

## RECENT APPROACHES IN THE OPTIMUM CURRENCY AREAS THEORY

AURA SOCOL\*  
CRISTIAN SOCOL\*\*

### Abstract

*This study is dealing with the endogenous characteristic of the OCA criteria, starting from the idea that a higher conformity of the business cycles will result in a better timing of the economic cycles and, thus, in getting closer to the quality of an optimum currency area. Thus, if the classical theory is focused on a static approach of the problem, the new theories assert that these conditions are dynamic, and they cannot be positively affected even by the establishment of the Economic and Monetary Union. The consequences are overwhelming, as the endogenous approach shows that a monetary union can be achieved even if all the conditions mentioned in Mundell's optimum currency areas theory are not met, showing that some of them may also be met subsequent to the unification. Thus, a country joining a monetary union, although it does not meet the criteria for an optimum currency area, will ex post lead to the increase of the integration and business cycle correlation degree.*

**Keywords:** *optimum currency area theory, endogeneity theory, OCA characteristics*

### Introduction

Although the problem of the monetary unions is more actual than ever, both for the developed countries, which have already joined the Eurozone, and also for the less developed states, which are preparing to meet the criteria for being accepted, this topic has been put forward for a long time in the economic literature. Thus, the classical theory of the optimum currency areas has come out since 1961 in an article presented by Robert Mundell (who is considered to be the „father” of the optimum currency areas theory). The objective of this theory was to make a monetary union possible, by providing answers for the measures which should be taken for improving the situation.

The optimum currency areas theory (OCA) is based on Robert Mundell's contribution (1961) which is mentioned above, although the problem has been reviewed and added by many other economists, such as Robert McKinnon (1963), Peter Kenen (1969) etc. *The theory shows that countries can obtain net benefits as a result of having a unique currency, thus being able to avoid the possible adjustment problems, as long as the member countries meet certain conditions (OCA characteristics)*

The latest researches referring to the optimum currency areas theory require the so-called theory of OCA endogeneity criteria in the economic literature. Thus, from a theoretical point of view, some authors assert that two of the optimum currency areas criteria are especially important.

Frankel and Wei (1998) propose two of the characteristics of the optimum currency areas as being fundamental in assessing the net benefits of a monetary union: *an economy's opening degree (from a commercial point of view) and the correlation degree of the business cycles (economic symmetry degree)*. In case the classical theory is focused on a static approach of the problem, the new theories assert that these conditions are dynamic, and they can be positively affected even by the establishment of the Economic and Monetary Union. This approach represents one of the paradigms related to the optimum currency areas theory and it has overwhelming consequences. According to this approach, a higher economy opening degree will determine a convergence of the business cycles, and this will provide favorable conditions for political integration and for the creation of a currency

---

\*\*Lecturer, PhD, The Bucharest Academy of Economic Studies, (e-mail: socol.cristian@gmail.com).

area. In such a case, the mutual commerce is stimulated, and the business cycles will get synchronized, the final effect being the regularity of the currency and the exchange arrangements.

The consequences are overwhelming due to the fact that the endogenous approach shows that a monetary union can be created *even though all the conditions* mentioned in Mundell's optimum currency areas theory *are not met*, showing that some of them may also be met subsequent to the unification. Thus, a country joining a monetary union, although it does not meet the criteria for an optimum currency area, will *ex post* lead to the increase of the integration and business cycle correlation degree. Actually, this fact outlines that the main objective for which a monetary union is created is to make profits on the benefits, even though they can be identified from the beginning (the *ex ante* variant), or if they occur after a certain period of time (the *ex post* variant).

The endogeneity of the optimum currency areas was defined by Jeffrey Frankel and Andrew Rose in 1998, and, subsequently, in 2007, Gayer made an important addition. The endogeneity in a currency area shows that a country's joining to a currency area results in the increase of the synchronization degree of the economic cycles, due to the increase of the commercial integration.

#### The Endogeneity of the Optimum Currency Area Criteria

The trade-off between *the economy's opening degree* and the correlation degree of the business cycles is described by the OCA line, in figure 1. It represents the set of combinations between symmetry and economic integration for which the costs and the benefits of joining a monetary union are equal. The OCA line has a negative slope due to the fact that the implementation of a unique currency is in a positive relation with the economy's opening degree, and also with the correlation degree between the countries' economic cycles. On the right side of the OCA line, we encounter the situation in which the benefits exceed the costs for losing the monetary independence. On the left side of the OCA line, it is more favorable for countries to keep their monetary independence and to join a monetary union (for example, a monetary union between EU, USA and China is not efficient).

