

THE ECONOMICS OF CRIME: ANALYSIS OF TREND, PATTERN AND DETERMINANTS OF CRIMINAL BEHAVIOUR IN THE DISTRICTS OF ASSAM

A thesis submitted to Indian Institute of Technology Guwahati in partial
fulfillment of the requirements for the degree of
Doctor of Philosophy



By

Kuladhar Saikia

Roll No.11614101

Department of Humanities and Social Sciences

Indian Institute of Technology Guwahati

Guwahati-781032

June, 2016

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Roll No.11614101

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Guwahati-781032
June, 2016

Dedicated to my parents and teachers





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Department of Humanities and Social Sciences

Guwahati-781032

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Declaration

I, hereby, declare that the thesis entitled “The Economics of Crime : Analysis of Trend, Pattern and Determinants of Criminal Behaviour in the Districts of Assam” is the result of investigation carried out by me in the Department of Humanities and Social Sciences, Indian Institute of Technology Guwahati, India under the supervision of Prof. S. Borbora.

In keeping with the general practice of reporting observation, due acknowledgements have been made wherever the work described is based on the findings of others investigations.

Kuladhar Saikia

June, 2016



Indian Institute of Technology Guwahati

Department of Humanities and Social Sciences

Guwahati-781032

June, 2016

Certificate

This is to certify that the thesis titled “The Economics of Crime : Analysis of Trend, Pattern and Determinants of Criminal Behaviour in the Districts of Assam” submitted by Mr. Kuladhar Saikia for the degree of Doctor of Philosophy in Economics in the Department of Humanities and Social Sciences of Indian Institute of Technology Guwahati, embodies bonafide record of research work carried out under my supervision and guidance. The collection of materials from the secondary sources has also been done by Mr. Kuladhar Saikia himself.

The present thesis or any part thereof has not been submitted to any other University for award of any degree of diploma.

All assistance received by the researcher has been duly acknowledged.

Prof. S. Borbora
Supervisor

Acknowledgement

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I offer my sincere thanks to the management of the libraries of Ratan Tata Library, Delhi University; Jawaharlal Nehru University, New Delhi; Institute of Economic Growth, Delhi; Indian School of Business, Hyderabad; Indian Institute of Management, Ahmedabad; Indian Institute of Management, Lucknow; Indian Institute of Technology Guwahati; Omeo Kumar Das Institute of Social Science, Guwahati; Gauhati University; Assam Administrative Staff College, Guwahati.

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Kuladhar Saikia
Research Scholar
Department of Humanities and Social Sciences
Indian Institute of Technology Guwahati.

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Abbreviations

IPC	:	Indian Penal Code.
Cr. PC	:	Criminal Procedure Code.
NSDP	:	Net State Domestic Product.
NDDP	:	Net District Domestic Product.
PCY	:	Per Capita Income.
CPI	:	Consumer Price Index.
NCRB	:	National Crime Record Bureau.
SCRB	:	State Crime Record Bureau.
CID	:	Criminal Investigation Department.
GDP	:	Gross Domestic Product.
VECM	:	Vector Error Correction Model.
RBI	:	Reserve Bank of India.
SEBI	:	Securities and Exchange Board of India.
FICN	:	Fake Indian Currency Note.
CBT	:	Criminal Breach of Trust.
CS	:	Charge Sheet

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Abstract

Human society has been witnessing crimes since its inception. Rise in incidence of criminal behaviour has been a matter of grave concern resulting in debates and discourses amongst the experts from diverse fields. All pervasive criminal activities are likely to have a negative impact on economic environment thereby bringing in adverse results in economic growth, investment and other parameters of the market dynamics. Moreover, this results in social unrest, anarchy, and loss of faith in law and governance. In a situation of high crime rates, the quality of life of the citizen is adversely affected since there is a threat to personal life and property. That's why criminality has been a cause of concern amongst the law abiding and peace loving citizens.

Though crime simply defined relates to some harmful acts which violate individual's body and the property and deny respect to people and institutions, there are wide divergences amongst the social scientists. However, common and widely accepted definition of crimes by most of the modern states refers to an act or omission that is defined by the validly passed laws of the nation state in which it occurred so that punishment should follow from the behaviour. Without the state and the criminal law there is no crime, and without criminal justice system sanctioned by law, there are no criminals. Analysis of factors responsible for criminals' behaviour has been the subject matter of sociologists, criminologists and in recent times the economists. The recent entry by the economists using the understanding and logic of economics along with the utilisation of sophisticated tools of econometrics and statistics has attracted the attention of policy makers. Becker (1968) specified an economic model of crime, stating crime as any other economic activity based on rational choice so that the criminal would base his/her decision on a cost- benefit analysis and then decide to commit crime if the benefit is bigger than the cost.

It is important to note that the state of Assam which is situated in the North Eastern part of India has experienced a long period of agitations in the beginning of the 1980's, with spikes of violence at times, against the illegal immigrants from Bangladesh and later onset of insurgency related violence which have had adverse impact on crime scenario in the state. As in the entire country crimes have been showing an increasing trend in Assam along with noticeable changes in the compositions of crimes. There is a need for comprehensive study on the criminal behaviour in

the state of Assam to understand the long term trend, pattern and shifts in the composition of crimes. Accordingly the present study has been taken up to make an assessment of nature and magnitude of the crimes, to explore the causes and determinants of criminal behaviour with attempts to examine how different crimes are distributed spatially, disaggregated up to district level. The study also has aimed at examining how deterrence variables like presence of police, logistic supports for policing, charge sheet rates and prison population along with some select socio economic variables like economic prosperity, inflation and dropout rates in education influence criminal behaviour.

While conducting this study quantitative and qualitative approaches with relevant statistical and econometric tools have been utilized in analysing data which have been drawn from secondary sources through different publications by the governments at the Centre and the State.

