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The Euro, An Optimal Currency Area

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Synthesis

The creation of the euro represented an enormous progress in the European project, where economic integration anticipated political integration. In fact, the adoption of a common currency, which took place in January 2002 through the introduction of the euro, closely united the countries participating in the project, marking the beginning of a process of harmonization between European institutions. The European integration had a great impact and importance on most countries since it was considered a supranational organization able to include and innovate not only fiscal, political, and economic policies; but also ideological needs. The process symbolized both a risky attempt and a courageous act that promised economic stability. However, the recent economic crisis that culminated in a sovereign debt crisis involved many euro area countries and it has challenged both sustainability and the smooth functioning of the single currency. The crisis have had a mixed impact on the member states, which led to repercussions both in the financial sector and in the real sector; therefore, the current difficulties afflicting the Eurozone call into question the effective capacity of the Euro system to maintain such dissimilar economies. The following paper aims to analyze these difficulties by following the indications and arrangements provided by the theory of "Optimal Currency Areas," born in the early sixties of the last century thanks to the work of Milton Friedman.

In the first chapter the key principles and the evolution of the theory are presented starting from its origins in the sixties, listing the theories of the founding fathers (Friedman, Mundell, McKinnon and Kenen), up to arriving at the same time as the recent theories developed starting from the nineties with the realization of the monetary union. In the second part of this chapter an analysis is provided with the objective of determining when it is convenient for a country to share the same currency, and therefore to join a common currency project. The second chapter traces the history of the creation of the European union and the Eurozone, reporting the main historical stages that led to the birth of the single currency. Finally, in the third and last chapter the situation of the Eurozone will be studied, trying to answer if the European economic and monetary union (EMU) is following the conditions exposed by the AVO theory. In practice, fundamental criteria will be used for the creation of an AVO discussed above, to try to understand whether the euro zone is optimal or not. The criteria in question will reflect both the visions of the first theories of the founding fathers (i.e. the ideal characteristics to be possessed ex-ante) and the modern ones (i.e. the possible ex-post benefits obtained from the creation of a monetary area). In the conclusion of the work it is highlighted in the end how the existing relationship between the AVO theory and the reality of the current EMU is very far from the ideal Eurozone model described by many economists.

Introduction Chapter 1

From the mid 20th century to now days, the procedure towards European economic integration and the settlement of monetary and economic union caused a redundant debate on the Theory of Optimal Currency Areas. The formation of the theory is mostly due to Mundell, Mckinnon, and Kenen's approaches, whereas, the new developments of it were faced by modern economists such as Barro, Gordon, and Tavlas. Not only did the three fathers of the theory demonstrate the benefits and advantages from the use of a common currency that is able to reach an economic stability, but also observed the characteristics that members of a single currency, therefore a monetary union, must absorb so that it can relinquish the management of local monetary policy and general exchange rate adjustments. Milton Friedman, originator of monetarism, faced a discussion with Robert Mundell about Flexible or Fixed Exchange Rates. Over the years, along with the Monetary and European Union that coordinates its economic and fiscal policies to reach common objectives, modern theories and revisions linked to the theory of Optimal Currency Areas were encouraged.

1.1 Friedman: The origins of the theory

The American economist, Milton Friedman, is the author of the theory: "The Case for Flexible Exchange Rates" (1953), Friedman[1] disagrees with Mundell[2] because the first economist thinks that a country with better advantage on flexible rate will consider all benefits and costs of its own monetary policy. Therefore, the founder sustained that fixed exchange rates would bring negative implications; for example, a country which increases its monetary supply can take advantage by addressing costs on members until other countries will accept its currency at an unchanged rate. When inflation is unsustainable followed by changing exchange rate, the system will not be able to survive. On the other hand, a country will not influence its members by increasing its monetary policy if following flexible rates system; in fact, it will only decrease investment and trade flows.

'The Case of Flexible Exchange Rates' establishes three various concepts:

- Flexible exchange rates will assure a balanced system because market forces could gain external balance in response to a real world influenced by the stickiness of prices and wages, meaning that the price and the pay of employees tends to have a slow response to the changes in the performance of an economy, and the balance of payments crises driven by the Bretton-Woods system[3].
- Flexibility of exchange rates would pledge the independence of monetary policy, as a result, each country is not influenced by mistakes of other members.
- Fluctuation would favor multilateral trade and increase freedom of goods and capital movements between countries. Friedman analyzes the pound, presupposing that there are states, which embrace fixed rates between each other and flexible exchange rates with other currencies. On the other hand, the United States are distinguished by a single fiscal and monetary policy. Friedman is able to state that the harmonization of internal monetary and fiscal policies is required for fixed exchange rates without trade restrictions, if and only if the internal adjustment of prices and wages cause significant changes to external conditions. Friedman's work occurred to point out future developments also for topics left behind from the economists of the period such as: 'Exchange Rate Overshooting[4]' and 'Corners Hypothesis[5],' led to the creation of the 'Theory of Optimal Currency Areas.'

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1 Friedman wrote "The Case for Flexible Exchange Rates" in 1953, as a proposal for a quick way for Western European countries to eliminate the exchange controls that they had established before World War II and that persisted in early 1950s.

2 Robert Alexander Mundell is a Canadian economist, born in October 24, 1932

3 The Bretton Woods system was the first system used to control the value of money between different countries, which had a single monetary policy that kept the exchange rate of its currency within a fixed value.

4 The term overshooting indicates the excessive fluctuation of the nominal exchange rate in response to a change in the monetary supply.

5 The corners hypothesis postulated that countries are—or should be—moving to one or another corner in their choice of exchange rate regimes

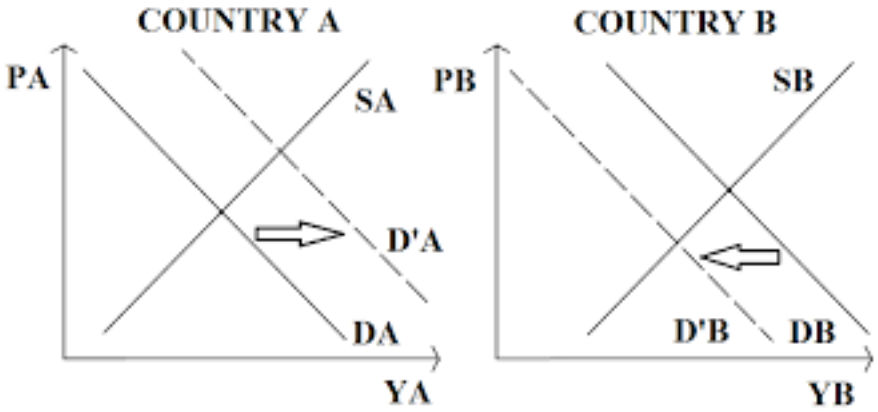
The last theory believed that only an unreal world would imply simpler adjustments between currency areas with different currencies and flexible exchange rates and those unions will strictly depend on monetary and fiscal policies and from sustainable mobility of goods and inputs.

1.2 Mundell

Robert Mundell, Canadian economist, revalued and reconstructed the theoretical literature on monetary integration in his article entitled "A Theory of Optimum Currency Areas." OCA was published in 1961, period delineated by Bretton-Woods fixed exchange rates regime and the emerging movement of European integration. In fact, the Canadian economist's article was highly influenced by: Friedman's theories on flexible exchange rates, where Mundell points out the context of fixed but adjustable rates, which was also affected by Bretton-Woods agreements (potential to cause the periodic balance of payments crisis). On the economist's viewpoint, the presence of fixed rates, wage rigidity, and price levels prevent the market from adjusting itself in the long run. The pioneering author demonstrates how an adopted exchange rate regime upholds different characteristics of the economy respect to other solutions; he proves that Friedman's views on flexible exchange rates would lead to a loss in value on exchange rates because different currencies free to fluctuate will end up ineffective. Furthermore, Mundell relates to traditional academic trends by stating that a budget deficit will not cause directly increased unemployment, but a depreciation takes place; whereas, a surplus will persuade an appreciation rather than inflation. Therefore, he questions the best solution between the fluctuation of every currency or a monetary union considered a currency area as a "domain within which exchange rates are fixed." Symbolizing a monetary union as a territory where regional or national entities adhere to it, sharing a single or several currencies whose value is continuously pegged. OCA theory emphasizes the problem concerning the geographic domain where exchange rates are fixed, and deducting what domain is 'optimum' between single and several currencies to consider as a currency area. The optimal domain is essential to reach the needed equilibrium between internal balance, which establishes price stability and full employment; and external balance that identifies well-functioning balance of payments criteria. The OCA illustrates the "advantageous monetary area," conditions in which member states adopting same currency will procure higher benefits rather than excessive costs to their respective monetary system and economic efficiency. The cost-benefit analysis of a monetary union presented by the OCA, witnesses a trade-off: benefits related to a single currency follow the elimination of costs connected to converting one currency into another; therefore, the financial gains, including the overthrow of transaction costs and the regression of exchange rate risk. Not only does the presence of a single currency offer increased competition because prices are easier to compare, but also decreases investor's uncertainty. For example, a general decrease in risk premium that firms pay on equity, caused by lower uncertainty, increases investments and capital accumulation; suggesting an increase in the economy's growth rate. In conclusion, the trade-off highlights the relationship between the elimination of transaction costs as well as the overthrow of exchange rate uncertainty, which encourages trade among member states and each Central Bank's loss of revenue, associated with the conversion of national currencies.

If member states adopt different currencies, they have needs of intensive cooperation between central banks in order to control money supply leading to a significant loss on reserves. Therefore, there is difference between interregional and international adjustments; in fact, the second is rather influenced to fixed exchange rates. On the other hand, in the first case the pioneering theory of Mundell discusses the stabilization of flexible exchange rates in an uncommon and a common currency area, which face three different situations in response to an economy affected by a 'shock' in the aggregate demand for goods produced by country A and country B.

Monetary expansion in A and monetary restriction in B



Source: Mundell (1961) "Theory of an Optimal Currency Area"

The first case considers internal and external balances recommended to be well established, so he presumes that both countries are adjusted with: full employment, price stability (nominal wages and fixed payments), and balance-of payments equilibrium in the short run. Stating that an increase in unemployment is derived from a decrease in wages and price levels, furthermore, the monetary policy aims at avoiding inflation rate. Later on, he hypotheses a shift in aggregate demand on both countries (from point 1 to point 2) initiated from country A and attributed to country B: in case of asymmetric shock on demand, there will be an increase in demand for goods in country A, and a decrease in goods in country B. A problem occurs for each case because country A will be affected only by over-full employment if using a different currency and also a current account surplus if using a common currency; whereas, country B will deal only with increased unemployment if dealing with a different currency, but also a current account deficit if having a common currency. In case of national currencies, the central bank of country A will respond to the adverse shock by increasing interest rates, and restrictive monetary policy shifts aggregate demand to the left side of the graph, while the other central bank acting for country B will lower them and deals with expansionary monetary policy that shifts positively aggregate demand to the right. The result of the monetary policies is an appreciation of the currency in country A and depreciation in country B. As to goods and services of country A will be sold in country B at a more expensive price; instead country A will sell products of

country B at a cheaper price. National monetary policies can adjust countries after an asymmetric shock because the results on the previous example will be that country A controls and stabilizes price levels and country B will reduce unemployment.

If deciding on adopting a common currency, the two countries embrace the monetary union, there will be a single central bank that will control money supply and manage the right price level equilibrium. The central bank will detect a decrease in output and lower price level if a symmetric shock takes place in a monetary union, so it will decrease the interest rate to encourage aggregate demand in both countries. On the other hand, an asymmetric shock implies a negative impact on one of the two countries; for example, the central bank might lower interest rate if an adverse shock affects negatively country's B aggregate demand, but it will lead to worse-off inflationary pressure of country A and a current account surplus. Whereas, if it decides to increase interest rate to adjust inflation levels in country A, country's B unemployment rate will raise. It would result unlikely for the common central bank to increase money supply because it would further deteriorate the inflation rate in country A, which would change its market conditions (country A reflects how full employment can generate inflationary bias). It is demonstrated that in a monetary union, the authorities privilege unemployment in countries in deficit; so central banks never stabilize if asymmetric shocks take place, meaning that monetary policy is not as important as fiscal policy in terms of a macroeconomic stabilization. The monetary union does not appear to be the optimal choice when asymmetric shocks occur. Initially, the founder father anticipated the short run where wages and prices appear to be rigid; while over the long run, they are expected to turn out flexible. For example, let's suppose that prices increase along with inflation in country A, while country B deals with excess supply therefore a fall in price level: in the first case, country A will obtain its equilibrium from the appreciation of exchange rates and country B will gain its equilibrium by its depreciation. Reaching an optimal equilibrium is not immediate or effortless to manage, so both countries will suffer from different circumstances like inflation (country A) and unemployment plus possible deflation (country B).

