Economic freedom in Europe

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Abstract. The fiscal analysis is an important research topic, aiming at identifying/creating fair fiscal systems, which can respond to requests coming from both the state (which needs revenue to finance various public projects) and from taxpayers. The economic agents, but also the taxpayers will always want a reduction of the taxes, and the public decider aims to increase the revenues attracted to the budget through (higher) taxes. An optimal tax system could be characterized by taxes that produce minimal effects of distorting the behavior of taxpayers, as well as a positive impact on the development of society.

Keywords: Fiscal analysis, Economic freedom, Multivariate Analysis.

Introduction

The soundness of the fiscal system and the optimal allocation of budgetary resources for development represent the coordinates of a country's sustainable socio-economic development policy. Taxation is not the only source of revenue for the state budget, but public investments do not ensure a sustainable development of the company, the business environment being both a contributor to the fiscal system, but also a designer of the dynamics of the company through investments that they promote for the development of their own businesses.

Redistribution is an important function of the tax system, the tax system can

contribute to reducing inequalities in a society, by improving the standard of living of vulnerable people. The inequalities encountered in society are real obstacles to human development. Improving the quality of life offers to the members of society various long-term benefits, by stimulating the overall economic development.

An optimal fiscal system implies a minimization of the negative impact of taxation in the economy, with the stimulation of the growth rate. The economic development influences the design of the tax system and the ability of taxpayers to pay their tax burdens. The evolution of the tax systems shows that the last century was characterized by economic development associated with the increase of taxation, with a great diversity of taxation models. Developed countries collect taxes and fees from a larger mass of contributors and the collection rates are higher. It is based more on the taxation of incomes, but it ensures through the public investments or in partnership, the infrastructure necessary to facilitate the development of the business environment. The less developed countries rely more on the taxation of the movement of goods (commercial taxes) and on consumption taxes, the collection rate is lower and the sources for supporting public investments associated with sustainable development are below the national needs.

The standard economic approach of the fiscal-development relationship focuses on how the changes occurring within the economy influence the evolution of the fiscal system. The changes to the tax system reflect structural changes in both the business environment and the tax patterns.

In the historical evolution of society, prosperity has represented a perennial objective, as well as freedom. Economic freedom, as a fundamental right, expressed by the IEF composite index (Index of Economic Freedom, developed by The Heritage Foundation, Washington's No. 1 think tank.) combines in one measure 12 categories of freedoms, from freedom of property to financial freedom - the freedom of individuals to work, produce, consume and invest according to their own decision; freedom of movement of labour, capital and goods, insofar as they do not affect the freedom itself. For 2 and a half decades this index measures performance in promoting and ensuring economic freedom and allows comparative analysis between countries and highlighting progress. A free economic society is associated with a healthy, environmentally and friendly society, concerned with the accumulation of wealth and human development, a society that promotes democracy and the fight to eradicate poverty. Developed on 4 piling, the index of economic freedom includes government spending, fiscal burden and fiscal health within the pylon "the dimension of governance".

The Economic Freedom Index is a useful tool that currently allows the analysis of 186 economies from all over the world, also facilitating country analyzes, regarding development, this index representing an analysis of political and economic developments. The 12 indices on economic freedom and their evolution also offer a comprehensive set of principles and facts for those who want to understand the fundamentals of economic growth and prosperity.

Literature review

Using institutional theory, Heritage Foundation/Wall Street Journal 2003 Index of Economic Freedom and the 2002 Global Entrepreneurship Monitor, Mullen et al (2008) analyze entrepreneurial activity motivated by opportunity and entrepreneurial activity motivated by necessity, using 10 factors of economic freedom and Gross Domestic Product (GDP/capita) per 37 countries. The results showed that both the entrepreneurial activity motivated by the

opportunity and the entrepreneurial activity motivated by the necessity are negatively correlated with the GDP per capita and positively correlated with the freedom of work. Other factors of economic freedom are unique in necessity-driven entrepreneurship and opportunity-driven entrepreneurship. More precisely, we find that entrepreneurial activity motivated by opportunity is positively correlated with property rights, while entrepreneurial activity motivated by necessity is positively correlated with fiscal freedom and monetary freedom. Thus, governmental restrictions on economic freedom seem to affect entrepreneurial activity differently, depending on the particular freedom restricted by the government and the reason for the entrepreneur to engage in entrepreneurial actions.

