

**QUANTIFYING THE ECONOMIC PARAMETERS
AS INDICATORS OF OPTIMAL MOMENT
OF SERBIA'S ACCESSION TO THE EUROPEAN UNION ^a**

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Abstract

The process of joining the European Union is largely driven by the procedures developed clearly and in great detail, and at first glance it may appear that the entire process does not have much room for creative functioning of national monetary authorities. However, given the duration of this process, the sequence of steps and preparatory actions have become an important aspect of the overall process, which is the responsibility of the candidate countries. The decision about the future steps should be made on the basis of an objective scientific analysis, based on the quantitative economic indicators. Therefore, it is very important for any prospective member states to determine the optimal moment of accession to the European Union, and later to the European Monetary Union, in terms of minimizing the adjustment costs, and maximizing the benefits of the future membership. The aim is to determine the optimal moment of Serbia's accession to the European Union, from the economic aspect, i.e. reaching the numerical values of the key macroeconomic data that were singled out as the most important indicators in this process.

Key words: European Union, monetary integration, convergence criteria, macroeconomic indicators, Republic of Serbia.

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КВАНТИФИКОВАЊЕ ЕКОНОМСКИХ ПАРАМЕТАРА КАО ИНДИКАТОРА ОПТИМАЛНОГ МОМЕНТА ПРИСТУПАЊА СРБИЈЕ ЕВРОПСКОЈ УНИЈИ

Апстракт

Процес прикључења Европској унији у великој је мери вођен јасним и детаљно развијеним процедурама, па на први поглед може изгледати као да у целокупном процесу нема превише простора за креативно деловање националних монетарних власти. Међутим, с обзиром на трајање овог процеса, редослед корака и припремне радње постају важан аспект укупног процеса, који остаје у надлежности држава кандидата. Одлуку о будућим корацима треба донети на основу објективне научне анализе, која ће бити заснована на квантитавним економским индикаторима. Стога је одређење оптималног момента приступања Европској унији веома важно за сваку од будућих земаља чланица, а потом и Европској монетраној унији са аспекта смањивања трошкова прилагођавања и повећавања користи од будућег чланства. Циљ рада је одређивање оптималног момента уласка Србије у Европску унију са економског аспекта, односно достизања нумеричких вредности кључних макроекономских података који су се издвојили као најзначајнији индикатори у овом процесу.

Кључне речи: Европска унија, монетарне интеграције, критеријуми конвергенције, макроекономски индикатори, Република Србија.

INTRODUCTION

The European Union is the result of the political and economic unification of European countries, and its strengthening is contributed by the new Member States. It is therefore not surprising that from the original six countries that formed the European Economic Community Union currently consisting of 28 countries has been created, with a tendency of an even further expansion. Analysing the economic development level of its members, it's easily noticed that there is too much diversity in the level of economic development and standard of living of its citizens, from Luxembourg which is one of the richest countries (as measured by gross domestic product per capita that was 2.5 times higher than the EU average in 2012) to Bulgaria and Romania (Member States that have less than 50% of GDP per capita of the EU average) (Eurostat, 2013), which do not have other characteristics of other EU member states, except for the membership. For Serbia, which has its strategic objective defined as the accession to the European Union, it is very important to choose the appropriate (optimal) moment of accession, and not in terms of the achieved political will, but achieved economic results, so it is not just another in a series of the states that contributes to the numerical increase of the Union, but not its own economic development.

Bearing in mind the whole process of the creation of the European Union in a form that is known today, and by analysing all the proposals of the

organisation of European countries, it's noticeable that there is a dominant presence of the primarily political criteria, while the economic criteria still remained in the background. Although the basis for the achievement of monetary integration, as the highest form of economic integration, is also made of the economic criteria, which have been designed by the Maastricht convergence criteria, their existence does not necessarily mean their attainment and achievement by the candidate countries. At the time of the formation of the European Monetary Union in 1999, only three out of the 11 countries fulfilled all five defined economic criteria (Luxembourg, France and Finland), which speaks in favour of neglecting the importance of the economic indicators and significance of the fulfilled criteria for the introduction of a common currency (Mundell, 1961). Although the defining criteria of convergence was initially managed by Mundell's theory of optimum currency areas, meanwhile, a kind of substitute ideas have been created and instead of paying attention to the criteria of the currency areas, the focus has been directed to the convergence criteria, whose achievement is not set as a strong condition for the accession to the Monetary community. These economic criteria are known as the convergence criteria, or the Maastricht criteria.

