiscal capacity with a limited asymmetric shock absorption function [that] could take the form of an insurance-type system between

[45] MacDougall D., *et al.* (1977: 12).
[46] Marjolin R., *et al.* (1975).
[47] Saraceno F. (2013).
[48] Among the most cited blueprints for a European Fiscal Union: Allard C., Brooks K. P., Bluedorn J. C., Bohrnhorst F., Christopherson K., Ohnsorge F., Poghosyan T. (2013); and Enderlein H., Bofinger P., Boone L., De Grauwe P, et al. *(*2012).
[49] European Commission (1993).
[50] European Commission (2012).
[51] European Commission (2013b).

euro area countries. […] such as unemployment insurance"[52]. The "Four Presidents" justified the need for such an EMU fiscal capacity with the traditional arguments of the OCA theory. They argue that: "In a common currency area, the burden of adjusting to country-specific economic shocks falls on labour and capital mobility, price and cost flexibility, and fiscal policy. In order to protect against negative fiscal externalities, it is important that fiscal risks are shared where economic adjustment mechanisms to country-specific shocks are less than perfect. This is clearly the case in the euro area, where labour mobility is comparatively low, capital flows are susceptible to sudden swings that can undermine financial stability, and structural rigidities can delay or impede price adjustments and the reallocation of resources. In such cases, countries can easily find themselves pushed into bad equilibria with negative implications for the euro area as a whole"[53].

A euro area unemployment insurance scheme (EUIS) would be particularly suitable to act as an automatic stabilization tool because unemployment benefits are a virtually instantaneous response to downturns in the business cycles. EMU-wide unemployment benefits expenditure would reduce the variability of GDP in a major recession in a member country, and reduce the variability of income even more if the benefit scheme is generous and adverse shocks have a direct impact on employment. By maintaining a certain level of income for the unemployed, unemployment benefits support demand and give the unemployed enough time to find a job that matches their qualifications or to retrain if necessary. Moreover, the multiplier effect of unemployment insurance benefit expenditure is large since it primarily targets low-income households facing cash shortfalls[54].

Since the "Four Presidents Report" a number of proposals for a feasible euro area unemployment insurance scheme have been made by European and national institutions, academics, policy-makers and think tanks, both as a possible first step towards the set-up of a common fiscal capacity to tackle asymmetric shocks and as a means to strengthening the social dimension of the EU[55].

On the basis of such proposals it is possible to identify three main options how an unemployment-based shock absorber for the Eurozone could be designed[56]. For all three variants, specific choice need to be made regarding: i) scope; ii) activation, iii) size; iv) eligibility rules; v) replacement ratios; vi) duration of benefits; vii) interaction with national systems; viii) fiscal rules; ix) administration, x) financing.

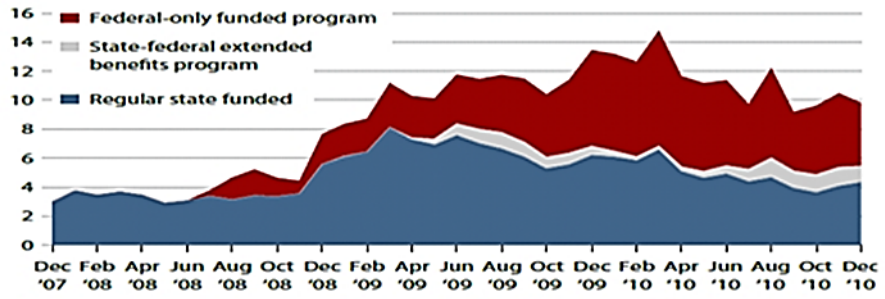
A first option would be a "basic unemployment insurance scheme". An unemployment insurance scheme for the euro area which provides a mini-

[52] Van Rompuy H., Barroso J. M., Juncker J-C., Draghi M. (2012: 11).
[53] Van Rompuy H., Barroso J. M., Juncker J-C., Draghi M. (2012: 10).
[54] Directorate General of the Treasury (2014).
[55] For example, proposals from Italian institutions are: Ministero dell'Economia e delle Finanze (2015); and Brandolini A., Carta F., D'Amuri F. (2014).
[56] Dolls M., Fuest C., Neumann D., Peichl A., Ungerer M. (2014).

mum insurance for a limited time period. Under such a system, a certain share of contributions to unemployment insurance would be paid to a European fund instead to national schemes. The European scheme would partly replace national unemployment insurance systems, however, if a country desires a higher level of protection than is provided by the EUIS, it could do so by topping up the European benefits. If a country decides on a top-up, these extensions would have to be paid for by national funds.

