ROMANIA'S FISCAL STRUCTURE IN VIEW OF EURO ADOPTION. A MULTIDIMENSIONAL ANALYSIS

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Abstract: *The aim of this paper is to conclude whether the adoption of the single currency induced a trend of structural resemblance, and if so, to determine groups of countries with similar fiscal structures inside the Euro Area. Taking into consideration total revenues, indirect taxation, direct taxation and social contributions, we analyzed primary data and completed it with multidimensional classification. Having in view Romania's objective of adopting Euro currency we aim to establish to which subgroup is Romania more similar in terms of fiscal structure and whether this resemblance enhanced since the accession to the European Union.*

Keywords: total revenues; indirect taxation; direct taxation; cluster analysis; Euro Area; Romania.
JEL Classification: C38; E62; H71.

INTRODUCTION

The main objective of the European framework for fiscal policies regards monitoring budget deficits and government debt in the MS (MS), in order to maintain a balanced budgetary position that will not affect the economic activity of other states. Provisions for common rules for fiscal policy were introduced into European law by the Treaty of Maastricht, which was established as a basis element of preparation for achieving economic and monetary union, and were further completed by the provisions of the new European economic governance. Through these provisions, MS retain sovereignty regarding fiscal policies, but their autonomy was limited by the convergence criteria, in view of Euro adoption and of stability criteria, afterwards. Therefore, the differences in fiscal structures between Euro Area MS can be significant, as countries have different taxation levels, different collecting capacity, different needs and, therefore, different results. However, these countries maintain numerous similarities and, in some cases, the gap began to narrow.

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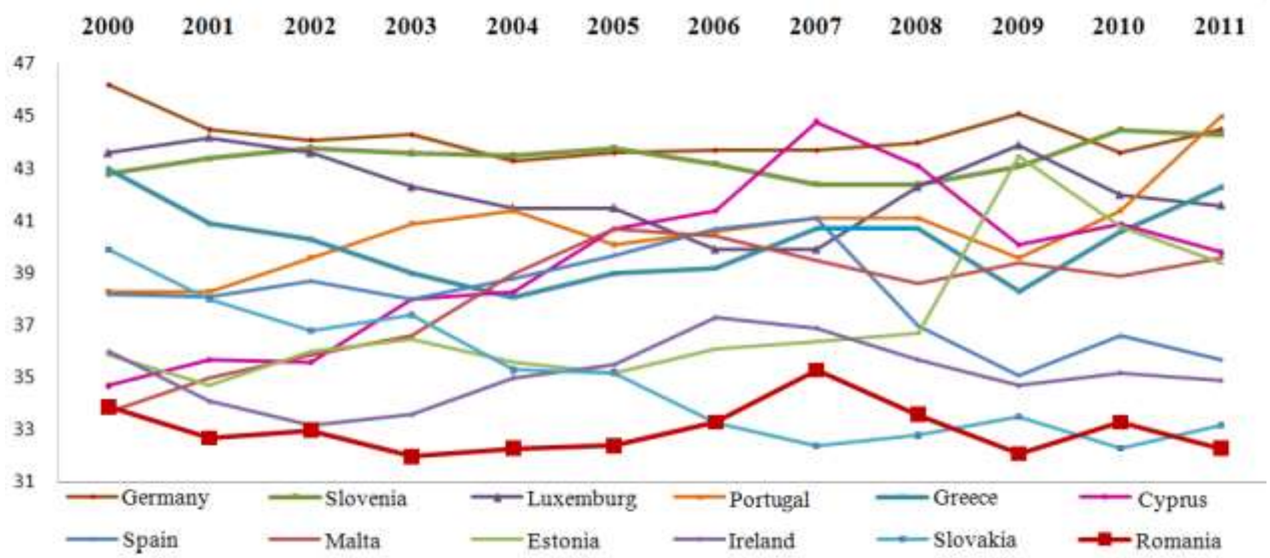
1. PRIMARY DATA ANALYSIS

In order to present an overview of Euro Area fiscal structures, we have analyzed data regarding total revenue, direct taxation, indirect taxation and social contribution for all Euro Area MS, during 2000-2011, with emphasis on level, structure and trends.

