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THE INFLUENCE OF ECONOMIC FACTORS ON CRIME IN THE COUNTRIES OF THE EUROPEAN UNION

Bachelor's thesis

Programme TAAB, specialisation Economic Analysis

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Tallinn 2023

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ABSTRACT

This bachelor's thesis examines how various economic factors can motivate people to engage in crime. This information can help prevent future crimes by creating a more conducive environment for people to have no reason to break the law.

The work is divided into three chapters. The first chapter provides an overview of previous theoretical and empirical studies on the topic. The second part examines the data and methods used in the analyses, and the third chapter performs the analysis, describes the obtained results and draws conclusions.

The analysis uses panel data for the period 2005-2020, collected from the World Bank, Organisation for Economic Co-operation and Development and Eurostat databases. The methods used in the thesis are correlation and regression analysis, which includes the following indicators: the number of crimes per 1,000 people, the level of adult education, the Gini index, the number of number of immigrants, inflation rate, unemployment rate, relative poverty rate, annual growth of urban population. Regression analysis reveals that the unemployment rate, Gini index, inflation rate, annual growth of the urban population have an increasing effect on the number of crimes per 1000 people, while the proportion of adults with tertiary education reduces crime.

Keywords: crime rate, labor market, returns to crime, unemployment, poverty, education, fixed effects model, panel data

INTRODUCTION

Crime has existed since ancient times and remains one of the most important social problems to this day. Higher crime rates are one of the main causes of anxiety and discomfort in any community. Crime entails significant monetary and psychological costs to society. A criminal act creates a sense of insecurity and fear even among those who have not yet become a victim. This sense of panic at being victimized can take a toll on people's well-being. (Gillani *et al*., 2009; Groot & van den Brink, 2010)

In addition to previous point, crime puts additional pressure on the economy. Maintaining prisons and providing prisoners with everything they need requires the use of money from the reserves. Also prisoners can no longer participate in the labor market, which leads to a shortage of labor and an increase in the burden on workers. This leads to a decrease in the volume of production and, consequently, the gross domestic product of the country. (*GDP*). (Groot & van den Brink, 2010)

It is believed that the reasons for committing a crime often lie in sociology and criminology. Phenomena such as family background, peer pressure, and criminogenic traits are considered major motivators. However, economists can also provide some insight into the impact of economic incentives on criminals' decision making and how the market affects their motives. The economist can also suggest some alternative crime reduction strategies, taking into account the cost-benefit framework. (Freeman, 1999, pp 3533)

That is why it is so important to predict the dynamics of crime rates. The first step towards achieving the goal is to understand how the economic situation in the country is related to the crime rate. Scientist often refer to scarce labor market opportunities and low wages as the main sources of motivation for people to commit crimes. (Draca & Machin, 2015) However, there is no doubt that there are many other incentives. In his scientific paper, Lin (2008) mentions that the omitting statistically important variables can affect the validity of the models.

The aim of this bachelor's thesis is to find out which economic factors influence the crime rate and in which direction. Understanding the motives for committing crimes, in turn, helps to develop measures that would help create a more favorable economic environment where residents have no reason to break the law.

The main problem of the study is the definition and evaluation of economic indicators that explain the level of crime in the country.The following research questions are posed by the author to solve it:

1. What economic factors influence a person's decision to commit crimes?
2. Is this influence positive or negative?
3. Do these factors affect different types of crimes in the same way, or do some factors affect some types of crimes more than others?

The author has an intention to test the following hypotheses:

H1: An increase in unemployment and inflation rate can lead to an increase in crime rate of the country.

H2: The immigration flow has a statistically significant relationship with the crime rate.

H3: Easier access to higher education reduces crime in the country.

For the analysis of the thesis, the following indicators are used: crime rate, unemployment rate, relative poverty rate, inflation rate, immigration flow, Gini index, annual growth of urban population and the proportion of educated people. The first one is the dependent variable, the rest are the independent variables. All data is collected from World Bank, Eurostat and Organisation for Economic Co-operation and Development (*OECD*) databases.

Analysis is based on panel data. The author uses data from the countries of the European Union from 2005 to 2020. This choice of countries and time period is due to the availability of data. In order to find out whether there is a relationship between crime rate and each of the economic indicators, correlation analysis is used. After that a pooled model is created, and then it is tested whether a fixed-effects model or a random-effects model should be used.

This thesis is divided into three chapters. The first chapter provides a theoretical and an empirical overview of the economics of crime and examines people's motives for committing a crime, arising from the economic situation in the country. The second chapter describes the data and methology.

It gives the overview of variables choosen for variables, provides descriptive statistics and justification for the selection. In addition, research methods are described and justified. The results of the empirical analysis are presented in the third chapter. This chapter is meant to answer research questions and draw conclusions.

1. THEORETICAL APPROACH

This chapter provides an overview of the previous theoretical and empirical literature on the influence of economic factors on crime rates. The author also presents the Becker's model, and also gives a summary of what methods of combating crime exist and demonstrate the greatest effectiveness.

1.1. Becker's model

The influence of economic factors on people's willingness to engage in criminal activity was recognized centuries ago. Such ancient Greek philosophers as Aristotle and Plato mentioned this topic in their writings. (Draca & Machin, 2015) Economists offer insights into the motives of criminals in market conditions. (Freeman, 1999, pp 3533)

One of the first scientists to conduct empirical research on the socioeconomic determinants of crime was Gary S. Becker. (1968) He presented a model in which people make a decision between criminal activity and legal activity given the expected utility from these activities. According to the equation below, a rational person makes a choice in favor of committing a crime in a given period of time. It takes into account the profits from criminal and lawful work, respectively, the likelihood of being caught (in the event that a person is involved in a crime) and the sanction imposed by the criminal justice system if they are caught.

$$(1 - \rho)U(W_C) - \rho U(S) > U(W) \tag{1}$$

where

U - utility

ρ - the probability of being arrested

W_C - earnings from successful crime

W – earnings from legal work

S – the extent of punishment

This equasion leads to several conclusions. First of all, it implies that the monetary payoff from successful crime has to increase along with the increase in the chance of being apprehended. Secondly, changes in the possibility of being caught have a greater influence on risk-averse individuals than changes in the extent of punishment. (Freeman, 1999, pp 3538-3539; Brosnan, 2018) That was also prooven by empirical research. Both the likelihood of being apprehended and the likelihood of being sent to jail have the ability to deter people from commiting property and violent crimes. At the same time, neither the amount of fines nor the length of prison sentences appear to have the same effect as they have very little influence on crime rates. (Engelen *et al.*, 2016) Lastly, the equation shows that the main incentives (criminal and lawful proceeds) and deterrence (the chance of being caught and the severity of the punishment) are inextricably linked. (Freeman, 1999, pp 3538-3539)

One of the main shortcomings of the Becker's model is that it treats crime and legal work as interchangeable entities. Ehrlich (1973) solved this problem by refining the model so that it allowed people to allocate their time freely between the legal and illegal labor markets. This leads to the fact that the impact of wages becomes ambiguous. The decision to commit a crime depends more on the relative magnitude of the impact of proceeds in terms of employment and involvement in both work and crime. However, the possibility of being arrested gives a reason to expect that an increase in individual income will reduce the motivation to engage in criminal activity. (Machin & Meghir, 2004)

1.2. Poverty, low income and crime

One of the most commonly established motives for committing a crime is poverty. (Berk *et al.*,1980; Grogger, 1998) The poor often have very low incomes, which means they can barely afford basic necessities. It also significantly limits their savings potential. All this leads to a weakening of the morality of people and, consequently, to an increase in their propensity to commit crimes. (Gillani *et al*., 2009) Fleisher (1966) suggested that another important reason why the poor engage in criminal activity is that their cost of arrest is relatively low. The legal earnings of individuals are already depressingly low, so the possibility of obtaining a criminal record does not discourage them.