The examination of the fulfillment of the convergence criteria at the beginning of 1998, based on data for 1997 showed that the condition of price stability was met by all countries except Greece. The lowest inflation rate was recorded in Austria (1.1%), France (1.2%) and Ireland (1.2%). All member states had inflation below the reference value (2.7%), except Greece, which despite a significant reduction in inflation from 14.2% in 1993 to 5.5% in 1998 remained outside the aforementioned criteria. The data is even more convincing if we take into account the year 1996, whereby the countries were much further away from meeting all the defined criteria, which indicates the major role that "creative accounting" received.

The accession process itself is determined by the procedures, but the success of this process depends on the results achieved before obtaining the membership. Premature accession to the EU may have more negative effects not only on the Member State, but also on the Union as a whole. Therefore, the main goal of this research has been to determine the optimal moment of Serbia's accession to the European Union in terms of achieving the numerical values of the economic parameters that have proven to be the key indicators of the optimal moment to join the EU. For the purpose of analysis, the database on the dynamics of the group of macroeconomic and macro financial indicators for the Member States of the European Union and the group of the countries which are not the members of the European Union, for the period of membership and the period that precedes it, was formed and their significance for the economic effects of economic integration was tested. The critical value of the indicators that may suggest the (un)favourable impact of economic integration on the economic development of the Member

States and the Union as a whole was determined by the econometric data processing. The results of the numerical values of the key indicators of the achieved level of economic development and stability, which guarantee the country's positive effects of economic integration, were obtained by applying the econometric model. In that way, through the quantification of the macroeconomic indicators, the best moment of Serbia's accession to the European Union is determined, in terms of maximizing the positive and minimizing the negative effects of economic integration. The applied ROC curve is a novelty in the analysis of the economic criteria of the countries aspiring to join the European Union, and later the European Monetary Union. On the road to the European integration, the first step for the new members is the EU accession. The paper focuses on defining the numerical values of the macroeconomic indicators that have been shown to be statistically significant indicators of the membership in the European Union.

LITERATURE REVIEW

The European Union is an attempt at the largest-scale integration of different national economies, through a process of harmonization of economic policies in the pre-accession period. The EU is operating on the principles that ensure and facilitate its further extension only for those members who are able to demonstrate that they can operate on the same principles, which are related to the compliance with all the standards and EU regulations, the approval by the EU institutions and EU member states, as well as the consent of its citizens expressed in one way (in the parliament or in a referendum) (European Commission, 2014). The very idea of the origin and formation of the monetary union in the European region is based on the theory of optimum currency area, and the convergence criteria have found their footing in the criteria for the common currency. The analysis of the theory of optimum currency areas (Mundell, 1961) and their comparison with the Maastricht criteria (Maastricht Treaty, 1992) show that the EMU is not an optimum currency area (Marinković, Šabotić, 2013). The process of accession to the European Union should be seen through a comparison of the advantages and disadvantages of the fixed and variable exchange rate. According to Stockman (1999), a fixed exchange rate will have an advantage for those nations with similar economic structures that are further followed by similar exogenous shocks. On the other hand, those nations with different economic structures that are mainly exposed to specific shocks should have a floating exchange rate, which allows them to use monetary policy to a wider range of domestic economic objectives. The main disadvantage of the fixed exchange rate is the fact that it can cause a mismatch between the stable nominal exchange rate and the difference between inflation in the country and the country of the reference currency, which in the case of a speculative attack, ultimately leads to the collapse of the currency regime and a currency crisis. On the other hand, the fluctuating exchange rate is usually

