

## DOES EDUCATION REDUCE CRIME? ECONOMIC ANALYSIS ON A SAMPLE OF EUROPEAN COUNTRIES

**Vojislav Babic**

Institute for sociological research, University of Belgrade, Serbia, [babic.voja@gmail.com](mailto:babic.voja@gmail.com)

**Siniša Zarić**

Faculty of Economics, University of Belgrade, Serbia, [sinisha.zaric@gmail.com](mailto:sinisha.zaric@gmail.com)

**Abstract:** This is an analysis of an individual's economic behavior in relation to the benefits and risks of a potential crime. In theoretical terms, the paper relies on the postulates and contributions of Nobel laureate Gary Becker (1968; 1978). The main goal of the paper is to investigate the extent to which the level of education and the corresponding net income of the working population influence the change in the number of robberies. According to the initial hypothesis, the high level of education reduces the number of robberies. The sample in which the following countries were selected is analyzed: France, Italy, Germany, the Czech Republic, Hungary, Finland, Estonia, and Serbia. The criteria for selecting countries were EU membership, EU candidate status, and the country's geopolitical position. The econometric method was used in the research. Eurostat data on the net income of the working population, the share of the working population by level of education and robberies recorded offenses were used. After multiple regression analysis, in the case of the low educated population, speaking about the value of adjusted  $R^2$ , a set of two predictor variables explains 76.6% of the variability of robberies per 100K inhabitants. The jump of both independent variables affects the growth of robberies with the fact that in the case of the variable 'share of low educated' the jump of robberies is more pronounced. When it comes to the observed population with tertiary education, a set of two independent variables explains 68.2% of the variability of 'robberies per 100K inhabitants'. However, when the share of tertiary educated people jumps by one point, the variable 'robberies per 100K inhabitants' decreases by 1.110. The independent variable 'tertiary education' has a significant effect on deterring individuals from robbery, due to the assessment that in relation to the current situation, the consequences are more expensive and the benefits insufficient. Rational choice theory is at work. After assessing the punishment and the probability that they will be caught for the committed crime, highly educated people make the decision that their current social and material status is more attractive than the benefits of a potential robbery.

**Keywords:** Education level, net income, robbery, rational choice theory, European countries

### 1. INTRODUCTION

Nobel laureate Gary Becker is considered the founder of the Economics of crime discipline. According to Becker (1968; 1978), criminals behave rationally, comparing the benefits they can gain by breaking the law with the utility they could gain from engaging in a legitimate business. If the expected benefit of a crime is greater than the utility of a legal alternative engagement, the rational decision of a potential criminal is to commit the crime. According to Becker (1968: 177), the expected utility of committing a crime is:

$$EU_j = p_j(Y_j - f_j) + (1 - p_j)U_j(Y_j), \quad (1)$$

where  $Y_j$  is his/her income, monetary plus psychic, from an offense;  $U_j$  is his/her utility function; and  $f_j$  is to be interpreted as the monetary equivalent of the punishment.

When it comes to penal policy, Becker believes that from the point of view of society, a fine is an optimal measure. Economically, the realization of a fine does not require the investment of police and judicial resources or financial resources for the functioning of prison systems. Based on precise mathematical calculations, through partial derivatives, Gary Becker (1968) proposed optimal amounts of fines for a large number of crimes. The optimal amount of the fine for the committed crime is equal to the sum of the marginal damage caused by the criminal act and the marginal costs of apprehending the perpetrator. According to Becker, crime cannot be eradicated but can be reduced to a certain level. From the point of view of prevention, the most rational decision is to increase the punishment and reduce the supervision (Becker, 1974). The higher the fine, the less expected the usefulness of the criminal experience. According to Becker, crime prevention is based on a penal policy that relies on an effective fine that will deter an individual from committing a crime (Begović, 2004). Becker's postulates of the crime economy have attracted much attention over the years from admirers and critics who have largely resented economic reductionism. From the point of view of psychology, it can be noticed that Becker has to some extent neglected the psychological profile of criminals because they often have problems with rational prediction. Criminals are often