Most studies on the relationship between economic freedom and GDP growth have shown that there is a positive relationship between them. The problem regarding economic freedom is the way of reflecting the economic freedom. A single measure does not reflect the complex economic environment, and a strong aggregate index makes it difficult to draw political conclusions. Carlsson and Lundström (2002) investigated which specific types of economic freedom measures are important for growth. One of the effects of index decomposition is the potential problem with multicollinearity. The results showed that economic freedom influence the growth, but this does not mean that economic freedom growth implies an economic growth, because some of the components of the index are insignificant, and some of the significant variables have negative effects.

Ockey (2011) explores whether different forms of economic freedom determine fiscal performance. It also establishes which specific measures of economic freedom have the most important statistical effects. The results of the analysis show that economic freedom has an impact on GDP per capita. Because some indices of economic freedom have negative effects on GDP per capita or are not statistically insignificant, increasing the level of economic freedom of a country will not necessarily stimulate economic growth or increase fiscal performance.

The tax behavior of taxpayers in a state that wants economic development is a topic of major importance. The fiscal system is one of the main instruments by which a state exercises sovereignty by collecting, allocating and redistributing the revenues, in order to the given territory. In order to highlight how the characteristics of tax systems, human development and the effectiveness of government actions affect the economic environment and, consequently, the behavior of taxpayers in the Member States of the European Union, panel data analysis was used, using a number of independent variables (fiscal freedom, government, efficiency, human development index) and tax evasion as a dependent variable. The study has 3 econometric models that analyze the influences involved and analyze indicators from the 28 member states of the European Union during the period 1999-2010, and the results show that there is a connection between these variables (Dronca, 2016).

Methodology

The analysis of the fiscal system related to the Index of financial freedom was performed using the analysis of the main components. The fundamental principle of this method is to extract the smallest number of components to reflect as much as possible of the total information contained in the original data, these new components expressing new attributes of individuals and constructed so that they are not correlated with each other, each of these new variables being a linear combination of original variables (Giannelloni and Vernet, 2001).

This method provides a graphical visualization of the map of the individuals, respectively of the countries, according to the similarities between them and of the variable map. Although the base of this method is the same as for factorial analysis, the analysis in main components differs by defining the elements of the initial data table and the way of calculating the distances between points. As a descriptive method of data analysis, it can be applied only to quantitative variables and large tables that contain information on more than 15 individuals and 4 variables. Another characteristic that differentiates it from the factorial analysis is the modality of terms transformation (Pintilescu, 2003).

The objectives pursued by an analysis of the main components are (Baccini, 2005):

- the "optimal" graphical representation of individuals, minimizing the deformation of the cloud of points, in a sub-space E_q dimensions q ($q < p$);
- graphical representation of variables in a sub-space F_q , best explaining the initial links between these variables;
- size reduction, i.e. approximation of table X through a table q ($q < p$).

Results

To analyze the fiscal system in Europe, the Index of Economic Freedom, Property Law, Government Integrity, Judicial Effectiveness, Tax Burden, Government Expenditure, Fiscal Health, Freedom of Business, Freedom of Work, Monetary Freedom, Freedom of Commerce, Freedom of Investment and Financial Freedom were analyzed. All indicators register values in Europe higher than half of the scale, the lowest values being recorded for governmental integrity and judicial efficiency. The averages for these indicators are representative, the deviations are small, this implies a homogeneity of the countries of Europe regarding economic freedom.

Figure 1. Map of the Economic Freedom Index, Europe, 2019

Source: <https://www.heritage.org/index/heatmap>

As can be seen from the graph, the North and West Europe registrant very high values for economic freedom, and the East registrant very low values.