A second option would be a "benefit extension program". The EMU unemployment insurance scheme would supplement national systems by providing additional benefits in case of severe economic downturns. Common benefits could either top-up national benefits or substitute them if national benefits expire. The pay-out rules would be trigger-based, i.e. benefits from the EMU scheme would be paid if the level and/or change in unemployment reached pre-determined thresholds. Such a system would be broadly comparable with various benefit extension programs in the US. There, State regular unemployment insurance benefits, which generally last up to 26 weeks, can be extended through a combination of permanent and temporary federal legislation. The Federal Extended Benefits (EB) program provides additional 13-20 weeks of benefits to workers in States where the level and change in the State unemployment rate is above a specified threshold. The EB program has been recently supplemented by the Federal Emergency Unemployment Compensation (EUC) program which provides up to 47 weeks of additional unemployment benefits to jobless workers who have exhausted their regular State benefits. The extended benefits are partially financed at the federal level, while the emergency benefits are completely financed by the federal government (*Figure 24*)[57].

Figure 24 Unemployment insurance benefits paid by month in the US (billion dollars)



Source: Boushey H., Eizenga J. (2011).

[57] See: Congressional Budget Office (2012).

On the stabilization effects of the US federal-state system of unemployment insurance, many divergent estimates can be found. Two important differences explain the divergence. A first difference is whether one estimates average stabilization over the whole business cycle or marginal stabilization during downturns (which appears more relevant). A second is whether only the effects of the regular State-level unemployment benefits are estimated or whether federal extended and emergency benefits are also included[58]. The seminal paper by Asdrubali, Sorensen and Yosha[59] claimed that the stabilization impact of the US federal unemployment insurance system, in the period 1963-1990, was very small: only 1.7% of a State-specific income shock was absorbed by the federal unemployment insurance. However, the authors focused on average stabilization over a whole business cycle. Chimerine, Black and Coffey[60], as well as Vroman[61], instead, focused on the impact during a recession which can be seen as an analysis of marginal stabilization in times when it is most needed. Chimerine et al., by analyzing 5 recessionary episodes occurred in the US between 1969-1991, estimated that recession-related changes in real GDP were reduced on average by about 15% by the US unemployment insurance benefits. Vroman estimated that the US unemployment insurance system closed about 18% of the shortfall in the real GDP caused by the Great Recession of 2008-2009, almost half of the stabilizing effect could be attributed to federal transfer system of extended unemployment benefits and the rest to the regular State-level unemployment benefits.

A third option for a euro area unemployment insurance scheme would be to introduce a "fully centralized unemployment insurance system". National unemployment insurance schemes would be completely replaced by the EUIS, this in contrast to the two alternatives above where the EMU unemployment scheme would partly replace or complement national systems. In this case, the direct costs of unemployment at national level would be fully borne by the supranational level.

The "Four Presidents Report" set the guiding principles for the shock absorption function of an EMU fiscal capacity. According to the Report, the EMU unemployment insurance scheme should: i) improve the overall economic resilience of the EMU and euro area countries; ii) cushion country-specific shocks without leading to unidirectional and permanent transfers between countries; iii) not be conceived as an income equalization tool; iv) not undermine the incentives for sound fiscal policies at the national level; v) not undermine incentives to address structural reforms at the national level; vi) limit moral hazard; vii) be developed within the EU legal framework; viii) be consistent with the existing EU fiscal rules; ix) not be an instrument for crisis management; x) be consistent with the principle of subsidiarity and not

[58] See: Strauss R., *et al.* (2013: 12).
[59] Asdrubali P., Sorensen B., Yosha O. (1996).
[60] Chimerine, L., Black T. S., Coffey L. (1999).
[61] Vroman W. (2010).

