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Cross-Generational Variations of Educational Poverty

Abstract. *According to the theory of skill-biased technological change, labour markets are characterised by an increasing demand for more highly skilled workers. On the other hand, the process of educational expansion increases the number of those who are better educated. In this context, basic qualification levels are devaluated in the labour market. A certain level of education could be sufficient to allow a successful participation in the labour market for specific groups of people, while for others, it may be insufficient. Taking these aspects into consideration, the present paper aims to reveal how and if the threshold pertaining to educational poverty changes across generations in the case of Romania. Our findings are useful for fostering data-driven decisions for public policies in the field of education.*

Keywords: *educational poverty, educational expansion, cohorts, labour market, employment.*

JEL Classification: I26, I31.

1. Introduction

One of the most important and well-known theories that analyses the relationship between education and labour market outcomes is the Human Capital Theory.

After several years in which economists studied the relationship between education and earnings, J. Mincer first introduced a new concept in 1958, named human capital, by developing an earnings-based model that explains income based on the years of schooling and professional experience (Cooper & Davis, 2017; Galiakberova, 2019). Therefore, following the development of human capital theory by J. Mincer and other economists, it was concluded that education increases

individual productivity, which leads to higher earnings, in other words, a longer period in education returns greater wages (Becker, 1964; Cooper & Davis, 2017). However, even if each additional year of education can bring higher income on the labour market later, people invest in education up to the point where the marginal cost is less than or equal to the marginal benefits. The costs are represented by direct (e.g., tuition fees) and indirect (the loss of earnings due to studying instead of working), while the benefits refer to the possible income earned later in the labour market (Botezat, 2016). Therefore, education represents an extremely important factor in the human capital accumulation, which can be considered the catalyst for technological change and a source of economic growth (Pohan & Vitale, 2016). Permanent investments in human capital are very important, given that skills and knowledge can degrade and become obsolete (Galiakberova, 2019), a situation that can be conducive for the so-called educational poverty, especially among older people who do not possess the knowledge and skills to use the new technologies.

While the human capital theory remains a fundamental part of economics of education, it is not the only theoretical framework worth considering. Other important theories regarding the relationship between education and labour market participation are the screening and signaling theories (Spence, 1981). In contrast to the human capital theory, in the case of these theories, the presumption is that the level of education is a “signal” for employers when they are looking for employees and they have to choose between workers with different productivity and different skills (Galiakberova, 2019). This happens because, usually, when there is a situation of asymmetric information for the employer and the employee regarding the employee’s knowledge, skills, and productivity as well as intrinsic abilities. Thus, the employer relies on the educational level and also the acquired certificates/credentials, instead of testing the employee’s skills, because this can be observed without any costs and it is also considered a method that can predict the potential productivity of those employees (Popov, 2014; Botezat, 2016). Therefore, more and more individuals decide to increase their level of education also for the fact that they can be better seen by employers on the labour market and to convince them about their skills, a fact that leads to situations of overeducation among individuals (Rinne & Zhao, 2010).

Another important perspective relevant to the present study is the theory of skill-biased technological change. According to this theory, labour markets are characterised by an increasing demand for more highly skilled workers. This happens due to the emergence of the new technologies and because the skills needed to use them are possessed only by some workers (Machin, 2004; Acemoglu & Autor, 2011), especially by those with higher level of education who are more likely to work in complex jobs than those with lower level of education (Yabiku & Schlabach, 2009). In our age, as the economy changes and new technologies are becoming more and more present in our lives, jobs that require complex skills are becoming more common. Thus, the skills that workers currently possess will partially or totally lose their relevance on the labour market and will be replaced by other types of skills that were not very important or required in the past (Allen & de Grip, 2007). This leads,

on the one hand, to the expansion of education, especially among young people who are still enrolled in education, and, on the other hand, to educational poverty, especially among the older ones who have completed their education in the past and whose skills no longer match to recent technological changes. This situation can increase the skill gap between those with a higher level of education and those with a lower level of education, or those with obsolete skills that are no longer needed in the new labour market. This skill gap can be reduced through formal training, on-the-job learning, and other types of formal or informal learning which need to be part of the lifelong learning, and it is relevant in order to reduce the negative effects of the skills change (Allen & de Grip, 2007).