1.1. Total revenues

In the Euro Area, national total revenues range from 30% GDP to 50% GDP. The countries that registered the lowest shares of total revenues in GDP are Slovakia, Ireland, Spain, Malta, Estonia and Cyprus (the average of total revenues, during 2000-2011, is of about 40% of GDP). Greece, Portugal, Luxembourg, Slovenia and Germany cashed, on average, public revenue of 40-45% of GDP during 2000-2011. Compared to Euro Area countries, Romania has the lowest share of total revenues in GDP. Only during 2007-2008, Slovakia recorded less revenue (% GDP) than Romania, which indicates a low level of taxation in Romania, but raises questions on the revenue collection capacity.

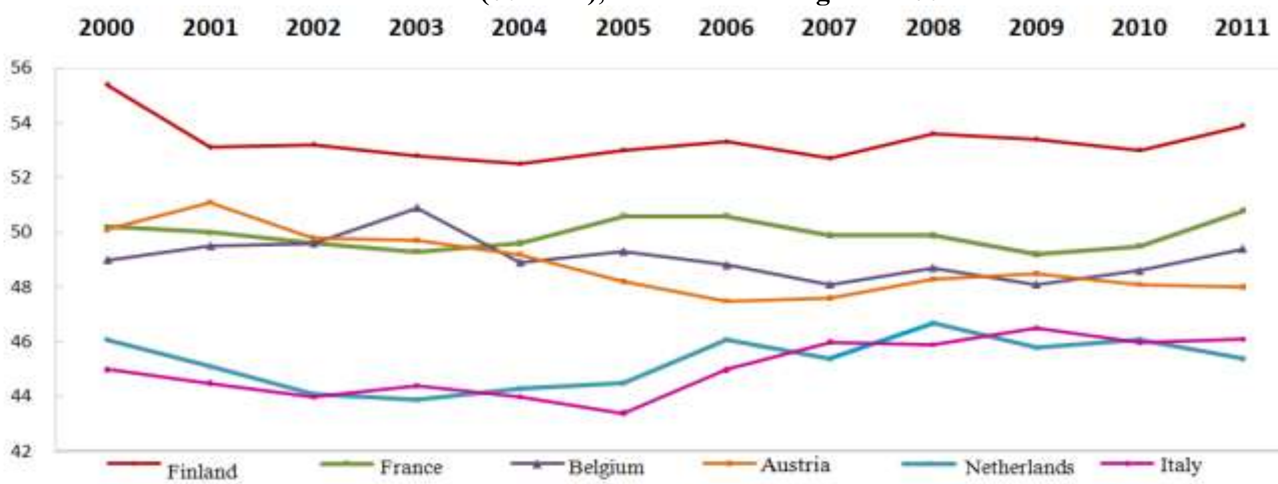
Figure 1 - Dynamics of total revenues in Romania and Euro Area MS, during 2000-2011 (%GDP)
a. total revenue (% GDP), 2000-2011 average ≤ 45% GDP



Source: EUROSTAT, own calculation

During the analyzed period, Cyprus, Greece, Estonia and Ireland showed strong fluctuations. Greece had a downward trend during 2000-2004, when total revenues decreased from 43% to 38.1% of GDP. Since 2004 the share of revenues in GDP rose up to 40.7% (level registered during 2007-2008). The economic crisis has induced a significant decrease of 2.4 percentage points, but in 2009 the share of revenue increased to the 2000 level, probably due to lower GDP. Cyprus had registered a significant increase during 2000-2007 from 34.7 to 44.8% of GDP, followed by a sharp drop to 2009 (40.1% of GDP). Slovakia's total revenue was on a downward trend, from 39.9% of GDP in 2000 to 33.2% of GDP in 2011. Estonia recorded in 2009, a substantial increase of almost 7 pp, reaching 43.5% after that, in 2011, total revenues decreased to 39.4% of GDP, a share that is nevertheless higher than the one registered during the period before the crisis.

Figure 1 - Dynamics of total revenues in Romania and Euro Area MS, during 2000-2011 (%GDP)
b. total revenue (% GDP), 2000-2011 average > 45% GDP



Source: EUROSTAT, own calculation

During 2000-2011, Finland registered the highest ratio of public revenue, with an average of total revenues relative to GDP of 53.3%. It was followed by France, Belgium and Austria, which recorded average total incomes of nearly 50% GDP. Netherlands and Italy also had a high tax, over 45% of GDP.

