URBANIZATION, UNEMPLOYMENT AND PROPERTY CRIMES: A DISTRICT LEVEL ANALYSIS OF PUNJAB PROVINCE

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CERTIFICATE

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DEDICATION

DEDICATED TO MY FAMILY, AND ALL THE TEACHERS AND FRIENDS

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ABSTRACT

This study main emphasis is to find empirically the relationship between property crimes with its lag, urbanization and unemployment at district level in the Punjab province. The districts are categorized in to three groups which are Urbanizing (RY Khan, Bahawalnagar, Jhelum, Muzaffargarh, Jhang, Hafizabad, Mandi Bahaud-Din, Nankana, Lodhran, and Sargodha), Urban I (Khanewal, TTSingh, Vehari, Okara, Sargodha, Sahiwal, Gujrat, Sheikhupura, Narowal, Kasur, Pakpattan, Vehari, and Rawalpindi) and Urban II (Multan, Sialkot, Gujranwala, Faisalabad, and Lahore) on the basis of population density which is used as a proxy for urbanization. The population density for Urbanizing districts is 300-600 population per km square while for Urban I and Urban II is 600-900 and 900-1200 respectively. For this purpose this study has estimated three different models to clearly sketch the relationship among the concerned variables. The panel data duration of the concerned variables is from 2007 to 2017. It is collected from various publications of Punjab Bureau of Statistics. GMM is used to get the estimates which show mixed results for the relationship between lagged property crimes and current property crimes. For urbanizing districts it's negative, for urban I it is positive and for urban II it is again negative. Results for other variables varies. For urbanizing districts unemployment is the main factor responsible for crimes but it has no significant impact on crimes in urban I and urban II districts. In urban I and urban II districts population density is the main factor contributing to high property crimes.

Key Words: Property Crimes, Unemployment, Urbanization, Population Density, GMM

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CHAPTER 1

Introduction

From economic point of view, urbanization facilitates attaining economies of scale and plays important role in industrial development, services sector development etc. and hence, plays important role in economic growth of a country. However, if we look at it from social perspective urbanites face more criminal incidents as compared to rural residents. Urbanized areas are more congested which puts pressure on urban amenities. This leads to less availability of legal opportunities and participation in illegal activities increases including crimes.

Crime is a factor responsible for insecurity. Those who are not yet victims also feel insecure. This panic feelings of insecurity negatively affects well-being of the society.

Cambridge Dictionary defined crime as any action or activity that is against the law. The definition of crime differs among different scholars depending upon the locality they live in and the level and types of crimes they incorporate in their studies. According to Curzen "A crime is an unlawful act which is punishable in a court proceedings and the state is obliged to prevent criminal activities at first place" (Auolak, 1999).

The pioneers of Economics of Crimes are Becker (1968) and Ehrlich (1973). Becker provided a completely new framework of studying criminal behaviour. He was the first to build a model of criminal choice. The model stresses on the point that “criminal is a rational person. He commits crime by comparing the costs and benefits of a crime i.e. the costs of getting caught and spend time in jail as compared to using this time in some legal work and also taking in to consideration the severity of punishment”.

Becker's paper opened a window to empirical research whose main emphasis was to study the socioeconomic variables which have an impact on crimes. Human behaviour is very complex so, with the help of economics of crime only we cannot justify why a person commits crime. Due to this reason we take help of other fields to comprehensively study the behaviour of a criminal. We take help of sociology, criminology, psychology etc. It is also closely associated with poverty, social exclusion, education and other economic and socio-demographic factors that may impacts an individual's inclination towards committing crimes such as age, gender and urbanization. The higher level of social cohesion, lower offender rates in a well ordered physical surroundings and informal social control, the residents of rural areas are less prone to crimes as compared to urbanites. Criminals commit crimes mostly in cities because of wide spectrum of targets available, and people are more inclined towards crimes in cities as compared to rural areas dwellers (Glaeser and Sacerdote, 1999). The above mentioned factors with a deficiency of informal guardianship in urban areas explain higher crime rates.

The 20st century started with a great revolutionary changes in almost every field of life. One of this changes is rapid urbanization which no doubt led to rapid economic growth of countries because most of the industries are located in the urbanized areas and people shift to urbanized areas in search of good education, employment opportunities and other public services which are hard to be found in rural areas. So, having industries with availability of enough labour the output boosts. This is the positive aspect of urbanization. As they say every action has some consequences so is true for urbanization. Rapid urbanization puts pressure on resources available in the urbanized area and it leads to inadequate housing, traffic congestion, slums, crimes, homelessness etc (O'Sullivan, 1996).

The world is urbanizing at a high pace. Industrial zones are installed in urban areas, consumption-production chains operates in urban areas, supply chains are functioning, employment opportunities are available in urban areas, central offices of big businesses and

Government entities are located in urban areas. Because of all the above mentioned reasons and many other reasons as well, people rush towards urban areas. In 1950, 30% of the world population resided in urban areas. In 2014 the urban density increased to about 54%. It is evident from the above statistics that today more than half of the world population now lives in urban areas. Based on United Nation (UN, 2014) projections, by 2050, the urban density will be round about 66%. In Asia the urban population is growing at high pace as there will be more than 1.1 billion people live in urban areas by 2030 (Asian Development Bank, 2008). Asian has the fast ever growing urbanized rate, compared to the other continents. The main reason is huge rural to urban migration in search of job, better living standard etc. At the same time, due to R-U migration cities also benefited with steady supply of labour. Internal migration is also beneficial because it enhances women's empowerment and give them access to jobs outside the home. (ESCAP, 2013).

Pakistan, a South Asian country with population of about 197 million and population growth of about 2%. On the basis of population its sixth populous country in the world. Pakistan is further divided in to four administrative units, Punjab, Khyber Pakhtunkhwa, Sindh and Balochistan. The most populous province of Pakistan is Punjab. The territory of Pakistan also includes territories of FATA and Capital City of Islamabad. Provincial governments of Balochistan and KPK also includes PATA. Further, the provinces are divided in to 26 division and divisions in to 107 districts. The concerned province of this study is Punjab which has 36 districts. The districts can further be divided in to rural, urbanizing, urban I and urban II on the basis of population density. Urban I and urban II are high urbanized districts of the province.

Urbanization in Pakistan is growing with a high pace. During the five years duration from 2005 to 2010 the urban areas grew at 4.1%. According to UNDP, (2014) projections it will grow at 10% rate during the current decade.

Punjab is the populous administrative unit of Pakistan. It is home for 56% people of Pakistan population. Urbanization heap is high in Punjab as compared any other province. Among the ten largest cities six are in Punjab (Jan et al, 2008).

As urbanization increases so does crime rates (Gumus, 2004). Flango and Sherbenou (1976) conducted a study about determinants of crime. They concluded that urbanization and poverty are the important criminogenic forces. Central cities have low employment rates, high crime rates and widespread drug abuse. The reason for the low employment is that most of the jobs requires college education, as the newcomer influx is inadequately educated and they are not able to compete with the urbanites in job market because education level of urbanites is high. In short it could be concluded that there are less legal opportunities, so illegal sources become the only option (Freeman and Hozler, 1886).

The high pace of urbanization over the past two decades has caused serious problems. The uneven development process has caused greater rural to urban migration. Urban areas are already congested so the less job opportunities, the deteriorating health facilities, low quality houses, a surge in crime rates, and low quality of education etc. are some of the problems the urban units are facing. It has become a serious challenge for the administration to maintain the required facilities and the standard of life in the cities. The newcomer in urban area often is less educated as compared to urbanites having insufficient information about the urban job market due to which he remains unemployed. There is little that conventional education can do for him. Huge influx of such people in to the city further deteriorates the education statistics. So, uneducated people increases and they are most likely to be involved in delinquent, and violent activities. Thus, the impact of urbanization on education is to put heavy burden on the education system which is already weak in developing countries, as far as preparing the young ones to cope with the ups and downs of the urban life is concerned (Biobaku, 1967).

Crime in Punjab is primarily an urban problem. If we look in to the statistics then rate of growth of crime rates in urban areas is high as compared to rural districts of Punjab. Crime rate in large city districts of Faisalabad and Lahore is 1.7 and 2.6 times higher than the rural districts between 1991 and 2015. Not only just the crime rate in large city districts are higher, it grew 3 to 4.5 percentage points faster than the rate of growth of crime in rural districts from 1991 to 2015 . Keeping in view the above statistics it can be argued that the crime difference between large city districts and rural districts will become larger over time because of the rural to urban migration which is the main factor behind the rapid urbanization in Pakistan (Cheema et al., 2017).

Like many of the developing countries where the absorption capacity of newcomers in the job market is low, unemployment is one of their major problem. One of the distinguishable factor between developed and developing countries is unemployment rate. The high rate of unemployment negatively affects the economy which results in unstable economic conditions. In other words, if the absorption capacity of an economy is low then there is underutilization of resources. So, total production of developing countries is low as compared to developed countries. High population is associated with alarming issues in countries like Pakistan. As mentioned above that half of the population in Pakistan resides in urban areas so the problems of unemployment, poverty and crimes are mostly concentrated in urban areas. High population and unemployment rates in itself are problems but also they are causes of many other problems like poverty, high crime rates, homelessness etc.

In developing countries and LDC's unemployment and population growth are both high and so are its related issues mentioned in the above paragraph. Ilegbinosa (2014) studied the impact of population on unemployment in LDC's. His focused country is Nigeria. He concluded that the main factors responsible for unemployment in Nigeria are, rural to urban migration, incompetent government policies, urban biased polices, increasing population, corruption and

inspirited entrepreneur drive. For the relationship between unemployment and crimes the study of (Small and Lewis, 1996) concludes that unemployment causes crime more often than vice versa. In case of Pakistan (Arsalan and Zaman, 2013) study proves that population and unemployment are positively related. Regarding the relationship between unemployment, urbanization and crime (Hanzala and Jalil, 2010) concluded that among other socioeconomic and demographic variables unemployment and urbanization are the main criminogenic factors.

Punjab is the major manpower contributor because it has largest pool of professionals and highly skilled manpower in Pakistan (UNESCO, 2012). But, the unemployment rate in Punjab has increased marginally, both in the population aged 10 and above and in the 15 and above during the period of 2003-04 to 2014-15. The unemployment of both the categories had been higher than the national unemployment rate for most of the years. By considering the spatial disparity the unemployment rate in urban areas of Punjab was higher during the period under consideration as compared to rural areas (Pakistan Bureau of Statistics, 2015).

Employment has negative relationship with crime as proved by (Mallubhotla, 2013). The results shows that because the relationship between crime and employment is logarithmic, the effect has diminishing marginal returns i.e. increasing employment is productive for individuals who are unemployed.

1.1. Research Objectives:

Punjab is the most populous province of Pakistan. It is also a major contributor of man power in the job market but due to uncontrolled urbanization many immigrants are left jobless due to pressure on job market, and besides that crime is also an urban phenomenon in Punjab (Cheema, et al, 2017). Also study on the relationship between the concerned variables is not yet done in case of the Punjab province (Jabbar et al, 2015). On the basis of above evidences, the following objectives are devised:

i. To find out empirical evidence of relationship between urbanization and crime on district level in Punjab province.

ii. To find empirically the relationship of unemployment rate with property crimes.

1.2. Hypotheses:

Based on the above objectives this study intends to test the following hypotheses:

a) Property crimes increases as urbanization increases at district level in Punjab

b) Unemployment has positive impact on property crimes in Punjab

1.3. Significance of the study:

Economics of crime has received less attention in case of Pakistan. The available literature have common characteristics of incorporating country level data of socio-economic variables and determining its impact on crime rates. Crime rates are, however, sensitive to the geographical boundaries. A significant amount of literature have used states, provinces and even district level data to investigate this serious issue. Thus, it is of utmost importance to investigate the impact of socio-economic and demographic variables crime rates at district level in Pakistan as space is available in the literature to extend economics of crimes analysis to district and divisional level in Pakistan (Jabbar et al, 2015). So, the significance of this study is to investigate the relationship between property crimes, urbanization and unemployment on district level of the Punjab province of Pakistan.

CHAPTER 2

Review of Literature

History of illegitimate activities is not a recent phenomenon and it has been topic of interest in every society. When Adam Smith (1776) emphasized on accumulation of wealth by people he also mentioned about the protection of wealth against the criminals. An individual looks at the world through the lenses of cost and benefit. He analyse the situation and makes a decision whether it would be costly to commit a crime or to allocate that time in legal activity to maximize the benefits (Becker, 1968). Becker's paper revolutionized the field of economics of crimes. The rest of the literature is discussed below:

2.1. Studies on the Relationship between Urbanization and Crime:

Urbanization is considered a good omen as it is a rich source of economies of scale and thus the growth of industries and of the economy in broader terms. However, from social point of view urbanization encourages crimes which is evident from the fact that big cities have more crimes as compared to small cities and rural areas. Urbanization is the sole determinant of crimes in urban areas. The other factors involved are unemployment, inflation and income inequality. However, the above factors itself are related to urbanization. So, the root cause in urbanization (Malik, 2016).

The main idea behind this relationship is that when an area becomes densely populated the spectrum of crime targets for criminals widens because in agglomerated areas the families are less intact and there are less chances of getting caught (Glaeser and Sacerdote, 1996). Alison (1972) investigated those factors which causes high crime rates. In his investigation he tried to

find out the effect of population, police strength, per capita income, recreation and educational expenditure on crime rates. He concluded in his analysis that the strength of these variables may vary but these are responsible for high crime rates in the society.

This relationship is long being discussed in the literature. Watts (1931) focused on finding out the impact of population density on crime rates in Canada. He gave two sets of statistics, one is that of congested districts and other of that of the least congested districts. He gave empirics in his study that in the judicial districts of Montreal, Toronto and Hamilton, the crime rate averages approximately 500 per 100,000 population, whereas in the least congested districts the rate averages about 90. This facts prove that population density do have an influence on crime rates. With the passage of time the urban areas become more and more agglomerated. Braithwaite (1975) conducted a study to point out that if Australia's population is doubled, so would be the crime rate? According to him the proposition that if the population is doubled and crimes would increase many folds than double, is not so obvious. He concluded that crime rate is related to city size, residential mobility, unwanted children and family size. However, Omotor (2009) investigated the impact of economic variables (unemployment, inflation, population growth and literacy rate) on crime rates in Nigeria. Through cointegration and ECM he concluded a long run relationship between crime rate and the above mentioned variables. He concluded that unemployment and crimes are positively related while low literacy rate and high population are not the stimuluses of the crimes.

But, Flango and Sherbenou (1976) introduced socioeconomic variables in to their study with demographic variables and tried to find out, if socioeconomic variables have any impact on crime rates. They used 59 demographic and socioeconomic characteristics of 840 American cities to six independent factors out of which urbanization and poverty turned out to be the important criminogenic forces. In another study Masih and Masih (1996) tried to find long term relationship between socioeconomic, demographic variables and different categories of crime

by incorporating the multivariate cointegration method in to their study. To test the Granger causality they estimated VECM using annual Australian data over the period 1963–90. The conclusion they drawn was that wealth and urbanization played vital and consistent roles in the determination of most types of criminal activity.

For finding determinants of crime at city level Gumus (2003) used cross-sectional data of US city to empirically investigate the determinants of crime in urban areas. He concluded that per capita income, income inequality, population, and present of black population are all prominent determinants of crime in urban areas.

Paolo Bounanno et al (2008) studied the impact of socioeconomic and deterrence variables on crime rates in Spain. They categorized the crimes in to property crimes and violent crimes. They used panel data from 1993 to 1999 and used GMM to get the estimates. They concluded that property crimes are better explained by socioeconomic variables i.e. youth unemployment rate and education. However, violent crimes are not easily explained with such type of aggregate data. Moreover, the authors concluded that urbanization has a significant positive impact on all categories of crimes. The other conclusions involve the significant correlation of property crimes and total crimes with fraction of foreigners in total population. This correlation is not true in case of violent crimes.

The long term relationship between demographic and socioeconomic variables in case of Pakistan, is find out by Hanzala and Iqbal (2011) through the use of Granger Causality and Cointegration. Their main conclusion is that beside other socioeconomic and demographic variables there is a positive connection of urbanization with crimes in Pakistan.

2.2. Studies on the Relationship between Urbanization and Unemployment:

With economic progress we see people migrates to urban areas for jobs. In rural areas the agricultural activities are still mouth feeders of the masses but at the same time non-farm activities are still important in this technological era. The world population is increasingly urbanizing due to rural to urban migration. The main reason behind migration is industrial development and increasing urban amenities. People are happy with urbanization as the general thought was prevailing 'more urbanization, more jobs' but it is not the case anymore. The cross-sectional of developed, developing and under-developed countries reveals a positive relationship between urbanization and unemployment in developed countries but negative relationship for developing and under-developed countries (Haq et al, 2010). The International Labour Office estimates that 88.2 million young people aged 15-24 are unemployed in the world today (Miller, 2005). Formal unemployment rates are worst in urban areas. The main reason for this is that there are few jobs available and many urban youth lack qualification that urban sector work requires. Urban youth is concentrated in the informal sector, work longer hours, less pay, insecure job environment and low job security. That is why most of urban youth is underemployed or out of the labour force (Mabala, 2011). (Datta, 2006) also concludes the same in case of India where the emphasis is on capital intensive and technological innovative goods. In such case cities using capital intensive and technologically innovative strategies are unable to generate employment opportunities for the low educated rural influx. So, there is transfer of rural poverty to urban poverty.

Maqbool et al (2013) analysed the determinants of unemployment in Pakistan by using data of a period 1976 to 2012. The main hypothesis of their study is that FDI, GDP, population, inflation and external debt exerts strong impact on the unemployment rate in Pakistan. By using ARDL the results shows that GDP, population, inflation and external debt are significant determinants of unemployment in Pakistan both in short run as well as in long run. (Kalim,

2003) also studied the determinants of unemployment in Pakistan. She also focused on population and GDP as determinants of unemployment. By analysing the relationship between the mentioned variables using 13 years data from 1986 to 1999 she concluded that population and GDP are major contributors to unemployment in the economy. The study of (Arsalan and Zaman, 2014) also proves the same relationship. According to their results Inflation, FDI and GDP has negative relationship with unemployment while population growth has positive relationship with unemployment. The data he used is from 1999 to 2010.

Echebiri (2005) analysed the determinants of unemployment in Umuahia and Nigeria using the data of time period 1991 to 2004. He has drawn sample of 220 youth from Umuahia with varying residential configuration. He found that youth unemployment in the town shared common specifications with that studied in many other cities in the developing world. He also concluded that Umuahia has a faster population growth so most of the labour is unemployed. Ilegbinosa (2014) also studied the impact of population on unemployment in LDC's. His focused country is Nigeria. He concluded that the main factors responsible for unemployment in Nigeria are, rural to urban migration, wrong government policies, urban bias, lack of population control, lack of mental skill and practicability, corruption and inspirited entrepreneur drive.

By using time series secondary data of Nigeria and using parsimonious error correction mechanism (Bakare, 2011) concludes that rising nominal wages and accelerated population growth are the main reasons behind urban unemployment. According to him, the mentioned factors influenced the supply side through surge in labour force relative to the absorptive capacity of the economy.

2.3. Studies on the Relationship between Unemployment and Crime:

Unemployment and its widespread presence in an economy is the major cause of increase in crime rate. Increasing unemployment means that legal sector opportunities fall and the only option to earn livelihood is through illegal means, so, crimes will increase because the real cost associated with crimes for unemployed person goes down (Gillani et al. 2011). Also according to Ehrlich (1973) individuals allocate their time between legal activities and risky illegal activities. If legal income opportunities fall short of gains from crimes, then crime will be the more common means of earnings in the society.

Moreover, (Becker, 1968) argued that criminal is a rational economic agent. Like an economic agent he equates the costs/risks and benefits of crimes. In Ehrlich's model, individuals allocate their time between legal activities and risky illegal activities. The scarce the legal activities and more frequent will be the criminal activities.

Box (1987) Reports 35 reliable studies on the concerned topic, 20 of which find a positive relationship between unemployment and crime, in the rest no such relationship was found.

Small and Lewis (1996) also did econometric study based on time-series techniques and Granger causality tests and landed strong support to the idea that unemployment is an important factor responsible for increasing crime than vice versa.

Kerry L. Papps and Rainer Winkelmann (1999) study indicated that controlling for all the complicating variables unemployment do have positive impact on crimes. In particular, he focused on dishonesty crime committed such as crimes of theft, fraud, car conversion, receiving and burglary.

Bausman and Goe (2004) study pivot point was economic marginalization and the spatial distribution of crime rates. They argue that economic marginalization focuses mainly on unemployment and poverty, while ignoring other contributing factors. By going deep in to the

topic and focusing on the factors responsible for economic marginalization they concluded that employment volatility is an important source of economic marginalization. While testing their hypothesis through regression analysis by analysing the impact of employment volatility on the property crime across 683 U.S. metropolitan counties during the period of 1980 to 1983 they concluded that high levels of employment volatility is responsible for higher levels of property crimes in general.

Saridakis and Spengler (2009) empirically investigated the relationship crime, deterrence and unemployment by incorporating panel data and using GMM technique. Their empirical results concludes that property crimes have significant negative relationship with clear up rates and significant positive relationship with unemployment rate in Greece. The relationship is weak and insignificant in case of violent crimes.

Hans Gronqvist (2011) in his paper focused on the effect of youth unemployment on crime. He focused on different types of crimes in his analysis by incorporating unique individual labour market and conviction data, the empirical study concludes large and statistically significant impact of unemployment on different type of crimes. The impact is particularly large for theft.

2.4. Facts and Figures on Crime Scene in Punjab:

Punjab the most populous province of Pakistan. It is the province of 110 million people which is 56% of the whole population. It has 36 districts out of which 27 districts falls in to the categories of urbanizing and urbanized. With such huge population obviously some benefits and some disadvantages are attached. If we consider the advantages then more population means high demand and high demand means more production which runs the wheel of the economy. But, if we look at the dark side of the picture then with large population crimes, traffic problems, poverty, unemployment, high rents are attached. Even though law enforcement agencies do function there but the crime rates are still high in Punjab as it is discussed in the literature that there is a significant relationship between urbanization and

crimes. If we look into the data collected by FAFEN (2011) the most registered crimes were in Punjab. The reason provided is better outreach i.e. it is easy to commit crime in urban areas as there are many targets available and the probability of getting caught is very low. If we look in to the details of crimes then FIR's registered for crimes related to property are 17% of the total crimes reported and the highest percentage is in Punjab.