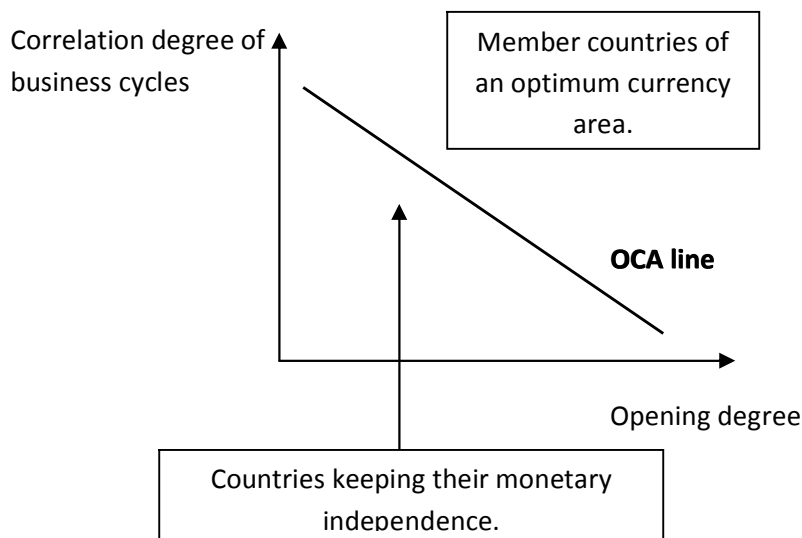


Figure 1. The line of the optimum currency area

Many authors agree that the development of a mutual commerce and an economy's opening degree as high as possible are benefic for each national economy. Thus, the transaction costs get

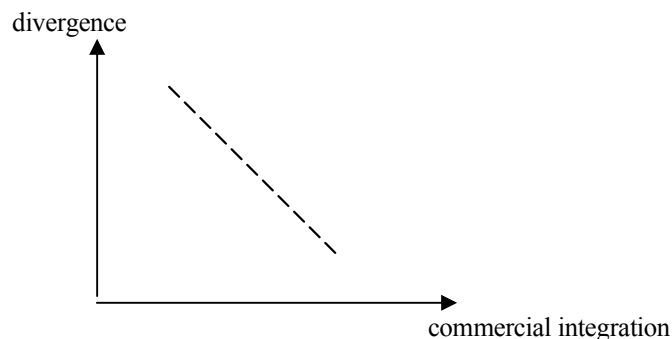
decreased, the rate of exchange is stable and the net benefits of a monetary union get increased. The empirical studies demonstrated that, after the creation of the Unique Market, the commercial relations between the European Union's members recorded a 60 percents increase (Frankel and Wei, 1998).

Rose and Frankel explained that the monetary integration may lead to a significant dependence on the mutual commerce. From this point of view, the Eurozone can be changed into an optimum currency area after initiating the monetary integration process, and this means that the countries joining the Eurozone, irrespective of their motivation, could ex-post meet the criteria required by an OCA ZMO, even though they were not able to do it ex-ante. As a consequence, the borders of a new currency area would be too large, due to the standby according to which the commerce integration and the revenues correlation will get increased when the union is created.

The effect of endogeneity of an optimum currency area is based on two main perspectives. The first perspective outlines the fact that the opening degree of the economies being taken into consideration (the mutual commerce between the members of the currency area) is expected to get increased. This perspective is generally accepted, even though there are contradictory points of view regarding the largeness of the opening, and the second perspective supposes a positive relation between the commerce integration and the revenues correlation. As a monetary union is established, even in an automatic manner, the market mechanisms begin operating, and this facilitates the various criteria proposed for testing the area's efficiency.

The differences between countries exist, but the problem is to what extent they are relevant, so that their presence could prevent the creation of a monetary union. To what extent do the *asymmetric shocks* mentioned by Mundell exist and act? From this point of view, there are two perspectives: an optimistic perspective and a pessimistic one.