constrained by affective behavior, so they cannot control their emotions and impulses. Therefore, in a large number of cases, they cannot make rational decisions. In general, Becker's theory does not mention the ethical moment or internal moral brakes, which are also important factor in deterring an individual from committing a crime. Although Becker does not explicitly mention the impact of education on crime, the fact is that most criminals are low-educated people, whose income from the activities they legally perform to survive is low. That is why they more often opt for a criminal act because it brings them greater expected benefits (Begović, 2004).

There are a large number of empirical studies on the impact of education on crime. Lochner and Moretti (2004) used ordinary least squares (OLS) to determine whether education has an impact on crime. Based on the results, it was found that in the US, one-year increase in average years of schooling reduces murder and assault by almost 30 percent, motor vehicle theft by 20 percent, arson by 13 percent, burglary and larceny by about 6 percent while effects on robbery were negligible (*ibid.*). Machin et al. (2011) found that in the UK the impact of education on property crime is greater, compared to estimates for the US (Lochner & Moretti, 2004), while in the case of the effects on violent crime it is weaker. Groot and van der Brink (2009) found that the probability of committing shoplifting, vandalism and threat, assault, and injury decreases with years of education, while the probability of committing tax fraud increases with years of education. Kristina Veselak (2015), based on research from the Suffolk County Correctional Facility in Riverhead, New York, found that high school offenders are more likely to be arrested for fraud and drugs. Lochner (2020) stated that economic theory implied a negative correlation between educational achievement and most types of crime. Increasing the level of education significantly has reduced violence and property crimes that bring significant social benefits.

The aim of this paper is to analyze the extent to which the level of education and the corresponding net income of the working population influence the change in the number of robberies. The research tests the following hypothesis *H*: *The high level of education reduces the number of robberies.*

## 2. MATERIALS AND METHODS

A self-structured sample of eight countries (Zarić & Babić, 2021; Peregrine, 2018) was used in the study. The composition includes France, Italy, Germany, the Czech Republic, Hungary, Finland, Estonia and Serbia. Two criteria were used to select the countries in the sample. The first criterion was EU membership, *i.e.* the status of a candidate for EU membership. The second criterion was the importance of the country's geopolitical position. Eurostat data for the net income of the working population (Eurostat 2021a), the share of the working population by level of education (Eurostat 2021b), and robbery recorded offences per 100K inhabitants (Eurostat 2021c) were used. Data for the COVID-19 pandemic years were avoided due to bias, so data from 2019 were used from the Eurostat database. Table 1 shows the results according to the given criteria. The econometric method is used in the research. Calculations were performed in SPSS 25 software.

**Table 1. Net income, level of education, robbery per 100K inhabitants**

	Median equivalised net income, the lowest education (EUR)	Median equivalised net income, tertiary education (EUR)	The share of low educated, 15 to 64 years %	Share of tertiary education , 15 to 64 years %	Robbery, police recorded offences per 100K inhabitants, 2017-2019
France	19017	27749	23.4	33.8	43.8
Italy	14377	23491	39.8	17.4	47
Germany	18136	29350	19.5	26	45
Czechia	8674	13611	12.3	21.6	13.9
Hungary	4540	8229	20	22.5	7.4
Finland	21093	32027	16.9	38.5	31.1
Estonia	9253	15837	15.8	36.5	15.3
Serbia	1854	4870	22.1	20.6	21.7

Source: Eurostat 2021

## 3. RESULTS AND DISCUSSION

To test hypothesis *H*, the following model was used:

$$R_i = C + b1w_{i1} + b2E_{i2} + e_i \quad (2)$$

Where, for  $i = n$  observations:

R = robbery, police recorded offences per 100K inhabitants (dependent variable)

