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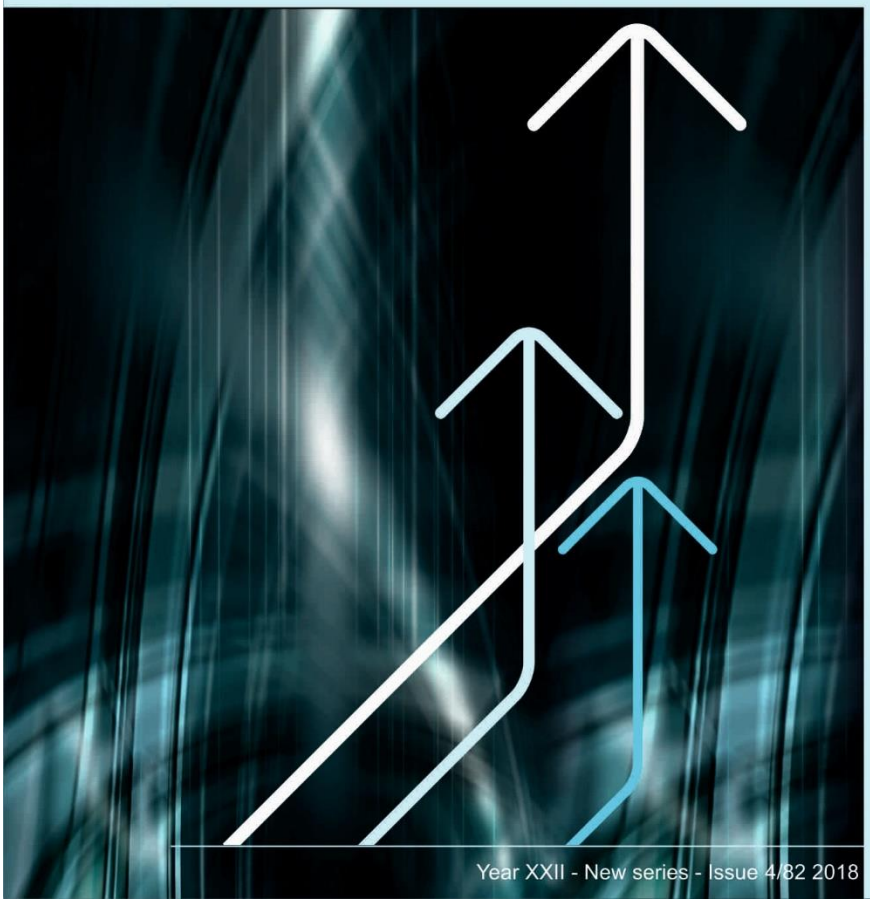

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“VICTOR SLĂVESCU” CENTRE FOR FINANCIAL
AND MONETARY RESEARCH

FINANCIAL STUDIES

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MONETARY INTEGRATION BEYOND THEORY - EURO AREA PRACTICAL ACHIEVEMENTS

Adina CRISTE, PhD *

Abstract

Concerns about the monetary integration issue have lasted for over five decades, outlining several criteria which embody the theory of optimum currency areas. Although the European monetary integration pattern is not based on this theory, it often serves as a reference in assessing the opportunity of adopting the euro for the candidate countries. Based on the optimum currency area criteria, the paper focuses on the euro area experience, and identifies some specific features for this currency area. These particularities are both in terms of theoretical criteria and in terms of recent challenges at the European level, challenges that require a viable reform for euro area in the near future.

Keywords: optimum currency area, economic convergence, political decisions

JEL Classification: F15, F45

1. Introduction

The theory of optimum currency areas is considered as a reference in the assessment of the Euro adoption availability for Euro Area countries, as well as of the rationality of the same framework for the candidate countries to this monetary union.

The theoretical contributions, developed and tested since the seventh decade of the last century, define the optimum currency areas (OCA)[1] on the basis of six fundamental criteria which must be meet by

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[1] *The reference point of the monetary integration theory is Robert Mundell's article "The Theory of Optimum Currency Areas," published in 1961 in the American Economic Review, and the source of the idea is temporally between 1955 and 1956 when, in the dissertation "Essays in the Theory of International Capital Movements", Mundell starts from a critical analysis of the flexible currency regime and develops the optimal concept of a currency regime according to the mobility of the factors of production.*

member countries of a currency area (see Table 1). There are three economic criteria, which in fact constitute the traditional OCA theory, and three political ones, added over time due to the limits identified. The economic criteria highlight that giving up to the exchange rate instrument as an adjustment mechanism is a cost that increases in the presence of asymmetric shocks because, by definition, they do not affect all the currencies of the member states of that monetary union. Based on these criteria, one can appreciate the degree of economic "homogeneity" of a monetary union. Political criteria added over time are the result of attempts to identify different adjustment mechanisms to propagate symmetrical or asymmetric shocks, given the existence of rigidities in the economy: the tax transfers system is aimed to regulate regional imbalances within a monetary union; the homogeneity of preferences has rather the role to prevent the contradictory effects generated by specific or common shocks.

Table 1

The Synthesis of OCA theory

Criteria	Observations
Labour Mobility (laid down by Robert Mundell)	- *OCA is that region where people can move easily in response to economic incentives.* - this criterion addresses ways to minimize the negative effects of an asymmetric shock within a currency area.
Product diversification (laid down by Peter Kenen)	- *countries whose production and consumption are widely diversified and have similar economic structures could form an OCA.* - the more similar economic structures have member states, the lower the incidence of asymmetric shocks
Economic openness (laid down by Ronald McKinnon)	- *countries with a high degree of economic openness, and with a high degree of mutual trade, are qualified to constitute an OCA.* - in conditions of a liberalized trade, the prices of tradable goods are the same, both inside and outside a country, i.e. they are independent of the exchange rate (exchange rate variations do not influence the country competitiveness).
Fiscal transfers	- *OCA is that region in which the member countries get mutually financial support, in case of adverse shocks*.
Homogeneity in policy preferences	- *the member countries of an OCA must have a broad consensus on how to manage shocks.*

	- the lack of homogeneity over the economic policy decisions taken at the Union level can produce contradictory effects, which in turn can create tensions in interstate relations - the criterion is based on the existence of economic "homogeneity" of countries, quantifiable by at least indicators such as public debt, economic deficits, inflationary history, etc.
Political integration	- *when common monetary policy gives rise to conflicts between national and supranational interests, the member countries of an OCA must accept costs in the name of the "common destiny".*

Source: Author's synthesis

Theoretically, a currency area which has a higher level of flexibility (concerning the factors of production, reflected also by wages), a higher degree of business cycle synchronization[2] and with greater structural similarities of their economies is less likely to be faced with the propagation of asymmetric shocks. It is assumed that the lack of such economic features (flexibility, synchronization, structural similarity) or their insufficiency could be offset by certain adjustment mechanisms activated due to the fulfilment of the political criteria - alongside the common monetary policy, the tax transfers between regions or between currency area member countries, and the implementation of macroeconomic measures at national level, which do not conflict with those of other Member States, are important elements for the optimal functioning of a currency area.

As a principle, the opportunity for joining a currency area depends on the dimension of its costs, compared to the benefits of such a decision.

2. Euro Area and the OCA criteria

The Euro Area project is based on a monetarist view, and the principles underlying its working are set out in the two European treaties – the Maastricht Treaty, whereby the entry into the third phase

[2] *Although it is not explicitly mentioned amid the theoretical criteria of an optimal currency area, the business cycles synchronization can be seen both as a result of a diversification in terms of productive and commercial activity, and as a high degree of economic openness. In addition, the synchronization of economic activity is seen as a prerequisite for adopting similar macroeconomic policies, directly related to the OCA criterion on homogeneous preferences.*

of the Economic and Monetary Union (adopting the euro as a single currency) is conditioned by the achievement of a sustainable nominal economic convergence of the candidate countries, and the Treaty of Amsterdam, with its "Stability and Growth Pact" (SGP), a "fiscal regulation" for the functioning of the euro area.

The analysis of factors underpinning the functioning of Euro Area reveals a widening and a reinterpretation of the OCA theory criteria, the concept of economic convergence being, besides the nominal component, complemented with the real side of the economy[3]. Thus, the economic adjustment mechanisms in a currency area, also found in the OCA theory (the labour and capital mobility), are taken into account. In addition, the importance of the free movement of goods and services among Euro Area countries is also highlighted, in close connection with the degree of economic openness (a traditional criterion of OCA theory). In this context, it is assumed that the factor mobility, and more generally, the structural flexibility of economies contributes to the increasing of income convergence and to the improvement of adjustment capacity to asymmetric shocks spread across Euro Area countries. Such a feature is reflected in price and wage flexibility, but also in the ability of labour and capital factor to move towards more profitable businesses, thus mitigating the gap between the business cycles of monetary union member countries. Regarding the real income convergence in the currency area, it is assumed that the investments are directed from developed countries (with higher incomes) to those with lower incomes, while the labour factor moves in the opposite direction - from the poorer countries to those richer.

3. Features of the Euro Area Functioning

The period since the creation of the single currency area in Europe is not without major events that have imprinted a sinuous trajectory of the "common destiny" for its member countries. Many challenges and political shocks have put their mark on the common currency developments (the divergent evolutions of economies, the Brexit shock, the terrorist attacks, the sovereign debt crisis, the

[3] *The nominal economic convergence indicators are provided for in the Maastricht Treaty, but regarding the real economic convergence there are no explicit indicators stipulated in any treaty; instead, they are conventionally accepted - GDP per capita, labour productivity, unemployment or employment level, etc.*

increase in unemployment, especially among young people, controversial elections, etc.), that the optimism of expectations about an enhanced cohesion between member countries has turned into pessimism, emphasizing the Euroscepticism.

Designed to function as a macroeconomic stability generator, improving development and convergence, the Euro Area has created a credible monetary policy environment and has contributed to the financial integration. However, many of the governments have failed to ensure an adequate fiscal discipline or to implement structural reforms as to improve the adjustment mechanisms needed for the proper functioning of a monetary union.

In the first stage of Euro Area (1998-2007), the member countries enjoyed a stable macroeconomic environment with low interest rates, low inflation expectations and a stable euro exchange rate, in the context of a common monetary policy oriented towards stability. Nevertheless, in this period, it has been registered significant macroeconomic imbalances and an increasing competitiveness gap between countries (Criste and Lupu, 2012), which have been attributed to the pro-cyclical stance of national fiscal policies, as well as to the postponement of structural reforms. The poor financial supervision policy and the rapid increase in cross-border capital flows have been factors that have exacerbated macroeconomic imbalances, especially since the latter have not led to a real economic convergence of the emerging economies, in the absence of an adequate institutional and structural framework for an efficient capital allocation in these economies (Panait, 2015). Since the global financial crisis, the economy of Eurozone has stabilized, and the economic growth is gradually improving. Nevertheless, the member countries have divergent economic developments, reflected by the actual income gap, which will ultimately affect the social cohesion within the monetary union (Criste and Lupu, 2013).