The present study has empirically established an assessment of nature and magnitude of the crimes in the state of Assam and its districts, along with the long term behaviour of different classes of crimes. Though the long term trends of total crimes have been more or less of similar nature in both at the national and at the state levels, Assam has been occupying top ranking almost consistently in recent times as one of the most violent states. There are wide variations in incidents of recorded crimes amongst the districts. Even in terms of rate of crime per 100,000 population districts differ. While analysing the deterrence factors one finds that the state has been showing a very low performance level in terms of filing charge sheets and securing convictions which reflect poor quality of investigative efforts. In cases of all classes of crimes the state's rates of charge sheets and convictions have been far less than that of all India averages. A matter of concern is that recidivism has been higher in Assam than that of national average. It is observed that the pattern and composition of the various crime categories have undergone perceptible changes over time. These changes involve shifts not only among the various categories but also within the categories themselves. The share of some crimes have fallen drastically while a few others, like crimes against women and economic crimes, have come into prominence. The increases in different types of crimes against women have been a cause of shame and agony for the people. Incidents like rape, molestation and sexual assault have very led to public protest and cause of law and order disruption by irate mobs through indulgence in arson and rioting and thereby damaging public property and peace. It is seen that the importance of property crimes in relation to total crimes has been showing a remarkable declining trend in the years. During the course of the study the possible association of crimes and other important parameters like backwardness,

education status, and urbanization were also looked at. The empirical exercise has been carried out with respect to the determinants of criminal behaviour in the state of Assam to examine the roles of these factors by following two approaches of study viz. Time series analysis and Panel data analysis. Both the approaches have identified a set of a socio economic and deterrence variables which would impact the crime scenario in the state and district level. Economic growth is seen to have a long term association with crime rates, while inflation is positively related as expected since the rise in prices reduces the real legible earning for the people thereby making illegitimate earning through criminal activity more lucrative. Logistic supports to the law enforcement agencies play important role in ensuring deterrence to criminal activities. Similarly, the work load on civil police in a police station is an important factor in prevention and detection of crimes. All these empirical results in the study would point to appropriate policy guidelines for better crime management in the state of Assam and its districts.

The present study can be viewed as a unique contribution in the field of comprehensive research work on criminal behaviour in the state of Assam and its districts, as no such research is known to have been conducted focusing on the determinants of crimes in the state . It has addressed the issues concerning the long term trend, patterns and shifts in the composition of crimes so as to make an assessment of nature and magnitude of the crimes, to explore the causes and determinants of criminal behaviour while framing out appropriate policy guidelines for better crime management in the state for achieving better quality of life.

Chapter 1

Introduction

Rise in incidence of criminal behaviour has been a matter of grave concern. This has led to growing public awareness against violent and other forms of crimes. All pervasive criminal activities are likely to have a negative impact on economic environment thereby bringing in adverse results in economic growth, investment and other parameters of the market dynamics. Moreover, this results in social unrest, anarchy, and loss of faith in law and governance. In a situation of high crime rates, the quality of life of the citizen is adversely affected since there is a threat to personal life and property. That is why criminality has been a cause of concern amongst the law abiding and peace loving citizens. Since the ancient days in India the concepts of crime and administration of justice have been given prominence in state craft. Manu classified crimes in several heads like assault, defamation, theft, robbery, adultery, violence, gambling and betting. He also referred to the police function prevalent at that time for the prevention and detection of crime. It has been said that there were references of “policing” in ancient India with duties to be performed. The Apasthamba Dharmasatra (600-300 BC) prescribes that the king should appoint in towns and villages officers and subordinates, who are pure and truthful for the protection of the subjects against thieves, for instance, “Chaur Rajjuka and Vivitardhyaksha were experts in apprehending thieves.” (Sharma ,2004).

Analysis of crimes and the factors responsible for crimogenic situations along with the criminals’ behaviour has been the subject matter of sociologists, criminologists and in recent times the economists. Academics from multitudes of sectors like psychology, criminology, sociology, geography and economics have made wide ranging analyses to understand the socio-psychological dimensions of criminal behaviour, patterns of crime and its geographical distribution, motivation and rationality of a criminal act. However it is to be mentioned that all such approaches to study of crimes are not in isolated and watertight compartments. In fact the different issues which are raised frequently in such discussions in reference to explanation of crime and criminal behaviour also interact and intersect with one another either in direct form, or in indirect ways.

A basic question very often asked relates to the definition of crime, that is, how does one define crime? Though crime simply defined relates to some harmful acts which violate individuals' body and the property and deny respect to people and institutions (Morrison, 2006), there are wide divergences amongst the social scientists including the nineteenth century French thinker Durkheim(1984) for whom criminal behaviour was a form of social dysfunction with the underlying notion of anomie that refers to feelings of alienation and rootlessness amongst the individuals (Denny et al 2004). However, it is not a simple exercise to test a model based on the concept of anomie as this leads to the measurement problem of anomie over a long period consistently. But there are further objections by some others to accept Durkheim's definition of crime. According to them crime is not something that is just a simple and straight forward situation occurring in isolation, rather it is the result of interactions of different processes intertwined in a complex manner. These processes are : from forming the concept of 'crime', to recognising an event as a crime; from the necessary responses to the event so identified , to the formal activities of state agencies that may process the persons responsible as 'criminals' for punishment. Different approaches to the definition of criminal behaviour in terms of four frameworks are put in this way: (a) crime as a social construction; (b) crime as a product of religious authority/doctrine; (c) crime as a reflection of nation-state legality; (d) more recent concepts beyond the nation-state derived from social and political theory. It is worthwhile to mention that since the seventeenth century, crime is sought to be understood as an act or omission as recognised by the sovereign state through its legal and political processes (Morrison 2006). The Oxford Dictionary has a similar definition of crime: an action or omission which constitutes an offence and is punishable by law. Thus the common and widely accepted definition of crimes by most of the modern states refers to an act or omission that is defined by the validly passed laws of the nation state in which it occurred so that punishment should follow from the behaviour. Without the state and the criminal law there is no crime, and without criminal justice system sanctioned by law, there are no criminals.

