

**Financial and Banking Services Market**

Mariia LYZUN

**THEORY OF OPTIMUM CURRENCY AREAS
AS CONCEPTUAL BACKGROUND
FOR REGIONAL MONETARY UNIONS****Abstract**

The evolution of the theory of optimum currency areas is researched and the positive and negative effects of monetary integration are examined. The main criteria of the theory of optimum currency areas are summarized and their value is shown. The reasons for losing the independence of monetary policy in the process of monetary integration through the prism of a so-called «incompatible triangle» or «impossible trinity» are highlighted. European way to overcome the «impossible trinity» is demonstrated and the role of the theory of optimum currency areas for the European Economic and Monetary Union is considered. It was argued that there are no prerequisites in the nearest future in Ukraine to pass all stages of integration needed to join the monetary union. Theory of OCA could be helpful for estimation the overall appropriateness of monetary integration, analysis of its potential benefits or disadvantages and selection of instruments for exchange rate policy.

© Mariia Lyzun, 2016.

Lyzun Mariia, Cand. of Economic Sciences, Assist. Prof., Ternopil National Economic University, Ukraine.

Key words:

Optimum (optimal) currency area, monetary union, regional monetary union, monetary integration, single currency, monetary policy, «impossible trinity», the European Monetary System.

JEL: F30, F31, F33, G01, G20, G28.

**Genesis of the Theories
of Optimum Currency Areas**

The process of integration, which originally developed actively only among limited number of countries, now is covering all continents of the world. The rapid increase in number of integration associations is the result of promoting the idea of economic openness, strengthening of specialization, the growing role of MNCs in the international division of labour. Monetary integration is one of the main trends of the global monetary system at the present stage of globalization of the world economy. Monetary integration should be considered in the aspect of implementation the coordinated monetary policies of its member-countries and the creation and functioning of international organizations engaged in interstate currency regulation.

Theoretical aspects of regional monetary integration, the historical reasons for the formation of currency unions and areas have been researched by B. Balassa, T. Baumi, A. Bergson, R. Mundell, R. Ohorodnyk, A. Rose, J. Fleming, J. Friedman, V. Chaplyhin, V. Kozyuk, O. Sharov, Y. Savelyev etc.

Mediating all international economic relations of the subjects of the world economy, foreign exchange relations are experiencing profound qualitative changes together with the sphere of international production, services, investment. Monetary integration and the forms it takes are usually associated with regional economic integration and the emergence of regional currencies.

The most common in the scientific literature interpretation of integration's evolution is represented by B. Balassa, who identified five stages: free trade area, customs union, common market, economic union, political union (Balassa,

1961). The typology was based on criteria abolition of discrimination between foreign companies and degree of liberalization of the international factor movement. At the highest stage, the harmonization and unification of social economic and monetary policy takes place.

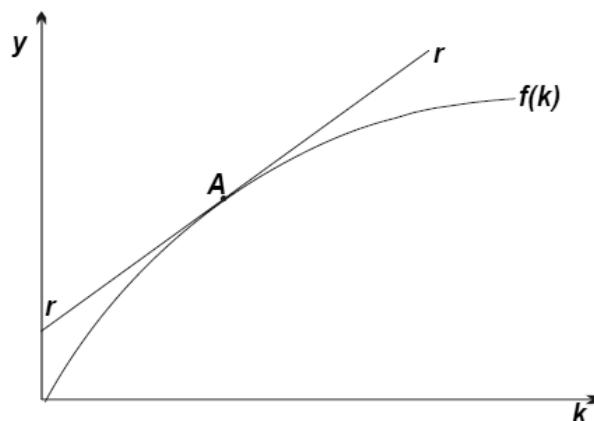
One of the most difficult practical problems concerns the process of transition to full monetary integration. The debate between «monetarists» and «economists» about strategy and the timing of further steps toward monetary union has dealt largely with this interim stage. «Monetarists» argue that positive steps toward monetary integration would strengthen and accelerate the process of economic integration. Such steps would force member nations to coordinate their economic and financial policies, thus reducing disparities in wage and price trends and making exchange-rate rigidity easier to achieve. «Economists» argue that policy harmonization and real economic integration must come first, and that further steps toward monetary integration should not be taken until wage and price changes have in fact converged and structural adaptations in response to intra-Community free trade been completed (Ingram, 1973).

But nevertheless monetary integration leads to positive effects, if there are sufficient conditions. In a path-breaking paper, Rose used an augmented gravity equation to show that trade between countries sharing the same currency is much larger than trade between other pairs of countries (Rose, 2000). His cross-sectional regression results imply that the bilateral trade between two currency-union countries is, on average, 3.35 times as large as the bilateral trade between other countries. In language used hereafter, the trade raising effect of a currency union is 235 per cent, and this is additional to the most obvious trade-raising effect of a currency union – the complete suppression of exchange-rate variability (Kenen, 2002).

Neoclassical growth model, developed by R. Boldvin, argues that the decline in real interest rates as a result of monetary union temporarily increases the rate of economic growth (Boldvin, 1989). However, reducing the currency risk also reduces the volume of expected corporate profits. Thus, the use of a common currency has a dual effect: reducing real interest on the one hand, and the reduction of expected investment income – on the other. Neoclassical model of economic growth is represented graphically on Fig. 1. The horizontal axis – the size of capital per manufacturer, vertical – production of one manufacturer. Line $f(k)$ is the production function. Equilibrium in this model established, when limit of capital productivity is equal to interest rate at which consumers refuse from future consumption. Equilibrium is reached at point A , where the line rr (its slope is equal to the interest rate) is tangent to the production function. According to this model, economic growth is possible only under the conditions of population growth or external technological changes.