Becker 's model also suggests that poverty contributes to an increase in crime. Thus, if the wages offered in the lawful labour market increase while every other factor of the model remains constant, the crime rate is predicted to decrease. (Draca & Machin, 2015; Raphael & Winter-Ebmer, 2001) Scientists proovides proof for this by pointing out that the rapid rise in wages in the early stages of the career can account for much of the decline in crime among young people aged 17 to 23. (Grogger, 1997; Levitt, 2001)

While scientists agree that poverty generally affects crime rates, it is more difficult to determine what type of crime it provokes. Some studies claim that income per capita has a significant and positive effect on both violent crime and burglary (Freeman, 1999, pp 3532; Engelen *et al.*, 2016), while others show that there is no significant association between poverty and this type of crime. (Patterson, 1991) Pattern between poverty and property crimes is much more consistent. (Patterson, 1991; Brosnan, 2018)

This statistic is true not only for perpetrators, but also for victims. Low-income groups tend to be more likely to suffer property crime than people with stable incomes, despite owning less property. (Freeman, 1999, pp 3532) It was also noted that crime has an evolutionary element. If a region has a history of high crime rates, it will only grow. (Brosnan, 2018). Despite this, the poor are not the only ones who engage in criminal activity. Rich people may resort to illegal methods in their quest to accumulate wealth. They also have the power and resources to exploit loopholes in the legal system to get away with crime and to avoid punishment. (Gillani *et al*., 2009)

1.3. Unemployment and crime

Unemployment is another important economic factor influencing crime rates. Scholars agree that reducing legal labor opportunities makes crime more attractive. Thus, the unemployed are more likely to engage in illegal activities. (Draca & Machin, 2015; Freeman, 1999, pp 3543) The reason for this phenomenon is that the unemployment rate goes hand in hand with the level of income. If people have the prospect of getting a decent wage in the legal labor market, they will make a decision in favor of the illegal one. (Gillani *et al*., 2009) In addition, the cost of being arrested is much lower for those who have been jobless for several years. (Raphael & Winter-Ebmer, 2001)

Although the connection is clear, it should not be forgotten Ehrlich's (1973) study, which showed that people can combine working and committing crimes. There are different ways to do this (Freeman, 1999, pp 3543-3544):

1)   some people commit crimes while working for hire;

2)   some people use their legal jobs to succeed in crime (for example, to gather information or find clients);

3)   some criminals switch between crime and work, depending on the market opportunities.

As with poverty, it is difficult to determine which types of crime are affected by unemployment. Some scientists argue that joblessness has a positive effect on both property and violent crime. (Berk *et al*.,1980; Raphael & Winter-Ebmer, 2001) Others say that while unemployment increases the rate of property crime, violent crime has no significant association with this economic factor. (Lin, 2008) Moreover, the estimated impact of unemployment varies even across different types of property crimes. Burglary and auto theft are much more strongly correlated with crime rates than bicycle theft. (Edmark, 2005)

1.3. Education and crime

Schools play an important role in human development, so the influence of the level of education on the level of crime should not be forgotten. According to statistics only 35% of inmates in US prisons have a high school diploma or higher. (Deming, 2011) The crime rate for dropouts is about three times as high as for non-dropouts. (Fleisher, 1963)

Since people put different amounts of effort into education, it is reasonable to expect one hour of labour input does not give the same output across all workers. Education boosts future productivity and future earnings and therefore can be considered as an investment in human capital. A country's human capital is often measured by adult literacy rates, school enrollment ratios or average years of schooling. (Wößmann, 2003) Regions with higher human capital have less crime since people do not have a motivation to engage in one. Incarceration costs for committing crime are also higher for educated people. (Deming, 2011; Lochner, 2004) Scientists have come to an agreement that education has a negative impact on both violent and property crime rates. (Lochner & Moretti, 2004; Machin *et al.*, 2011) However, it should be noted that crimes with higher skill returns, such

as tax fraud, are more likely to be committed by educated and older workers. (Lochner, 2004; Groot & van den Brink, 2010)

Previous researchers (Lochner & Moretti, 2004; Machin *et al.*, 2011) offer several other reasons why higher education reduces crime rates:

1) Incarceration plays a big role in decision making. The time spent in prison can be spent on getting a higher education which will allow an individual to have a better salary in the future. And if a person has a potential to receive a big salary, then the cost of arrest is much more significant.

2) The educational system can change students' risk preferences. People who are less risk-averse tend to think more about the possible consequences and penalties when making a decision.

3) Schools can strengthen students' morals and deter them from breaking the law.

4) If young people are busy with their lessons and extracurricular activities, then they do not have enough time to participate in illegal activities.

1.4. Other factors

In addition to the economic factors discussed earlier, inflation rate also has a positive effect on crime rates. (Tang, 2009) Rising prices lead to a decrease in real incomes of the population, which reduces their purchasing power. This situation particularly affects people who belong to the low-income group and are already struggling to afford basic necessities. Increasing inflation leaves them no choice but to try to find an additional source of money in the illegal labor market. (Gillani *et al.*, 2009) The impact of inflation is considered widespread, immediate and direct. (Rosenfeld & Levin, 2016)

Another factor that can influence the level of crime is migration. The combination of labor demand in the expanding Western European economy and low wages in poor developing countries resulted in many immigrants entering the racially homogeneous population. Apparent discrimination resulted in them receiving lower wages than the rest of the community, which pushed the immigrants into poverty. All of the above has desensitized people to the point of breaking the law. (Decker *et al.*, 2009) A prime example of this phenomenon is Sweden, where in 2017 58% of people suspected on reasonable grounds were immigrants. (Adamson, 2020)

1.5. Crime prevention measures

Because crime inflicts physical and/or financial harm on victims, governments and even individuals themselves have to spend significant amounts of money on crime prevention. Scientists cannot agree on which methods of crime prevention and innovation in technology and police are more effective, whether sanctions are more or less effective than social programs. At the government level, various studies show that the most inexpensive short-term programs are ineffective in reducing crime. These consist of programs such as Scared Straight (sending at-risk young people to prison to see what happens if they commit crimes), correctional boot camps, police visits to homes where domestic violence occurs, and Neighborhood watch. On the other hand, some longer-term and potentially costly programs such as frequent home visits to at-risk young people and their parents, intensive surveillance of convicted or paroled offenders, additional police patrols in crime hotspots. Crime prevention at the individual level is also complex. Tighter security measures often work as a shift in crime from those with more private protection to those with less private protection. On the positive side, if people's protective actions reduce the overall return to crime, their actions will contribute to the deterrence of crime in general. (Freeman, 1999, pp 3556-3560)

Incentive-based programs can be more beneficial because they are not only effective and relatively inexpensive, but also contribute to a country's economic growth. (Freeman, 1999, pp 3558) Economic growth with social and economic equity should be a key goal of the planning strategy. All major economic determinants of crime (unemployment, poverty, etc.) must be thoroughly taken into account by politicians in order to control the level of crime in the country. It is very important that crime reduction policies be favorable to the poor in society. More resources should be allocated to those sectors of the economy where the majority of the poor work, such as the agricultural sector, and the areas in which they live, as they tend to be comparatively less developed. (Gillani *et al*., 2009)

Empirical analysis proves that the severity of punishment does not affect offenders and suggests that governments stop focusing on costly prison sentences. Instead, they should take into account the reduction of poverty and the strengthening of social control. (Engelen *et al*., 2016) Another important step is rehabilitation. Measures such as providing released prisoners with unemployment benefits to keep them going until they find work, training in prison plus employment assistance,

participation in academic and vocational programs in prison have more potential to reduce crime than life imprisonment. (Freeman, 1999, pp 3558)

This chapter is written to provide an overview of previous research on the topic of economic factors that have an influence on the crime in the country. Firstly, it introduced the Becker's model that explains how people make a decision between criminal activity and legal activity given the expected utility from these activities. It also presented the list of economic factors that have an influence on the crime rate. The are poverty, unemployment, the level of education level, immigration and inflation.

2. DATA AND METHODOLOGY

In this chapter, the author describes the data and methods used in the thesis to estimate the relationship between to estimate the relationship between the crime rate and various economic factors among the countries of the European Union. The first subchapter provides an overview and descriptive statistics of the data on the dependent and independent variables. The second subchapter justifies the methods chosen by author.

2.1. Data and descriptive statistics

The following indicators are used to carry out the analysis of the thesis: number of crimes, adult education level (below upper-secondary, upper secondary and tertiary education), Gini index, number of immigrants, inflation rate, unemployment rate, relative poverty rate, annual growth of urban population. The first of these is the dependent variable and the rest are the independent variables. The data used for empirical analysis was collected from World Bank, Eurostat and OECD databases.

The observation period is 2005-2020. Due to the fact that the period is quite short, the author of this paper decided against using the time series. Panel data from 12 European Union countries was used to create the most accurate model possible. The countries chosen were: Austria, Belgium, Finland, France, Germany, Greece, Latvia, Lithuania, Luxembourg, Slovakia, Slovenia, and Spain. The reason for the selection of these countries is the availability of data.

2.1.1. The dependent variable

In this work, the author uses the number of committed crimes as an endogenous or dependent variable. Data on the number of committed crimes are taken from the Eurostat database. Crime data is presented as the number of crimes committed in the country during one particular year. The crime data were taken from two separate Eurostat data tables that provide the same type of data but for different periods.

The first dataset (Eurostat, tabel *CRIM_GEN*) covers the years 1993-2007 and divides crime statistics into the following six categories: intentional homicide; acts causing harm or intending to cause harm to the person, injurious acts of a sexual nature and acts against property involving violence or threat against a person; robbery; burglary of private residential premises: theft of a motorized land vehicle; unlawful acts involving controlled drugs or precursors.

The second tabel (Eurostat, tabel *CRIM_OFF_CAT*) shows the crime data from the year 2008 to the year 2020 and the statistics are broken down into the following categories: intentional homicide; attempted intentional homicide; serious assault; kidnapping; sexual violence; rape; sexual assault; robbery; burglary; burglary of private residential premises; theft; theft of a motorized land vehicle; unlawful acts involving controlled drugs or precursors.