From the optimistic point of view, the commerce within the countries which are member to the European Union is, to a large extent, an intra-industrial commerce; this commerce is based on the existence of the economies of scale. Thus, most of the demand shocks affect the countries from this economic space in the same manner. Under the terms of creating a unique market, most of the demand shocks will tend to have a symmetric effect. According to this perspective (figure 2), the increase of the integration degree will lead, to a larger extent, to making the economic structures compatible and, to a smaller extent, to the occurrence of asymmetric shocks.



**Figure 2. The optimistic perspective**

From the optimistic point of view (figure 3), the assumption of the asymmetric shocks is not eliminated, though. According to this perspective, the economies of scale may result in the occurrence of agglomeration effects; the commerce integration which is achieved due to the economies of scale existing in the EU space leads to a regional focus of the industrial activities. Thus, the output focus effect will result in losing the advantages provided by the economies of scale. According to this approach, the commercial integration leads to the occurrence of asymmetric

shocks. The asymmetric shocks would be favored by the high focusing degree of certain industries in a country. In such a case, the countries encountering such shocks would rather use the rate of exchange for balancing economy.

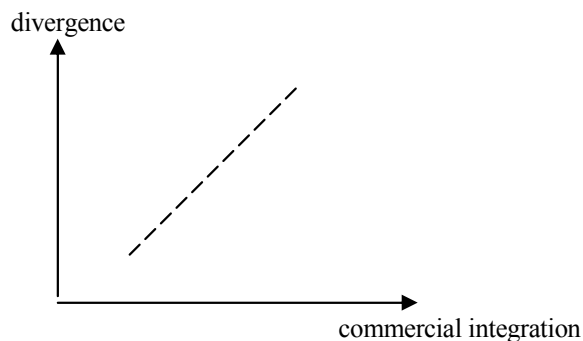


Figure 3. The pessimistic perspective

The intersection point of costs and benefits related to joining a monetary union (point A) determines the critical level of an economy's opening which makes a country worthy joining a monetary union together with its commercial partners. In this pattern, the form and the position of the costs curve depends, to a great extent, on the perspective considered in terms of efficiency of the exchange rate tool in adjusting the effects generated by the different evolutions of demand and costs in the countries which are involved in a monetary union. De Grauwe (2003) presents two variants of the costs-benefits correlation: *the monetarist perspective* – also accepted by the European Commission for assessing the net benefits of the Economic and Monetary Union – in which the right side of the costs is closer to the origin – and *the Keynesian perspective* which supposes a less optimistic approach of the problem (figure 4).

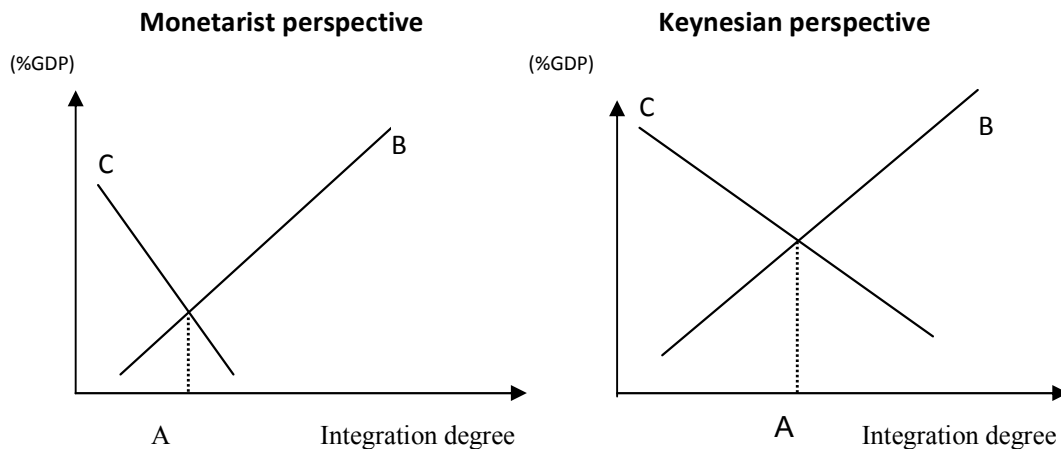


Figure 4. Monetarist perspective versus Keynesian perspective

In the case of the Keynesian perspective – illustrated by Mundell’s model – the costs curve is placed much farther from the origin of the axes system, so that only a few countries would be favored by joining a monetary union. The national economies are characterized by structural rigidities; the rate of exchange is an essential tool for eliminating unbalances, and the curve of the costs for giving up their own currency is farther, if compared to the origin. In such a perspective, a few countries will be interested in joining a monetary union.