Addressing a broader subject, namely, the structural crisis of capitalism, Streeck (2013) also touches on the issue of structural differences among the Euro Area economies and points out that the common currency regime in Europe is an adequate monetary anchor for the German and Nordic countries, but it is not a favourable one, for the southern Europe. He highlights that in tackling the Greek crisis and the situation of the Mediterranean countries, the structural problems have been minimized, while the problem of their debt has been exaggerated. Although, after the recent crisis, the Greece's credibility

has been restored to financial markets, its economic and institutional structures have continued to be inappropriate for the Euro monetary regime.

The nominal economic convergence

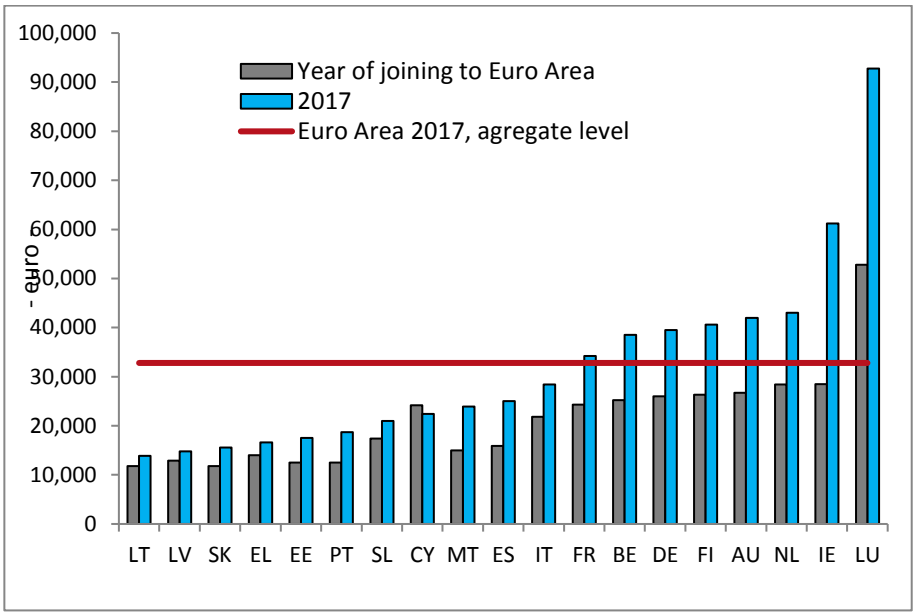
In the run-up to the Euro Area functioning, there was a proclivity to convergence between countries, in terms of inflation and interest rates. However, the more pronounced convergence of the latter than the first ones led to a decline in the real interest rates, which has encouraged the speculative capital inflows to the lower-income countries. One of the features of the Euro Area is the persistence of the inflationary gap between member countries. Brůha and Podpiera (2007) explain this phenomenon as a result of the intensive convergence process of the candidate or new member countries to the Euro Area, based on the technological improvements and capital inflows. As a result, the real exchange rate is subject to significant appreciation, and in the run-up to the euro adoption, the candidate countries are constrained by the conflict between the nominal exchange rate stability and the price stability. Even though the nominal exchange rate appreciation will ease the general process of economic convergence, before the euro adoption, the new single currency will mean a significant gap in inflation vis-à-vis the rest of the Euro Area countries.

The real economic convergence did not occur among member countries. The GDP growth and the productivity growth did not reduce income disparities between richer and poorer countries.

The level of development of the Euro Area countries, in terms of GDP per capita, is various: on the one hand, the most of the founding countries of the Economic and Monetary Union (EMU)[4] register similar values of this indicator, but, on the other hand, these values are noticeably lower for the new member states of Euro Area (Slovakia, the Baltic States) (see Chart 1).

[4] *The eleven founding countries of EMU are: Germany, France, Italy, Austria, Belgium, Netherlands, Luxembourg, Spain, Portugal, Ireland and Finland.*

Chart 1
GDP per capita for Euro Area member countries (current prices, PPS)



Source: Eurostat data (updated on 31 July 2018)

The convergence analysis of Euro Area countries identifies two periods[5]: from the adoption of the euro to the global financial crisis (2000-2007) and after the financial crisis (2008-2017). In the first period, there is a slowdown in the convergence process - only Ireland, Malta and Slovakia register the highest growth rates of GDP per capita (see Chart 2). In the second period, Ireland managed to recover the

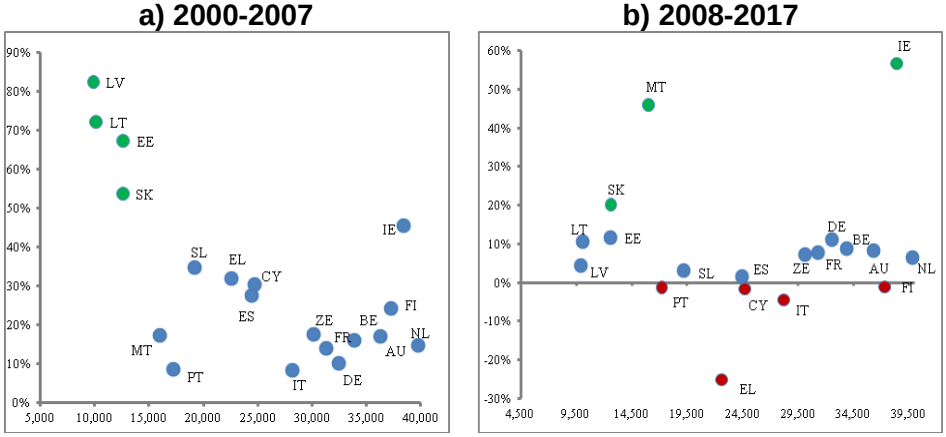
[5] *The convergence process is evaluated on the basis of two complementary indicators, according to the model described by Sala-i-Martin (1996): 1) the beta-convergence indicator, reflecting the speed of recovery of the gap between the less advanced and the advanced countries, starting from the observation that the less developed economies have higher economic growth rates, and in the long-run they are approaching the advanced countries by the so-called "catch-up" process; 2) the sigma-convergence indicator, which reflects the decrease over time of the dispersion level between countries regarding the GDP per capita. Both indicators taken together are relevant to assess the quality of the convergence; only a faster growth of lower-income countries does not automatically mean a decrease in income dispersion among countries.*

losses suffered by the global financial crisis. Countries worst hit by the European sovereign debt crisis (Italy, Cyprus, Portugal, Greece, Spain) are also experiencing the biggest losses in terms of convergence of the level of development.

Chart 2

The convergence of the development level between Euro Area member states

a) 2000-2007 **b) 2008-2017**



X-axis - GDP at market prices (euro per capita):2000 (Panel a), and 2007 (Panel b); Y – axis - real GDP growth rate in 2007 compared to 2000 (Panel a), and in 2017 compared to 2008 (Panel b).

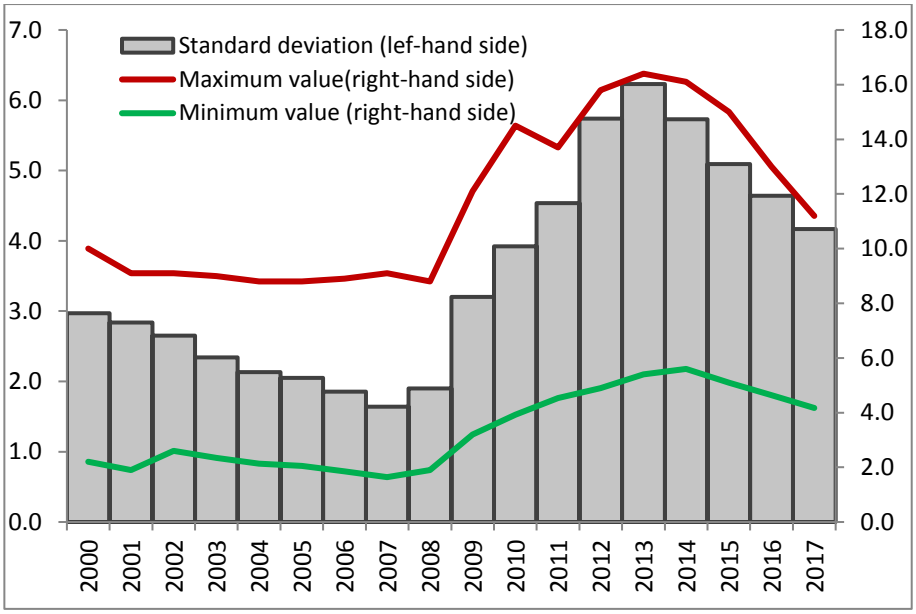
Note: 1) ZE (Euro Area); BE (Belgium); DE (Germany); EE (Estonia); IE (Ireland); EL (Greece); ES (Spain); FR (France); IT (Italy); CY (Cyprus); LV (Latvia); LT (Lithuania); MT (Malta); NL (Netherlands); AU (Austria); PT (Portugal); SL (Slovenia); SK (Slovakia); FI (Finland); UK (United Kingdom). 2) Euro Area: ZE11-2000, ZE12-2006, ZE13-2007, ZE15-2008, ZE16-2010, ZE17-2013, ZE18-2014, ZE19.

Source: estimations based on Eurostat data (July 2018)

The convergence process of the unemployment rates has developed until the global financial crisis outbreak, but subsequently the gap between countries deepened. In Greece and Spain, for example, the highest levels of the unemployment rate are maintained (after 2011, the values of this indicator exceed 20%), while at the opposite end Germany has a significant reduction in unemployment

(below 4%)[6]. The Chart 3 illustrates the band in which the unemployment rate varied over 2000-2017.

Chart 3
The unemployment rate in the Euro Area countries, 2000-2017 (annual average, % of active population)



Source: illustration based on Eurosatat data

Business cycles synchronization

Theoretically, the business cycles synchronization (the cyclical convergence of economies) is a fundamental condition for the success of the monetary union, but the global financial crisis occurrence has shown that financial cycles have a decisive role in the economic fluctuations (Praet, 2014), given that the capital movement, by the credit allocation in the economy, affects the economic activity.