On behalf of Mundell's point of view, a monetary union is not able to simultaneously manage full employment and price level stabilization; the only chance for member states to achieve these objectives is by integrating a flexible exchange rate regime. The author of the AVO theory agrees with Friedman about borders requiring different currencies and flexible exchange rates; in fact, it would be preferable for both national and regional currencies to adopt flexible rates in the event that a country does not desire to join a monetary union.

Mundell indicates three principles that a currency area must respect to result an optimal choice:

- Labor mobility is eminent because it is able to reduce the need for adjustments of nominal exchange rates in order to correct external balance. Also capital mobility can facilitate adjustments; Monetary Union should therefore raise the mobility of factors of production and try to prevent asymmetric shocks.
- In case of flexible wages, the increase in demand for products produced in country A lead to higher salaries with a consequent decrease in aggregate supply and increased price-level; on the other hand, country B will have the opposite effect. It is suggested to buy more from country B and less from country A to reach a better equilibrium.
- If labor mobility and flexible prices and wages are excluded, the independence of asymmetric shock results a sustainable method to analyze the optimality.

If the number of flexible exchange rate increases, monetary efficiency, related as means of payment and currency unit, decreases; According to Mundell, 'money illusion[6]' will not have significant implications for a region or country having a large share of imports and exports in GDP. By introducing flexible exchange rates, the economic agents will witness the variation of their real income not due to adjustments in the price level and nominal wages, but mainly due to exchange rate variations. Money illusion will soon be eliminated because of devaluation influencing the price levels; it results inconsistent if there is a biased growth of imports over consumption. The economist hypothesizes on a world divided in three currency areas, each country should maintain proper currency that is flexible respect to other currencies because some countries will have mobility of labor or/and capital while other countries will have none.

A modern economic system using floating exchange rates can be integrated and later process effectively and efficiently if considering the following factors: International price stability; level of exports and imports that are not highly influenced by changes in exchange rates; fair hedging costs for risk associated with exchange rates; Central Banks has to abstain from monopolistic speculation; protection for creditors and debtors in order to support long run increasing rate of capital flow; wages and income are not related to price index, but on level of imports. Considering the fact that one of the main objectives of the monetary union is to reach economic stability, even a country, focused on capital mobility and lacking of labor mobility, can be considered a currency area. An increasing number of monetary unions lead to a better functioning flexible exchange rate regime. In fact, if labor and capital mobility are insufficient in a country, flexible external prices related to a national currency will not be stable with other currencies; furthermore, unemployment and inflation rate will spread over different countries. However, if labor or/and capital mobility are consistent in national frontiers, this means that the states differ from respective countries: flexible exchange rates are no more necessary as fixed exchange rates can work as well. In conclusion, Mundell points out that an essential element to favor a single currency is the mobility of factors of production.

[6] Money illusion is an economic theory stating that people have a tendency to view their wealth and income in nominal dollar terms, rather than in real terms.

1.3 McKinnon

Ronald I. McKinnon furthered his studies on the Optimum Currency Areas, focusing upon the internal and external capital balance equilibriums; therefore, in 1963 the Nobel Prize economist assumes that labor and capital mobility is not the only factor mobility between countries. In fact, he introduces the 'openness' of the economy that is defined as the ratio of tradable and non-tradable goods. 'The ratio of Tradable and Non-tradable goods' is a concept that presumes the classification between goods and services which enter into foreign trade and goods and services not internationally traded, but consumed domestically because of unfeasible transportation costs. International Trade statistic's approach on tradable and non-tradable goods focuses on the relation between them: imports of goods and services are added to the Aggregate Gross Domestic Product, such addition includes traded goods which are exports plus imports. On the other hand, non-traded goods involve goods and services absorbed and consumed exclusively by the domestic economy, therefore they are not exported since they are produced in home country, or imported.

In the concept of "Tradable goods," McKinnon embraces two criteria: exports, products produced in domestic country and in part exported in foreign countries; and imports, which like exports are produced domestically, but include additional products bought by domestic country from abroad.

The surplus of exports relies on the excess consumption of the domestic country and it should be reduced and adjusted because it is convenient for countries to specialize on certain goods and services to gain a competitive advantage[7]. Whereas, if the amount of imports results to be higher than exports; it is due to the country's specialization on imports.

To notice the fluctuations of price and exchange rates, it is necessary to evaluate the effect of a shock on the relative prices of an economy's Gross Domestic Product, which includes the difference between tradable and non-tradable goods, respect to the price level of world economy. Taking into account a small economy, settled in a flexible exchange rate system, characterized by a high ratio of tradable and non-tradable goods; its price index that includes both tradable and non-tradable commodities, fluctuates more than the price index of a relatively closed economy. The impact of such difference in price levels leads to a currency depreciation, meaning that the unit of account and store of value of the economy's currency decreases. Supposing that an economy is subject to negative terms of trade and to a depreciation of the nominal exchange rate, it is yet possible to stabilize the price levels whenever the financial authorities enable a contraction of demand as a result of the exchange rate depreciation and the increased price of

[7] Competitive advantages are conditions that allow a company or country to produce a good or service of equal value at a lower price or in a more desirable fashion. These conditions allow the productive entity to generate more sales or superior margins compared to its market rivals.

tradeable commodities. The contraction of demand causes the price of non-tradeable commodities to fall: as the 'openness' of the economy rises (ratio of tradable and non-tradable goods), it is necessary to increase the contraction of demand. However, a relatively open economy that is affected by changes in nominal exchange rates will respond by changing wages and prices as a form of compensation; therefore, competiveness is not influenced by changes of nominal exchange rates.

Economists such as Charles Engel[8] sustain that central banks must consider exchange rate stabilization[9] in their objective function, including output and inflation rate since exchange rate fluctuations alter the level of relative prices from levels associated with efficient allocation of goods and capital across countries. Furthermore, Hausmann[10] supports the idea that choosing a floating exchange rate regime over a fixed exchange rate regime is worthwhile because the first option results to be less influenced by external shocks. Not only flexible exchange rates have a greater probability to overcome external shocks, but also imply that domestic interest rates will not follow the 'doctrine' of international interest rates changes; therefore, they will moderate the impact of externally driven business cycles. The idea that the openness of an economy overcomes money illusion, permits to exchange rates to be more reliable and effective policy instruments. McKinnon's opinion on stabilizing flexible exchange rates meets Engel's point of view towards the concept of money illusion; in fact, flexible exchange rates perform a stabilizing function due to money illusion. After analyzing these key concepts, the economists stand up for the integration of fixed exchange rates in an open economy: open economies have higher probability to reduce the risk of money illusion. If considering a dynamic context, as a country devalues, the devaluation will lead to inflation and thus the probability of a future devaluation reduces. A devaluation, which influences the price level of exports and imports, will have a less effective impact on the price level ratio of exports and imports of a large country because it produces a relevant quantity of non-tradable goods and services; whereas, a small country's price level ratio of exports and imports is highly influenced by a devaluation. McKinnon states: "if we move across the spectrum from closed to open economies, flexible exchange rates become both less effective as a control device for external balance and more damaging to internal price level stability." It is clear that it would result optimal the choice of joining a fixed exchange rate regime or a common currency area with the external countries to avoid speculation. Therefore, it results profitable for small open economies to take part in larger currency areas, if the currency area is sufficiently large to raise the quantity of non-tradable goods. At that point, the domestic currency is pegged to the increased level of non-tradable goods to give money liquidity value to the population of that specific area. Therefore, the presence of stable large countries is essential for small countries for the purpose of efficiently peg their currencies.

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[8] See the article "European Product Market Integration after the Euro" (2004) by Charles Engel

[9] Countries, especially developing ones, pursue stable exchange rates to attract foreign capital. They usually accomplish this by fixing their currencies to that of a more stable country, a practice called pegging.

[10] See Article "Should There Be Five Currencies or One Hundred and Five?" (1999) by Ricardo Hausmann

In conclusion, McKinnon studies and theories on the 'openness' of an economy lead to the conclusion that the more open the economy, the more it will oblige to use fixed exchange rates; therefore, the economist is able to connect the size of a country with optimum currency area theories.

1.4 Kenen

A further significant contribution to optimal currency areas theory was given by Peter B. Kenen in 1969, the economist introduces the peculiarities underlying product diversification for Optimum Currency Areas. The best aspirants turn out to be highly diversified economies, since the latter, by prevailing the need to change terms of trade assiduously through exchange rates, allows the exclusion of shocks. A country, involved in conspicuous activities, with a greater quantity of products to be exported, can more easily safeguard itself from possible shocks that affect various companies or market sectors, generated by changes in consumption or production. Product diversification reduces the possibility of asymmetric shocks; consequently, positive changes in the exports of some goods and services may be balanced with the negative changes of others. A few years later, in 1976, other economists came to the conclusion that this counterbalancing method is more effective and efficient, when the exportable products are diversified; if in foreign markets, the demand for goods and services decreases, then a country that produces a multiplicity of products has a lower probability to suffer a decrease in total production.

The previously mentioned Nobel prized economists, Mundell and McKinnon, thought over Kenen's ideas and arrived to the following opinions: from Kenen's product diversification theory, Mundell believes that the world economy is not only the most diversified, but also the most insured against the risk of fluctuations of exchange rates. On the other hand, McKinnon points out that a large diversified economy, which implies a smaller foreign sector, must adopt fixed exchange rates; whereas, small open economies should be characterized by floating rates, since they don't have large economy's features. Over recent year, other economists such as Melitz[11] doubted over some implications of Kenen's theory of product diversification, the 20th century economist stresses the fact that Kenen's argumentation implies that a country, without a diversified structure, would only benefit through the use of flexible exchange rates.

Kenen exposes other useful peculiarities for the optimal currency areas (OCA): first of all, he points out "fiscal integration" that allows to attenuate the asymmetric shocks through fiscal transfers between regions with low unemployment towards those with a high rate of unemployment; next, he presents the idea of similar production structures. According to what Mundell said about countries with flexible exchange rates

[11] Marc J. Melitz is an American economist, who published the article "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity" (2003)

and subjected to asymmetric shocks in the presence of labor mobility, two countries, characterized by limited but similar production structures, are ideal components for a two-currency union since the shock of the specific sector damages them simultaneously. From these peculiarities, Kenen defines the autochthonous literary process of the Optimum Currency Area theory.

1.5 Introduction of new theories; critics and new ideas

The Optimal Currency Areas theory has been constructed by Mundell, McKinnon, and Kenen with the following features: International mobility of factors of production, degree of openness, and product diversification. The three founders of the theory focused on economic considerations; but part of the optimum currency areas literature affirms that an optimum currency area is mainly influenced and integrated by long-term political commitment rather than the economic criteria. Ingram states that the government's commitment whether to decide exchange rate arrangements is much more valuable than the economic features of the optimal currency area. Moreover, the real economic determinants of the OCA theory mostly affect the speed and ease of adjustment, but the policy positions taken by governments, the attitudes of the population toward the adjustment processes, the nature of financial and other institutions determine the efficacy of a currency area. Mintz[12] agrees by claiming that 'the political willingness of the central authorities to pursue monetary unions is the most important factor for forming currency areas.' From the economists' interventions, it is considered the fact that political integration is one of the prime priorities for the Optimal Currency Area's properties. However, it is not taken into consideration during the Optimal Currency Area analysis; since such a factor, defined 'political will,' is difficult to measure. The cooperation between countries on a diversified set of economic policies and the progress of institutional development are features stimulated by the 'political will.' Corden[13] adds that it cushions working out satisfied compatibility in preferences concerning inflation, employment, and growth. In conclusion, economic considerations are implemented after political processes if focusing on the idea of creating a real currency area.
Tavlas considered that the 'old' Optimal Currency Areas theory lacked of two substantial problems: "the problem of inconclusiveness" and "the problem of inconsistency." OCA theory met the first problem by incorporating inconsistent suggestions about a country's options of adhering in a joint currency area or not. A small open economy will not adopt fixed exchange rates over flexible exchange rates, since it has low

[12] Mintz, N. (1970) *"Monetary Union and Economic Integration."* New York: New York University Press.