criticised for fluctuating considerably, reflecting mainly non-fundamental influences, so that it creates unnecessary instability, uncertainty and possibly holds the currency in the zone of a constant overvaluation or undervaluation. Similarly, the subsequent works (Chinn and Wei, 2008) also seem to contradict the Friedman's assertion about the benefits of flexible exchange rates. The authors found that the imbalance in the balance of the current transactions within the flexible regime are no less a persistent phenomenon, but they are within the fixed exchange rate regime. They have also provided a simple explanation: while the nominal exchange rate flexibility may contribute to the variability of the real exchange rate, it seems that it does not contribute to the actual adjustment of the real exchange rate, in the sense that it does not make the real exchange rate more prone to oscillate around its fundamental values. If this is true, it would mean undermining the empirical basis of Friedman's (1953) argument (Ghosh et al., 2010). Karras and Stokes (2001) investigated how two specific criteria, the relative size of the shocks in the scope of economic activities and their synchronicity, evolve over time in the case of the thirteen countries of the European Union. They found unambiguous evidence that those OCA criteria that have undergone the test of time, suffered changes. Considering exclusively the foreign-connections, Frankel and Rose (2002) tested what performance the rigid exchange rate regimes show (currency union and currency boards) in comparison to the flexible exchange rate regime. They found that in terms of the level of foreign trade exchange and income, the rigid regimes outperform the flexible ones. By statistical isolation of the potential impact of a large number of geographic and political factors, the authors found that the currency union tripled the trade exchange between the Member Countries, without any evidence that the growth of trade within the Union comes as a result of acquisitions, or a decrease in the trading activity with the non-member countries. Similar results are found with Frankel and Rose (1997, 1998), who found a statistically significant positive correlation between the degree of correlation of income and foreign trade integration. The growth of the foreign trade between countries reduces the gap between the business cycles and thereby diminishes the importance of the shocks of asymmetric impacts, which are considered the most significant cost of monetary integration. After this operation, there was a number of other studies whose results clearly supported the aforementioned hypothesis of endogeneity. Silvestre and Mendonça (2007), in the case of Portugal found quite obvious interdependence between the synchronization of the economic cycle and the intensity of foreign trade. Frankel (2005, p. 16), for example, emphasizes that:

“the support from neighbouring countries for integration would be sufficient as well as mass use of reserve currency in private transactors, strong transmission of changes in the exchange rate on domestic prices and, in particular, the expressed need to import monetary stability”.

RESEARCH METHODOLOGY

Accession to the European Union is a process in which each next step should be well planned, primarily concerning the time aspect, i.e. the duration of each stage in the accession process should be determined as accurately as possible. Exactness can be achieved if the predictions are based on the quantitative macroeconomic and macrofinancial indicators in the countries that are the members of the European Union, as well as those aspiring to become the members of the EU, and then the observed tendencies of their movements to be used for defining the dynamics of Serbia's accession to the European Union. Accordingly, the main objectives of the research are:

- Monitoring the movement of the selected economic indicators for a longer period of time in the EU member countries and those that are not members, as well as the definition of the variables that could serve as the indicators of membership in the European Union, and later the European Monetary Union;
- On the basis of the selected variables, determining the level whose achievement can be labelled as the best moment of Serbia's accession to the EU and EMU;
- After reaching the specified level, positive effects of the EU accession can be expected, as well as the avoidance of the negative scenarios of those countries that became members of the EU and EMU prematurely, in terms of the lack of preparation.

The purpose of this research is to point out the necessity of application of the appropriate economic policies of a country that wants to become a member of the EU, not only in terms of fulfilling the convergence criteria defined by the EU, but based on the experience of the countries that have gone through the same process of adapting to determine the quantitative valuation code of the economic variables that are characteristic for the EU Member Countries and the candidates should strive to reach their potential.