The business cycles synchronization and the similarity of shocks are highlighted by empirical studies which notice the rising of these trends after the euro adoption (Stavrev, 2008) and until the global financial crisis. Giannone et al. (2010) points out that, as compared to the previous time, there are no significant changes in the trajectories

[6] *According to Eurostat data, updated on July 2, 2018.*

of the economic cycles since the euro adoption. From this point of view, countries are classified in two main groups. The first one includes those countries that have similar levels of GDP per capita since the early 1970s, maintaining a synchronization of economic cycles, during 1970-2006. In the second group there are countries characterized by a higher level of heterogeneity; they are also generally more volatile. The study results confirm the existence of the Eurozone "core-periphery" model and show that the loss of exchange rate flexibility as well as of the monetary policy independence has had no effect on fluctuations in economic activity between countries, although countries are heterogeneous in terms of competitiveness and real interest rates. However, recent studies (Campos and Macchiarelli, 2016), which also take into account both the global financial crisis period and the post-crisis period (2008-2012), highlight the manifestation of a divergence or a de-synchronization of business cycles between the core and peripheral countries of Euro Area, on the one hand, and an increase in the business cycle synchronization between the core countries, on the other hand.

Over the past years, some research has various results on the cyclical convergence in the Euro Area. De Grauwe and Ji (2016) point out that the average correlation of the bilateral business cycle is higher within this monetary union than outside, though the authors do not consider whether the degree of synchronization has evolved over time. Enderlein, Letta et al. (2016) reveal a lack of improvement in the synchronization of business cycles since the creation of the EMU.

Furthermore, Bayoumi and Eichengreen (2017) emphasize once again that the Euro Area does not correspond to an OCA in response to aggregate supply and demand shocks, and the endogeneity hypothesis is not verified.

Recent research highlights that, while the trade contributes to the business cycles synchronization in Euro Area, the different labour market regulations (Duran and Ferreira-Lopes, 2015), as well as the fiscal and structural disparities between member states (Inklaar et al., 2008) work in the opposite direction.

Euro Area and the institutional matter

The success or failure of a monetary union depends not only on the presence or the absence of the convergence of countries' economic structures and of the business cycles synchronization, but also on the institutional factors.

A vulnerable institutional element of the EMU refers to its unsuitable financial and fiscal architecture, because it aggravates the financial fragility of the Union and does not provide favourable conditions for sustaining the long-term economic growth, entailing critical economic and political divisions between member states. Fragmented capital markets and the incomplete project on the functioning of the banking union hinder the Euro Area to take full advantage of the monetary integration benefits and to achieve a better risk-sharing through the market mechanisms. Tax rules have proved to be insufficient to reduce the public debt, and the weaknesses in the EMU fiscal architecture have overburdened the European Central Bank (ECB), generating widespread political tensions among Eurozone member states.

It critically analyses the experience of the euro area during the crisis about the importance of the of the institutions' operation

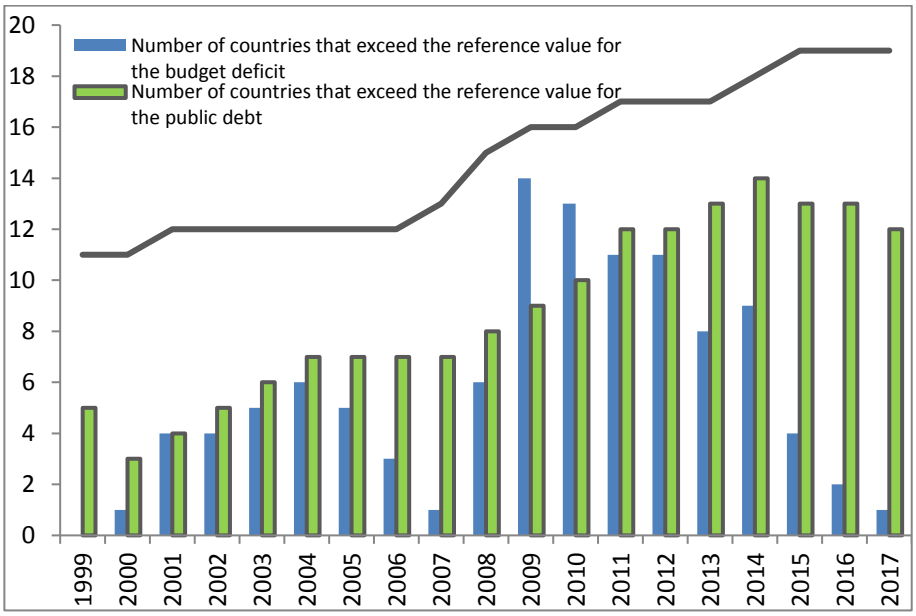
Some studies, such as De Grauwe (2010), critically analyse the experience of the Euro Area during the crisis about the efficiency of its institutions, and one of the main concerns of EMU refers to the poor political integration. As far as the tax rules are concerned, although to be effective, they need to be implemented by a single institution. The functioning of institutions is also important in terms of the risks posed by the high levels of public debt registered in many Euro Area countries.

The high degree of heterogeneity of the Euro Area is a factor driving divergences between national and supranational interests. Moreover, there is a rather large uncertainty concerning the functioning of the Euro Area institutions, and this is a rational motivation for some EMU candidate countries to position themselves in the ”waiting area” until at least the rules of operation of the Euro Area institutions are clarified.

In the failing of the adjustment mechanisms required to the functioning of a currency area, specifically the lack of intra-Community fiscal transfers, the member countries should have adequate fiscal policy space or expand it so that, in times of crisis, the fiscal policy can support the national economy. The lack of the fiscal discipline is a long-term matter for the Euro Area, as many countries have exceeded the limits imposed by the Stability and Growth Pact, both before and after the global financial crisis outbreak (Chart 4).

Chart 4

The number of countries exceeding the reference values for the nominal convergence criteria of fiscal category



Source: illustration based on Eurosatat data

The country differences in the level of indebtedness, as well as the poor fiscal coordination, are reflected on the government bond yields curve, which may also lead to significant differences between countries in terms of lending conditions. On the other hand, as Mongelli (2013) mentions, the Euro Area can be functional and beneficial to all member states, even without a fiscal union, but provided that the regulatory mechanisms are introduced along with the banking union institution.

Table 3

The Euro Area features in terms of OCA theoretical criteria

OCA CRITERIA	THEORETICAL MOTIVATION	EURO AREA
Labour mobility	Validation the running of adjustment mechanisms	Insufficient mobility – the labour migration problem (disequilibrium in labour market)
Product diversification	Structural alignment of member states (economic similarities)	Product diversification
Economic openness (business cycles synchronisation)	Cyclical alignment of member states (business cycles synchronisation)	High degree of economic openness, but differences in terms of business cycles synchronization
Fiscal transfers	Validation the running of common adjustment mechanisms	Not available
Homogenous preferences (similar economic policies)	Cyclical and structural alignment (business cycles synchronisation and economic similarities)	Incomplete
Financial integration	Financial cycles synchronisation	Incomplete. Uncertain positive effects, as a consequence of pro-cyclical character (stimulates economic growth during ”buoyant” times, and enhances disturbing factors during crisis)
Political integration	Validation the functioning of common institutions	Incomplete: - common monetary policy (and common currency); - National fiscal policies restricted by SGP.

Source: author's synthesis

In the Euro Area, the variety of performances related to the OCA criteria shows that the decision to become member of a currency union is not a definite one, being influenced by internal factors, by political agreements between countries, either from the inside, or from the outside of the currency union, but exercising a strong influence.

Nevertheless, the problem of the Euro Area is not limited to failing to meet some of the theoretical criteria, quantifiable; it is more profound, linked to its intrinsic structure, to the way it was designed to work, but also to the cohesion capacity of the political leaders of the member states.

4. Challenges of the euro area reform

Although there is a broad consensus on the EMU vulnerabilities and the need to reform it, opinions do not converge on how to settle these shortcomings. Two options are outlined, based on the different views related to the correction of the functional deficiencies.

One of them refers to applying more flexible rules and instruments aims at better stabilizing the Euro Area and for a better risk-sharing within the monetary area (common budget mechanisms or even fiscal union) to support member states in times of financial stress. In this line is the opinion expressed by Stiglitz (2016), which states tremendously that the Euro project was made by unskilled politicians in the economic field that have created their own reality. The structural nature of the challenges noticed, particularly since the crisis of 2008, refers to the lack of a comprehensive mechanism for managing the common risks among member countries and to the specificities of common currency policies that block economic growth and generate deep social problems increasing unemployment. Moreover, the austerity program promoted by the IMF and the European Commission for the Euro Area countries hit by the crisis (Greece, Ireland, Spain, and Portugal) has accentuated domestic economic problems. The recession and prolonged crisis experienced by these countries have been determined by the strictly following the instructions on the implementing the austerity programs, and the current rules on limiting the budget deficit and public debt have hindered an expansionary of the national fiscal policy needed to support the economic recovery and to exist the crisis. The Euro Area reform, both in terms of developing those structures that contribute to the effective support of less developed (i.e. more vulnerable) countries through allocating money and cross-border guarantees, and by functioning a risk-sharing

system[7], could provide for the success of the monetary integration process in Europe.

The second option, which rejects the idea of risk-sharing, is aimed at applying tighter rules and stronger incentives to drive more prudent political behaviour at national level. In this respect, market discipline is indispensable for ensuring fiscal responsibility and, implicitly, financial stability. The supporters of this view include Sinn (2014) accusing vulnerable countries, the Southern Europe, of abandoning the concept of fiscal responsibility.

There is a tendency to consider the two visions as mutually exclusive and the postponing of the monetary union reform, in one way or another, due to the lack of consensus among member states, seems to hamper/hinder/impede the Euro project advancement. The choice between the two options, either increasing the risk-sharing capacity or improving incentives and financial discipline, is a false problem, as Bénassy-Quéré et al. (2018), because the revision of the Euro Area's financial structure and its consolidation implies not only crisis prevention tools (incentives, strict rules), but also levers to mitigate the effects of the possible crises, as the risks exist no matter how appropriate are the preventive incentives. Also, the design of risk-sharing mechanisms can also be done to mitigate or even reduce the risk of moral hazard, and the risk-sharing tools can play an important role in improving discipline. Therefore, a risk-sharing system, along with the application of appropriate incentives (rules and instruments aims to increase market discipline) should be seen as complementary, not substitutive solutions.

