

## **Social aspects of the informal economy: evidence from EU countries**

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**Abstract.** *Constantly developing, the informal economy continues to find new areas and directions of expansion, leading states to a position of constant search for solutions to temper it. The agricultural sector, the social one, and the rural areas are analyzed in this paper in relation to the informal economy, for the EU member states (including United Kingdom), between 2004-2020. Results show that both agricultural labor and rural population influence the informal economy. On the contrary, there is an indirect relationship between social benefits and the informal economy. In addition, some concluding suggestions for possible future research areas are proposed.*

**Keywords:** informal economy, social benefits, agriculture, rural sector, panel regression.

**JEL Classification:** A13, C33, E26.

## 1. Introduction

The informal economy (or *shadow economy*, or *underground economy*) is widely believed to be one of the most significant factors that constrain revenue mobilization of a country. Tax revenues are vital when it comes to the sources of funding of states in their economic development. The informal economy may have direct negative effects on the level of tax revenues, and therefore, it is of great interest for the long-term financial sustainability of a state. The informal and formal segments are best understood as complementary, rather than separated.

The paper is structured as follows: the first section summarizes the literature review on the informal economy and its social determinants, the second section contains the data and the methodology, the third section includes the obtained results and their interpretation, the fourth section presents the case of Romania, while the last one discusses the conclusions and limitations of the study.

## 2. Literature review

Hereafter, we will provide a review of existing studies on the informal economy and its social determinants. The existing literature on the informal economy, tax evasion and tax avoidance show that there are two main components for the tax revenue losses in developing countries: a domestic and an international one. As for the domestic component, the informal economy includes tax evasion caused by domestic activities, while the international component covers the base erosion and profit shifting by companies and offshore financial holdings by private persons (Cobham, 2005; Schneider, 2005; Baker, 2005; Schneider et al., 2010). Regarding the domestic component, it is to be analyzed in relation to the agricultural sector, respectively, to the social and rural ones.

The domestic component also includes the social policy of the states and, implicitly, the social benefits that states provide in their public programs. Our literature review investigation on how social policies of a state influence tax compliance shows that this perspective on the society does represent a significant factor when it comes to paying taxes. In this regard, Androniceanu et al. (2019) found that there is interdependence between tax evasion, on the one hand, and social, cultural development, on the other hand. Furthermore, according to Schneider (2017), the areas in which the most recent cases of nondeclaration of work are found are: the construction sector, followed by the agriculture/gardening sector and repairing/selling vehicles.

However, when it comes to rural areas, a controversial subject, this influencing factor must be viewed considering a slower process of human and economic development (La Porta and Schleifer, 2014). People in rural areas are not familiar with the concepts of filing statements online, insofar as they are not connoisseurs of the legislation. For these reasons, the shadow economy is more widespread in rural areas due to low education levels, the community bond, well-established traditions, and the power of informal institutions.

Informality is a long-established tradition among members of rural communities. In rural areas, informal activities are the ones that uphold livelihoods of depleted populations

through natural resources and land-based economic activities such as agriculture, forest harvesting, and mining. However, as states evolved and developed, the practices taken up by people in rural areas began to interface with the measures and rules that urban markets provide. This led to a stage in which obsolete informality rooted in customary practices came to co-exist with formal rules (Weng, 2015).

In close connection with those mentioned above in the previous paragraph, we must also mention the concept of fiscal morality that rural populations have not experienced in customary practices. As for Kubakh (2021), states aim through their agriculture-related legislative regulations to decrease the informal transactions. Furthermore, Williams and Horodnic (2017) consider that to improve the level of the underground economy, improvement of the moral tax among the rural population must also be taken into account. Thus, corroborating the authors' conclusions, both in terms of moral tax and legislative areas, agriculture influences the level of the underground economy.

OECD (2009) provides worldwide data on the informal sector and states that the decision of people to work in the developing world in the informal economy is due both to the fact that they are left out of formal jobs and to the fact that they voluntarily choose not to be part of the official structures. The illegitimate economy is a source of financial support during unemployment periods for those genuinely wishing to participate in the formal economy.

Regarding social terms, the general morale of the tax in a specific country is determined by the citizens' expectations of being beneficiaries of public services (Ali et al., 2014). Therefore, taxes can be seen from the perspective of a relationship between the government and citizens offering the latter quality public services in order to comply with the payment of taxes (Paler, 2013).