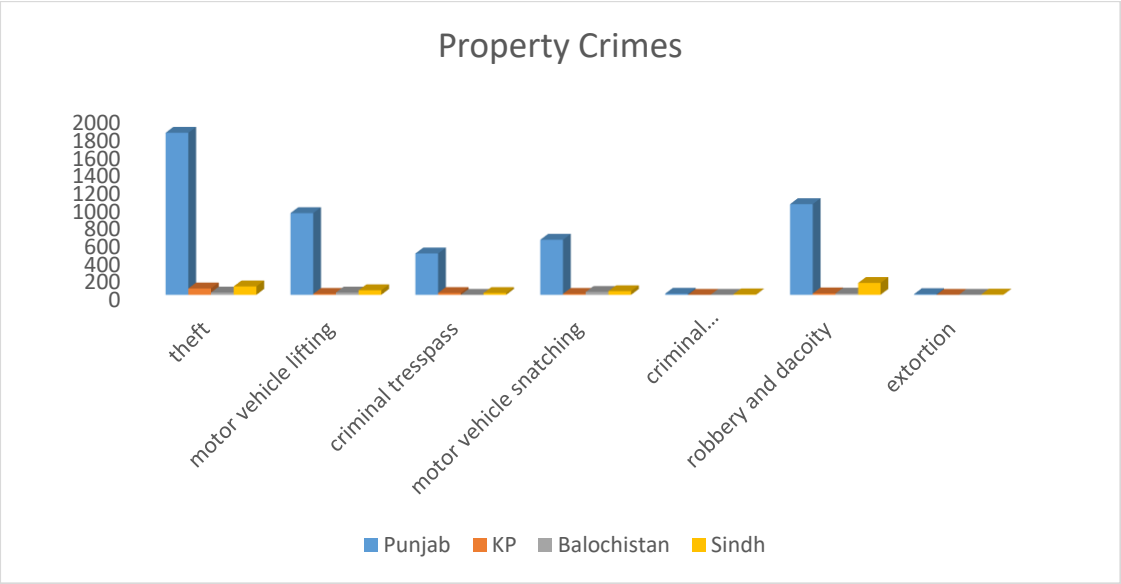
Table 2.4.1: Different types of crime rates among different provinces in percentage

Sr. No	Crime Category	Punjab	KPK	Balochistan	Sindh
1	**Physical Harm**	10.6	8.9	33.3	17.4
2	**Property Crimes**	22.5	1.7	21.9	14.5
3	**Threat and Fraud**	10.1	1.7	5.0	2.6
4	**Crimes against women**	2.8	1.1	2.9	3.0
5	**Other Crimes**	54.0	86.6	36.9	62.5

Source: FAFEN, Sep 2011

If we further categorize the property crimes then we can see from the graph that theft is the most reported crime. Out of all the theft reported 90% are in Punjab. Robbery and Dacoity comes second as 86% of such crimes are reported in Punjab.

Figure 2.4.1: Percentage of different types of property crimes in the provinces



Source: FAFEN, SEP 2011

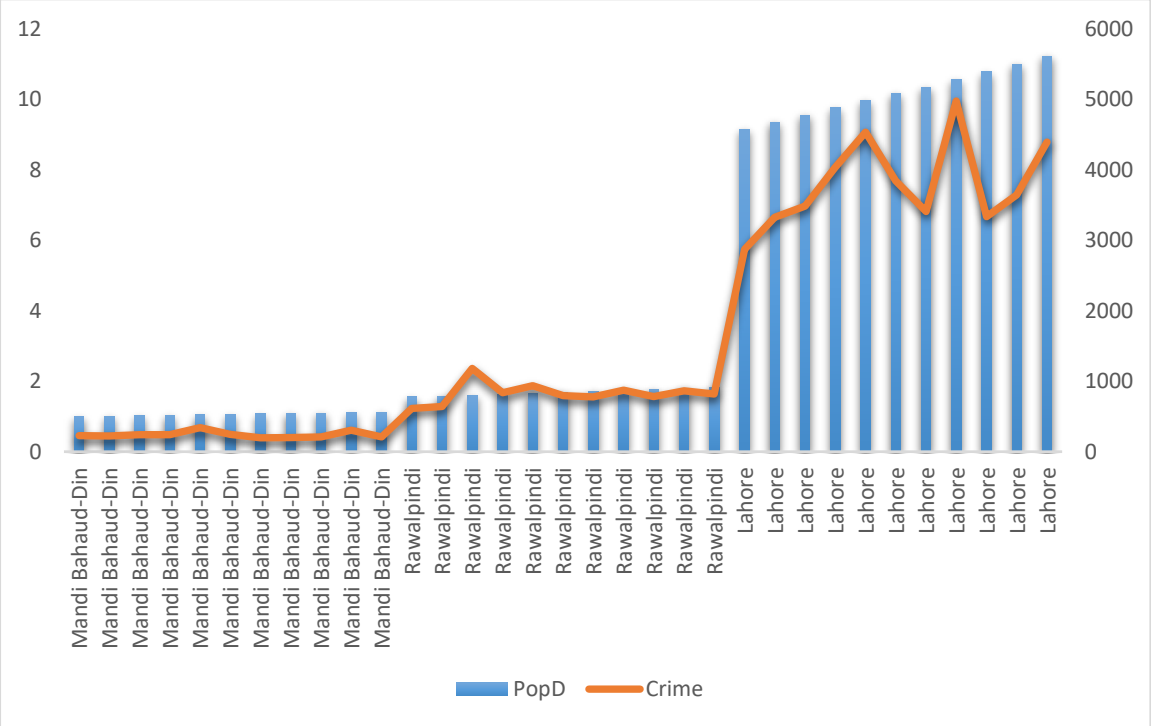
Moreover, district level analysis reveals that eight out of the 10 districts reported high crimes are of Punjab. As the graph and the table shows, the crime rate in Punjab has reached alarming level due to many economic, social and demographic reasons. If we look into district wise data then different trends can be seen such as the more populated the district, high are the crime rates. Lahore takes the lead in high crimes among the Punjab districts then comes Faisalabad, Gujranwala, Okara and Rawalpindi.

The statistics in the table and the graph clearly shows that property crimes are high and the main reason which can be given is that property crimes are mostly associated with youth (Besci, 1991) and our country is going through a phase where 64% of population is of the age below 30. It is second youngest country in the world after Afghanistan. As our economy is in turmoil so legal sector opportunities are low for youth and they get involved in illegal sector to earn livelihood. It can also be argued that property crimes are mostly associated with economic incentives [Buonnano, et al, (2008); Gumus, (2004)] thus unemployment, inflation, poverty

and all other factors which involve economic gains and the demographic variable of population density can be considered responsible for high property crime rates in Punjab.

We can understand the relationship between urbanization and crime easily with the help of the following figure 2.4.2.

Figure 2.4.2: Population density and property crimes relationship



Source: Punjab Bureau of Statistics

In this graphs three districts of Punjab are randomly selected for urbanization and crimes relationship in which Mandi Bahaud-Din is selected from urbanizing category, Rawalpindi from Urban I category and Lahore from Urban II category. As we can see, as population density increases, crime rates increases. This relationship doesn't mean that population density is the only factor responsible for high crimes. This study indents to find other factors as well which are responsible for high property crimes in Punjab.

Chapter 3

District Crime Profile of Punjab Province

We have selected Punjab as a case study due to high property crimes as discussed in section 2.4 of chapter 2. The higher tendency of property crimes in Punjab has led to insecurity, frustration and mental unrest. This factors spells out a dire need to deal with the situation. The study has focused on property crimes only because it is responsive to demographic, socio-economic and law enforcement conditions of a society. In order to look into the relationship of property crimes with socio-economic, demographic and law enforcement situation of the society a district level data has been taken and furthermore, districts are divided in to three categories i.e. Urbanizing, Urban I and Urban II on the basis of population density to understand the relationship more clearly.

In this chapter district crime profile of each of the 26 districts is discussed below:

Bahawalnagar:

The district spread over an area of 8878 square kilometre with population of 0.61 million. The urban population of the district is 19.05% (Government of Pakistan 2017)[1]. This district comes under the urbanizing districts category i.e. it is not densely populated. Its average population density is 297 per kilometre square. Although the population density and urban population of the district is not that high but still crimes and unemployment is considered one of the problems in the Punjab districts. The relationship between urbanization and property crime will be discussed with the help of the figure 3.1 (Appendix).

If we look at the graph of the concerned variables we can see that on average crimes rates are on the rise as population density increases. Population density is increasing from 270 to 310

[1] http://www.pbs.gov.pk/content/district-glance-bahawalnagar

during the focused period and if we look at the crime rate it is also on the rise and reaches peak i.e. 110 per 10, 000 persons. Population density is the sole propeller of crime rates. The other variable which can impact the crime rates in this district is unemployment [(Figure 3.2 (Appendix)].

Considering the relationship between crime rate and unemployment the relationship is not very clear because from 2007 to 2013 the relationship is inverse i.e. as the unemployment is low or decreasing the crime rate is on the rise. After 2013, as unemployment increases crimes rates increases as well and when it becomes constant for two years the crime rates decline and then during 2017 it's on the rise again. However, just like population density's relationship is positive during 2014 the relationship between crime rate and unemployment is also positive.

Rahim Yar Khan:

The total population of R.Y Khan District is 3.4 million. 19.6 percent of the population resides in urban areas. The average population density of the district is 366 per kilometre square (Government of Pakistan 2017)[2]. As the study intends to discuss the relation between urbanization and crimes so, the property crimes estimates indicates on average 110 per 10, 000 persons are involved in property crimes. The relationship is clearer in the following figure 3.3:

Population density is on the rise. From 2007 to 2017 it has risen from 340 to 400 and so does crime rate from 90 and it reaches peak during 2014 to 150 crimes per 10, 000 persons (Punjab Bureau of Statistics 2017)[3].

Another focused relationship of the study is unemployment and property crime rate [(Figure 3.4 (Appendix)].

[2] http://www.pbs.gov.pk/content/district-glance-raim-yar-khan
[3] http://bos.gop.pk/system/files/PDS%202017_0.pdf

By looking at the figure below the results are mixed. From 2007 to 2008 the unemployment rate is decreasing and so does crime rates and when in 2009 the unemployment increases so does crime rates. Here the relationship follows the previous studies finding. After, that from 2010 to 2014 the unemployment is decreasing or constant for some years but crime rates are still high. During 2017 the unemployment rate is on the rise but crime rate is decreasing.

The conclusion of the above discussion is that in R.Y Khan Population density have more impact on property crimes as compared to unemployment rate.

Muzaffargarh:

The total area of this district is 8249 square kilometres and the population of this district is 2.6 million in which 13% lives in urban areas, so it is very much rural district but on the basis of definition of (Cheema et al, 2017) it lies in the category of urbanizing district as the average population density of this district is 451 persons per kilometre square. The standard in the above mentioned paper is population density between 300 to 600 for urbanizing districts. On other hand it impact on crime rate can be found in the figure 3.5 (Appendix).

The population density has increased from 400 to 500 from 2007 to 2017. The crime rate also increased from 60 to peak 98 per 10, 000 persons. In the meantime it has some downward slopes as well.

The main source of earning is agricultural sector in this district. The unemployment is usually high because of disguised unemployment. A more vivid overlook of the relationship can be found out from the figure 3.6 (Appendix).

The unemployment rate over the focused time period decreased from 10% to 6.7%. The peak unemployment rate in this district is in 2007 i.e. 10% in the meantime crime rate is the lowest in the district.

Jhang:

A southern Punjab district with a population of 2.84 million and urban population of 23.39%. The average population growth rate is 2.16%. It has three tehsils and 129 union councils. The population growth in this district is close to the overall Pakistan population growth rate i.e. 2.4% (Government of Pakistan 2017)[4]. Considering the population density, which is a proxy considered in this study, the average population density is 401 square kilometres. High population density means congestion and it is a cause of many problems. The focused are property crimes and unemployment. The impact of urbanization and property crimes can be vividly explained with the help of the figure 3.7 (Appendix).

From 2007 to 2011 is the time when terrorism was on the rise in the country so criminal had greater chances to escape because the law enforcement agencies were busy countering terrorism. The graph of property crimes then turns low even if the population density is increasing.

The other important relationship to be considered here is unemployment and property crimes. It can be better explained with the figure 3.8 (Appendix).

The peak unemployment rate is 14% which is because of small proportion in their total economically action population. It's situated on the bank of Chenab River and most of the times it is a bearer of a natural calamity i.e. floods. During the focused time of the study floods have destroyed many villages, the infrastructure and many people fled to other districts. So, this might be the reason for the decreasing trend of unemployment. The reason for the high property

[4] http://www.pbs.gov.pk/content/district-glance-jhang

crimes from 2007 to 2011 is that during floods people need shelter and food and people have no resources to get these basic necessities, so crime rates increases, specifically property crimes.

Hafizabad:

District Hafizabad spread over an area of 2367 square kilometres. The population of the district is 1.123 million. Which makes the population density of 473 square kilometre. The urban population of the district is 27.26%. The average household is 7.1 which high by standards (Government of Pakistan 2017)[5]. One of the factor which contributes to the increasing population density is population growth rate which is 2.2% in this district. High population density causes some serious problems and one is high crime rates.

To see how population density impacts the property crime rates in the district figure 3.9 (Appendix) can explain it better:

The population density has risen from 415 to 470 during the focused time period. By the meantime property crimes show mixed trend. It first decreases then reaches its peak of 60 crimes per 10, 000 persons in 2011. Then after 2011 it follows the same trend. The overall increase in crimes is 1.6% but at the same time local and special laws enacted has risen by 24% due to which the crimes against persons has decreased by 10% and crimes against property decreased by 36% in 2015 as compared to the crimes reported in 2005. The number of proclaimed offenders has increased by 3 times during 2005 to 2015. During the last three years record number of proclaimed offenders has been arrested as well. That's why the trend follows the downward trend from 2011 to 2015 [Annual Policing Plan, District Hafizabad, 2016-17][6].

[5] http://www.pbs.gov.pk/content/district-glance-hafizabad
[6] https://punjabpolice.gov.pk/system/files/518-Hafizabad.pdf

Besides population density there are other factors which contributes to property crimes, one of which is unemployment. To look at this relationship more closely, the figure 3.10 (Appendix) would be a fair view:

The unemployment is very high, overall in this district but the trend is a bit mixed. In 2007, the property crime rate is 60 per 10, 000 which decreased to almost 25 per 10, 000 in 2011 to 2013. Then, it started increasing and is still on the rise in 2017. This decrease is because of the rise in special and local laws enacted and record number of arrests.

If we compare the impact of urbanization and unemployment on the property crimes , we can see that in this district the average property crime rate due to population density is 45 per 10, 000 and for unemployment it is almost 35 per 10, 000. So, the main contributor to property crimes in this district is urbanization.

Mandi Bahauddin:

This district is spread over an area of 2673 square kilometres. The population is 1.5 million which makes the average population density of 521 per square kilometres. This district is rural if we look at the population distribution among urban and rural settings. The urban population is 15.20% and rural is 84.80% respectively but on the definition set by (Cheema et al, 2017) paper it falls in the category of urbanizing districts as the range for this category is 300 to 600 per square kilometre. The urbanization trend in on the rise in the district which causes some problems, one of which is crime. Crime is a major source of insecurity in the society i.e. it has negative impact on the wellbeing of the society. For analysing the relationship more clearly the figure 3.11 (Appendix) need to be consulted:

As the population density increases the crimes are also increasing and reaches a peak of 70 crimes per 10, 000 persons. After 2011 it shows downward trend because of the use of technology in detecting crimes. CCTV cameras are installed at different locations and entry

and exit points for command and control. These cameras are managed and record locally but it can be viewed directly in the police control room. Nadra Verysis is another facility available in the DPO office through which CNIC can be verified instantly. Crime scene investigation mobile unit is available 24/7 [Annual Policing Plan, Mandi Bahauddin 2016-17][7]. All these factors has deterrence effect on crimes. So, population density has increased but the above mentioned factors have controlled crimes.

Unemployment also causes crimes in the society. The average unemployment over the focused course is 11.6%, which is very high. With the help of the figure 3.12 (Appendix) the relationship can be properly investigated:

Unemployment rate has decreased significantly over the course of time. It has decreased from outstanding 17.5% to 14.1%. This decrease can be attributed to availability of employment opportunities in various trades e.g. mechanical, electrical, auto engineering, welding, surveyor and commerce. Due to the availability of employment in the legal sector the criminals as rational persons do not involve in illegal activities.

Nankana Sahib:

Nankana was actually a tehsil of district Sheikhupura but in May, 2005 it was given a district status as a way of promoting development in the area and investment by Indian Sikhs because of shrine of Guru Nanak.

This district is spread over an area of 2960 kilometre square with population of 1.35 million. It means that 458 persons live per kilometre square and it falls in the category of urbanizing district. The population growth in the district is 2.35% which is almost equal to national average i.e. 2.4%. The urban population in the district is 18.13% (Government of Pakistan 2017)[8].

[7] https://punjabpolice.gov.pk/system/files/M.B.Din_.pdf
[8] https://nankana.punjab.gov.pk/district_at_glance

Urbanization in every district of Punjab is increasing and it has some repercussions for the society as a whole. One of the problem due to urbanization is increasing crime rates [(Figure 3.13) (Appendix)]

The population density in this district has increased from 442 to 485 persons per kilometre square during the focused time period. This huge rise causes the property crimes to rise as it reaches a peak of 100 crimes per 10, 000 persons in 2011. After 2011, there is a downward trend in the property crime rate. The reason for this decrease is that the district is divided in to three police circles and these police circles furthers branches to eleven police stations. In this district police have adopted strategic policies which is helping them to achieve the set targets, e.g. special assignments have been given to the responsible police officers to control crimes in their respective areas of jurisdiction, citizen focused police service delivery, development of police community partnership. The strategic priority of the district police is to reduce crimes in the district specifically related to robberies and burglaries and to arrest targeted offenders (Annual Policing Plan, 2017-18)[9].

Another important factor which contributes to crimes is unemployment [(Figure 3.14) (Appendix)].

The average unemployment rate in the district is 10% which quite high if compare it to overall Punjab which is 5.5% and Pakistan 5.2% respectively. The crime trend shows that crimes are low but crimes are high. The main reason for such high unemployment disguised unemployment because people are associated with agriculture and in agriculture sector disguised unemployment is the main issue especially in countries like Pakistan in which the major source of employment is agriculture sector.

[9] https://punjabpolice.gov.pk/system/files/Nan%20kana%20sb.pdf

Lodhran:

This district spreads over an area of 1790 square kilometres with 1 million total population which makes the population density of 559 per square kilometre. The urban population in the district is 14.51%. The annual population growth rate is 2.7% (Government of Pakistan 2017)[10]. The average property crime rate in the district is 45 crimes per 10, 000 persons. The average unemployment rate is 6.56%. Firstly, we have look at the urbanization and crime relationship with the help of the figure 3.15 (Appendix).

The relationship between population density and property crimes almost looks direct because as urbanization increases so does property crimes. The effect is more vivid after the 2011 peak of 60 crimes per 10, 000 persons. The main reason for the high crimes is inefficient police services. In the district total 224 complaints are registered out of which 125 are filed. In this 125 filed complaints 56 are pending and 43 are completed (Annual Policing Plan, 2016-17).

Secondly, unemployment and property crimes relationship will be discussed with the help of figure 3.16 (Appendix).

The average unemployment rate is low in this district as compared to the districts discussed above. The trend shows that only in 2014 as the unemployment rate increases so is crime rate. The credit goes to LPP (Lodhran Pilot Project). The project was initiated in March 1999. It is a non-profit organization which is committed to promote development and humanitarian objectives in Pakistan.

Jehlum:

The district of Jehlum stretches from river Jehlum almost to the Indus River. It is located in the north of the Punjab province. Jehlum covers an area of 3587 square kilometre. Its total

[10] http://www.pbs.gov.pk/content/district-glance-lodhran

population is 1.22 million out of which 28.97% is urban residents. The population density of Jehlum is 340square kilometre (Government of Pakistan 2017)[11]. Theories suggests that the more the urbanization the high will be the crime rates.

Figure 3.17 show mostly a positive trend between population density and property crimes but crimes are low as compared to the above discussed districts which is 35 per 10, 000 person (peak value). The main reason for this is that the major profession of the people is armed forces. Hence, they are disciplined and law abiding. The main source of livelihood of the people is agriculture. The district has few industries like textile mills, cement factory and soda ash factory. There is no labour unrest and the overall conditions are peaceful. For most of the property crimes the Jehlum police has found unemployment as one of the reason (Annual Police Planning, Jehlum, 2016-17)[12].

Figure 3.18 (Appendix).

Over the focused time period unemployment rate have shown mix of trend. From 2007 to 2011 the unemployment rate is quite high but the crime rate is low. Unemployment rate reaches peak in 2008 which is 16.5%. Comparing both the figures we can see that unemployment contributes more than population density because the average crime rate in unemployment case is between 30 to 35 per 10, 000 persons while in urbanization the average crime rate is between 25 to 30 per 10, 000 persons.

Sargodha:

The district is spread over an area of 5854 square kilometre with population of 3.7 million out of which 28% is living in urban areas. The average population density is 559 per square kilometre. The average household size is almost same across the regions and is 6.8 members

[11] http://www.pbs.gov.pk/content/district-glance-jhelum
[12] https://punjabpolice.gov.pk/system/files/Jhelum_3.pdf

on average (Government of Pakistan 2017)[13]. Villages around the road show higher population concentration while in the remote villages population concentration is low. The population of Sargodha city is 692,250 and is the eleventh largest city in Pakistan

The average property crime rate in district is 107 per 10, 000 persons which is quite comparing to the districts discussed above. The average unemployment rate in the district is 9.29% which is higher than the province average 6.4%.