In order to obtain the annual data of the countries, the author summed up the numbers of crime of each category by country. During this process, it became clear that many data were missing and therefore it was not possible to include the study of all the countries of the European Union. Thus the choice of countries was reduced from 27 to 12.

In order for the author to compare these data and then use them to create a regression model, the crime data were divided by the population of the respective country in the respective year. Population data was collected from the OECD database, where it is presented in millions. The resulting numbers were very small and therefore difficult to perceive. For ease of understanding, the author decided to multiply them by 1,000. As a result, the dependent variable is the number of crimes committed in a particular country per 1,000 people per year.

For a better overview of the data used, it was decided to examine the descriptive statistics of all countries, which are presented in Table 1. The countries where crimes are most often committed are Belgium and Luxembourg. The all-time highest rate for the period studied in this paper was also in Luxembourg in 2014. The safest country is Slovak Republic. The lowest crime rate for the study period was also in the Slovak Republic in 2020. The most stable crime rate is in Finland (since it has a coefficient of variation of only 8.49%). Belgium and Lithunia are in second place, with a coefficent of variation of 9.09% and 9.96%, respectively. Spain's crime rate is the most volatile with a coefficent of variation of 32.63%.

Tabel 1. Statistics describing the number of crimes committed by European Union countries per 1,000 people

	Mean	Median	CV	Min	Max
Belgium	48.26	48.61	9.09%	34.19	53.49
Germany	31.38	30.12	16.95%	23.66	43.44
Greece	16.33	15.88	16.29%	10.67	21.04
Spain	15.59	13.68	32.63%	8.99	25.55
France	34.15	33.99	10.61%	28.14	39.66
Latvia	20.08	18.27	16.16%	16.48	28.10
Lithuania	19.48	18.80	9.96%	17.14	24.70
Luxembourg	40.44	40.33	18.69%	27.22	54.90
Austria	33.04	33.66	13.27%	21.90	38.72
Slovenia	21.98	22.17	19.29%	14.69	28.79
Slovak Republic	8.63	9.16	31.35%	4.40	12.67
Finland	36.87	36.48	8.49%	32.09	41.20

Source: Zimina (2023a), based on the data provided in the e-database compiled by the author

The figure 1 shows the average crime rates in the countries of European Union during the observed period. A downward trend can be observed. The highest number of commited crimes can be seen in 2008 and the author speculates that this change is influenced by the Great Recession. Since 2014, the crime rate has steadily declined.
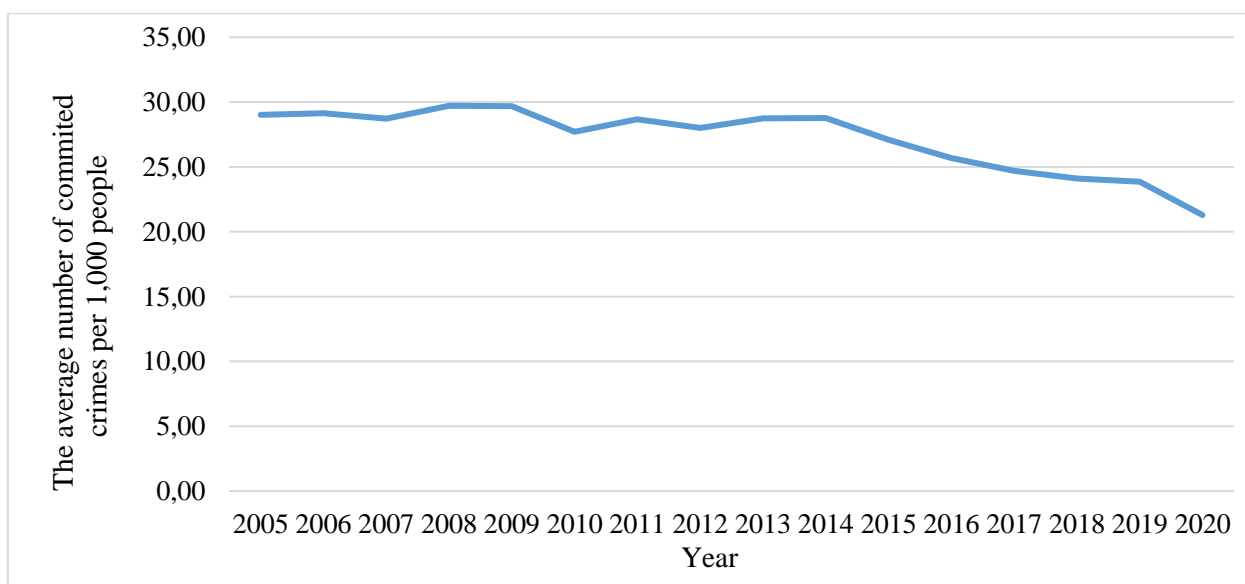

Figure 1. The average number of crimes commited in European Union per 1,000 people in the period 2005-2020
Source: Eurostat (2023), OECD (2023), compiled by the author

The crime rate may seem stable, but it must be remembered that the graph only analyzes the average of different countries. As descriptive statistics have indicated, some countries are more volatile than others.

2.1.2. The independent variables

The first independent variable discussed in this thesis is the relative poverty rate. The data was collected in Eurostat and this rate is measured by the percentage of people whose equivalent disposable income is below the at-risk-of-poverty threshold of 60% of the national median. The decision to use relative poverty rather than absolute poverty is based on previous studies. They claim that people who earn enough money to cover their basic needs and nothing else are already motivated to commit crimes.

Looking at the graph (Figure 2), it can be concluded that poverty moves in a growing trend. The poverty rate in 2020 is higher than it was in 2005. The biggest surge was in 2008. These may be the consequence of the Economic crisis. A slight increase that can be seen in 2020 could be related to the Covid crisis.
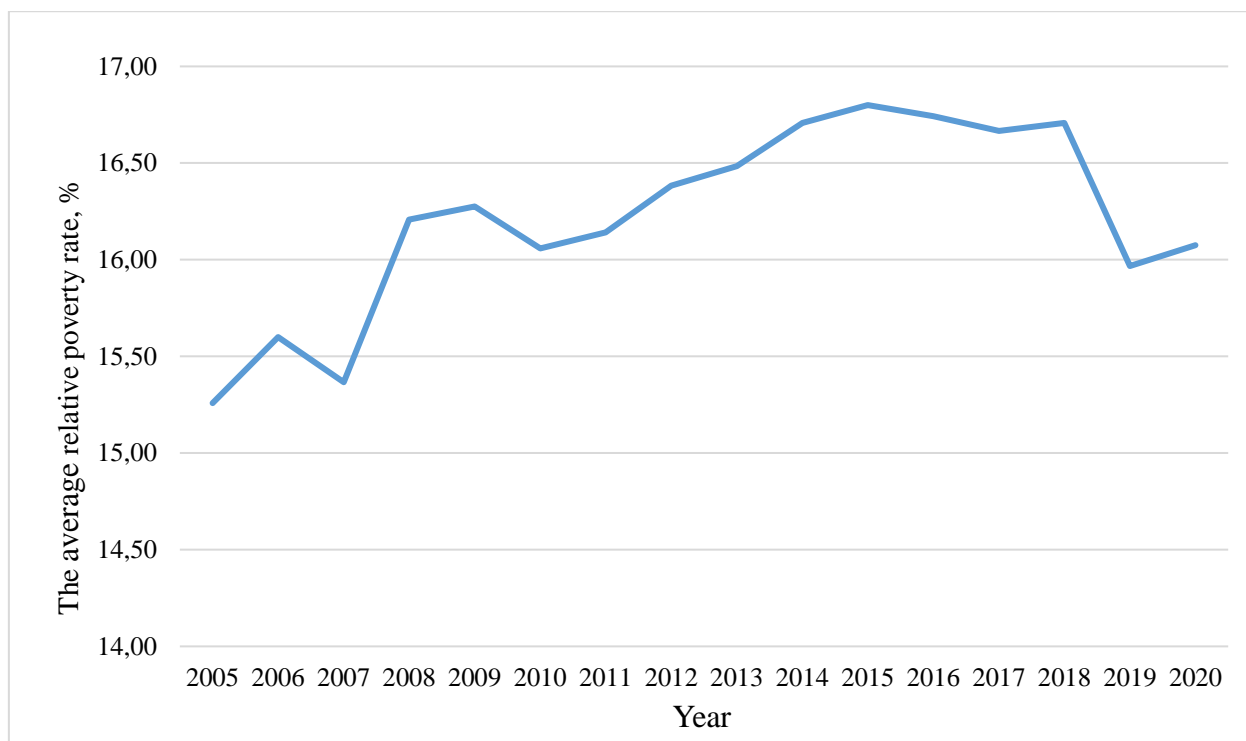

Figure 2. The average relative poverty rate in European Union in the period 2005-2020
Source: Eurostat (2023), compiled by the author

The next important independent variable is the unemployment rate. This variable is represented by the percentage of unemployed people in the labor force. The data were taken from the Eurostat database.

