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İKTİSAT (İNG.) ANABİLİM DALI
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SOCIO-ECONOMIC DETERMINANTS OF PROPERTY CRIME IN TURKEY

M.A. Thesis

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İKTİSAT (İNGİLİZCE) Anabilim Dalı İKTİSAT (İNGİLİZCE) Bilim Dalı TEZLİ YÜKSEK LİSANS öğrencisi EZGİ ER'nın SOCIO-ECONOMIC DETERMINANTS OF PROPERTY CRIME IN TURKEY adlı tez çalışması, Enstitümüz Yönetim Kurulunun 30.05.2019 tarih ve 2019-16/20 sayılı kararıyla oluşturulan jüri tarafından oy birliği / oy çokluğu ile Yüksek Lisans Tezi olarak kabul edilmiştir.

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ÖZET

TÜRKİYE'DE MÜLKİYET SUÇLARININ SOSYO-EKONOMİK BELİRLEYİCİLERİ

Bu çalışma, mülkiyet suçlarının sosyo-ekonomik belirleyicilerini araştırmaktadır. 2008-2017 yılları arasında 81 ilin verileri kullanılarak gerçekleştirilen bu çalışmada, bağımsız değişken olarak, erkek işsizlik oranı, erkeklerde lise ve üzeri tamamlanmış eğitim düzeyi oranı, enflasyon, kişi başına düşen GSYH, bir şehre göç eden kişi sayısı, GINI katsayısı, nüfus yoğunluğu verileri kullanılmıştır. Türkiye'de hem işlenen toplam suçların nüfusa oranı, hem de işlenen mülkiyet suçlarının toplam suç içerisindeki payı artmaktadır. Bu bağlamda, bin kişiye düşen suç sayısını açıklamak adına, sabit etkiler modelinden faydalanılmıştır. Sonuçlar, erkeklerde lise ve üzeri tamamlanmış eğitim düzeyinin, göç miktarının, enflasyon ve kişi başına düşen GSYH'nin mülkiyet suçları üzerinde arttırıcı etkisinin olduğunu göstermektedir.

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ABSTRACT

SOCIO-ECONOMIC DETERMINANTS OF PROPERTY CRIME IN TURKEY

This study investigates the socio-economic determinants of property crimes. In this study, which was conducted by using the data of 81 provinces between 2008 and 2017; as independent variables, the data on male unemployment, the rate of completed education level of high school and above, inflation, per capita GDP, the migration count, GINI coefficient, and population density were used. The ratios of total crime and population also property crime and population are increasing in Turkey. In this context, fixed effects model was used to explain the number of crimes per thousand people. The results show that increase in high level of completed education (male), migration, level of inflation and GDP per capita has an increasing effect on property crimes.

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1. INTRODUCTION

Crime is a behaviour which is prohibited because it is wrong or harmful and, in some cases, punished by legal institutions in a society. It is also a type of deviant behaviour which can be explained by divergence from social norms. In each group or community there are both positive interaction with the norms and act of violation of the norms.

Considering the social consequences of the criminal behaviour, it is necessary to identify the causes of this problem and to determine the ways to lower crime rates to maintain social prosperity. For this purpose, in criminology there were various perspectives and solutions were proposed to deter crime. Among the approaches developed for crime, it is seen that the pragmatic philosophy, which started with Jeremy Bentham, has an important place in the perspective of economy and rationality brought about by explaining the causes of criminal behaviour. He implements his idea of "man is a calculating animal" to the criminology to explain reasons for committing crime. According to him, every person can make their own decisions in a rational way and if the outcome of this is enough for avoiding crime (by its proportion and time) crime can be deterred.

Both criminology and economics share the same subject which is human-beings. Economics also copes with production, exchange of goods and services and wealth distribution. However, in the core of it, there is a trade-off between costs and benefits. Similarly, with the use of resources, criminal decision is also a decision that the people deciding the weight of benefits and costs.

To comprehend the behaviour of people to commit crime and its relation to socio-economic conditions, there are two theories need to be mentioned. One of them is called motivation theory, which explains that in the times of economic stagnation, the decrease in the level of leads the individual to commit a crime. According to this theory, when people cannot obtain what they desire to live in certain standards, they tend to commit crime. In addition, another aspect of this theory is related to the rational choice process.

The second one is the opportunity theory which tries to explain the increase in crime rates when income and goods available is increasing.

In general; research on the relationship between economic structure and crime is related to economic factors such as unemployment, poverty, deprivation, market conditions and inflation. It is important to investigate how these elements relate to criminal activity in criminal investigations.

In that study, in following chapter, the concept of crime and criminological theories will be explained. Criminological theories will be examined in three categories. These are, biological, psychological and sociological criminological theories. While in first one, "born criminals" theory will be explained, in the second, personality theories will be emphasized.

In the last one, classical criminology by Beccaria and Bentham will be explained first, then later, social learning, control, social bonding and labelling theories proposed by Sutherland, Durkheim, Hiroshi and Becker, respectively.

After that, social disorganization, anomie and strain (relative deprivation) theories will be explained with the help of again Durkheim's and Merton's work. After those preliminary works will be explained, Marxist, feminist and post-modern approach will be examined.

In chapter 3, the concept of property will be examined in a way that how one can define a property and legally, what is a property crime. After those explanations have been made, statistics regarding property crime in Turkey will be shown and explicated.

In chapter 4, literature survey regarding the study will be explained in categorization of independent variables of this study. After that chapter, methodology and model and its results will be explained in detail. In final chapter, conclusions will be shared.

2. THE CONCEPT OF CRIME AND CRIMINOLOGICAL THEORIES

2.1. The Concepts of Deviation and Crime

According to Cambridge Dictionary, the word “deviance” generally explaining a behaviour that is not considered to be acceptable or common. “Deviance”, as a term, describes divergence from the norm (Dobbert & Mackey, 2015:1).

Since the deviation definition is related to norms, norm concept is also needs explaining. Social norms moderate human behaviour and their relations. Norms alter in accordance with their intensity of acceptance by people and their application to the certain society (Gibbs, 1965:588). These types of behaviour may happen in any direction from origin, which in this case, norms. As society evolves, deviance started to mean divergence from the cultural norms in a negative way (Dobbert &Mackey, 2015:1). In that context, social deviation refers to the incompatibility with the social norms that affect the majority (Bozkurt, 2011:173).

Crime is a social deviation that is officially in criminal law (Macionis, 2011:216). In that sense, criminal behaviour is also a deviant one since law can be regarded as a kind of social norm (Clinard & Meier, 2015:112).

Although crime is identified with social contexts, there are also other factors in the literature that can be attributed as reasons of criminal behaviour. Those factors can be biological and psychological or economic. However, both the idea that human behaviour is determined by the society and the varied behaviours of the maternal twins revealed that psychological and biological factors may be insufficient in this respect and strengthened the debate about the influence of the socio-economic variables on criminal behaviour (Bozkurt, 2011:179). Although the mentioned variables have changed, the main argument stays the same: Criminal participation is related with the expected payoffs or costs of committing crime (Harbaugh et al., 2011:1).

Deviance related to social behaviour is not the same concept with social problems present in society. Even though there are certain people experiencing some social problems

such as unemployment, absence of enough medical care or access to certain vital needs, it does not create a pattern of deviant behaviour (Clinard & Meier, 2015).

In this chapter, at first theories from all fields regarding criminology will be presented. By this fields at first biological resolutions of criminal behaviour will be explained in the base-idea of idea of "born criminals". According to this perspective, people born with some physical, genetic or hormonal features may cause them to commit crime.

After that, the relation with psychology and criminology will be explained. Personality theories as the most important theory pile in that perspective, will be explained in detail.

From sociological perspective, there are number of theories which are worth to mention will be explained in that chapter. And finally, crime and economics relation will be explained in a sense that both are social sciences deals with human behaviour and by determination of human behaviour, in addition to socio-cultural and demographic elements, economic variables also play a crucial role.

2.2. Criminological Theories

Crime theories started with the idea of classical approach which basically puts the idea in the centre of "opportunity cost". According to classical school, crime is a decision which can be prevented by severe punishments or equally attractive legal income; or encouraged by insufficient punishments or low legal returns. In 1876, this theory replaced by biological positivism which carries the idea of biological inferiority of criminals in comparison with law abiding citizens. In that sense, it can be said that classical theory embodied more humanistic traits because it focuses on crime and how it can be prevented; on the other hand, biological theories are more scientific and focused on the criminal (Vold et al., 1998:14). As an evolvement of biological point of view, psychological theories try to explain both genetic and personality views. In addition, there are also pile of theories which are sociological and tries to explain nurture part of widely-known nature vs. nurture debate of criminology.

Early biological theories of crime were strongly affected by Darwinian perspective of evolution and natural selection and tended to oversee social effects. Starting with Lombroso's studies, biological perspective was accepted until the beginning of 1900s. The increasing effect of sociology, however, changes this view and started the debate of society and how it is organized (Oxford Bibliography, 2013).

In summary, according to Marsh (2007), resolutions of criminal behaviour are as follows: biological, psychological and sociological. In that study, this categorization will be filled.

2.2.1. Biological Resolutions of Criminal Behaviour

Social theories of crime which will be mentioned in upcoming sections did not contain biological factors of crime. Because, they hypothesize that there is no diversification within people regarding that aspect. For example, if there is a gene or biological tendency to criminal behaviour, that person may or may not commit crime. However, orthodox biological theories concentrate on anatomical, physiological, or genetic differences can be used to differentiate deviant and normal people from criminological perspective. This also causes neglecting social elements. In more modern theories, these elements are not ruled out (Akers, 2012:36).

Roots of biological resolutions of crime lies the idea of "born criminals". The well-known representative of this approach was Cesare Lombroso and his book, The Criminal Man which was published in 1876. In his book, he basically theorized that the criminals share similar physical attributes such as the shape of their chins or foreheads. In that context, he added that the criminals born the way such that they tend to commit crime (Cullen & Wilcox, 2010:5).

He explained his theory with Darwin's atavism. According to him, born-criminals are the primitive version of human-being and comprise some physical features also basic instincts. Their criminal behaviour is inevitable unless it is prevented. Although he started the theory as the majority of the criminals are natural born criminals, later on he reduced the ratio to one third since social, economic, and political conditions might be involved as well (Akers, 2012:36).

Goring (1913) made a comparison in a few thousand criminals with the measures for 37 possible signs of atavism and came up with no diversifications other than that the criminals were shorter and lighter than law-abiding citizens. However, according to Goring (1913), even though there is physical aspect, there is also environmental aspect since they grow up in poorer areas and badly-nourished which at last, may cause them to commit crime (Marsh, 2007:24).

As a following work of criminal anthropology, Hooton (1939) published a book called "Crime and the Man." In his study, he collected data of both physical and sociological aspects however he also stated that since criminals are born that way, sociological aspect can be neglected. The remaining part of the study demonstrates slight difference between criminals and non-criminals even though he selected work groups which requires physical superiority such as firefighting and law enforcement.

In addition to criminal anthropology there is also body type theories which can be exemplified with Sheldon (1949). According to Sheldon, there were three extreme point which can be explained like the following (Marsh, 2006:25):

1) Relatively overweight endomorph who is understanding and enjoys eating and surrounding by people;

2) The ectomorph who is thin and artistic, delicate and introverted;

3) The mesomorph who has a triangle shape, and aggressive and reckless.

His essential kinds of features regarding body and personality traits can be also summarized as follows (Vold et al., 1998:47):

- *Endomorphic:* Extrovert who loves luxury and comfort (viscerotonic).
- *Mesomorphic:* Aggressive and active (somotonic)
- *Ectomorphic:* Introvert, troubled as health-wise (cerebrotonic)

Sheldon tried to exhibit a nexus between criminal behaviour and physical appearances based on the table above. He found that people with criminal history had high mesomorphic

and low ectomorphic traits. Conversely, non-criminal people had lower mesomorphic traits. With that mapping, Glueck et al. (1957) calculated that % 60 of the criminals had mesomorphic traits. They have also made some socio-cultural additions to the theory with lack of household routine and family activities.

In 1972, Cortes also came up with a conclusion that supported Sheldon's theory since he found out that % 57 of the criminals had mesomorphic traits. He also found out that people who carry these traits had more need for achievement and power which resulted with more aggressive behaviour.

Another theory regarding biological criminology links criminal behaviour to a chromosomal abnormality. Since the 1960s, to theorize the violent criminals' behaviour of males, existence of XYY chromosome is debated. Findings of some studies supported the theory in a way such that proportion of XYY males with criminal history is higher than male population itself (Taylor, 1984).

It is important to state that, this theory's scope is relatively limited. Since because it is not applicable to female criminals and valid for small portion of population, this theory cannot be generalized easily. In addition to those, knowing that Klinefelter Syndrome (XXY Chromosome) among people with criminal history is equals to the super male chromosome jeopardize the validity of the theory (Akers, 2012:41).

In modern biological theories is rejecting the height, weight, body shape and chromosomal breakdowns regarding criminal behaviour. They are more likely to lean on genetics, brain functioning, neurology, and biochemistry (Akers, 2012:42). They have been debating whether the combination of people's biological features and social environment can be the determinant of criminal behaviour. They furtherly state, biology can only be a trigger to a certain criminal behaviour. There is no single gene or biologic feature to "force" people to commit crime.

Some of these theories are related with the notion of intelligence. There are numerous reasons of intelligence's relation to criminal activity. At first, people with low intelligence could

end up with arrest more easily than a normal person. However, West and Farrington (1977) stated that the nexus of intelligence and criminal behaviour is not disappearing even though self-report researches (not police reports) are analysed. The other option is that people with low intelligence accepted the allegations of police more easily than a normal person since they do not understand clearly. However, these are not clearly supported by empirical proof.

In this context, the nexus of intelligence and crime is considered as negative. One of the pioneers of this theory was Goddard (1914). He stated that criminals could not develop socially valid skills because of their low intelligence. In addition, Zeleny (1933) showed that criminals were more likely to have lower IQ than law-abiding citizens (Marsh, 2007:57).

In relatively more recent theories findings stays the same. According to Gordon, (1987) negative correlation between IQ and criminal behaviour, which does not decrease when social class and race are taken into consideration.

Farrington (1992) made research on a group of men from birth into adulthood. He observed that more than % 35 of the 18-year-old men whose scores were below average on a test of non-verbal intelligence were involved in criminal activity in their adult years.

Conversely, Moffitt et al., (1994)'s neuropsychological model of male criminal activity that extends IQ and adds mental functioning and flexibility. They evaluated these factors as determinants of criminal behaviour that start at teen ages and continue into to adulthood. However, it is found that none of the neuropsychological measures at teen ages were strong determinants of later criminal activity.

It is important to note that crime an intelligence relationship has lack of limitations because of the definition of these two concepts are not clear. Intelligence is not a concept which one can automate easily by IQ. Intelligence have different features within its scope. In addition, crime is also related with getting caught. However, people who commit crime and get away with it cannot be contained in the research and easily disturb precise results (Marsh, 2007:58).

In addition to those, treating low intelligence as a biologic factor can be problematic at the first place. There is also strong possibility that these people are growing up in an environment where they are poor and having trouble to access adequate education opportunities. Since there is large amount of research to boost the theory of people with low incomes and have limited access to education, thus, employment is more likely to commit crime, low intelligence became a socio-economic factor which are crucial to understand the determinants of criminal behaviour.

Similar to the male chromosome idea, testosterone level also considered as a determinant of criminal behaviour. Booth and Osgood (1993) found a positive relationship between testosterone and adult deviance however they further stated that this hormone level cannot be regarded as determinant of criminal behaviour. In addition, Ellis (2005) states that the mesomorphic traits that resulted criminal behaviour is the hormone testosterone.

The other modern biological explanation of criminal behaviour is called "the inherited criminal tendency". Christiansen and Mednick (1977) stated that a person with a slow autonomic nervous system (ANS) inherently, arouse slowly too. Those people may control deviant behaviour. Thus, they are more likely to become criminal. They also found in various studies he conducted, in adaptive sons that biological father's crime involvement increases the child's criminal behaviour more that adoptive parents.

Whether inherently or not, low heart rates may also attribute as a determinant of criminal behaviour. Latvala et al. (2015) stated that the men with the lowest resting heart rates were 39 % more likely to be convicted because of a violent crime over the next years, in comparison to the men with the highest resting heart rate.

Serotonin is another factor that is alleged to be associated with criminal behaviour. The studies put forward that genes that affect serotonin will eventually influence tendency to criminal behaviour of the people who carry them. In some studies, especially regarding rapists who claim that they hate what they do can be cured by serotonin medicines. In addition to the serotonin, dopamine system is stated to be a factor that affects the perception of reward (Morley & Hall, 2003:3).