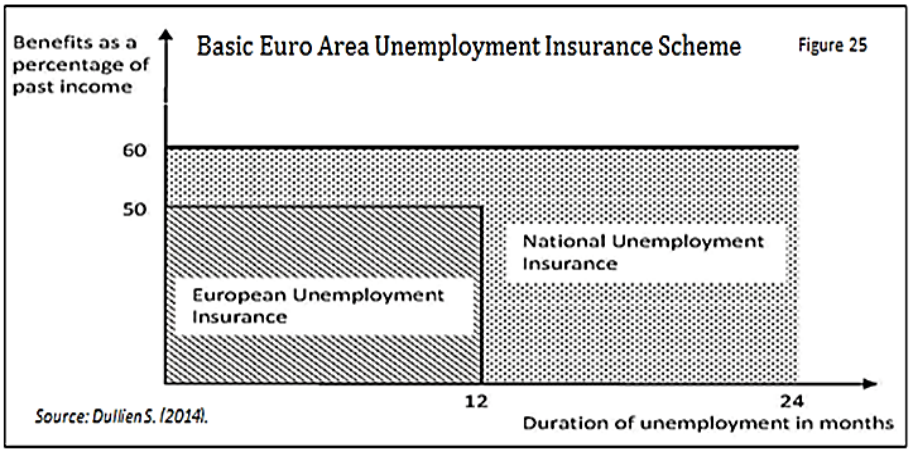
lead to unnecessary centralization; xi) not lead to an increase in expenditure or taxation levels[62].

Given the three broad alternatives for an EUIS discussed above, and the guiding principles of the "Four Presidents", the most feasible system appears to be a "basic unemployment insurance scheme". A basic EUIS is more likely to be accepted by member governments in a context where reciprocal confidence and the willingness to go towards more integration are particularly weak. It would require neither a high amount of harmonization in labor regulation and taxation nor integration between the national systems of unemployment benefits. Such a scheme would allow member States to keep a large degree of discretion over the level of social protection in their own country, thereby preserving national competence according to the principle of subsidiarity. At the same time, the risk to undermine the incentives of national governments to address their own structural weaknesses would be minimized, given that the direct costs of unemployment would be mainly borne by the national level. The EMU unemployment insurance, in fact, would only cover short-term unemployment, while structural reforms by definition aim at reducing long-term unemployment. Therefore, as long as the EUIS does not bear the costs of long-term unemployment, it should not create moral hazard for national policy makers. In addition, a basic unemployment insurance scheme would present the advantage of being established within the existing EU Treaties framework. Articles 136 and 175 TFEU appear to provide a sound legal basis to establish such a EUIS by ordinary legislative procedure[63]. Finally, a basic EUIS could also be combined with elements of a "benefit extension program", e.g. transfers could be activated once unemployment rates are above a certain threshold and continue rising, thereby supplementing the national benefits[64].

One of the most comprehensive and in-depth potential architecture for a basic EUIS with transfers to short-term unemployed was proposed by Dullien on request of the European Commission in 2013[65]. He designed a European unemployment insurance as a follow. First, the EUIS would pay 50% of past income for up to 12 months while the national unemployment insurance would have to pay the rest according to national rules (*Figure 25*). From the point of view of the unemployed, the introduction of the European unemployment insurance would not alter the generosity of unemployment protection. Second, all the employees in EMU would be ensured, and benefits from the EUIS would be financed by contributions from employees and/or employers on gross wages which would be collected through existing national unemployment insurance administrations. National governments would be free to top-up the payments from the European level or extend its coverage to other unemployed groups. If a country decides to top-up these

[62] Van Rompuy H., Barroso J. M., Juncker J-C., Draghi M. (2012: 12).
[63] See: Ministero dell'Economia e delle Finanze (2015: 3).
[64] Dolls M., Fuest C., Neumann D., Peichl A., Ungerer M. (2014: II.31).
[65] Dullien S. (2013a); and Dullien S. (2013b).

extensions in their generosity they would then have to be paid for by national contributions to the national unemployment insurance. Third, while some countries would make net payments to other countries over the cycle, for the euro area as a whole, the introduction of the system would leave the fiscal burden for employees and businesses overly unchanged. As the system just replaces part of already existing national systems, both with regards to pay-outs and contributions, the overall costs would remain unchanged and moreover the contributions towards unemployment insurance could be expected to remain constant. Fourth, the EUIS would be able to run surpluses and deficits, this means that it would accumulate reserves (in good times) and borrow in the capital markets (in years with synchronized recession), so that the stabilization would not be only across countries but also across time. This would allow to avoid frequent adjustments of the contribution rate and pro-cyclical effects. However, over the cycle, contributions to the scheme would have to cover all payouts.



