

The Determinants of Poverty Revisited– Empirical Evidence from Romania’s Development Regions

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Abstract

The purpose of this paper is to provide new evidence on the determinants of poverty, a sensitive and challenging subject. Because Romania is considered to be one of the poorest countries of Europe, this research work examines its poverty phenomenon in depth, on its eight development regions, over the 2011 – 2022 time interval. Using data from National Institute of Statistics, our paper estimates simple and multiple regression models on panel data, focusing on the factors that influence Romanian poverty, finding out which are the most deprived areas and how one can act to eradicate it. The authors validate an indirect relationship between the poverty rate and economic prosperity, urbanization rate and Internet prevalence, and a direct relationship between poverty and unemployment rate, consumption rate and households with very low work intensity. Policy implications are drawn in order to reduce poverty.

Keywords: Poverty, Panel Data Analysis, Romania, Deprivation, Development Regions.

Introduction

One of the most important challenges for the world is represented by the reduction of poverty. Poverty affects millions of people across the world every year, depriving them of basic human needs and fundamental rights, such as access to adequate food, healthcare, education, decent shelter and so on. Researches merely define poverty as a lack of money for satisfying a person’s needs (Mabughi and Selim, 2006). However, poverty is much more than not having enough money; it may include disadvantages such as: not having scholar opportunities, not receiving job offers, being excluded from the society where the person comes from. Also, it can affect any human being both physically and mentally, which is why it is considered an important issue worldwide.

The main reason for choosing to analyse this subject is the urge to understand the causes that stand behind the appearance of poverty, to evaluate how to manage its effects and to contribute to fighting against it. Many organizations have the main objective to combat the poverty from their country as much as possible and to help all affected people. Despite

that, it's our firm belief that everyone might have a small, but essential contribution to combating this phenomenon; for instance, one could spread awareness all over the world by informing and educating people about poverty's devastating effects. The aim of this paper is to investigate what determines poverty by using simple and multiple regression analysis of a Romanian panel database. Considering the existing literature in the field, we obtain original results, thus contributing crucially to the understanding of the poverty socio-economic phenomena.

The remainder of this paper is organized as follows: the literature review, the explanation of the data and research methodology used by this study, the results obtained and discussions, ending with conclusions.

Literature Review

The rich empirical literature has reached firm conclusions regarding the magnitude of the factors that lead to poverty. The study of Islam (2004) affirms that reducing poverty is a challenge made tougher by crises, but a sustainable employment policy is one of the best ways out of poverty. A high rate of unemployment, which means a low income, results in a higher poverty rate. By targeting the reduction of the unemployment rate, societies can work towards improving overall well-being and economic stability for their citizens. Another paper that supports the previous ideas is written by Karnani (2011), who attests that a poor individual can escape from this social condition by being employed in a productive job that leads to higher income. The most efficient method to reduce poverty is to raise the income of the poor by focusing on creating opportunities for them. Also, Zizzamia (2020) emphasizes the idea that unemployment plays a significant role in driving poverty because it can directly affect individuals' ability to earn income and improve their lives.

Afzal et al (2022) contribute to our study by underlining the importance of the ability to obtain information from many sources, through the internet, which has a crucial impact on poverty rate. It is believed that an increased usage of technology is associated with poverty reduction. As long as we are informed about the disruptive effects of poverty, we can keep it under control without destroying our lives or our futures. One factor analyzed by Phan (2023) is internet penetration, which is seen as a complementary tool in anti-poverty programs. His analysis shows that the rural poor have been able to improve their living conditions. Also, his study suggests that improving digital literacy should be an essential part of poverty reduction programs, in the context of developing countries. Montiel (2016) also finds that there is a severe lack of internet infrastructure in the poorest households, which points to a much more serious problem: poverty. Some underprivileged individuals struggle to pay their expenses and bills, because they live far away from the digital world.

Information poverty is a well-known issue in rural environments that hinders social development and negatively impacts the quality of education. According to Chen et al (2011), residents of villages face limited access to knowledge, restricted job opportunities and a lack of awareness about critical global issues, such as poverty.