[13] Max Warner Corden is the author of nine books, the best-known ones being The Theory of Protection, Trade Policy and Economic Welfare, and Inflation, Exchange Rates and the World Economy.

labor mobility with trading partners. Whereas, a relatively open country, even if characterized by trading with other countries, deals with low mobility of factors of production with the same trading partners; it should join the currency area according to one criterion, but it also could result convenient not to participate in this option according to another criterion. In fact, the second problem considers small countries which tend to be less differentiated in production than large countries, but tend to be more open. As to the first problem, one criterion suggests that the small countries should take part in a joint currency area because of its openness; on the other hand, a second criterion of the OCA theory implies not to adhere for the lack of product diversification. Furthermore, the relationship between the size of a country and the exchange rate regime leads to some uncertainties: if considering two countries, country A and country B, the first country is larger and relatively more open than the second country. An economic development in country B will have lower repercussions on country A's aggregates, for example, GDP; on the other hand, an economic development in country A will influence more relevant positive externalities. If the two countries are subjected to a single national authority, the latter will be much more interested in economic developments in the first area. From this example, it is clear the fact that large and open economies should be subjected to the fixed exchange rate regime, contrasting McKinnon's thoughts. Moreover, the paradox of diversification is another key factor that show a correlation with the economists' claims: two economies, which are not well diversified should interfere with flexible exchange rates, but if they create a fixed exchange rate system, the arising currency area would have a higher level of diversification than that of the individual regions. Therefore, the diversification may act as an incentive and a disincentive for the creation of a single currency. Such economies choose to deal with flexible exchange rates because they may handle better such features than not well diversified economies. Economies that are open to trade tend to specialize in some sectors of production and become less diversified, thanks to the exploitation of economies of scale.

After thirty-years of scarce consideration of the OCA theory, the debate has been resumed from a different perspective: in the 'new' OCA theory, the main objective is to avoid inflation and to dampen the fluctuations of the economic cycle without further consideration of the monetary policies. The change in prospects led to two main implications, first, an optimal equilibrium for price stability over the medium-run, so that the nominal exchange rate adjusts to a new equilibrium in case of external shocks. Next, the attempt to eliminate the "inflation-bias" problem of the monetary policy, which tries to over-stimulate the economy and monetizes budget deficits and debt. Tavlas claims that the monetary union results useful to achieve low inflation by modifying inflationary expectations. Bofinger[14] agrees by stating: "The surrender of all national monetary policy responsibilities to a supranational central bank system is the most obvious signal that a

[14] This view concurs with Bofinger (1994), who despite his criticism of theory, writes that the OCA theory "seems to be almost generally accepted as the main touchstone of the advantages of EMU and as the theoretical basis for all empirical tests in this area."

country is no longer attempting to make use of surprise inflation." The economist points out that the avoidance of 'asymmetric monetary' shocks leads to a 'fundamental benefit of any monetary union.' Bofinger states that larger currency areas imply a more stable rate of money demand because the intra-regional shifts that take place in a common currency area don't influence the national demand function, but only the regional money demand. Based on the before mentioned criticisms, Julius Horvath[15] exposes three discussions on how to choose the optimum exchange rate regime, keeping in mind that the OCA theory constitutes the choice between the fixed and the float exchange rates, whereas, economic policy-making are responsible for choosing intermediary types of regimes. The first approach is subject to a macroeconomic model which evaluates which exchange rate regime better reacts to an economy affected by different disturbances; for example, in case of nominal foreign shocks, nominal domestic shocks, and real domestic shocks, it results convenient for an economy to adopt flexible exchange rates to avoid the externalities. The same economy influenced by real domestic shocks may continue to implement a fixed exchange regime if and only if they are of a financial nature. On the other hand, the second approach considers the stabilization of an exchange rate regime, it takes into account a country affected by high inflation that wants to stabilize with minimal costs of adjustment. In the absence of "money-illusion," linked to the neutrality of money and the difference between real and nominal rates, the general equilibrium analysis determines a single solution for the real variables; the price level stays indeterminate if another nominal variable is fixed.

General- equilibrium models based on modern theoretical contributions and on microeconomic implications are explained in the third approach: the exchange rate regime has no social welfare impact in a scenario where asset markets are complete and money is neutral. Elhanan Helpman[16] states: "there are various rigidities and imperfections (for example, market imperfections) whose existence may have a bearing on the relative desirability of alternative exchange-rate regimes. Thus, it is possible that a particular exchange rate regime performs better than others under certain types of imperfections. A characterization of imperfections under which each exchange rate regime performs best will be valuable."

In Tavlas's point of view, such implications reveal the fact that the loss of the monetary independency is not subject of a negative outcome, since countries characterized by high inflation would gain advantages in terms of credibility from participating in a monetary union and therefore transferring monetary policy decisions to a common central bank, adjusting interest rates and unemployment costs to move towards a balanced level of inflation. These functions brought some countries to support the idea of joining the

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[15] Horvath (1997) identify the shocks as supply, nominal, and real fiscal. Using data for 20 European market economies, they compare original members of the European Community to new members and non-members. Shocks are mostly country- specific, particularly for newer members and non-members, suggesting the importance of alternative adjustment mechanisms other than national monetary policies after the introduction of a single currency.

[16] See "An Exploration in the Theory of Exchange-Rate Regimes" (1981)

European Economic and Monetary Union. In other words, each country should estimate its benefits and welfare emerging from the participation in a currency area, considering its own interest and welfare.

1.6 Costs and Benefits

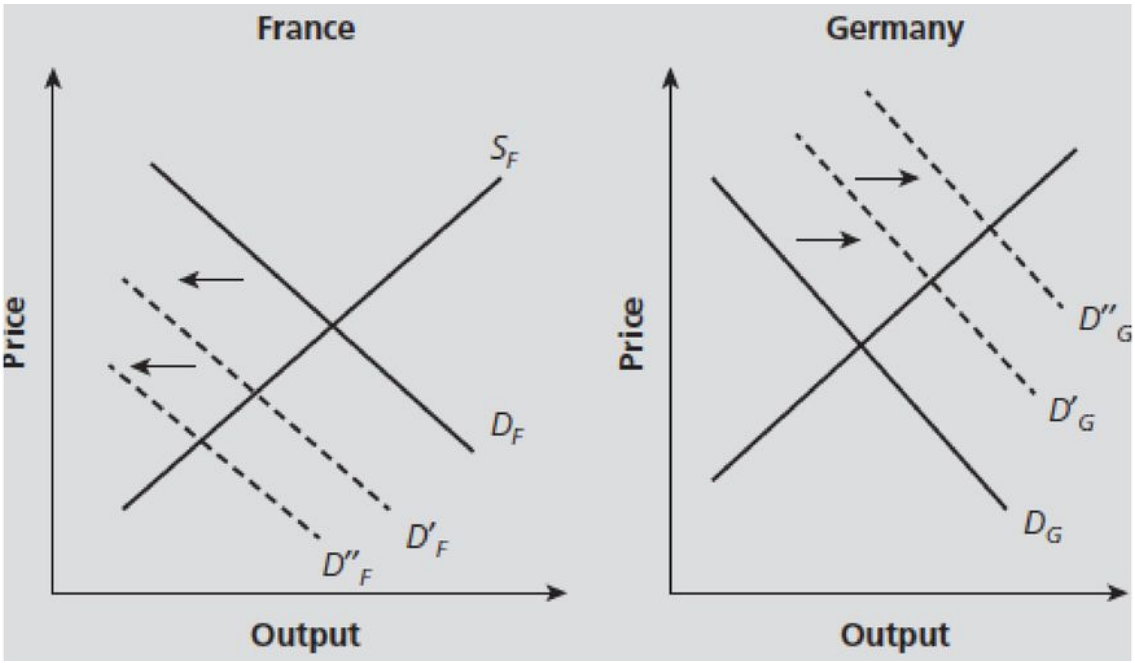
Nations joining a monetary union face benefits of a microeconomic nature, and at the same time are forced to bear costs of a macroeconomic nature.

One of the main costs of integrating a common currency within a country is the loss of sovereignty and therefore autonomy in handling an independent monetary policy. Meaning that it will no longer be possible for the country's exchange rate to be subject of an appropriate devaluation for the purpose of re-launching an economy affected by an asymmetric shock. The possibility of devaluing or revaluing a nation's price of its currency is extremely beneficial and useful; since the difference between different economies may have a negative impact on each other, the exchange rate may be used as an instrument to adjust or stabilize a disequilibrium between the two international economies. Financial markets can enable speculative attacks, which lead individual countries into forced insolvency, since they issue debt securities in a currency over which member countries have no control. De Grauwe reports a recent historical episode happened in 2011[17] between: England, a sovereign country, and Spain, a member of a monetary union. If investors will sell the bonds thereby raising the interest rate if they expect that the British government is defaulting. As a result, they will possess a large amount of pounds, which price will fall by selling them at the foreign exchange market, where at this point some investors are willing to buy. The UK currency stock will remain unchanged and the pounds will be invested again in English assets and government bonds. Even if such presumption would not happen, the Central Bank of England will be the buyer of last resort, ensuring liquidity necessary for financing the debt; therefore, investors will not be able to cause a liquidity crisis. Although, a fear of default for the Spanish government induces the same the procedure that investors will sell Spanish securities with the aim of raising interest rate; it will not be necessary to exchange the amount of euros obtained from the sale of Spanish bonds. It results more profitable to invest the sum in other securities. Consequently, the Hispanic banking system will lack an appropriate euro amount, causing a liquidity restriction in Spain due to the absence of a foreign exchange market and a flexible exchange rate regime. Moreover, the Spanish

[17] Since the start of the financial crisis, the UK public debt-to-GDP ratio has risen more than that of Spain. In 2011, as a percentage of GDP, the British public debt was 17% higher than the Spanish public debt (89% against 72%). However, since the beginning of 2010 the yield on Spanish government bonds has risen sharply compared to the United Kingdom, suggesting that the market price reflects a significantly higher risk of default for Spanish government bonds, than those of the United Kingdom.

government will not have the possibility to sell its public debt to the Bank of Spain, since those transactions are taken directly by the ECB. The outflow of Spanish capital will lead to a crisis and a serious default. Financial markets may exacerbate the difficulties of a country by leading it to a forced insolvency, in fact, asymmetric shocks are amplified when the Monetary Union is unconfident for the required amount of government's solvency of one or more member states.

Supposing that French consumers change their preferences from Domestic products to German goods and services, France's demand curve will shift left. Such shift causes domestic output to decline, whereas, foreign output rises.



Amplification of asymmetric shocks

Source: De Grauwe (2012): "Economics of a Monetary union"

The effect of demand shift, used in this example, leads to additional unemployment in France and a lower unemployment level in Germany. Moreover, France will encounter a current account deficit and Germany will have a current account surplus. This trend would be corrected and the demand curve would return to the initial equilibrium by implementing a devaluation in France; it is improbable for this solution to hold in the long run because such devaluation not only increases the price of imports and therefore the costs of production, thus it increases the domestic prices, but also nominal wages to compensate for the loss of purchasing power suffered by workers and consumers. Consequently, the aggregate supply curve will move upwards and therefore the positive effects of the devaluation over time will be neutralized by the increase in domestic prices.