In the case of the monetarist perspective, the modification of the exchange rate is not efficient in adjusting the development differences between countries; thus, the curve of the costs for giving up their own currency is closer to the origin. Even in the case when the rate of exchange were an efficient tool, its use would typically generate worse results for the countries using it. Thus, the costs curve is placed very close to the origin of the axes system. The point which makes a country worthy joining a monetary union (the critical point) is close to the origin. As a consequence, several countries in the world would benefit from giving up their own currencies and from joining a monetary union. In case a decrease is recorded in the prices and wages rigidity, and the labor mobility gets increased, then the curve of the costs for giving up the national currency would move to the left, and the monetary union would become more attractive. Practically, the net benefits depend on the inclination degree of the two lines, as well as on their position in relation to the origin.

Which of the two perspectives is closer to reality? The empirical evidences of Frankel and Rose (1996) support the optimistic variant. Frankel and Rose asserted the *endogenous* characteristic of the OCA criteria, starting from the idea that the countries with the closest economic relations have the tendency to provide a higher conformity of business cycles and they asserted that the emphasis of integration due to the monetary unification will lead to a better synchronization of the economic cycles and to coming closer to the quality of an optimum currency area. The lower the correlation of the shocks, the higher the costs for a monetary union, in the absence of the economy’s short-term adjustment possibilities by means of the exchange rate. The costs for a lower symmetry can be balanced by the benefits from a higher economic integration degree, and this will allow a better expenditure of resources in economy.

Frankel and Rose gave the following example. Let us consider a group of countries, which is initially placed in point 1 in figure 5, on the left of the OCA line (where it is more favorable to keep their monetary independence). If these countries create a “union” – for example, the European Union – then the correlations between the business cycles of these countries will get increased, as well as the economic integration degree. According to the endogeneity assumption, if these countries create a common market, they will gradually move towards point 2. If the group decides to also create a monetary union, then the integration degree and the correlation of the business cycles between these countries will get more increased; soon, they will move in point 3, which is placed on the right side of the OCA line, where it is more favorable for all the countries which are members to the group to adopt a common currency. Joining the monetary union will result in the increase of the economic integration degree, thus outlining the benefits of such a union.

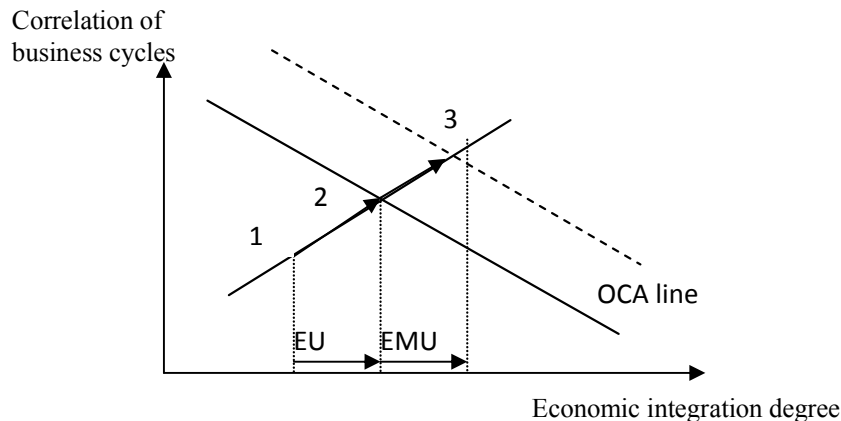


Figure 5. The Endogeneity of the Optimum Currency Area Criteria

*This approach represents one of the paradigms related to the optimum currency areas theory and it has overwhelming consequences. According to this approach, a higher economic opening degree will determine a convergence of the business cycles, and this will provide favorable conditions for political integration and for the creation of a currency area. In such a case, the mutual commerce is stimulated and the business cycles will get synchronized, the final effect being the disciplining of the monetary and the exchange arrangements.*

Thus, if the classical theory is focused on a static approach of the problem, the new theories assert that these conditions are dynamic, and they can be positively affected even by the creation of the Economic and Monetary Union. The consequences are overwhelming, as the endogenous approach shows that a monetary union can be created *even though all the conditions* mentioned in Mundell's optimum currency areas theory *are not met*, explaining that some of them can also be met subsequent to unification. Thus, a country's joining a monetary union, even though it does not meet the criteria of an optimum currency area, will *ex post* lead to the increase of the integration degree and to the increase of the business cycles correlation degree. Actually, the main objective for which a monetary union is created is to make profit from the benefits, even though they can be identified from the beginning (the *ex ante* variant), or if they occur after a period of time (the *ex post* variant).