Then, Dullien simulated the net transfers and the stabilization properties of such a EMU(12) unemployment insurance scheme in relation to the period 1995-2011. He assumed a macroeconomic multiplier of disbursed unemployment benefits by the EUIS equal to 1, which could be considered a conservative estimate[66]. Given that the lack of EMU-wide data on the employment history of the individual unemployed makes it impossible to determine with precision how many unemployed would be eligible for the EMU unemployment benefits, Dullien used two different assumptions to estimate their number. In the assumption *A* all the increase in short-term unemployment

[66]According to Zandi M.M. (2008), in the US a 1 dollar increase in unemployment benefits generates 1.64 dollar in near-term GDP. According to the US Congressional Budget Office (2012), extending unemployment benefits for one year would boost GDP by 1.10 dollars for every dollar of budgetary cost in that year. This figure represents the midpoint in the range used by CBO which suggests that increasing unemployment benefits by 1 dollar raise GDP by between 0.4 and 1.80 dollars.

over the past 12 months was covered plus 3% of the total employment in a country. In the assumption *B* all of the increase in the short-term unemployment over the past 12 months was covered plus 20% of the remaining short-term unemployment. These are arbitrary settings which try to get the number of covered unemployed close to the numbers covered in the national unemployment schemes.

The simulation showed that during the period 1995-2011 the EUIS would have had average annual revenues and pay-outs between 20 billion and 50 billion euros in nominal terms (i.e. between 0.3% to 0.7% of EMU(12) GDP) and could be financed by a payroll tax between 0.65% and 1.66%, depending on the assumptions. In general, no single member country would have been net receiver or net payer in all years. All member countries would have received payments in the large recession of 2008-2009. Overall, in the period 1995-2011, net contributors to the scheme would have been Belgium, Germany, France, the Netherlands and Italy, while net recipients Spain, Greece, Ireland and Finland (*Table 5*).

Table 5 Net overall payment flows to the EUIS by country, 1995 to 2011 (billion euros)

	Assumption A	Assumption B
Belgium	1.1	3.1
Germany	11.2	21.1
Spain	-17.4	-45.5
France	7.7	3.2
Ireland	-1.3	-0.9
Italy	7.2	7.4
Luxemburg	0.0	0.2
Netherlands	1.8	11.3
Austria	-0.5	2.1
Portugal	-0.6	0.2
Finland	-1.6	-3.9
Greece	-1.6	-3.1

Note: negative numbers denote overall net recipient position, positive numbers overall net payer position.
Source: Dullien S. (2013b).

In relation to the macroeconomic stabilization effects, Dullien found that in the hardest-hit crisis countries over the past years, where labour market condition deteriorated more seriously, the stabilization impact of the EUIS (i.e. the percentage share of the deterioration in the output gap which would have been prevented) would have been sizable. Dullien found marginal stabilization above 10% (under both assumptions) for Ireland, Portugal and Spain during the post-2007 downturn. During previous downturns, stabilization of at least 10% would also have occurred for Belgium, France, the Netherlands, Austria and Portugal. The marginal stabilization would even reach 20% or more in the case of the 2007-2009 downturn in Spain and pre-

vious downturns in France, the Netherlands and Austria (*Table 6*)[67]. While a conservative estimate of the unemployment benefits multiplier was used here, larger multipliers would evidently lead to larger stabilization results. Nevertheless, these results seem already comparable to the marginal stabilization results for the US as a whole mentioned above.