Figure 2. Map of the Economic Freedom Index, Europe, 2019

Note: 100% is the most favorable situation

Source: database <https://www.heritage.org/index/visualize?cnts=romania&type=3#top>

From temporal perspective, the values for economic freedom are decreasing, one of the causes being the reduction of the health of the fiscal system and the deterioration of the freedom of the market actors - employees and business environment. Although, in evolution it is estimated that the tax burden has been reduced, it registrant high rates. Romania's position indicates a moderate economic freedom with an index of 68.6, in the same group with Bulgaria (69.0), and before countries such as Poland (67.8), Belgium (67.3), Spain (65.7), Slovenia (65.5), Hungary (65.0) or France (63.8).

Economic freedom is a complex phenomenon and cannot be quantified or described by a single indicator due to its multidimensionality, in order to be studied it is necessary to use a relatively large number of indicators. In the study of the Economic Freedom Index, the primary indicators are quantitative statistical variables that are not independent and we cannot say that they overlap. This results from the simple fact that all primary indicators concern aspects of reality. The effect of partial overlays can only be a redundant information contained in the variable system.

The reduction of the number of variables initially proposed can be achieved using multidimensional analysis - factorial analysis. In this way, are determined factors, but also are established mathematical relationships that determine the connection between the initial variables and factors, with the property that reproduce the information given by the variables initially established. Basically, due to the factor rotation method, using Hotelling's method, the solution generated by applying factor analysis is one of a myriad of existing solutions.

Correlation Matrix data analysis gives us information about correlation coefficients and at the same time helps us avoid multicollinearity and identify any variables that can be eliminated later in the analysis. We determine strong correlations between: government integrity, judicial effectiveness and ownership; government spending and fiscal burden;

freedom of investment and financial freedom.

We can consider the model valid due to the value of 0.821 (value close to 1) of the KMO test and the level of seriousness of Bartlett's (413.985, Sig = 0.000), and the four extracted factors explain 84.1% the variance of the twelve variables.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.821
Bartlett's Test of Sphericity	Approx. Chi-Square	413.985
	df	66
	Sig.	.000

Source: Authors' own research (SPSS®).

The 12 variables were grouped into four factors with eigenvalues greater than 1, as follows (Extraction Sums of Squared Loadings):

- factor 1 explains 47.30% of the variance of the included variables;
- factor 2 explains 16.28% of the variance of the included variables;
- factor 3 explains 12% of the variance of the included variables;
- factor 4 explains 8.82% of the variance of the included variables.

In the context of the initial factorial solution, without rotation, the factors explain 84.41% of the variance of the analyzed values, the difference of 15.6% remaining unexplained by this factorial model.

Table 2. Total Variance Explained (before and after rotation axes)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.676	47.302	47.302	5.676	47.302	47.302	3.636	30.301	30.301
2	1.954	16.283	63.585	1.954	16.283	63.585	3.617	30.140	60.441
3	1.440	11.999	75.584	1.440	11.999	75.584	1.735	14.457	74.897
4	1.059	8.824	84.408	1.059	8.824	84.408	1.141	9.511	84.408
5	.573	4.774	89.183						
6	.358	2.986	92.169						
7	.296	2.469	94.638						
8	.210	1.752	96.390						
9	.180	1.501	97.890						
10	.123	1.022	98.912						
11	.079	.657	99.569						
12	.052	.431	100.000						

Extraction Method: Principal Component Analysis.

Source: Authors' own research (SPSS®).

After axes rotation (Rotation Sums of Squared Loadings) we notice that the difference between the values of the factors has narrowed, and the first two factors best explain the variance of the variables included, having the highest values:

- factor 1 explains 30.30% of the variance of the included variables
- factor 2 explains 30.14% of the variance of the included variables;
- factor 3 explains 14.46% of the variance of the included variables;

- factor 4 explains 9.51% of the variance of the included variables.

As it can be seen, from the analysis of the four factors, a redistribution of the variance explained by each factor occurs, factor 1 loses saturation in favor of the other three factors. Basically, the value of the saturations for each factor is changed, respecting that the value of the total variance remains unchanged.

Factor analysis applied to the index of economic freedom, considering each variable a factor, the representation of the 12 factors reflects that the first four components are the highest.

The graphical method is also used to determine the number of components. Thus, using the chart values, scree Plot can retain three or four components, the final decision was influenced by the cumulative proportion of variance explained.