Figure 1

Neoclassical model of economic growth



Source: (Baldwin, 1989)

Applying this model to the monetary union, we can assume that the abolition of currency risk leads to reduction of systemic risk and declining of interest rates (Fig. 2). Reduction of interest rate makes line rr aslope, resulting the equilibrium moves from point A to point B , and is accompanied by accumulation of additional capital and the dynamics of economic growth. In the new equilibrium amounts of capital and production per producer increased. Thus, the decline in real interest rates as a result of monetary union temporarily increases the rate of economic growth.

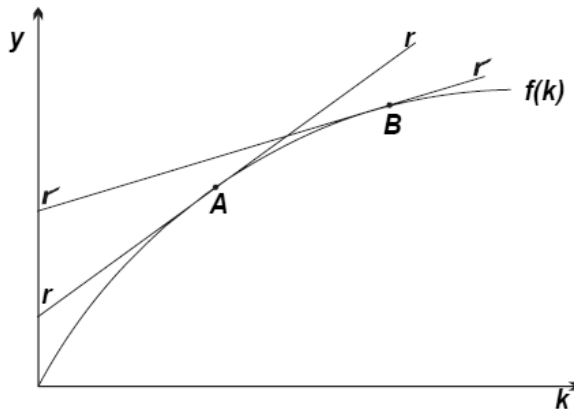
Conditions necessary for effective currency (monetary) integration are considered in the theory of optimum (or optimal) currency area (OCA). Optimum currency area implies the existence of fixed rate between currencies and a limited range of floating exchange rates against the currencies of other countries.

The optimum currency area theory tries to answer an almost prohibitively difficult question: what is the optimal number of currencies to be used in one region. The difficulty of the question leads to a low operational precision of OCA theory. It is possible to distinguish two major streams of the optimum currency area literature. The first stream tries to find the crucial economic characteristics to determine where the (illusionary) borders for exchange rates should be drawn (1960s–1970s). The second stream (1970s – till now) assumes that any single country fulfills completely the requirements to make it an optimal member of a

monetary union. As a result, the second approach does not continue in the search for characteristics, identified as important for choosing the participants in an optimum currency area. This literature focuses on studying the costs and the benefits to a country intending to participate in a currency area. The costs and benefits are compared and the question of participating in monetary union becomes largely an empirical problem. Later on, OCA literature takes into account the «Lucas critique», endogeneity of the optimum currency area criteria and modern macroeconomic theories (Roman, Komarek, 2002).

Figure 2

Neoclassical model of economic growth – the effect of monetary union



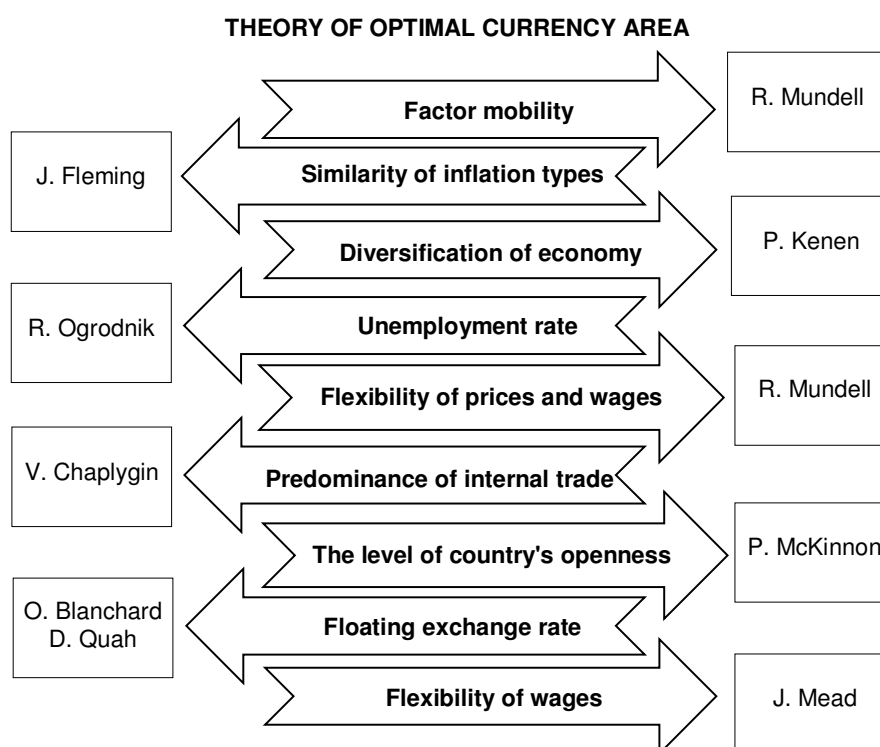
Source: (Baldwin, 1989)

An Optimum Currency Area fall within the ambit of currency unions. An OCA, using Mundell's definition is 'a domain within which exchange rates are fixed' (Mundell, 1961). By this definition, Common Currency Area (CCA) would be a step further with the adoption of a single common currency among members of the currency union. Several structural preconditions have been cited as being necessary for an OCA. Mundell argues that a high degree of factor mobility is an essential ingredient. McKinnon cites trade intensity or integration as a precondition (McKinnon, 1963). Kenen would examine regional production patterns for product diversification to determine if a region would be well suited for an OCA (Kenen, 1969). Yet, other literature on the configuration needed for a country to be a candidate of a currency union identify factors, such as similar levels of infla-

tion, extensive trade relationships, similar or synchronous business cycles and a certain extent of policy congruence (Bacha, 2008). The main factors influencing common currency areas are depicted on Figure 3.