Table 6 **Macroeconomic stabilization by the EUIS for selected recessions**

Country	Years	Change in net payments to/from EUIS (% of GDP)		Change in Output Gap (percentage points)	Stabilization effect (% of output gap change)	
		assumption A	assumption B		assumption A	assumption B
Belgium	2001-2003	-0.16	-0.19	-1.6	10.1	12.1
Belgium	2008-2009	-0.19	-0.18	-3.9	4.9	4.8
Germany	2001-2003	-0.11	-0.14	-3.0	3.7	4.7
Germany	2008-2009	-0.13	-0.12	-5.9	2.2	2.1
Spain	2007-2009	-1.33	-1.51	-6.3	21.3	24
France	1995-1996	-0.19	-0.15	-0.7	26.3	20.1
France	2008-2009	-0.32	-0.32	-4.2	7.7	7.6
Ireland	2007-2009	-1.08	-1.14	-7.7	14	14.8
Italy	2001-2002	-0.07	-0.04	-0.9	7.7	3.9
Italy	2008-2009	-0.10	-0.10	-5.3	1.8	1.8
Nether-	2002-2004	-0.19	-0.23	-1.1	18	21.7
Austria	2001-2002	-0.30	-0.28	-0.5	55.8	51.7
Austria	2008-2009	-0.23	-0.21	-4.8	4.7	4.4
Portugal	2001-2003	-0.28	-0.31	-3.8	7.5	8.2
Portugal	2008-2009	-0.31	-0.30	-2.9	10.5	10.2
Finland	2001-2002	-0.15	-0.11	-1.5	9.8	7.8
Finland	2008-2009	-0.15	-0.36	-9.4	3.9	3.8
Greece	2001-2002	-0.37	0.00	-1.3	0.8	0.2
Greece	2008-2011	-0.01	-0.57	-11.6	3.8	4.9

Note: fiscal multiplier = 1.
Source: Dullien S. (2013b).

In 2014, Dolls and others[68], on request of the European Parliament, made an equivalent exercise, by examining in detail the economic effects of a basic EUIS if such a system had been in place during the period 2009-2013. The scheme analyzed in their simulations was very similar to that of Dullien. The EUIS had a replacement rate of 50% of previous gross wages which could be topped up by national unemployment insurance systems. It had a broad coverage as all new unemployed with previous employment income (as well as self-employment income) were eligible to unemployment benefits from the EUIS for up to 12 months. The EUIS was financed by a proportional payroll tax, and it could run deficits or surpluses in single years but was

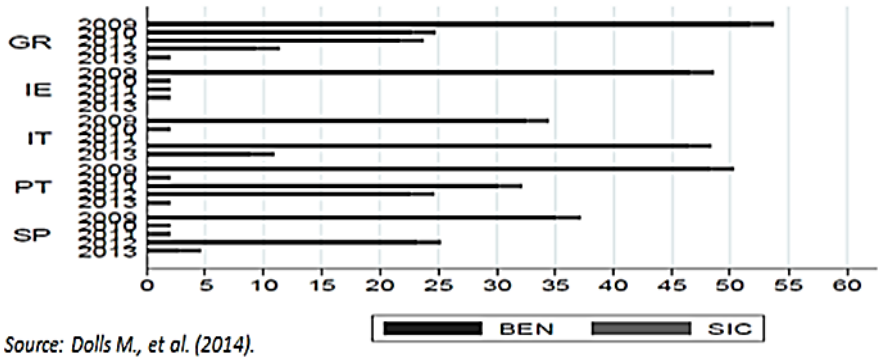
[67] In 2014 Dullien repeated the simulation under different coverage assumptions in relation to the period 1999-2012, obtaining similar results, and a strong macroeconomic stabilization in the periphery during the recession 2011-12, see Dullien S. (2014).
[68] Dolls M., Fuest C., Neumann D., Peichl A., Ungerer M. (2014).

calibrated ex-post such that it was revenue neutral over the whole simulation period.

The results of the simulation showed that over the period 2008-2013 the scheme would have had a total volume of 365 billion euro at the Euro-zone(17) level. Average yearly benefits and contributions would have amounted to 61 billion euros (about 0.6% of euro area GDP). The EUIS would have run deficits in 2009, 2012 and 2013 and surpluses in 2008, 2010 and 2011. In order to achieve revenue neutrality over the whole simulation period, a proportional payroll tax of 1.9% on all employment income was required. Largest net contributors to the scheme would have been Austria, Germany and the Netherlands with net contributions relative to GDP ranging from 0.27% - 0.4% in Austria, from 0.31% - 0.40% in Germany and from 0.14% - 0.59% in the Netherlands. While largest net recipients would have been Spain, France, Greece and Portugal, with net benefits up to 1.39% of GDP in Spain, 1.23% of GDP in Greece, 0.53% of GDP in Portugal and 0.19% of GDP in France.