1.1 Effects of crime

High crime rates have a destabilizing effect in the important parameters of the economy and its growth process. There are different ways through which crime can adversely influence the various parameters of economic growth. Undoubtedly, crime undermines the rule of law. It decreases people's faith in security of property rights. The investment scenario is significantly dependent on the law and order situations in the country. It is seen that crime

lowers the quantum of both domestic and foreign private investment (Sandler and Enders 2008). The prevalence of uncontrollable or very high crime rates would hamper the inflow of investment fund. Both short term and long term economic environment get jeopardised due to high incidence of crimes since direct costs of crimes fall heavily on the business enterprises and other stakeholders and give rise to a feeling of insecurity and fear thereby preventing the flow of funds for investment and business purposes. In most cases, even one witnesses flight of investible resources. One can see the increase in amount of security related expenses, cutting in to the profit margin and reducing the competitiveness of the firms and also one witnesses the diversion of scarce public resources from productive to security related protective products and activities that do not contribute to society except in their association with criminal activities.

Prasad (2012) has noted that crime can influence economic activities in two possible ways: affecting the level of output, and influencing the growth rate of output. Another way is through affecting the growth rate of per capita income which can happen due to foregone investments and institutional changes that influence productivity growth. In the initial period both affect the growth potential of the economy. Negative effects of crime on the level of output may be transitory effects and may reverse to its *prior* state, but the growth effects are not reversed and leave the economy permanently behind. The study showed that in case of India crime has had a significant and negative effect on economic performance of Indian states. The results suggest that higher crime rates have negative impacts on both growth rate and level of output.

This is the reason why the issue of social cost of crime in a society has been the subject matter of a number of economic studies. Different approaches have been taken resort to while estimating these costs arising out of criminal activities in different countries (Mayhew 2003, UNODC 2007). Such costs involve both explicit and hidden costs to a country, like substantial resources spent in planning and executing the schemes to prevent crime and deal with offenders through criminal justice delivery systems and other means. This provides a basis for cost-benefit analysis, in which the costs of crime reduction initiatives are sought to be weighed against savings made from crimes prevented. The effects of crime has also been seen in terms of whether the allocation of resources due to crime could otherwise be used more productively in other socially beneficial activities, transfers of resources from victims of a crime to criminals, opportunity costs involved, or implicit and

hidden costs associated with risks to life and health. Crime can result in the allocation of resources towards products and activities that do not contribute to society except in their association with crime. As mentioned by Anderson (1999), when there is no crime, the material resources utilised by the provision of these goods and services could be better placed for the creation of public utilities rather than the avoidance of crime situations. The opportunity costs are in terms of the criminal's time spent in illegal activities, detection and incarceration as well as the victim's loss in workdays and time spent in ensuring the security of life and property. The implicit costs of crime include the fear of being a victim of crime and the resultant loss. Moreover a number of crimes results in transfer of assets from victim to criminal. The effects of crime on an economy can be broadly seen in terms of prevention cost, correctional cost and the lost opportunity of labour being held in correctional facility (Habibullah et al, 2008).

The crime preventions costs may take various forms depending on the degree and the nature of crimes, for example, investment for crime preventing gadgets by private individuals such as anti theft or anti burglary equipment like lock system, security alarm tools for establishments, provision of secured parking place and even provision of security guards. The demand for private security guards has been increasing over time. Households, offices, corporate houses and business organisations are deploying such private agencies to provide securities as many a time it is not possible to get the state provided policemen because of scarcity of police members. As noted by Freeman (1996), the amount on private expenditure on crime prevention is estimated to be 0.6% of GDP for the US. A substantial amount spent by the government on police administration and management including salaries of people involved in judicial systems, prosecutors, as well as making public awareness and education programs regarding crime prevention may be included in this category of costs. The cost incurred for the prison infrastructure and its management along with other correctional facilities like salaries of social workers, probation officers are termed as the correctional costs. An inmate in these correctional homes and prison centres has to forego potential labour contribution while the lost opportunity refers to the loss of potential labour due to being in correction facilities. Crime results not only in the loss of property and lives, they make people suffer from mental trauma. It is worth noting here that even in case of so called victimless crimes like prostitution, drug abuse, gambling and such activities one can see severe social repercussions affecting the health of the society. The loss of productivity due to the treatment of drug abusers entails a huge cost to the exchequer. Moreover, this deviant behaviour leads

to increased crime rates. The time spent by both the victims and the offenders along with their families and friends in courts and dealing with the law enforcement agencies would mean a big loss to the society. As Fajnzylber et al (2000) noted increases in crimes lead to rise in indirect costs of crimes like loss in labour productivity and decrease in labour participation rate.

According to the Global Peace Index Report (2013) increased crimes had led India to suffer a loss of about 4 percent of its gross domestic product (GDP) in 2012. As has been noted by UN (2005), the wide prevalence of violent crimes has proved to be detrimental to economic prosperity especially in the developing countries. Similarly, the World Bank (2006) analysis using a sample of 43 countries for the period of 1975-2000, points to a negative association between crime and growth. It is noted that “in today’s world, it is well accepted that violence exacts a high cost on global development. In about 60 countries over the last ten years, violence has significantly and directly reduced economic growth. It has hampered poverty reduction efforts and limited progress towards the Millennium Development Goals. About half of these countries experience violent conflict or are in post-conflict transition. The other half experience high levels of violent crime, street violence, domestic violence, and other kinds of common violence. Common violence often increases significantly in post-conflict countries after large-scale politically motivated violence ends” (Miller et al, 2009). Poveda (2012) had done an identical study on the experience of Colombia in terms of crime and economic growth nexus.