Figure 3

Main factors and researchers of the theory of optimal currency area



Source: (McKinnon, 2000; Mundell, 1961; Kennen, 2002; Tavlas, 1993)

Tavlas tries to summarize main criteria of OCA and shows their implications (Table 1). We still do not have a general agreement on the relative importance of all these criteria, nor on all of their interrelationships with one another. The recent Argentina crisis illustrates, however, that just meeting a few of the OCA criteria is not enough. While Argentina met the substantial currency substi-

tution criteria with its high level of dollarization, its economy was rather closed with respect to trade and lacked a high degree of domestic economic flexibility. Coupled with the failure of its currency board to promote fiscal as well as monetary discipline, the results were tragic. (See, for example, Willett, 2002).

Table 1

OCA Criteria

Criteria	Implications for OCA
1. Factor mobility	Alternative adjustment mechanisms.
2. Wage and price flexibility	
3. Size and openness.	High pass-through effect can make exchange rate changes ineffective High openness also reduces the cost of Keynesian adjustment under fixed rates.
4. Goods market integration	Promotes intra-regional trade and makes exchange rate fluctuations more costly.
5. Commodity diversification	Shocks tend to cancel out so less need for adjustment.
6. Fiscal integration	Transfers between states reduce adjustment pressure in the short-run.
7. Similar inflation trends	Reduces cost of common monetary policy.
8. Real exchange rate variability (Generalized PPP)	Affects amount of adjustment
9. Political factors.	Commitment of exchange rate and monetary policy coordination
10. Financial integration (It's ambiguous)	Can help finance payments imbalances. Consumers in countries with different economic situations can share risks. But it can also make floating rates work better.
11. Financial instability	Where speculation is unstable, high capital mobility makes flexible rates more costly.
12. Patterns of Shock	
a. Automatic stabilization	Short-term shocks can offset each other. Different patterns can favor fixed or flexible rates.
b. Symmetric medium term shocks	Lowers cost of using common monetary policy.
c. Optimal discretionary	Optimal policy responses depend on nature of shocks.

Criteria	Implications for OCA
13. Optimal public finance	Can affect costs of fixed rates. Optimal inflation tax version is similar to differences in inflation rates.
14. New classical policy ineffectiveness	Surrender of monetary policy autonomy will not be costly.
15. Informativeness of price and quantity signals	The larger the variance of monetary disturbances is compared to that of real output, the less confusion about the shocks and the less adjustment of real exchange rate. Also, if the agents cannot distinguish between local and foreign shocks (by definition, in fixed regime), the response of real exchange rate is less.
16. Time inconsistency and credibility discipline problems	Creates case for use of fixed rates as a commitment technology to promote discipline.
17. Liability dollarization	Flexible rates increase the risk of balance sheet effects due to depreciation.
19. Endogenous OCA	Not necessary to fully meet the criteria before joining the currency union. Fixed rates will generate responses that reduce their costs

Source: (Tavlas, 1993).

Robert Mundell stated: the larger is the optimum currency area, the higher is the value of its currency because of reducing transaction costs for agents (Mundell, 1961). The common currency as a medium of exchange automatically excludes the costs of conversion and forward coatings that are required under floating exchange rate. Another important point related to monetary integration – improvement the efficiency of financial operations and risk management in the financial market. Increasing number of available financial instruments allows both lenders and borrowers to raise the diversification of their portfolio through the acquisition or sale of assets with different risk (Tavlas, 1993).

Currency union has a positive impact on trade between states involved in. The impact of monetary integration on bilateral trade between the countries is researched by Rose, Engel, Frankel, Barro (Rose, 1999; Rose, Engel, 2000; Frankel, Rose, 2002; Barro 2003).

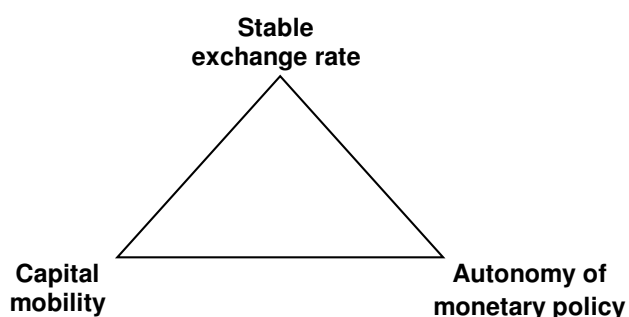
Along with all the benefits of the association, there are also costs that are likely to bear by the countries involved in the integration process. First of all, this

is inability to use floating exchange rate as a tool for stabilizing the balance of payments after exposure to various shocks.

Another important drawback of fixed exchange rate regime or monetary integration for potential participants is the loss of autonomy in conducting of monetary policy. Autonomy in this case means that the government is able to run the policy, which is effective only for a given state or region. Loss of control over the national currency is a threat to the state (Ichiyama, 1975). While there are differences in price levels, productivity and wages under fixed exchange rate, the threat of inflation will always follow the states with surplus of balance of payments; and constant depression and unemployment will follow the states with BoP deficits. Soft monetary policy will be adequate for the regions with high unemployment rate, whereas the increase in inflation, on the contrary, may need to make it tighter. The reasons for losing the independence of monetary policy under the monetary integration have conveniently to be considered in the context of so-called «incompatible triangle» or «impossible trinity» (Figure 4).

Figure 4

Model of «impossible trinity»



Source: (Mundell, 1961).

The main idea of this triangle is that all three conditions could not be reached simultaneously. The state must choose only two of them and give up with third one.

