DETERMINANTS OF PERSISTENT POVERTY IN THE EU COUNTRIES

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Abstract
Although the significant progress is met across different components of society, poverty still remains an issue in the political and academic debates. Moreover, persistent poverty represents a thorough reality of the societies, being caused by complex interactions between economic, social and environmental factors. In this context, our paper intends to analyze the relationships between persistent poverty, on one hand, and the national patterns in terms of resources productivity and domestic material consumption, of agricultural size of holdings, of tertiary educational attainment and, also, of social protection, on the other hand, across the European Union member states in 2018. Our results showed that persistent poverty is significantly influenced by all the above indicators, excepting educational attainment. In detail, an increasing number of small farms in terms of worked land (2 ha) determines a higher level of persistent poverty. Contrary, resources productivity and domestic material consumption and, also, expenditure of social protection represent determining factors that influence persistent poverty in a negative manner. In other words, their increasing represents ways of poverty amelioration. Focusing on the analysis of a critical phenomenon, affecting a significant part of European population, we consider that our study responds to a real need for research in this field.

Keywords
persistent poverty, resource productivity and domestic material consumption, agricultural size of holdings, education, social protection, econometric modelling, European Union.

JEL Classification
C50, I32, I38, J21, O13

Introduction

Poverty is a real concern in the context of the necessity to comply with the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda (UN, 2015), where this problem is

especially pointed out. The subject is largely debated within the academic literature because of its amplitudes from all over the world, emphasizing a thorough reality of the societies that urgently needs for specific solutions. It represents a complex social construction, with multiple facets, being defined in terms of lack of economic income, but also in terms of deprivation of material necessities, of basic rights etc. (Alkire and Santos, 2013; Whelan *et al*., 2014; Samuel *et al*., 2018). As Nunan (2015) mentions, poverty is caused by the complex interactions between economic, social and environmental factors and this kind of approach must be taken into consideration in order to correctly understand them and, in this way, to know the directions needed to be improved for addressing it.

Literature review

Including the time perspective, poverty may be transient or persistent (Jalan and Ravallion, 1998; Hulme, 2003) and, in this context, attenuation strategies often focus on the concept of poverty trap (Barrett and Swallow, 2006; Barret and Carter, 2013). Its theoretical roots belong to the economic development theory, where it is defined as the persistent poverty delimited by a specified income threshold (Cao *et al*., 2009; Glauben *et al*. 2012). The major characteristics of a poverty trap are the ones related to (1) its persistence (the period of remaining in poverty), (2) its determinant factors (both personal characteristics and external particularities), (3) the generating mechanism, as the integrative perspective of the most important determinant factors of remaining in poverty, (4) possible strategies for overcoming this problem through formulating solutions from the perspective of the mechanism of generating it.

We can consider the poverty traps as resulting from unsustainable and unappropriated personal and external particularities that reinforce each other (see Dasgupta and Ray, 1986; Kremer, 1993; Dercon, 2009), concreting in what is called persistent poverty. Completing this perspective, the poverty traps are frequently analyzed within the studies devoted to sustainable development (Gunderson and Holling, 2002; Allison and Hobbs, 2004; Cumming, 2018), where they are considered as the consequence of the complex interactions between the economic, environmental and social dimensions.

In the context of the persistent poverty, it is necessary to call to the concepts of resilience and adaptation regarding these dimensions (Gunderson şi Holling, 2002) and, in this way, creating new feedbacks and strengthening the positive ones (Haider *et al*., 2018). More, other papers emphasize new modalities of conceptualizing the dynamic of poverty traps in terms of natural resources and their management (Boonstra *et al*., 2016; Enqvist *et al*., 2016). In this way, these studies put into attention the fact that the pattern of natural resources consumption is closely linked to the persistent poverty.

Persistent poverty and the determining factors taken into consideration

The persistent poverty was measured using the *Persistent-at-risk-of-poverty rate*. This indicator is defined as the share of persons with an equivalised disposable income below the risk-of-poverty threshold in the current year and in at least two of the preceding three years. The threshold is set at 60% of the national median equivalised disposable income (Eurostat, 2018).