In that context, the Dopamine 4 receptor (D4)'s relevancy on criminal behaviour is investigated by Faraone et al (2001:1052). They concluded that there is a significant connection between the '7 repeat' version and ADHD thus, criminal behaviour.

As it is known already, modern biologists do not search for 'the crime gene', but they look whether specific biological differences or similarities effects the criminal behaviour. The most important perspective regarding those theories above is not to disregard biology but to consider it as a co-variable of others such as physiological and sociological which will be explained below. Because, albeit there were biological factors involved there are obvious factors such as having a small income that are much more effectual causal factors (Marsh, 2007:54).

2.2.2. Psychological Resolutions of Criminal Behaviour

Over the years, criminological theories have investigated the people who are inclined to commit crime and their motivation when they choose the crime type which they choose. Within that scenario, psychologists also provided a series of commentaries to explain these situations. Psychological resolutions of crime depend upon the perspective that individuals behave criminally because of a factor inside them (Brown et al., 2010:223). They basically split up to parts, one side of the theory compile with the genetic perspective, the other part is keen on the social explanations which affects a person's behaviour. In that context, in that section, psychological resolutions will be addressed.

The psychological point of view can be split into 2 parts, one of them is psychology and the other is psychiatry. Traditional psychiatry is based on the studies of Freud (1856-1939). At the base of the Freudian psychoanalytic point of view, lies the idea of human personality is driven by forces which are subconscious rather than conscious. These forces were, the id which drives by biological drives and self-satisfaction. The superego which contains conscience and morals. The ego is the mediating force, merely called the conscious personality (Brown et al., 2010:221-222). However, the most important issue with the Freud theory's application to the criminology is that it cannot be used to predict crime. It seems normal or logical to link

childhood traumas to criminal behaviour. However, it is not possible to know that which specific part of people who experience those traumas commit a specific crime.

The most important theory pile in that resolution is the personality theories. Personality is defined as the characteristic cluster of behaviours, cognitions, and emotions that raise from biological and environmental elements (Corr & Gerald, 2009:748).

Personality in criminal behaviour came forward with the term psychopath at first. That and these types of terms are investigated and concluded by psychologists to analyse the different types of personality category that a person belongs to. Majority of the criminals assumed to have similar personality traits (Marsh, 2007:57). Psychopathy is generally explained as a personality disorder which contains permanent antisocial behaviour, lack of empathy and remorse, and incautious, disinhibited, and self-centred traits (Patrick et al., 2009:1).

In an early research from Binder et al. (1988) regarding juvenile delinquency concluded that more common personality characteristics of the criminals can be sorted as, sadism, cold-heartedness, not-matured emotionally, lack of empathy, and hyperactivity.

According to conditioning theory of Eysenck & Gudjonnson (1989) personality traits of criminals is different from law-abiding people. According to them, criminal behaviour is related with below:

- Extraversion: Central nervous system. To achieve standard level of arousal people with lower arousal levels should demonstrate extreme behaviour.
- Neuroticism: Autonomic nervous system. It is related with degree of emotionality. Higher levels of emotionality cause more neurotic behaviour since those people easily lose control.
- Psychoticism: Related with testosterone, serotonin, and monoamine oxidase levels. Extreme cruel or insensitive behaviour is related with those levels.

Another study that connected between personality criminal tendencies by Krueger et al. (1996) concluded that law abiding people are more conventional, planned, mild and

withdrawn. On the contrary, people with criminal record are rebel, impulsive, like to make use of other people. In addition, personality theory stated that, criminals behave impulsive, aggressive, scandalous and hostile. Also, criminal behaviour relates with psychopathy, anti-sociality and sociopathy (Brown et al., 2010:223).

Personality theories have been generally tested with psychoanalytic theories. The widely-used method is to measure personality with a personality survey [(such as Minnesota Multiphasic Personality Inventory (MMPI) and the California Psychological Inventory (CPI)] and compare the results of criminals and non-criminals (Akers, 2012:54).

Although there are studies that rejects the link of these two concepts, majority of the literature found significant differences (Caspi et al., 1994). However, it is important to mention that personality research on criminology suffers from tautology because of the definition of psychopathic behaviour. First, the definition is wide and could be valid to any criminal. Secondly, some of the factors that used to define this behaviour is also related with crimes such as prior arrests and violence.

2.2.3. Sociological Resolutions of Criminal Behaviour

Early biological positivist approach based on the idea that the criminals behave the way they do because of their biological creation meaning “nature”. This contains the concepts of physical abnormalities, what type of body features they had, bio-chemical status. Modern biological theories intersect this positivist approach with social context however, they do not agree the idea of sole “nature”. According to them, the influence of biology can be triggered by psychological and sociological factors. More recent biological explanations are accepted more broadly then previous counterparts, however, they have been in suspicion because of their empirical issues. Psychological theories also based on the reasons of crime in individual-dimension, but they do not focus on whether they are inherited or not. They link the problems related psychology to the problems happened in childhood and social environment. They widely suggest treatment programs for decreasing criminal activity (Özdemir & Öner-Özkan, 2017:347).

After those two points of view, final resolution which will be explained in this thesis is the sociological ones. Although previous theories are not fully rejected by sociologist they are taken into consideration by explaining criminal behaviour only partially. Sociologic resolutions however, based on the idea that the causation of criminal behaviour can be only explained by where crime happens, which is - within sociologic structure (Marsh, 2007:91).

It is important to realize that, in the discussion of criminal causation, sociology have an important place. From this, it is also inevitable that there is plenty of theories for this connection and there is no sole truth. All of them can be explanatory in variety of different criminal activity. Obviously, the causation of criminal activity on high profile embezzlement or o simple burglary can be different. In addition, for juvenile criminals, it is okay to assume the cause is poor supervision of parents or living conditions and it is also possible that these two causes themselves and, in the end, criminal activity.

Although there were no sub-headings in previous resolutions, it will be clearer if we follow a chronological path with individual headings.

2.2.3.1. Classical Criminology

This school of thought generally corresponds to the Enlightenment Era. The focus of this school is the punishment for a crime should be in proportion to the criminal behaviour and this punishment should be considered as a deterrent. So, by this explanation it is clearly seen that rather than explaining the crime individually, classical criminologists have focused the idea of the link between crime and punishment, and in the end, justice. In that point of view, criminal behaviour will be nothing but a rational calculation of individual acts. The most important representatives of this approach were Cesare Beccaria and Jeremy Bentham (Akers, 2012:15).

According to Beccaria's utilitarian perspective regarding law and punishment, although laws of society might negatively affect the freedom of some people, it should be accepted if it concludes general happiness in the end. Also, he believed that people behave rationally and make their decisions by its pleasure or pain. If it is applied to criminology, it can be said that, pain of punishment should be greater than the potential pleasure of crime. In

addition to that, Beccaria stated that if punishment would be in proportion to the social damage it prevents the unclear punishments given by judges. This clear idea of punishment that it is not evitable and certain, would help prevention of criminal behaviour itself (Brown, 2010:135).

Following Beccaria, the utilitarian Jeremy Bentham also a representative of classical criminology. He implements his idea of "man is a calculating animal" to the criminology for explaining the causation of crime. According to him, every person is free to make their own decisions rationally and if the punishment enough for deterrence of crime (by its proportion and time) crime can be prevented. In addition to supporting basic pleasure-pain principle, Bentham also stated that all law and punishments should be align with the utilitarian idea of 'the greatest happiness of the greatest number' and on considering levels of pain and pleasure (Marsh, 2007:96).

Cook (1980) stated that offenders do a cost-benefit analysis before choosing whether the criminal behaviour should be demonstrated or not. If the gain is greater than the potential damage, it is strongly possible that a crime would take place. This is often called as the deterrence hypothesis. These ideas were upgraded by Cornish and Clarke (1987) and became the rational choice theory of crime (Marsh, 2007:79).

As deterrence theory has updated, although deterring effect of punishment still accepted, there is a thought regarding the negative effect of severe punishments on society. According to LaFree et al., (2009) negative deterrent effects may be larger than the positive ones so it is important to find the net result comes of punishment overall.

Deterrence is still touchstone of the classical school and its propositions stays at the centre of rational choice framework. Rational choice updates traditional deterrence literature by adding more explanatories in the process such as the type of crime (Guerette et al.,2014:550).

In other words, deterrence concept in criminology is mostly related with "rational choice" theory in economics. Rational choice theory is rooted on the "expected utility" concept of economics. The expected utility can be explained as the people would make rational

decisions based on the profit maximization or cost minimization. This is the same assumption about behaviour of people in classical criminology (Akers, 2012:23).

Although there is obvious connection rational choice theory in criminology has not have a long history. As it can be presumed, this theory is introduced to empirical research of criminology by economists such as Becker (1968), and Ehrlich (1973).

According to those theories, the basic idea of the rewards that potential criminals search for their crimes is done by specific decision-making processes which are different for every person. In that point of view, classical criminologists support the idea that specific crimes are chosen by criminals and done for specific causes.

When deterrence and rational choice theories are updated in accordance to our times, they are more likely to become the modern social bonding and learning theories which will be explained in following sections (Akers, 2012:33).

2.2.3.2. Social Learning Theory

The thought of learning to involve to a criminal activity was very important in the context of differential association by Edwin Sutherland. According to Sutherland's theory, crime is a behaviour which is learned. This involves an open objection to biological and individual psychological theories. According to Sutherland, guilt arises from neither personal characteristics nor socio-economic conditions; crime, in any culture, is the result of the learning process that will affect any person. According to this theory, when crime exceeds thoughts of law-abiding, the individuals commit crimes.

Regarding how criminal behaviour is learned, Sutherland, put forward the term of differential association. According to Sutherland, all behaviours are learned whether they are legal or criminal. The main part of learning takes place in intimate personal groups. What is learned depends on the intensity, frequency and duration of the association. When the mentioned concepts and variables are in the content of the crime, the individual learns the methods to be used in the crime process and he legitimizes them and creates a suitable

environment for the offending behaviour. The balance between the contradictory and non-contradictory, or rather guilty and non-guilty movements, now begins to change in the direction of criminal behaviour (İçli, 2003: 514).

It can be said that Sutherland's theory is both sociological, because of the involvements of social factors for creation of crime, and psychological, because of its individual characteristics. The underline on link of those concepts indicates the effect of the notion of differential association on the labelling theories (Marsh, 2007:112).

2.2.3.3. Control Theories and Social Bonding

Control theory emphasizes the role of control against deviations or criminal behaviour. Many crime theorists say that if people are left with their own will, they will abide by the rules; it is inclined to believe that some biological, social, or psychological factors push people into crime. Control theories approach the issue from the other side, and they argue that every human being is born with innate animal traits and tends to commit a crime if left with their own will and that the question to be asked is why people "should not" commit crimes. Control theorists explain this question with the presence of some elements that prevent people from committing crimes. Therefore, according to the theory of control, the reason for not committing crime is the weakness of the forces that prevent people from committing crimes (Vold & Bernard, 2003).

According to Hirashi (1969)'s Social Bonding Theory guilt occurs when a person's link to society is weakened or when this link is broken. There are four elements that make one's connection to society (Akers, 2012:86):

1. Attachment: Attachment to other people is about being how closely connected to those people, which is why their expectations and therefore social norms are mattered.

2. Commitment: Devotion represents the accumulation that a person may jeopardize or lose his or her investment in traditional values and types of behaviour, and thus with deviations in behaviour or law. People to build a good job and a good career, and a good social position, to earn dignity, make this investment.

3. Involvement: This means that the person is involved in and engaged in activities that are appropriate for social values and traditions, such as working, spending time with family and engaging in social activities.

4. Beliefs: The concept of faith refers to the adoption of traditional values and norms specifically, the rules of law and society must be morally correct and must be followed. Therefore, if a person's belief in the moral validity of laws and norms is weakened, the person will be more likely to violate these norms.

According to Hirschi 'classical' theoretical position of crime is related with the "nature" of a person is not true. However, when children are born, they do not know which behaviour of them is accepted in society, so they trace their natural instincts until they are socially involved in a community. Socialization is individuals' considerations of the consequences of their behaviour. However, some people may want to ignore the bad consequences that's when they commit a certain crime. According to him, people not always criminal or law abiding they make decisions between these two extremes depending upon the developments in their lives.

Control theories state that crime is natural, and conformity should be explained. As Williams (2006) suggests that, conformist behaviour is the result of specific situations and criminal activity took place when those situations change. The essence of control theories contains the idea of criminal behaviour is the collapse of the socialization.

2.2.3.4. Labelling Theories

In labelling theory, the key element is the connection between the criminal and social group that label this behaviour. The discussion is that the criminal is a person who has been labelled by society. The perspective is related with the work of Howard Becker's. According to him, social groups, make same rules to some behaviours, and label it deviant in the case of a violation. They also apply it to some people, and label them "outsider" In this respect, deviation is not a feature of human behaviour; it is the result of the practices of others by the rules and sanctions that they have determined. The person showing the deviation is the person to whom

this label is successfully applied; the behaviour of deviations is the behaviour that people label in this way (Becker, 1963: 9).

In that context, labelling is a process by which people creates labels for specific kinds of behaviour and individuals. The question of who has the force to enforce their thoughts on others According to Giddens, the labels are applicable to create categories of deviance and power structure of society. They are framed *"by the wealthy for the poor, by men for women, by older people for younger people and by ethnic majorities for minority groups"* (Marsh, 2007:114).

2.2.3.5. Social Disorganization, Anomie and Strain Theories

In this section, Durkheim's theory that seeks explanation on the connection between increasing social disorganization and criminal behaviour will be explained. In addition, the 'strain' theory created by Robert Merton that connects anomie with criminal behaviour will be mentioned. In modern societies social disorganization seen a lot more, therefore in that societies there is a growth in social issues, including crime. The approach and theorizing of these sociologists have become known as the Chicago school (Marsh, 2007:99).

Durkheim's mechanical society-organic society based on the distinction of industrialization, the nature of crimes and the nature of social events have also changed. For instance, the 19th century industrial revolution and the overly religious rules affected the family ties from the loosened division of labor, and the society had an anomaly. On the other hand, because of the urbanization phenomenon brought about by industrialization, the physical and cultural texture of the city has changed. Migration from the village to the city was inevitable. This results in the destruction of the social and cultural structure of the city due to the negative consequences of migration and the phenomenon of crime and urbanization. The unhealthy growth and habitat caused by illegal construction has started to deform the city identity and culture (Downes et al. 2016:90).

According to Merton, crime can be explained by examining the cultural and social structure of society. Due to issues such as "unbalanced income distribution, inequality of

opportunity in education", many people will not be able to reach the targets legally. On top of that, people will desperately try to reach their goals through illegal (illegitimate) ways. Such inequalities and inadequacies create tension in individuals in society. At the social psychological level, anomie can be explained as a deviation of between an individual's aspirations and expectations. Aspirations simply means desires of a human being, financially, or about school and job. Expectations means what a person believes what is possible to achieve. Anomie theory explain that if this gap widens it will be higher the probability of law violation (Smith & Bohm, 2008:3).

Social disorganization is resulted from physical, economic, population, or family conditions. From this point of view, physical, economic, and population characteristics are objective indicators of disorganization (Shaw & McKay, 1942). Bursik (1988) also points out that these variables prevent control factors to applied in a society, where in the end, ends up to control theories where can be said that people, in low socio-economic conditions behave more instinct-based.

According to, the Chicago school and Durkheim, crime is a social concept. If in specific places, there is a chaotic social environment, crime is inevitable and standard. However, this situation is not permanent, because the effect of rapid changes in society will be stopped at some point.

According Durkheim, without moral obligations and social rules, life becomes unbearable and results in anomy. Anomy is a non-normality, a sense of non-normality, and results in destructive behaviour such as suicide and crime. Unrestricted requests and behaviours result in deviation from important social norms.

Merton (1938) says that unfulfilled wishes and desires lead to anomalous behaviour and the denial of morality that dominates society. Indeed, there are many obstacles to achieving legal opportunities, such as cultural differences, economic flaws, and limited resources to enable the lower classes to achieve their goals and move towards the upper classes. Merton, as opposed to the theory of anomia of Durkheim, states that the social structure, as the rich and the desires of the owner, provokes some desire and passion, while at the same time limiting the

social structure to be used to obtain them. If the system of cultural values glorifies some of the aims, which are particularly indicators of success, and at the same time the social structure limits the legal paths to these purposes for a large part of the society, then perverse behaviour is widely seen. There are many obstacles to legal opportunities. This theory focuses on the barriers faced by low income classes. These are cultural differences, economic hardships, and the limited resources required to move upwards. There are differences in opportunities between classes to obtain training opportunities. Achieving a specific education level is a way that can lead to many social successes. This is particularly difficult for young people of low-income groups. Cloward and Ohlin's theory of differential opportunities, originating from the theory of anomie, were used to explain juvenile delinquency. This theory basically indicate that young people grow up in a criminal environment can become one because of the lack of opportunities.