The ideas of OCA and CCA found their practical implication in the forms of regional currency areas (RCA). Regional currency areas originated from various roots such as historical, «existential», economic and, especially, political reasons. The importance of political factors can be found e. g. in the process of cre-

ating an independent Germany in 1871 (as well as in 1990, when eastern and western part of Germany were unified) and many other states (e. g. Switzerland and Italy). So-called existential reasons were characteristic of the group of geographically small countries (El Salvador, Kiribati, Liechtenstein, Monaco, Nauru and Vatican), where the acceptance and the legalization of the foreign trade partner currency were a necessity. For the sake of completeness, there are also states, where more than one currency circulates within its borders. These are e.g. Hong-Kong and Macao. The best known and economically strongest is certainly the European Monetary Union (EMU) founded in a cashless form in 1999 (Roman, Komarek, 2002).

Regional monetary unions in Europe and beyond

The first formal steps of European monetary integration go almost as far back in time as the OCA theory (see Table 2). In October 1962 the Commission issued a memorandum – known as the Marjolin Memorandum – that can be considered as the official starting point of monetary integration in Europe. The memorandum kicked off the discussion on a common currency and prompted several measures in the field of monetary cooperation. The exchange rates of the members of the European Economic Community (EEC) were never directly fixed, although they were all pegged to the US Dollar. At the time exchange rate stability was still secured by the Bretton Woods Arrangement, and there was no urgent need for new institutional arrangements among European currencies. Under the provisions of the memorandum, a Committee of Governors (CoG) of the national central banks of the EEC was established in 1964. Over the years the Committee gradually gained in importance as it started developing, and managing, an institutional framework for monetary cooperation. It was this committee that prepared the first draft of the Statute of the ECB in 1990 (Mongelli, 2008).

By the end of the 1960s, the international environment changed due to persistent current account deficits of the US (the anchor country of the Bretton Woods System) and the emergence of widespread inflationary pressures that were then exacerbated by the first oilshock. The Bretton Woods System collapsed in August 1971 and the members of the EEC pursued different economic policies that in turn led to exchange rate tensions among them and even threatened to disrupt the customs union and the common agricultural market. In 1969 the Heads of State or Government requested a plan for the realisation of an economic and monetary union. The result was the Werner Report published in 1970, and that proposed to achieve economic and monetary union in several stages by 1980. While the final goal of monetary union was never achieved, as the report turned out to be too advanced for the level of economic and financial integration

prevailing at the time, some of its elements could still be implemented. In 1972, after the demise of the Bretton Woods system, the «currency snake», an exchange rate arrangement for European countries, was created¹.

Table 2

Monetary integration steps

1958	Establishment of the Monetary Committee
1962	A proposal for economic and monetary union among the members of the European Economic Community (EEC) is first floated in the Marjolin Memorandum.
1964	A Committee of Governors of the central banks of the Member States of the EEC is formed to institutionalise the cooperation among EEC central banks.
1970	The Werner Report sets out a plan to realise an economic and monetary union in the Community by 1980.
1972	A system (the «snake») for the progressive narrowing of the margins of fluctuation between the currencies of the Member States of the EEC is established.
1973	The European Monetary Cooperation Fund (EMCF) is set up to ensure the proper operation of the snake.
1974	the ECOFIN Council adopted a Decision to foster the convergence of economic policies and a Directive on stability, growth and full employment.
1979	The European Monetary System (EMS) is created.
1988	The European Council mandates a committee of experts under the chairmanship of Jacques Delors (the «Delors Committee») to make proposals for the realisation of EMU.
1989	The «Delors Report» is submitted to the European Council.
1989	The European Council agrees on the realisation of EMU in three stages.
1990	Completion of «One Money, One Market» evaluation that had been commissioned in 1988 as an input for the Delors Report.

¹ According to the Smithsonian agreement, IMF members pledged to support fluctuations of their exchange rates against the US dollar in the range of $\pm 2,25\%$ (so-called «tunnel»), while EEC states in addition allowed mutual fluctuations between each other in narrower limits – up to $\pm 1,125\%$ («mini-tunnel» or «snake») – introducing the system known as «snake in the tunnel». It is fair to note that such regime was not long-lasting – in 1973 the EU lifted up the limits of fluctuations against the dollar (i.e. a snake came out of the tunnel) and expanded the range of mutual fluctuations to $\pm 2,25\%$. Overall, by the end of the 1970s only 5 of 9 EEC states consistently adhered to the regime of snake (Germany, Denmark and the Benelux countries), the others exited before.

1990	Stage One of EMU begins in July.
1993	The Treaty on European Union enters into force.
1994	Stage Two of EMU begins and the EMI is established.
1997	The European Council in June agrees on the Stability and Growth Pact.
1998	In May Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland are considered to fulfil the necessary conditions for the adoption of the euro as their single currency; the Members of the Executive Board of the ECB are appointed.
1998	The ECB and the ESCB are established in June.
1998	In October the ECB announces the strategy and the operational framework for the single monetary policy it will conduct from 1 January 1999.
1999	In January Stage Three of EMU begins; the euro is launched; conversion rates are fixed irrevocably; a single monetary policy is established for the euro area.
2001	Greece joins the euro area.
2004	In May the national central banks (NCBs) of the ten new EU Member States join the ESCB.
2007	Slovenia joins the euro area.
2008	Cyprus and Malta join the euro area, and Bulgaria and Rumania join the EU and ESCB
2009	Slovakia joins the EMU.
2011	Estonia joins the EMU.
2014	Latvia joins the EMU.
2015	Lithuania joins the EMU.

Source: author's modification of (Mongelli, 2008).

Monetary cooperation became closer; internal and external monetary stability became important goals. Countries with relatively high inflation found it easier to pursue disinflation policies. This fostered a downward convergence of inflation rates, reduced excessive exchange rate volatility, and promoted trade and an improvement in overall economic performance. However, the lack of fiscal convergence remained a source of tension as some countries ran persistently large budget deficits.

The EMS lasted from 1979 until the launch of the euro in 1999. Exchange rates were based on the ECU, whose value was determined as a weighted average of the participating currencies. Officially no currency was designated as an anchor. However, the Deutsche Mark and the Bundesbank were unquestionably the centre of the EMS. During this period it went through four main phases and several periods of turbulence.