1.2. Indirect taxation

The Euro Area MS that are heavily dependent on indirect taxation are: Cyprus, Estonia, Greece, Italy, Portugal, Malta and Slovenia. During 2000-2011 public revenues collected through indirect taxation in Euro Area MS ranged from 8.8% to 18.5% of GDP. The states that received the most income from indirect taxation are: Cyprus, France, Austria and Slovenia. At the opposite pole are Spain, Slovakia, Germany and Ireland. In most Euro Area MS, the level of public revenues from indirect taxation declined due to the crisis, as the average during 2008-2011 was below the average of the period 2000-2007. Exceptions are: Cyprus, Malta, Estonia and Germany. These countries had, on average, more income from taxes on goods and services during the crisis than in the past.

Indirect taxes consist of taxes on products and other taxes on products, of which the main source of income is the first group, composed of VAT type taxes, Taxes and duties on imports excluding VAT and taxes on products, except VAT and taxes imports (according to ESA 95 Methodology). VAT revenues reach, in Euro Area average, 30% of total fiscal revenues. The differences between Euro Area MS are reveled regarding this aspect also, as in 7 out of the 17 MS VAT revenues count for more than 30% of fiscal revenues. In countries as Slovakia and Estonia VAT revenues exceeded 40%, while in 4 countries (as Italy and Spain, in 2009) the share of revenue collected from VAT in total tax revenues was below 25%. Regarding the VAT rate, the analysis for the period 2000-2011 reveals two distinct trends. Before the economic crisis, most countries had attempted to reduce value added tax, but in the acute period of the crisis, and afterwards, in order to collect more revenue for overall budgets, many MS have increased VAT (as Estonia, Portugal, Greece and many others). The reason was, in most of the states, the need to increase budgetary resources and to cover costs, indirect taxation being the easiest tool to use, with more chances to meet the increased collection objective, compared to other types of tax.

1.3. Direct taxation

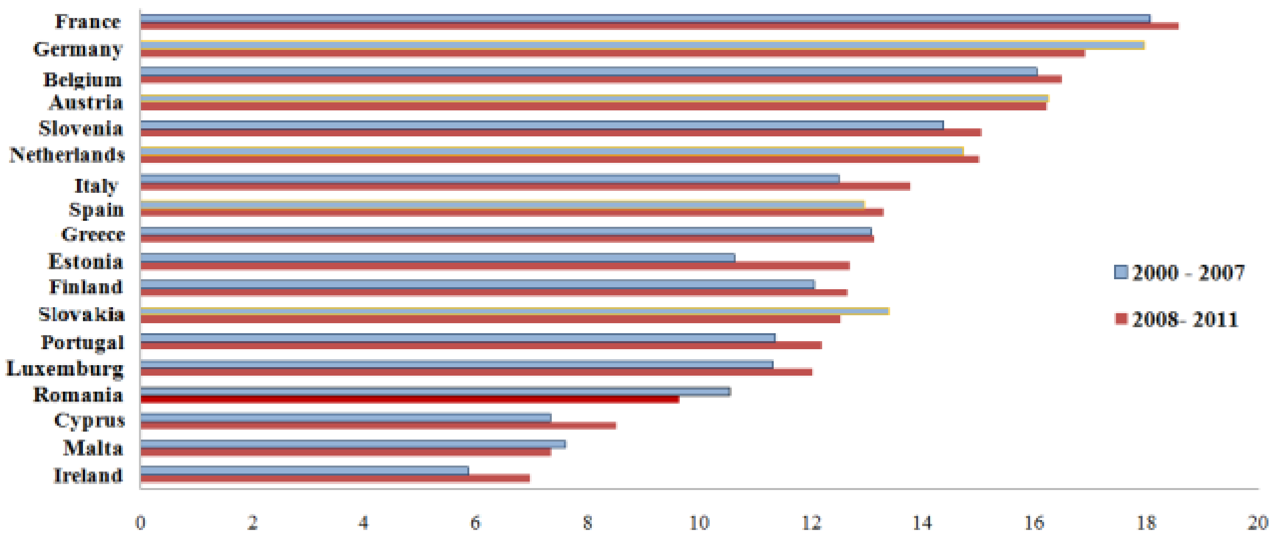
Euro Area MS that rely primarily on direct taxation are Belgium, Finland, Ireland and Luxembourg. During 2000-2011 direct tax revenues were in the range of 5.3%-21.1% of GDP. The states that collected the most from direct taxation are: Finland, Belgium, Italy, Luxembourg and Estonia. At the opposite pole are Slovakia, Greece, Slovenia, Portugal and Spain. Also, Romania is very close to the minimum of Euro Area regarding direct taxation. The crisis has reduced revenues from taxes on income, profits and capital gains in Slovakia, Greece, Spain, Ireland, Austria and Belgium. In other Euro Area MS, and also in