The statistical analysis was based on the use of the univariate and multivariate linear regression analysis, as well as the ROC (Receiver Operating Characteristic) curve, with the aim to highlight the opportunities offered by the ROC analysis of the economic interpretation of the results, a very popular statistical model in other sciences with the possibility of a graphic presentation of the results.

DATA ANALYSIS

The analysis used data for 40 countries, 27 EU countries (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom) and the 13 countries that are not

members of the European Union, but with a tendency to become a member (Serbia, Croatia,¹ Montenegro, Switzerland, Bosnia and Herzegovina, Macedonia, Belarus, Moldova, Ukraine, Azerbaijan, Georgia, Armenia, Albania) in the period from 1997 to 2013. The variables used in the analysis have their starting point in the convergence criteria also, but they were primarily selected as the most important macroeconomic indicators that provide an insight into the level of the economic development of the countries surveyed. The analysis included: GDP (in millions of euros); GDP per capita (in PPP); the real GDP growth; the real interest rate, the inflation rate, the unemployment rate; the exchange rate; cash flows; government debt, total (% GDP); current account balance (% of GDP); population; direct investment abroad (% of GDP); trade (export plus import as % of GDP); growth of GDP per capita (annual percentage change). The sources of the data are statistical database of the European Union (Eurostat) and the statistical database of the World Bank (World Bank Data). The essence of the analysis is to identify those variables that proved to be the most important indicators of membership in the European Union. Their quantitative determination will serve as the basis for determining the optimal moment of Serbia's accession to the European Union.

Univariate and Multivariate Regression Analysis

Regression analysis is used to determine the intensity of the changes of the dependent-variable variable that are associated with changes in the independent-variable variables. Using the regression model, it is possible to determine the relationship or association between the dependent and independent variables, and in such a way that it can determine to what extent the change of the dependent (categorical) variable is caused by a change of the independent variable. Logistic regression enables testing the model for prediction of categorical outcomes with two or more categories. Binary logistic regression is used to investigate the dependence of a binary variable to one or more independent variables. It is usually taken to be the value of the binary variables 0 and 1. Independent variables can be numeric and categorical. These variables are called the predictor variables, because by using them the probability of a binary variable that receives the value 1 is predicted. The binary logistic regression equation is:

$$\ln\left(\frac{p}{1-p}\right) = a_0 + a_1x_1 + a_2x_2 + \dots + a_nx_n, \quad (1)$$

¹ Even though Croatia became an EU member on 1st July 2013, it is classified as a non-EU member, because all indicators taken into consideration in the analysed period (1997-2013) were achieved while it wasn't an EU member

where p is the probability that a binary variable gets value 1 and $a_0, a_1, a_2, \dots, a_n$ are the unknown coefficients, which should be determined. From the previous equation it is obtained:

$$p = \frac{e^{(a_0 + a_1 x_1 + a_2 x_2 + \dots + a_n x_n)}}{1 + e^{(a_0 + a_1 x_1 + a_2 x_2 + \dots + a_n x_n)}} \quad (2)$$

The aim of the application of the statistical methods described above is to identify the variables that have the greatest impact on the change of the categorical variables (membership in the EU) through the univariate and multivariate regression analysis, in order to obtain the critical value (cut off) using ROC curves. The univariate binary regression analysis indicated that the membership in the EU is significantly affected by the current account balance (% of GDP) ($p = 0.018 < 0.05$). The odds ratio is 1.194 (1.031-1.384), which means that its increase by one increases the chance for the country to become an EU member by 19.4%. Gross domestic product per capita (EU27 = 100), using the univariate binary logistic analysis, shows that its value significantly affects the EU membership ($p = 0.002 < 0.05$). The odds ratio is 1.060 (1.022-1.099), which means that its increase by 1 increases the chance for the country to become an EU member by 6%. And when the total GDP per capita is considered expressed in purchasing power parity in US dollars, the univariate logistic regression analysis gives similar results. Due to obtaining more precise results, a new variable has been created (obtained by dividing the absolute values by 1000), and its impact has been confirmed as statistically significant for the EU membership ($p = 0.003 < 0.05$). The odds ratio is 1228 (1177-1282), which means that its increase by one thousand, increases the chance for the country to become an EU member by 22.8%.