Dullah et al (2012) states that economic growth raises the income of citizens of a country, therefore it will reduce poverty. A special attention should be paid to higher rates of economic growths because, over the years, it has been demonstrated that they undoubtedly reduce poverty rates. Balasubramanian et al (2022) mention that even the multidimensional poverty could be minimized by fostering economic growth measured by Gross Domestic Product (GDP). A sustainable economy could generate more job offers, increase income levels, create environment for investments and, obviously, lift people out of poverty. The

relationship between economic growth and poverty is also explained by Nguyen et al (2021), who supports economic growth to improve the quality of life of people. Furthermore, a strong economic growth promotes increasing resources for poverty reduction.

Urbanization, simply known as a migration from rural to urban area, has an important impact on economic growth, which clearly affects poverty in many ways. For instance, migrants feel the wage gap between urban and rural areas and prefer to migrate from their locality to work for higher wages. In addition, urbanization influences migrants' consumption, saving and investment behavior, so the migrants become more cautious, as of (Nguyen et al., 2021). Migration has also been discussed by McKenzie et al (2007), attempting to show that successful migration influences education and schooling decisions, leading to a better future and less chances of poverty. Moreover, migrants would bring the knowledge of new technologies, leading to higher income and less poverty.

The consumption function introduced by John Maynard Keynes refers to a consumer's spending that is determined by income and the changes in income. A part of the income should be spent on necessary food and bills and the other part should be put into savings. Otherwise, if a person spends all their income and savings, their lifestyle is likely to undergo a significant transformation, increasing the likelihood of experiencing poverty. Pressman (1991) confirms the previous conclusions and that the mathematical relationship between poverty and consumption is positive, these two being directly correlated. On the other side, Gong et al (2022) validates a negative relationship, saying that the increase in the consumption rate has contributed to the decrease in the poverty rate, since it is considered that consumption is necessary for the normal growth and development of a person.

Data and Methodology

In the following part of this study, the phenomenon of poverty is analysed empirically considering its potential explanatory variables. The dataset used in this study includes the eight development regions of Romania (North-East, South-East, South, South-West, West, North-West, Center and Bucuresti-Ilfov) over nearly the last decade (from 2011 to 2022), being structured as a panel dataset. Our database is framed using the data available on the website of The National Institute of Statistics and Eurostat. Moreover, the results are obtained using the econometric software Stata 11. Three types of analyses are performed: Pooled Ordinary Least Squares (OLS), Fixed Effects Modelling (FEM) and Random Effects Modelling (REM).

Table 1

Variables used and their influence on poverty

| Indicator | Reasoning for applying in the model / Variable used in research | Researches conducted before | Relationship |
|----------------------------|--|---|--------------|
| Dependent variables | | | |
| At-risk-of-poverty (AROP) | The indicator shows the percentage of population that are living in households where the equivalised disposable income (after the social transfer) is below the at-risk-of-poverty threshold (60% of the national median equivalised disposable income). | Urean et al (2017); Fischer et al (2020); Aksman (2021) | - |

| | | | |
|--|--|---------------------|----------|
| | <i>(annual %)</i> | | |
| Severe material deprivation rate | The indicator refers to the proportion of people that are experiencing enforced lack in at least 7 of 13 deprivation items. <i>(annual %)</i> | | - |
| At-risk-of-poverty or social exclusion (AROPE) | This indicator measures the percentage of people who are either at risk of poverty or living in a household with a very low work intensity or severely materially and socially deprived. <i>(annual %)</i> | | - |
| Independent variables | | | |
| Very low work intensity | This indicator refers to the percentage of persons between 0 and 64 years old that are living in households where the active population worked less than 20% of their total work potential during the previous year. <i>(annual %)</i> | - | Positive |
| Unemployment rate | Several studies have shown that unemployment tends to increase poverty rate. Employed people lead to have more sources of income than the unemployed, therefore their chances of becoming poor are lower. Zizzamia points out that unemployment is the key determinant of poverty. <i>(annual %)</i> | Islam (2004) | Positive |
| | | Karnani (2011) | Positive |
| | | Zizzamia (2020) | Positive |
| Internet penetration | It is known that a poor person is deprived of sources of information. Therefore, if the number of households that have internet access increases, it is expected that the number of poor households will decrease. A low internet infrastructure indicates the emergence of poverty among the locals. <i>(annual %)</i> | Chen et al (2011) | Negative |
| | | Montiel (2016) | Negative |
| | | Afzal et al (2022) | Negative |
| | | Phan (2023) | Negative |
| GDP/capita | | Dullah et al (2012) | Negative |