Romania, direct tax revenues have increased, on average, in the period 2008-2011 compared to the average of the period 2000-2007.

1.4. Social contributions

Austria, France, Germany, the Netherlands, Slovakia and Spain are the Euro Area MS that rely primarily on social contributions. They have as well the largest share of social contributions in total revenues collected for general budgets (Figure 2).

Figure 2 - Dynamics of average social contributions in Euro Area MS and in Romania (%GDP)



Source: EUROSTAT, own calculation

Overall, during 2000-2011, the degree of social tax is between 5.6% and 18.8% of GDP. It is easily noted that, during 2008-2011, in the context of the economic crisis, the average revenue received from social contributions increased in most states, compared with the average of the period 2000-2007. Exceptions are Malta, Romania, Slovakia, Austria and Germany. Reduced level of revenue from social contributions, below 10% GDP was registered in Romania, Cyprus, Malta and Ireland, mainly due to the low level of social taxes compared to other European states.

2. SCORING ANALYSIS

Since the primary analysis of the tax systems of the Euro Area MS revealed many similarities but also significant differences, we used scoring analysis to group tax systems, taking into consideration standard deviation.

In order to group as correct as possible Euro Area MS depending on the structure of public revenues, and to, subsequently, compare Romania with the group of states that appear to be similar, we assigned scores from 1 to 17 for total revenue, direct tax revenues, indirect taxation and social contributions, with 1 being the lowest, 17 being the highest. Grouping was performed taking into account the deviation score obtained by each country to the average.

Table 1 - Results of scoring analysis for Euro Area MS and Romania

Country	Deviation	
Slovakia	**-25**	
Ireland	**-20**	**Romania**
Spain	**-18**	
Greece	-8	
Malta	-6	
Portugal	-6	
Luxemburg	-5	
Estonia	-3	
Cyprus	-2	
Slovenia	-1	
Germany	1	
Netherlands	2	
Italy	**16**	
Belgium	**17**	
Austria	**18**	
France	**20**	
Finland	**20**	

Source: EUROSTAT, own calculation

Classifying the Euro Area MS according to the structure of public revenues shaped the existence of three groups of countries (Table 1). The first group, consisting of Slovakia, Ireland and Spain, is specific for states in which revenues from indirect taxation, direct and social contributions are well below the Euro Area average, as their distance from the average is very high.

The second group of countries is the largest and consists of: Greece, Malta, Portugal, Luxembourg, Estonia, Cyprus, Slovenia, Germany and the Netherlands. In these countries total revenues and revenues from the three main categories of taxes are close to the Euro Area average variation from the mean being in the [-8, 2] range.

Italy, Belgium, Austria, Finland and France form a particular group of countries, for which the deviation is positive and very large. This highlights the main feature of this group of countries: high taxes and income from indirect taxation and social contributions above the Euro Area average.

Applying the same procedure for Euro Area MS and Romania, assigning scores from 1 to 18, group composition remained unchanged, while Romania has proved to be similar to the first group of countries, consisting of Slovakia, Spain and Ireland.

3. MULTIDIMENSIONAL ANALYSIS

As the primary data analysis revealed many differences between Euro Area MS that were highlighted by the scoring analysis as being in the subgroup, we considered necessary to complete the study with the multidimensional analysis of the fiscal structures. Therefore, we used cluster analysis to classify tax systems into subgroups based on common characteristics, with the aim of achieving a more appropriate division of fiscal structures.