### 3. Data and Econometric Methodology

To start with, following the theoretical observations in Section 2, we initiated the study starting from the following working hypotheses stated both on the expectations of the authors and on the conclusions of the literature review undertaken, hypotheses whose confirmation/refutation we will describe in detail.

H<sub>1</sub>: The informal sector is negatively related to the size of *social protection benefits*.

H<sub>2</sub>: The informal sector is positively related to the *rural population*.

H<sub>3</sub>: The informal sector is positively related to *agriculture labor*, in terms of salaried citizens.

Through this approach, the authors bring an innovation to the literature because although social issues related to agriculture and the rural population have been previously addressed in specialized articles, they have not been reflected through the indicators used by the authors. Moreover, based on the searches undertaken by the authors, no articles were found that would analyze these variables in the same equation and for the member states of the European Union of the. Thus, the conclusions to be drawn, as well as the suggestions to be

made, are meant to be of great interest to policymakers who are in a constant search for methods of economic progress and decreasing the size of the informal economy.

In our study, we used a wide range of data that aim at the period 2004-2020, for the 28 EU Member States, including the United Kingdom. For this study, we also considered the United Kingdom, being a country that, although leaving the European Union in 2020, was under the aegis of the same European Union legal framework during the entire aimed period. Our expectation is that this number of observations will allow us to confirm or refute, as the case may be, the hypotheses stated above.

Based on our research and having in mind all the information previously presented, we estimated the following equation:

$$\begin{aligned} InfEco = & Rural\_Pop(-1) + Agri\_Lab(-1) + \log(Soc\_Benefits) + \\ & + Unemp/Gen\_Debt + c \end{aligned} \quad (1)$$

The data on informal economy was provided by Medina and Schneider (2018) for the period 2004-2017 and the data for years 2018-2020 were estimated using the Box-Jenkins method (ARMA (1.1) model). This database provided by the authors has been used in countless studies (i.e., Dronca, 2016; Remeikien et al., 2021), both as a standalone variable representing the underground economy, but also as a proxy for tax evasion. Furthermore, this variable will be interpreted considering both approaches.

In the subsequent Table 1, we will present the dependent variable - informal economy - and the independent variables used, as well as the sources for our database.

**Table 1.** *What are the variables considered?*

Indicator	Meaning	Unit of measure	Source
Informal Economy (InfEco)	It means the parallel economy, including activities of production and provisions of services and goods that are not reported to the competent authorities, including underground activities, informal household, and tax evasion.	% of GDP	Medina and Schneider (2019)
Agricultural labor (Agri_Lab)	This index provides information on income in the agricultural sector. More broadly, it represents the aggregate number of hours worked as an employee or a self-employed person during the calendar year, when the output of this work is included in the output of the agricultural industry.	Index, 2010-100; Salaried Annual Work Units (AWUs)	European Commission (Eurostat).
Rural Population (Rural_Pop)	This indicator is estimated by the World Bank on the basis of the United Nations Population Division's World Urbanization Prospects.	% of the total population;	World Bank
Social protection benefits (Soc_Benefits)	It reflects the total expenditures of a country spent on social protection benefits.	Euro per inhabitant	European Commission (Eurostat).
Unemployment Rate (Unemp)	The index represents the unemployed population related to the entire labor force.	% of total labor force	World Bank
General Debt (Gen_Debt)	The index represents the rate of general government debt as a percentage of the gross domestic product, at the end of the year.	% of GDP	European Commission (Eurostat)*

\* for United Kingdom, the results are provided by the International Monetary Fund (IMF);

**Source:** European Commission – Eurostat (2021), The World Bank (2021), IMF (2021), Medina and Schneider (2019).

As control variables, we used the unemployment rate and general debt. Dobre et al. (2010) suggested that a rise in the unemployment rate leads to a growth in the informal economy, as more individuals seek work in this sector. This finding is supported by Schneider (2011) and Medina and Schneider (2018). Our study confirms the results reported by these authors.

The variables were analyzed from a fixed and random effects perspective, using *Redundant Fixed Effects Tests* and *Correlated Random Effects - Hausman Test*. The results provided by the indicated tests are indefinite among the two varieties of effects; thereby, we estimated hereafter only the non-effects model specification as it is the most suitable to be used, according to the aforementioned tests. As for the verification using the robustness, for this study we used general debt as a control variable, and we estimated the regression also using the *Robust Least Squares* method.