Freeman (1996) tried to look into the different costs involved in various forms of crimes in US. In the early 1990’s it was estimated that the cost of crime may have been 4% of GDP if one takes into account the direct loss due to crime including both direct and indirect pecuniary losses as well as including the cost of resources due to crime control measures by the private and public bodies which could have been put into other socially better uses had there been a possibility of a no-crime society (Czabanski, 2008).

The author had noted that very often the researchers generally have tried to estimate the “objective” costs by focussing to tangible effects like the value of stolen goods, destroyed property, lost productivity, public expenditures on law enforcement, and similar elements. This approach does not take into account all non-monetary, intangible effects of crime. The author noted that there are several ways, one of them being the revealed

preferences and of measuring the psychological impact of crime based on real behaviour of people in the market settings.

1.2 Statement of the Problem

Crime statistics in India bring to light the increasing trend of crime in the country. As discussed above, growth in criminal activities has destabilizing and demoralizing effects in the economic and social life of the people. The fear of insecurity in life and property has a wide ranging effect. The statistics on annual crimes in the country are being published by National Crime Record Bureau (NCRB) under Govt. of India, Ministry of Home Affairs. Though there are arguments that these data do not reflect the true picture of criminal behaviour in the country due to the twin problems of underreporting and under registering of criminal incidents, crimes have been showing an increasing trend in the country in terms of volume of crimes every year. This has attracted the attention of policy planners and opinion makers and members of civil society with an urgent appeal that the upward trend in crime in the country should be dealt with effectively so that the economic growth and development is not affected adversely by it and socio-cultural life is not disturbed in the shadow of fear and insecurity with respect to life and property.

The annual data published by NCRB in its publication called Crime in India show a disturbing picture of crime situations in the country as a whole and the states and UTs in particular. As per NCRB, the total number of cognizable crimes registered increased by 296.6% during 1953-2012. If one looks at the long term trend of total cognizable crime under IPC at the all India level one observes that the rising trend has been the rule during this period rather than the exceptions of declines in certain years.

An important index of criminal behaviour frequently used is the crime rate which takes care of the population effect. Population is one of the factors influencing incidence of crime. There is a positive correlation between the growth in incidence of crimes and the population of the country. Crime rate is seen as crimes per 100,000 or per 1,000 populations in a place. If one looks at recent crime rate for IPC offences one observes that it has increased by 16% in the last decade. From the data on crimes one can see that there are shifts and counter shifts in case of different forms of crimes. Some classes of crimes have declined while others have shown increasing trend. Similarly some crimes have increased their shares in the total IPC crimes while some others have a declining contribution to the total kitty of crimes.

Things are not much different in case of the state of Assam during the period. On the basis of the total registered IPC cases during 1974 to 2012 one witnesses distinct phases of ups and downs in crime figures in a year to year basis. During 2000-2012 the average rate of crime went up to 170 crimes per 100,000 population. One may recall that 1979-84 was the peak period of the movement against illegal immigrants in Assam when there were instances of strikes and sporadic violent cases. The movement continued till 1985 when Assam Agreement brought an end to it. Since the movement with its protest components had been tapering down since 1984 due to the ongoing negotiations with different parties involved in the agitation, there was a reflection of this in the number of registered crimes coming down since 1984. There seems to be almost constant trend line during this period but since 2004-05 onwards the state had witnessed total crimes under Indian Penal Code (IPC) surpassing the 40,000 mark every year in almost regular manner.

There are changes in the compositions of crimes in the state too over time. The growth of crime against body for 2001 to 2012 has been 61.32% against 132% for total IPC crimes. Though individual category of crimes under crimes against body like murder, attempt to commit murder, culpable homicides not amounting to murder have been showing almost a constant growth during this period, other classes of crimes like kidnapping & abduction and hurt have experienced much higher growth. The rate of violent crimes (per 100,000 population) increased from 21.2 in 2011 to 22.7 in 2012 in the country. However, Assam had much higher violent crime rate of 54.2 in 2012. In fact, Assam recorded the highest rate of violent crimes in both these years (2011 and 2012). The period from 2004 onwards marks the decline of insurgency in the state. A fall in murders and other crimes against body is therefore an expected trend. However, a phenomenal rise in kidnappings and other forms of violent crimes need an in-depth analysis of criminal behaviour patterns in the state. The motives behind the violent crimes like homicides need to be looked at with attention to understand the growing societal demand in the state, e g. in murder cases motives of gain, property and personal vendetta as a whole have been contributing a high percentage (33.23% in 2011) to the total causes . It is interesting to note that 82.66% of the arrested persons in 2012 are in the age group of 18-45 years which means that in the majority of the homicides cases, the young persons of most productive age group are suspected to be involved. It would of interest to any crime analyst to examine the possible associations between urbanization and homicides rates in the districts. This is because very often it is opined that crimes like murder have a strong urban basis.

A major shift in the crime pattern is seen in new entry of the dowry related incidents. It is a well known fact that the menace of dowry had been unheard of the social customs amongst the local people in the state. The practice of branding an individual as ‘witch’ is prevalent amongst some section of people of particular communities and it seems the menace has been taking its toll in this century also, cutting across communities. It is seen that the importance of property crimes in relation to total crimes has been showing a declining trend in last several years. Importance of crimes like dacoity and robbery has come down but the relative share of other property crime like theft has improved its share significantly. The increases in different types of crimes against women have been a cause of shame and agony for the people. Incidents like rape, molestation and sexual assault have led to public protests and been the cause of law and order disruption by irate mobs through indulgence in arson and rioting and thereby damaging public property and peace.