3.1. Literature review

Multivariate statistical analysis methods, including cluster analysis, have been previously used to identify subgroups within the group of OECD countries with similar tax structures in order to explore the impact of globalization on the structure of taxation in 21 OECD countries over the period 1965-2003 (Kubatova, Vaneurova and Foltysava, 2008). Based on the hierarchical method, the analysis confirmed that the structures of OECD countries approached gradually under the pressure of globalization. The influence of globalization on the fiscal system was applied by Heinemann (1999) that took into consideration also other dimensions as public spending, debt, and the total revenues in OECD countries. The importance of his results relies on the fact that it confirms a trend of convergence of tax systems regarding the division into direct and indirect taxes.

Cluster analysis was previously used by Peters (1991) in order to group 22 OECD countries, according to their tax systems, taking into account the proportion of each type of tax in total revenue. The result consists of four groups of countries that are still used today, as follows: English-speaking countries, Scandinavian countries, Latin countries and states with a broad tax base and total tax revenue estimated at the average of the OECD countries.

European countries were grouped through the multidimensional classification method by Kemmerling (2003), while Bernardi studied the OECD countries (2003). The analysis of European countries for the period 1970-1997, conducted by Bernardi (2003) highlighted four groups: Northern states, with high tax burden, countries that recorded a tax burden higher the EU average, Anglo-Saxon states with tax burden close to the European average and the Mediterranean countries, with tax burden below average. Although Kemmerling (2003) was more focused on the effects of fiscal structure on the evolution of the welfare state, the results obtained can be considered similar. Cluster analysis was also used to test Romania's and other Eastern European Countries' convergence with Euro Area, this method being useful for testing the degree of nominal and real convergence (Miron, Dima and Paun, 2009).

European Union MS were classified into subgroups based on common aspects by Delgado (2009) and Brasoveanu (2009). Taking into consideration fiscal burden and structure, Delgado (2009) grouped EU 15 MS in five clusters, as follows: 1- Belgium, Finland and Sweden; 2- Greece and Portugal; 3- Ireland and the United Kingdom; 4- Denmark, while the fifth cluster contained all others. Denmark was also kept in a separate cluster also by Brasoveanu (2009), that used cluster analysis for years 1995, 2000, 2006 and 2009, in order to determine changes in fiscal revenues.

3.2. Methodology

We have considered the structure of tax revenues in the first year of the introduction of the euro currency and annually since 2007, the year of Romania's accession to the European Union. We took into account the following four categories of fiscal variables: total revenue, direct taxes, indirect taxes and social contributions, in two situations, with and without Romania.

We used the hierarchical method, as we considered it to be the most suitable taking into account the number of cases, being also one of the most direct methods of multivariate classification. We used the range of solution, with possible solutions from 2 of 6, as we started with the idea of differentiation up to the maximum number of clusters found in the literature so far (6). For interpretation we used the classification tree and agglomeration schedule showing the combinations for each iteration. For all years under review all 17 and respectively 18 (when Romania was included) cases taken into consideration were valid.

3.3. Cluster analysis

The analysis revealed the existence of six clusters during the entire period analyzed. During the analyzed period the number of clusters remained the same, but the composition of each subgroup has changed. The first cluster belongs to countries that have mostly managed to meet deficit targets. These are countries where the tax burden is high (Austria, Belgium, and France). An exception is Luxembourg, which is below the Euro Area average in this respect. Finland and Austria had the highest levels of financial resources, followed by France and Belgium.