Having in mind the above findings mentioned from the academic literature, we chose to integrate in our discussion regarding the main determinants of persistent poverty one indicator offered by Eurostat (2018), i.e. *Resource productivity and domestic material consumption*. The indicator is part of the EU Sustainable Development Goals (SDG) indicator set, being used to evaluate the progress towards SDG 12 regarding *ensuring sustainable consumption and production patterns* and SDG 8 regarding *decent work and economic growth* (UN, 2015). In other words, it is related to the manner in which the resources are utilized – if they are efficiently used or not, and, it is, in this way, closely

linked to the creation of well-paid quality jobs and to the achievement of global prosperity through the recognized importance of the high levels of economic productivity (Eurostat, 2018).

Moving on, the SDG 2 on *ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture* (UN, 2015) is other goal of sustainable development that is related to SDG 1 on *ending poverty in all its form everywhere* (UN, 2015), that represents the focus of our paper. In this way, aspects related to agriculture needs to be included within a discussion regarding poverty and, especially, the persistent one. As it was observed within the literature, a large part of poor people depends on agriculture for their livelihood (Agarwal, 1986; Irz *et al*., 2001; Christiaensen and Demery, 2007) and it was argued that the poor stood to gain much more from GDP growth originating in agriculture than from an equal amount of GDP growth generated outside the sector (Ravallion and Chen, 2003; Kraay, 2006; Christiaensen *et al*., 2011). In this context, we selected one indicator related to agriculture, i.e. *Agricultural size of holdings with less than 2 ha (farms)* (Eurostat, 2018), in order to observe the extent of the very small farms within each country taken into analysis. The number of holdings that work less than 2 ha of land represents a very relevant indicator for the level of agricultural development in a national context and the comparison between countries regarding it is useful for understanding the state of fact in terms of agricultural productivity.

Nearby these two indicators belonging to the environmental and economic dimensions of sustainability, we selected one of the most important and representative indicator for the social dimension, i.e. education, measured through *Tertiary educational attainment (% of population)* (Eurostat, 2018). In this way, we intended to observe if the individual educational background is especially linked to the persistent poverty and, even more, if it contributes to determining the level of this phenomenon. As shown within the literature, in general, when poverty is analyzed, the education is mentioned as one of its most important determinants (Galbraith, 1998; Sen, 1999; Alkire and Santos, 2013; Samuel *et al.*, 2018).

As a third force in addition to, on one hand, the individual components (represented, in our study, by education), and, on the other hand, the external context of private initiatives and actions (regarding national resource productivity, domestic material consumption and agricultural size of farms), able to help or not in the process of personal development, the social protection, as an instrument of the state, is integrated into our discussion. Its principle aim is to support workers and their households from contingencies threatening basic living standards, being grouped under three main headings: (1) social insurance; (2) social assistance and (3) labour market regulation (Barrientos, 2010). Being directed linked to the problems regarding the detaining of basic living standards, we expect that the level of expenditure on social protection to be significant in relation to the persistent poverty, as was also observed within other papers analyzing poverty issue (Soares, 2013; Schneider *et al*., 2016). For observing this relation, we opted to include into our study the following indicator: *Level of total expenditure of general government devoted to social protection* (Eurostat, 2018).

Research goals

In this context, our paper intends to analyze the way in which some economic, social and environmental factors influence the persistent poverty, trying, in this way, to define the poverty trap in terms of their generating mechanism that integrates these determinants. For this, our specific objectives are: (1) to analyze the relationships between persistent poverty, on one hand, and the national patterns in terms of resources productivity and domestic material consumption, of agricultural size of holdings, of tertiary educational attainment and, also, of social protection, on the other hand, across the European Union member states in 2018; (2) to emphasize some solutions from the point of view of the considered potential

determinant factors, based on the results obtained on the endeavor of responding to the first objective.
Considering these objectives, the paper is structured as follows. Section 2 is dedicated to the methodology and the data used in order to achieve the established objectives. Section 3 illustrates the main empirical results. Section 4 represents the part dedicated to discussing and concluding remarks.

Data and methodology

We focused our empirical analysis and discussions on the persistent poverty across European Union countries, using data from 2018. In the study, there were included 26 of the EU countries, Ireland and Spain being excluded because of their extreme values regarding some of the considered variables. Table 1 presents the variables taken into consideration in the paper, along with the represented indicators and the related data sources.