The literature have shown that urbanization and unemployment are causes of high crime rates, so firstly, the relationship between urbanization and property crime will be discussed with the help of the figure 3.19 (Appendix).

Overall, the property crime rate show increasing trend and so does the population density. It is the evidence that there do exist relationship between urbanization and property crimes. The property crime rate reaches its peak of 140 per 10, 000 persons at the population density of 580 per square kilometre. The reason for the high property crime rates is the less supply of policing which does not fulfil the demands of the society. People consider police as an instrument of oppression, not a source of protection. A survey conducted in 2004, reveals that only 25% mentioned that in time of emergency we would contact police. Keeping all such factors in mind the high crimes in Sargodha district are justified (Annual Policing Plan, District Sargodha, 2018-19)[14].

Secondly, the relationship between unemployment rate and property crime rate will be discussed with the help of the figure 3.20 (Appendix).

The average unemployment rate is quite low even if the property crime rate is increasing so the relationship doesn't look significant. The reason for this is that Sargodha is both agricultural

[13] http://www.pbs.gov.pk/content/district-glance-sargodha
[14] https://punjabpolice.gov.pk/system/files/Sargodha_6.pdf

as well as industrial district. Vast fields have allowed the farmers to grow a range of crops and develop animal breeding programs. The agricultural goods are the main source of income but besides that manufacturing sector is also growing. Sargodha is known for largest electrical fitting manufacturing in Pakistan. 70% of electrical fitting products are produced in Sargodha. Approximately 15 large units, 200 SMEs and 100 cottage industry units are involved in electrical fitting products production. All this factors tends to lower crimes because income from legal sector is available.

Toba Tek Singh:

This district spread over an area of 4364 square kilometre with population of 2.19 million out of which 20.1% are living in urban areas. The population density of 500 per square kilometre. The average population growth rate is 2.74% which higher than the national level population growth of 2.4% (Government of Pakistan 2017)[15]. The urban growth in the district is in all directions. Different provisional highways branches to the nearby towns. This provide opportunities for different businesses to settle. The most prominent land use that is expanding the towns is residential. A number of small colonies are established in the vicinity of towns. These colonies are established without proper planning (Minallah et al, 2015). Due to this unplanned urbanization crimes rates increases. The relationship between the urbanization and property crime rate can be explained in the detail with the help of the figure 3.21 (Appendix).

The population density has increased from 430 to 490 over the focused time period and so does property crimes. It reaches the peak in 2016 where the property crime rate is 68 per 10, 000 persons. The crime rates are quite high even if the population density is low. The reason for this is inefficiency of the police in this district also unemployment rate is quite high i.e. 10.12%.

[15] http://www.pbs.gov.pk/content/district-glance-t-t-singh

The relationship between property crimes and unemployment can be analysed with the help of the figure 3.22 (Appendix).

The figure 3.22 shows that unemployment rate is high even if the property crime rate is low. The peak unemployment rate is during 2008 i.e. 14%. The reason behind this is that this district is fully agricultural based and there is no industrial estate in the district. So, all the manpower is associated with agriculture and there exist disguised unemployment problem. This leads to theft, robbery and other property crimes.

Gujrat:

The district spread over an area of 3192 square kilometre with population of 2.75 million which makes the population density of 860 per square kilometre. The urban population in the district is 27.74% (Government of Pakistan 2017)[16]. In the cities most of the land use is for residential and commercial purposes which have narrow, winding and irregular streets. The houses are generally small in size. The average household size is 6.7. For such small size houses it's a big number. Most of the educational institutions are functioning in insufficient buildings. There are no planning as long as the commercial centres are concerned. Shops are scattered on both sides of the road. Like these land uses the industrial sector is also scattered all over the cities. Such a inefficient city planning causes serious problems. One to be mentioned here is crime. With the help of the figure 3.23 (Appendix) it can be explained better:

There is a complete shift in the property crimes trend after 2011. Before 2011 the population density is low but property crime rate is quite high. After 2011 population density and property crime rate are increasing almost at the same rate. This confirms the findings of [(Gumus, 2003; Jalil and Iqbal, 2010)].

[16] http://www.pbs.gov.pk/content/district-glance-gujrat

Population density is not the only variable affecting property crimes. In such urbanized districts unemployment is also one of the factor responsible for crimes.

Figure 3.24 (Appendix).

Unemployment rate is quite high in this district. The peak unemployment rate is 19% during 2010. If we look at the trend of property crime rate and unemployment rate it is clear that except 2011 and 2016, during the rest of the focused course unemployment do contributes to property crimes. Despite the industrial status of the Gujrat city the unemployment rate is quite high. The main reason for this is the small proportion of employed population in the total economically action population.

Narowal:

This district spread over an area of 2337 square kilometre with 1.7 million population. The population density of the district is 705 per square kilometre. The urban population of the district is 12.20%. The average household size is 7.4 which quite high (Government of Pakistan 2017)[17]. In this district 60% of the population is living within 4 kilometre belts along the highway, which makes it easier to access the higher amenities in urban areas. This process is responsible for rural to urban migration which results in congestion in urban areas.

Narowal is a non-industrial district. The main source of income is agriculture. There is no industrial state in the district. By looking at the social progress index the Narowal district score is 0.56 which very low. Social progress index score is weighted average of three main dimensions of a society i.e. social, gender and culture and economic dimensions. It varies between 0 and 1. The near the score to 1 the greater is the progress (Punjab Social Progress Index, 2015).

[17] http://www.pbs.gov.pk/content/district-glance-narowal

The focus of this study is relationship between property crimes, urbanization and unemployment rate.

Firstly, relationship between urbanization and crime will be discussed with the help of the figure 3.25 (Appendix).

The trend show that as urbanization increases so does crime rates. It is in accordance with the results of (Glaeser and Sacerdote, 1996). As discussed above rural to urban migration takes place sur to which the cities are congested and incidents of property crimes takes place and also the district is not doing well in social progress index.

Secondly, the relationship between unemployment rate and property crime rate will be discussed with the help of figure 3.26 (Appendix).

The trend shows that from 2007 to 2010 unemployment rate is high but crime rates are low which indicates weak relationship and from 2011 to 2017 unemployment rate is low but property crime rate is high. So, overall it shows insignificant relationship. For the crimes that are reported the reason is that agriculture is the main source of income in this district and youth are reluctant to accept farming as a profession. Since, the alternative sources of income are scarce so they got engaged in criminal activities like theft, robbery, motor vehicle snatching etc (Annual Police Planning, Narowal, 2017-18)[18].

Kasur:

This district spread over an area of 3995 square kilometre with population of 3.456 million which makes the population density 860 square kilometre. The urban population of the district is 22.83%, so it's mainly a rural district. The average household size is 7.0 (Government of Pakistan 2017)[19]. With such a high population density the almost 23% living in the urban areas

[18] https://punjabpolice.gov.pk/system/files/Narowal_6.pdf
[19] http://www.pbs.gov.pk/content/district-glance-kasur

face some serious problems. The one which will be focused on here is property crime rate and unemployment rate which according to literature is caused congestion i.e. high population density. If we look in to the social progress index statistics of the Punjab province the Kasur district score is very low i.e. 0.33. The social progress index varies between 0 and 1. The near the score to 0 the worst the conditions of the district, which is the case in Kasur district.

Firstly, the relationship between urbanization and property crime rate will be discussed with the help of the figure 3.27 (Appendix).

The trend shows that as population density increases so does property crimes. It is the proof high population density contributes to high property crimes. The reason for this is the worst performance of the district in social progress index because due to such high population density the anonymity of the criminal increases. The other reason for high property crimes is the district police of Kasur is short of resources e.g. manpower. The strength of Kasur police has become insufficient. The current available force-public ratio is 1:2100 while the required ratio is 1:250 (Annual Policing Plan, District Kasur, 2016-17)[20].

Secondly, the relationship between unemployment rate and property crime rate will be discussed with the help of the figure 3.28 (Appendix).

The average unemployment rate in the district is 4.73%. The trend shows that property crimes are still high even if the unemployment rate is low. Which means that unemployment does not contributes to property crimes in Kasur district.

Okara:

This district spread over an area of 4337 square kilometre with population of 3.03 million. The population density is 690 per square kilometre (Government of Pakistan 2017)[21]. Like other

[20] https://punjabpolice.gov.pk/system/files/Kasur_3.pdf
[21] http://www.pbs.gov.pk/content/district-glance-okara

Punjab districts Okara is growing very rapidly in the absence of a master plan. Colonies are scattered wherever space is available. The residential area covers 62% of cities. Okara is mainly agriculture based district with small scale industrial sector development within the municipal limits. There also exist a problem because there is no specific area where the industries are concentrated, so the industries are scattered along the roads. The commercial activities are developed up to a limit that it can cater the local population as well as inhabitants of the surrounding areas. District with such high population density has some serious problems, one is unemployment and the other is crime. The relationship between property crimes and urbanization will be discussed with the help of the figure 3.29 (Appendix).

The trend of both the variables show a positive relationship i.e. as population density increases property crime rate also increases. Okara is a congested district and congestion leads to more targets for criminals and also the possibility of getting caught is very low. That's why property crime rate depicts an upward trend.

Unemployment also leads to crimes because if opportunities in the legal sector is not available then citizens tend to be involved in illegal sectors to earn livelihood. The relationship will be discussed with the help of the figure 3.30 (Appendix).

The trend show no significant relationship between the focused variables because unemployment rate is low but property crimes are high in the district. The reason for this is that industries of all types e.g. rice, sugar, oil/ghee, electronics, textile, export quality crockery products etc are functional in the district which absorbs huge chunk of job seeking citizens.

Sheikhupura:

The district is spread over an area of 3030 square kilometre with population of 3.46 million which makes the population density of 1014 per square kilometre. The urban population in the

district is 26.22%. The average household size is 7.3 (Government of Pakistan 2017)[22]. Before partition Sheikhupura was a planned city the grain market and vegetable market at the centre and towards the west were civil lines area comprising of public building but after independence development took place all over the district in an unplanned manner and due to which Sheikhupura lost the designation of a planned city. Due the unplanned development congestion happened and it resulted in many problems. The two problems which are the focus of this study are property crimes and unemployment.

The relationship between urbanization and crime will be discussed with the help of figure 3.31 (Appendix).

The trend show a clear positive relation between population density and property crimes in the district. The population density has increased from 767 to 1014 during the focused period and so does property crimes from 88 to 105 per 10,000 persons. This is in accordance with the studies of [(Cheema et al, 2017; Jalil and Iqbal, 2010)]. The reason for high property crimes is that although it the district has industrial base but it is also a gun-smuggling hub which makes it more vulnerable to crimes of all kind.

The relationship between unemployment rate and property crimes has mixed results I the literature. In some studies the relationship is positive and in some studies it is negative but what relationship exists between the two variables in this district it can be explained with the help of the figure 3.32 (Appendix).

From 2007 to 2009 the unemployment rate is high but property crime rate is low. After 2009, the relationship becomes insignificant because unemployment rate is high but property crime rate is low. The low unemployment rate in the district is because of its industrial base. It provides most of the area's employment.

[22] http://www.pbs.gov.pk/content/district-glance-sheikhupura

Khanewal:

This district spread over an area of 4349 square kilometre with population of 2.92 million which makes the population density of 658 per square kilometre. The urban population of the district is 17.61%. The average household size is 7.1 (Government of Pakistan 2017). The district is further divided in to four tehsils which are Khanewal, Kabirwala, Mian Channu and Jahanian. Kabirwala is the biggest tehsil of the district but it's mainly rural. The urban population in Khanewal tehsil is higher compared to other tehsils. As long as the availability of skilled labour is concerned there are 12 technical, commercial and vocational institutions imparting training in various trades. The output of the institutions per year is 2001trained technicians, workers and artists. The population density of the district is very high which causes certain problems like crimes, unemployment etc.

The relationship between urbanization and crime will be discussed with the help of the figure 3.33 (Appendix).

The trend shoe clear positive relationship between population density and property crime rate in the district but the rate of growth in population density is low as compared to property crimes. The main reason for this is congestion. The literature also approves this result.

The other variable responsible for property crimes can be unemployment. The relationship between unemployment rate and property crimes will be discussed below with the help of the figure 3.34 (Appendix).

The trend show insignificant relationship between unemployment rate and property crimes rate in the district. The reason for this is that the employment rate of the agriculture sector is high

i.e. 55% and the rate for the service sector is 8%, labours 12% and industries 25% respectively (District Pre-Investment Study, Khanewal, 2012)[23].

Pakpattan:

The district spreads over an area of 2724 square kilometre with population of 1.82 million. The population density becomes 659 per square kilometre. The urban population of the district is 14.24% (Government of Pakistan 2017)[24]. The district is divided in to two tehsils. One is Pakpattan and the other is Arifwala. From urbanization point of view Pakpattan tehsil has more population as compared to urban residents of Arifwala. As long as the availability of skilled labour is concerned there are 4 technical, commercial and vocational institutions for men delivering training in various trades e.g. mechanical, electrical, auto-engineering, welding, wood work and commercial. Vocational institutions for women also delivering in hand/machine embroidery, stitching and knitting.

Population density of the district is high so, it may causes some problems e.g. crimes and unemployment. The relationship between urbanization and property crime will be discussed with the help of the figure 3.35 (Appendix).

The trend show no relationship between the concerned variables because population density is increasing but property crime rate over the focused time period is almost the same except in 2009. The main reason for this is that Pakpattan is a rural district and in rural districts the probability of the criminal getting caught increases because families are more intact as compared to urban areas (Glaeser and Sacerdote, 1996).

The relationship between unemployment rate and property crime rate will be explained with the help of the figure 3.36 (Appendix).

[23] https://doi.punjab.gov.pk/system/files/Khanewal_6.pdf
[24] http://www.pbs.gov.pk/content/district-glance-pakpattan

This trend also show insignificant relationship because unemployment rate is high but property crime rate is low.

The main reason for the property crimes in the district is that Pakpattan police are undergoing serious credibility crisis. People consider police as a source of oppression, not a source of protection (Annual Policing Plan, Pakpattan, 2016-17)[25].

Sahiwal:

This district spread over an area of 3201 square kilometre with population of 2.52 million. The population density of the district is 790 per square kilometre. The urban population of the district is 16.27% (Government of Pakistan 2017)[26]. Although, its urban population low but the district overall is very congested. The reason for the congestion is that the largest portion of district is undeveloped. Specifically, it accounts for 41% of area. 31.31% of the land is residential, which is a big number, 18% is occupied by transportation system. The industrial area is 3.85%, while 8.54% is open spaces. Area devoted commerce is 1.76%. Considering the high population density of the district and the percentage of land used for residence it can be argued that there would be severe social and economic problems. The problems which are focus of this study are property crimes and unemployment. The relationship between urbanization and property crimes will be discussed with the help of the figure 3.37 (Appendix).

If we look at the trend of both the variables it can concluded that there exist positive relationship between the two variables. Congestion is the main reason behind this relationship because when an area is congested the crime targets are more, anonymity of the criminal rises and due to insufficient police force the crime rates rises.

[25] https://punjabpolice.gov.pk/system/files/Khanewal_3.pdf
[26] http://www.pbs.gov.pk/content/district-glance-shaiwal

The other evil force behind the property crimes can be unemployment rate. The relationship between the two in this district is depicted in the figure 3.38 (Appendix).

The trend show no significant relationship between the concerned variables. From 2007 to 2010 the property crimes are low while unemployment rate is high, while from 2011 to 2017 unemployment rate is low and property crimes are high. The reason is that in rural areas the residents are not just associated with agriculture but also they are also associated with forestry, hunting and fishery industries. In urban areas majority are concerned with community, social and personal industries. Social and personal services industries have 29.8% working force, followed by 28% in whole sale, retail trade, and restaurants and hotels have 24.5% of the working force. As long as income from legal source is available the involvement in the illegal sector is low (Ehlrich, 1973).

Vehari:

The district spread over an area of 4364 square kilometre with population of 2.90 million. The population density is 660 per square kilometre. The urban population of the district is 16.05%. The average household size is 6.9 (Government of Pakistan 2017)[27]. The district has three tehsils; Vehari, Burewala and Mailsi. Demographically, Burewala is the most urbanized tehsil of the district. Vehari is growing in two directions i.e. north east and south. In the north-east the growth is taking place along Burewala road. Different schemes are developed along the road. 100 acres of the land has been reserved for such schemes. In the southern side the development is taking place opposite of Peoples colony and Liaquat Pura. This development is taking place due to road infrastructure and surrounding villages. This growth leads to congestion which causes some problems and the ones which are the focus of this study is property crimes and unemployment.

[27] http://www.pbs.gov.pk/content/district-glance-vehari

Firstly, the relationship between urbanization and property crimes will be discussed with the help of the figure 3.39 (Appendix).

The trend clearly show a positive relationship between the concerned variables i.e. as urbanization is increasing during the focused course of time the property crimes are also on the rise. This result is in accordance with the studies of [(Gumus, 2003; Glaeser and Scerdote, 1996)].

The other factor responsible for property crimes can be unemployment. The relationship between the concerned variables in Vehari will be discussed with the help of the figure 3.40 (Appendix).

The trend show no significant relationship between the concerned variables. From 2007 to 2010, unemployment rate is high but property crime rate is low and from 2010 onwards unemployment rate is low but property crime rate is high. So, it can be concluded that high population density contributes to property crimes in the district.

Rawalpindi:

The district spread over an area of 5286 square kilometre with population of 5.4 million. The population density of the district is 1322 per square kilometre. The urban population of the district is 53.16% (Government of Pakistan 2017)[28]. Such a high population density and more than half of the people living in urban areas, it will definitely face some serious problems like unemployment and crimes of all sort. The focus of this study is to find out the impact of urbanization and unemployment on property crimes. To find out more clearly the situation of the concerned variables, we will take help of the figures 3.41 (Appendix).

[28] http://www.pbs.gov.pk/content/district-glance-rawalpindi

The trend show no significant relationship between population density and property crimes because population density is increasing proportionately while property crimes do increase but by small proportion. So, besides population density there could be another reason for the high crimes rates in the district. Let's check the impact of unemployment on property crimes with the help of the figure 3.42 (Appendix).

The figure 3.42 show clear relationship between the concerned variables because from 2007 to 2009 the unemployment rate is rate is increasing and so does property crime rate. The same is true for the years onward except the last three years. In short on average there do exist positive relationship between the focused variables. So, it can be concluded that both population density and unemployment contributes to high crimes in the district.

Gujranwala:

The district spread over an area of 3198 square kilometre with population of 2.24 million. The population density of the district is 1370 per square kilometre. The urban population of the district is 50.55% (Government of Pakistan 2017)[29]. Gujranwala city is 7th most populous city in Pakistan. Gujranwala is comparatively modern as compared other northern districts of Punjab. Resident wise Gujranwala city is fast growing city. Growth occurred mostly in the northwest and southeast of the city after independence. Growth grow outwards mostly and evenly after 1985 till the present time. The city growth has been mostly unplanned because of poor implementations of development guidelines and weak enforcement of property laws. Due to this unplanned growth city faces many problems e.g. crimes, unemployment etc.

The focus of this study is impact of urbanization and unemployment on property crimes. Firstly, the relationship between population density which is taken as proxy for urbanization and property crime rate with the help of the figure 3.43 (Appendix).

[29] http://www.pbs.gov.pk/content/district-glance-gujranwala

The trend clearly shows a positive relationship between the focused variables, although the property crime rate is high as compared to the increase in population density. The reasons for this are more targets for criminals because of congestion, anonymity of the criminals, and insufficient police force. Unemployment in the district can also play a major role in impacting property crimes positively. The relationship between the two variables will be discussed with the help of the figure 3.44 (Appendix).

On average the trend show no significant relationship between unemployment rand property crime rate because from 2007 to 2010 the relationship is positive as we can see that unemployment rate decreases then so does property crimes rate, but after 2010 the relationship becomes insignificant. Unemployment is low but property crimes are still high. The reason is that Gujranwala is the third largest industrial centre after Karachi and Faisalabad. It contributes 5% to the country's GDP. Such huge industrialization absorbs most of the working force, so they do not engage in illegal activities.

Sialkot:

The district spread over an area of 3016 square kilometre with population of 3.90 million. The population density of the district is 1300 per square kilometre. The urban population of the district is 51.28% (Government of Pakistan 2017)[30]. About three decades ago the cities in Pakistan were concentrated around civic administration or commercial core but now the trend have changed e.g. In Sialkot and many other intermediate cities the cities grow along the major transport corridors. What were previously rural areas are now becoming urbanizing at haphazard rates. The predominance centres are now becoming less dominant because mobility and spending power increases, economic linkages are strengthening, commercialization on the

[30] http://www.pbs.gov.pk/content/district-glance-sialkot

rise and services sector is strengthening. All these factors contributes to the urban form becoming less centred and more multi-nodal and metropolitan in character.

This high population density and growth of the city causes serious problems for the residents. The most noted problems in the literature are crimes and unemployment. Firstly, impact of population density on crimes will be discussed with the help of the figure 3.45 (Appendix).

The trend shows a positive relationship between the concerned variables. The main reason this is congestion and unplanned urbanization. Another reason for the high property crimes insufficient police strength. All this factors helps the criminals to escape the law.

Population density is not the only factor which contributes to crimes. The other factor which may contributes to crimes in the district is unemployment. It will be will be discussed with the help of the figure 3.46 (Appendix).

The trend show no significant relationship between the focused variables as during 2007 to 2011 the unemployment rate is high but property crimes are low and after 2011 the unemployment rate low but property crimes are high. Sialkot is 3rd industrialized district after Karachi and Faisalabad. It has large commercial and services sector centres which caters the domestic demand as well as plays huge role in exports of Pakistan. Due to high industrialization and well established services sector the work force is efficiently absorbed and, hence the legal sectors save the residents from illegal activities.

Multan:

This district spread over an area of 3720 square kilometre with population of 4.74 million. The population density is 1300 per square kilometre. The urban population of the district is 52.48%. The annual growth rate is 2.73, which higher than the national growth level 2.4 (Government

of Pakistan 2017)[31]. Multan is one of the largest cities in Pakistan. Multan has grown at a very rapid rate and became the major urbanized area of the Punjab province. It is industrial, commercial, financial and service centre of the country. In the recent past the urban infrastructure has been overburdened and it has caused some serious problems and the city has been subjected to urban strife (Chaudhry et al, 2006).