#### **Consequences of the OCA endogenousness theory upon the economic and financial integration**

The economic cycles synchronization is an extremely important element for adopting the Euro currency without costs as a result of giving up the independent monetary and exchange rate policy. On the one hand, the commercial/economic integration is one of the main economic cycles correlation mechanisms. The economic **integration is a complex and dynamic process aiming at the unification of economic areas which have previously been distinct** and it may become real by emphasizing the relations between them, namely by intensifying the commercial trades, the flow of goods, of persons, of capital and ideas, and also by establishing increasing interdependences between these economic areas in order to create an open system which includes various economic, politic and social fields etc.

Andrew Rose and Jeffrey Frankel were those who discovered the fact that the membership to a monetary union results in the increase of the commercial trades. The effects of the monetary integration upon commerce are also known as the “Rose effects”.

**Box 1. The “Rose effect” behind the economic integration endogeneity**

The dilemma constituting the basis of the “Rose effect” → *Can the simple creation of a monetary union lead to intensifying commercial trades, besides the positive impact generated by the elimination of nominal exchange rate volatility?*

The researches on this topic assert contrary opinions. Thus, some of them assert that there is no significant relation between the two of them, at most a very low negative effect upon commerce may occur regarding the volatility. Other researches reflect the fact that they discovered some significant and negative effects of the exchange rate uncertainty upon commerce: on a long term, the impact could be high enough, even 10 percents. The decrease of the exchange rate may result in the increase of the commercial trades’ volume in two ways: firstly, by encouraging the increase of a company’s exported quantity, and secondly by increasing the number of companies which are involved in export. In order to give an exact definition for the “Rose effect”, Baldwin, Skudelny and Taglioni started by noticing that Europe has several companies which do not make exports or which make very low exports. One of the factors which determine them not to make exports is the uncertainty related to commerce, thus, a decrease of uncertainty may stimulate more the companies to make exports, thus increasing the commerce volumes. While these things are important for the negative relation existing between commerce and volatility – see the broken line in the below figure – the “Rose effect” is not totally applicable, being generally perceived as the impact of a monetary union’s control upon the linear commercial relations.

For a better understanding, we should explain the reason why the relation between volatility and commerce is convex. We may assume that the assertion according to which the relation between the two of them is convex is real, as the continuous curve in the chart shows.

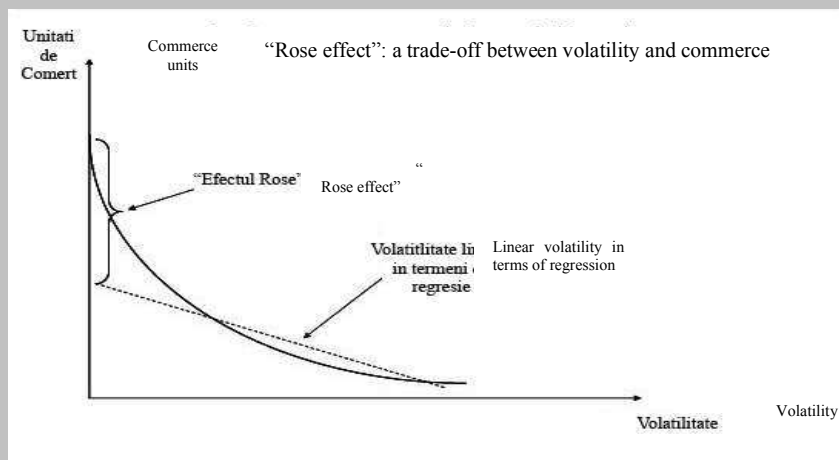


Figure 7

Baldwin assumes the existence of two sources for this convexity, as it follows:

- firstly, the volatility of the exchange rate accordingly affects small companies to a greater extent than the big ones. When the initial set of exporting companies includes more small companies, the marginal impact of a lower volatility could be higher; and
- secondly, the distribution of the European companies is very oblique in the case of the smaller companies. Thus, each decrease of distribution brings a higher and higher number of new exporters, as it is shown by the vault made by the “Rose effect” in the above figure.