As Figure 3 shows, the unemployment rate continued to decline until the Great Recession. In 2008, however, it started to rise and stopped only in 2013. The unemployment rate fell until the Covid crisis that started in 2019, when the rate started to rise again. In 2020 the unemployment rate was only slightly lower than it was in 2005.
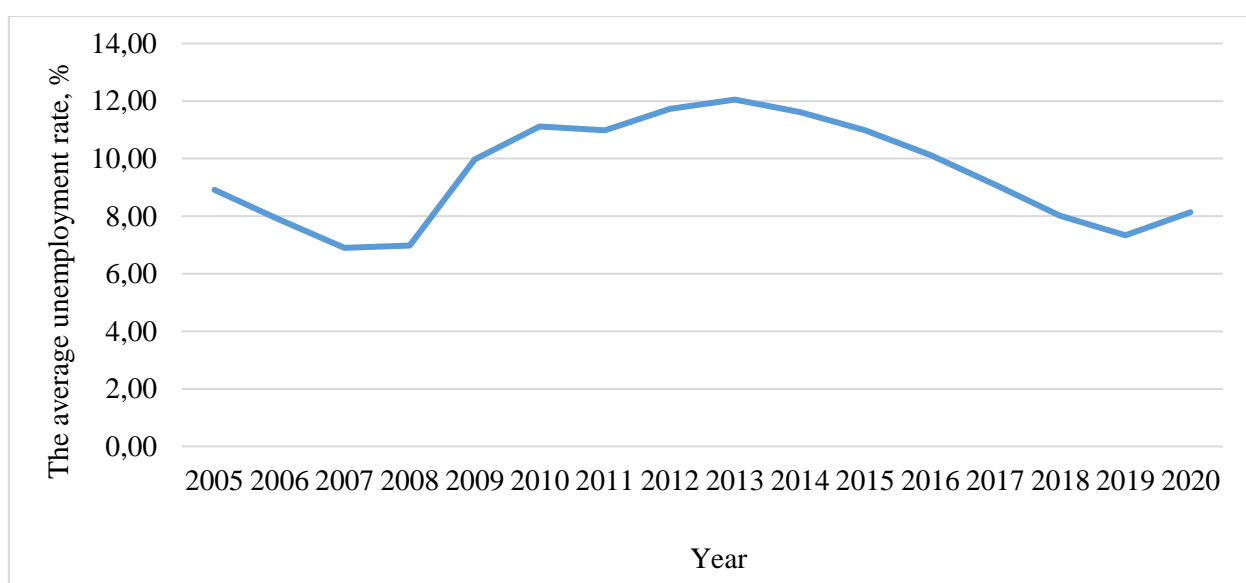

Figure 3. The average unemployment rate in European Union in the period 2005-2020
Source: Eurostat (2023), compiled by the author

Education level is also an important factor affecting the crime rate. This variable is better described by the adult education level. It is represented by the percentage of the population aged 25-64 who have completed one of three levels of education: below upper-secondary, upper secondary and tertiary education. Below upper-secondary education means finishing elementary school. This is followed by upper secondary education, and in order to get teritary education, individual has to graduate from university. The data was taken from the OECD database.

Figure 4 shows a graduate decline in the upper secondary schooling level and a slightly steeper decrease in upper secondary education. This means that, over time, more and more people decide

to pursue higher education. Tertiary education has grown steadily, although its share is not as large as that of upper secondary education.
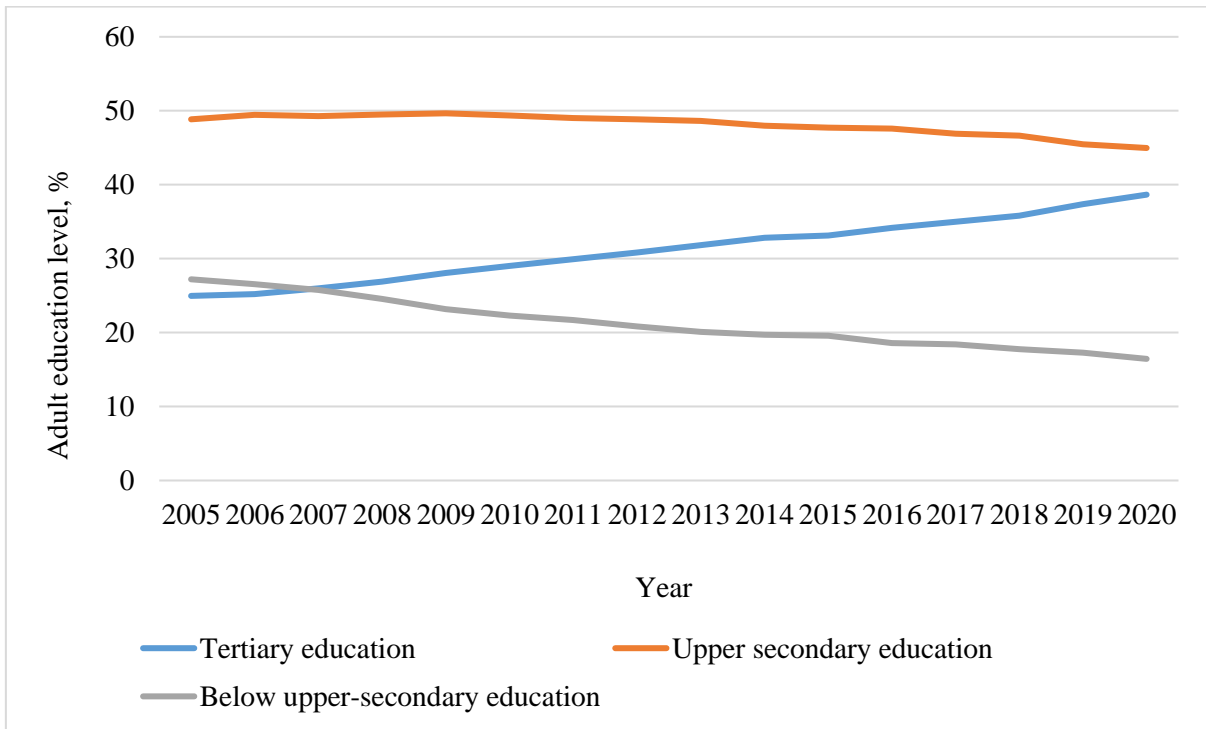
Figure 4. Adult education level in European Union in the period 2005-2020
Source: OECD (2023), compiled by the author

The fourth dependent variable is inflation rate, also known as the consumer price index (*CPI*). It is measured by the change in prices of a basket of goods and services that are typically purchased by certain groups of households. Inflation rate data was taken from the OECD database, where it is presented as annual growth rates, with 2015 being the base year.

As can be seen from the graph (Figure 5), inflation rate appears to be a rather volatile and cyclical variable. The largest increase in the CPI was in 2008 during the Great Recession. Despite falling to around 1% in 2011, inflation rate picked up sharply again in 2011. After that, it began to decline against the base year (2015) and remained below the 2% mark.
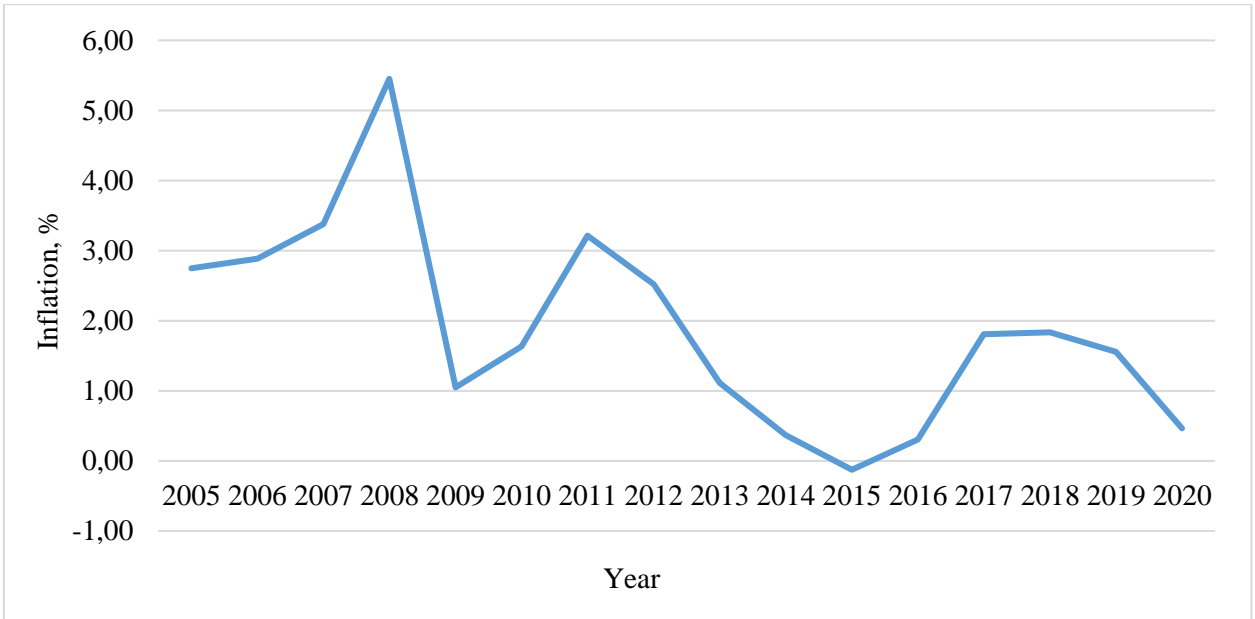
Figure 5. Average inflation rate in European Union in the period 2005-2020
Source: OECD (2023), compiled by the author

The next exogenous variable to be discussed in this thesis is immigration flow. It is measured by the number of immigrants entering the country during the year. Immigrants are known to seek a better life for themselves and their families, so they often choose to move to a country with a stronger and more stable economy. Figure 6 proves this belief by demonstrating a decline in immigration flow during the Great Recession and a sharp rise immediately after the crisis. Data was taken from Eurostat.