Table no. 1 Variables used in the analysis

Variable	Indicator	Source
PAROP	Persistent-at-risk-poverty rate (%)	Eurostat
DMC	Resource productivity and domestic material consumption (Index 2000 = 100)	Eurostat
EXP_SOC	Level of total expenditure of general government devoted to social protection (% of GDP)	Eurostat
EDUCATION	Tertiary educational attainment (% of population)	Eurostat
HOLDINGS	Logarithm of Agricultural size of holdings with less than 2 ha (farms)	Eurostat

The empirical analysis was structured in 2 steps. The first one consisted in determining the nature of the relationships between PAROP and the other variables. In order to observe these, we used Principal Components Analysis (PCA) which is one of the most powerful techniques for dimension reduction that transforms a group of correlated variables in a smaller group of uncorrelated hypothetical constructs called principal components (Timm, 2002). In this way, the original data are projected into a new coordinate system where the first axis corresponds to the direction along which the data vary the most; the second axis corresponds to the direction along which the data vary the most after the first direction etc. (Kherif and Latypova, 2020). Based on the results of PCA, we developed a regression analysis in order to examine whether any of the explanatory variables (DMC, EXP_SOC, EDUCATION and HOLDINGS) has a significant effect on the explained variable (PAROP). The equation of the regression model is the following:

$$PAROP = \beta_0 + \beta_1 DMC + \beta_2 EXP\_SOC + \beta_3 EDUCATION + \beta_4 HOLDINGS + \varepsilon \quad (1)$$

where β_0, β_1, β_2, β_3 and β_4 are the regression coefficients and ε is the residual component of the model (Greene, 2002).

Results

The variables considered in the analysis have homogenous distributions, the coefficients of variation regarding the persistent poverty and its determinant factors being lower than 50% across the European Union member states. The mean value of *persistent-at-risk-of-poverty rate* is 10.58%, values for this variable ranging between 5% (in Denmark and Finland) and 20% (in Romania). Regarding the *resource productivity and domestic material consumption*, the index varies between 79 (in Romania) and 182 (in United Kingdom) with a mean value of 132.27. The percentages of *social protection expenditure* at the level of EU states vary between 14.6% (in Romania) and 34.1% (in France), the mean value being equal

to 23.2%. The percentage of *tertiary educational attainment* is ranging between 25% (in Romania) and 58% (in Cyprus), with a mean value of 45.3%. Finally, the mean value of *agricultural holdings with less than 2 ha of land* is 4.25, values for this variable ranging between 2.26 (in Luxembourg) and 6.39 (in Romania). Referring to Romania, as a conclusion from this general perspective of the EU member states, we must mention that it is the country with the most critical situation in the case of all the five indicators included in our discussion. This observation may reveal, at the first sight, a deep link between the investigated national figures, sustaining our next steps that may direct our attention to the potential solution for persistent poverty amelioration.

In order to identify the correlations between these variables, we performed the PCA. The resulted solution regarding the projection of the variables on the coordinate system consisting of 2 axis is validated by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (Kaiser, 1974) and Bartlett's Test of Sphericity (Bartlett, 1954). The KMO statistic (0.647) shows that there are significant correlations between the analysed variables, while the χ^2 statistic of the Bartlett's Test of Sphericity (30.171) indicates that the variables are dependent on each other, the correlation matrix being different from the unit matrix. Also, according to the Benzécri criterion (1992), the amount of variance explained by the 2 axis represents at least 70% of the total variance from the coordinate system (48.3% for the first axis and 22.4% for the second axis). Figure 1 illustrates the correlations resulted from the PCA alongside with the distribution of the EU member states in the coordinate system.

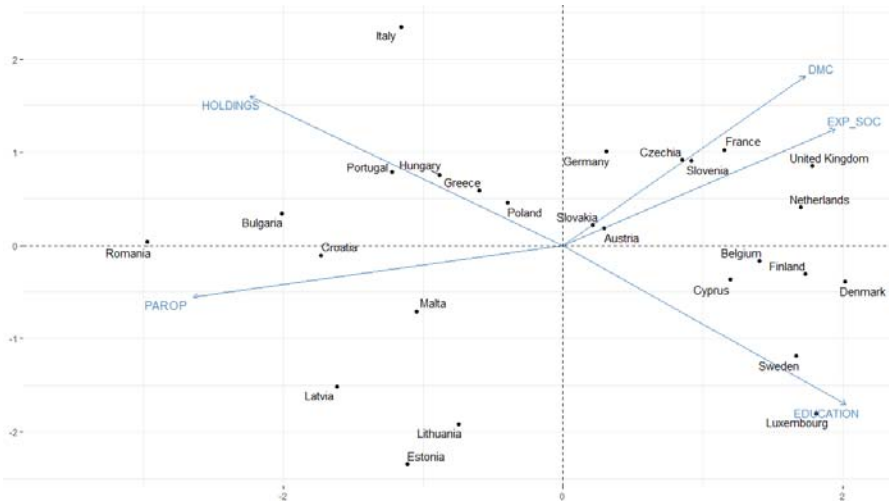

Fig. no. 1 Representation of the variables and EU countries in the first 2 axis of the coordinate system