One can see that the above-stated theories are relevant for the phenomenon called 'expansion of education', which increases the number of those better educated (Truong et al., 2021). This phenomenon takes place in the context of the new technologies' development, but also in the context in which the labour market demands more and more a higher level of education and skills. Therefore, we can say that higher educational attainment fosters the chance of participating in the labour market (Pastore, 2005). Another important aspect is related to the fact that the expansion of education can happen at different levels of education with different consequences. A strong correlation between tertiary enrolment and technological changes exists, while educational expansion in secondary education is critical for reaping many health and demographic benefits (Hannum & Buchmann, 2003). Moreover, the expansion of education helped narrow the gender earnings gap, considering that this process of educational expansion has given the chance to more and more women to pursue higher education and later participate in the labour market and reach top positions, where in the past the majority were held by men (Bar-Haim et al., 2022). Furthermore, previous studies have concluded that expansion of education generated benefits both at the individual and at the national level, such as reduced inequalities, healthier individuals, more democratic societies, improved economy, and more productive individuals (Hannum & Buchmann, 2003). However, one concern related to the expansion of education is that schooling returns can decline when the educational system expands faster than the demand for skilled workers (Yabiku & Schlabach, 2009).

Taking these aspects into consideration, the present paper aims to reveal which is the level of education that allows people to have a successful participation in the labour market and if this threshold changes across generations in the case of Romania. This threshold can be seen as the minimum level of education that gives individuals the possibility to have an adequate participation in the labour market or a poverty line from an educational point of view.

2. Problem Statement

A key mechanism in the fight against poverty is education, as it facilitates the access to better jobs and higher wages, thereby improving the lives of individuals (Ionescu, 2012). Therefore, the educational process plays a key role in preparing

individuals to join the workforce by equipping them with the necessary skills for employment (Ionescu, 2012). Over time, various studies analysing the relationship between education and participation in the labour market have been focused on what benefits education brings, but also on whether things change over time. A study conducted in Poland in 2005 found that, like other transition countries, Poland has experienced an increase in the proportion of people with higher education attainment over time, while the proportion with vocational secondary education has steadily declined, especially given that young people can avoid long-term unemployment, poverty, and social exclusion by pursuing education rather than unemployment or low-wage employment (Pastore, 2005). Another study carried out by OECD in 2007 found that there is an increasingly demand for higher-skilled individuals in most countries, while people with low educational attainment are less likely to be in the labour force and more likely to be unemployed given that most labour markets are experiencing a decrease in the number of jobs requiring a low level of education (OECD, 2007).

In the past, lack of education or professional qualifications was not a barrier to employment because the labour market could accommodate a broader spectrum of educational levels. Today, in a knowledge-based society, access to the labour market is conditioned by having a minimum level of education or professional qualifications (Botezat, 2016). Everything below this level can be considered educational poverty. In modern societies, technological progress led to changes in the structure of the labour market, resulting in a higher demand for more highly skilled workers. On the other hand, educational expansion has resulted in an oversupply of qualified candidates. Thus, workers with lower qualifications are being rejected for jobs that previously had been performed perfectly competently by workers with this level of qualification (Glaesser, 2021). In this context, basic qualification levels are devaluated in the labour market. Therefore, especially high-skilled young individuals benefit more from this transformation, while older individuals are more vulnerable to the negative effects of this changes due to the obsolescence of their skills (Pastore, 2005; Allen & de Grip, 2007).

Nowadays, more workers achieve formal education and qualification than in the past (Machin, 2004). A recent study published in 2022 shows that these changes also led to an increase in the number of women with a higher level of education compared to previous generations, so that women from recent cohorts are better educated compared to those from previous cohorts. However, their earnings level remains below men's, even if the gap has narrowed (Bar-Haim et al., 2022).

Educational poverty is a relatively new concept, being introduced for the first time in the academic discourse by Allmendinger in 1999 (Glaesser, 2021). According to Lohmann and Ferger (2014), educational poverty is a state of not being able to meet a socially accepted minimum level of education, respectively, an education level that is below a minimum threshold established by a society. However, the concept of educational poverty does not appear to be clear from a theoretical perspective; it seems to be in the midst of ongoing social and economic

changes due to globalisation and technological progress, and thus is still under construction (Botezat, 2016).