Figure 6. Average number of immigrants entering European Union in the period 2005-2020
Source: Eurostat (2023), compiled by the author.

Another independent variable used in this regression model is urban population growth. It is measured as the percentage of the population that moves from rural areas to cities within one year. The data is taken from World Bank database. The chart below (Figure 7) shows that this variable is quite volatile. It usually fluctuates around the 0,4 percent mark. Starting in 2007, the urban population growth fell until it reached 0,1 percent. This process stopped only in 2012, when the economy stabilized after the crisis, which allowed the percentage to start growing again.
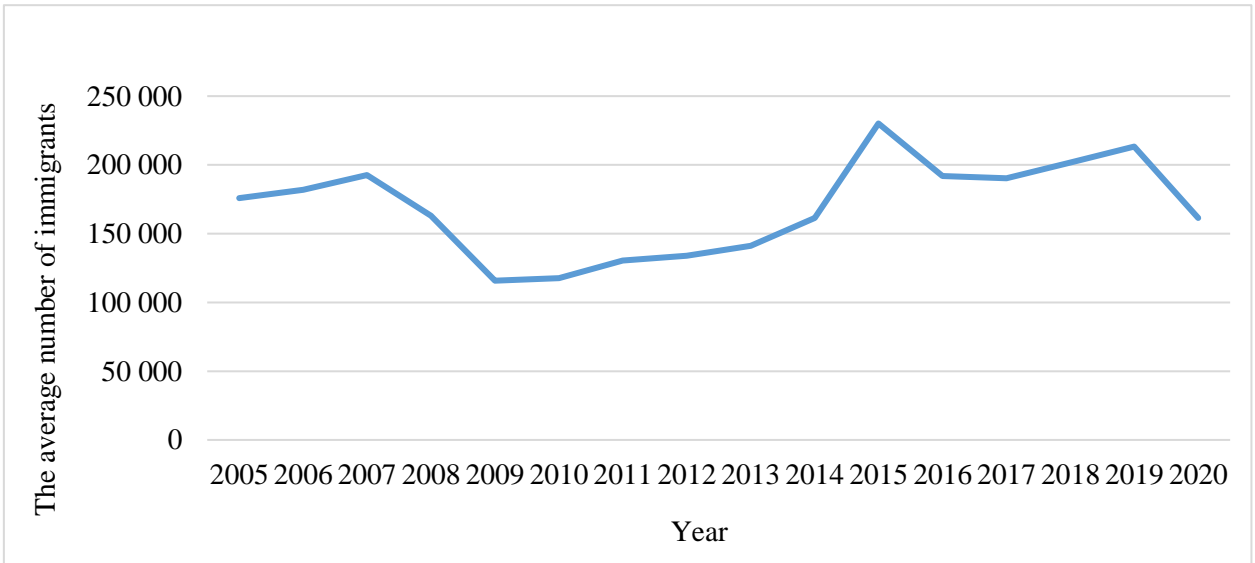

Figure 7. Average urban population growth in European Union in the period 2005-2020
Source: World Bank (2023), compiled by the author

The last variable analyzed is the Gini index. It measures the extent to which the distribution of income among individuals or households in an economy deviates from a perfectly equitable distribution. Thus, a Gini index of 0 implies absolute equality, while an index of 100 represents absolute inequality. This data can be obtained from the World Bank database.

As can be seen from Figure 8, the Gini index quite frequently changes its direction of movement. It reached its lowest point in 2006 and then continued to rise during the Great Recession. The author comes to the conclusion that inequality in income distribution is higher with economic instability. This is also supported by the fact that the same process took place during the Covid crisis: the index fell significantly in 2019 and rose very sharply in 2020.
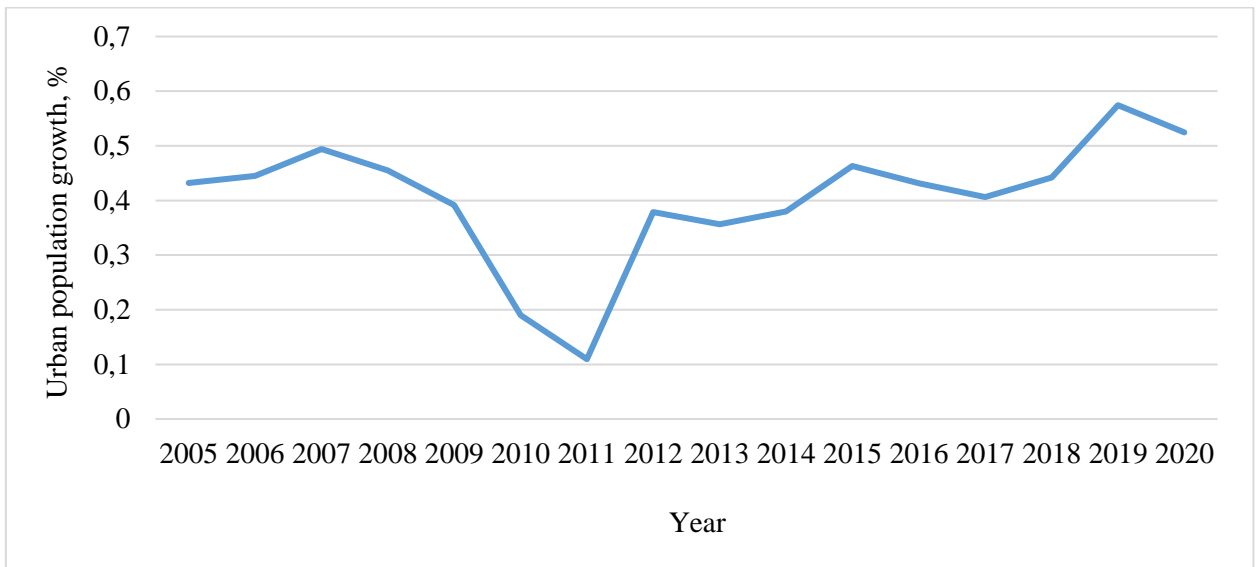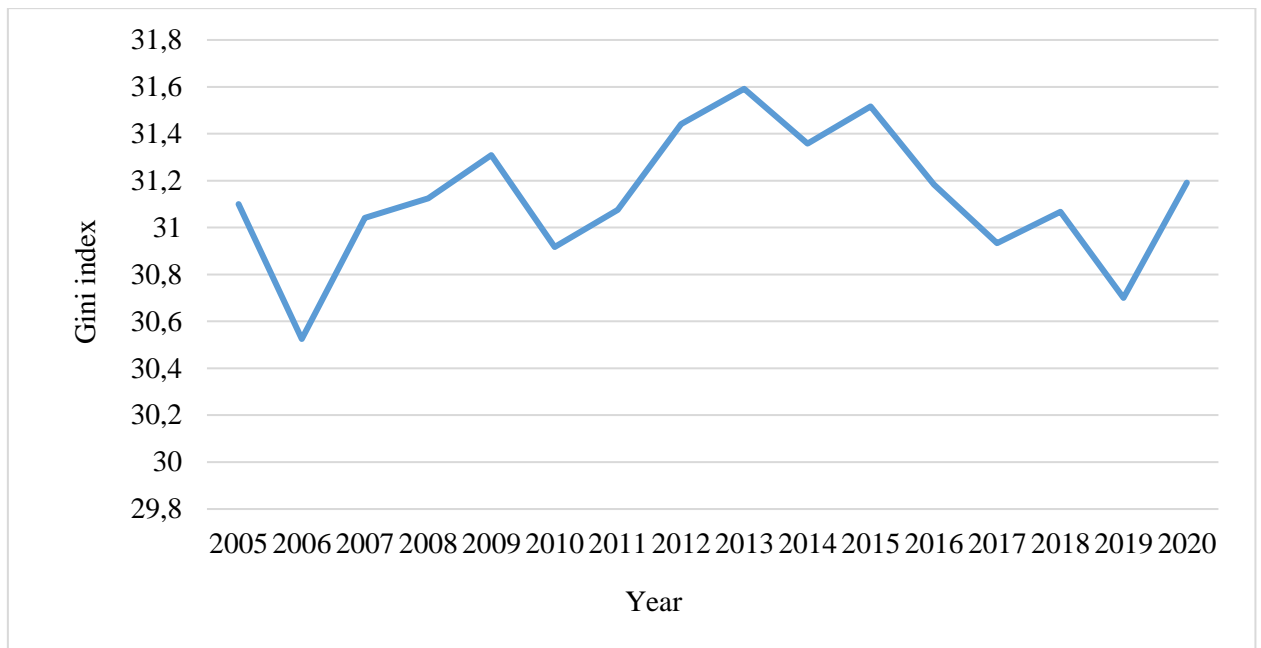
Figure 8. Average Gini index in European Union in the period 2005-2020
Source: World Bank (2023), compiled by the author

The graphs above show typical trends in the independent variables. It should be noted that each country has its own unique economy, and the introduction of average values into the model is inefficient, as it will only lead to unreliable results. Using panel data allows each country's variables to have their own value in the regression model.