Table 2 - Cluster composition in 1999, 2007, 2008, 2009, 2010 and 2011

1999	2007
C1: Austria, France, Germany, Netherlands C2: Belgium, Finland C3: Cyprus, Malta, Ireland C4: Estonia, Spain, Portugal C5: Greece, Slovenia, Slovakia C6: Italy, Luxemburg	C1: Austria, Belgium, France, Germany, Italy, Netherlands C2: Cyprus C3: Estonia, Ireland, Malta C4: Finland C5: Greece, Luxemburg, Portugal, Spain, Slovenia C6: Slovakia, **Romania**
2008	**2009**
C1: Austria, Belgium, Italy, France C2: Ireland, Malta, Cyprus C3: Slovakia, **Romania**, Estonia, Spain C4: Finland C5: Germany, Netherlands, Luxemburg C6: Greece, Slovenia, Portugal	C1: Germany, Netherlands, Austria, Belgium, France C2: Cyprus, Malta, Ireland C3: Estonia, Italy, Luxemburg C4: Finland C5: Greece, Portugal, Slovenia C6: Slovakia, **Romania**, Spain
2010	**2011**
C1: Austria, Belgium, Italy, Netherlands C2: Estonia, Luxemburg, Cyprus, Malta C3: Finland C4: Germany, Slovenia, France C5: Greece, Portugal, Spain C6: **Romania**, Slovakia, Ireland	C1: Austria, Belgium, Italy, France C2: Cyprus, Malta, Estonia, Luxemburg C3: Finland C4: Germany, Netherlands C5: Ireland, Greece, Slovenia, Portugal C6: **Romania**, Slovakia, Spain

Source: Own calculation

The first cluster consists of countries with high level of taxation, above the Euro Area average. Cluster 2 is comprised of countries that rely mainly on indirect taxation. Since the adoption of the single currency, Finland formed a separate cluster, due to the very high level of taxes, total revenue being over 50% GDP. The first and third clusters belong to countries that have mostly managed to meet deficit targets (2011). These are countries where tax burden is high (Belgium, Austria and France). Cluster 4 is typical for states with total revenues slightly above average, reduced indirect taxation and high social contributions (year 2011). The last two clusters are specific to countries with lower shares of total revenues in GDP that have a low tax burden, as Slovakia and Ireland. Cluster 5 includes states with excessive deficits like Greece, Ireland, and Portugal. Moreover, Greece and Portugal have proved to be similar in many aspects. The similarity between the Mediterranean countries confirms the result obtained by Bernardi (2003). Spain, however, has gradually differentiated from Portugal, becoming closer to Slovakia. Cluster 6 is specific for countries that have collected less revenue from taxes on income, profits and capital gains.

The analysis highlighted similarities between Romania and Slovakia in the structure of tax systems. One of the reasons for which both were part of the same cluster during 2007-2011 is the low level of total revenues collected from general budgets. Also, Cyprus and Malta had similar developments. The difference is in 2007 when Cyprus registered high total revenues compared with the previous and with that later). Since 2010, Ireland, that was previously in was in the same group as Cyprus and Malta, began to distinguish from the others.

The analysis conducted for the period between 1999 and 2009 revealed changes in the structure of clusters, indicating a trend of changing taxation in the MS of the Euro Area. Regarding the structure of taxation and its division into direct and indirect taxes can not conclude on the formation of a cluster solely on this criterion. It is thus highlighted the importance of a multidimensional analysis that not only takes into account many variables but gives more complete and relevant results than the primary analysis.

CONCLUSIONS

The multidimensional analysis of tax systems showed reduced changes, but indicates a trend of changing taxation and structural convergence. During the analyzed period, the number of clusters remains the same, but subgroups have changed, some countries becoming more similar to their cluster members. Regarding the structure of taxation and its division into direct and indirect taxes can not concluded on the formation of a cluster solely on this criterion.

The comparative analysis for the years 1999 and 2009 revealed changes in structure of the clusters, therefore it can be stated that since the adoption the single currency, Euro Area MS became more similar in terms of fiscal structure. Applying scoring analysis for Euro Area MS and Romania, assigning scores from 1 to 18, the composition of the groups remained unchanged (being the same as for the 17 Euro Area MS) and Romania proved to be similar to one group of countries, consisting of Slovakia, Spain and Ireland. The results emphasize the low capacity of Romania in influencing the composition of the subgroups, but underline however the fact that Romania can easily be assimilated to one of the clusters. Moreover, the analysis enhances the results obtained through the multidimensional analysis, according to which Romania, Slovakia and Spain became more similar since Romania’s accession to the European Union. These similarities with these Euro Area MS are worth taking into consideration, given Romania's objective of adopting the European currency.

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