In relation to the stabilization properties of such a scheme during the recent crisis, the EUIS would have provided a significant stabilization of net household incomes, either through reduced contributions or higher benefit payments. In particular, in periphery countries incomes would have received a substantial stabilization in the most critical years of the period concerned (*Figure 26*). While in 2009, when short-term unemployment increased in all the Eurozone, the EUIS would have had a stabilizing effect in all 17 Euro-zone member countries. Euro area unemployment benefits would have absorbed 42.5% of the shock on gross income at EMU level, while the stabilizing effect of reduced contribution payments would have amounted to 1.9%, i.e. equal to the proportional payroll tax. Here, the importance of a system that can run deficit in single years, without such a possibility, in fact, the EUIS would have led to pro-cyclical effects in those member States which were relatively less severe affected in 2009.

Fig. 26 Income stabilization of EUIS (benefits + contributions), % of income shock



Source: Dolls M., et al. (2014).

Table 7 **Additional effect of the EUIS on output, relative to national systems (% of GDP)**

	2009	2010	2011	2012	2013
EMU	0.20	0	0	0.08	0
Austria	0.09	0	0	0.03	0.03
Belgium	0.09	0	0	0.09	0.07
Estonia	1.88	0	0	0	0
Finland	0.14	0	0	0.04	0.03
France	0.12	0	0	0.06	0
Germany	0.11	0	0	0	0.01
Greece	0.40	0.24	0.39	0.06	0
Ireland	0.75	0	0	0	0
Italy	0.13	0	0	0.42	0.04
Luxemburg	0.06	0	0	0	0
Netherlands	0.12	0	0	0.08	0.12
Portugal	0.33	0	0.16	0.13	0
Slovenia	0.36	0	0	0	0.16
Spain	0.62	0	0	0.09	0

Note: fiscal multiplier = 1.5.
Source: Dolls M., et al. (2014).

Overall, during the period 2009-2013, a basic EUIS would have provided a higher stabilization than the existing national unemployment insurance systems in several member countries, even with a modest replacement rate of 50%. This proves the weakness of the existing national unemployment insurance schemes in some euro area countries, in particular in the GIPS, Italy, and Eastern European States. The stabilization gap between the national systems of these countries and the EUIS is mainly caused by stricter eligibility rules in the periphery implying lower coverage than the EUIS. Thus, Dolls et al. estimated the additional stabilization effect on output, relative to the shock absorption capacity of the national unemployment insurance schemes, that a basic EUIS would have provided during the period 2009-2013 (*Table 7*). The authors assumed that over the period the national systems would have been completely replaced by the EMU unemployment insurance. Assuming a fiscal multiplier of unemployment benefits on output equal to 1.5, they found that growth effects would have been moderate at the Eurozone level raising output only in 2009 and 2012, by up to 0.20% and up to 0.08%, respectively. However, the EUIS would have provided larger macroeconomic stabilization effects in Estonia, Ireland and Spain where output would have been raised by 1.9%, 0.8% and 0.6% in 2009, respectively. A significant additional stabilization effect would have been provided also in Italy in 2012, when the EUIS would have raised output by 0.42%, and in Greece, where a basic euro area unemployment insurance scheme would have provided additional stabilization in 4 out of 5 years. Instead, additional stabilization effects would have been small in the core countries, where national unemployment insurance systems provide strong automatic stabilizers, in particular in Austria, Belgium, France, Germany and Luxembourg.

In conclusion, while further analyses are necessary, the results of the simulations reported above show the potential of a European unemployment insurance scheme as a fiscal risk-sharing mechanism to tackle country-specific shocks. A well-design EUIS could contribute to macroeconomic stabilization within the EMU, making the monetary union more resilient, with a limited amount of total resources and without causing large permanent transfer flows between member States. It would provide short-term fiscal stimulus to economies undergoing a downturn in the economic cycle, something that every country is going to experience sooner or later. In a recession, the net amount that a member State is paying into the EUIS would fall as, first, contributions from this country fall with contracting employment and, second, payouts would increase with rising unemployment. This would support income in that country and hence stabilize its GDP. In an economic boom, increasing employment would lead to higher net payments into the EUIS, first by higher contributions and, second, by lower payouts. This would drain income from the country in question and limit overheating of the national economy. While individual stimulus by single member countries may run the risk of triggering distrust by markets, solidification of the monetary union through the creation of a common fiscal capacity would reduce uncertainty about individual countries' solvency. In addition, a European unemployment insurance scheme would strengthen the EMU institutionally, politically and in terms of social cohesion.