The main problems which are the focus of this study are impact of urbanization and unemployment on property crimes. Firstly, the impact of population density on property crimes in Multan will be analysed with the help of the figure 3.47 (Appendix).

The trend clearly show a very close relationship between the concerned variables. The reason for that is that the spectrum of targets widens as urbanization increases and police in Pakistan have been severely stigmatized and have lost credibility. The main reason for that is the miss use of power by police in most of the cases (Saeed, 2014).

Secondly, the unemployment rate can also contributes to property crimes because if livelihood opportunities are not available in the legal sectors, the residents earn livelihood through illegal activities. The relationship can be analysed with the help of the figure 3.48 (Appendix).

The trend shows no significant relationship between the focused variables between the focused variables because as mentioned Multan is the financial, commercial and service centre of the country and it absorbs most of the work force. So, the unemployment has no significant impact on property crimes in the district.

Faisalabad:

The district spread over an area of 5856 square kilometre with population of 3.21 million. The population density of the district is 1300 per square kilometre. The urban population of the

[31] http://www.pbs.gov.pk/content/district-glance-multan

district is 50.07% (Government of Pakistan 2017)[32]. It is third most populous city of Pakistan and second largest in Punjab province. Faisalabad has grown to become the centre of industrial and distribution activities because of its pivot location as it is connected to the neighbouring districts through roads, rails and air transportation. Faisalabad was initially established as Mandi town of an area about 3 square kilometre for an about 20 thousand persons. Job opportunities and fertile land attracted the rural people into the city. Its residents doubled after independence due to refugees from India. Its population further increased because of 1960's industrial growth. Such high population growth have burdened the urban infrastructure and urban society due to which problems of crimes and unemployment arises. As the focus here to find out the impact of urbanization and unemployment on property crimes in the district, so, firstly the impact of urbanization will be discussed with the help of the figure 3.49 (Appendix).

The trend clearly shows a positive relationship between the focused variables. But, the property crimes are not increasing at the same proportion as population density of the district. Faisalabad reported the highest crimes in October 2011 constituting 11% of the 32021 FIR's filed for 27 observed crimes in the 73 districts nationwide. The reason for that is the better outreach and absence of parallel judicial systems in the region (FAFEN, 2011).

The other factor which may contribute to property crimes is unemployment. The impact will be discussed with the help of the figure 3.50 (Appendix).

The trend show no specific relationship between the focused variables. The reason is that it is the industrial hub like Karachi and the services sector is in full function in the district, so it absorbs most of the work force and the probability of involvement in illegal activities decreases.

[32] http://www.pbs.gov.pk/content/district-glance-faisalabad

Lahore:

The district spread over an area of 1772 square kilometre with population of 11.3 million. The population density of the district is 1600 per square kilometre. The urban population of the district is 82.44% (Government of Pakistan 2017)[33]. Lahore is the second largest metropolitan area in Pakistan after Karachi. Lahore is still growing and the built up area almost double during 1999 to 2011. This has adverse impact on the city administration in terms of managing the city efficiently, overlapping of jurisdiction of land governing authorities, unchecked urban growth, crimes and unemployment etc. Since, the focus of the study is finding out the impact of urbanization and unemployment rate on crimes, it will be discussed with separately with the help of figures. Firstly, the impact of urbanization on property crimes will be discussed with the help of the figure 3.51 (Appendix).

The trend do show positive relationship between the focused variables but the relationship is not very strong. The reason behind this is that very high population like that of Lahore provides natural surveillance due to which the probability of property crimes decreases.

The other factor which can contribute to property crimes is unemployment. It impact on crimes will be discussed with the help of figure 3.52 (Appendix).

On average the trend show no significant relationship between the concerned variables. The reason behind this is the well establishment of industrial, services sectors and commerce in Lahore. The unemployment rate is quite high during 2007 to 2011 the GFC happened and it has also have adverse effects on Pakistan economy due to which demand for Pakistani products decreased. The result was cutting down the production and it resulted in unemployment rate increased. After 2011 is the recovery stage of the Pakistan Economy Essays, UK. (November 2018).

[33] http://www.pbs.gov.pk/content/district-glance-lahore

CHAPTER 4

Methodological Relevance and Data Description

Spatial disparity theory states that there exist geographical, economic, and social disparities which divides the society. This disparities are responsible for migration because some regions are more developed as compared to other regions and people migrates to those areas which are more developed so, it imposes burden on amenities available in the developed regions. We can an example of rural to urban migration. From spatial theory perspective, spatial inequality is determined by location decisions of firms and households. Household are in search of better amenities and firms are looking for high profits. Due to this location decisions of households and firms the result is congestion which leads to burden on facilities, pollution, crimes and other social problems (Kim, 2008).

In social sciences criminal behaviour can be discussed in the light of many theories. There are three main theories which are used by researchers which are rational model, present oriented or myopic model and radical political economic model.

Economics is defined as the discipline which studies how the limited resources are allocated by the forces of supply and demand to meet the needs of the society. By the same token economics argues that crime is a result of individual allocates the limited supply of time and efforts in legal and illegal activities. A key assumption is that criminal is rational and choose the efficient option based on available information and resources. David Friedman (1996) states this fact as: a burglar has same reasons for committing burglary as a teacher has for his teaching profession because both aim is to maximize utility.

The profits from crimes is mainly calculated in monetary terms, however there can be physical or psychological and other benefits. The costs of crime involves detection, apprehension and

severity of punishment. This cost and benefit analysis of crime leads to an important concept of opportunity cost of crime. Any decision which involves choice between two or more than two options has an opportunity cost. An opportunity cost can be defined as the value of next best available choice within the context of making a decision. In essence, the true cost of crime for potential criminal is the opportunity cost of time he spends in prison.

The main crucks of the above discussion can be, that when criminal commits crime it takes in to consideration the gains and cost related with criminal activity and tries to choose the best options for utility maximized outcomes [Becker (1968); Ehlrich (1973); Witt (1984) and Becsi (1999)].

Becker's theory was the first to economically explain criminal activities. There are also some Strain Theories which also explains criminality. According to Strain Theories certain stains or stressors induce an individual to commit crime. Agnew (1992) explained strain as any event or condition which is disliked by people. These events and conditions may involve the inability to achieve one' goals. In simple words, strains involve situations such as (a) lose something good (b) receive something bad (c) cannot get what they want. Committing a crime may be a way to minimize or escape from strains. For example, one may steal the money they want. Crime can be used to take revenge. Crime can also be used to overcome negative emotions e.g. an individual may start taking drugs in an effort to make himself feel better. For the above vast analysis of crimes from different angles, strain theories are the dominant theories in explaining criminality.

Merton (1938) was the pioneer of the Strain Theories devisers. He developed the Theory of Inability to Achieve Monetary Success during Great Depression, so it is not surprising that it is based on the notion of inability to achieve monetary success as during great depression unemployment and inflation were the higher ever recorded in the economic history of USA. According to Merton, everyone in USA is encouraged to work hard for achieving monetary

success. In the meantime the lower class are frequently deprived of achieving the goal through legal means. In particular, parents of the lower class children usually do not equip them with the required skills and education for getting involved in legal activities to earn money. Lower-class individuals attend inferior schools, and they lack funds to get higher education or start their own business activities. As a result, they often find it difficult to attain their monetary goals through legal activities.

This deprivation leads to much frustration that an individual may cope by involving in criminal activities including crimes which generates income, such as theft, drug dealing, and robbery.

According to Merton, the most conducive factor because of which an individual commits crime is when for his miserable condition some other is to blame. Agnew (1992) was also the proponent of the same concept.

Merton theory is very much related to the case of Pakistan as in our country people, most of the times blame the government for unemployment as they argue that government is corrupt and it facilitates only the rich and the poor are left miserable. Pakistan is a young nation. Our youth bulge is 70% but still the current unemployment rate in Pakistan is 5.9 percent. If the government is successful in devising policies which can absorb the huge youth bulge in legal sector then the crime problem of Pakistan will be solved.

The common factors responsible for economic deprivation in Pakistan are nepotism, favouritism, and corruption in the recruitment process. This causes the economic deprivation strain and mostly the same stressed individuals are involved in illegal activities to attain their monetary goals.

4.1. Data and Methodology:

4.1.1. Data:

Departure of people living in rural areas to urban centers is known as urbanization. The parameters used to determine whether an area is urbanized or not depends upon the matrix that we use. The standard practice of measuring it is on the basis of number of people living per kilometer square, in other words, population density. Many other factors that can be, and have been used across the globe, to qualify an area as urban are infrastructure, access to health and education, communication facilities and in some cases recreational places. In few rural areas population density is increasing but still could not qualify to be called urban due to the lack of many other facets that a normal urban area constitutes. A rural area is mostly agrarian-based with least congestion, whereas an urban area is congested having large number of markets that are in relatively easy access to urbanites.

Urbanization is categorized on the basis of population density, which is also used as proxy for urbanization as there is a positive and significant relationship of population density with property crime, which leads us to conclude that population density is the main factor responsible for crimes in Punjab (Jabbar and Mohsin, 2013). The categories includes Urbanizing, Urban I, and Urban II. The categorization is based on population density.

Table 4.1: Categorized districts of Punjab on the basis of population density

CATEGORY	DEFINITION 1	DISTRICTS
Urbanizing	300-600 population per km square	RY Khan, Bahawalnagar, Jhelum, Muzaffargarh, Jhang, Hafizabad, Mandi Bahaud-Din, Nankana, Lodhran, Sargodha
Urban I	600-900 population per km square	Khanewal, TTSingh, Vehari, Okara, Sahiwal, Gujrat, Sheikhupura, Narowal, Kasur, Pakpattan, Rawalpindi
Urban II	900-1200 or above population per km square	Multan, Sialkot, Gujranwala, Faisalabad, Lahore

Source: Ali, R. (2013) "Estimating Urbanization," *The Urban Gazette Reprint Series*, Urban Unit, Government of Punjab.

For the role of unemployment, district level Unemployment Rate is used. The number of crimes includes all the property crimes committed from 2007 to 2017. Property crimes include dacoity, robbery, burglary, motor vehicle theft, and ordinary theft. Crime rate is dependent variable in the model and it will be calculated as:

Crime Rate = Number of reported property crimes/ Urban Population x 100,000

Number of police stations and number of high schools are controlled variables. District level data is collected from yearly publications of Development Statistics of Punjab.

4.2. Econometric Methodology:

4.2.1. General Method of Moments:

The panel data estimation is considered as one of the effective analytical method in dealing with econometric data. Its importance among social scientists increased because of its capability for incorporating N-cross-sections in to the study; it can be countries, organizations, households and T time periods; years, quarters, months and so on. The combined panel data matrix containing time series for each cross-sectional member in the data set offers different estimation methods. Panel data can be balanced and unbalanced. The panel data is balanced when for all the variables and individuals it has equal number of observations. The data used in this analysis is also balanced. Data in this study strongly balanced.

The basic problem with time-series estimation is that sometimes we have data of few years and the problem arises with the t-ratios or F-statistic when we run the regression. There are very few annual series that extends up to 40 or 50 years. The problem can be resolved by pooling the data in to a panel of time series from different cross-sectional units. This solution give rise to the differences among the different cross-sectional or time series observations that can easily be seized by incorporating dummy variables. This capturing of systematic differences among panel observations through use of dummy variables lead us to what is known as fixed-effect model. The fixed effect model captures all the effects related to a particular individual and do not change over time. If we have country-wise panel analysis then the model will take in to consideration the geographical factors, natural endowments and many other factors which varies overtime but not over time. In some cases the model may have considered large number of dummy constants because some panels may have hundreds of individuals. The fixed effect model is an efficient tool to start with but it is mainly applied when N is large. For moderator N random effect model is used.

The contradiction between random and fixed effect model is that in random effect the constants of the estimations are not taken as fixed, instead they are taken as random parameters. The edge in incorporating REM in the study is that we have to estimate less parameters in comparison with FEM and the other advantage is that we can incorporate additional regressors easily that have same value for all observations within the group. In general, the main distinction between REM and FEM is that FEM assumes that each urban category estimates differs in its intercept while REM assumption is that each urban category estimates differs in its error term. The selection between the two models is with the help of Hausman test. But, we will not incorporate these models in to our study because earlier studies (Witt et al, 1999; Han et al 2010) have mentioned the existence of endogeneity due to spill over effect of crime.

As it is mentioned in the literature that due to congestion the chances of getting caught are low so most of criminals succeeds in escaping the law and they continue to commit crimes. In simple words by the spill over effect of crime it is meant that the tendency of people who are involved in crimes continue in it even after the circumstances that led them to turn to crime have changed. So, we can incorporate FEM or REM in the study while dealing with panel data but due to problem of endogeneity it will give biased results.

As prominent econometric technique to overcome the problem of endogeneity is Generalized Method of Moments (GMM). The very basic advantage of incorporating the GMM into the study is that the model to be estimated must not be homoscedastic and serially independent (Blundell and Bond, 1999). So, it can be concluded that GMM gives efficient estimates even in the existence of heteroscedasticity (Parera and Lee, 2013).

GMM is an estimation method in which before estimation you do not need to check the stationarity of the variables because it handles this problem automatically. If there is an endogeneity and auto-correlation problem GMM also take care of automatically and

efficiently. The other main reason for incorporating GMM analysis in to this study is to sketch the crime dynamics vividly with the inclusion of lagged crime rate as an explanatory variable.

In this study GMM is an appropriate choice because in the data that we selected the number of cross-sections N are greater than number of time periods T.

Considering the literature and by using the above estimation methods the following function is devised:

Property Crimes = f (Urbanization, Unemployment, Number of High Schools, Number of Police Stations)

In the above model pure economic, socioeconomic and deterrent variables which affects property crimes are considered. The variables are justified on the basis of spatial disparity theory, which shows that people migrate from rural to urban areas because urban areas are more developed as compared to rural areas. This theory refers to the increasing population density in the urban areas due to rural to urban migration. And as urbanization increases crime rates increases (Gumus, 2003). The strain theory give an answer to the high unemployment rate in urban areas because strain theory stresses on the fact that certain stressors exist in the society which do not allow people to achieve their goals. That goals can be in monetary terms. The variables are also justified on the basis of its extensive use in the literature. Many empirical studies have concluded that these are the important determinants of crimes. The first variable is urbanization. Unplanned urbanization can cause crime rates to increase. If we look at urbanization in Pakistan, it is unplanned (Arif, 2003). The second variable is unemployment. Employment is an opportunities available in the legal sector. Unemployment means that job opportunities in the legal sector is low, so person adopt illegal ways to earn livelihood (Ehrlich, 1973). The socioeconomic variable in the above model is education. Education can be the minimizer of crimes through the link of wages because more education leads increasing wages.

Crime-prone youth have reservation wages for legal and criminal activities. When reservation wage of criminal activities exceeds the legal work wage the crime will be committed and vice versa. Education opens up path of opportunities for an individual. The more educated the person is, the wide will be his spectrum of opportunities (Lochner, 2004). Hence, education is a way to earn from legal activities (Coomer, 2003). The deterrent variable in the model is number of police stations. The empirical results have proved that there is a deterrent effect of police strength on property crime rate as the police strength increases the process of reporting crimes is easy, reaching the crime scene is fast, people feel safe, and criminals become more risk averse as the probability of getting caught increases (Jabbar and Mohsin, 1996). And according to Becker (1967), criminals are rational people so they will avoid involvement in any illegal activity.

Thus, this study analyses the impact of urbanization and unemployment on property crime rates on the district level of Punjab province.

By considering the above discussion the following model will be estimated:

- $PCR_{Zit} = \gamma + \gamma_1 PCR_{Zit-1} + \gamma_2 Urb_{Zit} + \gamma_3 Unemp_{Zit} + \gamma_4 NOPS_{Zit} + \gamma_5 NOHS_{Zit} + \mu_{Zit}$

Where *Z* is for the categorization based on population density, *i* is for cross-sections and *t* is for time period.

4.3. Descriptive Statistics:

In table descriptive statistics for Urbanizing, Urban I and Urban II districts of Punjab province are given. In the table of urbanizing districts the maximum average value is associated with population density (6.045417). The lowest mean value is of Crime rates, which is (0.6905159). If we compare the statistics of all the three categories we can see that except the unemployment

and number of police stations statistics all have an upper trend i.e. crime rates and population densities increases as we move from urbanizing districts towards urban II districts.

Turning to the third column which provides the standard deviation of the variables it is observed that the standard deviation of the variables show mixed trends. If we look at the standard deviation of crime rate it is increasing as we move from urbanizing districts towards urban II districts but the standard deviation population density is (0.2524019) for urbanizing, (0.1401668) for urban I and (0.5922109) for urban II, which show a mixed trend. Same is the case with unemployment.

Table 4.2: Descriptive statistics

Variable	Mean	Std. Dev	Min	Max
Crime				
Urbanizing	.6905159	.309498	.14795	1.49975
Urban I	.8413029	.3934737	.2514	2.3576
Urban II	3.015715	.628053	1.148761	5.359261
Unemployment				
Urbanizing	1.857037	.2816559	1.410987	2.397895
Urban I	1.822224	.3807204	.9932518	2.772589
Urban II	1.943156	.1931647	1.648659	2.302585
Population Density				
Urbanizing	6.045417	.2524019	5.561842	6.406493
Urban I	6.557547	.1401668	6.338085	6.901168
Urban II	7.365711	.5922109	6.926925	8.632515

Number of High Schools				
Urbanizing	4.727913	.4568322	3.7612	5.631212
Urban I	4.975664	.4028032	4.127134	5.899898
Urban II	5.396881	.3836314	4.727388	6.084499
Number of Police Stations				
Urbanizing	2.700416	.3913949	1.94591	3.295837
Urban I	2.788558	.2665075	2.302585	3.433987
Urban II	3.613224	.4095134	3.258096	4.430817

Chapter 5

Results and Discussions

Punjab has very diversified districts in terms of economy and demography. Some districts are wholly dependent on agricultural sector (rural). Some are hybrid of the agricultural and industrial sector (Urbanizing and Urban I), while some are wholly dependent on industrial sector (Urban II). The districts can easily be categorized on the basis of population density as the population density of rural districts are low, and as we move towards urbanizing then urban I and urban II districts the population density increases. This increase of population density have some consequences e.g. high crime rates etc. which is the main focus of this study. To analyse the impact of population density and unemployment on crime rates, GMM is used to get the regression estimates. GMM in this study is an appropriate model because it overcomes the problems of endogeneity which do exist in our study as we will see in the regression analysis, heteroscedasticity, autocorrelation and it also handles unit root problem. FEM and REM cannot cope with the problem of endogeneity.

The discussion of the results will be a disaggregated analysis of the categories of districts on the basis of population density.

5.1. Urbanizing Districts Results and Discussion:

Before going in to discussion of the results it is better to check the appropriateness and adequacy of the model and estimation method, Arrelano-Bond AR test and Hansen tests of over identifying restrictions are estimated. The null hypothesis of Arrelano-Bond AR test suggests that the instruments are not correlated with the error term, while the null hypothesis of Hansen test suggests that instruments as whole are exogenous. The probability value (p-value) of the Hansen test is high enough (0.908) because of which the null hypothesis of the test, that the instruments are exogenous cannot be rejected.

The p-value of the Arrelano-Bond AR (2) test is also high (0.134), so we can infer that the null hypothesis about the validity of instruments cannot be rejected i.e. the instruments are valid. The estimated coefficient of lagged crime rates (PCR_{it-1}) has negative sign and is significant as well. It means that if property crimes in the previous year are increased by 1%, property crimes in the current year are decreased by 35%. This result negates (Witt et al, 1999; Han et al 2010) studies. Those studies found positive and significant lagged crime rates coefficient. The reason behind the negative and significance of the lagged crime rates coefficient is that the urbanizing districts are not yet fully urbanized i.e. their dynamics are more like rural areas and in such urbanizing districts people experience lower risk of crime as compared to urban areas. The risk of victimization is quite high for urbanites in comparison with rural residents (Marshall and Johnson, 2005). It can also be argued that in rural areas the anonymity of the criminal decreases because people know each other well as the families are intact due to low population density, so the criminal cannot hide (Glaeser and Sacerdote, 1996). This is also one of the result of this study as it is clear from the table that population density does not have significant impact on property crimes.

The main factors responsible for high crime rates is unemployment. The empirical results show that as unemployment increases by 1%, property crimes in urbanizing districts increases by 34% as unemployment rate has positive sign and is significant at 10% significance level. The study is in line with [(Edmark, 2005; Chamlin and Cochran, 2000; Levitt, 2004)]. This association can be explained if we look at it through class difference lenses as lower income individual's indulgence in illegal activities is high in comparison with other income groups. It reveals that crime is only conducted by those who are less well-off in the society. People with low income, the unemployed and those less formal education, come from broken homes and they are far more vulnerable to commit crimes (Braithwaite, 1979). The same problems are faced by the people of the urbanizing districts of Punjab [(Gillani et al (2009); Jalil et al (2010)].

Table 5.1: Impact of urbanization, unemployment and lag of crime rate on the current crime level in urbanizing districts of Punjab

VARIABLES	GMM
Lagged Property Crime Rate	-0.352** (0.166)
Log Unemployment Rate	0.348* (0.199)
Log Number of High Schools	-0.181 (0.123)
Log Number of Police Stations	1.245*** (0.176)
Log Population Density	0.108 (0.269)
Constant	-2.842* (1.474)
Observations	90
R-squared	0.084
Number of cross-sections	10
Arrelano-Bond test for AR(2) P-value	0.134
Hansen test of overid: restrictions	0.908

Robust standard errors in parenthesis, ***, **, * represents 1%, 5% and 10% respectively

5.2. Urban I Districts Results and Discussions:

The appropriateness of the model and estimation can be checked with the help of Arrelano-Bond AR test and Hansen test. The p-values of Arrelano-Bond AR test and Hansen over identification test are high showing that instruments are valid and exogenous as a group. The p-value of Arrelano-Bond AR test is (0.131) and that of Hansen test its (0.984).