Following the univariate binary logistic analysis and separation of variables that affect the individual membership in the EU, a multivariate regression analysis was applied, including the previously excluded variables, together in the model. Multivariate binary logistic regression shows that only GDP per capita ($p = 0.002 < 0.05$) has a significant impact on the EU membership. The odds ratio is 1236 (1084-1410), which means that its increase by one thousand, increases the chance for the country to become an EU member by 23.6%.

As GDP per capita is a macroeconomic variable that shows the greatest impact on the EU membership, the following table shows its mean value and the standard deviation for the year 2013, depending on the EU membership. The countries that are not the EU members and have achieved a similar level of economic development, the value of GDP per capita in purchasing power parity, ahead of Serbia (11100) are Belarus (16100) and Montenegro (11900).

Table 1. Gross domestic product per capita in purchasing power parity (\$).

| Year | EU members | | Non-EU members | |
|------|------------|--------------------|----------------|--------------------|
| | Mean value | Standard deviation | Mean value | Standard deviation |
| 1997 | 17260.02 | 8236.12 | 5639.15 | 7238.80 |
| 1998 | 18145.54 | 8641.39 | 6063.90 | 7474.75 |
| 1999 | 19066.70 | 9514.64 | 6136.68 | 7535.81 |
| 2000 | 20565.16 | 10351.61 | 7088.45 | 7766.08 |
| 2001 | 21483.07 | 10324.09 | 7387.82 | 7899.69 |
| 2002 | 22613.02 | 10743.05 | 7785.54 | 8169.24 |
| 2003 | 23365.39 | 10976.31 | 8183.34 | 8070.96 |
| 2004 | 24702.13 | 11539.55 | 8914.51 | 8311.88 |
| 2005 | 25951.97 | 11872.77 | 9701.18 | 8452.26 |
| 2006 | 28473.33 | 13294.68 | 11049.68 | 9301.95 |
| 2007 | 30431.41 | 13956.77 | 12307.92 | 10125.51 |
| 2008 | 31766.79 | 13578.59 | 13478.53 | 10825.23 |
| 2009 | 30761.90 | 12744.59 | 13245.18 | 10728.21 |
| 2010 | 31628.96 | 13447.86 | 13663.17 | 10957.24 |
| 2011 | 31659.26 | 13186.57 | 13128.57 | 11609.97 |
| 2012 | 31103.57 | 12678.34 | 13364.29 | 12172.52 |
| 2013 | 31341.67 | 12987.72 | 13657.14 | 12494.66 |

The data in the table above refer to the movement of the average values of GDP per capita in the EU Member Countries, and those countries that are outside the EU, which were included in the analysis, by year, from 1997 to 2013. During the entire observed period, its growth is noticed, both in the EU and in the countries outside the EU. A slight decline was recorded in both groups in 2009, which is likely a consequence of the financial crisis in 2008, which had a negative impact on all countries.

The difference between the mean values of GDP per capita (US dollars) between the EU member countries and the countries that are outside the EU is statistically significant ($p = 0.000 < 0005$). The average value of GDP per capita in the countries outside the EU is 13657.14 ± 12494.66 , while in the EU it is 31341.67 ± 12987.72 . The difference is even more pronounced if Switzerland is excluded. In that case the average value of GDP per capita in the countries outside the EU is 10492.30 ± 4148.98 .

As previously described, the applied statistical method is the linear regression analysis, which result is a linear regression equation enabling the extrapolation of the value of GDP in the coming period, which is associated with the year of accession to the European Union.