Before discussing the results, we will point out the test results that have been applied. Thus, all data series were tested for root unit and for the presence of significant correlation using the Unit Root Test, the results indicating that the data series are stationary. As regards the correlation between the variables, the correlation matrix indicates that there is a small to medium correlation between the independent variables. The correlation indexes have values between (-0.75) to (+0.32) and indicate that they are supplementary metrics and that the informational content is not superfluous.

#### 4. Results of the study

Based on the detailed steps and modeling procedures outlined earlier, the results of the analysis are summarized in *Table 2* below. This table provides a clear overview of the outcomes from the different analytical techniques and methodologies used in the study, reflecting the thorough data evaluation and model estimation processes undertaken.

**Table 2.** Estimation of the equation - results

	C	Rural_Pop	Soc_benefits	Agri_Lab (salaried)	Unemp	Gen_Debt
Coefficient	78.96625	7.387546	-6.773329	0.031639	0.198658	2.248874
t-Statistic	23.34316	5.348017	-25.65374	2.791024	4.529606	4.923926
Prob.	0.0000	0.0000	0.0000	0.0055	0.0000	0.0000
<b>R-squared</b>		0.668318				
<b>Adjusted R-squared</b>		0.665317				
<b>F-statistic</b>		222.6506				
<b>Prob(F-statistic)</b>		0.0000				

**Source:** own estimation.

As a first observation, our results confirm the assumptions made at the beginning. Specifically, the informal economy is indeed influenced by the rural population, social protection benefits, and the agriculture labor. Also, the expected results regarding the two control variables used, respectively, unemployment rate and general debt, are also confirmed in relation to the conclusions established in the literature and mentioned above.

In this paper, the rural sector is quantified in this paper by its population. According to the results obtained, the amplitude of the rural sector is positive linked to the informal economy, with a coefficient of 7.387546 (prob = 0.0000). This may be justified on the

grounds that, around their individual households, citizens in rural areas organize and carry out activities that, although according to the law, should be reported, by way of tradition or custom, have been practiced since ancient times. In this regard, we mention "working and paying per day" activities or the practice of selling agricultural products between neighbors without reporting.

According to the International Labour Office (2019), informality in the rural economy is in strong connection to other policy pursuits that are high on the international development strategy: without actions to temper income inequality, working poverty, and lack of social protection, it will be difficult to overcome rural poverty. Many employees or self-employed workers in the informal economy face a proper job deficit. This is extreme in the rural economy, specifically in agricultural activities, which are characterized by exceedingly increased levels of informality. These conclusions are also reflected in the results of our study, and those retained by the author are also confirmed by our study.

By social protection benefits, we refer to the intervention levers of the state to reward or to sustain its citizens, as the case may be. Such benefits could be state aid in cases of force majeure (e.g., the COVID-19 pandemic), the inclusion of the unemployed in programs to find jobs, the implementation of free training courses. How these social benefits are reflected in the perspective of people (both professional and nonprofessional) is quantified through the indicator *Social Protection Benefits*.

Between the informal sector and social protection benefits, the results indicate a negative relationship, with a coefficient of (- 6.773329) (prob = 0.0000). More precisely, when the level of social protection benefits offered by the state increases, this increase will be reflected in a positive way in the underground economy. By encouraging them to pay more attention to the state, it encourages them not to commit tax evasion, to pay their taxes and, more broadly, not to engage in informal activities. By making people feel that the state is paying more attention to them, it encourages them not to commit tax evasion, to pay their taxes, and, more broadly, not to engage in informal activities.

The informal economy and the agricultural labor relationship is then positive, as shown in Table 2. Our results indicate a coefficient of 0.031639 (prob = 0.0055), characterized by a t statistic of 2.791024. Regarding this indicator, in the estimated equation it was included with a lag of (-1), which will be reflected in our subsequent interpretations.

An upward trend in the agricultural labor force will lead to an increase in the informal economy. This means, in a broader sense, that with the growth of the agricultural sector, the size of the underground economy will also increase. Our results are in line with the prior literature from Weng (2015) and Eurostat (2018), which suggests that the agricultural sector is exposed to being illegitimate because it predominantly represents the activity carried out in rural areas. In other words, as we explained in the previous paragraphs, among the rural population people rely on community spirit and make trades with each other without declaring to the competent authorities the income/benefits obtained. Moreover, as crops are not easy to quantify, producers of agricultural goods may declare lower levels of their agricultural crops, may use their products for their own nourishment, or sometimes even turn the crop into other finished products, which they may later market.