For ease of understanding, Table 2 shows all the indicators included in the work, on the basis of which the econometric models described in the following chapter have been created. Abbreviations, measurement units and sources of all indicators have also been added.

Tabel 2. Overview of the indicators used in the analysis

Variable	Abbreviation	Measurement unit	Source
Crime rate	CRI	crimes per 1,000 people	Eurostat
Unemployment rate	UNEM	percentage	Eurostat
Relative poverty rate	POV	percentage	Eurostat
Adult tertiary education level	ED_T	percentage	OECD
Adult education level at upper-secondary level	ED_S	percentage	OECD

Adult education level below upper-secondary	ED_B	percentage	OECD
Inflation rate	CPI	percentage	OECD
Immigration flow	IM	people	Eurostat
Annual growth of urban population	URB	percentage	World Bank
Gini index	GIN	percentage	World Bank

Source: Zimina (2023a), based on the data provided in the e-database compiled by the author

The author notes that the next step should be to control the data skewness and its possible erasure by taking a logarithm. However, since most variables are presented as percentages, this action should only concern crime rates and immigration flow.

2.2. Methodology

The main research objective of this thesis is to establish the fact of the relationship between the crime rates and various economic factors. In case of finding that economic factors do affect the level of crime in the country, the author is going to find out how strong this relationship is, as well as what sign it has (positive or negative). For this study, correlation and regression analysis are used. The author intends to use two programs for analysis: *Gretl* and *Excel.* Initial models and tests are presented in the electronic appendix. (Zimina, 2023b)

Correlation is a statistical relationship between two random variables. (Sauga, 2020, pp 422) The correlation analysis results in a correlation coefficient that ranges from minus one to plus one. The closer the correlation coefficient is to either of those numbers, the stronger the relationship between the variables.

Regression analysis examines the dependence between indicators and the possibilities for its functional description based on a given formula. In this analysis, the author determines the effect of economic factors on the crime rate. Thus, the dependent variable is the crime rate in the country. Independent variables are all previously discussed factors.

To use panel data in regression analysis, the author must first create a pooled model. The next step is to check that all variables are statistically significant. All irrelevant indicators should be excluded from the model so that it can be considered reliable. The author then intends to check for autocorrelation, heteroskedasticity, or multicollinearity. It is also important to check whether the residual terms follow a normal distribution or not.

Only when all the previous requirements are met can one start deciding between a fixed and a random effect model. As with the pooled model, the first step is to control whether all variables are statistically significant or not. Then three tests should be performed to determine which model to use (pooled, fixed, or random effects model). These are the F-test, the Breusch-Pagan test and the Hausman test.

Below is the outline of the model used in the bachelor's thesis:

$$CRI = \mu + \beta_1 UNEM + \beta_2 POV + \beta_3 ED\_T + \beta_4 ED\_S + \beta_5 ED\_B + \beta_6 CPI + \beta_7 IM + \beta_8 URB + \beta_9 GIN + \varepsilon \ (2)$$

where

CRI – the number of crimes per 1,000 people

μ – free term

β - dependent variable parameter

$UNEM$ – percentage of unemployed people in the labor force

POV - percentage of people whose equivalent disposable income is below the at-risk-of-poverty threshold

ED_T – percentage of people with tertiary education

ED_S - percentage of people with upper secondary education

ED_B - percentage of people with below upper-secondary education

CPI – inflation rate

IM – number of immigrants

URB - annual growth of urban population

GIN – Gini index

ε – error term

3. EMPIRICAL RESULTS AND DISCUSSION

The third chapter presents an overview of the analyzes carried out and their results. Correlation analysis is described first, and then regression analysis. In the case of the first analysis, the relationship between indicators is examined, and in the second analysis, the influence of the indicators analyzed in the work on the crime rate is sought. Tests are also performed to help determine the fit between the data and the model.

3.1. Correlation analysis results

In this sub-chapter, a correlation analysis of selected variables is carried out to investigate the relationship between crime rates and different economic factors. The purpose of the analysis is to determine which independent variable should be added to the model in which order. The results of the correlation analysis are presented in Table 3.

Tabel 3. Correlation coefficients

	CRI	POV	UNEM	ED_T	ED_S	ED_B	CPI	IM	URB	GIN
CRI	1.00	-0.35	-0.48	0.41	-0.30	0.13	-0.02	0.07	0.45	-0.17
POV		1.00	0.48	0.11	-0.29	0.24	0.17	0.07	-0.37	0.82
UNEM			1.00	-0.12	-0.24	0.31	-0.22	-0.03	-0.32	0.39
ED_T				1.00	-0.55	-0.01	-0.29	-0.05	0.27	0.16
ED_S					1.00	-0.81	0.19	-0.23	-0.54	-0.34
ED_B						1.00	-0.03	0.28	0.46	0.29
CPI							1.00	-0.13	-0.16	0.12
IM								1.00	0.17	0.17
URB									1.00	-0.22
GIN										1.00

Source: compiled by the author using the Gretl program

First of all, to define the strength of the relationships, it is necessary to look at the correlation coefficients and their absolute values. The closer the correlation coefficient is to the absolute value

of 1, the stronger the relationship between the variables. Iti s also important to take the significance of the relationship into consideration.

At the significance level of the analysis, which is 0.05 or 5%, the critical value is equal to 0.14. The critical value is used to examine which features in the correlation matrix are not statistically significant. If the absolute value of the correlation coefficient is less than the critical value, then it is an insignificant relationship. If the critical value is smaller than the absolute value of the correlation coefficient, then the indicator is statistically significant.

Positive correlation coefficients indicate that as one variable increases, the other tends to increase accordingly. Looking at correlation matrix, the strongest positive and statistically significant correlation is seen between the relative poverty rate and Gini index.

Negative correlation coefficients mean that as one variable increases, the other variable decreases. The strongest negative and statistically significant correlation is between the adult education level below upper-secondary and the adult education level at upper-secondary level. The slightly weaker correlation can be seen between the adult education level at upper-secondary level and the adult tertiary education level.

As for the correlation of the crime rate with the studied economic factors, positive and statistically significant correlations of medium strength are seen with the adult tertiary education level and the annual growth of urban population. Other factors, like the relative poverty rate, the unemployment rate, the adult education level at upper-secondary level and Gini index, have negative and statistically significant correlations of medium strength.

Most of the statistically significant relationships are not consistent with theory. Previous researchers have agreed that an increase in poverty should lead to an increase in crime. (Draca & Machin, 2015; Raphael & Winter-Ebmer, 2001) It is also believed that unemployment encourages people to engage in criminal activities. (Draca & Machin, 2015; Freeman, 1999, pp 3543; Gillani *et al*., 2009) Despite this, the correlation coefficients between these independent variables and crime rates are negative. Higher education should provide more opportunities for people to legally earn money and avoid criminal work (Deming, 2011; Lochner & Moretti, 2004), but the

correlation matrix shows a positive relationship between crime rates and adult tertiary education levels. Inflation rate and the number of immigrants turned out to be statistically insignificant, even though there are papers proving the existence of a relationship between these two variables and the level of crime. (Tang, 2009; Gillani *et al.*, 2009; Rosenfeld & Levin, 2016; Decker *et al.*, 2009)

3.2. Regression analysis

Since most of the variables are expressed in percentages, it is reasonable to check whether it is necessary to logarithmize the factors presented in numbers. For this, it is necessary to find whether these arbitrary characteristics are subject to a normal distribution. It is verified by a Jarque-Bera test. In the case of this test, the asymmetry coefficient and the skewness coefficient of the analyzed quantity are found and based on them the Jarque-Bera test statistic is calculated. The null hypothesis is that the residuals follow a normal distribution. The results are presented separately for the number of crimes commited per 1,000 people and the number of immigrants in the electronic appendix. (Zimina, 2023b)

The empirical value for the number of crimes commited per 1,000 people is equal to 0.02 and for the number of immigrants is $5.26*10^{-96}$. It can be seen that the empirical values of both factors are smaller than the critical value, which is 0.05 in this case. This means that the null hypothesis should rejected as the variables do not follow a normal distribution. Therefore, it is concluded that the author should use the logarithms of both variables to obtain a reliable model.