Thus it is obvious that not only are the changes occurring in total volume of crimes but also there have been noticeable changes in the composition of criminal activities. There are shifts from one form of crime to another in terms of magnitude over time. One could see the occurrence of different kinds of crimes which were not there earlier. This is due to the advent of newer and innovative forms of technology and their utilization by the miscreants in committing crimes. All these have emphasised the need for analysis of patterns of crimes and their geographical distribution, and gauge the overall impacts on the life and living of the citizens. Some of these crimes have transcended the spatial boundaries due to modern day technology network and have taken the nomenclature as global crime. eg. Cyber crimes, money laundering, bank frauds etc. There are also important developments in the form of crimes termed as economic offences importance of which increase after the shifts in state policies regarding liberalisation, globalization and opening of the economy since 1990.

Another important development in the state had been the growth of insurgency problems in the state. Though some of the states in the North East India like Mizoram and Nagaland had been experiencing rebel activities by different groups demanding independent sovereign identities, in Assam it was in 1979 when the insurgent outfit called United Liberation Front Of Assam (ULFA) came into being and resorted to such violent activities. Over time there have been more groups claiming to be representing different ethnic communities and asking for either separate statehood or cessation from the country as an

independent nation. All these had impacts in the he crime scenario of the state both in terms of volume and patterns.

The cases relating to violent criminal activities like homicides, riots, Arson have increased and this has significant impacts on the safety and security of the common people. Even there were occasional atmospheres of communal hatred in the form of riots. In the sphere of public peace and order there are instances of increased violence. Though it is the duty of law enforcement agencies to maintain law and order and peace in their respective areas, it is seen that sporadic incidence of violence against the state authority on local and national issues which develop off and on are leading to disorder resulting in loss of governmental and private property and human life. The increasing agitational politics, strikes dharnas, bandhs etc have arisen on issues which very often needs early intelligence and police arrangement. It is observed that the agitationists are very often provoked, incited and angered by the apparent delayed actions by the authority resulting in mass hysteria and mob mentality leading to wide scale violence. All these require capacity building and professional up-gradation of knowledge and strategy at the police station level so that growing mass violence during the agitation can be efficiently control and managed.

It is also important to note that certain types of crimes put the country in shame and international disrepute. For example, the country has been witnessing scourge of violence against women in different forms like dowry related incidents, domestic violence, sexual assault and rape etc. There were a number of cases where the incidents of rape and violence had reached the highest scale attracting the attention from the members of the civil society, media, and international community. Even the torture and killings in the name of age old beliefs and traditions of witchcraft have been happening in a number of states. These types of offences have been mostly affecting the life of women in far flung areas which are under developed, high in illiteracy and isolation.

As is evident from above discussion there is a need for comprehensive study on the criminal behaviour in the state of Assam to understand the long term trend, pattern and shifts in the composition of crimes. Accordingly, the present study has been taken up to make an assessment of nature and magnitude of the crimes, to explore the causes and determinants of criminal behaviour. Also this study would attempt at finding out appropriate policy guidelines for better crime management in the state.

1.3 Objectives of the Study

This study will have the following objectives:

1. To study the long term trend of total crimes and to analyse the patterns of crimes in the state of Assam.
2. To examine how different crimes are distributed spatially, disaggregated up to district level.
3. To do empirical analysis by applying state level time series data of IPC cognizable crimes for Assam and to look at both long-run relationships between crime rates and a limited number of economic and law enforcement variables.
4. To extend the analysis by utilising district level panel data of Assam for the period 2004-2012 and look at the relationship between crime rates and some variables from socio economic and deterrence domain.

Finally, efforts would be made to arrive at policy prescriptions out of the present study.

1.4 The hypotheses of the study

The hypotheses of the study are formulated as follows:

1. Deterrence variables like presence of police, logistic supports for policing, work load on police personnel, charge sheet rates and prison population are important determinants of crimes.
2. Socio economic variables like economic prosperity, rate of inflation, dropout rates in education, have significant impacts on crimes committed.

1.5 Sources of data for the study:

Data are obtained from the secondary sources through different publications by the Governments at the centre and the state. The data on police personnel and police logistics like vehicles have been taken from Assam Police Headquarter. All sorts of crime data have been taken from the NCRB publications and supplemented by the sources of state police wherever required. The publications of Assam Economics and Statistical handbooks, Planning Commission and Census of India have been used for figures on State Domestic Product and District Domestic Product, population estimates, consumer prices indexes, estimates of backwardness indexes. Status of education in the form of dropout rate are collected from the Sarba Siksha Abhiyan, Education department. Data on prison population has been taken from the office of IG Prisons.

1.6 Methodology

While conducting this study quantitative and qualitative approaches have been utilized in analysing data which have been drawn from primary and secondary sources as mentioned. While analysing these, different statistical and econometric tools have been used as per relevance. The details of methods used for analysis have been provided in respective chapters. In discussion of crime trend and pattern of crimes in the state and district level as well as different categories of crimes, the present study has taken recourse to mostly qualitative and graphical analysis and also simpler statistical tools.

There is time series data analysis by use of regression analysis of dependent variable on a number of explanatory variables drawn from socio economic and deterrence related variables. The analysis has been extended by putting the data set of crimes from different districts into panel data analysis.

1.7 Dissertation structure

The dissertation is comprised of seven chapters including the present one.

In chapter two, a survey of available literature has been presented on issues relating to crime study. These include both the theoretical and empirical studies consisting of different approaches to the analysis of criminal behaviour, where prominence is given to the economic approach developed by Becker (1968) and the subsequent authors who dealt upon the question of how crime may be considered as any other economic activity.

Chapter three discusses the problems and issues relating to crime data since the empirical work would rely on these data available at national, state and district level.

In chapter four, the crime trends for the state and the districts for the period 1974-2012 have been discussed. Here the relation between crimes and some socio economic parameters has been presented with the help of graphs and statistical tools along with the spatial distribution of crimes over the districts.