| | | | |
|-------------------|---|------------------------------|----------|
| | Economic growth can undoubtedly reduce poverty rates and multidimensional poverty. Nguyen proved that when GDP increase, there is a possibility that the poor people will improve their income. (PPS per inhabitant) | Nguyen et al (2021) | Negative |
| | | Balasubramanian et al (2022) | Negative |
| Urbanization rate | Urbanization clearly impacts on reducing poverty. Urban people tend to be more educated and informed than rural people, leading to less chance of becoming poor. (annual %) | McKenzie et al (2007) | Negative |
| | | Nguyen et al (2021) | Negative |
| Consumption rate | Normally, consumption rate should directly influence the poverty rate. However, Gong et al. confirmed that consumption spontaneously increased while poverty rate decreased. (annual %) | Pressman (1991) | Positive |
| | | Gong et al (2022) | Negative |

Table 1 offers a brief description of the various poverty proxies we use within our study, and their explanatory variables, as well. Moreover, their summary statistics are included in Table 2.

Table 2

Descriptive statistics of variables

| Variable | Mean | Std. Dev. | Min | Max |
|--|---------|-----------|-------|-------|
| At-risk-of-poverty (AROP) | 23.1443 | 9.5571 | 2.4 | 41.1 |
| Severe material deprivation rate | 22.3788 | 8.0138 | 7.4 | 38.7 |
| At-risk-of-poverty or social exclusion (AROPE) | 38.875 | 10.9488 | 16 | 56.3 |
| Very low work intensity | 7.5763 | 3.0917 | 1.7 | 15.8 |
| Unemployment rate | 4.4886 | 2.0532 | 1 | 8.7 |
| Internet penetration | 71.046 | 15.231 | 39.17 | 95.89 |
| GDP/capita | 18207 | 9753.835 | 7600 | 53900 |
| Urbanization rate | 57.78 | 14.3093 | 42.65 | 92.48 |
| Consumption rate | 87.59 | 3.84 | 77.8 | 95.64 |

Source: Authors' processing in Stata

According to the descriptive statistics listed above, it is observable that the highest level of AROP rate is scored in the North-East region, at a level of 41.1%, while the lowest value is attained by the Bucuresti-Ilfov region, at a level of 2.4%. Over the last decade, Romania scored

an average AROP rate of 23.14%. Regarding the *severe material deprivation rate*, the highest level is scored in the South-East region (38.7%) and the lowest level is scored in the West region (7.4%), while the average value is of approximately 22.37%. The highest level of *AROPE* is attained by the South-East region (56.3%), the lowest level by the Bucuresti-Ilfov region (16%) and the average level is 38.87%. These are the poverty proxies we use in our main results and robustness checks estimations.

Concerning *very low work intensity* rate, the highest value is scored in the West region (15.8%), while the lowest value in the Bucuresti-Ilfov region (1.7%). The mean value is at a level of 7.57%, over the years included in this study. We assume that the less people work, the less they earn and thus their poverty risk is higher. Also with respect to working conditions, it is noticeable that the highest level of *unemployment rate* is at a level of 8.7% and is scored in the South-West region, while the lowest level is scored in the Bucuresti-Ilfov (1%). The average level is at a level of 4.48% over the last ten years.

Economic factors include prosperity, measured as per capita GDP. The highest level of *GDP/capita* is attained by the Bucuresti-Ilfov region (53900 PPS), also the capital region, the lowest level by the North-East region (7600 PPS) and the average level is 18207.95 PPS. Concerning the *consumption rate*, these extremes are reversed, as compared to economic prosperity: the highest level is attained by the North-East region (95.64%), the lowest level by the Bucuresti-Ilfov region (77.8%), meanwhile the average value is at level of 87.59%.