According to Merton (1938) social conditions put pressures on people differentially throughout the society and people react differently to these situations. In one hand, Durkheim stated that humans are naturally keen on to have many desires that must be under control by society, Merton stated that these desires are created socially.

Relative deprivation refers to the relative deprivation perception of others, rather than the absolute deprivation of what is the subject of the expectations of individuals or groups. Relative deprivation is the experience of lacking a right or something that he or she believes (Kawakami, & Dion, 1993). In some cases, relative deprivation can lead to political violence such as rebellion, terrorism, civil wars and other examples of social deviations, such as crime.

There are two separate models at the individual and collective level. Collective relative deprivation is experienced when a group member perceives a contradiction between the current situation of the group and the situation they believe deserves. According to this approach, it is not important what the real situation of the group compared to the other groups. The personal status of the group members is not important. It is often seen that those who lead revolt movements can personally have high status and success. Individual relative deprivation is the realization of the same concepts at the individual level.

2.2.3.6. Conflict-based and Marxist Theories

According to the conflict approach, there is no compromise in making laws and establishing public order. Because laws and public order are shaped in the interests of certain powers. The ideological, political, economic etc. that dominates a country. Powers are privileged both in the process of making laws and in practice. Since the law is made in the interests of these individuals and groups, the public authority cannot treat everyone in the same way and it is not fair. This creates a constant tension and disturbance in society, which is fuelling social conflict. For this reason, according to the theory of conflict, the forces that hold society together is not justice but power and pressure. The public authority is an instrument created to protect the interests of the dominant class. However, the construction of laws and what is defined as a crime does not change the fact that the laws constitute the basis of the criminal justice system, regardless of the view (Reid, 1993: 34).

Marxist-based explanations have two different perspective. Those are left realism and left idealism. Left realism grew on contrary to the Marxist underlining on crime as a reaction to class inequalities and advanced industrial societies. Many of the criminal activity are committed by the poor working class on the working class. According to Jock Young, there is 'square of crime which involves, "the state, society, the offenders and the victims" which needed to be taken into consideration while studying crime.

Although these thinkers, as the ideological means of the state, are advocating for the police to combat and fight crime, they want to put forward a realistic approach to the elimination of the causes of crime. This view draws attention to the fact that the working population is the victim of many crimes and is crushed under social problems. According to this theory, the formula of the crime is as follows: Relative social poverty, discontent and state policies that cannot bring a solution to all of them.

Critical, 'left idealist' criminologists were put emphasis crimes of the powerful and of underestimating the effects of crime of working-class males. Left idealists put their support on practical action by community groups to differentiate the criminal justice system (Akers, 2012:161).

2.2.3.7. Feminist Criminology

Feminist criminology is a discipline in which women's place is examined with a feminist view in the system of women's criminality and trial and punishment. It is the starting point of feminist criminology studies, where women criminals have been shown to be ignored or differentiated in their criminology studies. All these studies are basically carried out within the framework of two problems: gender ratio and generalizability issues. Gender ratio problem, why women commit less crimes, or why it looks like this. The question of generalizability is the question of whether the traditional theories that explain the crime can be applied to women's delinquency.

Lombroso (1895) stated a physiological explanation for the low rate of women's delinquency, discussing that the physical appearances that related to criminality were much occasional between females than males. He also argued that females were less inclined to crime than males.

2.2.3.8. The Postmodern Influence on Criminology

Differences in the society, politics, culture and economy in the beginning of 21st century puts Western societies to the status of ‘postmodernity’. While modernity is seen as the connection to moral certainty and a belief. While explaining problems experiencing humanity, postmodernity is linking to moral ambiguity and a fact of that there are a range of truths that can be legitimate and accepted at different times and for different people. Postmodernism’s rejection of one big theory and the underlining on diversity of explanations and on the role of the media in contemporary society have affected on criminological theorizing (Marsh, 2007:127).

According to the post-modernist view, there is no single type of violence. It is not necessary to look at the views on violence from a totality point of view. Postmodernists look at the events in the context of the concept of multimodality called intertextuality. According to this view, there is no truth waiting to be discovered. There are many truths. According to this view, new definitions of violence should be made. In sum, postmodernists argue that the

knowledge formed by those who have power and power constitute new forms of violence (Schwartz and Friedrich, 1994:221).

2.2.4. Crime and Economy

The science of economics is a social science that is related to people. Thus, every factor affecting people and the society fall into the field of economics. Economics also copes with production, exchange of goods and services and wealth distribution. However, in the core of it, there is a trade-off between costs and benefits. Similarly, criminal decision based upon the assumption that the people weighing financial benefits and social costs of such behaviour (Guarino-Ghezzi & Treviño, 2010: vii). In this context, the emergence of a field of study such as crime economy shows that the relationship between crime and economy is noteworthy (Ünver & Bakırtaş, 2008:35).

In the determination of human behaviour, in addition to socio-cultural and demographic elements, economic variables also constitute an important role. The analysis of the crime phenomenon from an economic perspective is mostly concentrated after the 1960s. In other words, the fact that economists turned to the field of criminology corresponded especially after the 1960s. Before this date, criminals were deviant individuals with largely physical or psychological abnormalities (Entorf and Spengler; 2000: 75-76). Becker (1968)'s study on Crime and Punishment may in a sense be regarded as the first system of economic theory at the systematic level of crime. In fact, the history of research that emphasizes the importance of economic factors or the assumption that crime can be related to economic conditions extends in social sciences long before. What is highlighted here is that, in a systematic and scientific sense, the economists' efforts to analyse the crime phenomenon are relatively new.

Economists and social scientists have developed different models of explanation regarding the possible relationship between crime and economic conditions. A part of these studies concentrate on differentiates in economic status to capture if they correspond to differentiations in crime rates. If poverty construct a reason for criminal behaviour, then in these areas there should be more crime. To capture that, of course it is common to look these both

regional and in different times. In addition to poverty, unemployment and income inequalities also considered as a factor in crime economics. From the very beginning, however, there has been disagreement about the findings and debate about whether the conclusions being drawn were justified.

In general, it is possible to formulate these forms of explanation in two theories (Kızmaz, 2003:280):

1- Motivation Theory: This theory assumes that in the periods of economic stagnation, the decrease in the level of income obtained by individuals legitimately leads the individual to commit a crime. According to this theory; in case of a desire to improve or maintain the living standards of individuals, it is easier for them to turn to crime. In addition, another aspect of this theory is related to the rational choice process. In cases where unemployed individuals are worthy of the criminal responsibility of violating legal behaviour, the prospect of gaining a crime is even more likely to be committed. In short, this theory predicts that crime rates are in an upward trend because of decreasing consumption in the periods of economic recession and increasing unemployment. The motivation theory with this content predicts a positive relationship between bad economic conditions and crime.

2- Opportunity Theory: This theory predicts that the increase in income and circulation of goods during economic growth increases the opportunity to commit a crime. In a sense; the increase of income will bring together the abundance of goods entering the circulation. This will increase the opportunity to commit a crime. In this aspect, the theory of opportunity, in contrast to the theory of motivation, in low economic conditions crime rates will drop. Another feature of this theory is that it deals with the phenomenon of crime mostly in terms of victims of crime. In times of economic stagnation, individuals who lose their jobs must spend a significant part of their time at home; they reduce the likelihood or risk of being a victim of any criminal act, such as exposure to a crime outside the home and entering a burglar. In fact, these two theories alone show how complex the relationship between crime and economics is.

When viewed generally; research on the relationship between economic structure and crime deals with economic factors such as unemployment, poverty, deprivation, market

conditions and inflation. It is important to investigate how these elements appear to be related to criminal activity in criminal investigations.

3. THE CONCEPT OF PROPERTY AND PROPERTY CRIME

3.1. The Concept of Property

Although the concept of property is one of the most important concepts of the economy, it is also a social phenomenon and a legal event and has been the basis of various theories and movements. Legally, property is the right to give the widest possibility to save on a good (limited use of law) or other regulatory rules. The person who has the right to property has the power to use something that is in his / her property, to transfer it to others, to destroy it, to benefit from the products of this thing.

3.2. Property Crime

Property crime is crimes committed against assets assessed under private ownership within the framework of legal or social norms. In this section, definition, classification and legal dimension of property crime will be explained.

3.2.1. Definition and Classification of Property Crime

If a person is envious about a certain person's possession or has a desire for a certain property there may take place the crime of theft which can be stated as an "illegal taking of another's possessions by stealth or force". These crimes can be called "economic crimes" (Brown, 2010).

Theft can be explained as "the act of dishonestly taking something that belongs to someone else and keeping it" according to Cambridge Dictionary. Larceny, the widest type of theft, involves obtaining the property of a person, without that person's desire and with the intent of permanent possession. Robbery is "the crime of stealing from somewhere or someone". In that sense, robbery may also include break-in.

Legal values protected by the crime of robbery are freedom of person, body inviolability, possession and ownership. In upcoming section, legal dimension will be explained in detail.

3.2.2. Legal Dimension of Property Crime

Property crime is a crime type which is committed against possessions of people, Article 35 of the Constitution of the Republic of Turkey protects that right. According to Constitution; "*Everyone has the right to own and inherit property*". Again, in Article 1 of the Additional Protocol No. 1 of the European Convention on Human Rights; "*Every natural or legal person is entitled to the peaceful enjoyment of his possessions*."

The case files included in the justice department are classified according to the Turkish Penal Code (TCK) and Special Laws.

Property crime, in Turkish Penal Code (TPC) are elaborated at Book 2, Chapter 10 "Crimes against Property" between the articles 141 and 169.

According to TURKSTAT there are 27[1] classifications of prisoners in Turkey.

Combining those classifications, in this study, property crime rates are constructed by theft and robbery cases. Below two of them will be explained.

Theft is a criminal offense and a prohibition, legally and morally imposed on every society. The basic concept of theft is stated as "*taking a movable property owned by someone else without his or her consent to provide benefit*" (Dülger, 2014:70). It can be said that as a rule for the realization of the theft, five conditions must be fulfilled (Naçak, 2013:27):

[1] Murder, Wounding, Sexual offenses, Deprivation of personal freedom, Insult, Theft, Robbery, Fraud, Drug or stimulants manufacture and trade and use, purchase, Forgery, Bad treatment, Embezzlement, Bribe, Smuggling, Traffic offenses, Forest crimes, Firearms and knives related offenses, Opposition to the Execution and Bankruptcy Act, Opposition to the Military Penal Code, Threatening, Damage to property, Resistance to the duty, Contradiction to the protection of the family and Other crimes.

- Goods should be transportable,
- There should be absence of the permission of the owner.
- The property should belong to someone else.
- There should be removal of the goods.
- The purpose of benefiting from the good should present.

According to Article 141 of Turkish Penal Code, theft is explained as follows;

"Any person who appropriates removable property, from its place, which belongs to another, without the consent of the individual in whose possession it is, in order to derive benefit for himself, or a third party, shall be sentenced to a penalty of imprisonment for a term of one year to three years."

A crime of robbery shall be punishable by a violation of Turkish Criminal Law. This crime is in the form of an attack on another person, his or her life, physical or sexual immunity, or threatening to do a tremendous damage. As it can be understood from the description, the matter of robbery is the property as it is in the case of theft. Differently, when the property is threatened or used force, the notion of robbery, not theft, will find application (Koca, 2005:2801).

The crime of robbery includes more severe sanctions than the offense of theft. The legal benefit protected by law of theft can be expressed as possession and ownership. In addition to these legal benefits protected against the crime of robbery, the freedom of the person and the immunity of the body are also protected (Naçak, 2013:29).

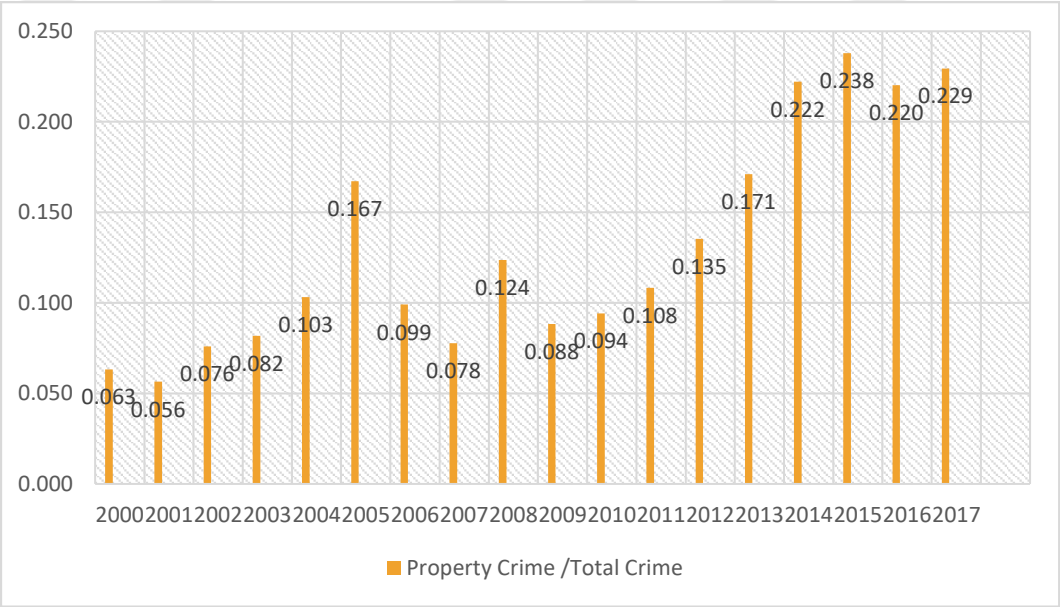
According to Article 148 of Turkish Penal Code robbery crime is stated as follows;

"Any person who compels an individual to provide property or acquiesce in the taking of any property, by using force or threatening the life, physical or sexual integrity of the individual (or his acquaintances) or threatening to seriously damage the financial position of such individual (or his acquaintances), shall be sentenced to a penalty of imprisonment for a term of six to ten years."

An extensive review of the crime economics literature is constructed by and relies on seldom contradictory results between property crime and socioeconomic determinants of it such as income distribution, demographics, and labor market conditions. Below, mentioned literature is explained.

3.3. Property Crime in Turkey

According to the data from TURKSTAT, property crime is the most-committed crime type in Turkey. In Graph 3-1, the property crime ratio in total crime from 2000 to 2017 is shown.



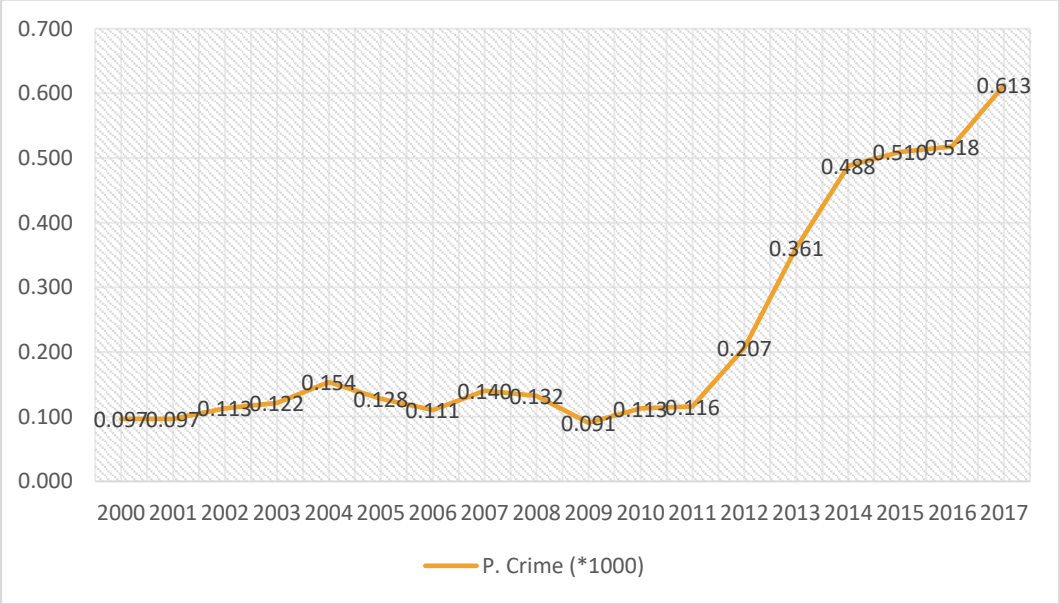
Graph 3-1. The Ratio of Property Crime in All Crime Types

Source: Prepared by the author from the data published by TURKSTAT

As for 2017, theft and robbery constitute, 22% (49.509/215.761) of the total crime. Apart from being the most committed crime, it has also an ascending pattern starting the year 2009.