The linear equation which shows that GDP \$ in Serbia depends on the year (using the data from 1997 to 2013) is:

$$\text{GDP} = \$4558 + 444 \times (\text{Year} - 1996) \quad (3)$$

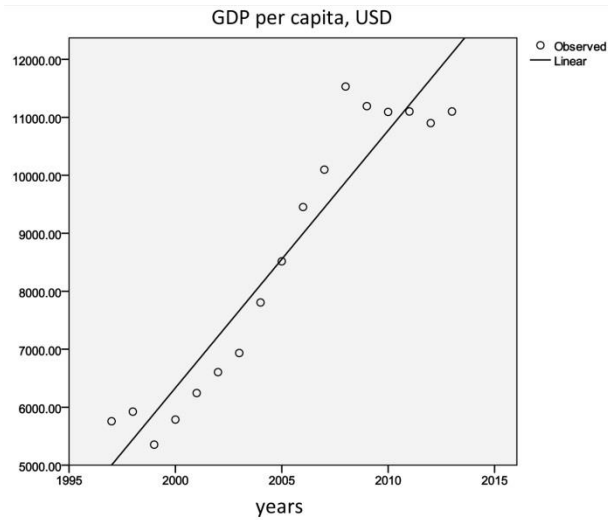


Figure 1. Regression line for years and GDP per capita

ROC Curve

The ROC curve is a graphical representation of the sensitivity and specificity for each possible boundary score in the coordinate system, where the values of sensitivity (probability of detecting the presence of the correct attribute) are shown on the ordinate (y), and the abscissa (x) shows the values of specificity (probability of incorrect detection of the presence of the feature) as shown in Figure 2.

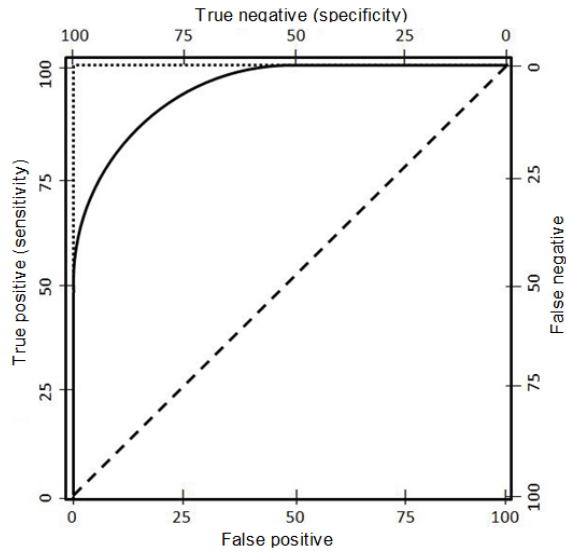


Figure 2. ROC curve

Each point of the ROC curve represents a pair (sensitivity, 1-specificity), which corresponds to individual variable values. When the results of a particular test are considered in two populations of the surveyed countries, for example, the population of the successful countries and the population of the unsuccessful ones, a complete separation between the two populations is rarely obtained. Sometimes, this separation should be based on the value of continuous random variables (e.g. the value of GDP per capita, the movement of interest rates, public debt, inflation rate, unemployment rate). Often there is no such threshold that the value of the variables above (below) means to which group (successful / unsuccessful) a country belongs. In such situations, it is necessary to determine the threshold (cut-off) that best separates the two populations. One way to determine the threshold is to determine the value of the variable for which the product of sensitivity and specificity is maximal. A variable can better serve for testing (actually separating the successful from the unsuccessful countries) if the area under the curve (the ROC area under the curve - AUROC) is higher. The closer the area to the number 0.5 the less suitable the variable is as a marker, and the closer the area to the number 1, the more suitable the variable is as a marker (indicator).