Moreover, the author who first introduced this concept classified the educational poverty into two types: the absence of educational credentials/certificates and the lack of competences. The first refers to the absence of educational credentials/certificates that certify the completion of a minimum level of education, whereas the latter refers to the minimal skills needed to participate in economic and social activities (Botezat, 2016). On the other hand, the educational poverty can be measured both in absolute and relative terms. The absolute definition of educational poverty represents the inability to achieve a minimum level of education (e.g., compulsory education), while relative educational poverty refers to individuals in the lowest quintile or quartile of the educational distribution (Botezat, 2016). In terms of measurement, Lohmann and Ferger assert that a relative educational poverty measure is more appropriate in developed countries where high educational attainment is a standard, while in developing countries where a significant proportion of the population has not been educated at all, an absolute educational poverty measure would be more appropriate (Lohmann & Ferger, 2014).

However, another important aspect to mention is related to educational poverty from a generational perspective. As we mentioned above, technological changes and the expansion of education lead to an increase in the level of education of individuals, and subsequently an increase in the minimum level of education required on the labour market. In this context, the level below which educational poverty is considered could be growing from one generation to another, as the minimum level of education and skills required increase. That is why as people acquire ever higher levels of formal education, a certain level of education that was perfectly adequate in the past may now represent educational poverty (Glaesser, 2021). In consequence, what was not considered educationally poverty for parents, might be considered educationally poverty for their children (Glaesser, 2021).

The present article proposes a new approach for identifying the threshold of educational poverty across generations. Our work complements the existing literature that studies the relation between education and the labour market, while developing the understanding of the concept of educational poverty.

3. Research Questions/Aims of the Research

The main objective of the research is to determine an optimal threshold for the education that can effectively predict favourable outcomes in the labour market. By identifying a specific threshold, we can assess the level of education necessary for individuals to achieve successful employment, whether as employees or as self-employed individuals. This objective helps to provide insights into the relationship between education and labour market outcomes, enabling policymakers and stakeholders to make informed decisions regarding educational policies, job market interventions, and career development strategies.

4. Research Methods

In order to do that, the Romanian dataset of EU-SILC for the year 2020, has been used, having as the main variables of interest as follows:

- The dependent variable has been the economic status of being an employee or self-employed person, codified with 1 and 0 for other forms of economic status.
- The main predictor variable has been the highest ISCED level attained as a proxy for the educational variable codified as an ordinal variable with 5 categories.
- The control variables have been gender, region, and degree of urbanisation.

The analysis has been carried out on three groups of age cohorts: 34 years old and less, 35-44 years old, and 45+ years old.

In order to identify the optimal threshold for the education variable that can effectively predict favourable outcomes in the labour market, the logistic regression analysis has been used to predict the probability of having a favourable outcome in the labour market and, furthermore, based on the selected cut-off to determine the correspondence with the minimum level of education.

The probability of categorisation issues with two possible outcomes is modelled using logistic regression. Based on the number of the independent variables, the model takes two forms:

$$P(Y = 1|X) = \frac{e^{\alpha + \beta X}}{1 + e^{\alpha + \beta X}} = \frac{1}{1 + e^{-(\alpha + \beta X)}} \tag{1}$$

if there is just one independent variable;

$$P(Y = 1|X_1, X_2, X_3, \dots, X_k) = \frac{e^{(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k)}}{1 + e^{(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k)}} \tag{2}$$

if there are more than one independent variables.

From the model, the coefficients formula could be extracted:

$$e^{\beta_0} = \frac{P(Y = 1|X_1 = X_2 = X_3 = \dots = X_k = 0)}{1 - P(Y = 1|X_1 = X_2 = X_3 = \dots = X_k = 0)} = \frac{P(Y = 1|X_1 = X_2 = X_3 = \dots = X_k = 0)}{P(Y = 0|X_1 = X_2 = X_3 = \dots = X_k = 0)} = OR_{initial} \tag{3}$$

This represents the odds report ($OR = \frac{P}{1-p}$) in the initial state $X_1 = X_2 = \dots = X_k$

$$e^{\beta_i} = \frac{P(y=1|X_i=1, X_j=0 \text{ for } j \neq i)}{1 - P(y=1|X_i=1, X_j=0 \text{ for } j \neq i)} \times \frac{1}{OR_{initial}} = \frac{OR_{X_i=1, X_j=1, \text{ for } j \neq i}}{OR_{initial}} \tag{4}$$

The best-fitting model can be evaluated using Cox & Snell Pseudo- R^2 , Nagelkerke Pseudo- R^2 , Akaike and Bayesian Information Criteria as well as Log-likelihood χ^2 ($LR \ chi2$).