[7] *Stiglitz (2016) identifies three possible options for reforming the Euro Area: 1) adopting a strategy aims to maintain the Eurozone in its current form, but which requires insufficient interventions to direct the region into a prosperity trajectory; 2) adopting a strategy to return to the previous situation by leaving some Euro Area countries and creating a new currency area, which could have serious consequences for some countries. Challenges arise in managing the current account deficit and the fiscal deficit, in managing the debt problem, or in creating a new financial transaction system; 3) the implementation of a flexible strategy related to the euro currency statute: a monetary arrangement by which each country can carry out transactions in euro but with different values: a Greek currency should have a value in relation to the Cypriot euro and another against a German euro. Such a flexible strategy preserves the concept of a single currency and monetary union by creating a framework allowing sufficient flexibility so that the Euro Area is operational.*

In recent years, the issue of deepening the Economic and Monetary Union is being debated amid more acute problems related to the persistent flow of migrants in EU countries, the terrorist risks and the UK exit of the EU (i.e. Brexit). In addition, the lack of consensus among EU member states on the speed and degree of integration in different European regions hamper the process of joining the Eurozone in the near future.

5. Conclusions

The optimum currency areas theory is only a framework for analysing the opportunity for adoption a single currency, but it cannot respond to this problem in a categorical manner - it needs to be applied in a dynamic environment. Although the OCA criteria are important, they are not necessarily preconditions for achieving monetary integration; they serve as orientation towards identifying possible sources of macroeconomic imbalances associated with the joining to a currency area.

The decision on the euro adoption has been proved to be primarily a political one. This is how the Eurozone was not considered to be an optimum currency area even during its formation, as the cyclical synchronization was limited, and the adjustment mechanisms were inappropriate - the low labour mobility and the lack of fiscal transfers.

As a political project, the Euro Area was created without a proper understanding of what a monetary union means. In addition to the heterogeneity among the member states and the failure to design joint institutions capable of ensuring its functioning, the different visions of European leaders, particularly those in Germany and France, make it difficult and delaying the decision to rethink and correct the functioning of the Euro Area.

At the same time with the Brexit shock and with the postponing of the structural problems' resolution at the Euro Area level, are amplified not only the challenges of the EU future and its member countries (from a political, institutional and legal perspective), but also the position of the Euro Area candidate countries on the euro adoption.

Irrespective of the European developments, Romania is bound to consolidate its economy and to implement policies aims at improving the competitiveness and the shock absorption capacity, creating the Romanian's ability to be integrated effectively into the global competition.

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ESTIMATING THE CREDIT RISK SCORE FOR NON-BANK STOCK EXCHANGE INTERMEDIARIES IN THE EVENTUALITY OF CHANGEOVER TO EURO CURRENCY

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Abstract

In this paper we build a system for determining the credit risk score and to estimate the probability of default for Romanian non-bank stock exchange intermediaries using principal component analysis applied on a selected set of financial and prudential indicators obtained from their financial statements and capital adequacy reports. Our approach is useful when dealing with non-listed undertakings, for which the probability of default cannot be derived from market prices. In addition, it can be replicated for the same type of companies in other jurisdictions and can be adapted to other type of non-bank financial intermediaries. The method could be especially useful for central counterparties. Regarding the eventuality of changeover to euro, this will have an insignificant impact on the financial credit risk score of Romanian non-bank intermediaries.

Keywords: credit risk scoring, default probability, principal component analysis

JEL Classification: G17, G23

1. Introduction

As a result of the development of financial markets and implicitly of the increase of the value of financial transactions, regardless of whether these are cleared and settled or not through a central counterparty, there is a growing need to develop internal rating

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systems allowing a financial entity to assess the probability of default of its counterparties in transactions.

Due to the increasing level of sophistication of standardized financial instruments, as well as to the interconnections between various financial entities who are participants in a centralized clearing and settlement system, the infrastructure entities of the financial markets are forced to use more and more sophisticated models in order to assess de probability of default of the participants in that clearing and settlement system.

Panait and Lupu (2009) as well as many other authors argue that in emerging capital markets, as is the case for Romania, an eventual financial crisis will have a significant negative impact on the equity market variables (ex. liquidity, volatility, and capitalisation) that will also reflect, in many ways, on the financial soundness of the intermediaries and their credit worthiness.

The default probability models build for non-bank intermediaries should take into account, among other things, the particularities of the indicators used in the evaluation process, if their dynamics is influenced or not by the exchange rate. In this regard, it should be taken into account that in the component of own funds enters items whose value depends on the exchange rate, and also that the capital adequacy ratio takes into account the value of the risk.

This article presents how a probability of default assessment system was built for a category of financial entities in Romania. This model can be used by various financial entities to assess the probability of default of the counterparties participating in transactions and, at the same time, the methodology can also be applied on the data of other categories of financial entities.

2. Literature Review

Many financial industry professionals and researchers were preoccupied with finding practical methods to assess the credit worthiness of companies.

Such methods are intensely utilized by banks and other non-bank credit institutions (ex. leasing companies) in order to decide which (potential) clients are eligible to receive financing and to what extent, based on an extensive set of information collected from internal and external databases and received from the applicants.

Also, investors in bonds and commercial paper use different approaches to evaluate the probability of default and the loss given

default of the issuers of such instruments. Some of them rely on their own analysis, others are taking into account the external ratings given by specialized companies or prices of exchange traded financial instruments, such as credit default swaps or options (which are also based on financial models that incorporate a wide range of detailed financial information).

Estimating the probability of default is the first step in evaluating the credit risk, which is often hampered by the limited information available. Structural models based on Merton Option Pricing Model and fundamental models centred on company's own financial and accounting indicators as determinant factors were developed with this purpose. Inside the latter category, we distinguish macroeconomic models, credit scoring models (the most widely used) and rating models.

Credit scoring models usually are developed based on different statistical and econometric methods that were investigated by many researchers, starting with Beaver (1966, 1968) and Altman (1968) who tested the use of linear discriminant analysis (LDA) for predicting failure of a company. Econometric methods are mainly centred on logit (Ohlson, 1980; Platt and Platt, 1990) and probit (Laitinen, 1999) models.

Bandyopadhyay (2006) employs both the logistic and the Z-score approach, with the aim to develop an early warning signal model, which incorporates financial as well as and non-financial information, to be used for predicting corporate default. The author finds that the Z-score model exhibits a high predictive power outperforming the contesting models, among which the Altman's original. Also, regarding the logit analysis, the author concludes that inclusion of financial and non-financial parameters increases the accuracy of the model.

During the recent years, non-parametric models gained popularity (ex. neural networks, fuzzy algorithms, K-nearest neighbour model) but studies are contradictory on their efficiency. While Galindo and Tamayo (2000) and Trovato and Caiazza (2004) argue that non-parametric model leads to better results, Altman, Marco and Varetto (1994) and Yang (1999) reach opposite conclusions. Also, Abramowicz and Nowak (2003) test the applicability of Bayesian belief networks (BBN) within the credit scoring process conducted in commercial banks, comparing results obtained by employing two techniques: traditional credit-scoring system and BBN structure.

Recently, the counterparty risk also started to represent an important part of the risk management of different entities trading on commercial and financial markets. While the general principles for assessing the counterparty risk are similar with the ones for evaluating credit risk, the methods need to be more practical, easy and fast to apply. At the same time, the information available for this purpose is in general more limited, based mainly on information that is available to the public or resulted from periodical reports filed by the respective company according with their applicable legislation. This is especially the case when the counterparty risk is evaluated for an undertaking that is not listed on a stock exchange. Being a more recent preoccupation, the literature available for this field of research is less developed.

Dardac and Moinescu (2006) offer an overview of the quantitative methodologies used by banks for evaluating the probability of default for loans, under Basel II framework. Their research includes both market-based models and determinant factors models concluding that the availability and the quality of the date have a strong impact on model selection and on the relevance of the results.

Miu & Ozdemir (2007) examined alternative methodologies for estimating and validating Long-Run Probability of Default (LRPD) introduced by the Basel II framework. The authors propose a system based on maximum likelihood estimators incorporating both cross-sectional and serial asset correlations which were found to be consistent with the economic model underlying the Basel II capital requirement formulation. Their simulation-based performance studies revealed that the proposed estimators outperformed the alternatives in terms of their accuracies even under a number of small sample settings. For the purpose of validating the assigned LRPDs, the authors also examined alternative ways of establishing confidence intervals (CIs) and concluded that use of the CIs constructed based on the proposed maximum likelihood estimators results in fewer errors in hypothesis tests.

Danila (2012) proposes a scoring model for estimating the default probability, using the logit model and based on both quantitative and qualitative information, according with the methodology previously developed by Altman et al. (2005).

Latter, Nar (2014) also focused on credit risk management under the Basel framework (this time Basel III) analysing the effectiveness of the models and arrangements put forth to prevent risk.

Haralambie and Ionescu (2016) discuss some specific issues that commercial banks have in the credit risk management process related to the analysis of a corporate client and propose a web application for functioning as a credit scoring system.

3. Data, selection of indicators and methodology

The internal rating system described in this article is built based on the historical data collected from financial statements and from capital adequacy reports filed by the Romanian independent stock brokerage companies. In building the database, the specificity and features of the financial entities were taken into account, since the dynamics of the financial and prudential indicators significantly vary from one category of financial entities to another because of the various complexity levels of the current activities, as well as because of the differences between the business models.

Also, in building the database, the minimum number of necessary data was contemplated, so that the subsequent analyses may be statistically meaningful and, at the same time, be able to grasp its dynamics. Thus, a database containing 150 observations was built, including values of several financial and prudential indicators of Romanian companies providing financial investment services, whose entire scope of business is authorized.

A set of financial and prudential indicators relevant to a time horizon of at least 5 years was selected. Considering that the economic-financial statements are drafted on a biannual basis and that the capital adequacy reports are drafted on a quarterly basis, the data was selected based on 6-month periods (semi-annual) so as to ensure the correspondence between the two categories of indicators used.

Also, because of the amendments made to the capital adequacy regulations, in choosing the time horizon, the guarantee that the prudential indicators used were determined unitarily methodologically speaking, regardless of the amendments having occurred in the applicable legislation, was also taken into account.

Some of the indicators taken into account in building the database were the following:

1. From the category of prudential indicators defined in the capital adequacy legislation: capital adequacy ratio (CAR), liquidity coverage ratio (LCR), largest exposure registered

(LER), Tier 1 Own Funds (T1OF), Tier 2 Own Funds (T2OF), total capital (TC), as well as the leverage effect level (LEL).

2. From the category of financial and accounting indicators included in the financial statements: total asset value (TAV), total income (TI), as well as the profit or loss (P&L).