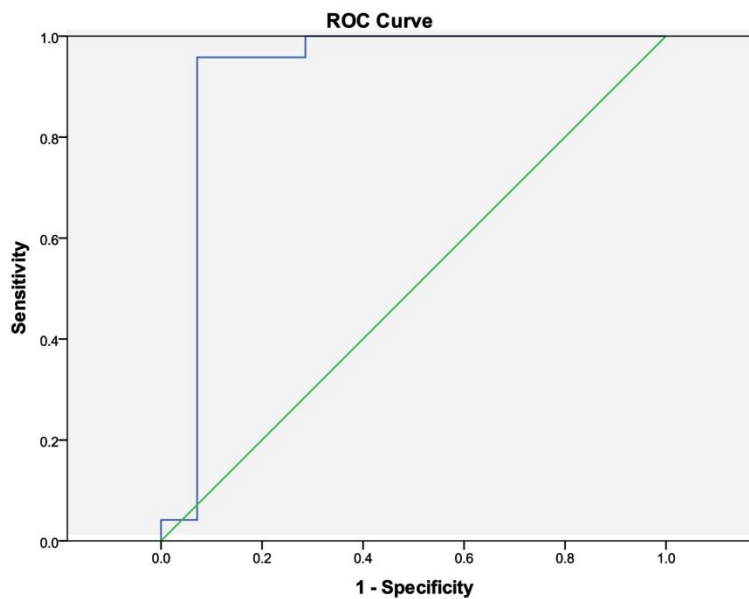


Figure 3. ROC curve for GDP per capita

The results show that GDP per capita can be a marker for the membership in the European Union (area = 0.923, $p = 0.000 < 0.005$). The values of GDP per capita of 17950 US dollars are obtained as the

optimum point of separation of the countries between the two groups (the members of the EU and those who are not part of the EU). The sensitivity is equal to 0.958, and the specificity to 0.929.

Table 2. The number of countries depending on the optimal point of separation and the EU membership

| | Non-EU members | EU members |
|-----------------------------|----------------|------------|
| GDP per capita < 17950 | 13 | 1 |
| GDP per capita \geq 17950 | 1 | 23 |

RESULTS AND DISCUSSION

Analysing 40 countries, all 27 EU countries and 13 countries aspiring to become its members, for the period of 17 years and the use of a large number of macroeconomic variables, which found its footing in the criteria of a common currency, and from them derived the convergence criteria, it is shown that GDP per capita is a statistically significant indicator of the membership in the European Union. Through the descriptive statistics and use of an appropriate test for determining the existence of the differences between the countries that are in the EU and those that are not, some economic variables have shown statistically significant difference in the values between the two groups, but the subsequently conducted univariate and then multivariate regression analysis have allocated GDP per capita as the most important indicator that is used for the construction of the ROC curves.

Bearing in mind the regression equation that shows how the year of accession depends on the value of GDP per capita, by substituting the value of the GDP per capita of 17950 in the previous equation (3) it is obtained that Serbia would have a sufficient GDP \$ to enter the EU in 2026, if the current upward trend of growth is continued.

If, in the subsequent period, higher growth rates of GDP per capita were achieved in comparison to the previous period, this would lead to a more rapid achievement of the obtained values, and thus to shortening the time for obtaining the full membership in the European Union.

The essence of the European economic integration is not in receiving a formal membership, since this is just the first and necessary condition, but definitely not the ultimate goal. The candidate countries should strive to make all the necessary structural reforms of their national economies prior to accession, to achieve an appropriate level of economic development, expressed by GDP per capita, in order to participate equally with other members in strengthening the position of the European Union in the global economy and avoid the negative consequences of a direct competition with the leading EU economies.

CONCLUSION

The process of European integration in all countries causes major changes. They refer to the necessity for the adaptation and harmonisation of the economic policies of the Member Countries of the Union. Reconciliation of monetary policy has received its materialisation in the convergence criteria, while the absence of the fiscal unification has jeopardized the effects of other implemented measures. The process of obtaining a full membership in the European Union is typically lengthy, exhaustive and is not time-limited. The moment of obtaining full membership is conditioned by numerous factors, some of which are economic in nature, but the factors that are political in nature have got a huge role, as well. This primarily relates to the political will of the European Union Member Countries for granting additional enlargement of the Union. However, the experience of the countries that have joined the European Union, as well as those who have given up monetary sovereignty and adopted the euro, indicates the importance of selecting the timing of accession in terms of the achieved economic development, expressed through the gross domestic product per capita.