Figure 3. Diagram of values, graphical representation of the 12 variables

Source: Authors' own research (SPSS®)

The structure of the Rotated Component Matrix is very useful for interpretation, especially if we consider the fact that it offers a better "view" on the indicators used in the analysis. The solution is obtained after 6 iterations. From the total number of variables, so many components can be extracted, each own value representing the part of variance explained by the respective component. Depending on the saturation values corresponding to each variable, we identify the factors. Before rotating the factors, we observe that Factor 1 is the most important factor contributing to the process of social inclusion. This is strongly correlated with 5 of the observed variables:

- property rights - with a saturation of 0.938;
- government integrity - with a saturation of 0.899;
- freedom of investments - with a saturation of 0.841;
- judicial effectiveness - with a saturation of 0.841;
- financial freedom - with a saturation of 0.806.

As can be seen from the Extraction Sums of Squared Loadings, the contribution of the other factors explaining the variation of the variables is much smaller.

Table 3 – Component matrix (before and after factor rotation)
Component Matrix^a

	Component			
	1	2	3	4
property_rights	.938			
government_integrity	.899			
investment_freedom	.841			
judicial_effectivness	.841			
financial_freedom	.806			
tax_burden	-.711	.475		
trade_freedom	.691	.457		
monetary_freedom	.608	.570		
business_freedom	.607		.498	
government_spending	-.417	.620	.464	
fiscal_health			.466	.804
labor_freedom		.485	.495	-.520

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Source: Own projection, using SPSS

Rotated Component Matrix^a

	Component			
	1	2	3	4
investment_freedom	.876			
trade_freedom	.871			
monetary_freedom	.864			
financial_freedom	.839			
business_freedom		.914		
judicial_effectivness		.889		
government_integrity		.855		
property_rights	.536	.760		
labor_freedom			.798	
government_spending			.739	
tax_burden		-.526	.667	
fiscal_health				.936

Extraction Method: Principal Component Analysis. Rotation

Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Source: Own projection, using SPSS

Source: Authors' own research (SPSS®).

Regarding Factor 2 we consider:

- government spending - with a saturation of 0.620,

while for Factor 4:

- fiscal health - with a saturation of 0.804;

The factors are named according to their effect on the observed variables. Obviously, after the rotation of the factors, their saturation on the variables will change, which can lead to the modification of their interpretation, the new results obtained being presented in the following table:

Table 4 – Factor identification after the factor rotation operation

Factor	Variable	Saturation	Factor identification
1	freedom of investments	0.876	Financial context
	Trade freedom	0.871	
	monetary freedom	0.864	
	financial freedom	0.839	
2	freedom of business	0.914	The political context
	judicial effectiveness	0.889	
	the integrity of the government	0.855	
3	freedom of work	0.798	
	government spending	0.739	
4	fiscal health	0.936	The fiscal health context

Source: Authors' own research (SPSS®).

From the results displayed in the Component Transformation Matrix we observe that the strongest correlation is between Factor 1 and Factor 2.

Table 5 – Component Transformation Matrix

Component	1	2	3	4
1	.687	.702	-.187	.024
2	.622	-.446	.629	.135
3	-.371	.522	.650	.408
4	.057	-.188	-.383	.902

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Source: Authors' own research (SPSS®).

Figure 4. Graphical representation of the 12 variables

Source: Authors' own research (SPSS®)

In order the size reduction to make sense, it is necessary to have strong correlations between the variables, otherwise they will be excluded from the analysis. The same is valid for very strong correlations in order to avoid the extremely singular situation of perfectly correlated variables. If we eliminate from the analysis the fiscal health, the freedom of business and the freedom of work, the following results are obtained:

Table 6. KMO and Bartlett's Test**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.824
Bartlett's Test of Sphericity	Approx. Chi-Square	360.073
	df	36
	Sig.	.000

Source: Authors' own research (SPSS®).