Unlike the urbanizing districts the lagged crime rate (PCR_{it-1}) has positive and significant impact on the current crime rates(PCR_{it}). The estimated coefficient is significant at 10%. The reason behind the positive sign is that there is a potential concern that higher crime rates in large city districts are due to higher tendency to report a crime, which is very unlikely in case of Pakistan (Anjum and Siddiqui, 2009). Unfortunately, in our country data of all the people are not in hands of the concerned authorities, so it is difficult to identify the criminals, so the probability that criminal can escape easily. This means that the opportunity costs of committing a crime is low, which is the motivation behind involvement in criminal activities (Jalil et al, 2010). It is also proved by the current study as population density has positive and significant impact property crime rates. The results shows that, as population density is increased by 1% property crime rate increases by 67%. The routine theory of crime (Cohen and Felson, 1979) asserts that for a crime to occur, the necessary conditions involve a motivated offender, a suitable target and absence of a capable guardian. As (Glaeser and Sacerdote, 1996) concluded in their studies that the spectrum of targets widens with increasing population density. So, it can be concluded that due to high population density in these districts the property crimes are high.

Table 5.2: Impact of population density, unemployment and lagged crime rates on current crime rates in Urban I districts of Punjab

VARIABLES	GMM
Lagged Property Crime Rate	0.236* (0.138)
Log Unemployment Rate	0.131 (0.202)
Log Number of High Schools	-0.136 (0.266)
Log Number of Police Stations	0.732** (0.349)
Log Population Density	0.671** (0.328)
Constant	-5.348*** (1.786)
Observations	99
R-squared	0.185
Number of cross-sections	11
Arrelano-Bond test for AR(2) P-value	0.131
Hansen test of overid: restrictions	0.984

Robust standard errors in parenthesis, ***, **, * represents 1%, 5% and 10% respectively

One can argue that for the high crime rates, unemployment could be the reason as [(Gillani, 2009; Jalil, 2010)] have found positive relationship between unemployment and crime rates in case of Pakistan, but our results negates this argument as it do have positive but insignificant impact on property crimes in urban I districts. Our results also negates Jabbar and Mohsin, (2013) study as they have found negative U-C relationship for property crimes. The reason for the insignificant U-C relationship is that these districts are industrialized and there are plenty job opportunities for the immigrants in to these districts. This argument

is supported by the study of (Alcorta, 2017). Hence, if legal opportunities are available then the tendency to indulge in illegal activities decreases (Ehlrich, 1973).

5.3. Urban II Districts Results and Discussions:

Arrelano-Bond AR test and Hansen tests used for validity of over identification restrictions and estimation techniques values are (0.384) and (1.000) respectively, which means the model is appropriate.

Table 5.3: Impact of population density, unemployment and lagged crime rates on current crimes in Urban II districts of Punjab

VARIABLES	GMM
Lagged Property Crime Rate	-0.414*** (0.0792)
Log Unemployment Rate	0.389 (0.539)
Log Number of High Schools	-0.200 (0.445)
Log Number of Police Stations	6.549*** (1.375)
Log Population Density	1.494** (0.637)
Constant	-30.03*** (3.178)
Observations	45
R-squared	0.243
Number of cross-sections	5
Arrelano-Bond test for AR(2) P-value	0.384
Hansen test of overid restrictions	1.000

Robust standard errors in parenthesis, ***, **, * represents 1%, 5% and 10% respectively

The coefficient of the lagged crime rates is significant at 1% level having negative sign. The basic reason for the negative sign can be given as in these large city districts with population densities very high i.e. 900-1200/ km^2 or above, so such densely populated area provides natural surveillance that has the effect of inhibiting violent as well property crimes as the eye witness are more and the crime is very likely to be reported to police very quickly (Harries, 2006).

Another reason for low crime rates in the current year is that these are the well-developed districts of Pakistan and the police strength is high enough to control property crimes. Jabbar and Mohsin, (2013) paper support this result as police strength has strong deterrence effect on all categories of crimes in the Punjab province. The results are also justifiable if we consider intuition and culture of the discussed province. The studies of (William et al, 1994; Becsi, 1999; Buonnano, 2008) also supports our conclusions.

This study is parallel with the literature as the main reason for high crimes in these districts is high population density i.e. congestion. High population density is both blessing and a curse for these districts because when the area is congested then eye witness are more and they will report the crime but at the same time the spectrum of target widens for the criminal. In the current study it plays both roles as it is indicated by the coefficients of lagged property crime rate and population density. The population density coefficient has positive and significant impact on crime rates. Its significance level is 5%. It is supported by the studies of (Gumus, 2003; Glaeser and Sacerdote, 1999). However, if we look at the unemployment coefficient then it can be concluded that it has positive but insignificant relationship with property crimes urban II districts. [(Ehlrich, (1973); Fleisher, (1966); Ricardo et al, (1997)] reported positive but significant U-C relationship. Their studies are conducted in other countries so significance of the results may vary. At national level Gillani et al (2009) and Jalil et al (2010) concluded a

positive U-C relationship. However, this study negates the results of Jabbar and Mohsin, (2013) paper as they have found negative U-C relationship for Punjab province.

The reason, which is already provided in case of urban I districts, for the insignificant U-C relationship is that these districts are industrialized and there are plenty job opportunities for the immigrants in to these districts. This argument is supported by the study of (Alcorta, 2017). Hence, if legal opportunities are available then the tendency to indulge in illegal activities decreases (Ehlrich, 1973).

Number of Police Stations: The common result among all the three categories is the number of police stations and its positive relationship with property crimes. [(Becsi (1999); Allison (1972); Gumus (2004)] justified this relationship by the fact that government announces new vacancies in police department when crime rates are increasing in the society, due to which there exist positive relationship between the dependent and independent variables. The result can be justified in case of Punjab by the fact that Punjab province is not yet able to reach the international standards of number of police employees for detection and prevention of crimes. The international standard is one policeman for 250 urbanites while in Punjab its one policemen for 550 urbanites (Annual Administration Report, DIG of Police Punjab, Lahore).

Chapter 6

Conclusion and Policy Recommendations

6.1. Conclusion:

The objective of this study was to find out empirically the impact of urbanization, unemployment, and lagged property crime rate on current property crimes in different districts of Punjab province. The districts are categorized on the basis of population density in to Urbanizing, Urban I, and Urban II districts. The methodology used for estimating the model is GMM (Generalized Method of Moments). The estimated results show that for urbanizing districts of the province unemployment the main factors responsible for property crimes while the impact of population density is not significant. The lagged property crimes in these districts has negative impact on current property crimes. The justifiable reasons behind these results are that families are intact in these districts because it is still urbanizing i.e. not yet fully urbanized because its dynamics are more or less like rural areas so, disguised unemployment is contributing to crime rates.

In Urban I and Urban II districts the results differ as population density and lagged property crime rate has greater impact on current property crimes, but under this categorization the results of lagged property crimes varies as well, as in Urban I it has positive relationship while in Urban II it has negative relationship with the lag. The impact of unemployment is insignificant in both the categories. The factors involved for arriving at such results for Urban I are congestion, negative relationship of incarceration rate with property crimes, anonymity of the criminals, while for Urban II the main factor is high population density which is both a curse and a blessing. Curse in the sense that spectrum of targets widens but blessing in the sense the natural surveillance exists and the possibility of crime to be reported to the concerned authorities increases.

6.2. Policy Recommendations:

The root cause of high property crime rates is high population densities in Urban I and Urban II districts and unemployment in urbanizing districts. The urbanizing districts are not fully urbanized and as identified by the study that unemployment is the main cause of crime in those districts. So, government need to create jobs in those districts to control the property crimes. In short, the focus should be the rural sector development.

Secondly, in Urban I and Urban II districts high population densities contributes to high property crime rates, so government need to devise policies of planned urbanization and of zoning laws, so that the districts are able to absorb the high population densities in an efficient and productive way.

Thirdly, in order to meet the international standards of police employees for crime detection and prevention it is necessary to increase recruitment in the police force so that we could achieve or be close to the international standard of one policeman for 250 citizens.

Finally, in Urban I districts previous property crimes spill over to the current property crimes, so government need to increase the deployment of police force in to these districts and focus more on hot spot policing so that the arrest process is fasten and property crime rates are controlled.