In selecting the prudential indicators, the following aspects were taken into account:

- Inclusion of the most important prudential indicator, namely CAR. This prudential solvency indicator aims at determining the ratio between a) the level of potential losses that could result if the risks the financial entity's assets are exposed to get materialized, and b) the level of own funds held by that particular financial entity;
- At the same time, besides the prudential solvency issue, financial entities are also exposed to the issue of ensuring the necessary cash for every maturity date of the undertaken obligations. The most important maturity date is that of 30 days, reflected by the ratio between the high-quality liquidity assets and the liquidity need falling due within no more than 30 days, namely LCR;
- To describe the effects of a possible materialization of the market risk and of the credit risk, the indicator of the largest exposure registered by the financial entity (LER) towards a debtor/issuer was used;
- Also, the total capital (TC) value was used, as well as the value of each own funds subgroup, namely the tier 1 own funds (T1OF) and the tier 2 own funds (T2OF). The own funds are the amount of financial resources that the financial entity can use to cover, within a reasonable time span, any debt that could occur as a result of the materialization of a financial and/or operation risk;
- At the same time, to describe also the negative effects of the decrease of the own funds value in the event that the main financial and/or operational risks the financial entity is exposed to get materialized, the leverage effect level (LEL) indicator was used.

In selecting the financial-accounting indicators, the following aspects were taken into account:

- The indicator regarding the total asset value (TAV) was chosen because the value of potential losses that could occur if the risks get materialized is determined for the assets held by the financial entity;
- Also, to be able to see the financial results of the financial entities, the following indicators were chosen total income (TI), profit or loss (P&L).

If, for some reason, the value of an indicator used, relevant to a reporting date, was unknown or could not be collected, it was statistically determined through a linear regression built based on the existing data, so that, subsequently, by adding the indirectly determined value, the correlations existing between the original data series are not affected.

Based on the collected data, the scoring analysis is conducted, based on the Principal Component Analysis (PCA) method as described by Abdi and Williams (2010). Thus, the main elements of the formula and, for each main element, the adjustment (weighting) factors, are identified.

By entering various values relevant to a set of relevant indicators, a range of values was determined, which was subsequently divided into several ranges associated to a certain number of ratings. Later, each rating was associated to a level of the probability of default.

The scoring ranges relevant to ratings were determined so that the better the rating (and implicitly the lower the probability of default), the higher the scoring range. Thus, the better a rating is, the more difficult it is for it to be obtained by a financial entity in its creditworthiness assessment.

One aim of the analysis of the main components is to determine a formula including only one indicator or two at the most, which reflect most of the information, whereas for the analysis of the probability of default of a financial institution applying the capital adequacy rules, this indicator should be the CAR (because it is the most important prudential indicator used in the prudential assessment on capital adequacy).

Also, in the scoring formula, the aim is to include, beside the CAR indicators, the Tier 1 Own Funds indicator because the level of

this indicator shows the size of the financial resources available to such financial institution to cover, over a time span of only a few business days, any debt that could result from the settlement of the transactions made.

To determine the relevance of the data sample, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) test is used. For a minimum relevance, the value of this test should be at least 0.60 points. Also, the value of the KMO test must be over 0.75 points so as to cope with a potential stress test.

In the analysis of the main component, the following criteria were taken into account:

- Any formula identified to contain at least the capital adequacy ratio (CAR) and the Tier 1 Own Funds (T1OF), where the capital adequacy ratio is the main component – which is mostly reflected by information relevant to the analyzed data;
- The identified formula should have reasoning from the prudential and economic points of view (depending on the type of data included in that formula);
- The level of the relevance test of the data sample used (KMO) should be as high as possible;
- The level of information included in the main factor (indicator) (CAR) and of the T1OF should be as high as possible.

Based on the criteria mentioned above, a series of simulations are made by eliminating one indicator at a time or/and later by adding another indicator, thus obtaining a set of PCA analyses on various combinations of the data categories, to determine the most relevant combination of indicators so that the minimum value of each combination exceeds 0.75 points. The highest value of the model ensuring the best relevance in terms of the information it is based on, will be chosen.

4. Results

Following the successive PCA analyses, statistically speaking, the best formula that was obtained is:

(-0.464)*CAR + (0.878)*T1OF + (0.782)*P&L + (0.937)*TI + (0.904)*TAV,

because:

- it gives the best result in the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test, i.e. the value of 0.785;
- the CAR indicator shows the largest load of information included in the data sets, i.e. the value of 65.87% and
- the T1OF indicator shows the second largest load of information included in the data sets, i.e. the value of 16.99%.

The scoring value for a financial entity is calculated as the sum of the relevant indicators adjusted by the relevant multiplication factor in the formula. To more easily analyze the scoring ranges of financial entities, the value of the resulting sum is adjusted by dividing it to 100,000 units of value.

Subsequently, based on this identified formula, scoring ranges relevant to each rating type are developed by going through the following stages: determination of the maximum value, determination of the minimum value and, later, determination of the other rating ranges (by using the same number of rating intervals as the one used by the large Rating Agencies).

To identify the lowest scoring level, the minimum levels set forth in the legislation on capital adequacy were used for the CAR and T1OF indicators, whereas for the P&L and TI indicators the value “0” was used and for TAV the T1OF value was used. To identify the highest scoring level, the highest values of the indicators recorded by one of the analysed financial entities were used.

Subsequently, based on this identified formula and on the above, the scoring ranges relevant to each rating type were developed, as follows:

Table 1

The scoring ranges relevant to each rating type

Rating level [1]	PD %	PD + X%	Scoring range/ class	Scoring variation/class	Scoring range/ class category
AAA	0%	0	> 80.000		
AA+	1%	1	60.000,1 - 80.000	20.000	50.000
AA	2%	1	40.000,1 - 60.000	20.000	
AA-	3%	1	30.000,1 - 40.000	10.000	
A+	5%	2	20.000,1 - 30.000	10.000	20.000
A	7%	2	10.000,1 - 20.000	5.000	
A-	9%	2	5.000,1 - 10.000	5.000	
BBB+	13%	4	3.000,1 - 5.000	3,000	6.000
BBB	17%	4	2.000,1 - 3.000	1.000	
BBB-	21%	4	1.000,1 - 2.000	1.000	
BB+	27%	6	600,1 - 1.000	400	700
BB	33%	6	400,1 - 600	200	
BB-	39%	6	300,1 - 400	100	
B+	47%	8	235,1 - 300	65	165
B	55%	8	185,1 - 235	50	
B-	65%	10	135,1 - 185	50	
CCC+	75%	10	110,1 - 135	25	75
CCC	85%	10	85,1 - 110	25	
CCC-	100%	15	60 - 85	25	
CC	115%	15	50,1 - 60	10	20
C	130%	15	40 - 50	10	
D	150%	20	< 40		

Source: Authors' own work

[1] *The same number of rating levels as the one used by the large Rating Agencies was used*

To establish the level relevant to the probability of default associated to the ratings used, the following criteria were taken into account:

- The best rating should be associated to a level of the probability of default of 0%.
- The worst rating should be associated to a level of the probability of default of 150%[2].

Subsequently, by applying this formula to the data relevant to the analysed financial entities, the following situation of the rating/probability of default resulted:

Table 2

The rating for each financial entity

Financial entity	Reference date	Rating T-1	PD (T-1)	Rating T	PD (T_0)	Dynamics
1	T-1	B-	65%			
1	T_0			CCC-	100%	↓
2	T-1	B-	65%			
2	T_0			CCC+	75%	↓
3	T-1	BB+	27%			
3	T_0			BB+	27%	=
4	T-1	BB	33%			
4	T_0			BB	33%	=
5	T-1	CCC	85%			
5	T_0			CCC	85%	=
6	T-1	B+	47%			
6	T_0			BB-	39%	↑
7	T-1	BB+	27%			
7	T_0			BB	33%	↓
8	T-1	B	55%			
8	T_0			B	55%	=

[2] *The highest probability of default provided by the legislation on capital adequacy.*

9	T-1	BB+	27%			
9	T_0			BB	33%	↓
10	T-1	CCC	85%			
10	T_0			CCC+	75%	↑
11	T-1	B+	47%			
11	T_0			B	55%	↓
12	T-1	BB	33%			
12	T_0			B-	65%	↓
13	T-1	BBB-	21%			
13	T_0			BBB-	21%	=
14	T-1	BBB+	13%			N/A
15	T_0			CCC	85%	N/A
16	T-1	A-	9%			
16	T_0			A-	9%	=
17	T-1	AA+	1%			
17	T_0			AAA	0%	↑

Source: Authors' own work

Considering that the level of the KMO test applied to the data sample is 0.785, if a stress scenario of 20% is applied to the data value, the value of this relevance test would be above the minimum value of statistical relevance, i.e. 0.60.

If we rebuild the scoring formula on the same sample of indicators, on the same time span, but without including the last reporting date, the following scoring formula will result:

(-0.462)*CAR + (0.890)* T1OF + 0.798*P&L + 0.938*TI + 0.908*TAV

(the scoring formula relevant to the Rating/PD (T-1) in the table above). The level of the KMO test applied to the data sample, used in determining this formula, is 0.792.

5. The impact of currency risk on the evaluation model

In the building up of the default probability model for non-banking intermediaries have been used financial indicators whose dynamics may be influenced by the exchange rate, respectively the own funds indicator, in which structure are elements that depend on

the RON-Euro exchange rate, as well the indicator of the capital adequacy ratio which also takes into account the value of the risk.

The Romanian non-bank intermediaries are not significantly affected by the RON-EURO exchange rate for the following reasons:

- Although the CAR indicator shows the highest load of data included in the data sets, approx. 65%, the level of this indicator, in the vast majority, is above 60% (the legal minimum is 8%), and the median of data is at the level of 44%. Considering the high level of CAR and the low level of the capital requirement related to the foreign exchange risk in the total capital requirement (below 10%), the impact of this risk is insignificant.
- The load of information included in the data sets of the T1OF indicator is approx. 17%. Considering the low volatility of the RON-EURO exchange rate, in conjunction with the load of information included in the data sets of the T1OF indicator, the potential negative impact of the RON-EURO exchange rate on the dynamics of the T1OF indicator is low.
- The level of currency risk is low because the level of transactions with financial instruments made by non-banking intermediaries, in a currency other than the RON, is low.

6. Conclusions

By using the Principal Component Analysis method, scoring formulas can be built, that are applicable in the assessment of the creditworthiness of financial entities. The data sample based on which the model is built must obtain a sufficiently high value in the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test so that there is an additional margin besides the statistical minimum value.

If the intention is to build a methodology to assess the creditworthiness of several categories of financial entities (lending institutions, financial investment services companies whose entire scope of business is authorized, financial investment services companies whose scope of business is restrictively authorized, etc.), a scoring formula must be built (and at the same time different scoring ranges) must be built for each category of financial entities because the value of the financial/prudential indicators varies very much from one category of financial entities to another. This is due both to the difference business models and to the different level of diversification

of the business lines that are used by those categories of financial entities.