In summary, the magnitude of agricultural labor, the scale of the rural population, and the scope of social protection benefits each play a significant role in shaping the informal economy. These factors collectively underscore the intricate interplay between agriculture, rural demographics, and social welfare policies as crucial mechanisms influencing the prevalence and expansion of informal economic activities. Consequently, agricultural conditions, rural socio-economic determinants, and social protection strategies emerge as fundamental vectors through which informal and illicit activities are facilitated and perpetuated.

## **5. Overview of the informal economy of Austria, Romania, and Bulgaria**

In this section, we will delineate the data utilized in this study, focusing on Romania, Bulgaria, and Austria. This comparative analysis aims to trace the evolution of the informal economy across a spectrum of development levels—namely, less developed nations like Romania and Bulgaria, alongside a more developed country such as Austria.

By examining these varied contexts, we seek to illuminate the dynamics of informal economic activity in disparate developmental environments. Concluding the section, we will offer a series of strategic recommendations for policymakers, aimed at fostering long-term economic stability and achieving a balanced regulation of the informal economy.

Romania and Bulgaria are the two countries that during the analyzed period scored the highest dimensions of the underground economy, while Austria is the state that managed to best balance its economy and score rates below 8% throughout the period under analysis. In the following, we will rehearse what the economic context is of these three states and what are the economic events that have had an impact on their informality.

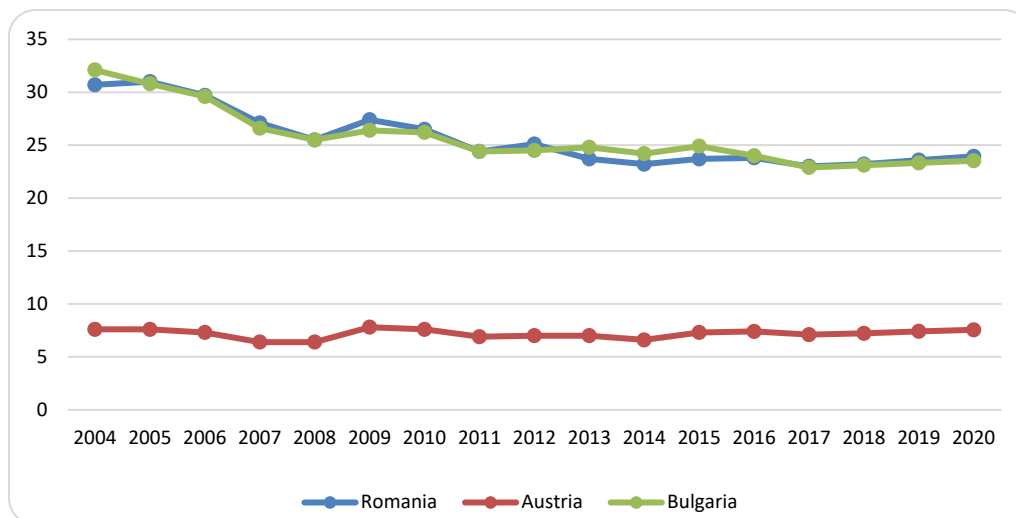
Austria is a great example of a state that carried out comprehensive reforms starting with year 2004 that led to considerable lowering of the tax burden. The Austrian reform package included three main elements: (a) balanced budget in terms of economy; (b) reducing the tax burden to less than 40% of GDP by year 2010; and (c) stimulating investment in infrastructure, education, and research (European Commission, 2005).

The goals of Austrian economic policy also appear in a changing composition of public expenditure. A fruitful policy package was considered as it tackled informality using an embedded approach by making formality affordable (and catchy) to both entrepreneurs and workers. It also included the extension of social protection among citizens to reduce the repercussions of informality. The benefits of this Austrian tax reform are also reflected in a positive manner in the levels of the Austrian informal economy for the period under review, an aspect which is in accordance with our results on the linkage between the informal economy and the social benefits.