As a consequence, the theory and the various economic researches have shown that the economic integration related to a monetary union may create commerce effects. The researches made for the OCA endogeneity suggest the capacity to increase the European integration subsequent to the monetary unification; along with this, the commerce is expected to increase faster. The financial European integration is a developing process, especially with reference to some market segments, namely the capital market and the retail segment of the banking market. Until now, the highest integration degree has been reached by the monetary market and the bond market. The Euro currency represents the bond which has resulted in the increase of the real unique market and which plays an important role in the well operation of the financial European market.

The financial markets integration is one of the essential factors of the optimum currency areas theory, because it results in the improvement of transmission of the unique monetary policy, it improves the assignment of resources by directing resources towards the areas with investment potential. As a consequence, the financial markets integration stimulates the economic growth and it may help in adjusting the idiosyncratic shocks. The financial markets integration is measured by means of the integration of monetary, capital and banking systems markets and by the way in which, from an institutional point of view, the conditions to equally deal with the market members are provided. Integration is institutionally provided in the new member states by adopting the community *acquis*. The free movement of the capital is provided by liberalizing the capital account, as a previous condition for joining the European Union.

The financial markets in the European Union's member states which are not member to the Eurozone record the highest delays in the integration process. Once these countries adopt the Euro currency and harmonize their internal financial structures with those of the Eurozone, the integration process will encounter an obvious acceleration. The experts assert that the financial integration is completely achieved when all the potential market members have the same relevant characteristics: if they face a unique set of regulations, when deciding to invest in various financial tools and/or services; if they have equal access to the above mentioned set of financial tools and/or services; and if they are equally treated when being active on this market.

The financial integration generates a series of advantages, such as: the improvement of the capitals assignment, their efficiency increase and the increase of economic growth.

Besides all these, the financial markets can provide a significant security source against the asymmetric shocks. From a graphical point of view, the financial integration, in the presence of endogeneity, has the effect of moving downwards the OCA line, namely the increase of net benefits for the Eurozone.

## Conclusions

Even though the empirical evidences seem to validate the endogeneity theory in the case of the Eurozone, its enlargement, under the present terms of financial instability, is not efficient and it may have an unhappy end for the Euro currency, the pessimistic people assuming that it can even decompose. The uncertainty related to the future optimality of the European monetary union comes to a standstill, due to the major differences existing between the economies of the member states. Moreover, there is another assumption in the economic literature (Krugman, 1993) which is based on



the commerce theory and on the increase economies of scale, according to which the commercial and financial integration is accompanied by the member countries' specialization within an OCA, and this generates very less diversified economic structure, which is inclined to be affected by the offer shocks.

The result is that their business cycles will become less correlated. As the economy's opening degree gets increased, each country will get specialized in producing the goods and services for which they have a comparative advantage. Thus, the second paradigm of the optimum currency areas theory is supported by Paul Krugman and it attempts to demonstrate exactly the contrary (if compared to the endogeneity theory), asserting that the commercial integration may result in specialization and in a lower correlation of the economic cycles.

The empirical evidences have shown that, although with reference to industry, economic centers may occur in certain areas, it is less probable that this phenomenon brings the emphasis of asymmetries. On the one hand due to the fact that the increase of the integration degree is accompanied by the possibility of occurrence of centers in the cross-boundary areas, and on the other hand, the probability that these centers occur in the sector of services is lower. As this sector represents 60-70% of the EU member states' GDP, it will be taken into account in the costs-benefits equation maybe more than the industrial sector.

#### Acknowledgement

This article represents the dissemination of research financed by Social European Fund, contract no POSDRU/89/1.5/S/59184 *Postdoctoral research performance and excellence in economic sciences in Romania*, Academy of Economic Studies, Bucharest.