Moreover, when it comes to *internet penetration* rate, the highest level is scored in the Bucuresti-Ilfov region (95.89%), the lowest level is scored in the North-East region (39.17%), while the mean rate is at level of 71.04%. Nonetheless, regarding the *urbanization rate*, the highest level is attained by the Bucuresti-Ilfov region (92.48%), the lowest level by the South region (42.65%), meanwhile the average value is at level of 57.78%.

Over the last ten years, we may notice an increasing trend of the *internet penetration*, *GDP/capita* and *urbanization rate*, these being indirectly correlated with poverty. On the other hand, a decreasing trend of the rest of the variables is noticed, which is considered an advantage for Romania's recent development boost.

The correlation matrix below is frequently used in the analysis of multiple regression models to determine whether one or another factor better explains the poverty phenomenon and which of them will better fit in the multiple regression estimation.

Table 3

Correlation between the independent variables

| | AROP | Severe material deprivation rate | AROPE | Very low work intensity | Unemployment rate | Consumption rate | Urbanization rate | Ln GDP | Internet penetration |
|----------------------------------|---------|----------------------------------|---------|-------------------------|-------------------|------------------|-------------------|--------|----------------------|
| AROP | 1 | | | | | | | | |
| Severe material deprivation rate | 0.5305 | 1 | | | | | | | |
| AROPE | 0.8489 | 0.8548 | 1 | | | | | | |
| Very low work intensity | 0.3141 | 0.2903 | 0.3216 | 1 | | | | | |
| Unemployment rate | 0.8263 | 0.684 | 0.8574 | 0.3753 | 1 | | | | |
| Consumption rate | 0.6554 | 0.2248 | 0.5235 | -0.0004 | 0.4604 | 1 | | | |
| Urbanization rate | -0.8135 | -0.3147 | -0.6363 | -0.2167 | -0.6777 | -0.6628 | 1 | | |
| Ln GDP | -0.8521 | -0.464 | -0.7322 | -0.3003 | -0.7949 | -0.7605 | 0.9131 | 1 | |
| Internet penetration | -0.6094 | -0.7086 | -0.7288 | -0.2803 | -0.7631 | -0.5419 | 0.5727 | 0.7891 | 1 |

Source: Authors' processing in Stata

Results and Discussions

In order to investigate the correlation between poverty and its determinants, simple and multiple regression models are run, using balanced panel data because of the character of the database: 8 regions are analysed in a timeframe of 11 years.

The OLS model is chosen for its effectiveness in handling cases with omitted variables and correlated data within the database. Additionally, we tried to generate FEM and REM to check if the omitted variables do not create a false correlation and to consider the possibility of heterogeneity of the regions. The following models are ranked in conformity with the decreasing value of their Adjusted R^2 , which is the explanatory power of the model. Later on, these variables are added in a more comprehensive regression for a complex model. The distribution of variables is also verified to satisfy the fundamental assumptions of multivariate data analysis. Only one variable (GDP/capita) is transformed using the logarithms to ensure a normal distribution of that variables (Hair et al., 2010).

The first measure in determining a model is placing the poverty measured by *AROP* in a simple regression with each independent variables in the following form

$$AROP_{it} = a + b * x_{it} + \varepsilon_{it} \quad (\text{Eq. 1})$$

where: x_{it} is the value of independent variable in year t for region i;
a is the constant/intercept;

b is the slope;

ε_{it} is the matrix of residuals.

The values of the parameters a and b for all simple regressions have been estimated and are presented within Table 3.

Table 4

The estimation of the level of poverty measured by AROP through simple regression, OLS Method

| | (1a) OLS | (2a) OLS | (3a) OLS | (4a) OLS | (5a) OLS | (6a) OLS |
|-------------------------|------------|-----------|----------------|------------|-----------------|------------|
| Constant | 15.2445*** | 7.9291*** | - 89.444*** | 54.3244*** | 196.394*** | 39.4034*** |
| Very low work intensity | 1.056*** | | | | | |
| Unemployment rate | | 3.3897*** | | | | |
| Consumption rate | | | 1.2854*** | | | |
| Urbanization rate | | | | -0.5392*** | | |
| Ln GDP/capita | | | | | - 17.8449*** | |
| Internet penetration | | | | | | -0.2289*** |
| R ² | 0.1168 | 0.5303 | 0.2664 | 0.6558 | 0.6177 | 0.133 |
| Adjusted R ² | 0.1055 | 0.5248 | 0.2579 | 0.6518 | 0.6132 | 0.229 |

Source: Authors' processing in Stata

Note: *** means 1% significant coefficient, ** means 5% significant coefficient, * means 1% significant coefficient.