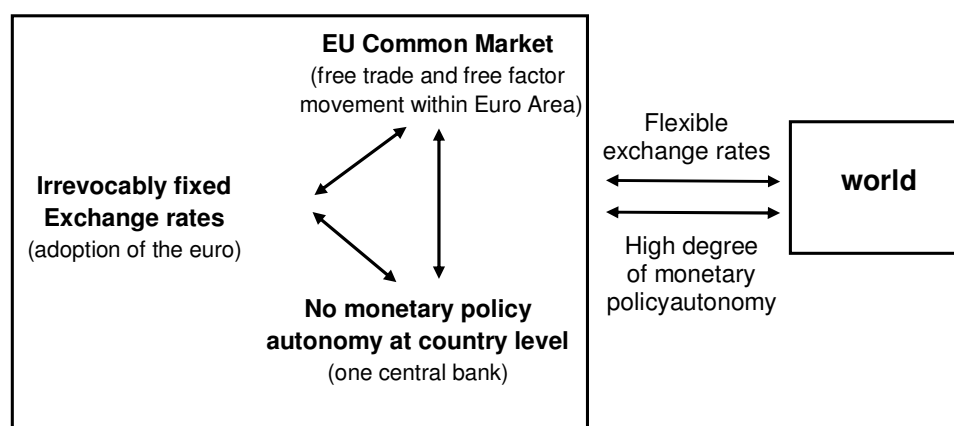
The first phase of the EMS lasted during 1979–85 and is marked with still maintained capital controls, significant inflation differentials, variances in budget deficits and public debt among EEC states. Full nominal convergence had not been established yet. With fixed nominal exchange rates this resulted in continued misalignments that required frequent adjustment of the official parities², which periodically brought up questions about the sustainability of the ERM.

The second phase of the EMS spanned from 1986 to 1992. Several EMS members (but not all) managed to bring down their inflation rates towards German inflation rates (in this phase the EMS is described by many as a «Deutsche Mark Area»). The quantity of adjustments of official parities was reduced³; capital controls were being dismantled and were officially banned as of July 1990. Owing to the impossible trinity proposition (refers to the fact that three desiderata of governments – i. e. free trade and capital mobility, monetary policy autonomy, and fixed exchange rates – cannot be reconciled), all central banks participating in the ERM had de facto renounced an independent monetary policy (see Fig. 5).

Figure 5

European way to solve the «impossible trinity»

European Union / Euro Area



Source: (Mongelli, 2008).

² During this first phase, there were nine adjustments.

³ There were three more adjustments till 1987.

The third phase of the EMS, from September 1992 until March 1993, is marked by the most severe crisis of the whole EMS arrangement. Misalignments kept growing (albeit at a slower pace), because some countries were unable to reduce inflation. The tight monetary policy pursued by the Bundesbank following reunification and the shock of the Danish electorate voting against the Maastricht Treaty alarmed the exchange markets and prompted speculative attacks on the overvalued currencies that almost destroyed the EMS. The UK and Italy were forced to leave the ERM (Italy then rejoined in 1996) and the fluctuation margins were widened from ± 2.25 to $\pm 15\%$.

The fourth phase of the EMS runs until the launch of the euro, allowing the principle of fixed exchange rates, although much weakened, to be kept alive. The European Monetary System ceased to function in its original form when 11 EU countries irrevocably fixed their exchange rates in preparation to adopt the euro. The successor of the original arrangement was ERM II⁴, launched on 1 January 1999. In it, the ECU basket is discarded and the euro becomes an anchor for other participating currencies (Mongelli, 2008).

Starting from 1999 we can talk about the existence of the European Economic and Monetary Union (EMU): the euro is introduced first in the cashless form, and from 2002 – in cash circulation. Institutional adjustment of monetary policy is carried by ESCB and the ECB. 8 new members gradually join 11 initiators state forming the Euro Area.

In addition to the EMU states, euro is also used now by 6 countries outside the EU and by 4 overseas territories of the EU states. Exchange rates of 22 currencies outside the euro zone are pegged to the euro. Euro has become the second largest world reserve currency (over 20% of world reserves).

Recent years were very challenging for the EMU – debt crisis that harm Ireland, Portugal and especially Greece; Brekzit effect – these and other events give grounds for Eurosceptics to talk about the collapse of the entire system of European integration. However, the attempts to reform the architecture of the EMU are made (the first stage of reform was completed in 2015; the second phase – so-called «Report of five presidents» – is scheduled for the period 2015–2025).

The influence of the OCA theory on the design of EMU is rather blurred. The arguments underlying the Delors Report, which then formed the blueprint for the Maastricht Treaty, are principally aimed at reducing the risk from destabilising exchange rate volatilities and misalignments. Several commentators noted that this argument had no direct links or very tenuous links at best, with the OCA theory (Bini-Smaghi et al., 1993; Baldwin and Wyplosz, 2006): i. e. the OCA proper-

⁴ Currencies were allowed to fluctuate within $\pm 15\%$ to the euro. The state needs to join the ERM II regime at least for two years to join the eurozone.

ties did not figure prominently in the Delors Report. Furthermore, the «One Market, One Money» Report held a critical view of the «early» OCA theory.

In this lies a paradox as, at the same time, the «One Market, One Money» Report greatly contributed to revitalising interest in the debate on the OCA theory. But the empirical studies surveys did not show strong effects of exchange rate volatility on either trade or international investment flows. This, in turn, justifies that monetary unification was seen as a limiting case of reduction of exchange rate volatility leading to the elimination of exchange rate uncertainty and to reductions in transactions costs and hedging costs.