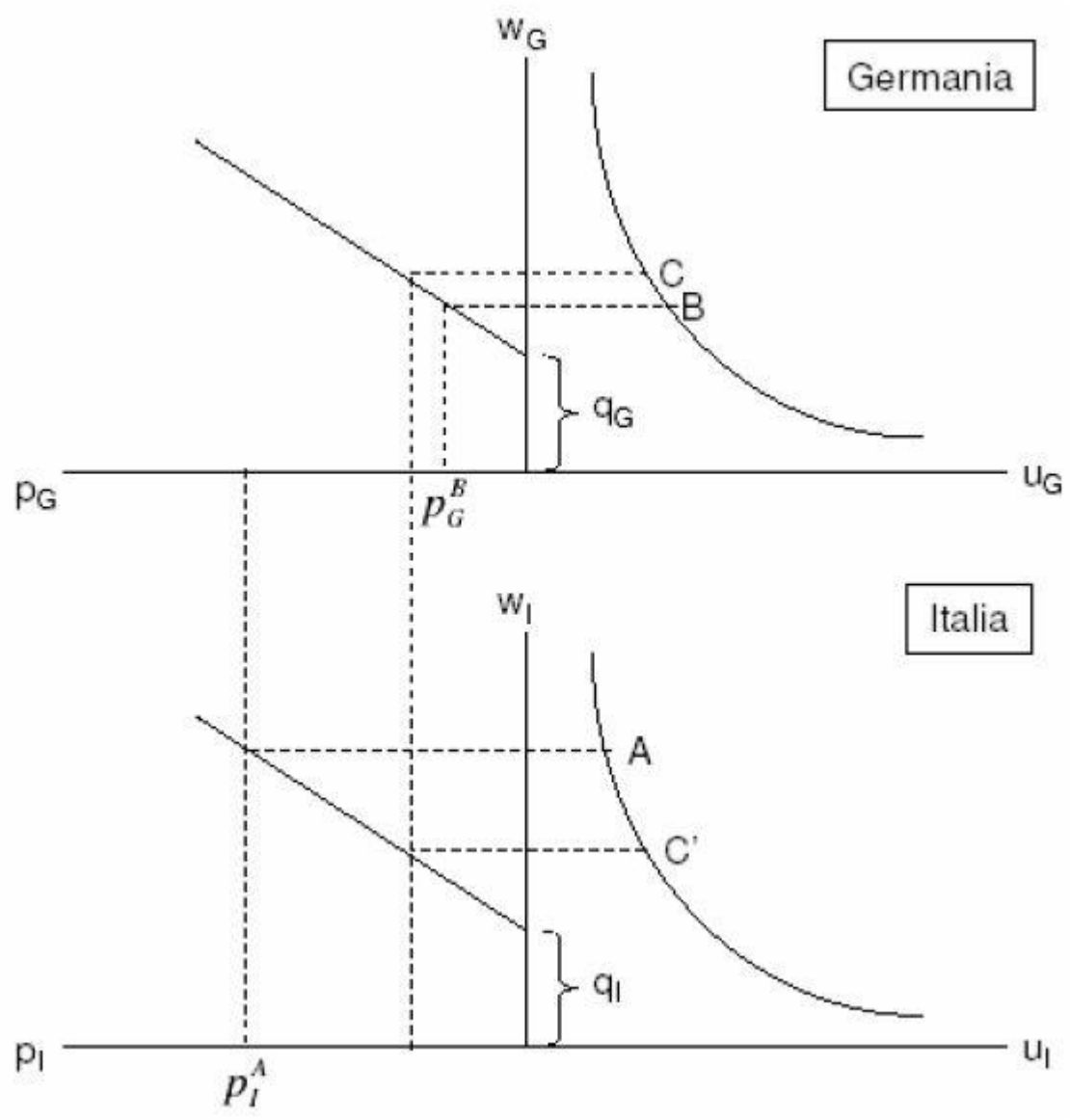
By considering an interest rate decrease caused by a country's decrease in money demand, it may also settle an increased level of income. The reason is that the money demand decrease is only due to an upgraded payment system. On the contrary, in case of a Monetary Union, the Central Bank would absorb the excess of

money supply as it avoids an interest rate deviation from the foreign interest rate, there will be no effect on income level.

From this example De Arcangelis[18] confirms that the Money Market is able to prevent nominal asymmetric shocks from influencing interest rates and income.

Another cost that derives directly from the loss of discretion regards the lack of the possibility to finance one's public debt through seigniorage, that is, the issuing of high potential money in such a way as to increase inflation and thus reduce the real burden of the debt. further costs of a monetary union derive mainly from the differences between the involved countries: this diversity will concern the legal and fiscal systems, the labor markets, the preferences on unemployment and on inflation. De Grauwe examines different preferences on the unemployment and the inflation rate of two countries, Italy and Germany, the comparison can be related by the Philipps curves.

18 See "Measuring Monetary Policy Shocks in a Small Open Economy" in Economic Notes, Review of Banking, Finance and Monetary Economics (2001).



Source: De Grauwe (2012) "Economics of a Monetary Union"

The wage rate is indicated on the vertical axis, whereas, the horizontal axis represents the unemployment rate. The relationship between the variation of the wage rate and the price change is attributed to the left quadrant of the graph: pI= wI-qI; pG= wG-qG,

- pI and pG are the inflation rates
- wI and wG are the wage rates
- qI and qG are the labor productivity growth rates in Italy and Germany

The two countries are related by the condition of equal purchasing power in e= pI-pG, which represents the rate of depreciation of the 'Lira' compared to the 'mark.' If e=0, it means that the exchange rate has become fixed; since the two countries adhered in a Monetary Union, therefore, adopt the same rate of inflation. If such equilibrium would not be respected, for example, suppose a greater inflation in Italy; it means that the country's competiveness would fall compared to Germany's level of production. Assume that two member states of the Monetary Union hold different preferences upon the level of inflation and unemployment, Italy selects point A; on the other hand, Germany settles in point B. Such decisions imply different inflation rates (pIA and pGB) that are unsustainable for a fixed exchange rate regime. Such example presumes that if both countries are forced to set another less favorable point or equilibrium level across the respective Philipps curves if they decide to join in a common currency area. Therefore, a 'hard-nosed country,' which prefers to raise the unemployment rate in order to reduce the inflation rate, will have to incorporate a higher inflation rate and a lower unemployment rate to keep the exchange rate fixed. Even the differences within the labor market can entail significant costs, in particular because they cause divergences in the price-wage dynamics. According to Calmfors and Driffils[19]: a country's labor market, which is characterized by highly centralized or decentralized bargaining, shocks suffered by the economy will not influence workers that advance high wage claims. In the first case, labor unions take into consideration the possible inflationary effect of increased wages, in fact, excessive demand for remuneration can lead to a higher level of inflation, eliminating the condition of an actual increase in real wages. while in the second case, labor unions may request for higher nominal salaries because of low inflation. The labor union represent a partial amount of the workers, this case generates 'free riding,' in which each labor union desires to increase nominal wages of each group of workers, but it follows its own small interest by not taking into account the aggregate effect of excessive demands due to the difficulty of achieving a wage moderation after a supply shock. The advantages are of microeconomic type, since it can be expected that the elimination of the national currency in favor of the common currency will provide economic efficiency gains. This efficiency gain derives from two factors:

1. The elimination of transaction costs associated with the exchange rate.
2. consists in eliminating the risk deriving from the uncertainty of the future movement of the exchange rate.

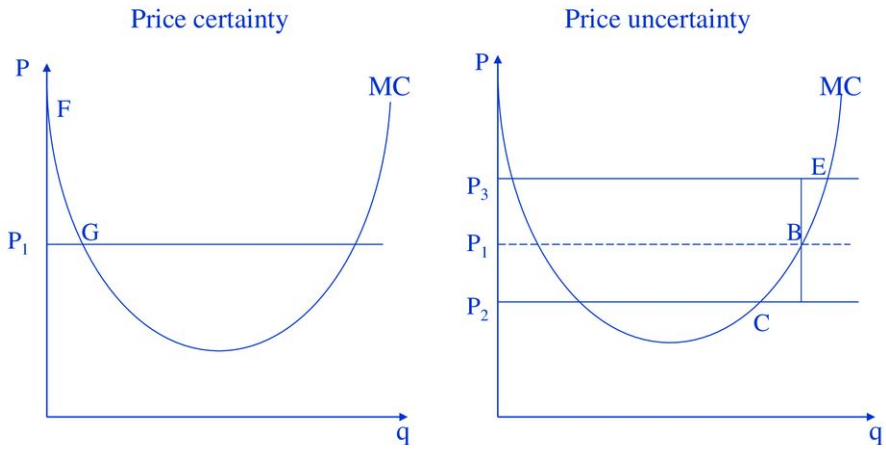
Direct gains associated with the removal of exchange transaction costs is the most relevant and easily quantifiable factor. Transaction costs related to currency exchange rate also represent a loss of social welfare; in fact, they are similar to a sort of tax paid by the consumer who receives nothing in return. Obviously, the elimination of exchange costs would damage a source of income for banking institutions

[19] Economic Policy, Volume 3, Issue 6, Pg. 13–61 (1988).

(according to estimates, the 5% of total banking revenues is made up of foreign exchange commissions). However, this lack of collection incentives banks to become more efficient as they should try to replace this loss with other sources.

For example, in the Eurozone there has been an increase in efficiency which has involved the creation of a better payment system. In addition to considering direct gains, the elimination of transaction costs also entails indirect gains, first of all, price transparency. In fact, all consumers belonging to the monetary union area will be able to compare prices in the same unit of account and then decide where to make purchases. Such turnover implies that competition between producers will increase. And consequently consumers will benefit from it.

Now we consider the welfare gains deriving from the reduction of exchange rate uncertainty: uncertainty deriving from future exchange rate variations leads to uncertainty about future business revenues; therefore, in a world of risk-averse operators, this causes a loss of social well-being. The elimination of the exchange rate risk causes a reduction of uncertainty; thus, it should increase welfare. However, De Grauwe underlines that there is an important aspect of the theory of the firm that can invalidate this conclusion, and this happens in a context of a competitive market where the company is a price-taker. Let us suppose that the company also exports all its product abroad, in this case, its profits will be different depending on whether the exchange rate is fixed or floating.



Source: De Grauwe (2012) "Economics of a Monetary Union"

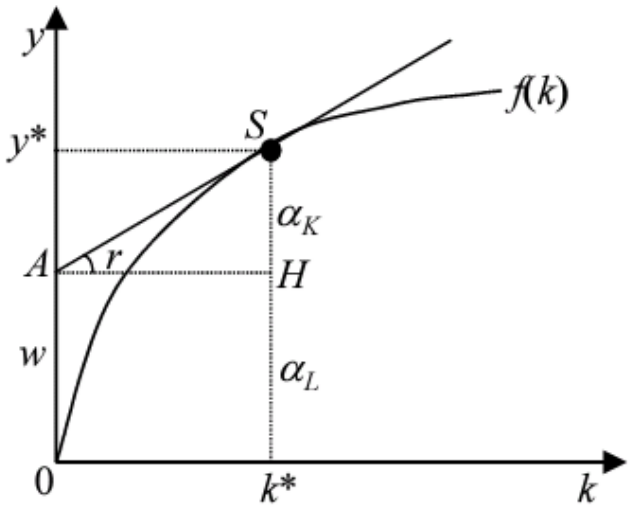
The graph on the left is related to a fixed exchange rate regime, therefore the price obtained by the companies is constant and perfectly predictable (the price that the company obtains is equal to the price charged in the export market multiplied by the exchange rate). In the second graph, the exchange rate fluctuates randomly, although on one hand the foreign price is fixed, on the other hand, the exchange rate varies causing the sale price of the company to no longer be constant. Suppose now that the price fluctuates symmetrically between p2 and p3. In the first regime, the profit of the company is certain in every period

and is given by the area shown minus the area of (f), (g), and (p1). In the second uncertainty regime, the profit will fluctuate according to whether the price (p2) or (p3) prevails on the other. In any case, in conditions of uncertainty: the profit will be, on average, higher than under conditions of certainty. That is when the p2 price is lower than the p1 price, the profit (in case of uncertainty) will be lower; whereas, when the price is high at the p3 level, the profit will be greater than in the case of certainty. Therefore, in the presence of a perfectly competitive market, the theory (concerning a company that exports) invalidates the thesis that the elimination of the uncertainty that is obtained by passing from a floating exchange rate regime to a fixed one, improves the well-being of the companies. Ultimately, in the most complicated economic models it is assumed that the uncertainty of the price can increase the averaged profits of the company. However, there is one aspect of uncertainty that is very serious and can undermine the relevance of the previous analysis: usually changes in exchange rates are not normally distributed, in fact, they determine periods of relative stability followed by periods of great variability (called currency storm). During the currency storm the variations of the exchange rate in one deviation or the other can be very large and persistent, giving rise to the "speculative bubble[20]," followed by financial collapses. When these economic events occur, they can have devastating effects on the national economy. In the case of the graphs in question, the currency collapse can be so wide that it causes the price to fall far below the level of the marginal cost curve (and the average cost), forcing the company to shut down. The allocation of the factors of production and the costs of the bankruptcy of these companies will be considerable given that large exchange rate movements are a recurring problem in the floating rate system; it also induces to face large repairing costs. From such threats, many leaders from different countries have been encouraged to join a monetary union.

Another benefit in favor of reducing the uncertainty linked to exchange rate risk is related to economic growth. Such argument, about the elimination of exchange rate risk can lead to greater economic growth, is formulated using the neoclassical growth model of Solow[21].

20 Willem H. Buiter, Paolo A. Pesenti- "Rational Speculative Bubbles in an Exchange Rate Target Zone," (1990)

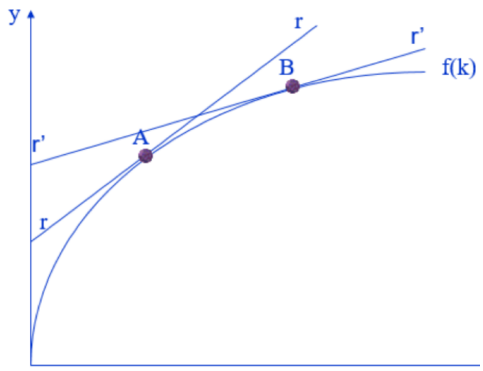
21 The Solow Growth Model, developed by Nobel Prize-winning economist Robert Solow, was the first neoclassical growth model.