The model with higher overall accuracy will demonstrate which feature selection method is more suitable for the dataset. The accuracy of classification problems is assessed using ROC and AUC curves. AUC ROC, which stands for the

area under the receiver operating characteristic curve, is commonly used to evaluate performance in binary classification applications. The accuracy of the models was evaluated using the ROC and AUC curve (area under the curve). Values close to 1 for these indicators indicate better model performance.

5. Findings

Table 1 presented the estimated probability of favourable outcomes in the labour market for the age cohorts under 34 years old. The empirical results revealed that in comparison to tertiary education (ISCED 5-8), the previous levels of education are associated with a lower probability of obtaining favourable outcomes on the labour market, and the results are highly statistically significant with the only exception of the ISCED level 4, which do not exhibit a significant impact on this probability. For the group cohort under 34 years old, keeping the other variables unchanged, the median estimated probability has been computed to be 0.4415, which corresponds to a minimum level of education ISCED 3, stipulating that individuals who have attained at least an ISCED 3 level of education are more likely to achieve positive outcomes in the labour market compared to those with lower levels of education. ISCED 3 represents a specific level of education attainment that is associated with improved employment prospects and better job opportunities. With respect to the control variables, individuals from region RO2 and living in both intermediate and thinly-populated areas have associated a higher probability of obtaining favourable outcomes in the labour market. On the opposite side, persons from the region RO4 and males are more inclined to have a lower probability of succeed on the labour market. The AUC value for the age cohort under 34 years old model is relatively high, indicating that the model moderately classifies the data (Fig. 1). The model correctly classified almost 67.8% of the data.

Table 1. The empirical results of predicting favourable outcomes in the labour market using logistic regression models for the age cohorts under 34 years old

	Coefficients	Std. err.	z	P>z	[95% conf.	interval]
Highest ISCED level attained (ref.category=ISCED 5-8)						
ISCED 0	0.038***	0.017	-7.110	0.000	0.015	0.094
ISCED 1	0.071***	0.023	-8.140	0.000	0.037	0.134
ISCED 2	0.044***	0.008	-17.090	0.000	0.031	0.063
ISCED 3	0.101***	0.016	-14.270	0.000	0.074	0.138
ISCED 4	0.972	0.385	-0.070	0.943	0.448	2.111
Region (ref.category=RO1)						
2	1.007	0.112	0.060	0.953	0.810	1.251
3	1.347**	0.163	2.460	0.014	1.062	1.708
4	0.774**	0.092	-2.150	0.031	0.614	0.977

	Coefficients	Std. err.	z	P>z	[95% conf.	interval]
Degree of urbanisation (ref.category=densely-populated area)						
Intermediate area	1.834***	0.217	5.130	0.000	1.455	2.312
Thinly-populated area	2.075***	0.230	6.590	0.000	1.670	2.578
Gender (ref.category=female)						
Male	0.433***	0.037	-9.880	0.000	0.366	0.511
Constant	7.841***	1.360	11.870	0.000	5.581	11.015
Number of obs.	2801					
Log likelihood	-1667.4079					
LR chi2(25)	548.13***					
Pseudo R2	0.140					
AIC	3358.816					
BIC	3430.069					
Correctely classified percentage	67.94%					

Source: Authors' own calculations.

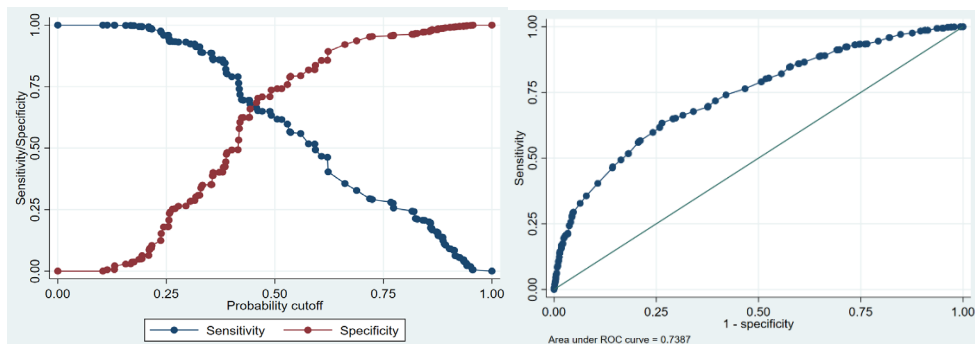


Figure 1. Diagnostic tests for predict favourable outcomes in the labour market using logistic regression models for the age cohort under 34 years old

Source: Authors' own calculations.