It should be noted that the OCA theory mainly focus on the positive effects of monetary integration, while the formation and management of monetary union is sooner institutional and normative process. In this aspect two historical stages of European integration should be considered: «pseudo monetary union» (typical to EMS) and «complete monetary union» (EMU).

Empirical work on the optimality of a European Economic and Monetary Union has dealt with four issues. A large body of work has sought to assess the cost to European countries of giving up exchange rate changes by measuring the co-variation of the exogenous shocks affecting those countries and thus the extent to which those countries (or subsets of those countries) are subject to symmetric or asymmetric shocks. Another body of work has tackled the same question by examining the degree of domestic diversification in European countries or decomposing output shocks into those that are place-specific and those that are industry-specific. A third body of work has looked at the role of labour mobility in international and inter-regional adjustment. And there is now a rapidly growing literature on the ways which a monetary union might itself affect the size and nature of exogenous shocks, the extent of labour mobility, and so on (Kenen, 2002).

Most of the researchers agree that the EMU is monetary union of the countries that do not meet the criteria of OCA theories (Lars and Drea, 2010; Krugman, 2012). Among the most controversial conditions are: relatively low cross-border labour mobility, the lack of fiscal supranational mechanism of accumulation and transfer, high differentiation of domestic prices, low trade openness, differences in national economic structures.

But EMU is not only the single example of existing monetary union. Table 3 provides a survey of other non-European regional monetary unions.

Key lessons of the euro zone crisis and the Global Financial Crisis (GFC) of 2008-2009 show a serious threat to the stability of the monetary union, which follows financial shocks, coupled with the real imbalances. Monetary unions that have not paid enough attention to the financial integration of the participants in the period of economic growth can observe a sharp decline among the state-debtors. The slowdown of capital inflows leads to banking and structural crises in

these countries. The chances of currency area's success depend on the effective institutions and policies aimed at resolving the financial and real asymmetric shocks that affect its members. In the absence of such mechanisms, asymmetrical financial turmoil may stimulate the destructive processes in the banking system, leading to structural and private debt crises, thus destabilizing monetary union.

Table 3

Regional monetary unions beyond the Europe

Monetary union	Currency	Central Bank
Eastern Caribbean Currency Union (1950)	Eastern Caribbean dollar (is pegged to the USD, prior 1976 it had been pegged to GBP)	Eastern Caribbean Currency Authority (1950–1982); Eastern Caribbean central bank (1983)
Central African Economic and Monetary Community (1945)	Central African CFA franc (it has been pegged to FRF and now to EUR)	Banque des États de l'Afrique Centrale
West Africa Economic and Monetary Union (1945)	The West African CFA franc (it has been pegged to FRF and now to EUR)	Banque Centrale des États de l'Afrique de l'Ouest

The net benefits of joining a currency area change over time. What may have seemed like a viable and successful currency union destined to «live together happily ever after» (the first euro decade) may have turned into a bad union with strong centrifugal forces at times of asymmetric shocks that test the union's viability (the second euro decade). Tighter unions may offer enough pooling mechanisms that provide sufficient insurance to increase the stability of a union. Achieving a tighter union, however, may require overcoming coordination problems, a move toward a banking union, possible union-wide deposit insurance backed by union-wide backstop mechanisms, and effective institutions to deal with the resultant moral hazard challenges (De Grauwe, 2011; Krugman, 2012; Aizenman, 2016).

A union of developing countries anchored to a global stable currency prevents runaway inflation (e. g., the CFA franc). However, it also implies the inability to use monetary policy to deal with asymmetric real and financial shocks impacting the union (e. g., with terms of trade shocks affecting countries in different ways) as well as with external shocks that change the exchange rates between

global currencies. Currency unions with low financial depth and low financial integration among its members may face complex dynamic challenges. Limited finance may reduce the exposure to asymmetric financial shocks, thereby stabilizing a currency union, at a cost of inhibiting the growth of sectors that depend on external funding. Currency union member country blessed with exportable commodities may find that union membership inhibits diversification toward manufacturing and magnifies the impact of «Dutch Disease» concerns over time, thus hindering the adjustment to terms of trade shocks. Similar concerns apply to other versions of fixed exchange rates (e. g., currency board, dollarization etc.).⁵

The theory of optimum currency areas: opportunities for Ukraine

Theory of optimum currency areas caused increased interest on the part of Ukrainian scientists and politicians for justification of strategic vector for economic (including monetary) integration. Despite the fact that current political realities actually decided for Ukraine this dilemma, rejecting the eastern direction of integration, but the OCA concept could still be helpful for the overall arguing of monetary integration, analysis of its potential benefits or costs and selection of instruments for exchange rate policy.

Most of the pre-crisis scientific researches, devoted to empirical application of OCA theories for Ukraine, obviously dealt with the issues of monetary integration within the CIS. However, a definite conclusion concerning readiness of Ukraine for monetary integration toward post-Soviet states or Western Europe has not been done. The results of some studies showed the benefits of integration, while the results of others where opposite (Table 4).

One of the latest researches of OCA effectiveness criteria for Ukraine has been done by S. Shumska and is based on statistics till 2012. Among the indicators for verification criteria are: mutual volatility of real exchange rate, volatility and correlation of real sector, monetary and inflation indicators, the relative size of economies and mutual trade. The standard deviation for the fluctuations of the real exchange rate of hryvnia to euro (0.16) was less than hryvnia/ruble ratio (0.22). Therefore, according to the criterion of exchange rate volatility, joining the Customs Union for Ukraine may have more losses (and therefore stronger mechanisms of alignment for domestic prices and wages) in comparison with the euro zone.