It is worthwhile to mention here that crimes have been placed under several categories in the Indian Penal Code. It would be of importance to examine crimes under different categories in more disaggregated level to see how they moved over time and to note what type of pattern is discernible in case of individual crimes. In chapter five, such an attempt has been made to look at the behaviour of different classes of crimes, their

compositions and changes in patterns over time. Also certain select criminal behaviours that have wider ramifications for the individuals and society as a whole have been analysed in greater details. This is to see if these have either been significantly increasing or decreasing or occupying an important place in terms of contributions to total kitty of crimes or have been attracting considerable attention from different stake holders in the society due to their wider ramifications for the individuals and society as a whole. These different categories of crimes would include Crimes against body, Crimes against property, Crimes against public order, Economic crimes, Crimes against women.

In chapter six, analysis would be carried out by utilization of time series data and methodology to explore the long run relationship between crime rates and a number of variables consisting of socio-economic and law enforcement variables. Also there would be panel data analysis to look at the determinants of crimes. The panel data is disaggregated up to district level in the state of Assam for the period 2005-2012.

In the concluding chapter, there would be presentation of summary of findings, conclusion and policy suggestions. Some of the research limitations as observed by the researcher are mentioned. Finally the chapter concludes with a brief discussion about future scope of research in this area.

Chapter 2

Review of Literature

It is essential that a review of literature relating to theoretical as well as empirical studies in connection with criminal behaviour is carried out so that the various issues with respect to the existing knowledge, relevant approaches and frequently used methods are examined along with the limitations of these studies. This would certainly help in carrying out the present study in the context of Assam. Thus a review of literature has been done keeping in mind the different objectives of the present study. The literature reviewed is presented under the following heads:

1. Theories of criminal behaviour
2. Economic approach to study of crime
3. Empirical studies on determinants of crime using economic approach
4. Empirical studies of crime trends and patterns

2.1 Studies on theories of criminal behaviour

One comes across various approaches to study criminal behaviour. The objectives of these approaches have been to examine the relevant issues connected with crime from multidisciplinary angles. There are analytical studies in various fields of social sciences like criminology, sociology, psychology, economics and political science. Explanations of criminal behaviour have been clubbed into several categories as per the contributions made by theorists, viz. ecological perspectives, differential association, cultural conflicts, sub-cultural influences, anomie and strain, lack of opportunities and lack of self-control. In a more structured way of presentation, Guthrie(1994) noted that different approaches to the study of criminal behaviour can be conveniently presented in four categories, viz. social control theory, which views crime as dependent on the absence of controls; structural strain theory, which views crime as a function of structural constraints; social learning theory, which includes subcultures of violence theories as well as other structure- culture models; and integrated models, which include some combination of the above approaches.

The references to crime and punishments have been found in a number of classical authors like Jeremy Bentham who was of the opinion that the deterrence to crimes could come through certainty and severity of punishment (Russell, 1962). This highlighted the importance of punishment as a potent tool to control and prevent criminal behaviour. But the extent of punishment should be there in conformity with the severity of crime so as to have differential effect of penalty. The underlying assumptions in the classical theory of criminal behaviour were the existence of free will to choose our actions and the rationality in making choices.

However, the opposition to classical theory arose because it was postulated by some theorists from psychology that the role of free will might not be only deciding factor, there are other environmental factors interacting with the person's psychological worlds that would determine the behaviour of the individual. One of the psychological theorists was Sigmund Freud (1961) who was the proponent of role of unconscious compartment of the mind in human interactions and visible behaviour of the individual. Human learning process as discussed by Skinner (1971) also brought in the criminal behaviour as learned behaviour. What Skinner postulated was that all human behaviour can be seen as the result of its rewards and punishments. That is to say that criminal behaviour is learned and it is retained if an individual gets reinforced by the rewards from it. But it is abandoned if he experiences negative reinforcements or punishments.

Another development in psychological approaches to crime was Eysenck's (1977) personality theory where criminal behaviour was sought to be looked at in terms of personality traits. It is worth mentioning that psychological theories had paved the way for introduction of a number of therapies like psychological therapy, behaviour therapy, cognitive therapy and so on.

There are theories which arose from the sphere of psychology viz. Differential Association theory (Sutherland, 1947) and Differential Reinforcement theory (Jeffery, 1965). The Differential Association theory is based on the presumption that criminal behaviour is learned. This learning is due to the association with individuals with criminal attitudes. Here, the environmental conditions that lead to operant behaviour of offenders may be reinforcing or reward giving or it may be in terms of punishment which would reduce the response to

environmental stimulation. The important assumption in the Differential Reinforcement theory is with respect to the fact that the experiences of reinforcement of varied stimuli differ for different actors depending on the previous history of conditioning. Moreover, it is also assumed that there is differential treatment to different individuals for criminal behaviour in terms of punishments or reinforcement.

Analysis of crimes has been a matter of concern for the sociologists as well. The sociologists attempt to locate the influence of stratification and socialisation in explaining crime and criminal behaviour. The people of a region are segmented (stratified) into specific groups and classes with a common thread of noticeable characteristics like social class, ethnicity, linguistic group etc. with the belief that these would offer different opportunities structures to which people of those groups or classes respond differently as per social roles and incentive prevailing there. In analysis based on socialisation approach to crime study one would like to explore the significance of variables like family groups, peer structures, community life etc. while explaining criminal activities. In socialisation theory it is assumed that crime results from socialisation process due to poor social support structures. The advantages of such theories are that they can be tested in region wise data. This is due to the fact that socialisation theory is based on groups rather than a person's specific behaviour at the micro level. As noted by RC Allen (1996) one encounters a number of variations in sociological crime theories. Strain, ecology and opportunity theories explore the possibility of certain socioeconomic conditions that are unfavourable to the group in providing an impetus for the group to indulge in crimes. Similarly social-control and learning theories relate these conditions to society's inability to control criminal tendencies. (Bernard, 1987; Brown, Esbensen and Geis, 1991).