As it is seen in Graph 3-2, property crime/population ratio [(Property Crime/Population) *1000] is ascending over the years. Starting from 2000, mentioned ratio starting to increase slightly until 2004 and after a decrease in 2005 and 2006, it started to

decrease again to the initial level. However, after 2010, this ratio increased rapidly and followed this trend until 2017.



Graph 3-2. Rate of Property Crime per 1000 people

Source: Prepared by the author from the data published by TURKSTAT

Knowing that property crime is a noteworthy threat in Turkey, this subject needed a detailed explanation. In doing so, in Table 3-1, the cities with the highest and property crime rate recorded will be demonstrated between the years of 2013 and 2017.

Table 3-1. The Cities with the Highest and Lowest Property Crime Rates and Turkey Average, 2013-2017

City/Year	2013	2014	2015	2016	2017
Antalya	0.592	0.835	0.830	0.870	1.047
İzmir	0.742	0.915	0.956	0.906	1.028
Aydın	0.561	0.766	0.793	0.836	1.017
Mersin	0.499	0.755	0.704	0.784	1.001
Adana	0.497	0.725	0.771	0.738	0.905
Average	0.306	0.423	0.429	0.439	0.497
Gümüşhane	0.134	0.143	0.119	0.140	0.153
Şırnak	0.107	0.129	0.145	0.141	0.143
Tunceli	0.258	0.231	0.221	0.207	0.133
Bayburt	0.159	0.273	0.140	0.100	0.124
Hakkari	0.044	0.083	0.072	0.138	0.083

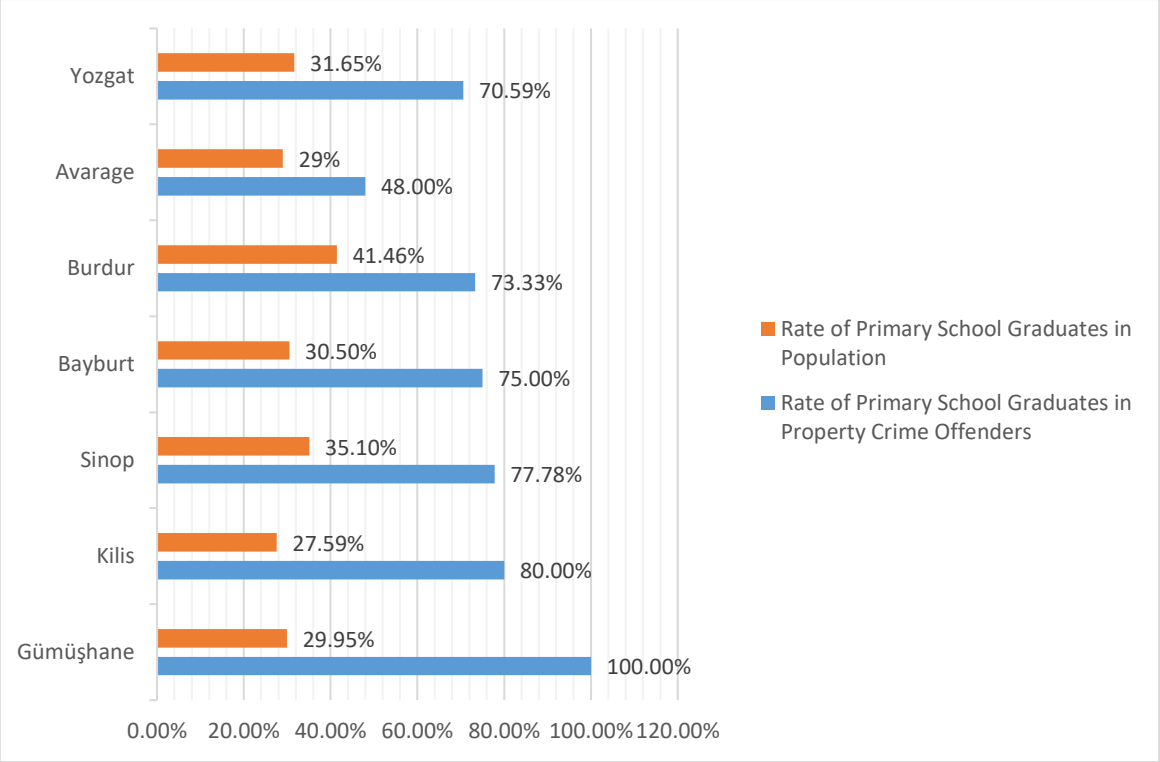
Source: Prepared by the author from the data published by TURKSTAT

As it is seen, the property crime rate is on average of 0,497 recorded in Turkey. However, some of the cities' have a higher rate of property crime. In Table 3-1, top 5 cities seen, and they have approximately 2 times higher rate than Turkey average. These cities are, Antalya, İzmir, Aydın, Mersin and Adana.

In addition, some of the cities' have a lower rate of property crime. In Table 3-1, the lowest 5 cities seen, and they have approximately half of the Turkey average. These cities are, Hakkari, Bayburt, Gümüşhane, Tunceli, Şırnak.

After presenting and overview regarding property crime rates, in this study socio-economic determinants of property crime will be examined. In doing so, some additional education statistics about property crime will be handy.

The relationship with completed education level and criminal activity is straightforward in the case of Turkey. In % 89 of the cities (73 out of 81), criminal activity is committed by primary school graduates. In Graph 3-3, the top rates of primary school graduates in overall criminals shown. Also, primary school graduates in all population is shown to demonstrate the difference between them.



Graph 3-3. Comparison of the Ratio of Primary School Graduates in Offenders and Overall Population

Source: Prepared by the author from the data published by TURKSTAT

Although this is also the case in total completed education level in overall of the country, the proportions are not that high. For example, in Gümüşhane, %100 off all property crime offenders recorded in 2008 is primary school graduate. However, in that city, only %29.95 of the population is primary school graduate. In that point of view, it can be said that property crime offenders are most likely to be primary school graduates.

4. LITERATURE SURVEY

There is a notable volume of research on the nexus between crime and economic variables. Many of the conclusions of this area of research are not in harmony. Some of the studies reports positive and some of them negative results in explaining the relationship of certain economic variables (e.g. wealth, unemployment, income distribution) and criminal activity.

Although widely known empirical researches are started with late 60s, beginning of the publishing of national crime statistics of France in the early 19th century, some of preliminary studies are starting to take place. Guerry and Quetelet tried to show the direction of the nexus between crime and wealth. In doing so, they made a comparison between rich areas with poor areas in France and they concluded that in wealthy areas, there are more criminal activity recorded. Guerry pointed at that, the reason of this is simply the "opportunity", since there is a lot to steal in wealthy areas. Quetelet also agreed with him, however, he added a remarkable perspective which is inequality. In wealthy areas, there are more inequality than poor areas and this may result increase in criminal activity because of the aggression this may create in poor people more than the poor people lives in poor areas (Vold et al., 1998:109).

Starting from these two researchers, there were numerous studies have been made on this relationship around the world. As a pioneer empirical researcher of criminology ***Becker***'s basic premise is that criminals maximize their expected gains (according to some utility function) from illicit activity. A person commits an offense if the expected utility he will receive exceeds the utility he would receive by engaging in other activities. Thus, the criminal's decision is based on benefits and costs of both a monetary and psychic nature.

In Becker's study, the effects of crime based on social loss function of society, which is;

(1) $$L=L\ (D, C, bf, O)$$

Where;

D: The net cost or damage to society is simply the difference between the harm and gain to offender

C: Cost of Conviction

bf: Punishments (where b is the coefficient of punishment, generally b equals or close to 0, but greater than 1 if there are punishments like torture or so.

O: The Supply of Offenses

With this model, he tries to achieve an optimal condition between offenders and law enforcers. In Ehrlich's study, however, crime modelling is based on what he called "Market Model of Crime". According to Ehrlich, there is supply and demand for offenses and they combine in a Walrasian-like abstract market. Supply of offenses;

(2) $$Ti= Wi-G-wi-pi+fi$$

Where;

i=illegal activity

Ti=expected net return of offense

Wi= expected illegal pay-off of i

G= direct cost incurred by offenders (self-protection etc.)

wi=the wage rate of an alternative legitimate activity

pi=probability of conviction

fi=preference of committing crime

and the demand is

$$Ti = ei^{*}+ Vi + Li$$

ei*=optimal expenditure on illegal goods and services

Vi=perceived risk of victimization

Li=private loss from crime

According to Ehrlich (1973) an individual allocates a fixed amount of time among legal and illegal income-generating activities. The effects of this time allocation are introduced only implicitly by Ehrlich through the effects of time allocation on wealth. From the basic model Ehrlich goes on to derive some behavioural implications such as: An increase in the probability of apprehension and punishment, with no change in other variables, reduces the incentive to participate in illegitimate activities.

In the same year, Sjoquist (1973) use several (conviction, committed rates) calculation methods of property crime rates. In this model, to explain criminal behaviour; population and population density, completed school year, average sentence served by inmates of similar crime, retail sales and yearly income is used. In this study, rather than utility maximization, this point of view and proceeding perspectives of it will be used.

After them, Block and Heineke (1975), Heineke (1978). Below in two paragraphs, the remaining part of first pillars will be presented.

Block and Heineke (1975) stated that, without constant assumptions, it is not possible to say that punishments will be deterrent and there may be many factors that determine the choice of the person. They also add that, changes in wealth, the payoff to illegal activity, enforcement, punishment, and the degree of certainty surrounding punishment were seen to have no qualitative supply implications under traditional preference restrictions. According to the expected utility theorem, the individual's labor-theft supply decision is explained by;

(3) $$\max_{L,T} \sum U (L, T, W0 + rL + (V-aF) O f(a)da$$

Where;

L= Labor, legal activity

T= Theft, illegal activity

V = the rate of return to illegal activity

r= the rate of return to legal activity

a= the stochastic failure, capture, or arrest rate, $0<A<1$

O= the number of offenses, O

F= the fine per offense

W= W0 + rL + (V-aF) O (T), actual wealth

N=time devoted to nonmarket activity

t=L+T+N

f(a) = the agent's subjective probability density on the arrest rate

Heineke (1978), use time context and this model includes allocation of time between legal and illegal activities. An increase in the probability or the severity of sanctions will affect the optimal mix of activities, whereas such an increase may be insufficient for influencing individuals who have specialized in one of the two activities. Assuming leisure time not to be fixed, the same comparative statics results in this study, as for the portfolio choice model are obtained.

As a summary, individuals are acted upon by the optimization principle and have legal and illegal opportunities and anticipations about their behaviour. At the same time the basic assumptions of this approach that there is a distribution of preferences in the society in terms of crime and that all the externalities of the crime generated. When an individual decides to commit a crime, the individual assesses the consequences and costs of the crime. The costs of crime include the direct cost of committing crime and the effort shown to avoid arrest, and the opportunity cost arising from the loss of income that can be obtained by choosing a legal act instead of committing a crime. On the other hand, the deterrence of the sentence given by the police force and the possibility of getting arrested accordingly is taken into consideration.

For that matter, both low opportunity cost of crime and high time-spent on criminal activity, there are other variables which are crucial to while investigating determinants of property crime. In the light of the models developed in the field of crime economics, many factors that are related to the crime phenomenon are tried to be exposed to empirical studies and the relations between the crimes are tried to be revealed.

4.1. Wealth and Income

Macro-level studies often conclude that low income areas have more criminal activity, but there are prominent exceptions (Pratt & Cullen, 2005). In addition, studies of crime time to time concluded that low economic conditions do not necessarily ascend criminal activity (Yearwood & Koinis, 2011). For example, crime increased notably during the 1960s, although the fact that all sociodemographic groups enjoy major improvements in their economic structure (LaFree, 1998; Wilson, 1983).

While overall economic structure getting better during the 1960s, there was an important cultural movement on economic well-being reflected in a decrease in poverty. People evaluate the conditions of other people who achieve economic success and when some were not able to achieve that kind of prosperity, they tend to commit crime (LaFree, 1998). Since there was an increasing gap between the rich and poor relative deprivation idea resulted in criminal activity. Disorganization, weakening moral codes, low punishment rates also affected that kind of an increase in subjected period (LaFree, 1998; Wilson, 1983).

On contrary, crime descended between the years 2008 to 2011, despite the huge economic recession that started at 2008. The decline in crime since 2008, despite the severe economic recession. In that years, unemployment is increased, real wages are decreased, and wealth of the households decreased which resulted high increase in poverty. (Barker, 2010). The most important breakdown of this “surprising” result is that people who make comparison with others’ lives concluded that “all people living in bad economic conditions. In addition, there was a huge increase in government spending after the recession so an important amount of that was spent to food, housing, and unemployment compensation.

Fleisher (1963) was the pioneer study on the role of income on crime decisions. According to Fleisher (1966), income has two effects on crime. First, low income increases the tendency to be involved in crime. Because if the legal gain is low, the opportunity cost of the crime will be low. However, the income levels of the victims also affect the tendency to commit a crime. The higher the income levels of potential victims, the higher the demand for crime.

In wealth dimension, Cho (1974) also found that the people who are living below the poverty line was not linked to any crime subjected to his study. On contrary, Ehrlich concluded that there was a positive link between property crime rates for 1940, 1950, and 1960 and the lower income households.

According to Ehrlich (1973), the offense of crimes against property, in particular, depends on the opportunities offered by the victims, for example the average income level in society. Inequality in income distribution represents the level of transferable assets and goods in society. The more unequally distributed the income distribution, the higher the level of transferable assets and assets. While the average income level is data, income inequality can be used as an indicator of the difference in returns between legal and illegal activities.

In addition to wealth, overall economic conditions also effect criminal activity in both directions. Some researchers concluded that in economic bottleneck times, criminal activity will increase since the chaotic structure of those times. However, there are notable number of studies also could not find significant increase in those times.

According to Fleisher (1966) and Ehrlich (1973), the impact of unemployment on the crime rate is a complementary indicator of income opportunities available in the legal labor market. In their study, they showed that unemployment rates are less effective on the crime rate compared to income level and distribution.

Wright et al. (1999) concluded that socio-economic status has both a positive and a negative effect on criminal activity. They stated that, low levels of Socio-Economic Status promoted criminal activity by ascending a person's aggression and isolation from the society and decreasing job and schooling opportunities, whereas high levels of Socio-Economic Status promoted individuals' criminal activity by ascending risk taking and social power and by decreasing conventional values. This research concludes that it is important to examine the balance between social class and behaviour.

Fajnzylber et al. (2002), found positive relationship between crime and per capita income. Soares (2004) did not find a significant relationship between per capita income and

theft crime. Mehanna (2004), who investigated the effect of disruption in income distribution on crime, found no significant relationship between crime rate and income inequality. Soares (2004) suggested that income inequality increases the crime of theft.

Kuştepeli and Önel (2006) analysed the relations between various types of crime (crime against state or government administration, crime against public, crime against individual and crime against property), and economic variables for Turkey such as; unemployment rate, private consumption as a rate of GDP and per capita GDP measured at constant 1987 prices in a temporal Granger-causal framework with a multivariate co-integration analysis. Only crime against individual has lack of long-run relationship.

In Cömertler and Kar (2007)'s study, the crime rate (property crime/population) used as a dependent variable. The independent variables include variables such as per capita income, unemployment, and schooling rate, and urbanization rate, number of security officers, migration and poverty. They also use other demographic factors which are population density and birth rate. There is also a metropolitan dummy in this study. 36 models are estimated in different combinations of independent variables with a cross sectional study, then significant variables are listed. According to the cross-section analysis conducted in accordance with 2000 data in the city level, it is seen that income, migration, demographic factors such as population density and birth rate, unemployment, education, and urbanization ratio are the motivating force of criminal behaviour.

Brush (2007) showed a positive relationship between crime ratio and income inequality in the cross-sectional analysis and negative correlation in time series analysis.

According to Buonanno and Montolio (2008), the increase in per capita income and the growth rate of GDP effects offenses against property negatively. They estimate a crime equation using a panel dataset in Spain for 6 years by using GMM estimator. They concluded that lagged crime rate, clearance, urbanization and foreigners' rate are positively correlated to crime rates.