Conclusion

The paper has traced how the optimum currency area theory has evolved over time, and has used the OCA theory as a framework of analysis within which the Eurozone's governance, flaws, crisis and future have been examined. The paper has argued that:

1. The EMU governance is grounded on three main principles: price stability, fiscal discipline, markets flexibility. This architecture is consistent with the theoretical underpinning of the "new" OCA theory that focuses mainly on the supply side of the economy.

2. The German view describes the crisis as the result of fiscal profligacy by periphery countries. The identified solution was in line with the theoretical basis of the EMU: fiscal consolidation, tighter fiscal-rules and structural reforms. After 2010 the Eurozone aggregate fiscal stance did not address the widening output gap and the fiscal policy became pro-cyclical. The ECB waited until the Eurozone as a whole was in deflation before implementing an aggressive monetary policy, when the "liquidity trap" already imposed limits on its effectiveness. This aggregate demand mismanagement reflects the theoretical underpinning and the institutional design of the Eurozone. The narrow mandate on price stability delayed the ECB response, while the lack of risk sharing mechanisms implied that the burden of adjustment fell exclusively on periphery countries.

3. All the main tenets of the ideology that shaped the EMU have been recently challenged by the IMF Research Department. It has disavowed the expansionary effects of fiscal consolidation and has argued the need for public investments in order to "crowding in" private investments. Moreover, it has questioned the productivity gains that would derive from labour market deregulation. Finally, the IMF has recognized the effectiveness of flexible exchange rates in restoring external balance. All this implies a change of perspective that leads to a reconsideration of the theoretical apparatus behind the traditional OCA theory.

4. The German view is powerful but is unproven. A consensus view among academics highlights the flaws in the Eurozone design. It argues that the sovereign debt crisis was triggered by huge current account imbalances followed by a series of "sudden stops". The "deadly embrace" between public and private debt caused capital flow reversals and opened the door to self-fulfilling liquidity crisis, forcing the periphery into a bad equilibrium and the core into a good equilibrium. The single most important lesson from the euro crisis is that balance of payments continue to matter within a monetary union.

5. The euro crisis led to "discover" two "additional OCA properties": the lender of last resort function and the banking union. The central bank's function as a lender of last resort to government bonds in a monetary union is essential to avoid self-fulfilling liquidity crisis. While a complete banking union is essential to an OCA for two reasons: i) it avoids large asymmetric shocks due to sudden capital flow reversals; ii) it allows financial integration

to play as a risk-sharing mechanism, improving the smoothing of asymmetric shocks.

6. The US experience suggests that what makes sustainable a monetary union is not the absence of large asymmetric shocks but rather the presence of powerful correcting mechanisms that allow to deal with such shocks. Labour mobility, financial integration and the federal budget allow to smooth a major part of regional shocks in the US, while labour market flexibility does not seem to play a significant role in the adjustment.

7. The EMU lacks of effective shock absorbers. High unemployment has not made European workers more mobile. Financial integration, instead of playing as a smoothing device, had a destabilizing role during the crisis. Moreover, once in a bad equilibrium, periphery countries lost access to capital markets and the automatic stabilizers in their budgets. Relying only on wage deflation as a means of adjustment would require an implausible degree of labour market flexibility.

8. The Eurozone urgently needs the creation of a common fiscal capacity to tackle country-specific shocks. A well-design European Unemployment Insurance Scheme (EUIS) has the potential to contribute to the macroeconomic stabilization of the EMU with a limited amount of resources.

9. The EUIS can work only as a temporary solution, while to survive in the long RUN the EMU will have to be embedded in a Fiscal Union. Only a true budget, in fact, can provide both macroeconomic stabilization and protection against liquidity crisis. This is the only real condition to make the Eurozone an optimum currency area. The conclusion is that without significant steps towards the Fiscal Union the euro has no future.

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