With the help of correlation analysis, it was possible to assess the strength and direction of the relationships between the indicators included in the bachelor thesis. However, since the aim of the bachelor's thesis is to find out which economic factors affect the level of crime and whether this effect is positive or negative, a regression analysis was also performed. With the help of regression analysis, it is possible to see the dependence of variables on the variability of other variables and obtain numerical relationships to describe the established model.

An initial pooled model was constructed using the ordinary least squares (*OLS*) method. Table 4 shows the process of its construction. Independent variables are added according to the degree of decrease in the absolute value of the correlation coefficient. The adult education level below upper-

secondary, inflation rate, and the number of immigrants are statistically unimportant. This fact coincides with the results shown in the correlation matrix. Also with the addition of these variables to the model, the constant loses its statistical significance, which means the entire model is invalid. For this reason, the author is going to choose model number 6 as the most reliable model. The results of the chosen model can be seen in the electronic appendix. (*Ibid.*)

Tabel 4. Comparison of pooled models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
const	3.63***	3.49***	2.80***	2.88***	4.87***	3.98***	1.96
	(0.07)	(0.08)	(0.15)	(0.18)	(0.46)	(0.51)	(1.47)
UNEM	-4.72***	-3.85***	-3.75***	-3.50***	-5.20***	-5.15***	-4.86***
	(0.65)	(0.66)	(0.62)	(0.69)	(0.75)	(0.72)	(0.75)
URB		14.39***	10.09***	9.11**	-8.83*	-9.12*	-7.44
		(3.50)	(3.39)	(3.59)	(5.16)	(5.00)	(5.12)
ED_T			2.25***	2.35***	0.99*	0.97*	3.02**
			(0.44)	(0.45)	(0.52)	(0.51)	(1.48)
POV				-0.83	-3.19***	-7.10***	-6.50***
				(1.00)	(1.08)	(1.50)	(1.55)
ED_S					-1.98***	-1.84***	0.18
					(0.43)	(0.42)	(1.44)
GIN						4.69***	4.28***
						(1.29)	(1.32)
ED_B							1.91
							(1.30)

n	192	192	192	192	192	192	192
Adj. R^2	0.21	0.27	0.36	0.36	0.42	0.46	0.46

Source: Zimina (2023b), compiled by the author using the Gretl program

Looking at the model, it becomes clear that the statistically significant indicators at the significance level of 0.01 are the unemployment rate (UNEM), the relative poverty rate (POV), the adult education level at upper-secondary level (ED_S) and Gini index (GIN). The annual growth of urban population (URB) and adult tertiary education level (ED_T) are statistically significant at the significance level of 0.10. The given model has a significance probability of $1.42*10^{-23}$, which is less than the significance level of 0.05. Thus, the null hypothesis should rejected, and the model is statistically significant. The coefficient of determination (*R-squared, R^2*) indicating the explanatory power of the analysed model is 0.47, which means that the independent variables explain 47% of the dependent variable.

Next step is to check whether heteroskedasticity or autocorrelation is also present in the model. The White's test is used for the first (Zimina, 2023b). According to this test, the p-value is 0.000001, which indicates the presence of heteroskedasticity in this model since this value is less than 0.05. Autocorrelation testing is performed by using the Wooldridge test. The test showes that there is autocorrelation in the model because the p-value is equal to $1.52*10^{-10}$ which is less than 0.05 (*Ibid.*). The author tried to get rid of heteroskedasticity and autocorrelation. Robust standard errors were used for this, although the desired result was not achieved because the only statistically significant factors in the new model (*Ibid.*) were the unemployment rate and the relative poverty rate.

It is necessary to perform the Doornik-Hansen test to check residual terms. As a result of this test, it turned out that the residual terms do not follow a normal distribution, as the p-value is 0.00001, which is less than 0.05 (*Ibid.*). In addition, it was checked whether the model had collinearity or not. Collinearity was found to be absent as the obtained p-values are less than 10 (*Ibid.*).

Despite the fact that multicollinearity does not occur in the model, it is not possible to further analyse it since there are autocorrelation and heteroskedasticity. Therefore, the decision was made to create fixed and random effect models.

An initial fixed-effect panel data analysis was performed, with the logarithmic number of commited crimes per 1,000 people still being the dependent variable. The logarithmic number of

immigrants (IM), the relative poverty rate (POV), education level at upper-secondary level (ED_S) and the adult education level below upper-secondary level (ED_B) turned out to be statistically insignificant and was removed from the model. The results of the preliminary fixed effect panel data regression analysis are presente in the electronic appendix. (Zimina, 2023b)

In order to find whether the use of panel data is justified, an F-test was performed. It turned out that the probability of significance equals to $6.65*10^{-67}$, which is less than 0.05. It can be concluded that the object-specific free terms are statistically significant. The author should prefer a fixed-effects model to a pooled model.

The next step was to create a random effects model (*Ibid.*). The Swamy-Aurora method was used to create it. The only variables found to be statistically significant are the unemployment rate, the annual growth of urban population, the adult tertiary education level and the relative poverty rate. The general coefficient of determination of the model is equal to 0.10, which means that the independent variables explain 10% of the dependent variable.

The p-value of the Breusch-Pagan test is smaller than 0.05, so the random effects model is better than the pooled model (the corresponding p-value is $2.47*10^{-73}$). Lastly, the p-value resulting from the Hausman test equals to $7.68*10^{-08}$, which is a smaller number than 0.05. This indicates that the random effects model cannot be used in the future.

Based on the information received, the author made 2 conclusions. First, the pooled model should not be used. Second, using the fixed effect model is preferable to using the random effects model. Therefore, the author draws conclusions based on the model presented in Table 5:

Tabel 5. Final fixed-effect panel data regression analysis

	Coefficient	*Std. Error*	*p-value*
const	2.52869	0.357562	<0.0001
UNEM	1.06978	0.511432	0.0379
ED_T	−1.71557	0.302234	<0.0001
CPI	1.56874	0.798214	0.0510

URB	10.6087	3.48233	0.0027
GIN	3.26620	1.19920	0.0071
P-value(F)			$3.40 * 10^{-82}$
LSDV R-squared			0.909301
Within R-squared			0.297646

Source: Zimina (2023b), compiled by the author using the Gretl program

The analysis revealed that the explanatory power of the model is 91%. Among the independent variables, , the adult tertiary education level (ED_T), the annual growth of urban population (URB) and Gini index (GIN) are at a significance level of 0.01. At a significant level of 0.05 stastically significant variables is the unemployment rate (UNEM). At a significance level of 0.1, inflation rate (CPI) is statistically significant variable. Overall, the model is statistically significant, since p-value is $3.40*10^{-82}$, which is less than the significance level of 0.05.

The existence of group-wise heteroskedasticity was also tested and the normal distribution of residual members. Firstly, the Wald test shows that the probability of significance is $4.08*10^{-057}$, which means heteroskedasticity exists. To solve this probleem, robust standard errors must be used. However, after that the model as a whole loses its statistical significance since a F-test for testing the significance of regressors indicates that no regressor is statistically significant, as the probability of significance corresponding to the test statistic is greater than 0.05. The author also decided to controll if the residual members do not obey a normal distribution. The significance probability of the residual members test was 0.00005, which is less than the significance level of 0.05. Thus, the residual members do not obey a normal distribution.

3.3. Discussion and suggestions

In order to find out whether there is a relationship between the crime rate and economic factors in the countries of the European Union, a correlation analysis was first performed. During the correlation analysis, it was found that the strongest and statistically significant positive

relationships with the level of crime have the adult tertiary education level and the annual growth of urban population. The strongest and statistically significant negative relationships with the level of crime have the relative poverty rate, the unemployment rate, the adult education level at upper-secondary level and Gini index.

The fixed-effect panel data regression analysis carried out subsequently revealed that the unemployment rate, the adult education level at tertiary level, inflation rate, the annual growth of urban population, and Gini index have a positive effect on the number of commited crimes per 1,000 people.

Based on the model created during the regression analysis, it can be said that when the unemployment rate increases by 1 percentage point, the crime rate in the country increases by 1.07 commited crimes per 1,000 people. The resulting relationship is also consistent with previous research, which also points to the lack of opportunity to earn money legally as the main economic incentive for people to commit crime. (Draca & Machin, 2015; Freeman, 1999, pp 3543; Gillani *et al.*, 2009)

An increase in inflation rate by one percentage point leads to an increase in the level of crime by 1.57 commited crime by 1,000 people. The resulting relationship is also in accordance with the study conducted by C. F. Tang in 2009 that argued that inflation rate can lead to a decline in real incomes, which reduces their purchasing power. This phenomenon forces people to find an additional source of money, and sometimes they find it in the illegal labor market.