We can observe that there are positive correlations between PAROP and HOLDINGS, on one hand, and between DMC, EXP_SOC and EDUCATION, on the other hand. Also, there are negative correlations between the two groups of variables. Concerning the EU member states, we can notice that countries such as Romania, Bulgaria and Croatia have high levels of persistent poverty and of agricultural holdings with less than 2 ha, unlike other countries, such as United Kingdom, Netherlands and Denmark, which are characterized by low levels for these variables, but high levels of domestic material consumption, social protection expenditures and education.

In order to analyze if the persistent poverty is significantly influenced by the determinant factors considered in the paper, we conducted a multiple linear regression. In Table 2, the results of the estimated model are included.

The significance of the unstandardized coefficients emphasizes the fact that the persistent poverty at the EU countries' levels in 2018 is significantly influenced by the resource productivity and domestic material consumption, social protection expenditures and size of agricultural holdings. The signs of these coefficients indicate that (1) DMC and EXP_SOC have a negative influence on the PAROP, meaning that an increase with one unit of the DMC or EXP_SOC determines a decrease in the mean level of PAROP and (2) HOLDINGS have positive influence on the PAROP, an increase of one unit in HOLDINGS generating an increase with 1.589% in the mean level of PAROP.

Table no. 2 Regression results

Regressor	Unstandardized Coefficients		Standardized Coefficients
	Coefficient	Std. error	Beta
DMC	-0.058 **	0.026	-0.357
EXP_SOC	-0.201 *	0.109	-0.294
HOLDINGS	1.589 **	0.776	0.376
EDUCATION	-0.025	0.086	-0.053
Constant	17.248 **	7.095	-

Notes: The dependent variable is PAROP. ** and * denote statistical significance at the 5% and 10% level, respectively.

Regarding the standardized coefficients from the estimated model, we can observe that the size of agricultural holdings has the highest importance in the persistent poverty variation, followed by the domestic material consumption and social protection expenditures. Although the variable EDUCATION is significantly correlated with PAROP, in the regression model it doesn't have a significant influence and, also, it has the lowest importance in the variance of the dependent variable.
The commune variation of the resource productivity and domestic material consumption, social protection expenditures and agricultural holdings with less than 2 ha explains 53.8% of the persistent poverty variation in 2018 at the level of EU countries. The assumptions regarding regression residuals are validated according to the results of the statistical tests for the hypothesis of homoscedasticity, lack of autocorrelation of residuals and normality.

Conclusions and discussions

In this study, we offered a flash image of the European Union member states regarding the persistent poverty and its factors belonging to economic, environment and social dimensions of sustainability. In this way, we tried to understand the mechanism that generates it across the EU countries, as an integrative perspective of some of the most important determinants for escaping from the trap of persistent poverty. Based on this, we intend to point some potential solutions for breaking this vicious circle of this type of poverty.
We observed the fact that, although all the variables taken into discussion are linked to persistent poverty, when integrating them into an equation, only resource productivity and domestic material consumption, agricultural size of holdings and expenditures for social protection remain significant in terms of their influence on poverty. In detail, we found that improvement is needed in the way of utilizing the resources, regarding both production and consumption, at the national level and that this advancement is able to translate into the progress in terms of persistent poverty reduction.
Also, trying to reduce the number of small farms through policies that encourage cooperation and association between rural people working the land may represent other direction of diminishing the level of persistent poverty. We consider that this would be an additional step onwards to obtain a better productivity and would lead to the forming of homogeneous groups with similar interests, capable to act more efficiently in the market.

In terms of social protection expenditures, observing their important role in the case of amelioration of persistent poverty, we consider that these positive results have to be streamlined through a more oriented direction of aid to the poorest from the poorest individuals, that are the ones that need it the most, and not to the ones that are nearby the poverty threshold, as the general political practice is.
Taking into consideration the fact that Romania is on the end of the list across the European Union countries, registering the most critical levels, although in this paper, our focus was not on its situation, future research will be directed on studying it deeper.

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