Based on the analysis of the data for 40 countries, which were used to identify the key economic indicators, whose numerical value can serve as the indicator of the optimal moment of accession, the values of the GDP per capita (measured in purchasing power parity) of 17950 US dollars has been obtained. Although the value of the GDP per capita in Serbia is still far from this level, the obtained values should indicate the importance of continuing the necessary structural reforms to achieve higher growth rates of GDP. By applying the regression analysis, it is estimated that Serbia, if the current upward trend of development continues, will reach this value in 2026.

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КВАНТИФИКОВАЊЕ ЕКОНОМСКИХ ПАРАМЕТАРА КАО ИНДИКАТОРА ОПТИМАЛНОГ МОМЕНТА ПРИСТУПАЊА СРБИЈЕ ЕВРОПСКОЈ УНИЈИ

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Резиме

Процес прикључења Европској унији у великој је мери вођен јасним и детаљно развијеним процедурама, па на први поглед може изгледати као да у целокупном процесу нема превише простора за креативно деловање националних монетарних власти. Међутим, с обзиром на трајање овог процеса, редослед корака и припремне радње постају важан аспект укупног процеса, који остаје у надлежности држава кандидата. На неке фазе интеграције се данас гледа са много више скепсе него деценију пре. Ово се пре свега односи на приступање чланица Европској монетарној унији. За разлику од раније доминантног, готово догматског става, да монетарна интеграција представља кулминацију овог процеса, данас се све више на ову фазу интеграције гледа као на независну одлуку, коју треба донети на основу објективне научне анализе предности и недостатака.

Процес европских интеграција у свим земљама изазива велике промене. Оне се односе на неопходност прилагођавања и хармонизације економских политика земаља чланица Уније. Усаглашавање монетарне политике је добило своју материјализацију у критеријумима конвергенције, док одсуство фискалне унификације угрожава ефекте других примењених мера. Процес добијања пуноправног чланства је дуг, исцрпан и није временски ограничен. Моменат добијања пуноправног чланства је под утицајем великог броја фактора, при чему фактори који су политичке природе имају значајну улогу. Ово се, пре свега, односи на политичку вољу земаља чланица Европске уније за одобравање њеног додатног проширења. Искуства земаља које су постале чланице Европске уније, као и оних које су одустале од монетарног суверенитета, указују на значај избора оптималног момента приступања, у смислу достигнутог економског развоја, израженог кроз бруто домаћи производ по глави становника.

Стога је одређење оптималног момента приступања Европској унији веома важно за сваку од будућих земаља чланица, а потом и Европској монетарној унији са аспекта смањивања трошкова прилагођавања и повећавања користи од будућег чланства. Циљ је одређивање оптималног момента уласка Србије у Европску унију са економског аспекта, односно достизања нумеричких вредности кључних макроекономских података који су се издвојили као најзначајнији индикатори у овом процесу.

Статистичка анализа је заснована на примени униваријантне и мултиваријантне регресионе анализе, као и ROC (Receiver Operating Characteristic) криве, са циљем да се укаже на могућности ROC криве у интерпретацији економских резултата, са могућношћу графичког приказа добијених резултата.

На основу анализе података 40 земаља које су послужиле за идентификовање кључних економских индикатора, чије нумеричке вредности могу да послуже као показатељи оптималног момента приступања Унији, добијена је вредност БДП по

глави становника (израженог паритетом куповне моћи) од 17950 америчких долара. Иако је вредност БДП по глави становника у Србији још увек далеко од овог нивоа, добијене вредности треба да укажу на важност наставка неопходних структурних реформи у циљу остварења већих стопа раста БДП. Примењеним моделом је оцењено да ће Србија, уколико се настави досадашњи тренд развоја, ову вредност достићи 2026. године.