⁵ Kazakhstan's fixed exchange rate regime was one of the latest victims of the declining commodity prices, moving to a floating exchange rate in August 2015. Plummeting oil prices and devaluations by Russia and China increased exponentially the cost of defending the currency against the dollar. Azerbaijan followed Kazakhstan in moving to a floating currency in December 2015, after a devaluation of about 25% in February 2015.

Table 4

Results of pre-crisis researches arguing CIS monetary integration

Authors	States	Conclusions
O. Tereschenko (2001, 2003)	Belarus Russia	Non-readiness of these economies for the monetary union. The need for significant changes.
S. Drobyshevskiy, D. Polevoi (2004, 2007)	12 of CIS	8 of 13 indicators in Ukraine fulfills the conditions of the OCA theory, Belarus – 6, Kazakhstan – 10. So, in general the readiest for currency union with Russia is Kazakhstan; Ukraine and Belarus later
V. Chaplygin, A Hughes-Hallett, C. Richter (2006)	Belarus, Kazakhstan, Russia, Ukraine	Creating of union is unnecessarily expensive in terms of growth and reduction of volatility. Economic losses from union forming in the long run will be the lowest for Russia, slightly bigger for Ukraine and Kazakhstan, significant for Belarus. In the short run most affected will be Ukraine and Kazakhstan
T. Savchenko, M.Rebryk, D. Kazarinov (2012)	Belarus, Kazakhstan, Russia, Ukraine	There are quite adequate financial conditions for monetary integration of 4 countries, there is only reservations on Belarus, as only 3 of 8 investigated indicators suggest a partial convergence of Belarus with the other three countries. However, the authors caution that definitive conclusions on this issue will be made on the results of further research
D. Mayes, V. Korhonen (2006)	Belarus, Kazakhstan, Russia, Ukraine	The Union will be very unequal, as Russia is the largest by different indicators. There is a need to develop an effective mechanism of balancing national interests
A. Ursu (2010)	Belarus, Kazakhstan, Russia, Ukraine	Check in of all four countries finds their partial convergence. As a result of the union formation the Dutch disease of Russian economy is quite possible to spread westward, therefore, the costs of formation of such a union will increase. If we exclude Ukraine from the model, three countries which remain will tend to complete cointegration

Source: Shumska S. (2013) Theory of optimum currency area: criteria and analysis of indicators of integration processes in Ukraine and the CIS, No 4, pp. 48–65 (in Ukrainian)

2014–2015 was a real period of testing for Ukraine, which was marked by a series of economic shocks. The most painful among them was monetary crisis. Inability of the National Bank of Ukraine to cope with the challenges facing the country, including the result of Russian aggression, led to deep currency crisis, the most prominent appearance of which was the striking devaluation of national currency.

As a result, over the last decade, Ukraine's economy is again experiencing severe crisis caused by macroeconomic imbalances that were accumulated long before the 2008 and 2014 crisis. In addition to a number of factors that are prerequisites for both periods of crisis, the regime of de facto fixed exchange rate leads to increase in the trade deficit that was financed mainly by FDI inflows and external borrowings in pre-crisis years. However, when access to international capital markets was deteriorated, capital inflows changed into outflows, resulting a powerful devaluating pressure on the national currency.

Signing the Association agreement with the EU, Ukraine has committed itself to reform the financial sector, whose ultimate goal should be the complete liberalization of the currency market and cross-border capital flows. For the process of financial liberalization international experience should be researched to select the appropriate pace and sequence of reforms that will take benefits of free movement of capital and minimize the risks associated with the volatility of its flow. Experience of instant financial liberalization (e. g. in Israel, Argentina) clearly demonstrates that under the absence of appropriate macro-stability and developed financial markets, shock mechanisms can significantly enhance the economic crisis.

In Ukraine, the situation with three components of the «impossible trinity» is as follows: in the conditions of free movement of capital, support of the exchange rate implies the rejection of adjustment of monetary indicators. In other words, it is impossible to target inflation and not to release hryvnia in the «free floating» and / or setting limits for movement of capital.

Recent studies of IMF economists also show that states which introduced capital controls before the global recession were less affected by the sharp economic recession. The choice of regulatory instruments depends on many factors: economic conditions, the level of reserves, the stability of the national currency, and the nature of capital flows and so on.

It should be noted that monetary integration of Ukraine and the EU, under doctrine of the theory of optimum currency areas, does not assume introducing the single European currency into circulation for Ukraine (at least not during the nearest decades). This is particularly the convergence of institutions for national monetary systems and instruments of monetary policy, and coordination of monetary policy objectives to improve foreign relations. The tools of this process can be joint consultations, formation of mechanism for currency adjustment to the new paradigm, joining the international monetary and financial organizations.

Potential benefits of monetary integration of Ukraine and the EU could be: a lower total monetary dependence on the US dollar; improvement of the currency structure of international reserves of the NBU and external borrowing; development of credit cooperation with the EU; increasing of market liquidity of the euro in Ukraine; the introduction of direct quotations of hryvnia to euro.

As of today, none of the above options for monetary integration of Ukraine – whether the creation of a single currency area in the CIS (not possible for political reasons) or joining the euro zone – are not practically feasible because of the potentially negative consequences for the national economy caused by different monetary transmission mechanisms, fiscal systems, stock markets. Currently Ukraine has no preconditions to pass through the integration process necessary for joining the monetary union. This prevents objectively insufficient development of industrial potential, very different social and economic structure, stratification and lack of polycentric structure.

Conclusions

The basis of most researches of regional monetary integration processes forms the theory of optimum currency areas, which undergone significant evolution since its formulation by R. Mundell. Conditions and criteria of the theory of optimum currency areas that are necessary for effective monetary integration are advanced during last decades. Though, currently there is no general agreement on the relative importance of these criteria and their relationship with each other.