The level of adult education is also consistent with the results of previous studies. The regression analysis carried out suggests that an increase in the proportion of people with higher education leads to a decrease in the crime rate by 1.72 crimes committed per 1,000 people. Previous researchers have argued that educated people have more human capital, higher wages, and therefore less motivation for criminal activity. (Deming, 2011; Lochner & Moretti, 2004) They also have more to lose (career opportunities and an intact reputation) if they are arrested. (Lochner, 2004)

The relationships between the crime rate and annual urban population growth and the Gini index is not supported by previous studies, and their inclusion in the model was based on logic. The Gini index indicates the distribution of income, where 0 represents absolute equal distribution and 100

absolute inequality. According to the author, it is logical that an increase in this index increases the level of crime, since the decrease in equality increases the number of poor people and thus motivates people to commit crime. People living in cities tend to have more valuable assets than people living in rural areas. This fact, together with the population density, leads to a greater motivation for criminal activity. The resulting model demonstrates exactly that, showing a one percentage point increase in urban population leads to an increase in the crime rate of 10.61 crimes per 1,000 people.

The aim of the thesis was fulfilled, which was to find out which economic factors affect the level of crime and whether this effect is positive or negative. Despite the fact that the model was able to describe 91% of the variability of the variables, according to the author, the research could go even deeper. First, there is heteroskedasticity in the model that cannot be eliminated by using robustsed adjusted errors. Consequently, this leads to model standard errors that are incorrect. Second, it would be possible to extend the time period to better understand the variability of variables over time and obtain a more accurate model. Finally, it is a good idea to include other explanatory variables in the regression analysis. The author suggests a combination of economic and criminogenic factors such as alcohol and drug use or child abuse.

CONCLUSION

This bachelor's thesis explores how and to what extent economic factors influence crime. The topic is undoubtedly relevant, since crime not only reduces the sense of security of society, but also negatively affects the economy as a whole. This includes police and prison funding, damages relief, and medical costs. Economists can offer insight into people's motives for committing crimes, which can be very helpful in developing new policies to prevent people from engaging in crime.

In order to study which economic factors have an influence on the crimes rate, the author analyze the theoretical and empirical literature on this topic. A review of previous research suggests that people's choice between criminal activity or legal activity is often based on the perceived utility of those activities. They consider the earnings of criminal and legal work, the likelihood of being caught, and the penalties imposed by the criminal justice system if caught. A list of economic factors that have a positive or negative effect on the crime rate has been compiled. The are poverty, unemployment, the level of education level, immigration and inflation rate. Another finding is that these factors affect different types of crime to varying degrees.

The author intended to test several hypotheses. For this, a regression analysis was carried out. The database included 12 European countries in the years 2005-2020. The length of the investigated time period was 16 years. The World Bank, OECD and Eurostat databases were used as the main sources of data. The research method used a panel data model with fixed effects. For the analysis of the thesis, the following indicators are used: number of committed crimes per 1,000 people, unemployment rate, relative poverty rate, inflation rate, number of immigrants, Gini index, annual growth of urban population and the proportion of educated people (below upper-secondary, upper secondary and tertiary education). The first one is the dependent variable, the rest are the independent variables.

The first theory was that an increase in unemployment and inflation rate can lead to an increase in crime rate of the country. This hypothesis was confirmed not only by previous studies, but also by the analysis conducted by the author. It was found that when the unemployment rate increases by 1 percentage point, the crime rate in the country increases by 1.07 commited crimes per 1,000 people. An increase in inflation rate by one percentage point leads to an increase in the level of crime by 1.57 commited crime by 1,000 people.

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The second hypothesis is that the immigration flow has a statistically significant relationship with the crime rate. Both correlation and regression showed that the number of immigrants does not significantly affect the number of crimes committed. Adding this independent variable to the model renders the entire model statistically insignificant. The hypothesis was rejected.

The third hypothesis, which was that easier access to higher education would reduce crime in a country, was confirmed. The author found that an increase in the proportion of people with tertiary education by 1 percentage point leads to a decrease in crime in the country by 1.72 crimes per 1000 people. This happened because higher education leads to more higher wages and therefore reduces people's motivation to commit crimes.

It should also be mentioned that the annual urban population growth and the Gini index also play an important role in explaining the country's crime rate. Both variables have a positive and statistically strong relationship with the number of crimes committed per 1,000 people.

In conclusion, the aim of the thesis has been achieved, the hypotheses have been tested and the answers to the research questions have been found. According to the work done, it can be recommended to carry out the same analysis, but with a larger sample, or to put more emphasis on analyzing the motives behind different types of crime.

KOKKUVÕTTE

MAJANDUSTEGURITE MÕJU KURITEGEVUSELE EUROOPA LIIDU RIIKIDES

Arina Zimina

Käesolevas bakalaureusetöös uuritakse, kuidas ja mil määral mõjutavad kuritegevust majanduslikud tegurid. Teema on kahtlemata aktuaalne, kuna kuritegevus mitte ainult ei vähenda ühiskonna turvatunnet, vaid mõjutab negatiivselt ka majandust tervikuna. See hõlmab politsei ja vanglate rahastamist, kahjude hüvitamist ja ravikulusid. Majandusteadlased saavad anda ülevaate inimeste kuritegude toimepanemise motiividest, mis võib olla suureks abiks uute poliitikate väljatöötamisel, mis takistavad inimeste kuritegevust.

Uurimaks, millised majanduslikud tegurid kuritegevuse määra mõjutavad, analüüsib autor selleteemalist teoreetilist ja empiirilist kirjandust. Varasemate uuringute ülevaade viitab sellele, et inimeste valik kuritegeliku tegevuse või seadusliku tegevuse vahel põhineb sageli nende tegevuste tajutaval kasulikkusel. Nad arvestavad kriminaal- ja juriidilise töö sissetulekut, vahelejäämise tõenäosust ja kriminaalõigussüsteemi poolt tabamise korral määratud karistusi. Koostatud on nimekiri majanduslikest teguritest, millel on kuritegevuse määrale positiivne või negatiivne mõju. Need on vaesus, töötus, haridustase, immigratsioon ja inflatsioon. Teine avastus on see, et need stiimulid mõjutavad erinevat tüüpi kuritegusid erineval määral.

Autor kavatses testida mitmeid hüpoteese. Selleks viidi läbi regressioonianalüüs. Andmebaas hõlmas aastatel 2005-2020 12 Euroopa riiki. Uuritud ajaperioodi pikkus oli 16 aastat. Peamiste andmeallikatena kasutati Maailmapanga, OECD ja Eurostati andmebaase. Uurimismeetodis kasutati fikseeritud efektidega paneelandmete mudelit. Lõputöö analüüsiks kasutatakse järgmisi näitajaid: toimepandud kuritegude arv 1000 inimese kohta, töötuse määr, suhtelise vaesuse määr, inflatsioon, immigrantide arv, Gini indeks, linnarahvastiku aastakasv ja haritud inimeste osakaal (algharidus, keskharidus ja kõrgharidus). Esimene neist on sõltuv muutuja, ülejäänud on sõltumatud muutujad.

Esimene hüpotees oli, et tööpuuduse ja inflatsioonimäära tõus võib kaasa tuua riigi kuritegevuse taseme tõusu. Seda hüpoteesi kinnitasid mitte ainult varasemad uuringud, vaid ka autori tehtud analüüs. Selgus, et kui töötuse määr tõuseb 1 protsendipunkti võrra, suureneb kuritegevuse määr riigis 1,07 toimepandud kuriteo võrra 1000 inimese kohta. Inflatsiooni tõus ühe protsendipunkti võrra toob kaasa kuritegevuse taseme tõusu 1,57 toimepandud kuriteo võrra 1000 inimese võrra.

Teine hüpotees on, et immigratsioonivool on statistiliselt oluline seos kuritegevuse määraga. Nii korrelatsioon kui ka regressioon näitasid, et immigrantide arv ei mõjuta oluliselt toime pandud kuritegude arvu. Selle sõltumatu muutuja lisamine mudelisse muudab kogu mudeli statistiliselt ebaoluliseks. Hüpotees lükati ümber.

Kolmas hüpotees, mis seisnes selles, et lihtsam juurdepääs kõrgharidusele vähendab riigis kuritegevust, leidis kinnitust. Autor leidis, et kõrgharidusega inimeste osakaalu kasv 1 protsendipunkti võrra toob kaasa kuritegevuse vähenemise riigis 1,72 kuriteo võrra 1000 inimese kohta. See juhtus seetõttu, et kõrgharidus toob kaasa rohkem kõrgemat palka ja vähendab seetõttu inimeste motivatsiooni kuritegusid toime panna.

Olgu mainitud ka seda, et riigi kuritegevuse määra selgitamisel mängivad olulist rolli ka linnarahvastiku aastakasv ja Gini indeks. Mõlemal muutujal on positiivne ja statistiliselt tugev seos toimepandud kuritegude arvuga 1000 inimese kohta.

Kokkuvõtteks võib öelda, et lõputöö eesmärk on saavutatud, hüpoteesid kontrollitud ja uurimisküsimustele vastused leitud. Vastavalt tehtud tööle võib soovitada teha sama analüüsi, kuid suurema valimiga või panna rohkem rõhku erinevate kuriteoliikide taga peituvate motiivide analüüsimisele.

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