As concerns Romania, it is important to observe that the trend of the informal economy is an overall descending one, which means that in the case of Romania the strategy for decreasing the population's appetite for informal activities was an effective one. We also note that Austria's trend towards the informal economy is uneven and that, overall, it is not declining significantly.

There have been studies (Goel et al., 2017; Zaman and Goschin, 2015) that hypothesize that the informal economy, if it is to a small extent and controlled by the state, can also have some beneficial effects on economic growth and may spur economic growth when synergies with the formal economy enhance productivity and development. This is also because often the money that is generated in informal activities returns to the economy, generating economic growth.

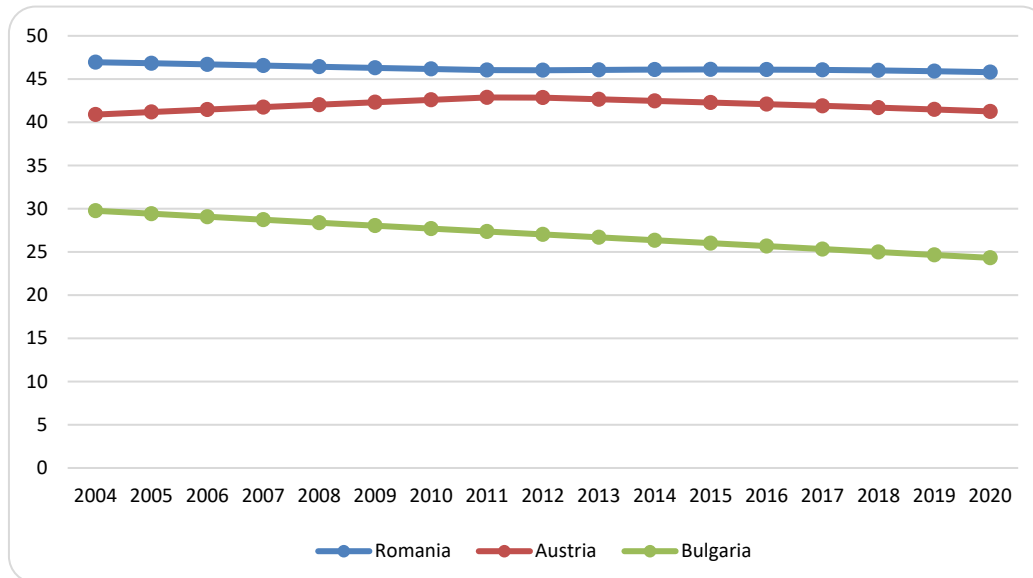
**Graph 1.** *Informal Economy Trend for Romania, Bulgaria, and Austria, 2004-2020*



**Source:** own processing.

The rural population refers to people who live in rural areas as defined by the World Bank and national statistical offices. As Figure 2 reflects for the three states, Romania is the state with the largest rural population, followed by Austria and, with considerable difference, Bulgaria. The level of the rural population in the three states did not register major fluctuations during the period analyzed. In Romania and Bulgaria, the trend is slightly downward, due to several factors, including (1) the migration of people from rural to urban areas and (2) the transformation of many rural areas into urban or suburban areas. This phenomenon is a natural one, as the tendency of youngsters is to relocate to areas where they can study (high school, college)/find a job, and then very few of them return to the rural areas from which they left.