#### References

- Aglietta, Michel (2002). *Macroeconomie financiară. Finanțe, creștere și cicluri. Crizele financiare și reglarea monetară*, Editura CNI Coresi, București
- Alesina, A., Barro, R., Teneyro, S. (2002). *Optimal Currency Areas*, Harvard University, Working Paper
- Baldwin, R., Wyplosz, Ch. (2006). *Economia integrării europene*, Editura Economică, București
- Banca Centrală Europeană (2004). *La mise en oeuvre de la politique monétaire dans la zone euro*, Documentation generale sur les instruments et procédures de politique monétaire de l'Eurosysteme
- Bayoumi, R.; Eichengreen, B. (1992). *Shocking aspects of European Monetary Unification*, NBER working paper, nr. 3949
- Bayoumi, T., Eichengreen, B. (1997). *Ever Closer to Heaven? An Optimum Currency Area Index for European Countries*, European Economic Review, nr. 41
- Buiter, W. (1999). *Optimal Currency Areas: why does the exchange rate regime matter?*, Cambridge University, Working Paper
- Burda, M., Wyplosz, Ch. (1997). *Macroeconomie. Perspectivă europeană*, Editura All Beck, București
- Dinu, M., Socol, C., Niculescu, Aura (2005 d). *Fundamentarea și coordonarea politicilor economice în Uniunea Europeană*, Editura Economică, București
- Emerson, F., Gros, D., Italianer, A. (1992). *One market, One money: an evaluation of the potential benefits and costs of forming an economic and monetary union*, Oxford University Press
- Frankel, J., Rose, A. (1998). *The Endogeneity of the Optimum Currency Area Criteria*, NBER Working Paper, nr. 5700
- Frankel, J., Wei, S. (1998). *Trade Blocs and Currency Blocs*, NBER, Working Paper, nr. 4335
- Grauwe de, P. (2003). *Economics of Monetary Union*, Oxford University Press, Fourth Edition
- Grauwe de, P. și Mongelli, F. (2005). *Endogeneities of Optimum Currency Areas: what brings countries sharing a single currency closer together?*, ECB Working Papers, nr. 468
- Horvath, J., Komarek, L. (2002). *Optimum Currency Area Theory: an approach for thinking about monetary integration*, Warwick Economic Research Papers, nr. 647
- Kenen, P. (1969). *A theory of Optimum Currency Areas: an eclectic view*, în lucrarea Mundell, R. și Swoboda, A. (eds.) – *Monetary Problems of International Economy*, Chicago: University of Chicago Press

- Mankiw, N. G. (2000). *Macroeconomics*, Harvard University, Worth Publishers, New York
- Mc Kinnon, R. (1963). *Optimum Currency Areas*, American Economic Review, nr. 53
- Mc Kinnon, R. (2000). *Mundell, the Euro and Optimum Currency Areas*, Stanford University, Working Paper
- Mc Kinnon, R. (2001). *Optimum Currency Areas and Key Currencies*, Stanford University, Working Paper
- Mongelli, F. (2002). *New Views on the Optimum Currency Areas Theory: what is EMU telling us?*, ECB Working Paper, nr. 138
- Müller, P., Price, R. (1984). *Structural Budget Deficits and Fiscal Stance*, OECD Economics Department Working Papers, nr. 15
- Mundell, R. (1961). *A Theory of Optimum Currency Areas*, American Economic Review, nr. 51
- Mundell, R. (1968). *International Economics*, McMillan Edition, Londra
- Mundell, R. (1973). *Uncommon Arguments for Common Currencies*, în Allen, Unwin (eds.) - *The Economics of Common Currencies*, New York
- Socol, C., Socol, Aura (2006). *Dilemele aderării României la Uniunea Economică și Monetară*, în revista „Economie teoretică și aplicată”, Editura Economică, București, ISSN 1841-8678, nr. 2, cotate CNCSIS
- Socol, C., Socol, Aura (2006). *Riscuri ale țintirii directe a inflației*, în revista „Economie teoretică și aplicată”, Editura Economică, București, ISSN 1841-8678, cotate CNCSIS, nr.1
- Stanoeva, G. (2002). *The Theory of Optimum Currency Areas: an application to ten central and eastern european countries*, Université Montesquieu, Bordeaux
- Tower, E., Willet, Th. (1976). *The Theory of Optimum Currency Areas and Exchange Rate Flexibility*, în International Finance Section, nr. 11, Princeton University