The most important contribution has been from the Chicago school and its path breaking set of studies covering the periods of 1920's through 30's & 40's where the association between crimes and social organisation attracted the attention of the sociologists interested in finding the link between crimes and its causes and consequences. There came the strain theory through the works of Merton (1938) who opined that some society may encourage too much deviance by setting up societal norms, and socially approved goals which lead to build up of pressure on the individual to conform. This would likely to compel the individual to either work within the approved societal structure, or instead belong to deviant subculture in an attempt to reach those goals. The delinquent sub-culture became the

main plank of the theory advocated by Cohen (1955) who focussed on gang delinquency among working class young population in slum areas where there existed a distinctive culture as a response to their perceived lack of economic and social opportunity. The social interaction among potentially criminal gangs may influence criminal activities as was observed in empirical studies (Alzúa and Torres, 2004). The social control theory was another much talked about development in sociological approach to crime study in criminology (Hirschi 1969, Janowitz 1975). In his version of social control theory, Hirschi (1969) paid attention to the formation of the bond to society during early childhood which prevents some of them from being delinquent while others who fail to form a bond become prone to delinquency. For him involvement in delinquent activities was inversely related to the strength of an individual's association with the society. However, this model has been criticised due to its neglect towards the impacts of educational policies and the effects of social class background while putting forward arguments on social control.

There are attempts to see how opportunity factors help committing a crime. The basic presumption here is that an individual wanting to commit a crime must have the opportunities to commit the offence, thereby advocating the need for reduction in situational opportunities (Roshier, 1989).

A different way of looking at the crimes and causation has been found in the writing of Jeffery (1956) who had advocated for shifting the attention from criminals to crimes. The issues raised here are regarding social mechanisms through which some conduct norms are transformed into norms legally approved by interest groups in the society. He also argued that in such analysis one should look at how the legal system works along with correctional institutions which are responsible for enforcement of these norms and brand an individual as "criminal." As noted by Don C. Gibbons (1971), another development in this regard is the rise of "sociology of criminal law". The main planks of their discussions have been on the issue relating to the development and workings of the criminal justice system (Chambliss 1969, Quinney 1969).

Another frequently used method of crime study has been to look at the factors like geographical distance barriers, costs of travelling, space specific crime opportunities etc while looking at different possible costs of committing crime. Such spatial analysis of crime

over geographical reasons has attracted the attention of crime researchers so that geographical variations in crime rate can be studied for policy issues (Repham et al,1999).

There are attempts to examine the dynamics of crime as interactions between multitudes of factors like effect of growth, density & stratification of population along with migration and mobility, impacts of urbanisation & neighbourhood. A lot of literatures based on empirical research have tried to link contribution of neighbourhood conditions in shaping the individual (Billy and Moore, 1992). The matters of demographic characteristics like migration, total population quantum and their redistribution and urbanisation have also become the themes of crime study by Wooldredge et al (1986) who made a study of 55 largest US cities.

2.2 Studies using economic approach to explain criminal behaviour.

The inspiration for analyzing crime determinants through economic approach came after the pioneering work of Becker (1968). His effort was to evolve a conceptual paradigm in analyzing the issue of crimes in terms of incentives. Becker through his distinguished paper on the behaviour of a criminal had talked about looking at a criminal as an individual with rational economic behaviour. Thus Becker's model is in relation to a rational choice to see how the potential criminal weighs costs and benefits before making a decision to commit crime, thereby providing a theory of criminal behaviour that was just an extension of economists' choice analysis and not dependent on notion of anomie or lack of appropriate psycho-physical traits.

In fact in Becker's study and in the analysis of Ehrlich (1973) potential criminals are assumed to be guided by the economically rational behaviour of utility maximization. For Ehrlich (1973), a potential offender's participation in criminal activities would depend on his return on earnings whether legally or illegally, the probability and severity of penalty as well as his chance of remaining out of employment in legal market. Thus their efforts led to the initiation of a framework based on economic understanding for assessing the criminals' response to incentives arising out of the factors affecting costs and benefits which may be in terms of rate of unemployment, income level, unequal distribution of income, demographic components, chance of getting apprehended, and severity of punishment (Han Lu, 2009 ; Oliver, 2002). One can understand how law enforcement and socio-economic factors affect criminal behaviour by examining the significance of the above

mentioned determinants. All these led to the conclusion that if 'prices' for committing crimes are made higher through more efficient policing, it would be possible that the criminal behaviour is lessened through lowering of incentives. It is also demonstrated that there is an inverse relationship between the labour market opening and criminal behaviour because it is expected that the lower the employment possibilities lower will be the opportunity cost of committing a crime by a potential offender. This cost-benefit approach has been the mainstay of economists' focus on crime study where the special focus is based on rational seeking behaviour.

Lau and Hamzah (2012) have noted that Ehrlich (1973) improved Becker's model in several ways. First, the criminal can now make a comparison between costs and benefits from legal and illegal initiatives. Moreover, the model brings in the issue of participating in illegal actions vis a vis general occupational alternatives. Also it is important to note that the model has introduced the difference in effects of deterrence and prevention through imprisonment as a means of punishment.

While discussing the distinguishing features of this approach, Levitt et al (2006) have identified a number of characteristics which make it stand distinctively from other approaches of social scientists. The economic approach focuses on the role of incentives with regard to the question of how an individual behaves. It is said that individual behaviour based on his choice and expected outcomes would explain the crime rates through aggregation of such individual behaviour (Stephen Machin et al 2014). The basic point here is how a criminal or a victim of the crime or a member of the law enforcers behaves in decision making would be based on incentives. This points to one of the basic assumption in economic theory that human behaviour would like to go for utility maximisation subject to constraints while deciding its behaviour. That is the individual would make a comparison between the expected costs and expected benefits from a potential crime and he could commit the crime only when the expected benefit outweighs the expected costs of the crime situations. Thus for an economist, the crime is like any other economic activity which when performed would necessarily require that time has been spent in the effort yielding tangible benefit. Therefore economic theory of crime begins from the basic assumption that crime is not the result of individual character or culture, but it results from the decisions they make on the basis of the response to the available choices (Cook & Ludwig, 1976).