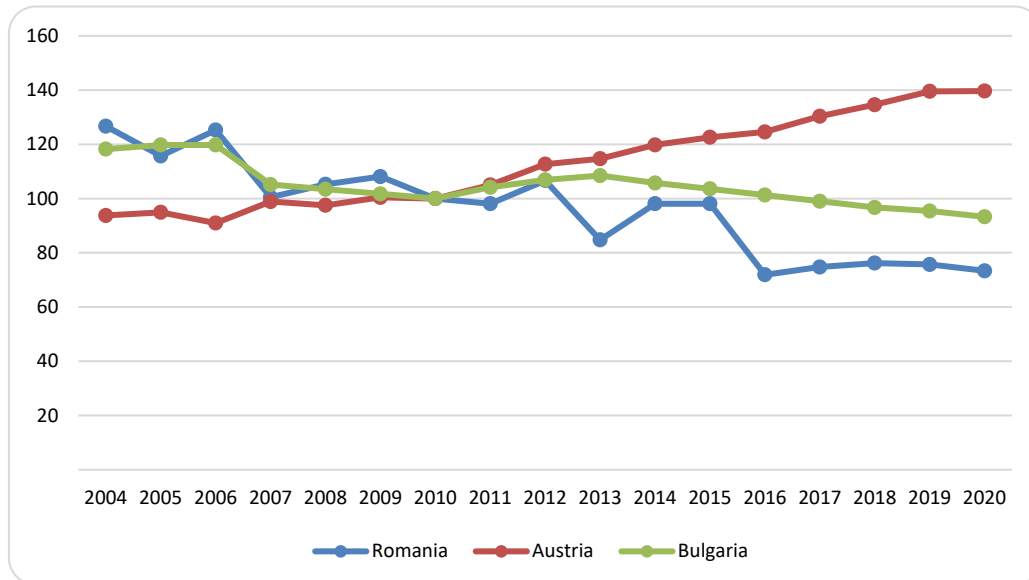


**Graph 2.** Rural Population trend for Romania, Bulgaria and Austria, 2004-2020

Source: own processing.

As far as the agricultural sector is concerned, the most developed state of the three is Austria. What is interesting to note is that, in 2004, from the perspective of the agricultural sector, it was the state with the lowest level of agricultural labor compared to Romania and Bulgaria, while in 2020 it ranks first among these three states. Therefore, if the trend for Romania and Bulgaria is decreasing in the period 2004-2020 (decreasing in the case of Romania from 126.67 AWUs to 73.33 AWUs and in the case of Bulgaria from 118.22 AWUs to 93.26 AWUs), Austria reported a considerable increase during this period, from AWU 93.76 to AWU 139.65.

Regarding the breadth of the agricultural sector for Romania and Bulgaria, there are many authors and many institutions that continue to monitor the evolution, Romania and Bulgaria being states with a huge potential in terms of land and land diversification, which favors the cultivation and growth of plants. To this end, however, it is required better planning of the agricultural sector, as it fails to produce enough to meet the needs of the population, thus increasing the chances of individuals to turn to informal sources from where to procure it (European Parliament, 2010; Anghelache et al., 2020; Rangelova & Vladimirova, 2017).

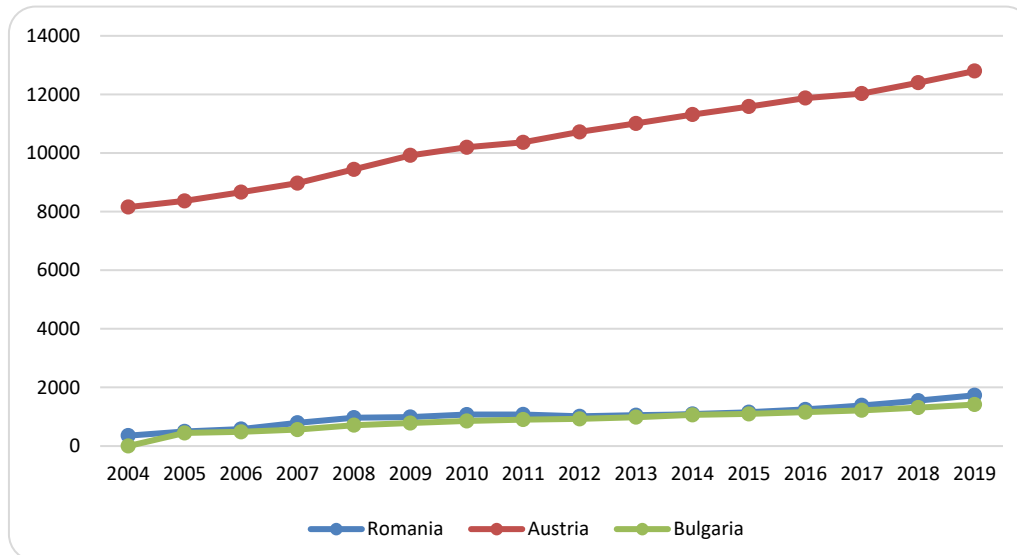
**Graph 3.** Agricultural labor trend for Romania, Bulgaria and Austria, 2004-2020

**Source:** own processing.

In terms of social policy, Austria provides a wide-ranging social security and welfare scheme, coordinated on both social benefits and services. As shown in Figure 4, the benefits Austria offers from the perspective of social protection to citizens are approximately seven times higher than the level offered by Bulgaria or Romania. Austria implemented in 2011 the *needs-oriented system of guaranteed minimum resources* which aims to provide the necessary minimum resources for people who cannot afford to support themselves and their families with what they own or earn.