In establishing the details regarding the probability of default assessment system, one must take into account the prudential legislation relevant to the category of financial entities that system is being built for.

If the intention is to build a probability of default assessment system for entities in a certain economic branch, this procedure of the Principal Component Analysis method can be used only on the financial data of the relevant entities. Also, to determine the lowest scoring level, the values of the financial indicators will be used, which, according to the analysis of the historical data during the recent five years, showed that similar entities of the same economic branch went bankrupt.

Regarding the eventuality of changeover to euro currency, this will have an insignificant impact on the financial credit worthiness of non-bank intermediaries. This is due to the particularities of the activity and the balance structure of the Romanian non-bank intermediaries.

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VULNERABILITIES OF THE ROMANIAN ECONOMY GENERATED BY THE FOREIGN TRADE, THE EXTERNAL DEBT AND THE EXCHANGE RATE AFTER ROMANIA'S ACCESSION TO THE EUROPEAN UNION

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Abstract

The paper analyses the vulnerabilities which can be brought about by the structure and trend of the foreign trade and the external debt, and by the exchange rate to the Romanian economy, in the period after our country's accession to the European Union. The structure and the trend of the current account can represent a cause of vulnerabilities for the sustainability of each country's economy. Therefore, the present article analyses the Romanian current account and its characteristics. Based on these findings, the author draws some conclusions regarding the possible effects of the vulnerabilities induced by the current account. Also, the author analyses the structure of the Romanian external debt on maturities and on creditors and points out the possible vulnerabilities generated affecting the evolution of the economy. Finally, in the article it is analysed the stability of the Romanian leu/euro exchange rate in the context of Romania's goal to join the eurozone.

Keywords: current account deficit, national currency, stability, indebtedness

JEL Classification: F31, F32, F34

1. Introduction

Since 2014, the international methodology framework for the Balance of Payments and the International Investment Position has been updated in order to enhance the completeness, consistency and harmonization among the balance of payments and other macroeconomic data sets, such as: the national accounts, the statistics

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of government finance, the monetary and financial statistics, etc. The new methodology is presented in the IMF Manual of Balance of Payments and International Investment Position, 6th Edition (BPM6), which replaces the BPM5 version of 1993.

After 2008, the slowdown of capital markets and the steep decline in international financial flows forced multinational companies to limit their global expansion to their financial resources, with effects in terms of diminishing international trade flows.

The analysis period in the article is from 2006 (the year before our country's accession to the European Union) until present. In this context, ***the significant periods in the evolution of Romania's foreign trade*** stand out to be 2003-2007 (before the international economic and financial crisis, whose effects started to be felt in Romania in 2008), 2009-2013 (characterized by a decrease in the deficits of the current account and goods account, mainly due to the effects of the international economic and financial crisis), and 2014-2017 (restarting of the upward trend of the trade deficit).

2. Vulnerabilities caused by foreign trade that can bring about imbalances in Romania

The trend of imports and consumption shows that Romania's economy depends on imports to meet the excess demand in the domestic market (for final consumption of households, for intermediary consumption, and less for gross capital formation). In this situation, if a shock emerges (e.g. the economic and financial crisis) with effects such as the significant decrease of the imports of goods, there will also be a decrease of the goods necessary for the productive process, leading to a limitation of the activity of the economic agents and implicitly to a contraction of the Romanian economy’s growth.

As a consequence, in order to support the sustainable development of the national economy, measures must be taken in order to diminish the dependency of the national production on imports, without causing the decrease of the activity of the economic agents on the background of the reduction of the goods needed for the productive process, reaching a balance between the demand for domestic products and the demand for imports. In this regard, we suggest the adoption of measures to guide domestic consumption toward national products, both through a campaign meant to raise the interest of Romanian consumers for national products, but also by stimulating

Romanian producers to offer requested, high quality goods and by intensifying quality controls of the authorities.

It should also be considered that too high domestic consumption compared to the possibilities resulting from the external competitiveness has negative consequences on the macroeconomic stability. Previous experiences show that adjustment through austerity is less beneficial, and the plain financial equilibration through cuts in public grants is not a medium and long-term solution. Measures should be taken to create jobs in areas that will improve the external competitiveness and the overall Romanian economy.

It is noticed that Romania's commercial specialization is in goods with low and medium technology, and also that Romania is engaged in intra industry foreign trade. In recent years, as a whole, there is an improvement in the structure of foreign trade, both in terms of exports and imports.

In order to support the sustainable development of the Romanian economy, consolidating the trend of improvement of the structure of goods exports through faster growth of exports of products incorporating greater innovation and higher added value should be a priority for macroeconomic policy management for the next period, by creating the premises for intensifying the activity of foreign trade in branches that involve a high level of innovation and technology, by attracting investments in high added value sectors and by increasing the Romanian companies' ability to adapt to the high competitive standards of external markets and by strengthening the capacity of these firms to cope with possible unfavourable developments.

The low share of exports of goods in GDP (about one third) shows the lack of a macroeconomic policy to consolidate Romanian exports, as well as the inability of exports to capitalize the opportunities offered by the increasing opening of Romania's economy toward international markets, the insufficient degree of adaptation of industrial production to the requirements of foreign markets.

Analysing the indicators in table 1, one can see a ***degree of openness***[1] of our country not very high on the background of relatively low competitiveness of Romanian exports. In 2007, the year of our country's joining the EU, Romania had a degree of openness of 61.7%.

[1] *The degree of openness is calculated as the sum of a country's exports and imports in GDP.*

As a result, mainly, to the intensification of trade relations with the EU countries, Romania reached a degree of openness of 67.2% in 2017.

Table 1

Romania's degree of openness (%)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Degree of openness	64,9	61,7	61,9	55,0	66,2	74,6	74,1	64,9	66,5	66,1	67,0	67,2
Exports in PIB	26,4	23,7	24,1	24,6	30,0	34,5	34,2	30,4	31,1	30,6	30,7	30,4
Imports in PIB	38,5	38,0	37,8	30,4	36,2	40,1	39,8	34,4	35,4	35,5	36,2	36,8
Commercial deficit in PIB	-12,0	-14,3	-13,7	-5,8	-6,1	-5,6	-5,6	-4,0	-4,2	-4,9	-5,5	-6,3

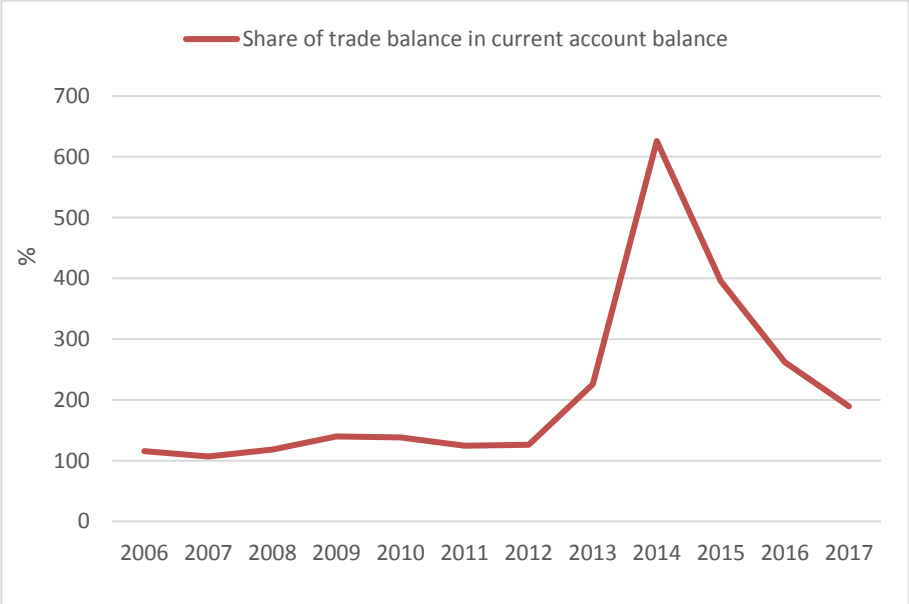
Source: author's own calculations based on NBR's data.

We consider that improving the degree of openness of our country, by increasing the share of exports in GDP, and the reduction of the trade deficit, should become objectives of national interest, before starting the steps for joining the euro area.

Considering that the evolution of the trade balance is the main cause of the current account deficit (Chart 1), we can say that the economy needs rather a mitigation of the openness and a more efficient restructuring. Thus, the trade deficit can decrease and support the reduction of the current account deficit insofar as the implemented macroeconomic policies can find effective ways to reduce imports (their value) (both productive imports, and especially consumption imports) and to increase the value of exports, in particular by improving the quality and added value of exported goods.

Chart 1

The trend of the share of trade balance in the current account balance in Romania during the period 2006-2017



Source: author's own calculations based on NBR's data.
Data are calculated according to BPM5 methodology for the period 2006-2012.
Data are calculated according to BPM6 methodology for the period 2013-2017.

Prior to the international economic and financial crisis, whose effects began to be felt in Romania in 2008, the situation was alarming due to the permanent deepening of the trade balance deficit on a year to year basis. The increase in the negative balance of the trade balance was caused in the context of higher increase of imports than the dynamics of exports, stimulated by the increase in demand for consumer goods and primary energy resources, by the increase in wages and the fast increase of non-governmental credit for durable goods. However, the situation has moderated in 2008 due to the effects of the crisis, when, in the context of the narrowing of the imports volume, the balance of goods improved, namely the high growth rate of the deficit diminished. Taking into account the decrease in the trade deficit and the current account deficit from 2009 to 2013, respectively 2014, followed by the resumption of the increase from 2014, respectively 2015 up to 2017 included, it can be concluded that the

deficits reduction was mostly due to the effects of the economic and financial crisis, so it does not have a profound, lasting character. In these circumstances, it is necessary to restructure our country's economy on sustainable basis.

Long-term existence (Romania's situation) of a trade deficit means insufficient competitiveness compared to domestic consumption.

The increase in the last years of the surplus of the services subaccount can be considered an evolution of the Romanian economy towards a structure similar to that of the developed economies, whose services sector is very developed. Analysing in depth the structure of services, it is noted that the positive evolution of the balance of this subaccount is mainly due to transport services. Given that road and railroad infrastructure in Romania is still underdeveloped, and given the high demand for transportation through our country, in order to capitalize this opportunity, we consider as absolutely necessary to develop the road infrastructure at an accelerated pace as a priority of our country.