Aksu and Akkuş (2010) use bound test approach to determine the nature of the relationship between crime cases (total burglary, theft and swindling) and inflation rate, unemployment rate real per capita income and secondary education (high school) rates. Their data set is including the years between 1970 and 2007. First, they used ADF unit root test for stationary levels. They later list their outputs of ARDL and OLS results. According to this study, crime rates affected positively by schooling inflation and unemployment and negatively by per capita income.

Dursun et al. (2011) used a panel data analysis while trying to explain crime rates (robbery, muggings, fraud, bribe, embezzlement, money and goods smuggling) with the help of unemployment and income variables. They used the data for 1990-2010 and 26 regions. In this study, LLC Panel Unit Root Test, Pedroni and Kou Residual Co-integration Test are used. According to this study, they found a long-term co-integration relation between unemployment and crime and a long-term relation between income and crime.

According to the explanations, the most common economic indicator used to describe the amount of crime in the literature by income variable is income level or income distribution.

Khan et al. (2015) reported that GDP per capita leads to higher crime rates in the long-run but to lower rates in the short-run. Also, they added that, in wealthy areas criminal activity occurs more due to the opportunity theory.

According to Hazra and Cui (2018) macroeconomic indicators, specifically unemployment, can affect crime in India.

4.2. Unemployment

The causation of unemployment and crime seem to be obvious and many researchers dig into this subject in the context of crime economics. The reasoning expected to be found is as follows: Crime should ascend when unemployment is high and descend when unemployment is low because since unemployment cause poverty, and poverty causes crime. However,

unemployment is also an indicant of economic structure of a certain country or region, in economic bottlenecks crime should also increase.

Some of the studies that attempt to explain the relationship between crime and unemployment have conclude that there is a positive relationship between crime and unemployment, while others have argued that there is no relation or insignificance (Freeman, 1994).

In one of early empirical studies' Glaser and Rice (1959) found that when unemployment is high, then recorded crime is low. However, Singell (1968) found a contradictory result that high unemployment resulted high crime rates.

Imrohoroğlu et al. (2001), stated that a decrease in the unemployment rate has no effect on the crime rate. Hojman (2002), reported that in Buenos Aires with the data from 1985-1997, there is no relationship between the rate of unemployment and crime, however inequality in the distribution of income increases the crime rate. Papps and Winkelman (1998) concluded that unemployment in New Zealand did not have a strong impact on the crime rate. In Buonanno and Montolio (2008), the analysis of socioeconomic determinants of crime in Spain among the provinces found the relationship between unemployment and all types of crime negative and weak.

There are also studies supporting the positive relationship between the amount of crime and unemployment. In a study by Carmichael and Ward (2001), a positive relationship was found between the rates of young and adult unemployed and crimes against property. Witte and Tauchen (1994), found that unemployment has a significant impact on crime. Cerro and Meloni (2000) determined that unemployment in Argentina has a positive and significant effect on crime through panel data analysis.

Raphael and Winter (2001), in their panel data analysis for US states, found that in the period 1971-1997 unemployment was an important determinant of crimes against property. Mui and Ali (1997) found that the unemployment rate increased crime, especially against property. Scorzafave and Soares (2009) found a positive relationship between unemployment and crimes

against property. Tang and Lean (2009) used Border Test Method and Granger Causality Test in their work, the unemployment and inflation rates positively related to crimes against property.

Hale and Sabbagh (1991), in a joint study on England, found a positive relationship between unemployment and crime rate. They have reached this conclusion by the time series analysis using the annual data of England in 1949-1987 in their study. Similarly, Papps and Winkelman (2002) also found similar results in a joint study of New Zealand.

Witt, Clarke and Fielding (1999), in the UK using the data from the years 1986-1996 11 different regions, panel data method to determine what are the economic factors that determine the crime. According to this work, they found that the existence of economic conditions such as unemployment and low wages increased the crime.

According to Burdett, Lagos and Wright, (2003), high unemployment increases the crime. On the other hand, Machin and Meghir (2004) examined the period of 1975-1996 in the UK using panel data analysis and found that there was no statistically significant relationship between unemployment and crime.

Cantor and Land (1985), in a joint study on the United States, concluded that there was a negative relationship between unemployment and crime. They have reached this conclusion in their study by using the time series analysis by using the US data of the years 1946-1982. Likewise, Poutvaara and Priks (2007) in a joint study, achieved similar results.

According to Freeman (1983) review of the studies researching the nexus of unemployment and criminal activity, higher unemployment rates are associated with higher crime rates, but the relationship is not certain and occasionally weak. Land, Cantor, and Russell reported that there is a weak negative relationship between crime and unemployment from 1960 to 1980. In that context, crime decrease when unemployment increases, but not enormously. They also added that, when there is a relationship exist that crime type is always the property crimes.

Corman & Mocan (2005) studied on the causes criminal activity and its relationship with economic structure of New York City, using 1974–99 data (monthly). They found out that the unemployment rate has an impact on property crimes such as burglary and vehicle theft.

Pazarlıoğlu and Turgutlu (2007) examined crime rates (all) and the existence of a long-term relationship between the GDP and unemployment rate by using the Johansen Cointegration Test. Error correction model is also used. The data set used in this paper is the crime rates, unemployment and GDP per capita between the years of 1968 and 2004. According to this study, the total crime in Turkey and among the GDP per capita and the total number of unemployed persons; there has been long run equilibrium relationship. There is also an increase in the tendency of society to commit crime as income rises. According to model results, unemployment does not encourage criminal behaviour.

Unel & Mocan (2011) studied on the reasons of criminal activity and its relationship with unskilled workers' weekly earnings. It is found that variations in unskilled workers' earnings impact property crime negatively, but that wages have no effect on violent crime.

In Ata (2011) study, factors such as unemployment and low wages, which caused the occurrence of the crime (property crime/population) theoretically expressed and tested using the "cross section analysis" and OLS method. In this study, “White test” also run for checking heteroscedasticity. According to the results, it was found that unemployment had a statistically significant positive effect on the crime rate, whereas the wage level had a statistically insignificant effect on crime.

Filiztekin (2013), also used OLS method to estimate crime (all) rates and its link with labor market for the years 1990-2008. According to this study, wages affect crime rates, but unemployment does not.

Frederick et al. (2016) stated that OLS indicates a positive and statistically significant impact of unemployment rates on crime rates but GMM model shows no effect of unemployment on criminal activity.

As a result, although there are many empirical studies on the interaction between unemployment and crime and its determinants, the findings of these studies do not reveal clear results about the direction and degree of relations between crime and unemployment.

4.3. Education

Crime is a priority problem among uneducated men. Low-skill individuals are more likely to be involved in crime because they have lower earnings from school or work, while high school graduates and talented individuals tend to be involved in less crime (Lochner 1999, 34). In Italy, Buonanno and Leonide (2006) concluded that for the period 1980-1995 education has a decreasing effect on property crimes, based on the empirical results. They have also added that, since crime has very large uncertain social costs, it has negative externalities for society. If the increase in the level of education reduces the crime, there will be a significant social benefit which cannot be calculated with schooling.

In this case, the social gain of education will exceed the private gain (Lochner and Moretti 2004, 1). Lochner and Moretti (2004) stated that, schooling significantly reduces crime. Usher (1997) analysed the relationship between education and crime by claiming that education had a civilian influence. He stated that this effect tended to reduce the rate of repetition of criminal activities. Schooling advises that life of criminals should not be emulated. The gain that is expected from the training, as the author said, education promotes law-abiding citizenship, gives more than gaining more education by teaching them skills, maintains the value of society, makes people cultured. In fact, as Freman (1994) and Lochner (1999) support, education increases skills and abilities, then increases job opportunities and wages, but also has the effect of civilization (Usher 1997).

Buonanno and Montolio (2008) reported that the education variable, which is calculated as the ratio of high school and university graduates to the population, is positively related to the offenses against property in the panel data analysis (pooled data-OLS) and negatively related to the dynamic panel analysis (GMM).

5. METHODOLOGY AND RESULTS

5.1. Purpose of the Research

This study tries to assess the relationship between the motivation of property crime offenders to commit crime and some socio-economic and demographic variables (in doing so, education level, population density, migration, unemployment, inflation, Gini coefficient, GDP per capita) are used. Since property crime (especially theft and robbery) is not always a professional act (planned) and it is occasionally related with social organization of certain area (Clinard & Meier, 2015 148-149).

There are two motives when it comes to socio-economically explain the criminal behaviour. One of that, as mentioned before, motivation theory is when people could not obtain certain goods without committing crime because they have low income, low educational status or are unemployed. The other is the opportunity theory when there is abundance in the economy while there are too many opportunities to commit crime for certain people.

In summary, the aim of the study is whether in Turkey, which of these theories is valid with the help of socio-economic variables.

5.2. The Significance of the Research

This study conducted in Turkey is contain NUTS-3 classification (81 provinces) and recent and detailed descriptive statistics regarding property crime. By trying to provide the answer of the question that which behaviour led people commit crime or what forces them to commit crime, this study tries to analyse what the dominant theory in Turkey is: motivation or opportunity theory.

5.3. The Collection of Data

The most important part of this research is that it occurs in macro-level. As it is widely-known macro- and micro-level theories are asking different questions in base. Micro-level

theories try to explain the reason of individuals commit crime, and macro-level theories seeking answer of explaining variety among social or geographic areas (Brown, Esbensen, & Geis, 2013; Tibbets, 2012; Vito & Maahs, 2012).

Crime rates calculated for a specific geographic area, which represent the cumulative of criminal offenders within them divided by usually the population size, are important examples of analytical or aggregate features, as defined by Lazarsfeld & Menzel (1961). In addition to crime rates being dependent variable, explanatory factors that underlines properties of geographic areas. Some of them being economic, and other may be demographic or social (Akers, 2012).

Tittle (1995) stated 3 types of causal structure, related organization of macro-level theories. These are:

(a) Motivation or propensity for criminal behaviour;

(b) Constraints to criminal behaviour; and

(c) The role of opportunities or situations for generating crime.

In doing so, current explanatory variable selection is based on the city's economic and social structure and whether these conditions promote or constraint criminal activity. For example, in a few theories to factor of economic deprivation, unemployment and poverty rates used as motivation to criminal activity.

From this point of view, all variables are collected from TURKSTAT. To point out more clearly, the variables used in this study will be described below section.

5.4. Description of Data

In that study, for explaining causation of property crime, GDP per capita, inflation (food and non-alcoholic drinks), high school or more graduate proportion (male and total), unemployment (male and total), migration (density and quantity), population density and Gini coefficient will be used.

5.4.1. GDP per capita and Gini Coefficient

Gross Domestic Product (GDP) is estimated as an independent account covering all sectors of the economy. There are three methods for GDP estimation: production, expenditure and income. Method of production in Turkey are taken into consideration in the calculation of GDP.

Gross Domestic Product Per Capita is obtained in Turkish Lira by dividing the Gross Domestic Product estimated at current prices by mid-year population estimate. With this value calculated by dividing the import to the weighted average dollar rate, the gross domestic product per capita is reached.

It is estimated that GDP per capita of a city may indicate the overall wellbeing of this city and may decrease property crime. However, when opportunity motivation is considered, it is also possible that if people living in this city is considerably rich, there is also too much to steal as theory indicates. From the point of these two views it is possible that this variable shows a certain effect on both directions.

As for GDP per capita in this study, 2009 prices have been used in dollar base. In that context, Table 5-1 shows 5 cities hold the highest GDP per capita and 5 cities hold the lowest GDP per capita according to 2017 data, and its change during last 5 years.

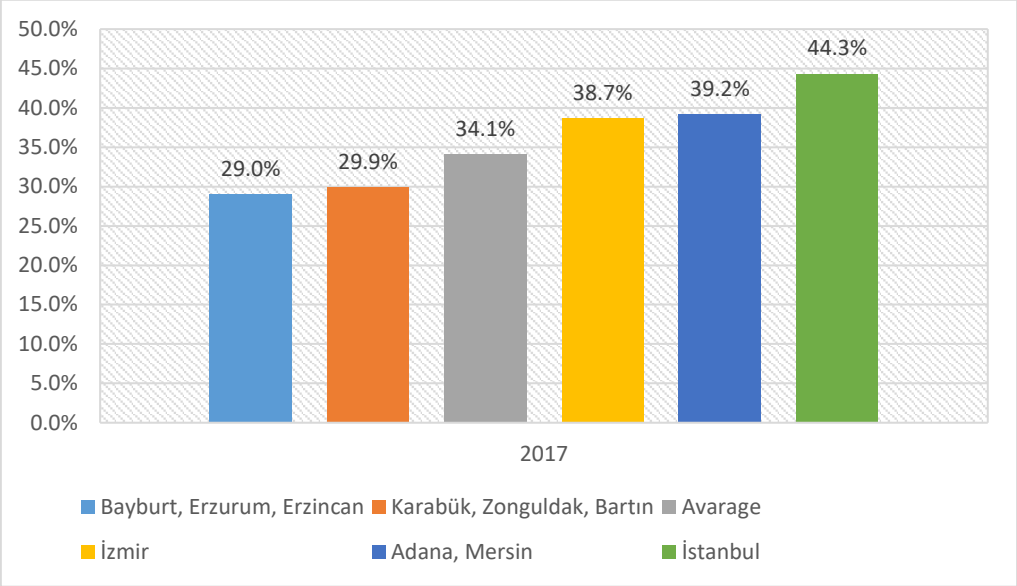
Table 5-1. The Cities with the Highest and Lowest GDP per Capita and Turkey Average, 2013-2017

City/Year	2013	2014	2015	2016	2017
İstanbul	20726	19957	18343	18169	17827
Kocaeli	20572	19900	17987	17618	17723
Ankara	17590	16772	14992	14965	14253
Tekirdağ	15673	15208	13420	13257	13014
İzmir	14695	14257	12626	12508	12344
Average	9482	9202	8354	8220	7946
Ağrı	4111	3880	3559	3679	3489
Van	4873	4533	3887	4094	3859
Şanlıurfa	4643	4469	4148	4022	3888
Muş	5748	5366	4775	4712	4258
Bitlis	5747	5517	4851	4678	4422

Source: Prepared by the author from the data published by TURKSTAT

As it is seen Table 5-1, 5 cities that hold the highest GDP per capita are, İstanbul, Kocaeli, Ankara, Tekirdağ and İzmir. In the year 2017, each of these cities hold at least %55 more than Turkey average. One thing should be noted that, İzmir also one of the highest property crime convictions in Turkey. In addition, below graph shows 5 cities hold the lowest GDP per capita according to 2017 data, and its change during last 5 years. Also, for 5 cities that holds the lowest GDP per capita are, Ağrı, Van, Şanlıurfa, Muş and Bitlis. In the year 2017, each of these cities holds at least %79 less than Turkey average.

In addition to GDP per capita it seems to be important to know whether this income is distributed fairly. In doing so, although there is no yearly data on Gini coefficient, it is added to the study as 2017 Gini coefficient and as a cross-section explanatory (whether change between cities maters in explaining property crime). To explain this situation visually, both top and the lowest Gini coefficient of the cities and Turkey average will be shown in Graph 5-1.



Graph 5-1. The highest and the lowest Gini coefficient of the cities and Turkey Average, 2017

Source: Prepared by the author from the data published by TURKSTAT

It is important to determine the level of inequality in the distribution of income in a country and what should be an acceptable income distribution or inequality, and the policies to be taken to eradicate this problem. As this problem cannot be determined, the necessary measures cannot be taken, and the interventions cannot be done, the existing inequality will increase. This situation can cause socio-economic social problems such as growth, development, effective distribution of resources, social dissatisfaction, hatred at the social level and increase in the amount of crime (Çakmak, 2015: 134). The important causality mechanism underlying the notion that there is a positive relationship between economic inequality and crime, which expresses the unequal distribution of national income among individuals, is explained by the concept of relative deprivation (Fowles and Mevra, 1996: 164). As it is mentioned before, Kawakami & Dion (1993) states that, this concept refers to the relative deprivation perception of others, rather than the absolute deprivation of what is the subject of the expectations of individuals or groups.

In the light of above reasoning it is quite clear to see that, Bayburt, with one of the lowest crime rates in Turkey has a more equal distribution of income, while İzmir has one of the most unequal one.