C = R intercept (Constant)

b1 = slope coefficient of independent variable w

b2 = slope coefficient of independent variable E

w = net income of correspondent education

E = education level of observed population

e = random error

The model was first tested in the case of low-educated citizens with less than primary, primary, and lower secondary education. As another independent variable, net income was used for the appropriate educational degree (Table 2). A significance level was set to  $\alpha = 0.05$ . The results show significant values for all three R coefficients. Due to the limitations of the smaller sample, the adjusted coefficient  $R^2$ , which has more severe criteria, is used in the analysis. Based on the value of adjusted  $R^2$ , a set of two predictor variables explains 76.6% of the variability of 'robberies per 100K inhabitants'. The remaining 23.4% could be attributed to other variables that were not included in the model. These are probably variables of a psychological and ethical nature for self-evaluation of moral attitudes that are not the subject of this research.

**Table 2 Low educated and Robberies**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.912 <sup>a</sup>	0.833	0.766	7.6193
a. Predictors: (Constant), attainment level less prime, prime and low secondary % and equivalent income				

Source: Authors' calculations based on Eurostat data

Based on the results, both independent variables have a contribution to the number of robberies (Table 3).

**Table 3 Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-11.175	8.792		-1.271	0.260
	net income of low educated	0.002	0.000	0.684	3.702	0.014
	less than primary, primary and lower secondary education %	0.987	0.350	0.521	2.822	0.037
a. Dependent Variable: Robberies per 100k inhabitants						

Source: Authors' calculations based on Eurostat data

When net income jumps by one point, variable 'robberies per 100K inhabitants' increases by 0.002. On the other hand, when education goes up by one point, robberies jump by 0.987. It is noticeable that in the case of low-educated citizens, the jump of both independent variables affects the growth of robberies.

As for tertiary educated people (Table 4), a set of two independent variables explains 68.2% of the variability of 'robberies per 100K inhabitants'.

**Table 4 Tertiary education and Robberies**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879 <sup>a</sup>	0.773	0.682	8.8751
a. Predictors: (Constant), attainment level tertiary education %, income for tertiary education				

Source: Authors' calculations based on Eurostat data

Based on the results, both independent variables affect the number of robberies. The negative impact of tertiary education on the dependent variable is interesting. When the share of tertiary educated people jumps by one point, variable 'robberies per 100K inhabitants' decreases by 1.110 (Table 5):

**Table 5 Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.419	11.745		2.164	0.083
	income for tertiary education	0.002	0.000	1.066	4.120	0.009
	Attainment level tertiary education %	-1.110	0.506	-0.567	-2.193	0.051
a. Dependent Variable: Robberies per 100k inhabitants						

Source: Authors' calculations based on Eurostat data

According to the results, it has been proven that a higher share of citizens with tertiary education reduces the number of robberies. It is stated that hypothesis *H* is confirmed. It is obvious that an individual in assessing the potential benefits of robbery has in mind that tertiary education, in addition to the possibility of a decent income, brings social status, reputation, rational thinking, and open opportunities for advancement.

#### 4. CONCLUSION

A large number of human behavior types can be viewed as rational and useful maximization. The individual chooses how to behave on the basis of a rational consideration of the costs and benefits of the intended action. There is practically no difference when it comes to criminal behavior. Whether or not someone will opt for a crime depends on whether it will be more rewarding and less costly for him/her than non-criminal behavior. The individual compares the benefits and disadvantages of current social and financial status, internal ethical constraints (if any) with the benefits and risks of potentially committing a crime. In this particular case, it has been shown that the independent variable tertiary education has a significant effect on deterring individuals from robbery - due to the assessment that in relation to the current situation, the consequences are more expensive and the benefits

insufficient. The robbery was included in the paper as a dependent variable as the most attractive criminal act. Space has been opened to measure the impact on other criminal acts such as burglaries, thefts of expensive vehicles, unlawful acts involving controlled drugs or precursors, tax evasion, and others.

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