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Appendix

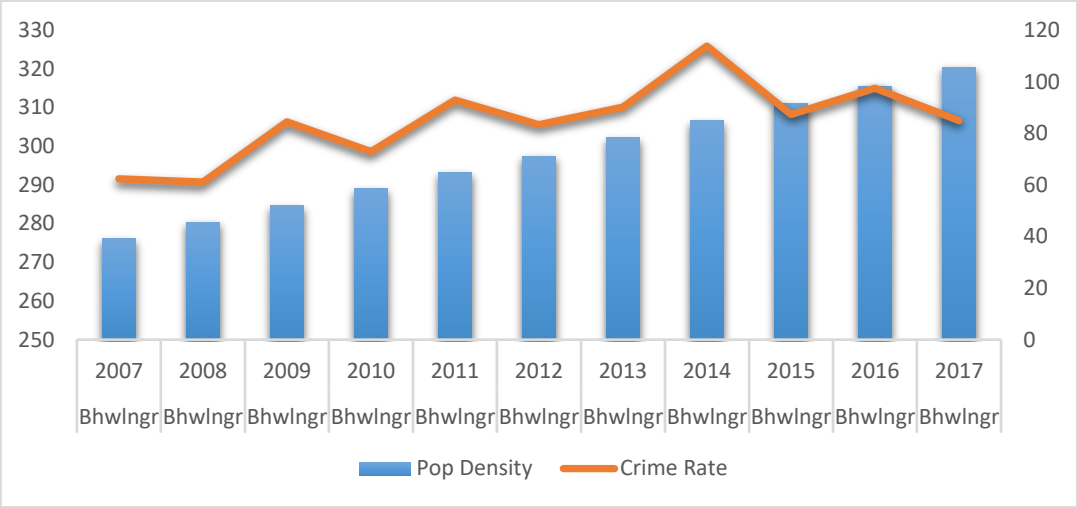

Figure 3.1 Bahawalnagar Urbanization and Property Crime Rate

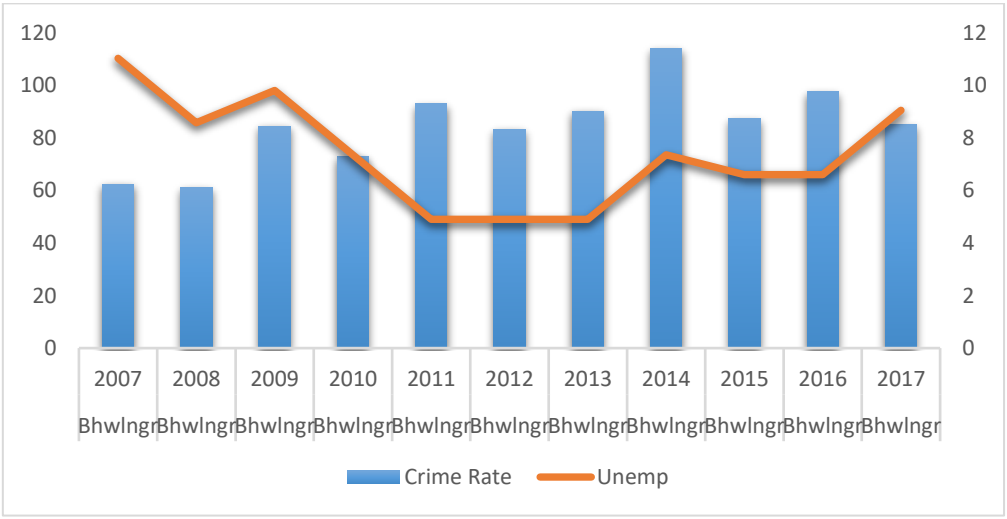

Figure 3.2 Bahawalnagar Unemployment rate and Property Crime Rate

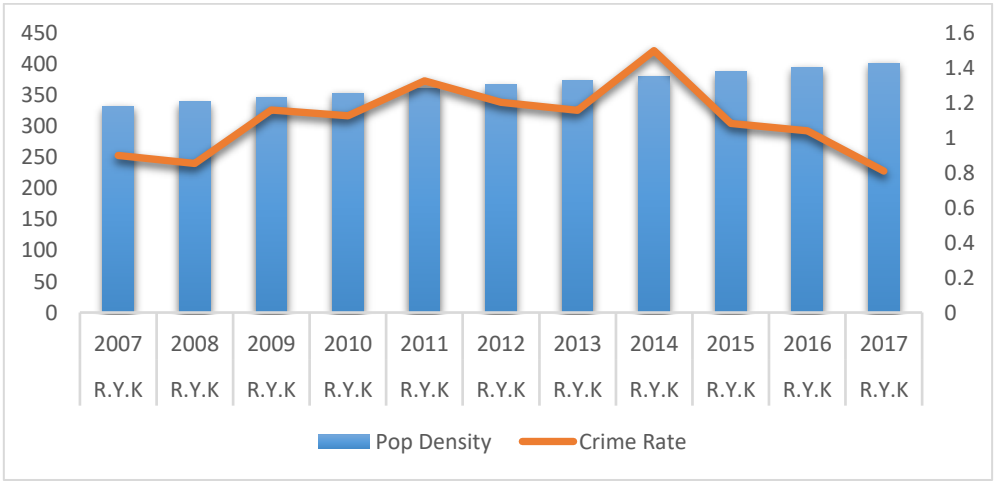

Figure 3.3 Rahim Yar Khan Urbanization and Property Crime Rate

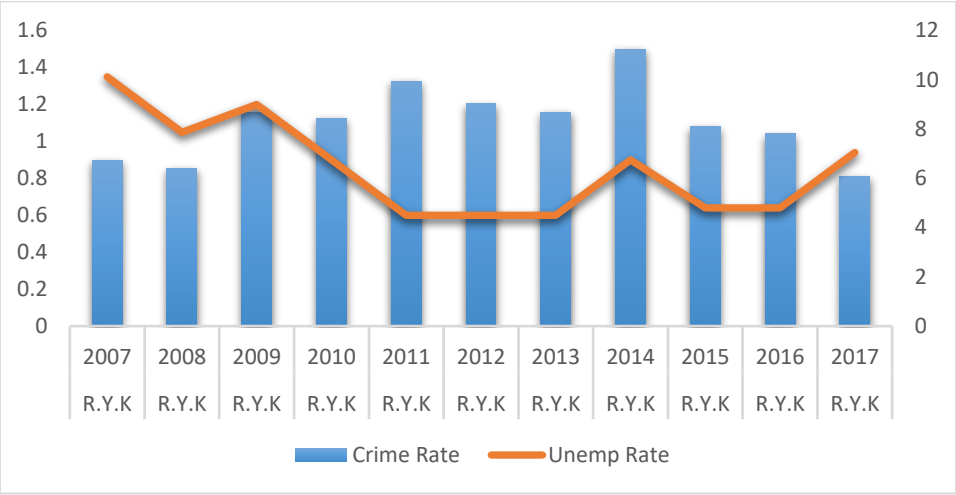

Figure 3.4 Rahim Yar Khan Unemployment rate and Property Crime Rate

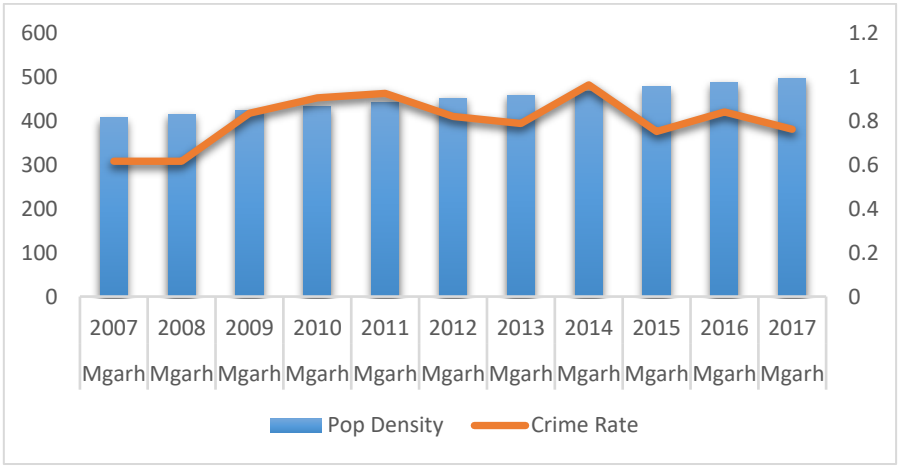

Figure 3.5 Muzaffargarh Urbanization and Property Crime Rate

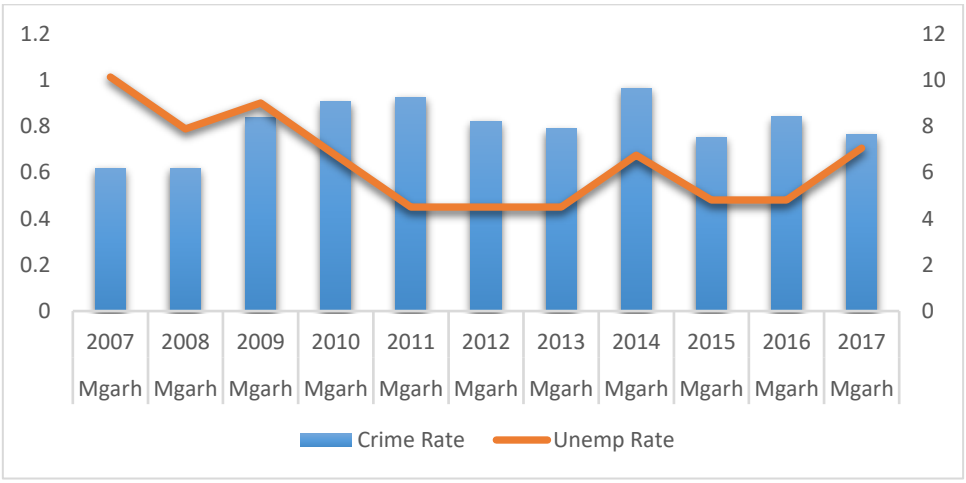

Figure 3.6 Muzaffargarh Unemployment rate and Property Crime Rate

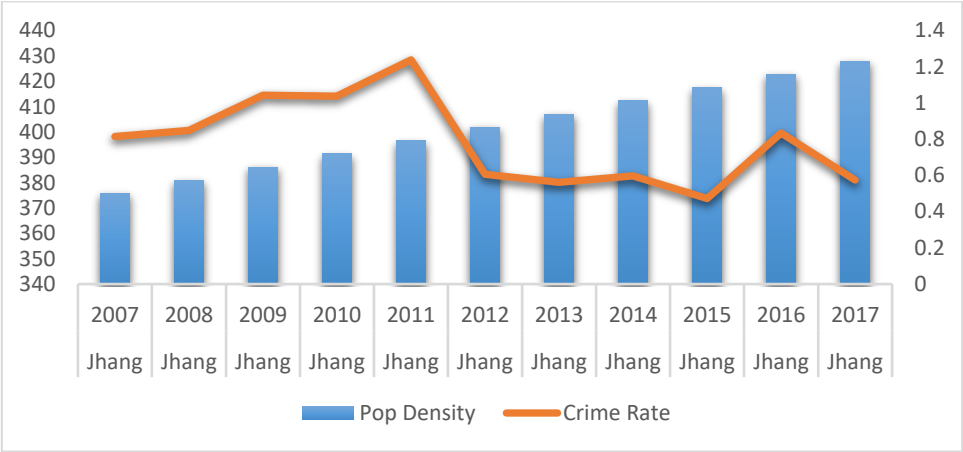

Figure 3.7 Jhang Urbanization and Property Crime Rate

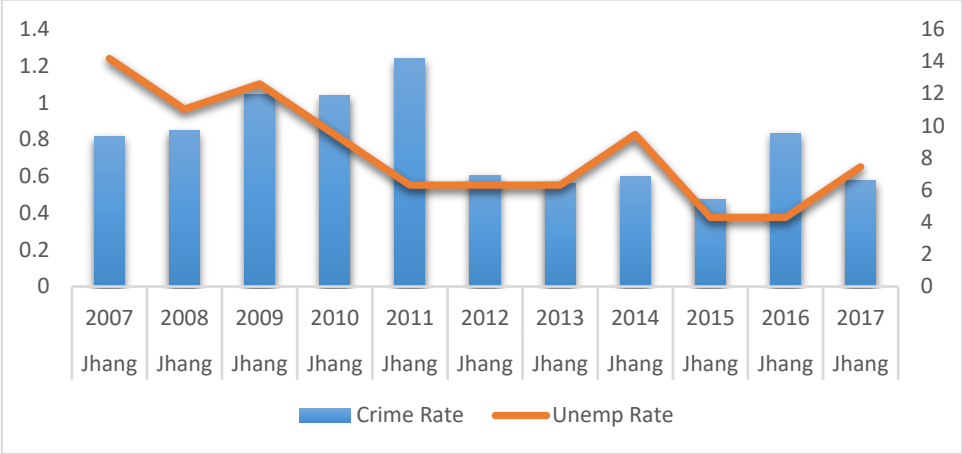

Figure 3.8 Jhang Unemployment rate and Property Crime Rate

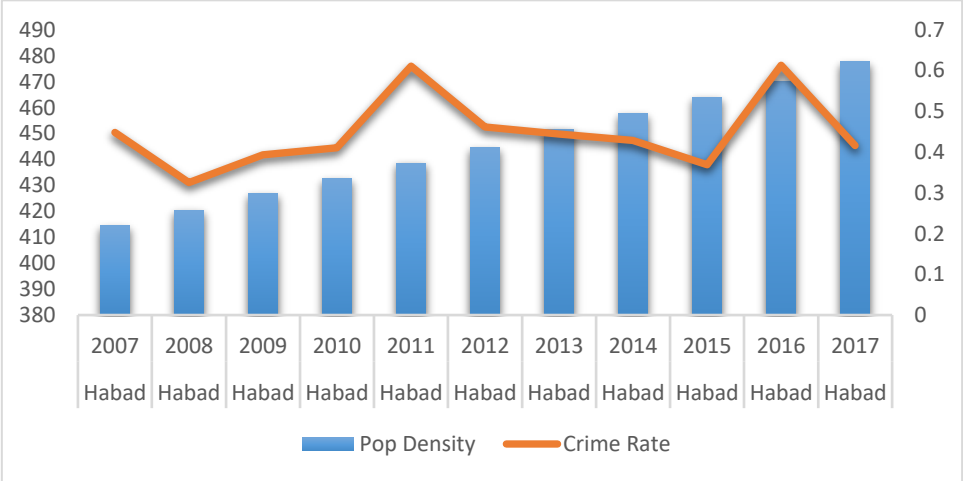

Figure 3.9 Hafizabad Urbanization and Property Crime Rate

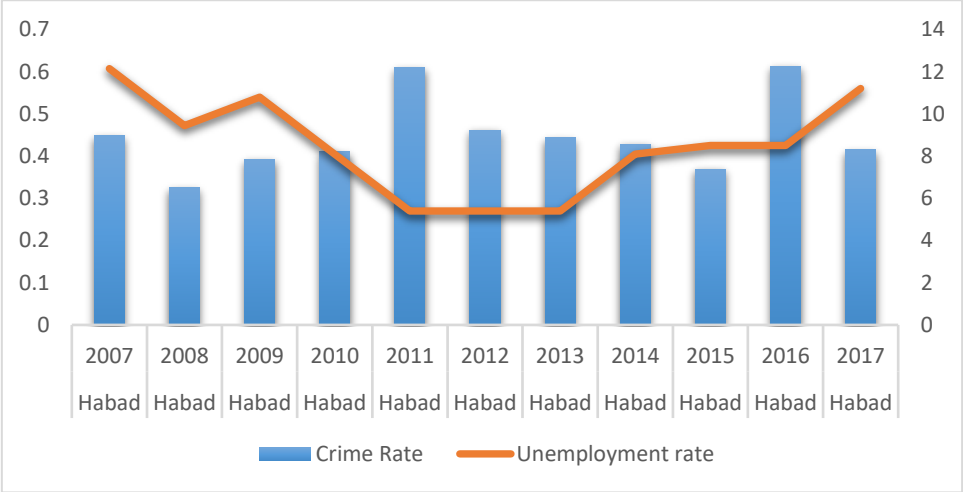

Figure 3.10 Hafizabad Unemployment rate and Property Crime Rat

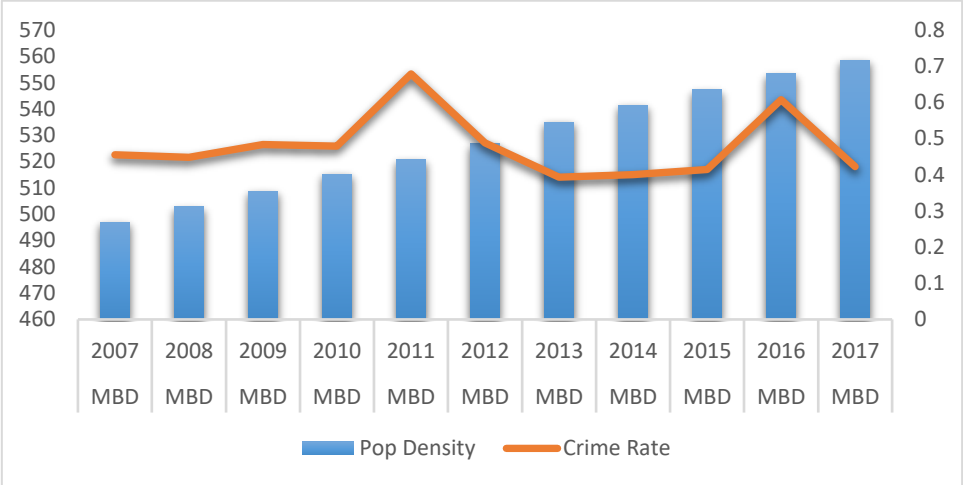

Figure 3.11 Mandi Bahaudin Urbanization and Property Crime Rate

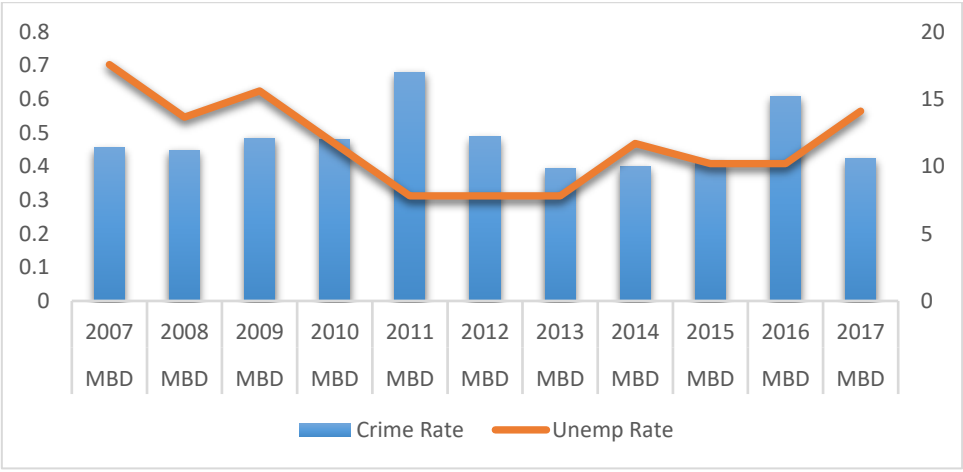

Figure 3.12 Mandi Bahaudin Unemployment rate and Property Crime Rate

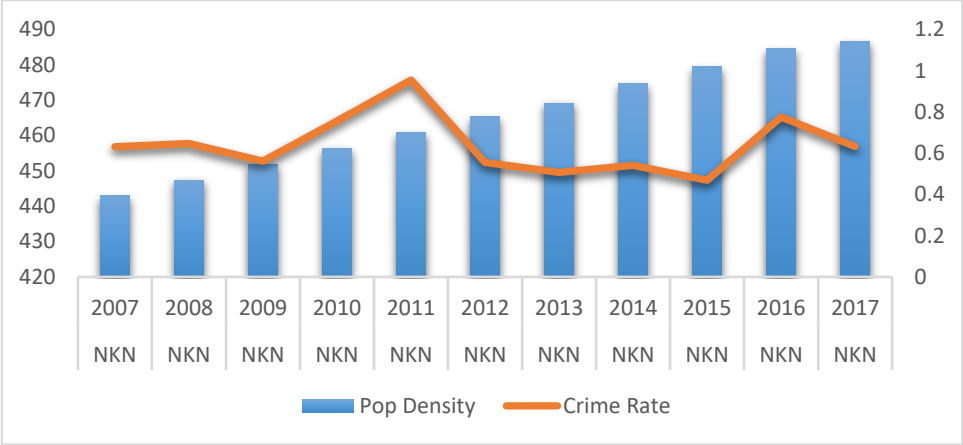

Figure 3.13 Nankana Urbanization and Property Crime Rate

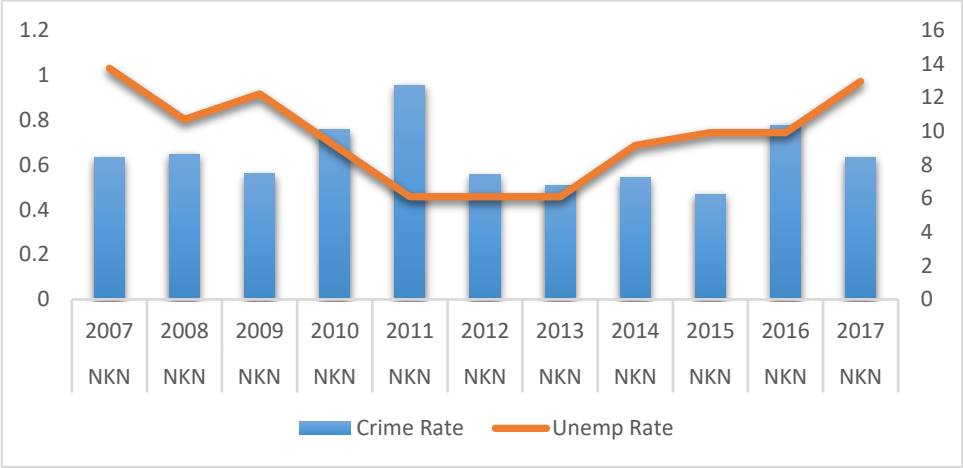

Figure 3.14 Nankana Unemployment rate and Property Crime Rate

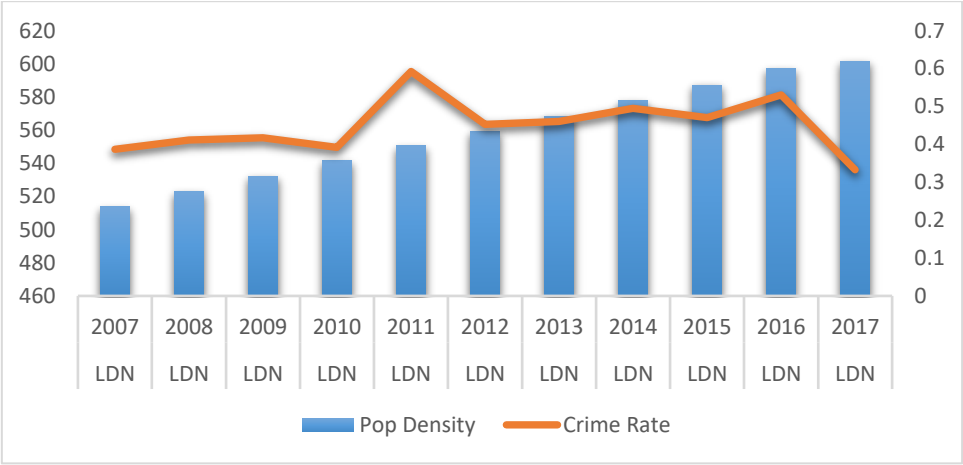

Figure 3.15 Lodrah Urbanization and Property Crime Rate

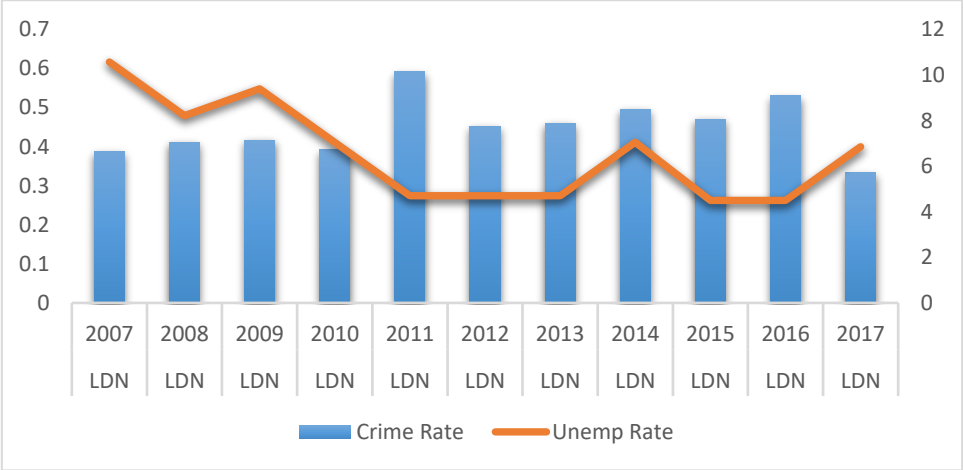

Figure 3.16 Lodrah Unemployment rate and Property Crime Rate

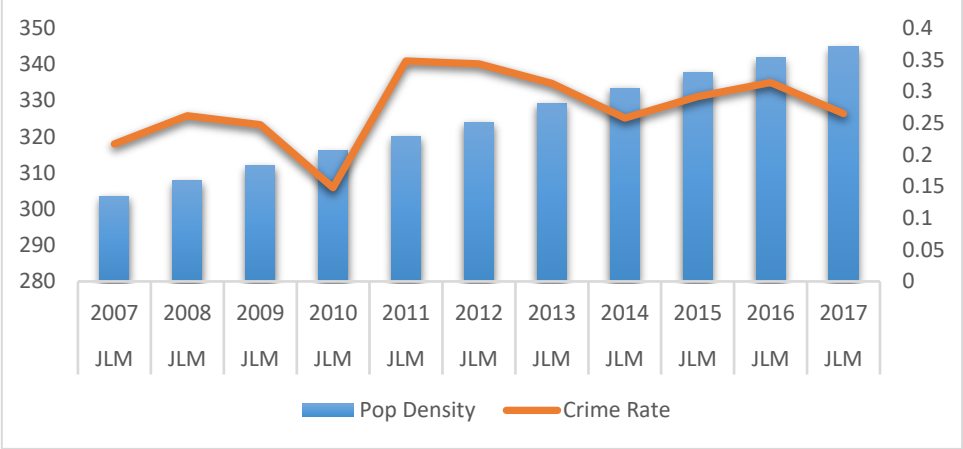