5.4.2. Inflation

Consumer Price Index (CPI), nearly year from all socio-economic groups 15 000 (3 years total of 45 000) households made with Household Budget Survey, institutional population survey, for the expenses they have made of foreign nationals in Turkey expenditure derived from tourism surveys and administrative records and the turnover information. In this study, NUTS-2 (nomenclature of territorial units for statistics) classification (26 region) CPI changes are taken for each month (change to the same month, previous year). These monthly data are turned to a yearly data by taking their average.

Tang and Lean (2009) used Border Test Method and Granger Causality Test in their work, the unemployment and inflation rates positively related to crimes against property.

Table 5-2. The Highest and the Lowest CPI change and Turkey Average, 2013-2017Table 5-2 shows 5 cities which hold the highest CPI change according to 2017 data, and its change during last 5 years.

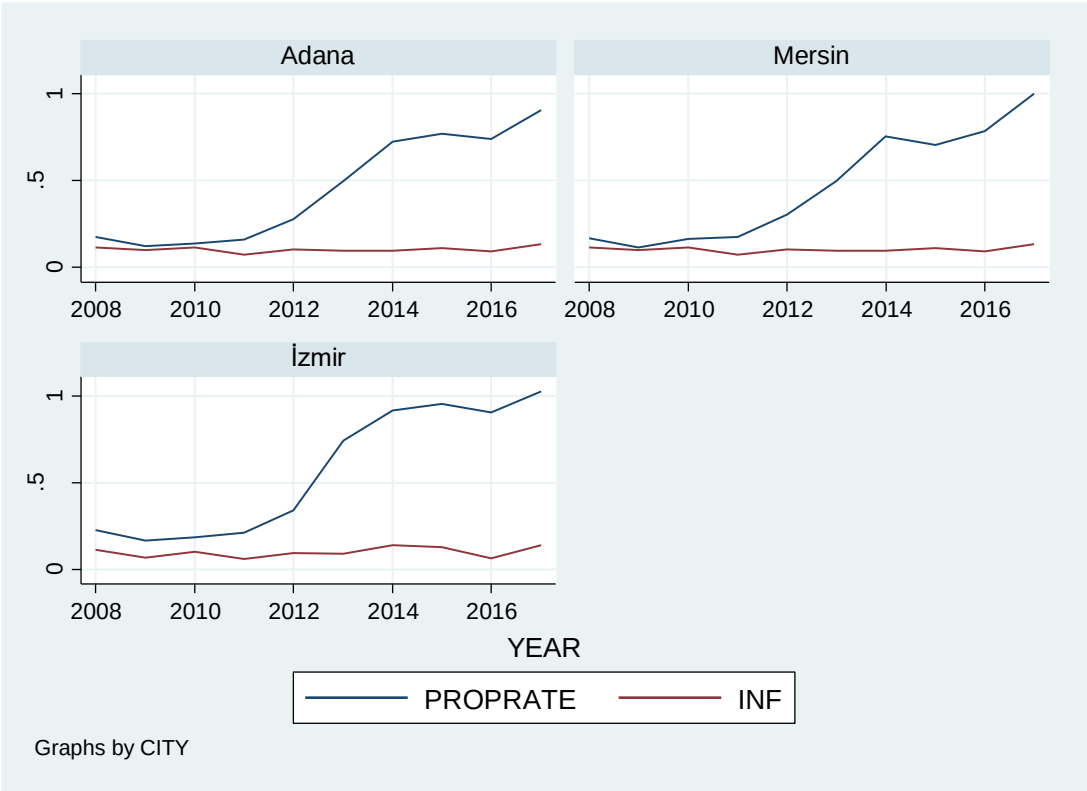
Table 5-2. The Highest and the Lowest CPI change and Turkey Average, 2013-2017

City/Year	2013	2014	2015	2016	2017
Gaziantep, Kilis, Adıyaman	12.79%	10.80%	10.95%	5.98%	15.16%
İzmir	8.97%	13.81%	12.99%	6.20%	14.15%
Şırnak, Mardin, Siirt, Batman	9.54%	11.42%	9.95%	5.86%	13.54%
Mersin, Adana	9.44%	9.72%	11.16%	8.97%	13.41%
Tokat, Samsun, Amasya	9.52%	14.08%	11.93%	6.54%	13.47%
Average	9.30%	12.70%	10.90%	6.00%	12.70%
Tekirdağ, Edirne, Kırklareli	9.91%	13.01%	10.12%	3.69%	11.75%
Düzce, Sakarya, Kocaeli,Yalova, Bolu	11.29%	12.59%	10.65%	5.80%	11.74%
Ankara	9.46%	14.29%	11.05%	6.63%	11.63%
Çankırı, Kastamonu, Sinop	7.32%	14.62%	12.34%	6.49%	11.55%
Erzurum, Erzincan, Bayburt	7.86%	15.57%	8.09%	5.88%	11.23%

Source: Prepared by the author from the data published by TURKSTAT

As it is seen from Table 5-2, inflation average shows fluctuations during the last 5 years. As the holders of high property crime rates, Adana, Mersin and İzmir also suffers from high inflation. Also, Table 5-2 shows 5 cities which hold the lowest CPI change according to 2017 data, and its change during last 5 years. Although we ranked as 2017 inflation data, since there is a fluctuation from %3 to %15.6 not all the cities seen as below average in that graph.

In Graph 5-2 it is also seen that simultaneous change of inflation and property crime rates of subjected cities.



Graph 5-2. Simultaneous Change of Inflation and Property Crime Rates of High Inflation Cities, 2008-2017

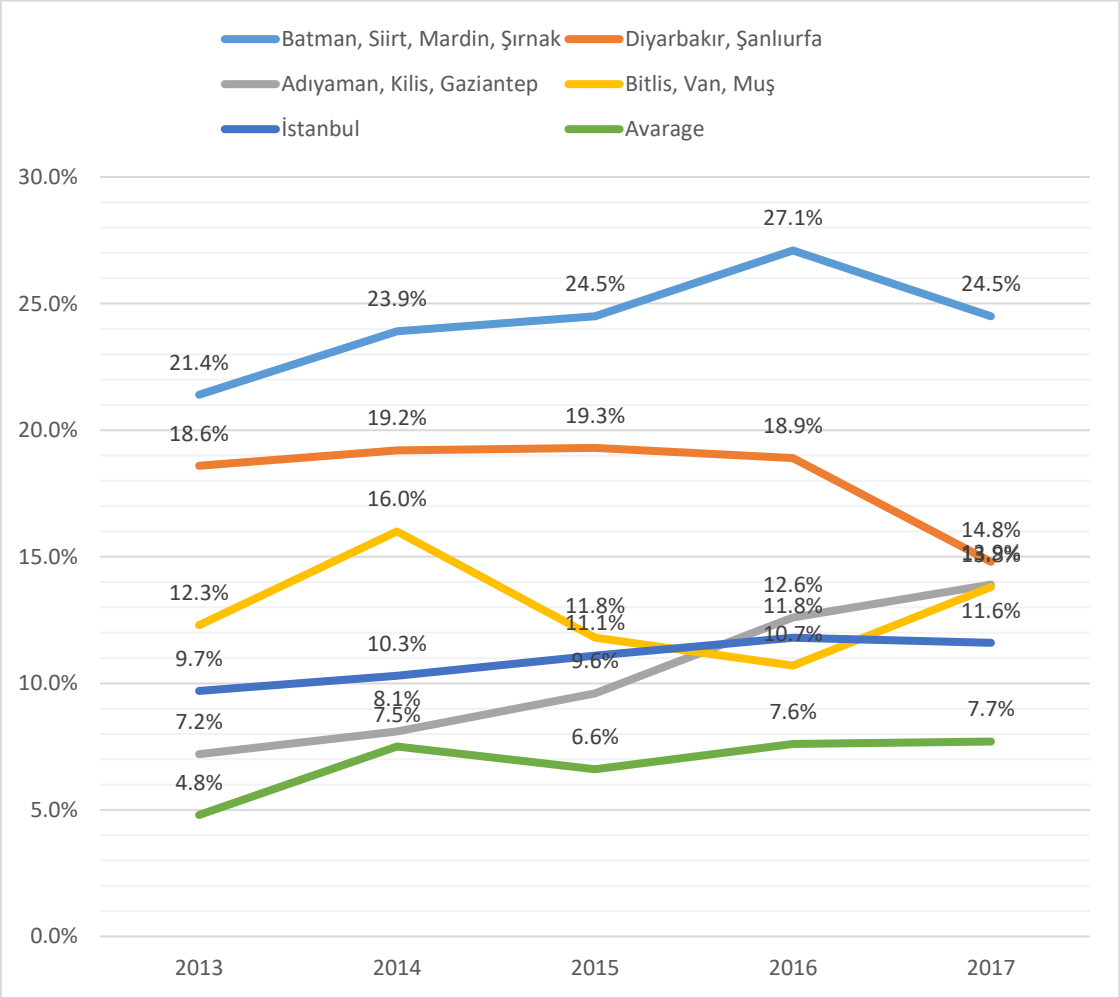
Source: Prepared by the author from the data published by TURKSTAT

As it is seen, subjected variables show increase in certain years such as 2010 and 2014 and 2016.

5.4.3. Unemployment

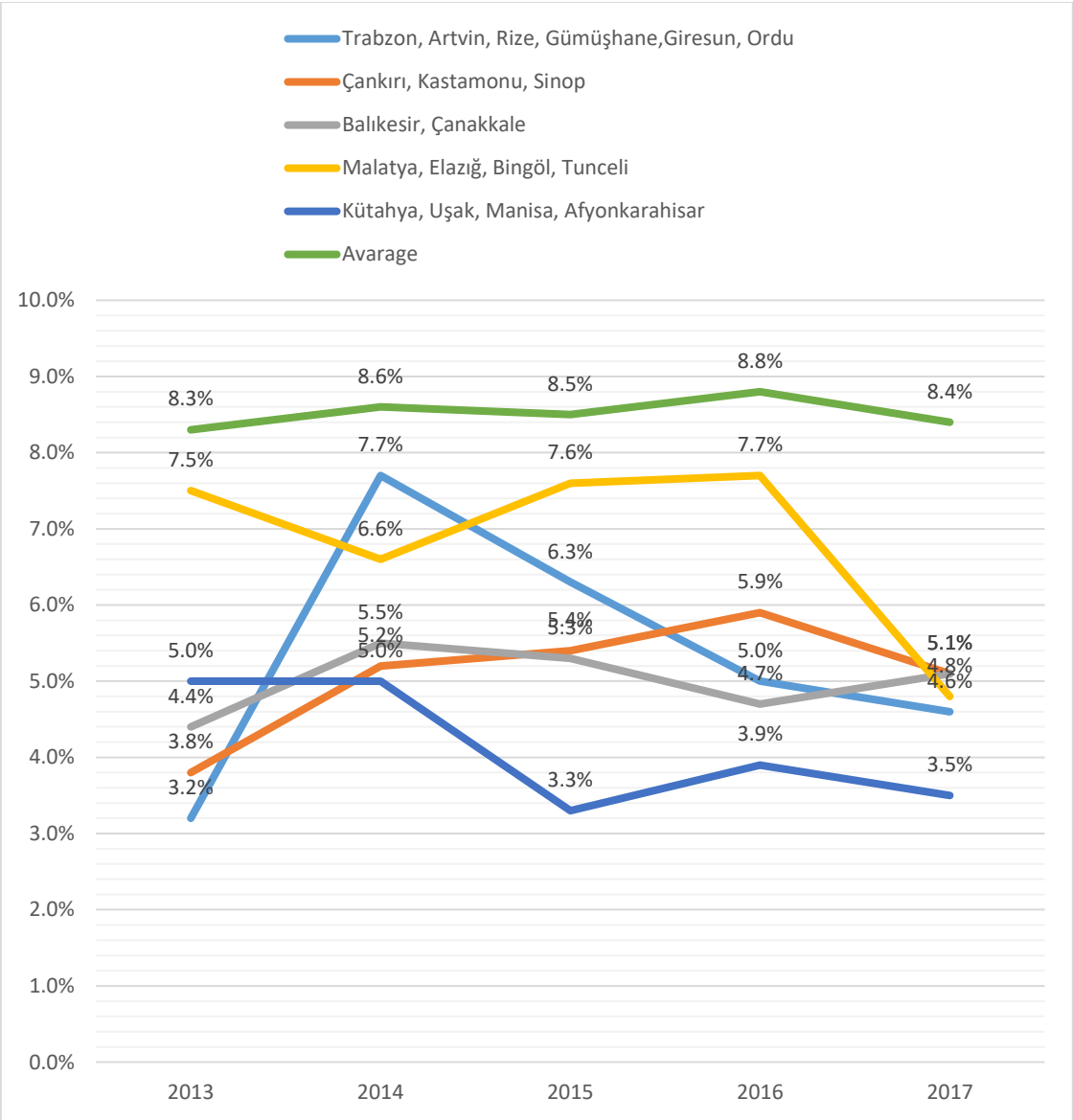
The nexus of unemployment and crime estimated to be found is that crime should increase when unemployment is high and decrease when unemployment is low because since unemployment cause poverty, and poverty causes crime. However, vice versa is also may hold because of in bad economic conditions opportunity motivation disappears. As continuing with Elliot and Ellingworth (1996) and since majority of property crime is committed by male criminals, male unemployment rate is also considered as an explanatory variable of crime.

Below in this section, you will see both total and male unemployment rate explanations. In Graph 5-3. Male Unemployment Rate (the highest 5) and Turkey Average, 2013-2017Graph 5-3, the cities with the highest unemployment rate will be shown.



Graph 5-3. Male Unemployment Rate (the highest 5) and Turkey Average, 2013-2017
Source: Prepared by the author from the data published by TURKSTAT

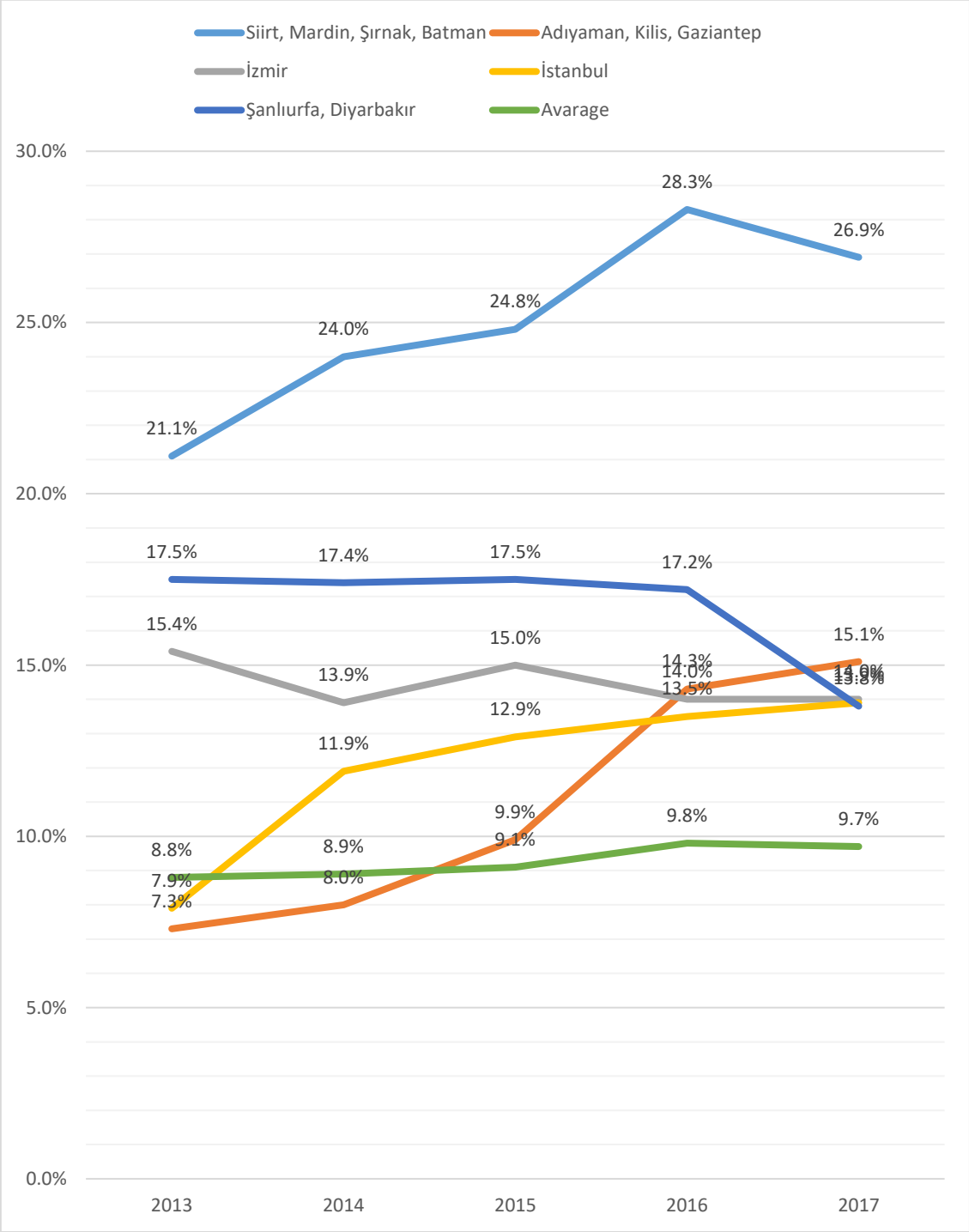
Although the fact that Şırnak has a very low property crime rate among other cities, from male unemployment rates it has one of the highest one. As it is seen, opportunity motivation has taken over regarding this matter. Since Şırnak population has a relatively low standard of living, and our property crime data is by the city where crime occurred, it is obvious that people do not choose to commit property crime in here. Although for low unemployment rate will be seen in Graph 5-4, it does not hold.