Table 2 presented the estimated probability of favourable outcomes in the labour market for the age cohorts 35-44 years old. The empirical results revealed that in comparison to tertiary education (ISCED 5-8), the previous levels of education are associated with a lower probability of obtaining favourable outcomes on labour market and the results are highly statistically significant. For the group cohort 35-44 years old, keeping the other variables unchanged, the median estimated probability

has been computed to be 0.927, which corresponds to a minimum level of education ISCED 4, highlighting that individuals in the age range of 35-44 years who have completed post-secondary non-tertiary education or higher are more likely to have better job prospects, higher earning potential, and greater career opportunities compared to individuals with lower levels of education within the same age group. This finding highlights the importance of attaining at least ISCED 4 level education during early adulthood or before reaching the age range of 35-44 years.

It indicates that individuals who have invested in higher levels of education during their formative years are more likely to experience favourable outcomes in the labour market as they enter the age cohort of 35-44 years old. Within the model, individuals from region RO4, usually males, and living in both intermediate and thinly-populated areas, have associated a lower probability of obtaining favourable outcomes in the labour market in comparison with the benchmark. The AUC value for the age cohort 35-44 years old model is relatively high, indicating that the model moderately classifies the data (Fig.2). The model correctly classified almost 86.47% from the data.

Table 2. The empirical results of predicting favourable outcomes in the labour market using logistic regression models for the age cohorts 35-44 years old

	Odd ratio	Std. err.	z	P>z	[95% conf.	interval]
Highest ISCED level attained (ref.category=ISCED 5-8)						
ISCED 0	- 4.889***	0.613	-7.970	0.00 0	-6.091	-3.687
ISCED 1	- 3.967***	0.454	-8.740	0.00 0	-4.856	-3.077
ISCED 2	- 2.517***	0.298	-8.450	0.00 0	-3.101	-1.933
ISCED 3	- 1.352***	0.273	-4.950	0.00 0	-1.887	-0.816
ISCED 4	- 0.764***	0.453	-1.690	0.09 2	-1.652	0.124
Region (ref.category=RO1)						
2	0.015	0.191	0.080	0.93 8	-0.359	0.389
3	-0.259	0.207	-1.250	0.21 2	-0.666	0.148
4	-0.363*	0.198	-1.840	0.06 6	-0.750	0.025
Degree of urbanisation (ref.category=densely-populated area)						
Intermediate area	- 0.574***	0.212	-2.710	0.00 7	-0.989	-0.158
Thinly-populated area	- 0.763***	0.204	-3.740	0.00 0	-1.163	-0.363

	Odd ratio	Std. err.	z	P>z	[95% conf.	interval
Gender (ref.category=female)						
Male	- 2.144***	0.182	- 11.800	0.00 0	-2.500	-1.788
Constant	5.434***	0.341	15.920	0.00 0	4.765	6.102
Number of obs.	2,173					
Log likelihood	-687.52873					
LR chi2(25)	434.23***					
Pseudo R2	0.24					
AIC	1399.057					
BIC	1467.264					
Correctly classified percentage	86.47%					
<i>Source: Authors' own calculations.</i>						

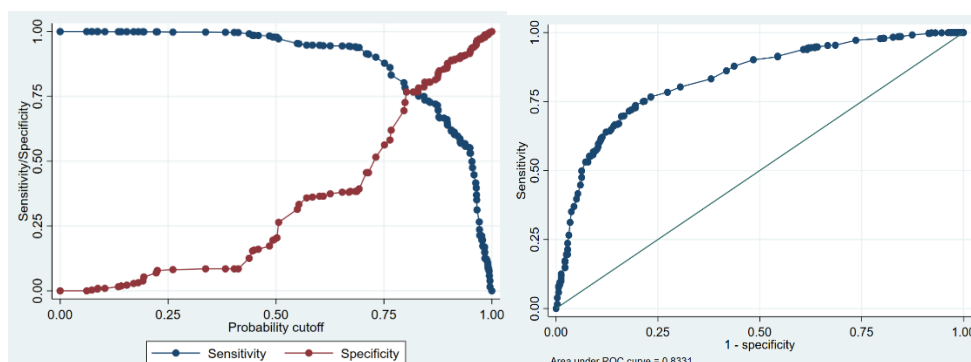


Figure 2. Diagnostic tests for predict favourable outcomes in the labour market using logistic regression models for the age cohort 35-44 years old
Source: Authors' own calculations.