Source: De Grauwe (2012) "Economics of a Monetary Union"

In the model the capital stock per worker (k) is shown in the horizontal axis, while on the vertical axis there is the output per worker (y); furthermore, the production function f (k) respects the conditions of diminishing marginal return. The equilibrium condition is obtained at the point where the marginal productivity of the capital (slope of the production function) is equal to the interest rate that consumers use to discount future consumption, moreover, it is represented at the point where the line RR (with slope equal to the discount rate) is tangent to the production function (PMK = r).

In this model, growth can only occur if the population growth rate changes or there is an exogenous rate of technological change. We will use this model as a basis to evaluate the effects that a monetary union could have on growth:

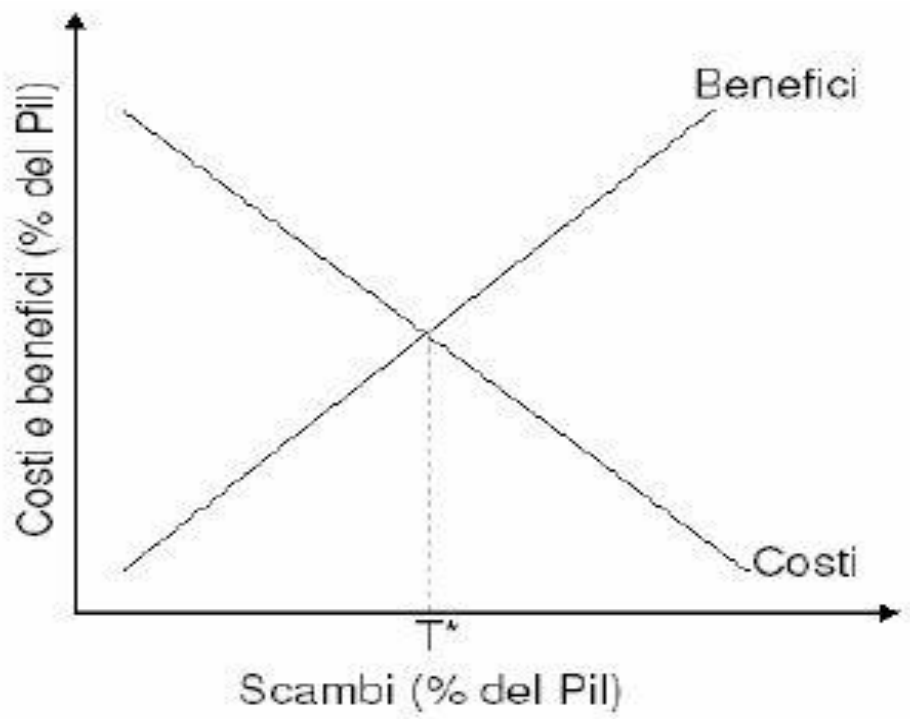


Source: De Grauwe (2012) "Economics of a Monetary Union"

risk reduction could lead to a reduction in the interest rate, making the line (RR) flatter this has the effect of shifting the equilibrium level from point (A) to point (B), in the new equilibrium there will be an increase in the level of capital per worker and output per worker. However, this growth induced by the monetary union will be only temporary: when the economy reaches the new steady state at point (B), growth stops even if in

this new equilibrium level of product per worker has increased. this model has been extended by introducing dynamic economies of scale; in this case it is assumed that the productivity of capital increases as the capital stock increases: this is because with a higher stock of capital per worker "Learning by Doing[22]" occurs. One of the characteristics of these new growth models is that the path of growth becomes endogenous and it is sensitive to the initial conditions of capital per worker. Therefore, an economy that starts off from a point with a higher level of capital per stock, has the possibility to move on a permanently higher growth path. Moreover, even by a lower interest, due to the elimination of uncertainty, can place an economy on a continuously higher growth path. The effect is shown by the upward movement of the (f(k)) curve, which also demonstrates that an economy will move on a higher growth path.

De Grauwe combines the curves that link costs and benefits with the degree of openness of a country.



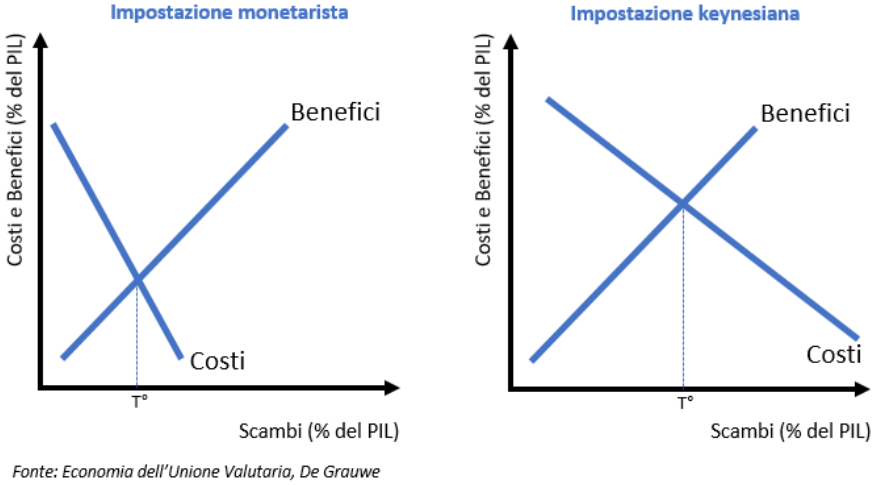
Source: De Grauwe (2012) "Economics of a Monetary Union"

From the intersection of the two lines we can determine the critical level of openness that makes it convenient for a country to join a monetary union. Compared to this critical level, if the country is on the left of the equilibrium point, it will be better to maintain its national currency. On the other hand, if the country has a trading situation positioned to the right of this critical point, it would be convenient for that country to

[22] Skills or knowledge are accumulated during the production, Romer (1989).

join a monetary union with its trading partners. It should be noted that the shape and position of the cost curve depend mainly on the opinion that one has regarding the effectiveness of national monetary policies in correcting the effects of asymmetric shocks.

In monetary policies are included policies concerning exchange rate maneuvers, in this regard, there are two extreme positions:



Fonte: Economia dell'Unione Valutaria, De Grauwe

Monetarist and Keynesian approach

as can be seen from the two graphs shown above, the benefits for joining a currency area do not undergo any change by passing from the monetarist theory to the Keynesian theory, whereas, the costs change visibly. In particular, the cost function is much steeper in the case of monetarist theories. Such change is due to the different view on the effectiveness of the exchange rate as a tool for correcting negative asymmetric shocks by the two economic theories. The Keynesian theory holds that the renunciation of the exchange rate as a corrective measure is particularly penalizing as it is an effective tool for the elimination of the imbalances, while for the monetarist theory the exchange rate is not a tool capable of correcting the different imbalances present between countries.

In conclusion, in both cases, the point of intersection between the line of benefits and the cost line determines the level of openness in which it is optimal or not to participate in the currency union. If we consider the case of the European Monetary Union, there are very contrasted levels of openness between the various member countries of the European Union. In fact, it is not easy to identify which member countries benefit from the economic monetary union and which countries do not benefit from it-considering other parameters being equal-such as, the degree of asymmetry of the shocks.

Introduction Chapter 2

The birth of the euro, almost two decades old, has given birth to one of the largest economic and monetary unions on the planet, both in economic and political terms. In the following years the creation of the Eurozone resulted in multiple discussions regarding the actual benefits and costs brought by the single currency, in terms of independence and flexibility, which it entailed.

2.1 The Beginning of the European Progress

The European Union is today a political and economic union made up of 28 member states, and is the result of a process that began after the Second World War with the aim of guaranteeing peace among European countries and throwing the bases for the creation of a project based on common interests. In 1951 the Treaty of Paris was stipulated which constituted the first European treaty. The treaty was signed by Belgium, France, West Germany, Italy, the Netherlands, and Luxembourg. This treaty effectively deported the European coal and steel community[23] (ECSC), which lasted from 1951 until 2002. This agreement actually led to the creation of a common market for coal and steel obtained by abolishing diagonals barriers of the protectionist measures on these two goods.

Later in 1957 the same countries signed the Treaty of Rome, establishing the European economic community[24] (EEC) and the European atomic energy community[25] (EURATOM). As regards the first, it constituted a supranational organization established to promote economic integration through the creation of a common market. In practice, a customs union was formed in which common policies concerning agriculture, trade and transport were applied, in which a common tariff policy adopted towards third countries was followed. The Treaty of Rome has also led to the creation of a European investment bank and the creation of a European social fund to promote the employment and mobility of workers in the

[23] The ECSC was first proposed by French foreign minister Robert Schuman on 9 May 1950 as a way to prevent further war between France and Germany.

[24] The first important accomplishments of the EEC were the establishment (1962) of common price levels for agricultural products.

[25] European Atomic Energy Community (EAEC or Euratom) is an international organization established by the Euratom treaty on 25 March 1957 with the original purpose of creating a specialist market for nuclear power in Europe, by developing nuclear energy and distributing it to its member states.

Community; therefore, the establishment of the "European Investment Bank" and the development of cooperation between Member States was achieved.
On 1 July 1967, a Commission and a Council (according to the norms of each community) were set up to carry out and analyze the prospects for development of a great project: the European union. The meeting of the Six, which took place in Hague in 1969, discussed a re-launch of the European Community in the areas of common foreign policy, economic and monetary union; so as to determine the spread of the idea of a single currency in order to preserve economic stability: the so-called "snake in the tunnel[26] " was created, limiting the maximum fluctuation gap between currencies to 2.25%. We are still in a context of flexible exchange rates although this represents the first effective step towards the transition to a fixed exchange rate that applies to all national currencies.

With the oil crisis of 1973 and the increase in price of oil, by OPEC[27], the first limits of the economic community process that were not yet fully completed were highlighted. In fact, the industry suffered a very serious damage and the nine countries, after some attempts of common reaction, proceeded individually to face the crisis. The need for a greater compliance of the economic policies of the individual states began to outline a more precise institutional structure of the European Community; therefore, it aims to ensure greater monetary stability (inflation reduction and less floating exchange rates) and greater cooperation between Member States. In fact in 1974 the institutionalization of the European Council[28] as an inter-governmental body was introduced, where meetings between Heads of State and Government took place at least three times a year.

2.2 The birth of the European Monetary System (EMS)

Ten years after the 1969 meeting, in Hague, eight countries (France, Germany, Italy, Belgium, Denmark, Ireland, Luxembourg and the Netherlands) decided to replace the "snake in the tunnel" with a system of fixed exchange rates, but modifiable, determined with respect to the ECU (European Currency Unit): a basket of currencies used as a unit of account. It was a scriptural currency introduced by the European

[26] Was the first attempt at European monetary cooperation in the 1970s, aiming at limiting fluctuations between different European currencies. It was an attempt at creating a single currency band for the EEC, essentially pegging all the EEC currencies to one another.

[27] Organization of the Petroleum Exporting Countries is an international organization. Since 1965, the headquarters of OPEC has been in Vienna, Austria. OPEC was established in Baghdad, Iraq on September 1960.

[28] The Paris Summit of December 1974, hosted by President Valéry Giscard d'Estaing, creates the European Council.

Council in 1978. The ECU was the second (virtual) currency of the European Union after the European Unit of Account[29] "EUA" (abandoned in 1975).

Together with the Exchange Rate Mechanism[30] (ERM), it created the European Monetary System in 1979. The ECU was born as a unit of account for the preparation of the internal budget of the European Community. Later on, it became more like a real currency (it was, for example, used for bank deposits), although it was never incorporated as a real currency. Its value is the weighted average of the currencies that make it up, each related to the economic importance of the corresponding country and also to any depreciation suffered by the currency:

$ECU = \sum a_i E_{i/j}$

- ai= represents the quantity of currency held in the basket
- Ei / j = the price of the currency (i) in terms of (j).

[29] Initially it was used for Lomé Convention and European Investment Bank operations before being gradually introduced into other sectors of Community activity.

[30] Was set up in order to reduce exchange rate variability and help Europe to become an area of monetary stability.