Following the data processing it is observed that we obtain two factors different to previous situation, the 10 being grouped as follows (Extraction Sums of Squared Loadings/Rotation Sums of Squared Loadings):

- Factor 1 initially explains 59.28% of the variance of the included variables, and after the rotation of the factors 41.21%;

- Factor 2 explains 18.23% of the variance of the included variables, and after rotating the factors 36.30%;

Table 7. Total Variance Explained (before and after rotation axes)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.335	59.279	59.279	5.335	59.279	59.279	3.709	41.208	41.208
2	1.641	18.232	77.511	1.641	18.232	77.511	3.267	36.303	77.511
3	.897	9.967	87.478						
4	.382	4.245	91.722						
5	.274	3.049	94.772						
6	.197	2.191	96.963						
7	.128	1.421	98.384						
8	.092	1.027	99.411						
9	.053	.589	100.000						

Extraction Method: Principal Component Analysis.

Source: Authors' own research (SPSS®).

In the context of the initial factor solution, without rotation, the factors explain 77.51% (less than the initial case) of the variance of the analyzed values, and the difference of 22.49% remains unexplained by this factor model. Following the redistribution of the variance explained by each factor, factor 1 loses from the saturation in favor of factor 2.

The value of the saturations for each factor changes as long as the value of the total variance remains unchanged.

Table 8. Component Transformation matrix

Component	1	2
1	.748	.664
2	.664	-.748

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Source: Authors' own research (SPSS®).

Figure 5. Diagram of values, graphical representation of the 12 variables

Source: Authors' own research (SPSS®)

Table 9 – Component matrix (before and after factor rotation)

Component Matrix ^a			Rotated Component Matrix ^a		
	Component			Component	
	1	2		1	2
property_rights	.920		investment_freedom	.879	
government_integrity	.869		financial_freedom	.853	
investment_freedom	.868		trade_freedom	.842	
financial_freedom	.833		monetary_freedom	.842	
judicial_effectivness	.801		tax_burden		-.860
trade_freedom	.727	.448	government_spending		-.790
tax_burden	-.718	.513	government_integrity	.465	.785
monetary_freedom	.645	.541	judicial_effectivness		.762
government_spending	-.428	.676	property_rights	.603	.706

Extraction Method: Principal Component Analysis.
a. 2 components extracted.
Source: Own projection, using SPSS

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.
Source: Own projection, using SPSS

Source: Authors' own research (SPSS®).

Figure 6. Graphical representation after rotating factors

Source: Authors' own research (SPSS®)

From the graphical representation after the rotation of the factors, we conclude a direct correlation between governmental integrity, judicial efficiency, property law, freedom of investment, financial freedom, monetary freedom, freedom of exchange and government spending, being on one side and the other of the first factorial axis. The only index that has an inverse link with the others is the fiscal burden that lies on the opposite side of the second factorial axis. The correlation between government spending and fiscal burden is strong, the Pearson correlation coefficient being 0.744.

Figure 7. Graphical representation of countries in the axis system

Source: Authors' own research (SPSS®)

Romania's position indicates a moderate economic freedom, registering a value of 68.6, in the same group, with Bulgaria (69.0), and before countries such as Poland (67.8), Belgium (67.3), Spain (65.7), Slovenia (65.5), Hungary (65.0) or France (63.8).

Conclusions

The present paper aims to analyze the role of taxation in supporting sustainable development and identifying mechanisms and tools of policies that allow a redefinition/modernization of tax systems, in order to increase their efficiency, as a first step in substantiating the fiscal optimum. Without solving the problem, the analyzes carried out some clarifications and/or consolidation of some experts' opinions on the future of the fiscal models in relation to the specific attributes of today and tomorrow, the externalities generated by the tax system in relation to contributors and the degree of mass expansion contributors.

As future research directions, the need for a solid prior analysis of the substantiation of the measures of the legislative fiscal reform and the identification of the development gaps, based on the identification of the supporting valences through fiscal revenues is detached.

Future research directions refer to detailed analyzes for: establishing the optimum taxation; determining the impact of taxes on the branches of the economy; reducing the level of tax evasion; the concept of e-taxation for the case of Romania; comparative analysis of the taxation with the fixed rate compared to the progressive one, in the case of Romania and the identification of the advantages/disadvantages compared to the support of the economic growth, social inclusion, social progress etc.

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