Graph 5-4. Male Unemployment Rate (the lowest 5) and Turkey Average, 2013-2017

Source: Prepared by the author from the data published by TURKSTAT

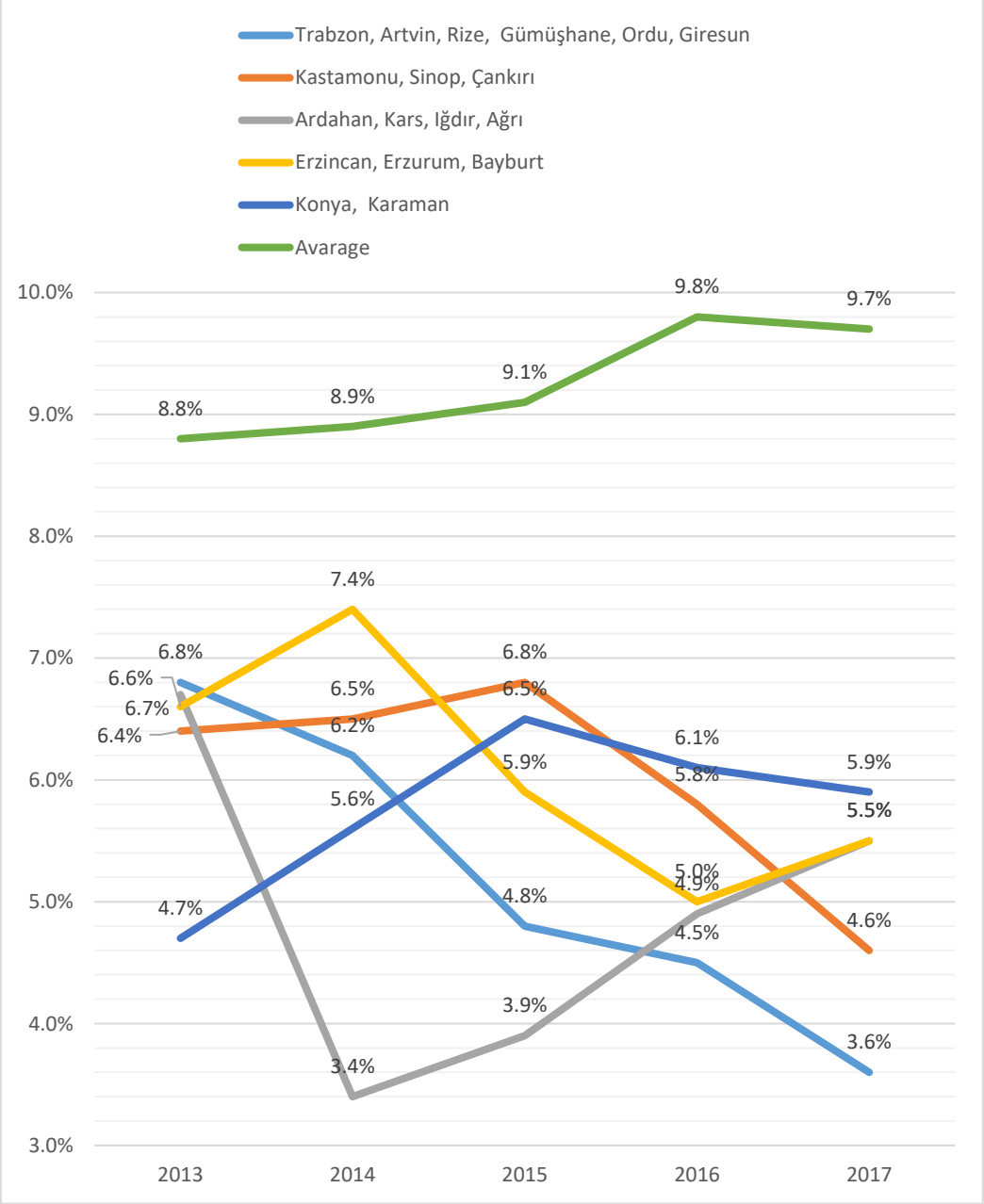
In addition to male unemployment, total unemployment data is also included in this study.



Graph 5-5. The highest 5 Unemployment Rate and Turkey Average, 2013-2017

Source: Prepared by the author from the data published by TURKSTAT

In Graph 5-5, it is seen that for high total unemployment, only İzmir included to the list and this city also happens to have one of the highest criminal record and GDP per capita around the country. This situation also seems controversial with Şırnak case and it may be the result of a metropolitan situation which may be included as a dummy variable. In Graph 5-6 you will also see the lowest unemployment rate.



Graph 5-6. The Lowest 5 Unemployment Rate and Turkey Average, 2013-2017

Source: Prepared by the author from the data published by TURKSTAT

In Graph 5-6 it is seen that for low total unemployment, Bayburt included to the list and this city also happens to have one of the lowest criminal records around the country. This also suggest that criminal activity (especially property crimes) may decrease in the areas where there is less unemployment.

5.4.4. Education

Education statistics consist of formal education, non-formal education and higher education statistics, adult education research and educational research in the context of lifelong learning statistics. Formal education statistics -which is used in this study- include data on regular trainings under the school roof with the program prepared according to the purpose of individuals of a certain age group and at the same level. Formal and non-formal education statistics are obtained from the administrative records of the Ministry of National Education. Since the 2002/03 academic year, the Ministry of National Education has established the Management Information System (ILSIS) and has begun to collect data on-line in every educational level. The formal education statistics are published annually by the Ministry of National Education as of 2005-2006 academic year.

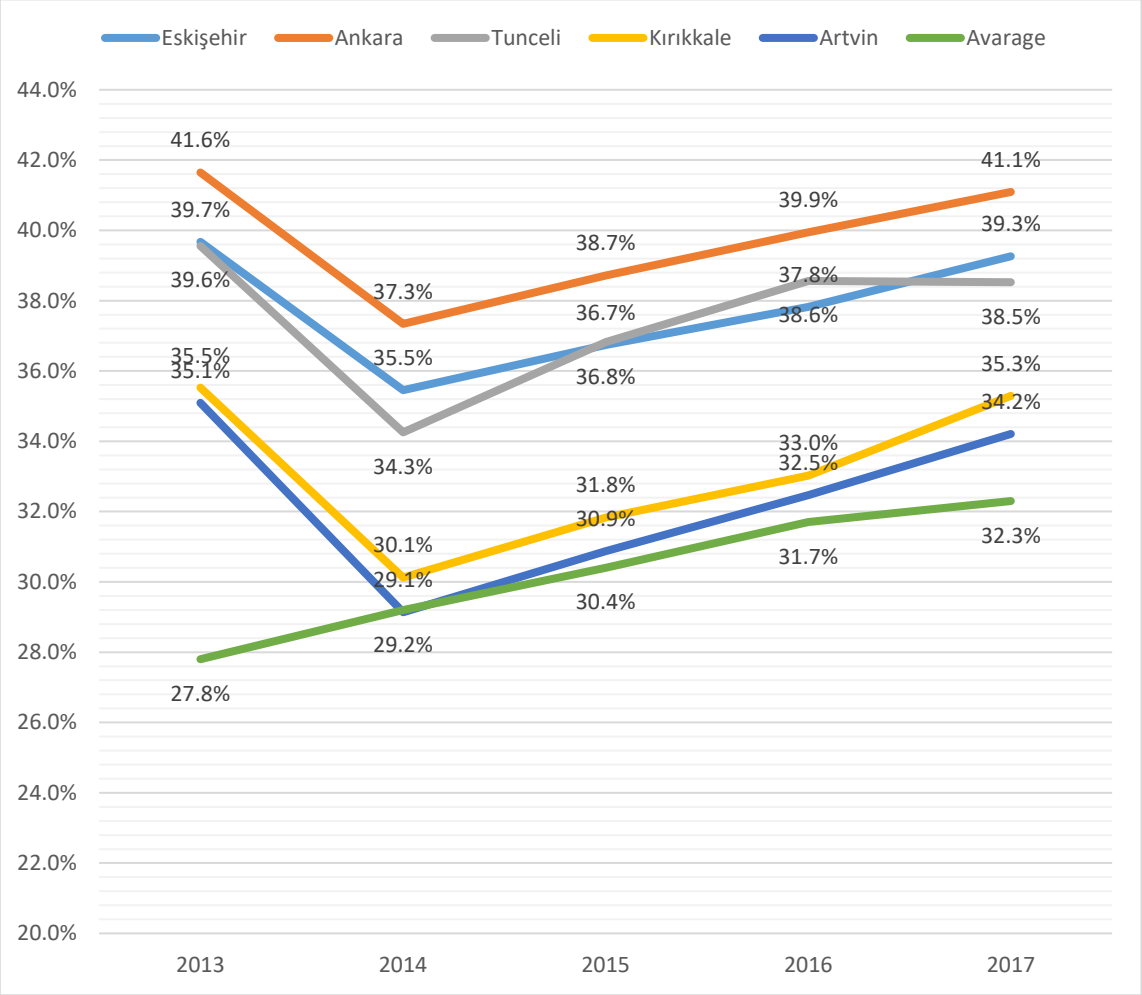
Education statistics obtained from TURKSTAT Dynamic Search and completed education level. Chosen level of education is high school and more, naming:

1. High School and Equal Level of Vocational School
2. University or Faculties
3. Master's Degree
4. PHD

This variable will be called educated from now on.

As accordingly with Yin (2017:228), considering high school or more, because this education level is enough to develop a mindset of law-abiding behaviour. It is estimated that

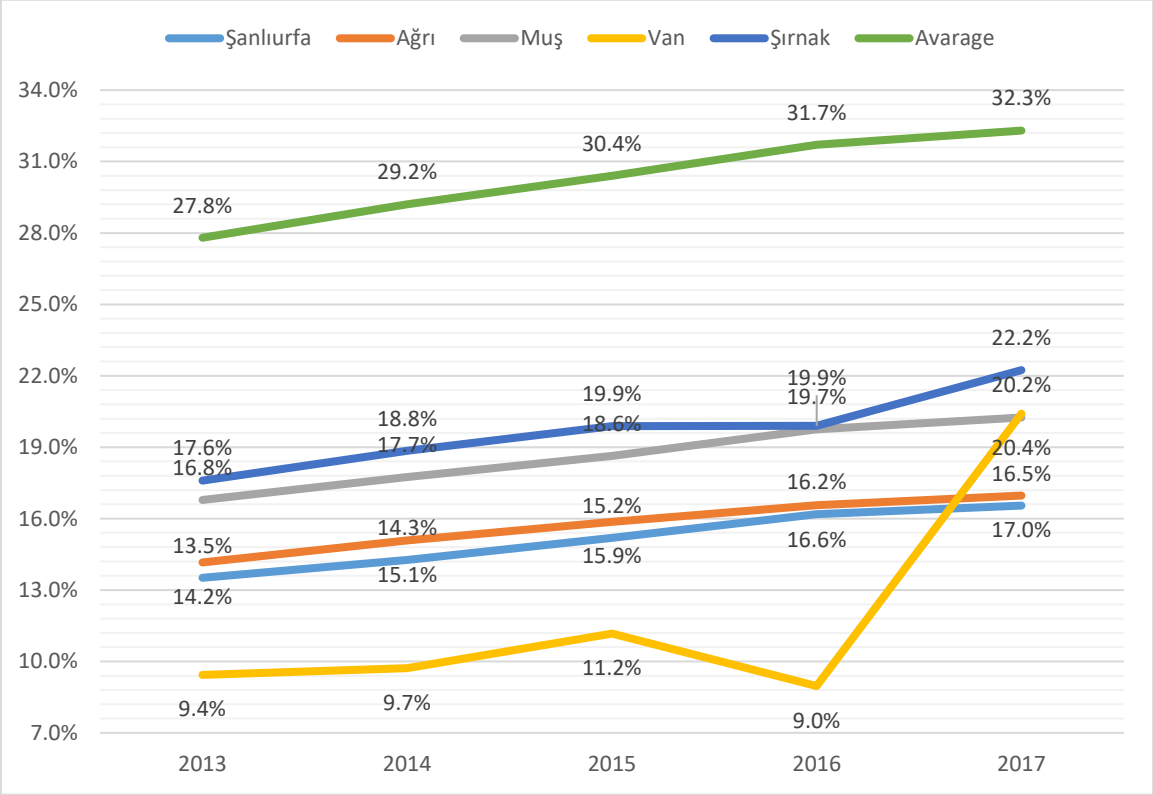
high rates of high school graduate in a certain city will cause less property crime. In Graph 5-7, both male and total education levels will be reported as graphs.



Graph 5-7. Educated Male Population (the highest 5) and Turkey Average, 2013-2017

Source: Prepared by the author from the data published by TURKSTAT

As it is seen Graph 5-8, one of the highest rates of educated male population living in Tunceli. Since this city also one of the lowest property crime rates in Turkey, this might suggest that education increase the opportunity cost of committing crime, meaning people invest theirselves by pursing high school or more education that they hesitate to commit crime since this investment will go in vain. Moving towards to low education in below, Şırnak indicates another controversial result since with low educated male population, the city has one of the lowest crime rates in Turkey.

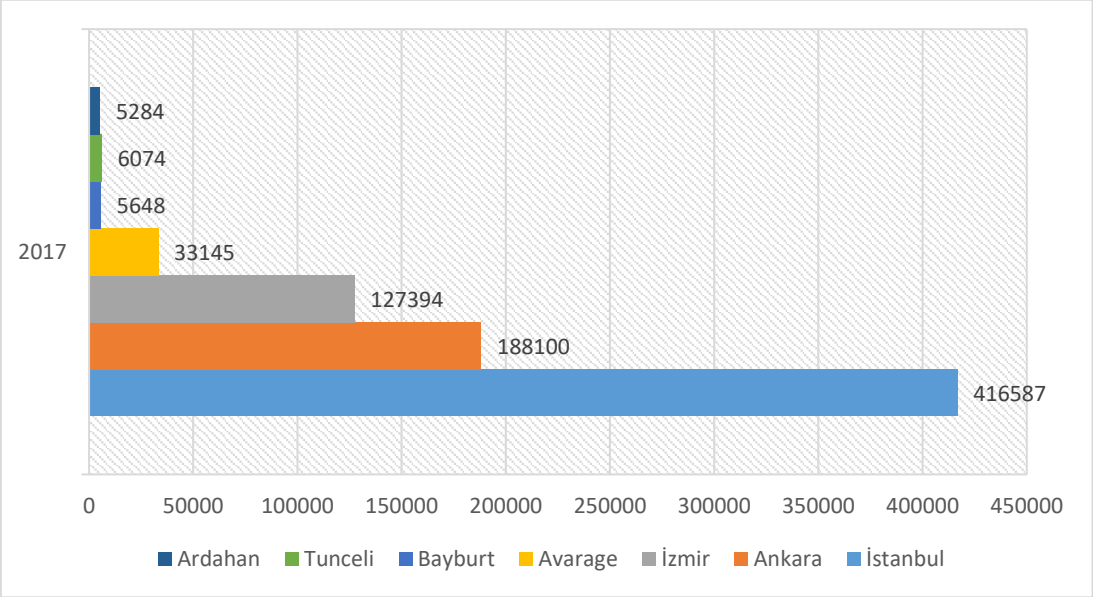


Graph 5-8. Educated Male Population (the lowest 5) and Turkey Average, 2013-2017

Source: Prepared by the author from the data published by TURKSTAT

5.4.5. Demographic Variables: Migration and Population Density

Internal migration is the migration that occurs within the borders of any country. During this displacement movement, there is no change in the country population. In general, urban populations are increasing due to internal migration, whereas rural population is decreasing. The most common of internal migration is from rural to urban areas. The regions where the industry develops with fertile agricultural areas and trade centres attract immigrants and touristic regions rich in mineral deposits attracts immigrants. In this study migration used as both logarithm of migration count and migration divided by population.