The table below is the final composition of the ECU, established on 8 November 1993 following the ratification of the Maastricht Treaty, and it achieved the following exchange rates fixed on 20 September 1989, based on the weighted average established by the Eco fin Council of 19 June, 1989:

Currency	ISO code	% Weighted average	Fixed Exchange Rate
Danish Krone	DKK	2,45	0,1976
Greek Drachma	GRD	0,8	1,440
Portuguese Escudo	PTE	0,8	1,393
Dutch Forint	NLG	9,4	0,2198
Belgian Franc	BEF	7,6	3,301
French Franc	FRF	19,0	1,332
Luxembourg Franc	LUF	0,3	0,130
Italian Lira	ITL	10,15	151,8
German Mark	DEM	30,1	0,6242
Spanish Peseta	ESP	5,3	6,885
British Pound	GBP	13,0	0,08784
Irish Pound	IEP	1,1	0,008552

In addition to the introduction of the ECU, this system, according to Krugman, has the objectives of: defending the European economic interests with the aim of achieving monetary stability in Europe, creating

lower inflation and more stable exchange rates; and providing superior cooperation between Member States, through common policies towards other country's currencies. The fixed exchange rate project in Europe seemed to have, in 1979, low prospects of success given the extreme variability of inflation throughout the area (from 2.7% in Germany to 12.1% in Italy), but thanks to political cooperation, to an even greater economic convergence of the various European countries, and to the possibility of adjusting rates; the Eighties marked not only the survival of the system but also its growth, with the inclusion, also, of Spain (1989), the United Kingdom (1990), and Portugal (1992). The choice of a maximum and minimum fluctuating rate for established exchange rates, the possibility of granting credit to countries with a strong currency against those with weak currencies, and currency controls that limited the buying and selling of currencies, were imposed decisions aimed at reducing the probability of a crisis. Through devaluation and revaluation operations, rates are allowed to fluctuate, up or down, with respect to central parities, not more than 2.25% for those countries with strong currencies and no more than 6% for those with a weak currency. For example, in the case of an expected devaluation of the lira, when the latter exceeded 75% of the variation allowed with respect to the central parity with the ECU, the Bank of Italy was obliged to intervene (in this case, buying lira and selling European currencies) to bring the Italian currency back to the central rate. Obviously, the opposite intervention was required for all the central banks of the countries whose currency was revaluing against the lira. Compared to the previous monetary snake, the great novelty of the stability mechanism of the currency system lies precisely in this "collective" obligation to respect parity with the ECU and therefore to maintain European currency stability.

The basis on which to calculate the bilateral deviations was obtained from the theoretical parity ratios of two currencies against the ECU. The "collective" obligation to intervene was considered as the guarantor of the stability of the EMS; so the country with the weak currency, as that with the strong currency, had to intervene in defense of its own devaluation (revaluation).

The intervention of the country with a strong currency was considered a suitable mechanism to prevent speculation: since the country with the appreciated currency had simply to sell national currency in exchange for the depreciated currency, it was assumed that the currency reserves of the first were unlimited, since it was enough to "print" currency and exchange it for the weak currency. On the other hand, in the previous system it was only the country with the weak currency that had to intervene to heal its position: in such case the intervention results limited by the amount of foreign exchange reserves available at the central bank. Finally, capital controls, used mainly by France and Italy, are another important means of protection from potential speculative attacks that prohibit national residents from selling national currency in exchange for foreign ones. These controls had a great importance in the protection from speculation during the eleven realignments of the exchange rate, which took place between March 1979 and January 1987, the year from which their gradual removal began (their final disappearance was registered, however, in 1995). In this context, the probability of speculative attacks increased, while the possibility of making revaluations and

devaluations was limited. Such mechanism, although on one hand shows a reduction in the independence of individual countries, on the other hand lays solid foundations for the creation of a unified European market. After the 1987 decision, there was no adverse event to maintaining fixed exchange rates until 1992, when asymmetric shocks occurred between Germany and the most important EMS partners due to the fall of the Berlin Wall (November 9, 1989) and the subsequent German reunification, which led to a period of strong German monetary expansion and consequent high inflation, fought with the rise in interest rates. Other countries were forced to adjust their rates, further aggravating their economic situation (they were already in a phase of no growth) towards an ever deeper recession. Among these countries were Italy and the United Kingdom, which in 1992 abandoned the exchange rate mechanism (ERM), while a currency crisis characterized by several speculative attacks aimed at undermining the parities of the European Monetary System. As a consequence, on august 1993 until January 1999, fluctuations up to ± 15% were established and maintained.

2.3 Maastricht Treaty and the last phases towards EMU

The EMS has certainly represented a very important step towards European monetary union. However, the system has seen frequent realignments of currencies (especially weak currencies such as the lira versus hard currencies such as Marco), and also the mechanism was accompanied by control over capital movements (definitively eliminated in 1995). This has led to the fact that the monetary policies of the participating countries have remained decentralized and applied in an often asymmetrical and non-coordinated manner by the central banks of each individual member state. This is why in 1988, with the entry into force of the single act, a further step forward was marked which culminated on 10 December 1991 through the Treaty of Maastricht, in which a decisive turning point was made towards the project of a monetary economic union. The Maastricht Treaty is fundamental for defining the three phases that would have led to the European Economic Union: the first phase began in 1990 following the assignment of greater powers to the Central Bank's committee of Governors of each EEC member state with the aim of pursuing a common monetary policy aimed at achieving the objective of price stability. Meanwhile, the foundations are laid for the subsequent phases in order to create an institutional structure with the projects of the European System of Central Banks (ESCB) and of the European Central Bank (ECB), through a growing cooperation of the central institutions of the member countries. The free circulation between the member countries is established with the opening of the single market on 1 January 1993, in addition to the strengthening of the cooperation between the central banks and the use of the ECU.

The second phase began in 1 January 1994, where the Committee of Governors was dissolved because of the creation of the European Monetary Institution (IME); although, it was not given the power to carry out currency transactions, the IME was charged by the Maastricht treaty the following criteria:

- obtain the statistical data in the monetary, banking and financial systems of the individual countries to analyze the feasible common monetary policies, preparing the necessary tools for their implementation;
- improve both internal payment systems, favoring the integration of the euro area, and the cross-border systems, implementing the TARGET system to improve their efficiency;
- outline the organization of foreign exchange transactions (in particular, introduce ERM II and future exchange rates between the euro and other currencies) and the holding of official reserves by member countries;
- choose the name of the new currency (euro) and supervise the proceeds of the banknotes; propose the last necessary measures to allow the introduction of the single currency on 1 January 1999.

The European Monetary Institution, in addition to strengthening the coordination of monetary policies among the individual central banks, plays a role of primary importance in setting the central bilateral parities necessary for the determination of the irrevocable conversion rates of individual currencies with the euro, laying the foundations for the ESCB; therefore, also for the ECB. Giving the initiative to the third phase, which started in January 1, 1999- when the single currency came into force- eleven member countries of the European Union adopted a common currency: the euro. Since then other seven member countries have joined the project. The European project of an Economic and Monetary Union (EMU), considered by many as a visionary fantasy until a few years before, has created a currency area of over 300 million consumers, more popular by about 10% compared to that of the United States.

The treaty of Maastricht puts the Delores relationship[1] into practice, and establishes the criteria necessary to guarantee the entry of a country within EMU. The criteria, still valid today, are the following:

1. Inflation rate not exceeding more than 1.5% compared to the average of the three lowest inflation rates recorded in member states.
2. Long-term interest rates not exceeding more than 2% of the average with the three countries with lower inflation.
3. Membership of the ERM mechanism, with the condition that it has not suffered a devaluation in the two decades prior to accession.
4. Current budget deficit not exceeding 3% of GDP, otherwise a continuous reduction is required up to the benchmark.
5. Public debt not exceeding 50%, otherwise, as in the previous point, a convergence with reasonable speed towards the set objective is necessary.

The treaty also does not stop at the list of conditions to be met to enter the monetary union, but establishes the need for a periodic check of the parameters set for the deficit and public debt, to be carried out even after admission and with the possibility to provide sanctions to member states that do not respect them.

Introduction Chapter 3

The purpose of this chapter is to use some fundamental criteria for the creation of an optimal currency area (discussed in chapter one) to evaluate and try to understand if the Eurozone is optimal or not definable as such, the criteria in question reflect both visions of the initial theories, the ideal characteristics to be possessed ex-ante, and the criteria of modern theories, the possible ex-post benefits obtained through the creation of the currency area.

The criteria used refer to the following variables are:

The level of similarity in inflation rates, the degree of mobility of the labor factor, the degree of openness of economies, the level of fiscal integration, and the level of flexibility of real wages.

3.1 Level of similarity in inflation rates

although such factor, the level of similarity in inflation rates, does not occupy a prominent place in the economic literature of the OCA, it represents the extent to which costs in different regions of a monetary area tend to move in a similar manner. In fact, if the speed with which prices vary is different between region and region, situations of disequilibrium can arise within the currency area. It should be emphasized that although there are many benefits deriving from the similarity in the aforementioned inflation rates at a low level, it is also true that the existence of differentials is not necessarily a negative condition. In any case, the index used for this analysis is the average harmonized consumer price index (HICP), which has the advantage of representing a common basket of goods and services for the Eurozone. From the data available on the inflation.eu site in which we report the following table, we can see that the average trend of inflation rates followed the same path for all countries.

HICP inflation 2019 by country / region

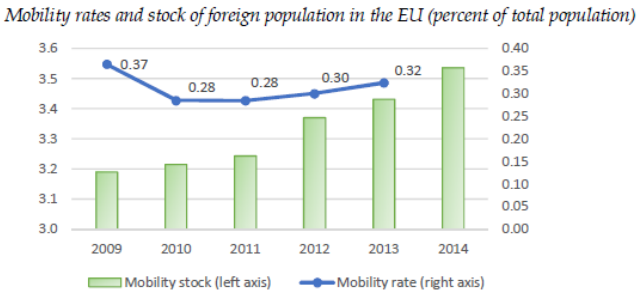
rent inflation / country		annual inflation (dec vs. dec)	average inflation
CP inflation Austria 2019	-	1.60 %	
CP inflation Belgium 2019	-	1.63 %	
CP inflation Estonia 2019	-	2.55 %	
CP inflation Finland 2019	-	1.22 %	
CP inflation France 2019	-	1.34 %	
CP inflation Germany 2019	-	1.55 %	
CP inflation Greece 2019	-	0.60 %	
CP inflation Ireland 2019	-	0.98 %	
CP inflation Italy 2019	-	0.82 %	
CP inflation Luxembourg 2019	-	1.89 %	
CP inflation Portugal 2019	-	0.43 %	
CP inflation Slovakia 2019	-	2.63 %	
CP inflation Slovenia 2019	-	1.72 %	
CP inflation Spain 2019	-	1.03 %	
CP inflation Sweden 2019	-	1.85 %	
CP inflation The Netherlands 2019	-	2.59 %	

Source: inflation.eu

3.2 Level of Labor mobility

As highlighted by Mundell in his OCA theory, the labor mobility factor contains the negative effects of an asymmetric shock, this thanks to the displacement of capital or labor from the region in surplus of supply to that in deficit. The aspect of free circulation of factors was immediately highlighted in the 1957 Treaty of Rome, in which, as we have already mentioned in the second chapter, focuses on the objective of creating a single market characterized by the free circulation of factors. However, the integration process took much longer, and can still be considered incomplete. The most common form of labor mobility involves a citizen who moves from one-member state to another to employ for work. These regular mobile workers enter the domestic labor market with the same rights and obligations as nationals. On the other hand, Cross-border workers provide labor in one-member state while residing in another, but they are fully integrated in the domestic labor markets, pay labor taxes and social contributions. A final category of mobile workers is the so-called posted workers and posted self-employed persons: an employee may be sent abroad to perform his/her work in another member state on a temporary basis (in many cases the worker is subcontracted by a company in the receiving country). One key difference between a posted worker and a regular mobile worker is the fixed temporary character of employment and specific EU law that applies to this type of mobility. In fact, posted workers are not part of the social security system of the country of work, but instead maintain their membership in their national system. The same construct also applies to self-employed persons who provide their services abroad. Both are effectively mobile workers, although, they are not directly employed in the country of destination but rather maintain a link to their domestic employer. Each category of labor mobility is important in terms of its size and how it affects public perceptions.

Taking inspiration from an analysis by Mikkel Barslund and Matthias Busse, it is highlighted that the number of people living in an EU country other than the birth country is only 3%, while the annual flow of citizens moving from one nation to another is just at 0.3%. The analysis, therefore, shows a low labor mobility in the area of the European Union, which is not evenly distributed in fact a high percentage of migrants searching for work comes from the countries of the east. Overall mobility remains very low, especially when compared to that of the USA, where the flow of citizens moving for business needs is at least 10 times higher than the EU.