Table 3 presented the estimated probability of favourable outcomes in the labour market for the age cohort 45-64 years old. The empirical results revealed that in comparison to tertiary education (ISCED 5-8), the previous levels of education are associated with a lower probability of obtaining favourable outcomes on labour market and the results are highly statistically significant. For the group cohort 35-44 years old, keeping the other variables unchanged, the median estimated probability has been computed at 0.745, which corresponds to a minimum level of education ISCED 3, highlighting that individuals in the age range of 45-64 years who have completed upper secondary education or higher are more likely to have better job prospects, higher earning potential, and greater career opportunities compared to individuals with lower levels of education within the same age group. This finding emphasises the importance of attaining at least ISCED 3 level education

during early adulthood or before reaching the age range of 45-64 years. It indicates that individuals who have completed their upper secondary education or higher during their formative years are more likely to experience favourable outcomes on the labour market as they enter the age cohort of 45-64 years old.

Within the model, individuals from region RO2 compared to those in the RO1 region exhibited a higher probability of achieving favourable outcomes on the labour market. This finding suggests that individuals residing in region RO2 have certain advantages or characteristics that contribute to their higher probability of attaining positive outcomes in terms of employment, income, or career progression, compared to individuals residing in region RO1. The specific reasons behind this difference in probabilities could be influenced by various factors such as differences in economic development, job opportunities, industry composition, infrastructure, educational resources, or other regional-specific factors. A relevant result is related to the fact that males and living in both intermediate and thinly-populated areas have associated a lower probability of obtaining favourable outcomes in the labour market in comparison with the benchmark.

Table 3. The empirical results of predicting favourable outcomes in the labour market using logistic regression models for the age cohorts 45-64 years old

	Odd ratio	Std. err.	z	P>z	[95% conf. interval]	
Highest ISCED level attained (ref.category=ISCED 5-8)						
ISCED 0	- 3.680***	0.488	-7.540	0.00 0	-4.636 -2.723	
ISCED 1	- 2.231***	0.232	-9.600	0.00 0	-2.686 -1.775	
ISCED 2	- 2.117***	0.151	- 14.020	0.00 0	-2.413 -1.821	
ISCED 3	- 1.365***	0.133	- 10.290	0.00 0	-1.625 -1.105	
ISCED 4	- 0.800***	0.208	-3.850	0.00 0	-1.207 -0.392	
Region(ref.category=RO1)						
2	0.300***	0.089	3.390	0.00 1	0.127 0.474	
3	-0.109	0.094	-1.170	0.24 4	-0.293 0.074	
4	- 0.257***	0.089	-2.890	0.00 4	-0.432 -0.083	
Degree of urbanisation (ref.category=densely-populated area)						
Intermediate area	- 0.221***	0.087	-2.540	0.01 1	-0.392 -0.050	
Thinly-populated area	-0.189**	0.084	-2.260	0.02 4	-0.353 -0.025	

	Odd ratio	Std. err.	z	P>z	[95% conf.	interval
Gender (ref.category=female)						
Male	- 1.109***	0.064	- 17.240	0.00 0	-1.235	-0.983
Constant	2.920***	0.147	19.930	0.00 0	2.633	3.208
Number of obs.						5,398
Log likelihood						-3001.6943
LR chi2(25)						717.74***
Pseudo R2						0.168
AIC						6027.389
BIC						6106.514
Correctly classified percentage						72.42%

Source: Authors' own calculations.