Figure 3.17 Jehlum Urbanization and Property Crime Rate

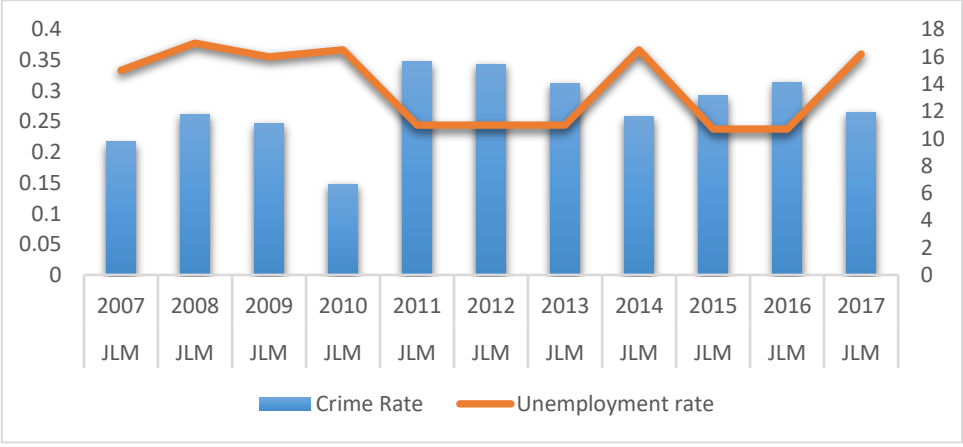

Figure 3.18 Jehlum Unemployment rate and Property Crime Rate

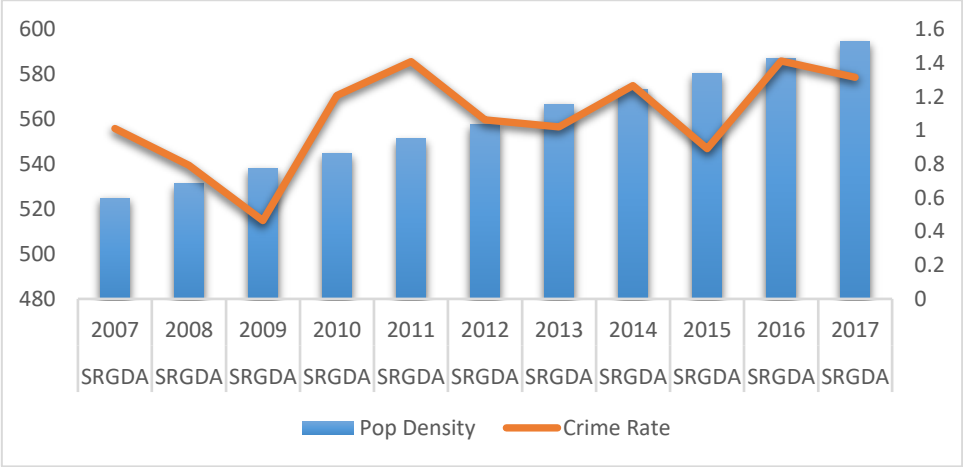

Figure 3.19 Sargodha Urbanization and Property Crime Rate

Figure 3.20 Sargodha Unemployment rate and Property Crime Rate

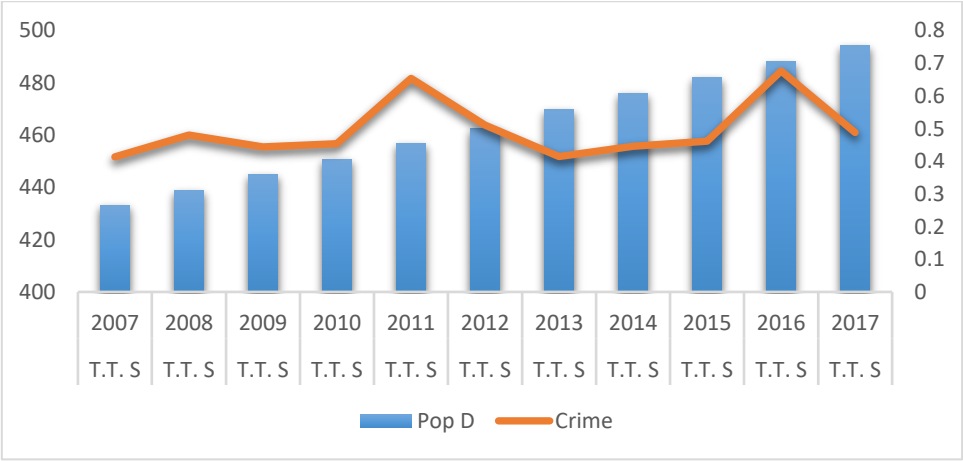

Figure 3.21 Toba Tek Singh Urbanization and Property Crime Rate

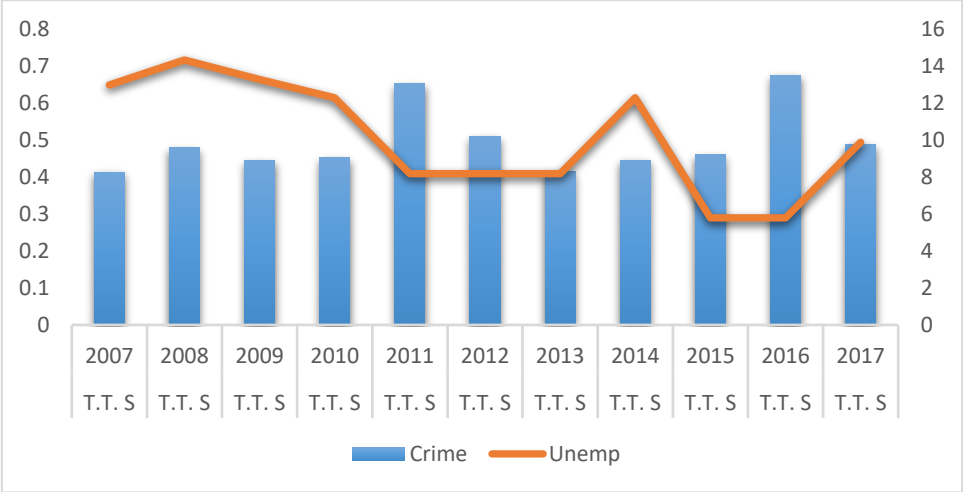

Figure 3.22 Toba Tek Singh Unemployment rate and Property Crime Rate

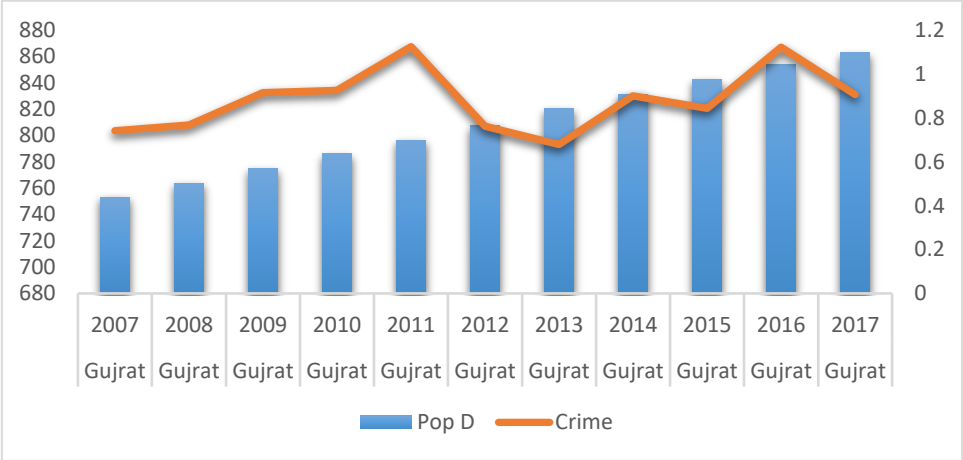

Figure 3.23 Gujrat Urbanization and Property Crime Rate

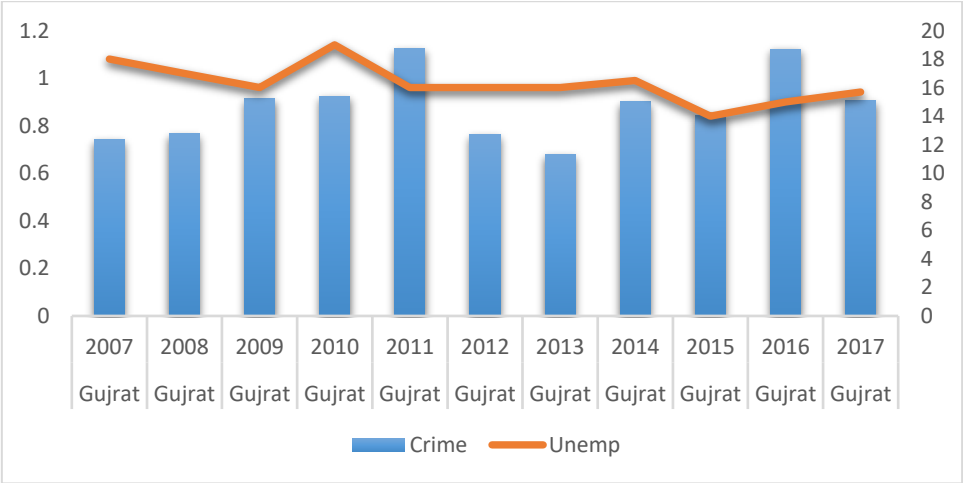

Figure 3.24 Gujrat Unemployment rate and Property Crime Rate

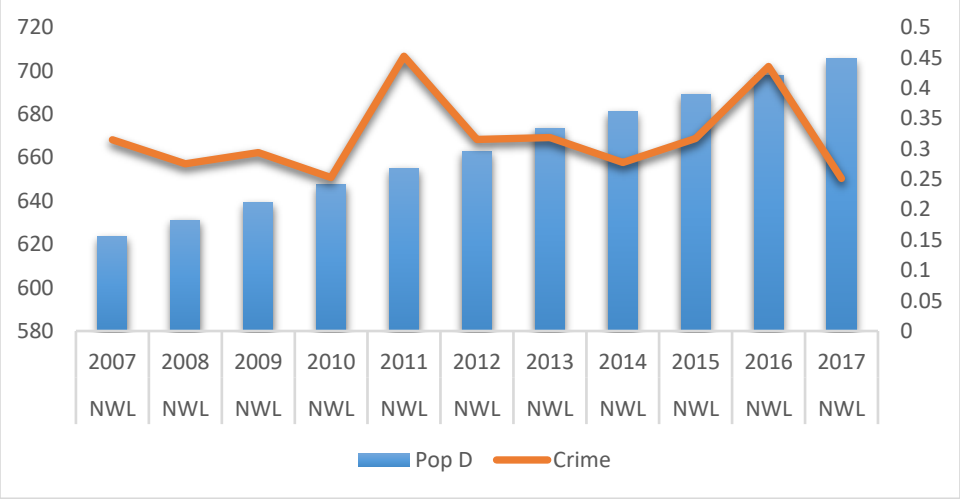

Figure 3.25 Narowal Urbanization and Property Crime Rate

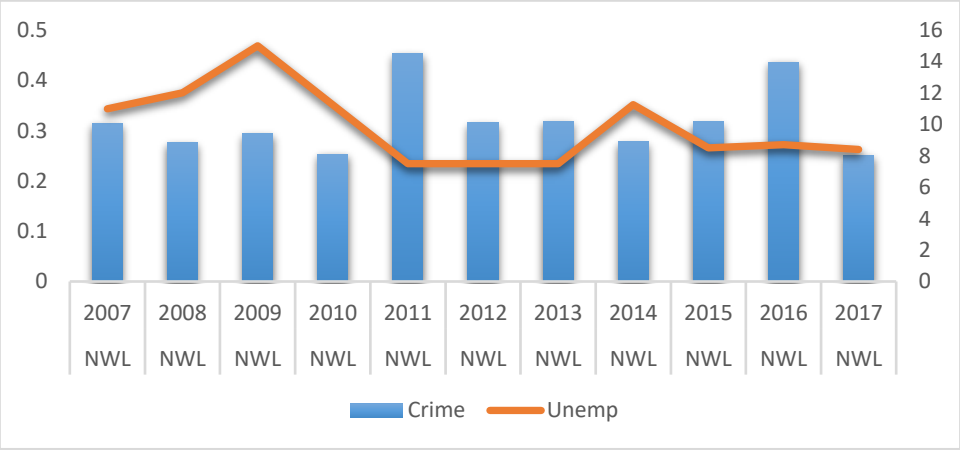

Figure 3.26 Narowal Unemployment rate and Property Crime Rate

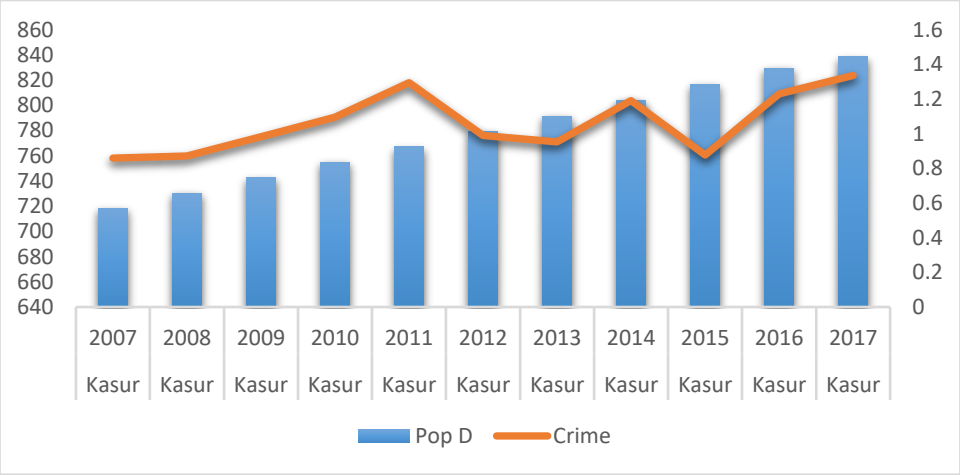

Figure 3.27 Kasur Urbanization and Property Crime Rate

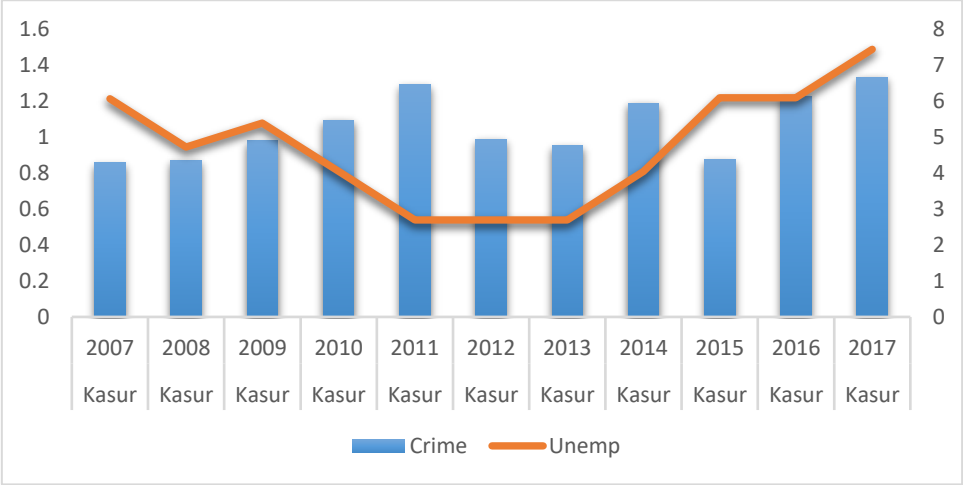

Figure 3.28 Kasur Unemployment rate and Property Crime Rate

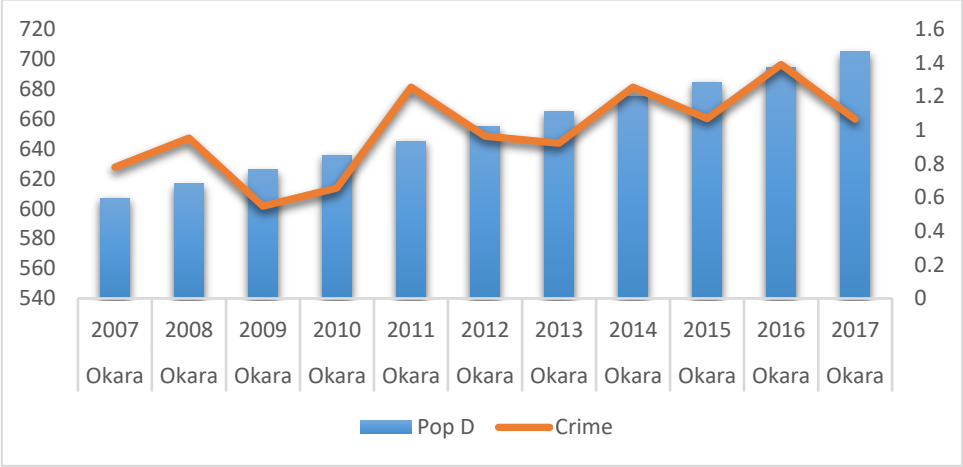

Figure 3.29 Okara Urbanization and Property Crime Rate

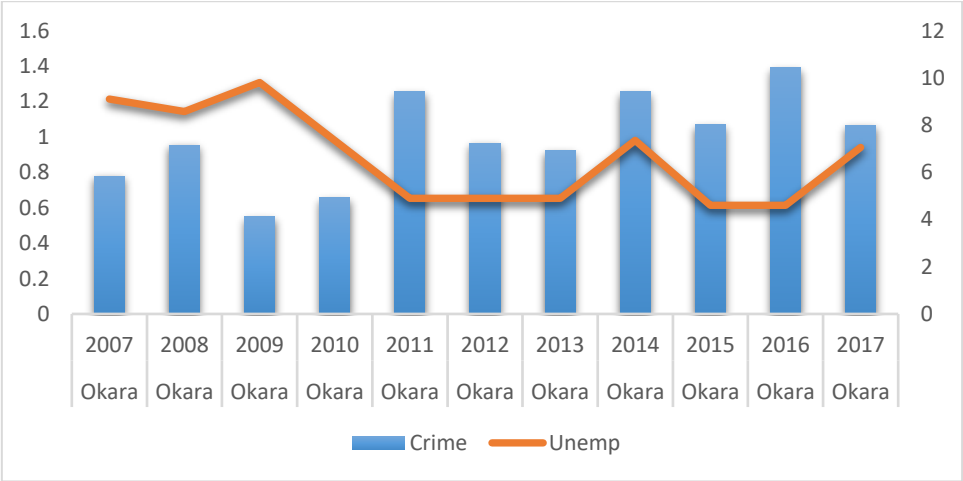

Figure 3.30 Okara Unemployment rate and Property Crime Rate

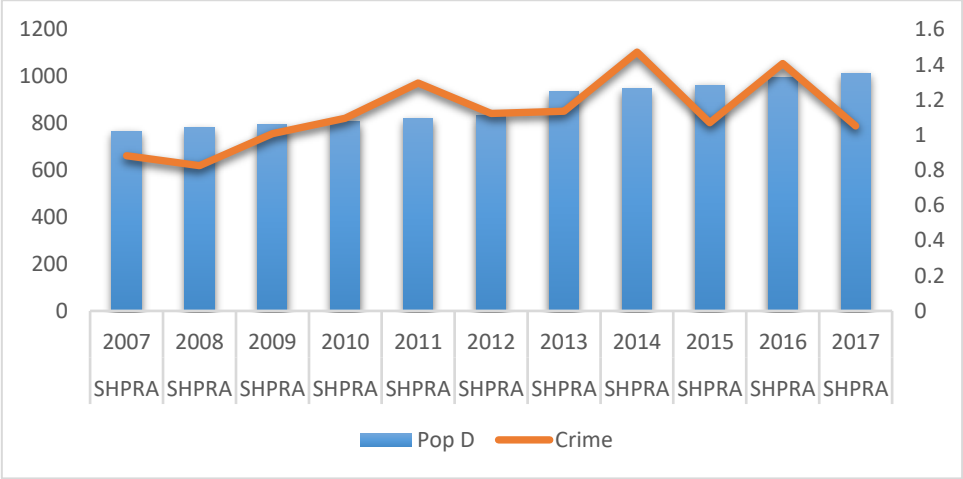

Figure 3.31 Sheikupura Urbanization and Property Crime Rate

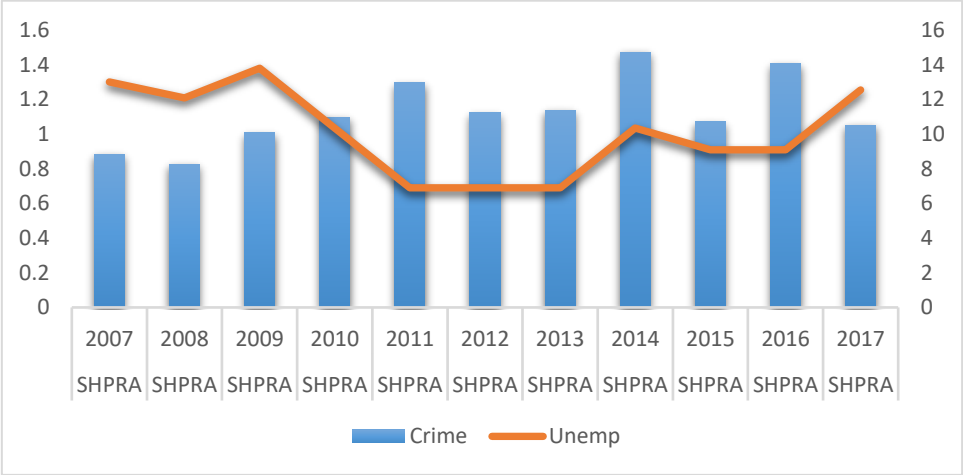

Figure 3.32 Sheikhupura Unemployment rate and Property Crime Rate

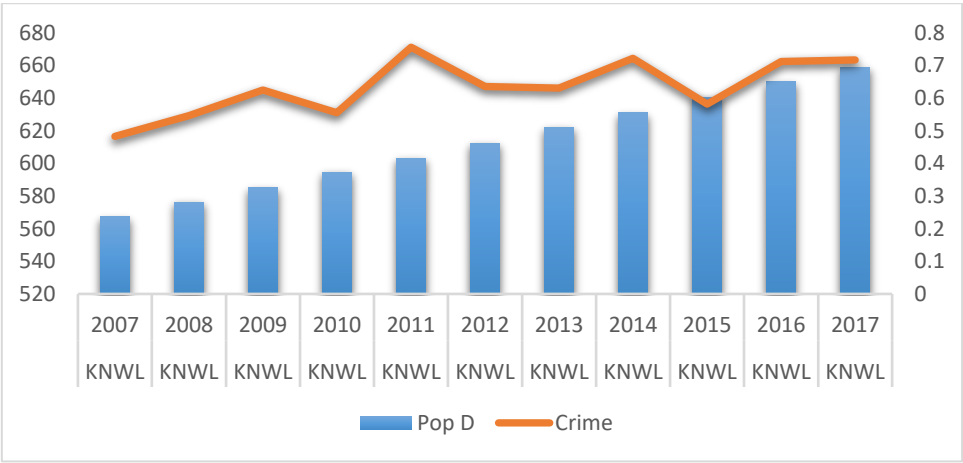

Figure 3.33 Khanewal Urbanization and Property Crime Rate

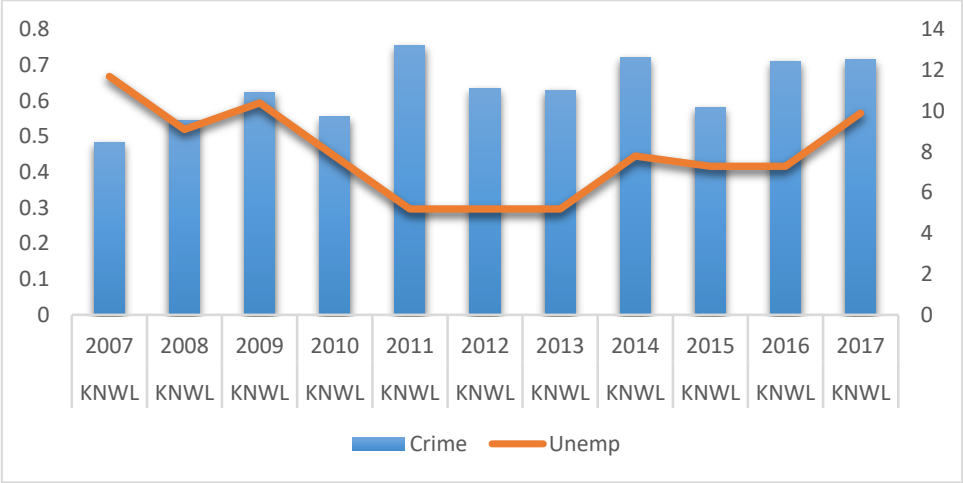

Figure 3.34 Khanewal Unemployment rate and Property Crime Rate

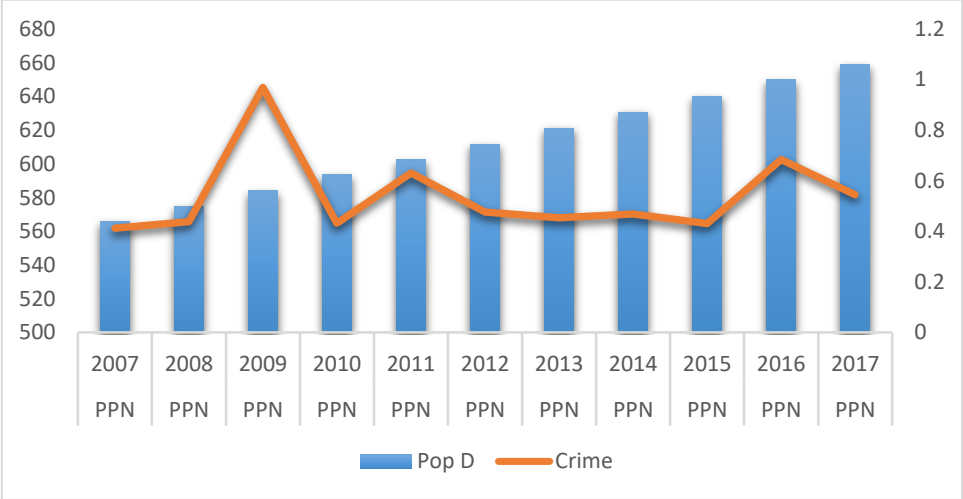