Source: Mikkel Barslund, Matthias Busse "Labour Mobility in the EU Addressing challenges and ensuring fair mobility" (2016)

Three overriding (long-term) EU policy principles and aims, laid down in the treaties, are key to acquiring an understanding of the barriers and challenges to labor mobility at the EU and member-state levels: the right to free movement of labor, the aim of achieving deeper single market integration, and the commitment in the Lisbon Treaty to work towards a competitive social market economy. The social market economy implies welfare states with high social protection, while deeper single market integration entails cross-border delivery of services and labor mobility. In a situation where large wage and income divergences emerge between member states, these aims conflict with a member-state approach to social and labor market policy. National welfare states, deep economic integration and generous social protection cannot be simultaneously attained. This has been labelled the 'social trilemma'. Deep economic integration with unrestricted cross-border delivery of services can co-exist with autonomous welfare states only in the context of a minimalist approach towards social protection and the coverage of the welfare state. In this case, full service-market integration (without restrictions) would imply that (posted) workers delivering services in another member state would be paid a fraction of the wage level in that member state. Competition in labor-intensive services would be severely distorted, since national employers in high-wage member states would still be bound to pay the national minimum wage and honor collective agreements. As a consequence, domestic unemployment would rise and wages would be depressed. Such a situation would not be sustainable for

welfare states with high levels of social security. On the other hand, with a European approach to welfare policy, for example, a common minimum wage and EU-wide collective agreements, extensive welfare states would be compatible with deep economic integration and labor mobility (defined the 'EU social policy' approach). However, given the current differences in wages levels, even after adjusting for purchasing power, this latter construct is largely theoretical. Implementing a common European welfare system would imply a large transfer of resources from richer to poorer countries in order to reach an acceptable common level. Finally, member states can maintain autonomous welfare states with high social protection levels if EU integration in labor-intensive services is restricted or managed. Given the existence of heterogeneities in wage levels and welfare-state designs, an 'equalization of rules' approach has been taken to ensure that *in situ* delivery of cross-border services are subject to the rules of the state in which the service is delivered (host-country principle). This is essentially the purpose of the posted worker Directive. This approach is, of course, backed by the Treaty in which cross-border service provision shall occur "under the same conditions as are imposed by the State on its own nationals". Different cases brought before the Court of Justice of the European Union over the last 15-20 years illustrate the difficulties in defining the right balance in order to satisfy the constraints imposed by the social trilemma. As member states' economic fortunes converge, the 'social trilemma' will become less and less relevant. If there are minor differences in wages across member states, deep economic integration will pose little interference to autonomous welfare states with high social protection or to strong labor market regulations. Thus the trilemma shrinks. Consequently, economic convergence among EU member states implies that restrictions on labor mobility can be relaxed.

3.3 The degree of openness of economies

As we have seen, McKinnon identifies the level of trade between countries as a criterion of choice for the accession of a monetary union, in fact, when there is a strong interconnection between different countries and exchange rates are flexible, exogenous eventual shocks that cause strong fluctuations of the exchange rates heavily affect the level of domestic prices: for example, a devaluation of the exchange rate makes imports more expensive, causing import inflation. So joining a fixed exchange rate system would mitigate the negative effects of these fluctuations.

Intra-EU trade had been developing strongly vigorously until the financial and economic crises severely hit all EU Member States and sectors, leading to a sharp decline in trade in 2009. Intra-EU trade in goods suffered a bigger dip than trade in services but quickly recovered. From 2011 onwards, weak demand and

slow economic growth led to low dynamics in intra-EU trade in goods. Intra-EU trade in services endures a less severe slump and showed a more stable increase afterwards. The recovery in intra-EU trade after the crisis has been steady. The EU's overall economic performance further improved in 2016/17, albeit at a slow pace, still helped by the euro's relatively low value and moderate oil prices as well as the effects of previous reforms. Positive signs of accelerated growth in intra-EU trade in goods and services were observed in 2015-2017. The countries with the fastest increases in levels of trade integration were Slovenia, Finland, Belgium, Lithuania, Croatia, and Portugal. Greece and the United Kingdom had witnessed relatively high increases from low levels. Slovakia, Hungary, Slovenia, and Belgium had highest trade integration index overall. Larger Member States not only show much lower levels of trade integration (due to their size), but some are actually becoming less integrated.

Services trade integration continues to increase for most Member States, though trends differ across sectors. The countries with the fastest increases in levels of trade integration are The Netherlands, Lithuania and Romania. Italy and the United Kingdom had strong increases from low starting levels. There is considerable potential for further strengthening trade integration in services, notably construction and business services. European analysts have summarized in a single index the path of integration of the Single Market from 1995 to 2015 using the following data:

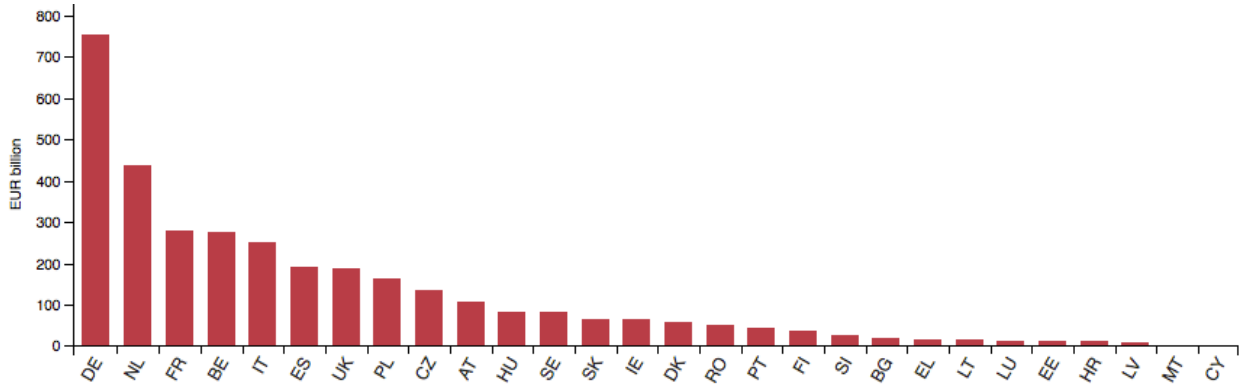
Single Market integration indicators used in the summary indicator of Single Market integration	Weight of the 17 indicators in the summary indicator of Single Market integration
Percentage of exports of goods to the EU to GDP	8%
Percentage of imports of goods from the EU to GDP	7%
Percentage of exports of services to the EU to GDP	8%
Percentage of imports of services from the EU to GDP	8%
Percentage of GDP of FDI inflow from the EU	8%
Percentage of GDP of inward FDI stock from the EU	9%
Percentage of GDP of outward FDI flow to the EU	8%
Percentage of GDP of outward FDI stock to the EU	7%
Percentage of EU Directives not implemented or implemented only partially or incorrectly into national law (i.e. the transposition deficit)	7%
Difference between unit nominal labour costs of Member State and the core EU average*	7%
Difference between per capita GDP of Member State and the core EU average	6%
Difference between interest rates of long-term bonds of Member State and the core EU average	6%
Difference between VAT rates of Member State and the core EU average	8%
Difference between purchasing power in Member State and the core EU average	3%

Source: LE Europe, based on Eurostat data.
Note: The EU core comprises the 15 Member States at the time of completion of the SMP.

The graphs below show recent trends, focusing on total intra-EU trade in goods and the most traded products. It presents statistics for the EU-28 aggregate and for individual Member States for the period covering 2002 to 2017.

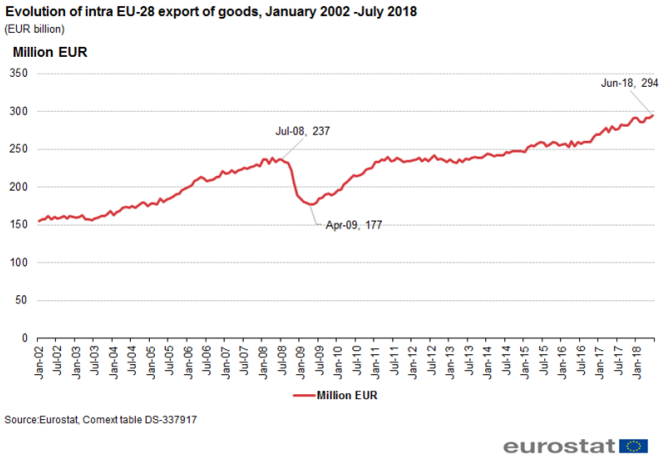
Statistics on international trade in goods between Member States of the European Union (EU), especially the size and evolution of imports and exports, enable the EU and national authorities to evaluate the growth of the Single Market and the integration of EU economies. These statistics also provide EU businesses with essential information for their sales and marketing policies.

Exports of goods to other EU Member States (2017)



Source: Eurostat, Context table

The figure below represents the seasonally adjusted value of monthly total exports of goods for EU-28 Member States to other Member States.



In 2002 and 2003 the level of exports of goods was fairly stable, followed by a period of rapid increase between 2004 and 2008. From July 2008 to May 2009 there was a sharp decrease in the value of exports of goods. Following this decline, the value of exports of goods began to increase again. In August 2011 it surpassed the level seen before the decrease and it has continued to increase until now.

From these sources of data, it can be observed that the creation of a monetary union has strongly influenced the development of exchanges between European nations, bringing them closer to the ideal situation described by McKinnon.

3.4 Fiscal Integration

According to Kenen the realization of a single fiscal unit within a currency area, would allow to manage and control the negative effects of asymmetric shocks, through an appropriate redistribution of resources. At present, the EU has no direct role in taxation, nor in setting the tax rates of the various member states. In 2011, the creation of an organization called ESM was approved by the European Parliament and ratified by the European Council. In practice it is a fund that guarantees the financial stability of the euro zone to safeguard and provide instant access to financial assistance programs for member states of the Eurozone in financial difficulty, with a maximum lending capacity of €700 billion. The EMS will be able to buy euro government bonds on the primary and secondary market. The fund may enter into financial agreements with financial institutions or private institutions (private banks are also supported in providing aid to troubled states). In the event of the insolvency of a State financed by the ESM, the latter will be entitled to be reimbursed before private creditors.

Therefore, we have a very variegated and inorganic framework of regimes and criteria for determining both the tax base and the tax rates. This fragmentation is very expensive, in fact, in an economically integrated area with a single currency and in the perspective of a political union, the persistence of significant differences in corporate taxation represents a significant cost in the European production system.

In a longer term perspective, the difficulties of a substantial approximation of the tax systems of the Member States can be overcome only if the fiscal integration is linked to the suppression of the principle of unanimity, and substantial powers will be attributed to the European Government and Parliament. Such context does not mean that all the tax burden differences existing in the individual countries must be removed from one day to another, and just considering the uniformity of the tax systems. The process of integrating a federal union between national systems will inevitably have to proceed at different speeds, in compliance with the fundamental principles of subsidiarity and proportionality and by keeping into consideration the two general rules of the prevalence of Community law over the laws of individual states (of course, when subsidiarity does not operate) and the direct application of this right vis-à-vis the public administration and the citizens of each member country.

In this context, the future European fiscal model cannot be detached from the type of federal structure that the EU will be given; furthermore, it will be able to contemplate the establishment of a direct federal European tribute which adds to the current VAT and excise duties and finances, even partially, to the federal spending. For corporate taxation it would be a matter of recovering consolidated tax base project (as proposed by the Bratislava[31] summit) without excluding the possibility of establishing a tax determined on

[31] Bratislava summit is where a meeting between EU27 takes place. As European Council President Donald Tusk told the media: "all of Europe expects that the EU, after Bratislava, will again be a guarantee of stability, security and protection – protection in the widest meaning, including social and economic protection.

the basis of the European fiscal status of companies, which could be a European corporation tax on the consolidated profits to be paid in the State of the located company. It is a federal tax system, the state taxes that would coexist with that tax may continue to be determined by each individual State and may even be an instrument of reasonable tax competition (especially in terms of rates). The difference compared to the present is that they must, however, be subject to coordination by the Federal Government and the European Parliament when the differences in their discipline are relevant in terms of common macroeconomic policies and are in contrast with the basic principles of the European federal state. Not upsetting the fiscal system of the single States, it should imply the revision of the EU Treaty, or involve the insertion in a future European Constitution of the reference to the principle of financial autonomy and also the attribution to the federal union of a coordinating power that finds its justification not in the sole objective of stopping distortive practices, but in itself as an essential instrument of decentralization and linking of multilevel powers.
In order to complete the integration, it will be necessary to recover at European level a different idea of taxation, also as a tool for gathering the essential financial resources for the development and subsistence of a community according to fair distribution principles.