The monetary integration of the EU was the logical culmination of a long-term process and in the framework of EMU monetary and economic components are interrelated and interdependent. Not all associations are so efficient in their process of monetary integration, in particular due to the fact that it significantly limits the ability of the simplest methods to regulate the financial policy of the country. Many initiatives for monetary unions for a long time remain under negotiation. In spite of these achievements, some researchers claim that the EMU is monetary union of the countries that do not meet the criteria of OCA theories. There are some conflicting conditions: relatively low cross-border labour mobility, the lack of fiscal supranational mechanism of accumulation and transfer, high differentiation of domestic prices, low trade openness, differences in national economic structures.

For Ukraine, the opening of the European market and Association agreement with the EU is certainly important and necessary to ensure its further integration into the global economic space. In such conditions the convergence of national monetary systems institutions and instruments of monetary policy of the EU and Ukraine becomes particularly important, as well as coordination of monetary policy goals to improve foreign relations.

References

1. Koziuk, V. (2014). Fiscal measurement of the theory of optimal currency areas in the light of the divergence of the EMU. *Economic theory*, 3, 82-98 (in Ukr.).
2. Lishchynskyy, I., Lyzun M. (2015). Regionalization of the oil market and its influence on the exchange rates and monetary integration process. *Economic Scope*, 100, 13–23 (in Ukr.).
3. Savelyev, Y., Siskou, T. (2016). Currency regimes and exchange rate policy in Ukraine in the realm of blessed and unblessed trinity. *Journal of European Economy*, 15 (2), 143–171 (in Ukr.).
4. Sibirskajan, A. (2014). Methodological aspects of monetary integration. *Belarussian Thought*, 10, 71–75 (in Russ.).
5. Balassa, B. (1961). *The Theory of Economic Integration*, London, Allen and Unwin.
6. Baldwin, R. (1989). On the Growth Effects of 1992. *Economic Policy*, 11.
7. Baldwin, R. (2006). «The euro's trade effects», ECB Working Paper No 594.
8. Bini-Smaghi, L., Padoa-Schioppa, T. and Papadia, F. (1993). «The Policy History of the Maastricht Treaty: the Transition to the Final Stage of EMU», in CEPR the Monetary Future of Europe, Centre for Economic Policy Research, London.
9. De Grauwe, P. (2011, May). «The Governance of a Fragile Eurozone», CEPS Working Documents, Economic Policy.
10. Mongelli, F. P. (2008, February). European economic and monetary integration and the optimum currency area theory. *Economic Papers* 302.
11. Frankel, J. A., Rose, A. (1998). The Endogeneity of the Optimum Currency Area Criteria. *The Economic Journal*. 1998. Vol. 108, 449.
12. Frankel, J. and Rose, A. (1998). «The Endogeneity of the Optimum Currency Area Criteria,» *Economic Journal*, July, 1009–25.
13. Horváth, R., Komárek, L. (2002). *Optimum Currency Area Theory: A Framework for Discussion about Monetary Integration*. – Warwick Economic Research Papers.
14. Ingram, J. C. (1973). *The Case for European Monetary Integration Essays in International Finance*, 98. Princeton, New Jersey.
15. Jonung, Lars, and Drea E., (2010). «It can't happen, it's a bad idea, it won't last: US economists on the EMU and the Euro, 1989–2002». *Econ. Journal Watch* 7.1 (2010), 4–52.

16. Aizenman, J. (2016, March). Optimal Currency Area: A 20th Century Idea for the 21st Century? NBER Working Paper, 22097.
17. Kotlan, V., Machacek, M. (2001). EMU and Asymmetric shocks: A Survey of Adaptation and Insurance Mechanisms, *Finance a uver*, 51, 2001, 10, 514–527.
18. Krugman, P. (2012). «Revenge of the optimum currency area». *NBER Macroeconomics Annual* 27, 1, 439–448.
19. Lyzun, M. (2015). Evolution of regional monetary integration. Сборник доклади. Юбилейна международна научна конференция «Развитието на Българската икономика – 25 години между очакванията и реалностите» (Свищов, 20-21 ноември 2015 р.) – Свищов, България, 54–62. (in Russ.)
20. McKinnon, R. (2000). Mundell, the Euro and Optimum Currency Areas, *Journal of Policy Modeling*, 22 (3), 311–324.
21. Mundell, R. (1961, September). «A Theory of Optimum Currency Areas», *American Economic Review*, 657–665.
22. Mundell, R. (2000). Currency Areas, Volatility and Intervention, *Journal of Policy Modeling*, 22 (3), pp. 281–299.
23. Obiyathulla, I. B. (2008). A common currency area for ASEAN? Issues and feasibility. *Applied Economics*, 40, 515–529.
24. Kenen, P. B. (2002). Currency Unions and Trade: Variations on Themes by Rose and Persson DP/2002/08 Discussion Paper Series.
25. Rodrik, D. (2007, August). The Real Exchange Rate and Economic Growth: Theory and Evidence. D. Rodrik, John F. Kennedy School of Government Harvard University Cambridge, MA 02138.
26. Rose, A. (2000). «One Money One Market: Estimating the Effect of Common Currencies on Trade», *Economic Policy*.
27. Tavlas, G. S. (1993). The «New» Theory of Optimum Currency Areas. *The World Economy*, 16(6), 663–685.
28. Willetty, T. D. (2010). Asian monetary cooperation: perspectives from the optimum currency area analysis. *The Singapore Economic Review*, 55(1), 103–124.
29. Willett, T. D. (2002). Crying for Argentina, the *Milken Institute Review*, 2nd Quarter, 50–59.
30. Wyplosz, C. (2006, April). «European Monetary Union: The Dark Sides of a Major Success», *Economic Policy*, 46, 207–247.