In addition to this system, several social programs are being developed in Austria, which include benefits such as social assistance, unemployment insurance, employment-conditional benefits, housing and family benefits (including support for sole parent households) and childcare support (OECD, 2004; European Commission, 2005; LSE Health, 2017).

On the flipside, we find Bulgaria and Romania, whose social policies do not include a high level of benefits for citizens. For Romania and Bulgaria, Figure 4 below reflects an upward trend in social protection benefits for the analyzed period, 2004-2019. For Romania, if in 2004, the total expenditures of a country spent on social protection benefits were 356.5 euros per inhabitant, in 2019 they reached a level of 1,728.6 euros per inhabitant. In Bulgaria, in 2019, the total expenditures of a country spent on social protection benefits were 1,462.620 euros. This discrepancy between Austria, on the one hand, and Romania and Bulgaria, on the other, has its origins in the fact that the latter are ex-communist states whose transition to development began in 1990, with the fall of communism.

**Graph 4.** Social protection benefits trend for Romania, Bulgaria and Austria, 2004-2020

**Source:** own processing.

Following the data presented in this section, we can see that for the three states analyzed, the trends of the indicators concerned in relation to the underground economy would confirm, at an overall level, the results obtained in the previous section. Therefore, during the period 2004-2020, the level of social protection benefits increased, the rural population decreased, and the level of the underground economy recorded a decrease for all three states.

Regarding the agricultural sector, it did encounter different fluctuations, but we consider that it would deserve a more detailed expansion of the relationship between the agricultural sector and the underground economy, which also considers other variables related to the agricultural sector that could characterize informal economy. The quality of legislative regulations in the agricultural sector. However, the article has some limitations, as several other variables related to the agricultural sector that could characterize the informal economy should also be explored. Therefore, the results regarding the agricultural sector in terms of agriculture labor should be interpreted with caution.

Part of the conclusion of this section is that, in general terms, any society that has a strengthened social and agricultural framework is stable and trustworthy from an economic position. In this sense, improving the strategies provided by the states in a transparent way and providing social assistance to citizens may restore or consolidate, as the case may be, the confidence of the citizens in the society they are part of.

Our recommendation, based on the direct relationship between the agricultural sector and the rural population as obtained through our study presented in Chapter 4 (*Results of the study*), is that a state should provide the necessary tools for the agricultural sector to grow, even in rural areas, but to pay more attention to informality in these contexts. In this regard, committees/ associations/directorates of public employees could be organized and well

trained to develop a direct relationship with people from rural areas, respectively, with farmers, and to take over their bureaucratic task. Thus, being close to them, they will be able to have a better understanding of the gaps that allow informality, and they can propose applied solutions to tackle them.

## 6. Conclusions

In conclusion, from the results of the regression analysis, we can state that the social protection, agricultural, and rural sectors are of great importance for the size of the underground economy. While the agricultural sector and the rural population have a direct positive impact on the underground economy, social protection benefits have an indirect link with it. Therefore, the intervention of the state plays a significant role in supporting the agricultural and rural sector, both in terms of supporting the structure of the agricultural system and in terms of income support. This support will be further reflected in reducing the underground economy.

The results of our study were also confirmed by a brief analysis on the economies of Austria, Romania and Bulgaria, together with the evolution of the agricultural sector, social policy, and the rural population among them. Of the three states, Austria has the lowest level of the underground economy and, in terms of the determinants of the underground economy, as outlined in this study, it is positioned in points that favorably influence the level of the underground economy. On the other hand, Romania and Bulgaria, which have the highest levels of the underground economy, have also registered a positive evolution in the three directions with an impact on the underground economy, but to continue in a downward trend of the underground economy, they must consider reorganizations and improvements in social systems and agriculture, such as the strategies used by Austria.

Furthermore, our study can be developed using other indicators of the agricultural and rural sectors, so it can be observed whether they will confirm the results of the dependencies established on the basis of this paper. Opportunities for future research include qualitative indicators that could be added along with the quantitative ones analyzed by us, and in this sense, we would recommend an indicator that reflects the quality of legislative regulations in the agricultural sector. Finally, the last direction to develop our research is related to the database, when more recent data on the shadow economy will be released, the study should be resumed.

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