3.5 Flexible Real Wages

Real wage flexibility is defined through the responsiveness of real wages to shocks in unemployment and productivity. The EU countries at very different levels of economic development, labor market flexibility is an extremely important structural factor for all of them. In a monetary union, where independent monetary and exchange rate policy is not available, real wage flexibility is a crucial adjustment channel to asymmetric shocks, especially if cross-border labor mobility and fiscal flexibility is limited. In addition, sufficient real wage flexibility is also desirable in the CEE countries during their convergence process, in particular to cope with external shocks and structural adjustments that may temporarily cause a decrease in aggregate demand. Those economies, where a flexible downward adjustment of real wages is possible, tend to have a better chance to withstand adverse economic shocks with lower adjustment costs, for example unemployment, than economies that are characterized by rigid real wages. Several studies have attempted to analyze some of the factors that can signal a certain degree of flexibility: the cyclical position of the economy reported by the difference between the actual and the natural unemployment rate (NAIRU): during the boom phases the wage flexibility is high, the opposite happens when one enters a recession that corresponds to the case in which it is most necessary- Arpaia and Pichelmann (2007).
The type of institutions in labor market: a coordinated union makes it possible to obtain better results in terms of flexibility since it takes into account the disadvantages deriving from too high wage demands,

whereas, the opposite happens for countries with low centralization of workers' representatives- Kittel (2001).

The level of inflation: when wages are nominally rigid downward and inflation is close to zero, the flexibility of real wages will be limited as companies, unable to reduce wages, prefer to reduce the employment; when the level of inflation is moderate, flexibility increases because it is easier to reduce real wages- Akerlof et al. (1996); Hyslop (1997). The benefits seem to be maximum for a CPI inflation level of 2.5%.

The participation or not in the Eurozone: the flexibility seems to be empirically higher in the CEE countries than in the Eurozone states, both in relation to the level of unemployment and the variations in productivity- Van Poeck (2007).

Salary responses to unemployment vary in relation to the economic cycle, positive when employment is above NAIRU levels, negative when the opposite occurs. In the first case, no significant persistence was found and the flexibility of real wages is substantial; during recessions, when the adjustment mechanism is more important, a hysteresis phenomenon has been observed that eliminates, in just two quarters, most of the initial response of real wages to growing unemployment.

The phenomenon is called "downward real wage rigidity" (DRWR) and is explained in various microeconomic studies: it is often linked to the existence of institutional factors, such as the indexation of wages, which prevent the adjustment of real salaries downwards.

An opposite argument can be made for productivity in relation to economic cycles. During periods of depression, real wages respond better to changes in productivity than in the boom phases. This channel partially compensates for the rigidity of real wages downwards.

The analysis data also reveal that an inflation threshold could exist, below which, the rigidity of real compensation could increase due to a block of nominal downward wages (downward nominal wage rigidity DNWR). This confirms the studies previously carried out on the subject, in particular those linking the types of institutions present in the market, regulation and unemployment with pay movements. Countries with centralized unions or with a legislature that protects workers, observe very marked phenomena of DRWR and DNWR which, during negative phases of the economic cycle, keep real wage rigidity high; the smaller the presence of these institutions, the lower the hysteresis effect in the short to medium term, the greater the response and the elasticity of salaries.

3.6 Conclusion

The aim of this paper was not only to include the European experience within a precise framework and theoretical panorama, but also (and above all) to evaluate its future prospects and scope. In this sense, the third chapter aims to resolve the dispute concerning the possibility of configuring or not the euro within the theory of optimal currency areas, emphasizing the problems linked to our single currency that do not allow it to be framed in this perspective. The problems that have emerged in recent years are, in particular, related to the misalignment between the economic trends of the various nations, a phenomenon certainly not in line with the harmonization interventions and the search for synchrony between the productive cycles of the single nations. Also in the third chapter, it is highlighted how the problems are also of a more strictly political nature: claims by individual states of greater fiscal and monetary independence, lack of propensity on the part of the richer countries to transfer resources towards those in difficulty, there is a strong disequilibrium in terms of capacity and speed of the institutional reform political process. Worthy of note also appear to be issues such as those of economic imbalances between countries, due to the adoption of fixed exchange rates between individual national currencies, and those linked to labor mobility within the EU as well as to the volume of trade commercial.

Ultimately, the European experiment still represents an open-air construction site and an ongoing process of harmonization, whose historical significance is undoubted. However, there is a need for a strong reshaping of the political, fiscal and economic order and balance within it, especially in a time of great difficulty and crisis. The originality of the European experience cannot be circumscribed and limited to a mere analysis in terms of cost-benefits sanctioned by the theory of optimal currency areas but must be included in a broader and more complex political and economic context.

Bibliography

ALESINA A. BARRO R.J. TENREYRO S. Optimal Currency Areas, MIT Press, 2003.
https://www.journals.uchicago.edu/doi/pdfplus/10.1086/ma.17.3585292

DE GRAUWE P. Economics of Monetary Union, Oup Oxford, 2012.
1)https://global.oup.com/academic/product/economics-of-monetary-union-9780198805229?cc=it&lang=en&#
2) P. (2002), *Unia walutowa*, Warszawa, Polskie Wydawnictwo Ekonomiczne. De Grauwe P. (1996), *The Prospects of a Mini Currency Union in 1999*, CEPR Discussion Papers in International Macroeconomics No. 1458.
3) (1993), *The Political Economy of Monetary Union in Europe*, World Economy, p. 653-661.

FLEMING J.M. On Exchange Rate Unification, The Economic Journal, 1971,
1)https://link.springer.com/article/10.2307/4149945
2)https://academic.oup.com/ej/article-abstract/81/323/467/5233966

HARRY G. JOHNSON. "The Case for Flexible Exchange Rates, 1969"
https://files.stlouisfed.org/files/htdocs/publications/review/69/06/Flexible_Jun1969.pdf

FRIEDMAN M. "The Case for Flexible Exchange Rates," 1953.
1)https://www.bankofgreece.gr/BogEkdoseis/Paper2017236.pdf
2)https://object.cato.org/sites/cato.org/files/serials/files/cato-journal/2018/4/cj-v38n2-3.pdf
3)https://link.springer.com/chapter/10.1057%2F9780230286023_4

KRUGMAN P. Revenge of The Optimum Currency Area.
1)https://www.nber.org/chapters/c12759.pdf
2)https://krugman.blogs.nytimes.com/2012/06/24/revenge-of-the-optimum-currency-area/

TAVLAS G.S. "Theory of Optimum Currency Areas," 1993
https://search.proquest.com/openview/ff7ca45f77b1e89b7faa18fa8605d768/1?pq-origsite=gscholar&cbl=1819673

KENEN P.B. "The Theory of Optimum Currency Areas: an eclectic view"
https://www.researchgate.net/publication/243672849_The_Theory_of_Optimum_Currency_Areas_An_Eclectic_View

MUNDELL R.A. "A Theory of Optimum Currency Areas, The American Economic Review, 1961
1)https://www.experimentalforschung.econ.uni-muenchen.de/studium/veranstaltungsarchiv/sq2/mundell_aer1961.pdf
2)https://www.jstor.org/stable/1812792?seq=1#page_scan_tab_contents

MCKINNON R.I. Optimum Currency Areas, 1963
1)https://www.experimentalforschung.econ.uni-muenchen.de/studium/veranstaltungsarchiv/sq2/mckinnon_aer1963.pdf

2)https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1130975
3)PKIEP104_Broz_1.pdf
4)http://assets.press.princeton.edu/chapters/reinert/16article_pomfret_optimum.pdf
5) (1963), *Optimum Currency Areas*, American Economic Review Vol. 52, No. 4, p. 717-725.
6) (2002), *Optimum currency areas and the European experience*, Economics of Transition Vol. 10, No. 2, p. 343-364.

HORVATH J. Optimum Currency Area Theory: Bank of Finland, 2003
https://pdfs.semanticscholar.org/6933/59c23f62e698ef7ef6f082340841f4309104.pdf

EDISON H.J. "Is The ECU an Optimal Currency Basket?" 1986
https://books.google.it/books?id=sOtxlGmTxzEC&pg=PA348&lpg=PA348&dq=EDISON+H.J.+Is+The+ECU+an+Optimal+Currency+Basket?&source=bl&ots=QKDbCeLuSK&sig=ACfU3U28-mvNmdzwt6gubiKunf2O6kdzSQ&hl=it&sa=X&ved=2ahUKEwiXlOfDkpbhAhUsMewKHVvZDoIQ6AEwAHoECAkQAQ#v=onepage&q=EDISON%20H.J.%20Is%20The%20ECU%20an%20Optimal%20Currency%20Basket%3F&f=false

BLANCHARD O. "Portugal, Italy, Spain, and Germany. The implications of a suboptimal currency area," 2006
https://economics.mit.edu/files/1773

ARTIS M.J. "Referations on the Optimal Currency Area criteria in the light of EMU, 2003
https://core.ac.uk/download/pdf/6642631.pdf

RICCI L.A. A Model of An Optimum Currency Area, 2008
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1726837

Appel E. (2002), *European Monetary Integartion 1958-2002*, London, Routlege.
Belka M. (1993), *Neutralność pieniądza – ewolucja poglądów*, Bank i Kredyt nr 5-6, p. 2-8.

Bień A. (1988), *Optymalny obszar walutowy. Teoria i praktyka*, Warszawa, PWE.
Bordo M. (2003), *Exchange Rate Regime Choice in Historical Perspective*, NBER Working Papers, No. 9654.

Buiter W. (2000), *Optimal Currency Areas. Scottish Economic Society/Royal Bank of Scotland Annual Lecture*, 1999, Scottish Journal of Political Economy Vol. 47, No. 3, p. 213-250.

Corden W. M. (1994), *Economic Policy, Exchange Rates, and the International System*, Oxford, Oxford University Press.

Eichengreen B., Bayoumi T. (1997), *Ever Closer to Heaven? An Optimum Currency Area Index for European Countries*, in: B. Eichengreen, *European Monetary Unification: Theory, Practice, and Analysis*, Massachusetts, The MIT Press.

Fisher S. (2001), *Exchange Rate Regimes: Is Bipolar View Correct*? mimeo.

Frankel J. A. (2003), *Experience of and Lessons from Exchange Rate Regimes in Emerging Economies*, NBER Working Papers No. 10032.

Grubel H. C. (1970), *The Theory of Optimum Currency Areas*, Canadian Journal of Economics Vol. 2, p. 318-324.

Ingram J. C. (1969), *Some Implications of Puerto Rico Experience*, in: *International Finance*, R. N. Cooper (ed.), Bungay, Suffolk, Penguin Modern Economics Readings.

Kennen P. B. (1997), *Common Currencies Versus Currency Areas. Preferences, Domains and Sustainability*, American Economic Review Vol. 87, No. 2, p. 211-213.

Mongelli F. P. (2002), *"New" Views on the Optimal Currency Area Theory: What is EMU Telling Us*? ECB Working Papers No. 138.

Mussa M. (1997), *Political and Institutional Commitment to a Common Currency*, American Economic Review Vol. 87, No. 2, p. 217-220.
Padoa-Schioppa T. (2002), *Competition, Co-operation, Public Action: Three Necessary Drivers for European Financial Integration*, mimeo.
Padoa-Schioppa T. (1991), *Introduction*, in: *Europe After 1992: Three Essays*, T. Padoa- Schioppa (ed.), Princeton, Princeton University Department of Economics Essays in International Finance.

Rose A. K., Engel C. (2003), *Currency Unions and International Integration*, Journal of Money Credit and Banking Vol. 34, No. 4, p. 1067-1087.
Snowdon P., Vane H., Wynarczyk P. (1998), *Współczesne nurty teorii ekonomii*, Warszawa, WN PWN.

Vaubel R. (1976), *Real Exchange Rate Changes in the European Community: The Empirical Evidence and Its Implications for European Currency Unification*, Weltwirtschaftlisches Archiv Nr. 112, p. 429-470.

Webography

https://ec.europa.eu

http://ejce.liuc.it/18242979201402/182429792014110201.pdf

https://www.investopedia.com

https://americanaffairsjournal.org

https://europa.eu

https://it.inflation.eu

http://www.treccani.it

https://www.ilsole24ore.com