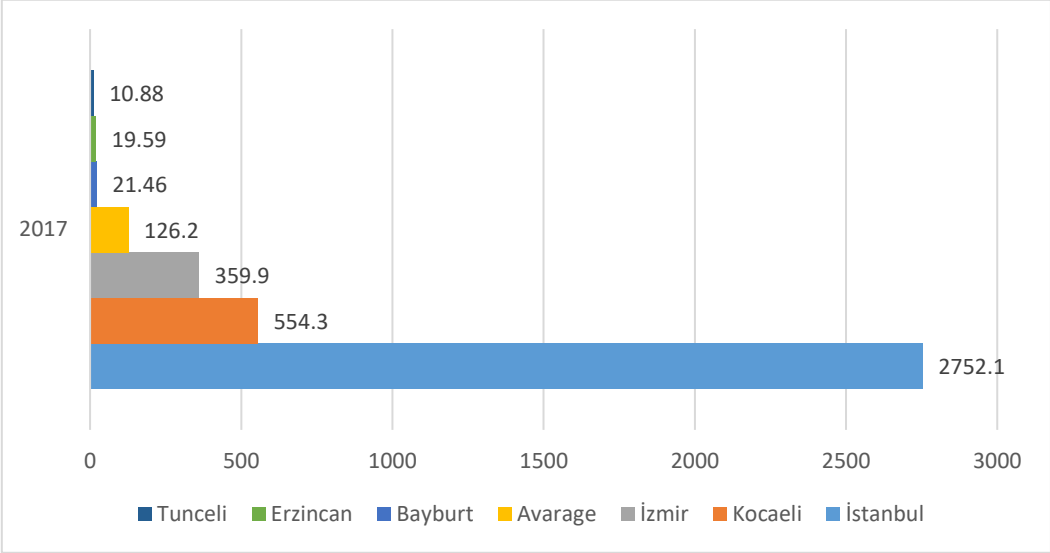


Graph 5-9. Number of immigrants, 2017

Source: Prepared by the author from the data published by TURKSTAT

As it is seen Graph 5-9, İzmir being one of the highest receivers of the immigrants and Tunceli and Bayburt, one of the lowest receivers of the immigrants also shows align results with their crime rates. Migration seem to increase property crime rates.

As a last one, population density may or may not increase property crime rates since in some cases it increases the opportunity motive, and in some, probability of arrest. Graph 5-10 you will see related quantities.



Graph 5-10. Population Density, 2017

Source: Prepared by the author from the data published by TURKSTAT

As it is seen Graph 5-10, İstanbul, İzmir and Kocaeli is the top 3 densely populated cities of Turkey, while Erzincan, Bayburt and Tunceli has the least population density. From that point of view, it seems dense population increases the opportunity motive, thus, property crime.

5.5. The Evaluation of Data

In this section, the regression model offered related with the property crime and socioeconomic factors will be as follows:

$$PC = \beta_0 + \beta_1 GDPPC + \beta_2 INF + \beta_3 GINI + \beta_4 UM + \beta_5 PD + \beta_6 MIG + \beta_7 MD + \beta_8 EDM + \varepsilon$$

Where;

PC: property crime committed in that city per 1000 people

GDPPC: Gross Domestic Product per capita, 2009 prices, dollars, logarithm

INF: average of 12 months, change according to same month, previous year

GINI: Gini Index, 2017

UM: Male Unemployment (%)

PD: Population Density, (Population divided by square kilometres)

MIG: Migration (Count), logarithm

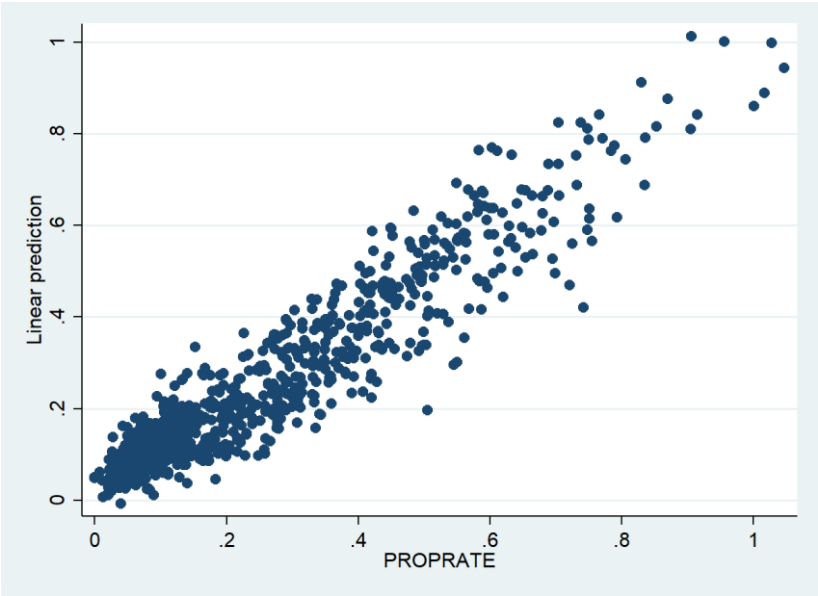
EDM: Educated Male Population Ratio, people who completed High School or above degrees

Since it is seen from above, to assess this relationship linear regression is used. Below to test this method's assumptions (correlation, linearity, normality of residuals, multicollinearity –no problematic VIF value detected-) related results have been shown.

In order to use a linear prediction, it is important to use whether the data in hand is suitable for a linear model. "xb" command calculates the linear prediction from the fitted model. According to Stata Manual,

"*All models can be thought of as estimating a set of parameters b1, b2, . . . , bk, and the linear prediction is ybj = b1x1j + b2x2j +· · · + bkxkj , often written in matrix notation as ybj = xjb. For linear regression, the values ybj are called the predicted values, or for out-of-sample predictions, the forecast.*"

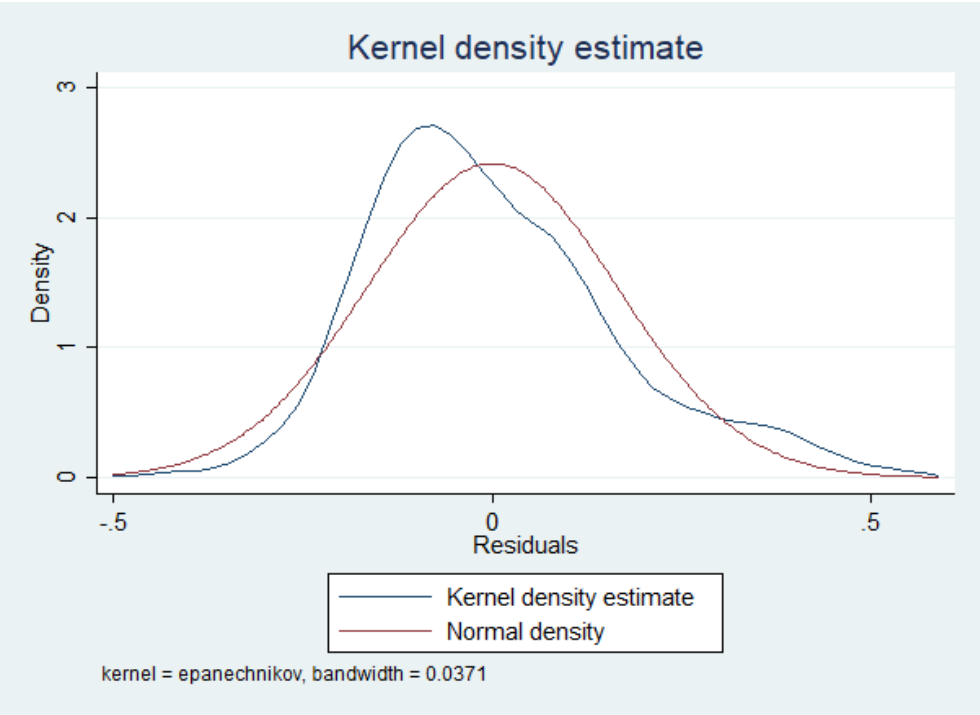
With this command, linearly predicted $\bar{Y}$ value used scattered into the original dependent variable Y. In Graph 5-11 you may see the results.



Graph 5-11. Linearity

Source: Prepared by the author

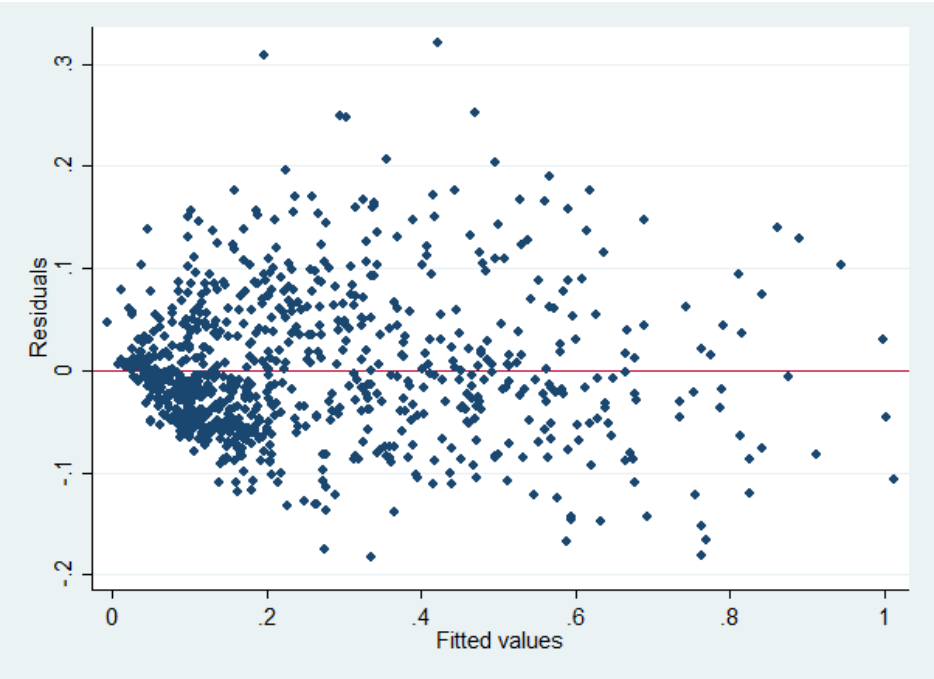
One of the assumptions for regression analysis is that the residuals are normally distributed. Heteroscedasticity the assumption of parametric analyses (e.g. linear regression). In a more direct way, it is assumed that the residuals of a regression model are homoscedastic across all values of the predicted value of the dependent variable. In Graph 5-12, Kernel Density Estimates and normal density is plotted. It can be seen that it is close enough to normally distributed residuals.



Graph 5-12. Normality of Residuals, Kernel Density Estimates

Source: Prepared by the author

The other way of measuring this is that is plotting residuals and fitted values. As seen in Graph 5-13, no specific pattern is found. It can be interpreted as there is no heteroscedasticity problem in data.



Graph 5-13. Residuals and Fitted Values

Source: Prepared by the author

In accordance with Graph 5-13, it can be said that there are 3 features which can be read as this model can be predicted as linear regression. Which are (Penn State College of Science, 2018),

- The residuals placed randomly around the red line (0). This can be interpreted as that the assumption that the model can be predicted is linear is logic.
- The residuals are placed around the 0 line horizontally. This can be commented as that the variances of the error terms are the same.
- No fade out from residuals. From this, it can be said that there are no outliers.

As t is seen, although there seem to be outliers, most of the predicted data is grouped around the zero-residual line.

5.6. Results

In economic researches, various data types are used. They can be in the form of a cross-section, time series or panel data. One way to incorporate the variation in or between units in the studies using panel data or differences in units and over time; it assumes that the present change leads to change in some or all the coefficients of the regression model. The models where coefficients are assumed to vary with units are called “Fixed Effect Models”. The general formulation of the model assumes that differences between units can be captured in differences in the fixed term. Fixed effects model; is a linear regression model of constant term that varies across units (Verbeek, 2008:345).

As it is widely-known, one way to consider the individuality of the cross-section series (in this case, cities) is to run fixed effects model. Starting from the idea of the only time-invariant variable is Gini coefficient and when it is dropped, it will be possible to run this kind of model. However, to better understand whether fixed or random effect is applicable to our data, Hausman test has been used (Verbeek, 2008:351).

Since the null hypothesis of this test is the random model as the preferred model and the alternative hypothesis is the model of fixed effects and, since the p value is less than 0.05, we failed to reject null hypothesis and consider the model as fixed effects. When it is the case, in Table 5-3 below you may see the estimation results.

Table 5-3. Estimation Results

Explanatory Variables	Coefficients
High School (+) Graduates	.654602*** (5.27)
Inflation	.6571348*** (7.53)
GDP per Capita	.5936496*** (9.57)
Population Density	.0001031 (0.72)
Male Unemployment	-.174469 (-1.69)
Migration	.8086812*** (4.40)
N	810

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Source: Prepared by the author

The results show that in cities with high level of completed education (male), migration, level of inflation and GDP per capita, property crime rates are high. However, population density and male unemployment does not show significance.

After dropping the insignificant variables, in Table 5-4 below, you may see the results.

Table 5-4. Estimation Results (Significant Variables)

Explanatory Variables	Coefficients
High School (+) Graduates	.6938934*** (5.69)
Inflation	.6582626*** (7.54)
GDP per Capita	.6315117*** (10.86)
Migration	.819046*** (4.77)
N	810

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Source: Prepared by the author

As it is seen both the significance and direction of the effect does not deviate from the results of the full model from the model with only significant variables. With this, it is possible to conclude the prediction result showed robustness.

The model indicates that migration, GDP per capita, inflation and educated male population rates affect property crimes significantly. However, a given increase in educated male population rate leads to a higher increase in both property crimes than inflation and GDP per capita. In addition, migration is found to have more effect on property crime than other variables. To sum up, the results indicate that these four variables have significant increasing effect on property crime.

6. CONCLUSION

The concept of crime defined as a behaviour that does not comply with social moral rules or laws. The crime rates and the factors that affect it in the evaluation of social welfare are factors that are dealt with by many researchers from various disciplines with their sociological, economic, demographic and psychological dimensions.

With the motivation that property crime is not always a professional or planned action and it is occasionally related with social organization of certain area, in this study the relationship between the motivation of property crime offenders to commit crime and some socio-economic and demographic variables (in doing so, education level, population density, migration, unemployment, inflation, Gini coefficient, GDP per capita) are examined.

From the empirical results, the first result which will be mentioned is the completed education level of male population. Results suggest that there is a parallel relationship between property crime and this variable. It can be said that higher level of completed level of education resulted in higher level of property crime. Although in the literature there are certain results that indicates inverse relationship, one thing should be kept in mind that it is a macro study. In the provinces with high levels of education, it is possible to mention that the opportunity theory holds and, in the cities, where highly educated males live, wealth and other "theft" opportunities show presence.

The next result which will be mentioned is the inflation. Results suggest that there is a parallel relationship between property crime and this variable. It can be said that a high level of inflation increases the property crime rates. The first outcome that can be realized by increase in inflation is de-valuation of gains. It can be said that people living in cities with more inflation tends to buy less with their gains and choose illegal ways of closing that gap. In summary, high inflation in a city drives people to increase their income for keeping their current living standards by legal or illegal ways including criminal activities. This result also compatible with motivation theory since low level of net gains may drive people to commit crime.

The other result which will be mentioned is the GDP per capita. Results suggest that there is a parallel relationship between property crime and this variable. It can be said that cities with higher level of GDP per capita and increase on it, have higher rate of property crime. This result is compatible with opportunity theory since high income per capita in a city increase the opportunities available to commit crime.

The last result which will be mentioned is the migration. Results suggest that there is a parallel relationship between property crime and this variable. It can be said that cities with higher level of migration have higher rate of property crime. Although it may not respond directly to crime and economy perspective, since migration causes social disorganization, in sociological perspective, this result seems compatible to the literature.

It is worth to mention that; this study did not report unemployment (male or total) or population density since there were no significant effect on our dependent variable.

In sum, it can be said that both motivation and opportunity theory are dominant when it comes to certain variables. For further suggestions, it can be useful to do city-unique research since there may be characteristic differences between the cities while deciding which theory is dominated.

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