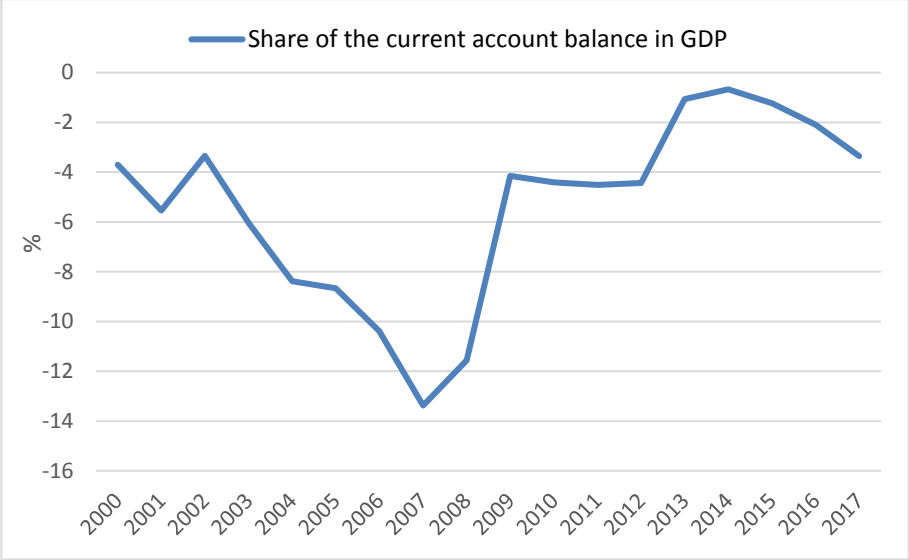
The high share of the current account deficit in GDP shows a negative effect of the current account balance on the domestic economic process. Between 2004 and 2008, the conventional sustainability threshold of the current account deficit (5% of GDP) has been constantly exceeded. Therefore, it is necessary monitoring, and, most importantly, adopting policies to ensure the sustainability of the current account deficit in the medium and long term. Although high according to international standards, Romania's current account deficit as a share of GDP was not a cause of alarm as long as its funding was secured, in particular by inflows of foreign direct investments (FDI). It seems that Romania's economy has opened up faster than it has restructured.

The considerable decline of Romania's current account deficit as a share of GDP over the 2009-2017 period compared to the period before 2009 (see Chart 2) (below the international conventional sustainability threshold of the current account deficit) represents an element favourable to the Romanian economy as a whole and to the balance of payments situation, although it is due, mostly, to the effects of the economic and financial crisis and not to the restructuring of our country's economy on sustainable basis, so it has not a deep, lasting character. The decrease of the value of the current account deficit in GDP may also be due to the improvement of the quality of Romanian

exports and to the conformation of their structure to the external requirements, manifested after the effects of the crisis have moderated. However, it is noticed that starting from 2015, the share of the current account balance in GDP begins to increase slightly. This trend can also be explained by the consistent deterioration of the balance of goods as a share of GDP over the period 2015-2017. According to RFS (Report for Financial Stability) 2016, the increase in the current account deficit in the recent years has been driven by increased consumption and domestic demand.

Chart 2

The trend of the share of the current account balance in GDP in Romania during the period 2000-2017



Source: author's own calculations based on NBR's data.
Data are calculated according to BPM5 methodology for the period 2000-2012.
Data are calculated according to BPM6 methodology for the period 2013-2017.

The evolution of FDI inflows after 2010 in Romania and the diminishing of their importance for covering the current account deficit shows a low degree of attraction and capitalization of foreign direct investments in the context of the display of factors such as: poor transport infrastructure, lack of fiscal facilities, lack of viable strategies for attracting strategic investors.

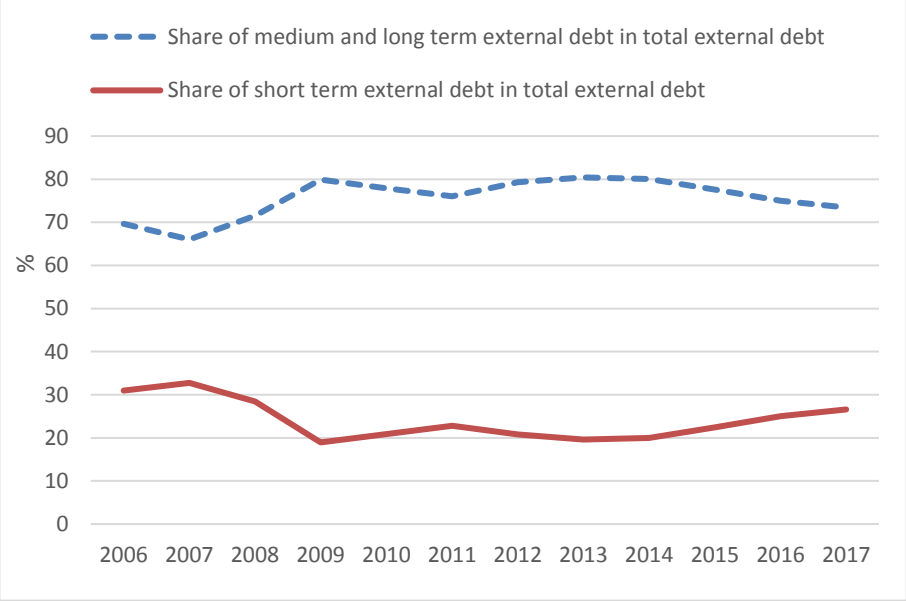
The evolution of medium- and long-term external loans had a turning point in 2011. Thus, over the period 2005-2010, the current account deficit was covered partly by the medium to long term loans. But, starting with 2011, Romania pays for the large external loans received the previous years. As a result, as of 2011, the long-term loans have concurred to the building-up of the balance of payments deficit with absolute decreasing values in 2013-2017.

3. Vulnerabilities caused by the foreign debt that can bring about imbalances in Romania

Over the period 2006-2017, the medium- and long-term external debt holds the largest share of Romania's total external debt (74%) (see Chart 3). It can be said that the structure of our country's external debt is quite adequate. Longer maturity favours the national economy sustainability, as the debt burden is staggered over a longer time horizon that does not "press" tightly on government budget decisions and jeopardize its development projects.

Chart 3

The trend of the medium- and long-term foreign debt and of the short-term foreign debt in Romania during the period 2006-2017



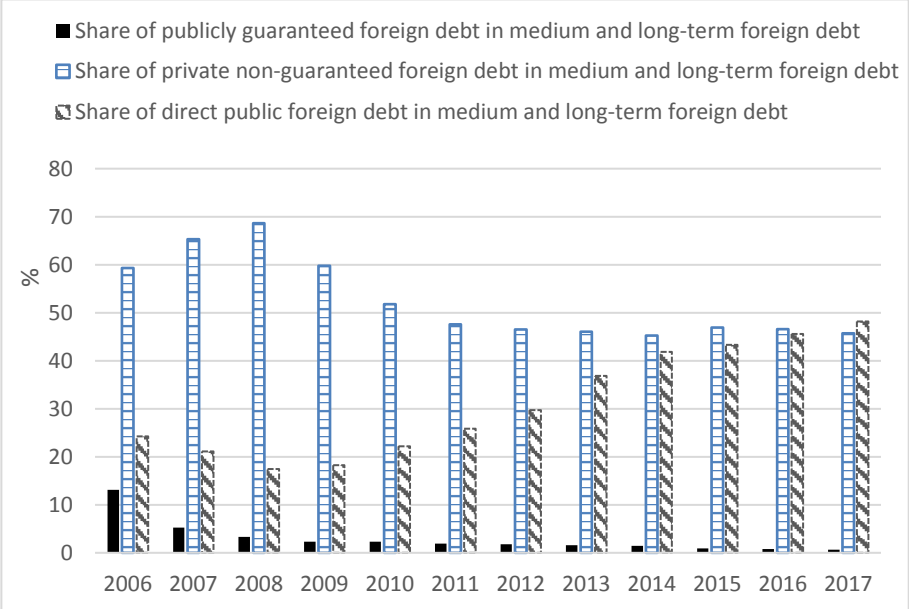
Source: author's own calculations based on NBR's data.

The fact that short term external debt is resuming growth since 2015 compared to the medium- and long-term external debt that has declined since 2013 represents an evolution that needs to be monitored as this type of debt can raise sustainability problems.

As a result of the almost continuous increase in the share of the private non-guaranteed foreign debt between 1994 and 2008, and from 2005 to 2010 inclusively, the private non-guaranteed foreign debt held the majority share in the total medium and long term external debt of our country, which shows, at the same time, the significant increase of the addiction on external financial markets in terms of risk and uncertainty for both borrowers and creditors. Since 2009, the share of private non-guaranteed foreign debt decreases, in 2016 it becomes equal to the share of the total public external debt in the medium- and long-term external debt. In 2017 the public debt holds a higher share than the private non-guaranteed debt in the medium- and long-term external debt (see Chart 4).

Chart 4

The trend of the components of the medium- and long-term foreign debt in Romania during the period 2006-2017



Source: author's own calculations based on NBR's data.

A negative fact refers to the disadvantageous lending conditions on the Romanian market. As a result, the private sector has often preferred to borrow from foreign markets at a comparatively advantageous foreign cost compared to capital prices on the domestic market due to the high active interest rates in Romania, to the not quite adequate behaviour of the domestic banks in the lending process, to an appreciated real exchange rate of the national currency.

The evolution of Romania's public debt shows the needs of the Romanian economy for external financing both in the period of the economic boom, and especially in the context of the global economic and financial crisis, with an important increase in 2009-2010.