Figure 3.35 Pakpattan Urbanization and Property Crime Rate

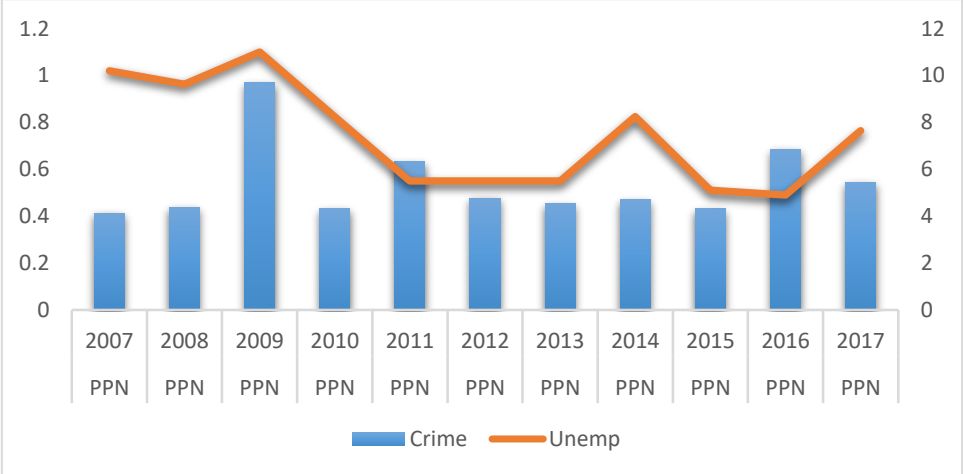

Figure 3.36 Pakpattan Unemployment rate and Property Crime Rate

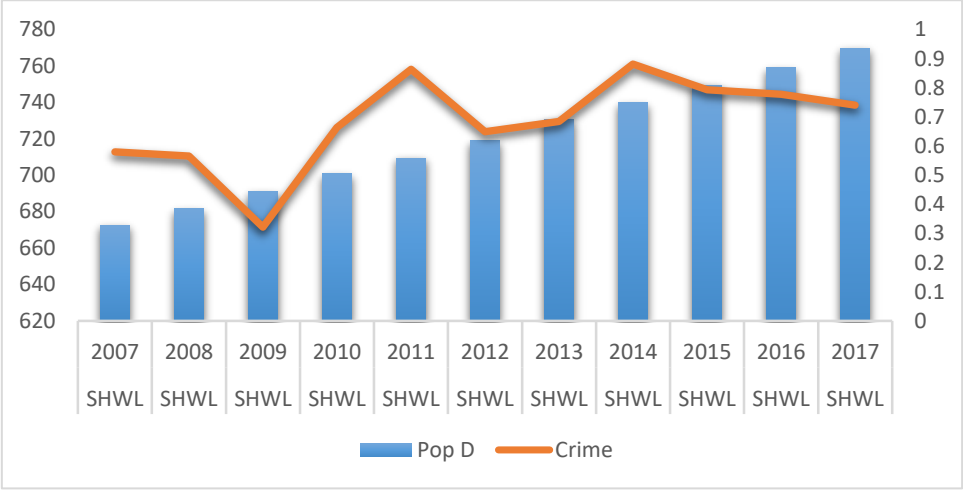

Figure 3.37 Sahiwal Urbanization and Property Crime Rate

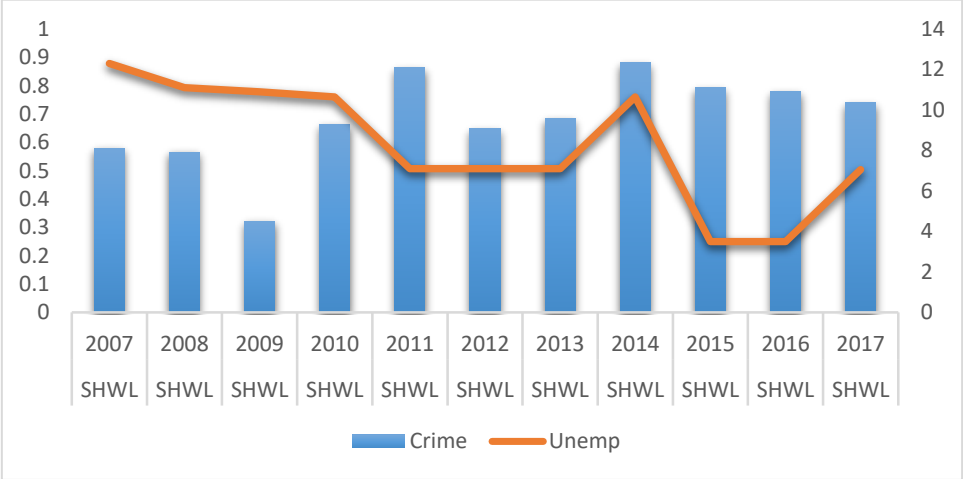

Figure 3.38 Sahiwal Unemployment rate and Property Crime Rate

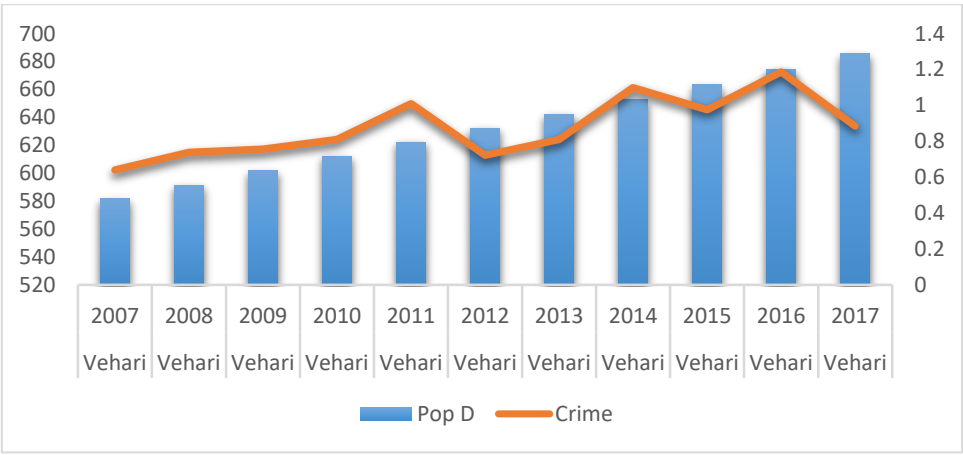

Figure 3.39 Vehari Urbanization and Property Crime Rate

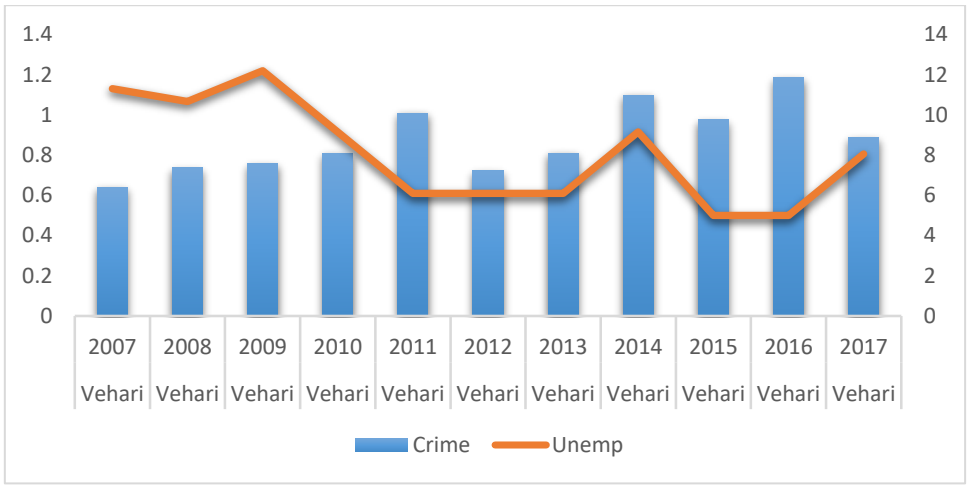

Figure 3.40 Vehari Unemployment rate and Property Crime Rate

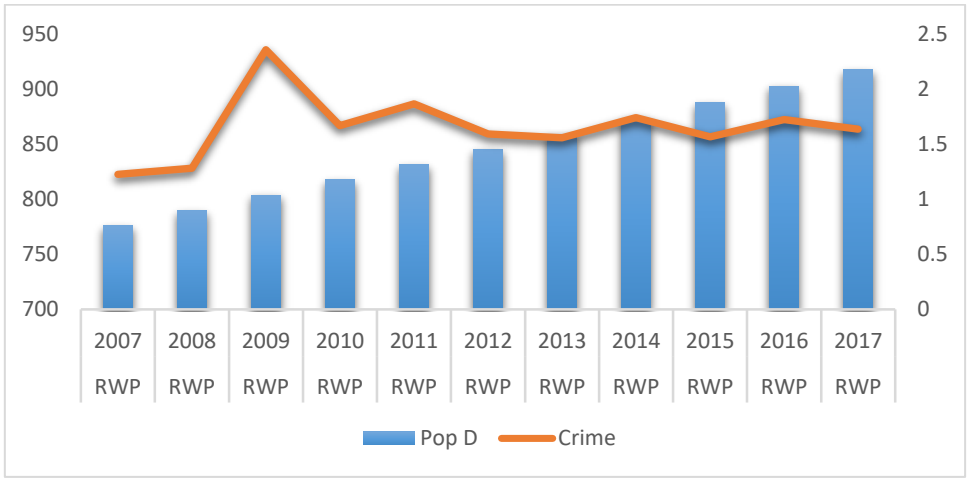

Figure 3.41 Rawalpindi Urbanization and Property Crime Rate

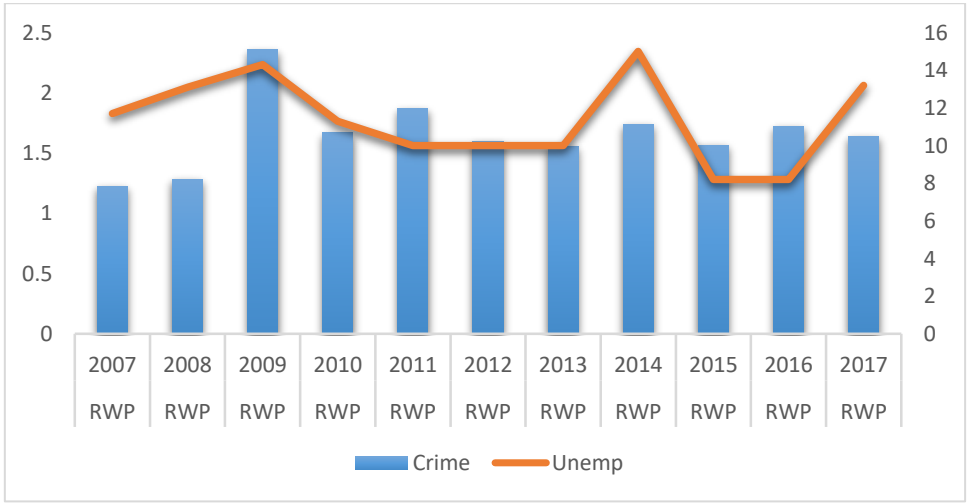

Figure 3.42 Rawalpindi Unemployment rate and Property Crime Rate

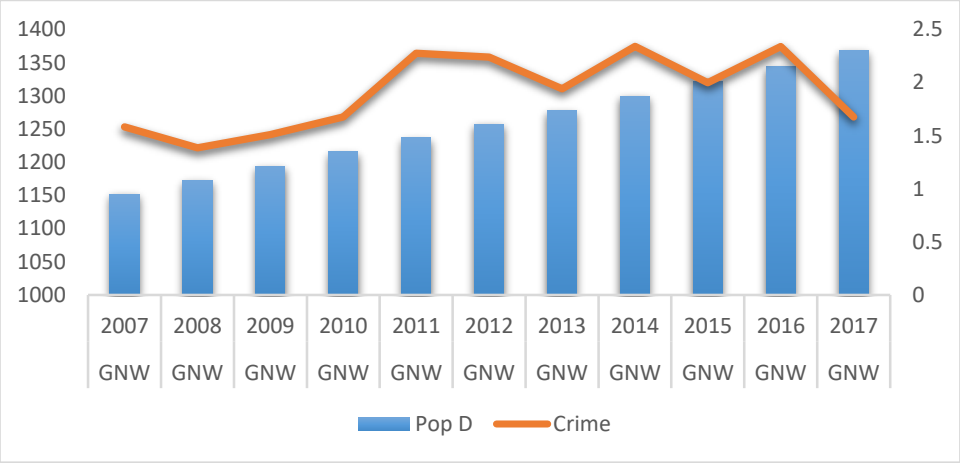

Figure 3.43 Gujranwala Urbanization and Property Crime Rate

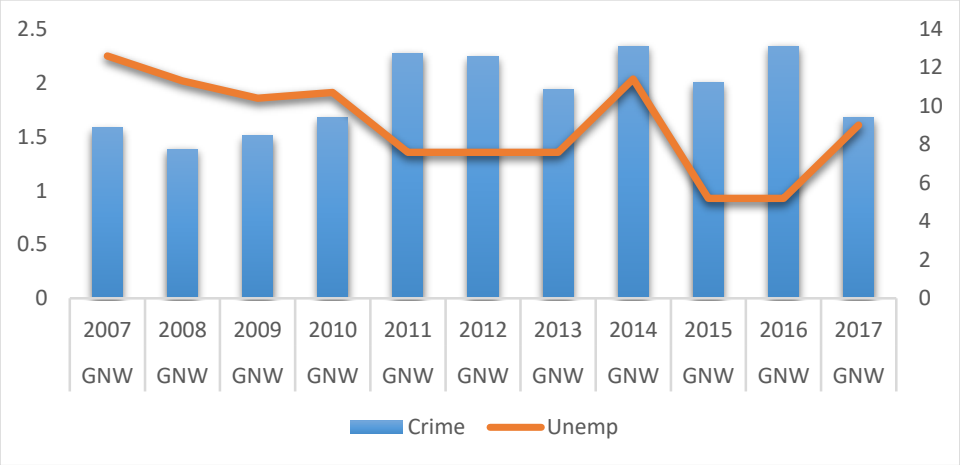

Figure 3.44 Gujranwala Unemployment rate and Property Crime Rate

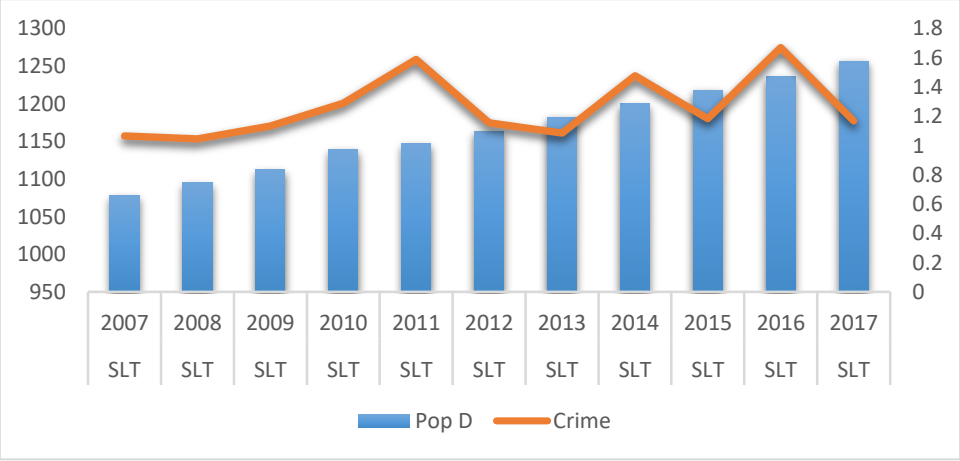

Figure 3.45 Sialkot Urbanization and Property Crime Rate

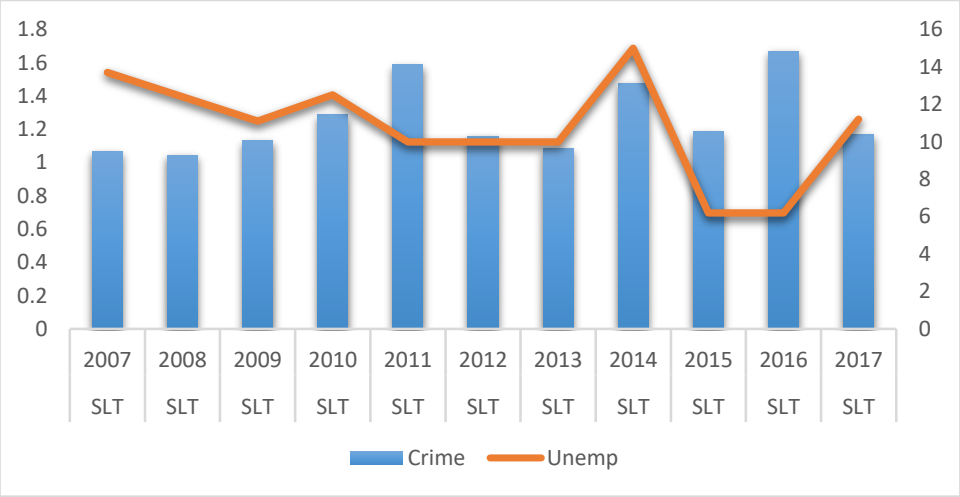

Figure 3.46 Sialkot Unemployment rate and Property Crime Rate

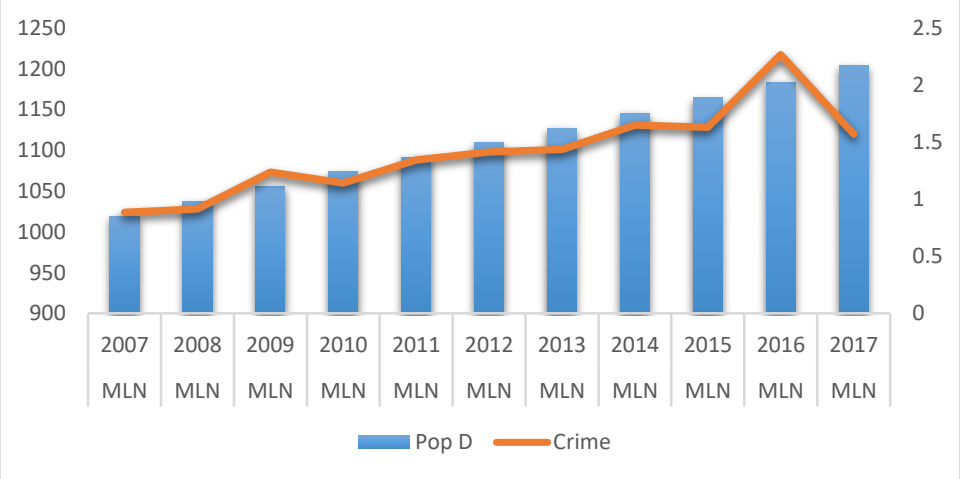

Figure 3.47 Multan Urbanization and Property Crime Rate

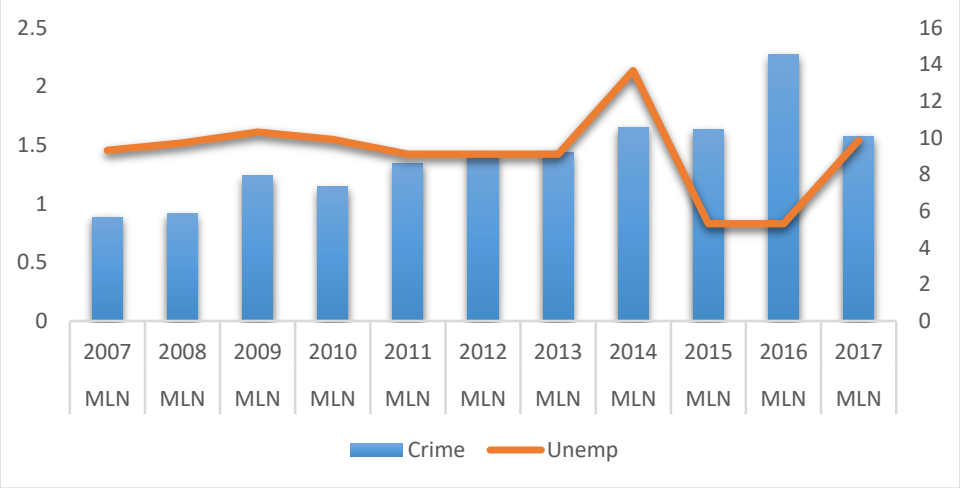

Figure 3.48 Multan Unemployment rate and Property Crime Rate

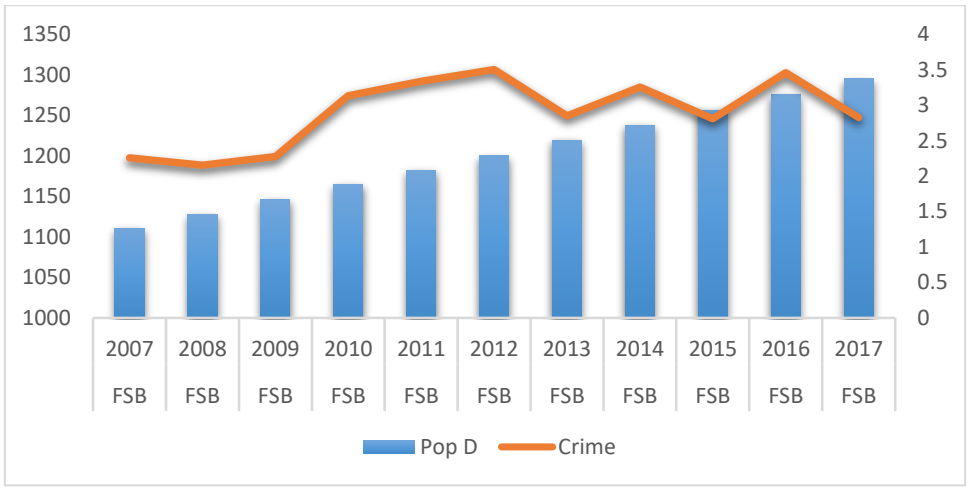

Figure 3.49 Faisalabad Urbanization and Property Crime Rate

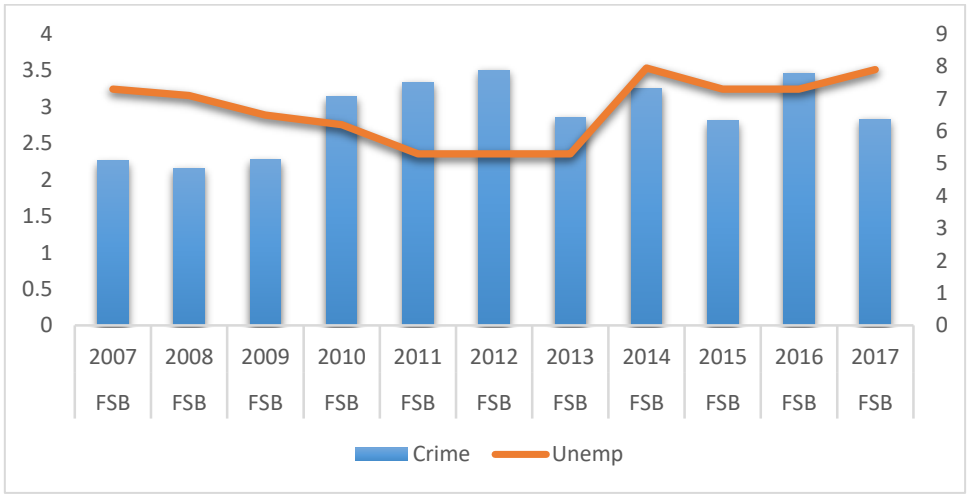

Figure 3.50 Faisalabad Unemployment rate and Property Crime Rate

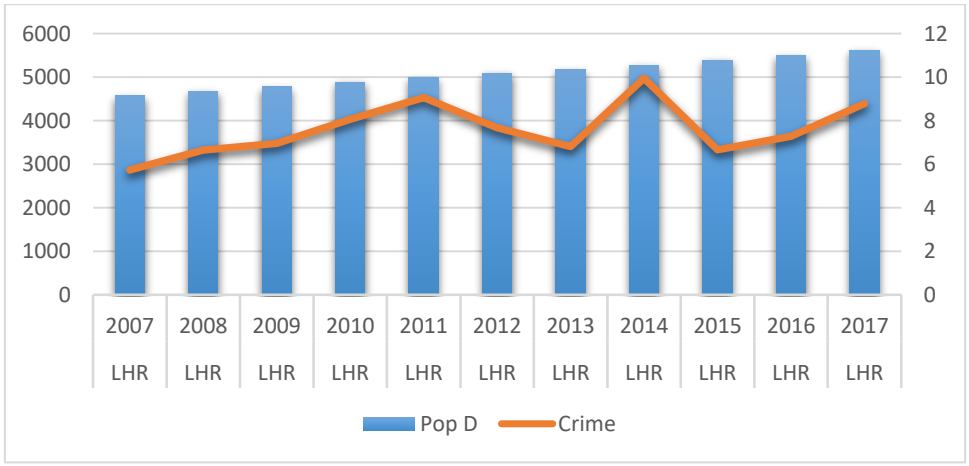

Figure 3.51 Lahore Urbanization and Property Crime Rate

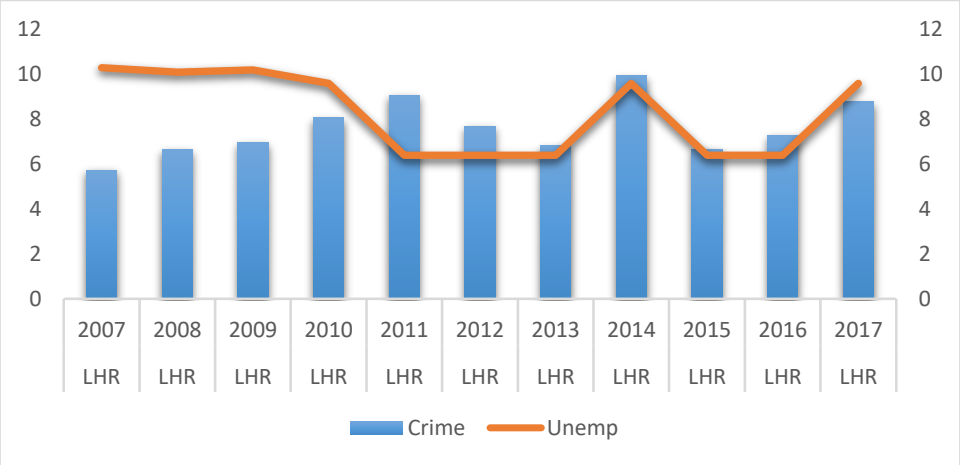

Figure 3.52 Lahore Unemployment rate and Property Crime Rate