The interpretations of the above simple regressions (Models (1a)-(6a)) are the following

- For a 1 unit increase in *Very low work intensity*, the poverty measured by AROP will increase with 1.056 units, ceteris paribus;
- For a 1 unit increase in *Unemployment rate*, the poverty measured by AROP will increase with 3.3897 units, ceteris paribus;
- For a 1 unit increase in *Consumption rate*, the poverty measured by AROP will increase with 1.2854 units, ceteris paribus;
- For a 1 unit increase in *Urbanization rate*, the poverty measured by AROP will decrease with 0.5392 units, ceteris paribus;
- For a 1 unit increase in Ln *GDP/capita*, the poverty measured by AROP will decrease with 17.8449 units, ceteris paribus;
- For a 1 unit increase in *Internet penetration*, the poverty measured by AROP will decrease with 0.2289 units, ceteris paribus.

Our second set of main results uses another poverty proxy as a dependent variable. As such, poverty measured by *Severe Material Deprivation Rate* is placed in simple regressions with each independent variable, in the next equation

$$\text{Severe Material Deprivation Rate}_{it} = a + b * x_{it} + \varepsilon_{it} \quad (\text{Eq. 2})$$

where: x_{it} is the value of independent variable in year t for region i ;
 a is the constant/intercept;
 b is the slope;
 ε_{it} is the matrix of residuals

Table 5

The estimation of the level of poverty measured by Severe Material Deprivation Rate through simple regression, OLS Method

| | (1b) OLS | (2b) OLS | (3b) OLS | (4b) OLS | (5b) OLS | (6b) OLS |
|-------------------------|----------------|----------------|--------------------|----------------|---------------------|----------------|
| Constant | 18.9205** * | 10.6334** * | - 71.831** * | 30.7113** * | 121.001** * | 51.2862** * |
| Very low work intensity | 0.4565 | | | | | |
| Unemployment rate | | 2.5429*** | | | | |
| Consumption rate | | | 1.0735** * | | | |
| Urbanization rate | | | | -0.144** | | |
| Ln GDP/capita | | | | | - 10.1919** * | |
| Internet penetration | | | | | | - 0.4173*** |
| R ² | 0.031 | 0.4295 | 0.2712 | 0.067 | 0.2766 | 0.5949 |
| Adjusted R ² | 0.0186 | 0.4222 | 0.2619 | 0.055 | 0.2674 | 0.5898 |

Source: Authors' processing in Stata

Note: *** means 1% significant coefficient, ** means 5% significant coefficient, * means 1% significant coefficient.

The interpretations of the simple regressions (Models (1b)-(6b)) is the following:

- For a 1 unit increase in *Very low work intensity*, the poverty measured by *Severe Material Deprivation Rate* will increase with 0.4565 units, ceteris paribus;
- For a 1 unit increase in *Unemployment rate*, the poverty measured by *Severe Material Deprivation Rate* will increase with 2.5429 units, ceteris paribus;
- For a 1 unit increase in *Consumption rate*, the poverty measured by *Severe Material Deprivation Rate* will increase with 1.0735 units, ceteris paribus;
- For a 1 unit increase in *Urbanization rate*, the poverty measured by *Severe Material Deprivation Rate* will decrease with 0.144 units, ceteris paribus;
- For a 1 unit increase in *Ln GDP/capita*, the poverty measured by *Severe Material Deprivation Rate* will decrease with 10.1919 units, ceteris paribus;
- For a 1 unit increase in *Internet penetration*, the poverty measured by *Severe Material Deprivation Rate* will decrease with 0.4173 units, ceteris paribus.