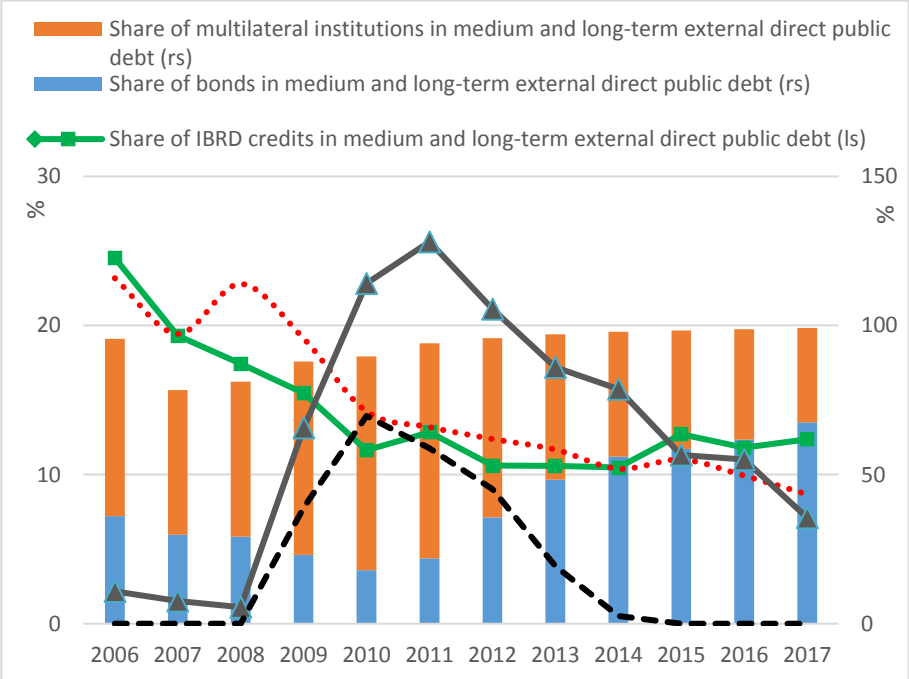
In the structure by creditors of the medium and long term external public debt, multilateral loans, which have the largest weight in the period 2006-2012, are gradually declining in favour of bond issues, reaching 31.7% in 2017.

Regarding the importance of the credit institutions in the total medium and long term external public debt, it is noted that as a result of obtaining the loan granted to our country in 2009, the share of loans from the European Union has increased significantly between 2009 and 2011, being important between 2009 and 2016 compared to the previous period.

Chart no. 5 shows that, despite the excessive media coverage of the loans from the International Monetary Fund, they do not have such a high share compared to the loans received from IBRD, EIB and EU.

Chart 5

The trend of the structure by creditors of the medium and long term public foreign debt of Romania during the period 2006-2017



Source: author's own calculations based on NBR's data.

Bond issuance has grown significantly starting with 2011, bringing an increase in the medium and long term external public debt. As a result, their share in the total medium and long term external public debt equals the weight of multilateral institutions in 2013 and bonds become majority since 2014, situation that continues up to the present (see Chart 5).

Thus, there has been a replacement of institutional creditors with private creditors. Given that debt from multilateral institutions has lower costs, taking into account the interest rates charged to countries perceived as having a high risk on the international private financial market; longer grace period; longer total duration, the replacement of the creditors represents a profoundly negative evolution of the Romanian economy's situation, from the point of view of the reimbursement effort. Instead of returning the contracted foreign debt, we become more indebted, under harsher credit conditions.

It is worth mentioning that the increase in external debt generates microeconomic risks (higher exposure to possible external shocks and more important effects on the Romanian banking sector), but it also has macroeconomic implications from the point of view of external debt sustainability. The growth of the external debt in the medium and long term may cause problems through the exchange rate channel (the sudden depreciation of the national currency would lead to a significant increase in the cost of external financing), through the confidence channel (the change in investor sentiment and perceptions leading to higher risk premium, and implicitly to higher cost of external financing), through contagion (through an regional economic, political or social shock), or even by an intrinsic shock of the national economy of a conjunctural or structural nature. With some of these consequences we are currently confronted (unfavourable investor perceptions, high cost of external financing).

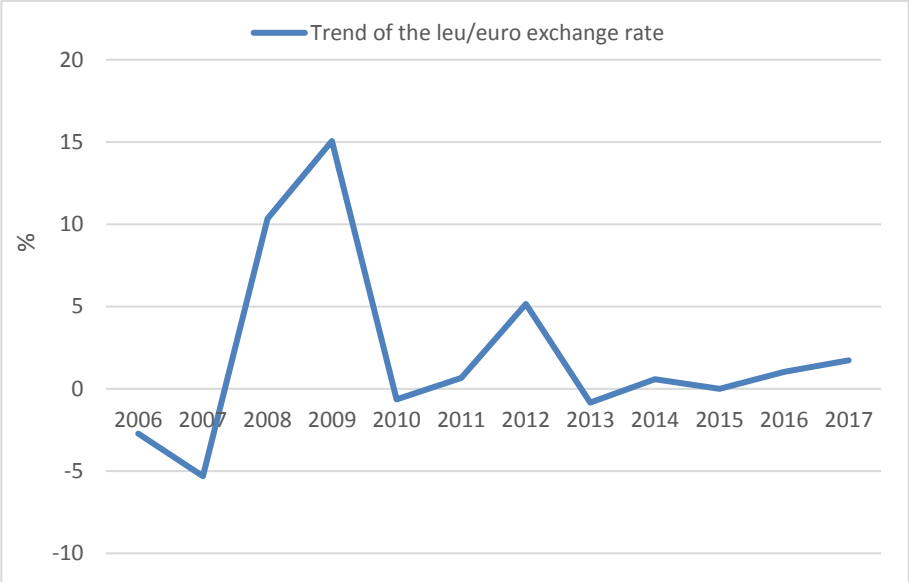
This highlights the importance of a comprehensive and coherent strategy for external debt reimbursement in close co-ordination with the restructuring of the national economy and with the progress of economic reform and of an indebtedness strategy which should establish an optimal ratio between medium and long term debt and short term debt, respectively between their maturities, so that the burden of external debt to be spread evenly over the years in order to avoid payment peaks.

4. Vulnerabilities caused by the exchange rate that can bring about imbalances in Romania

From chart no. 6, it can be noticed that in most of the years from the period 2005-2017, the annual variation of the leu / euro exchange rate is small. We note the appreciation of the leu / euro exchange rate from the period before Romania's accession to the European Union (2006, 2007), but also the significant depreciation in 2008, 2009 (when it is reached the 15% limit of the fluctuation band, characteristic of ERM II), in the context of the economic and financial crisis and its effects.

Chart 6

The trend of the leu/euro exchange rate during 2006-2017



Source: author's own calculations based on NBR's data.

Thus, the leu / euro exchange rate has been subject to strong fluctuations, mainly generated lately by investors' aversion to risk. In order to benefit from investors' confidence, a certain level of economic development, economic and political stability are needed.

It can be concluded that the national currency of our country is unstable at shocks. Thus, although Romania fulfils the exchange rate convergence criterion and the level of international reserves is quite high in the last years, which allows the action of the National Bank of Romania to limit the major fluctuations of the national currency, however, if we consider the entry into the euro area to be like a shock, this weakness of the leu / euro currency has to be taken into account.

As it is known, establishing the exchange rate parity between the leu and the euro will have a significant impact on the future evolution of the Romanian economy. Thus, joining the euro area at a too much appreciated exchange rate would negatively affect the economic growth, in particular through the slowdown of exports, and a too depreciated national currency against the euro could generate

inflation. Euro is a strong currency, and Romania needs a weak currency to support exports.

Also, it should be taken into account the behaviour of the population after the announcement of the date of entry into the euro area. There may be an increase in the demand for euro from the population in order to change the holdings of national currency, hoping to gain through the exchange rate difference and to avoid the danger of imposing a restriction for the amount of currency that will be exchanged at the time of the changeover to euro. In the first phase, pressures on the demand for the euro may lead to an increase in the exchange rate of the national currency and then to inflation increase.

5. Conclusions

Strengthening the trend of improving the structure of goods exports through more rapid growth of exports of products incorporating greater innovation and higher added value should be a priority for the management of macroeconomic policies for the next period by creating the premises for intensifying the foreign trade activity in branches that involve a high level of innovation and technology, by attracting investments in high added value sectors, respectively by increasing the capacity of Romanian companies to adapt to the highly competitive standards of the foreign markets and to strengthen the capacity of these companies to deal with possible adverse developments.

We consider that the improvement of the degree of openness of our country as a result of the increase in the share of exports in GDP and, implicitly, the decrease of the trade deficit should become objectives of national interest, before starting the steps for joining the euro area.

It is necessary, in order to support the sustainable development of the national economy, the guidance of the domestic consumption towards national products, both through a campaign to raise Romanian consumers' interest toward national products, and also by stimulating the Romanian producers to provide the required goods at high quality, also by enhancing quality controls by the authorities.

The entry into the euro area, but first in ERM II, must be correlated with the situation of the national economy, with its level of development so that the entry into the euro area would bring our country more advantages than disadvantages.

There may be problems for the new Member States adopting the euro due to lack of control over the interest rate (influencing the

monetary base, stimulating economic growth, managing shocks, including currency shock affecting directly inflation) and due to the too appreciated exchange rate, the new Member States need a weak currency to support exports. Generally speaking, the adoption of the euro means giving up power over economic decisions, which will be taken outside the country.

The decisions of the European Central Bank (ECB) represent an answer to the problems of the entire eurozone and not just to one country. Thus, the policy adopted by the ECB can only respond to the evolution of some euro area economies, if there are regional disparities concerning economic growth. If Romania remains outside the euro area, it is free to set and implement the monetary policy it needs in order to support economic growth, and to overcome existing imbalances.

The premature adoption of the euro means abandoning the instrument of changing the exchange rate and interest rate used to adjust the differences between Romania and the euro area countries. This means putting too much emphasis on labour market and commodity prices adjustments, as the only remaining markets for adjustments would be the labour market and the commodity market. Fiscal policy might absorb part of the shocks, but for the moment it must remain pro-cyclical. We do not think that these together can, at present, replace the possible lack of control over changes in the interest rate and in the exchange rate. Thus, it would not be possible to ensure full employment and price stability.

A single currency means a pan-European interest rate that limits the government's ability to manage the problems of the national economy. The various stages of economic development and different economic cycles make it difficult to find a fair interest rate for all euro area countries.

Managing a modern economy requires effective monetary bumpers, integrated in the economy. By joining the European Monetary Union, Romania is deprived of these shock absorbers, exposing itself to a new type of shocks, namely the shocks on the euro. The volatility of the euro-dollar exchange rate would cause fluctuations in the prices of commodities that are the subject to trade and hence in inflation.

Strengthening the convergence also implies sound management of public debt as the loss of the central bank's ability to control the domestic money supply through the interest rate has a

direct effect on the cost of borrowing and on the overall balance of the economy.

All the benefits brought about by joining the euro area can become real only under certain conditions. The theory and the recent practice show that the states participating in a monetary union can have net benefits, but only when their economic structures are similar. Otherwise, there is a risk that some of them, poorly prepared, would be adversely affected.

Considering the vulnerabilities highlighted above, we can say that Romania's economy is not ready yet to adopt the euro. It is unstable, vulnerable to shocks. As a result, we consider it is wise to expect signs of the stability of the Romanian economy and of the disappearance of the economic vulnerabilities before setting a fixed or estimative date for Romania's joining the euro area.

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Online resources:

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