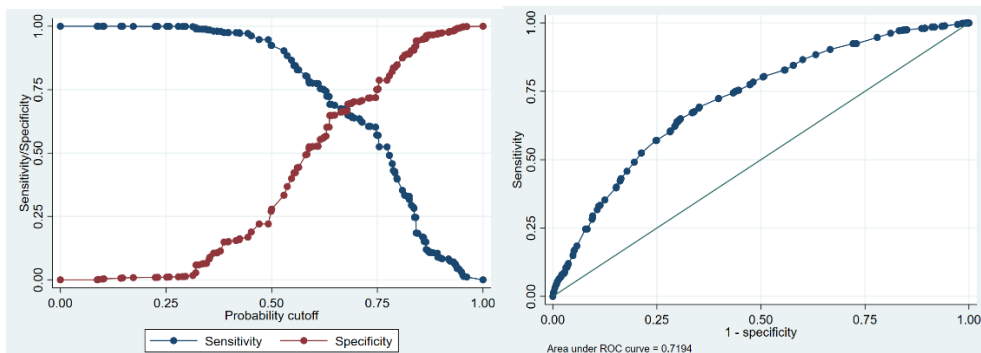


Figure 3. Diagnostic tests for predict favourable outcomes in the labour market using logistic regression models for the age cohort 45-64 years old

Source: Authors' own calculations.

This result suggests that being male and living in intermediate or thinly-populated areas pose specific challenges or disadvantages that hinder individuals' chances of attaining positive labour market outcomes such as employment, income, or career advancement.

There could be several underlying factors contributing to this lower probability. For males, it might be influenced by gender-related disparities, such as occupational segregation, wage gaps, or societal expectations. In intermediate and thinly-populated areas, limited job opportunities, lack of infrastructure, or lower economic development might play a role in the reduced probability of favourable labour market outcomes. The AUC value for the age cohort 45-64 years old model is moderate,

indicating that the model classifies adequately the data (Fig.3). The model correctly classified almost 72.42% of the sample cases.

6. Conclusions

The present study aimed to identify the minimum level of education that allows individuals to participate successfully on the labour market. We applied logistic regression analysis on the Romanian dataset from EU-SILC 2020 and find that the minimum level of education predicting a favourable outcome in the labour market varies across generations. Thus, in the case of younger and older cohorts, one should attain at least upper secondary education in order to have the above-median probability of being an employee or self-employed. For individuals in the age cohort under 34 years old, this level of education may align well with the skills and qualifications demanded by the labour market. It provides them with the necessary knowledge and competencies to access favourable employment opportunities. The age cohort 45-64 years old often comprises individuals with substantial work experience. In this phase of their careers, employers may prioritise practical skills and experience rather than higher levels of education. ISCED 3 education is often sufficient to meet the requirements of many jobs at this stage, and individuals in this cohort may have already established themselves in the labour market based on their prior experience and skills. For the younger age group, the ISCED 3 education serves as a foundation for further educational or career advancements. Individuals in this cohort may still be in the early stages of their careers and can benefit from acquiring additional skills or pursuing higher education in the future. For the older age group, the focus may shift towards leveraging their existing skills and experience rather than investing in higher levels of education.

On the other hand, in the case of 35-44 years cohort, post-secondary non-tertiary education is the minimum level granting a superior probability of employment. Education at the post-secondary non-tertiary level often focuses on providing specialised vocational or technical training. Individuals who have completed programs at this level acquire specific skills and knowledge that are relevant to particular industries or occupations. Education and training at the post-secondary non-tertiary level can provide individuals with the necessary qualifications and credentials to pursue career advancement opportunities. With specialised skills and knowledge, individuals in this age cohort may be better equipped to take on higher-level roles, responsibilities, and leadership positions within their chosen fields. This can result in increased job satisfaction, increased income potential, and overall favourable outcomes in their careers.

The analysis revealed that individuals in the age cohorts of 35-44 years old and 45-64 years old, living in intermediate or thinly-populated areas exhibits a lower probability of obtaining favourable outcomes in the labour market and this can be explained by limited job opportunities, by the fact that intermediate and thinly-populated areas often face economic challenges, such as lower economic growth, limited investment, and fewer resources for job creation. In the case the age cohort

under 34 years old, living in intermediate or thinly-populated areas increases the probability of employment due to younger ages of school-to-work transition due to limited access to education and training and opportunities for self-employment in agriculture.

Our results point to the importance of supporting the general expansion of education (including in rural areas), while encouraging individuals to reach at least upper secondary education. Moreover, participation of adults to further education and training during the life course becomes critical for all so the level of skills and qualification should reach at least post-secondary education level in the most productive age from the economic point of view.

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