Therefore, the optimum models are established using intermediary multiple regressions till the optimum models, considering the increasing trend of the explanatory power. We want to check whether OLS model is reliable, therefore we estimate a FEM as well, meaning that the variables are assumed to be fixed, and REM, meaning that some variables are expected to show some random variation. Thus, the first model is estimated:

$$AROP_{it} = a + b * x_{1it} + c * x_{2it} + d * x_{3it} + \varepsilon_{it}, \quad (\text{Eq. 3})$$

where the independent variables (x_1 , x_2 , x_3) are unemployment rate, consumption rate and internet penetration.

Table 6

The results of the multiple regression estimations, OLS Method

| | (1c) OLS | (2c) OLS | (3c) OLS | (4c) FEM | (5c) REM |
|-------------------------|-----------|-----------|------------------|-------------------|----------------------------|
| Constant | 7.9291*** | -30.9556* | - 144.1481*** | 1.0756 | -29.6478* |
| Unemployment rate | 3.3897*** | 2.9346*** | 4.6226*** | 0.8267* | 2.3192*** |
| Consumption rate | | 0.4672** | 1.2995*** | 0.1366 | 0.3183* |
| Internet penetration | | | -0.4604*** | 0.0898** | 0.2039*** |
| R ² | 0.5303 | 0.5560 | 0.7249 | Within 0.0564 | R ² = 0.0501 |
| Adjusted R ² | 0.5248 | 0.5455 | 0.7151 | Between 0.8293 | R ² = 0.8263 |
| | | | | Overall 0.6615 | R ² = 0.6855 |

Source: Authors' processing in Stata

The interpretations of the first multiple regression model (Models (1c)-(5c)) are the following:

- For a 1 unit increase in *Unemployment rate*, the poverty measured by *AROP* will increase with 4.6226 units, ceteris paribus;
- For a 1 unit increase in *Consumption rate*, the poverty measured by *AROP* will increase with 1.2995 units, ceteris paribus;
- For a 1 unit increase in *Internet penetration*, the poverty measured by *AROP* will decrease with 0.4604 units, ceteris paribus.

As we add more variables to the model, R² and Adjusted R² gradually increases.

The second model set of multiple regression models is estimated by Eq. 4:

$$\text{Severe Material Deprivation Rate}_{it} = a + b * x_{1it} + c * x_{2it} + d * x_{3it} + \varepsilon_{it}, \quad (\text{Eq. 4})$$

Where the independent variables (x_1 , x_2 , x_3) are internet penetration, unemployment rate and urbanization rate.

Table 7

The results of the multiple regression estimations, OLS Method

| | (1d) OLS | (2d) OLS | (3d) OLS | (4d) FEM | (5d) REM |
|-------------------------|------------|-----------|------------|-------------------|---------------------------------------|
| Constant | 51.2861*** | 42.25*** | 27.5085*** | -45.9025 | 34.0001*** |
| Internet penetration | -0.4173*** | - | -0.3180*** | -0.3453*** | -0.3528*** |
| Unemployment rate | | 0.3386*** | 0.7758** | 1.6488*** | 0.9159 |
| Urbanization rate | | | -0.1604*** | 1.5202 | 1.0710* |
| R ² | 0.5949 | 0.6137 | 0.6573 | Within 0.7676 | R ² = Within 0.7619 |
| Adjusted R ² | 0.5898 | 0.6037 | 0.6438 | Between 0.1455 | R ² = Between 0.4852 |
| | | | | Overall 0.0006 | R ² = Overall 0.6509 |

Source: Authors' processing in Stata

The interpretations of the second set of multiple regression models (Models (1d)-(5d)) are the following:

- For a 1 unit increase in *Internet penetration*, the poverty measured by *Severe Material Deprivation Rate* will decrease with 0.318 units, ceteris paribus;
- For a 1 unit increase in *Unemployment rate*, the poverty measured by *Severe Material Deprivation Rate* will increase with 1.6488 units, ceteris paribus;
- For a 1 unit increase in *Urbanization rate*, the poverty measured by *Severe Material Deprivation Rate* will decrease with 0.1604 units, ceteris paribus.

As we add more variables to the model, R² and Adjusted R² gradually increases, both in Table 6 and Table 7.

Robustness Checks

In order to verify the previous results obtained, we perform some robustness checks by verifying another variable which acts as a proxy for poverty (AROPE). Table 8 contains the simple regression models, while Table 9 contains the estimates for the multiple regression models.

$$AROPE_{it} = a + b * x_{it} + \varepsilon_{it}, \quad (\text{Eq. 5})$$

where: x_{it} is the value of independent variable in year t for region i;

a is the constant/intercept;

b is the slope;

ε_{it} is the matrix of residuals.

Table 8

The estimation of the level of poverty measured by AROPE through simple regression, OLS Method

| | (1e) OLS | (2e) OLS | (3e) OLS | (4e) OLS | (5e) OLS | (6e) OLS |
|-------------------------|-----------|------------|--------------|------------|-------------|-------------|
| Constant | 32.102*** | 19.4874*** | -114.2326*** | 67.1004*** | 242.3069*** | 106.9984*** |
| Very low work intensity | 1.0077** | | | | | |
| Unemployment rate | | 4.953*** | | | | |
| Consumption rate | | | 1.7838*** | | | |
| Urbanization rate | | | | -0.4892*** | | |
| Ln GDP/capita | | | | | -20.7102*** | |
| Internet penetration | | | | | | -0.853*** |
| R ² | 0.1035 | 0.7361 | 0.2755 | 0.4040 | 0.5684 | 0.5181 |
| Adjusted R ² | 0.084 | 0.7312 | 0.2621 | 0.393 | 0.5604 | 0.5092 |

Source: Authors' processing in Stata

$$AROPE_{it} = a + b * x_{it} + \varepsilon_{it}, \quad (\text{Eq. 6})$$

where the independent variables are unemployment rate and internet penetration.

Table 9

The results of the multiple regression estimations, OLS Method

| | (1f) OLS | (2f) OLS | (3f) FEM | (4f) REM |
|-------------------------|------------|------------|---------------------------------|---------------------------------|
| Constant | 19.4874*** | 38.9604*** | 56.8876*** | 42.2964*** |
| Unemployment rate | 4.9530*** | 4.1974*** | 1.6492 | 3.1138*** |
| Internet penetration | | -0.2068* | -0.3064** | -0.1954* |
| R ² | 0.7361 | 0.7494 | Within R ² = 0.4996 | Within R ² = 0.4881 |
| Adjusted R ² | 0.7312 | 0.7400 | Between R ² = 0.8688 | Between R ² = 0.8551 |
| | | | Overall R ² = 0.7172 | Overall R ² = 0.7488 |

Source: Authors' processing in Stata

Looking at the values obtained in Table 8 and Table 9, we can compare and notice that the signs of the coefficients are the same in both models. Therefore, we confirm the model is robust.

Conclusions

Our results, in a nutshell, allow us to investigate how drastically the identified determinants of poverty can influence the scale of this undesired phenomenon. Through this

paper, we observe that poverty in Romania is directly influenced by *Very low work intensity*, *Unemployment rate*, *Consumption rate* and indirectly by *Urbanization rate*, *GDP/capita* and *Internet penetration*. From 2011 to 2022, we identify the Bucharest-Ifov region as the least affected by this phenomenon, while the poorest regions are the North-East and South-East.

Our contribution to the Romanian research field consists of finding the poorest regions of the country (North-East and South-East) so that the Romanian government can have a special focus on them when it comes to poverty eradication. We also conclude that among the indicators identified as significant, GDP/capita has the most important contribution to poverty reduction, with high values, each time 2 decimals. With this information, we believe that allocating more resources to help the development of the two affected regions will lead to poverty reduction. Our research is important in an international context as well, because it validates poverty determinants and it also brings along important policy implications. The Romanian government knows where to act and through which leverages to reduce national poverty levels. Extrapolating, development would result in poverty eradication, thus economic prosperity, technology boosts and active lives would drive the world out of poverty. For the future we intend to include education proxies as independent variables within our multiple regressions and maybe use cluster analysis as well.

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