As mentioned by Lauridsen et al (2013) the decision to purchase a commodity and committing a crime is identical which means the inverse relation between quantity demanded of a good and price holds good in case of crime too i.e. if the 'price' of crime is increased, ceteris paribus, the crime rate would be decreased like in any other economic decision. This led to the conclusion that if 'prices' for committing crimes are made higher through more efficient policing, it would be possible that the criminal behaviour is lessened through lowering of incentives. It is also demonstrated that there is an inverse relationship between the labour market opening and criminal behaviours. Because it is expected that the lower the employment possibilities lower will be the opportunity cost of committing a crime by a potential offender. This cost-benefit approach has been the mainstay of economist' focus on crime study where the special focus is based on rational profit seeking behaviour.

It is to be noted that the "cost" of crime to criminals in the economic approach consists of two aspects. First one relates to the income foregone by the individual while spending time during involvement in crime. In an economist's jargon this is what is known as the opportunity cost. The second type of the cost is in terms of the time he expects to be behind bars by the justice system because of the offence committed (Denny, et al 2004). An important point mentioned in their study is the distinction between the "Expected punishment" and the actual amount of imprisonment the convict spends in prison. In practice lot of crimes do not result in arrest, and even there are cases where after arrest also prosecution does not take place due to many legal loopholes and faulty investigation. There are also possibilities of some convicts receiving sentences of non custodial nature. Therefore punishment, from the criminal's viewpoint, is a probability, that he would assign, not a certainty.

The criminal justice system tries to make the expected costs of committing a crime much higher than the commensurate benefits expected from the illegal activity. Thus, a crime will be committed when the criminal's willingness to pay exceeds the price that society charges. Thus in other words, there are three essential aspects in Becker's model - the supply of criminal activity, the quantum of punishment and the probability of arrest and conviction. The last two points refer to tools for deterrence of crime. If there is more likelihood of crimes being detected or being awarded heavy penalty the supply of this crime will be lower. Thus the supply function has a negative slope in relation to the two deterrence factors.

Economic approach to crime study has drawn lot of attention from the policy planners. An important aspect of economic approach is that it would try to identify how a particular set of crime management policies have a causal impact on crime rates. This is because it is postulated by the economic model that criminal behaviour of an individual is not determined by underlying social conditions, but rather it is the outcome of individual choices influenced by perceived consequences. If a proper crime prevention policy of the government can change those consequences, then there would be behavioural changes for the individual (Cook et al 2013). Such a crime study would also explore the broad policy implications. The economist would like to use the cost benefit analysis so that the calculation of social desirability of a program is possible by looking at the cost-benefit aspects. The normative framework provided by the economists in their crime study approach encourages processes through which governmental interventions can be evaluated for its effectiveness. In their approach to crime study the economists have brought in sophisticated quantitative tools to explain the causes of crime in their normative framework that they used to analyse the various implications of relevant laws and the methods of crime prevention (Machin, et al, 2014, Cook et al 2013)

However it would be appropriate to mention that because of lack of micro data on individual behaviour it is difficult to validate Becker's model. Therefore, the model is put to test by macro data. Normally economists would construct a model based on micro foundations of a typical agent maximising individual wellbeing. However, if there is not much of heterogeneity in the data, then even aggregate data can be used without worrying much about aggregation bias (Allen, 1996, Repham et al, 1999). Economic approach also assumes full information, but it has been mentioned by economists that the consequences of criminal behaviour along with the risks involved like arrests, punishment etc. may not be known fully to the offenders in many cases.

It is also felt by some authors that these approaches have not adequately analysed the causes and consequences of crime. "Despite long years of study and research and the publication of tons of literature in some of the western countries, efforts to know the causes of crime have not been very fruitful, though some helpful insights have been acquired" (Nagpal H, 1976). It is also argued that these approaches to study of criminal behaviour are more influenced by the development in the western societies. They are of the view that all these explanations evolved from the social history of the developed westerns

nations which had seen rapid urban growth and social disorganisation. Since countries like India have markedly different social structure, culture and living which are seen to have developed into modernity with traditional components coexisting there is a need for separate approach to look at the motivations for criminal activity. They tried to look at the nature of criminality in India as the outcome of complex interplay of socio-cultural, political and historical variables. Their study was based on interviews of convicted offenders of Tihar Jail, Delhi. They found that reasons for criminal behaviour may be explained by variables like neglected childhood, poor education status, labelling effect arising out of criminal association, weakening of the traditional bonds etc. In fact, their study points to the need for a special approach to the criminal behaviour of people in developing countries like India different from the Western countries (Kumar et al, 2008).

2.3 Empirical studies on determinants of crimes using economic approach

It would be of importance to review the empirical studies carried out by the researchers using economic approach to examine the set of factors that determine criminal behaviour. This is because the recent entry by the economists using the understanding and logic of economics along with the utilisation of sophisticated tools of econometrics and statistics has attracted the attention of policy makers and academics ranging from criminologists, psychologists to sociologists (Dills et al. 2008; Bushway et al 2008).

Most of the studies are aimed at finding out if policy prescriptions could be suggested for crime deterrence by pushing up the costs that the criminals would expect while committing a crime. These studies have been built on the aggregate time series data over long time period and over cross section of regions. While some have concentrated solely on economic factors, others have taken care of social and demographic factors too.

Thus the different factors affecting criminal activity in these crime function models have broadly been classified as: (a) Deterrence factors, (b) Socio economic factors. The researches by the economists have focussed attention on the relevance of these factors in explaining the criminal behaviour.

The relevance of deterrence factors have been the subject matter of several studies on crimes by the economists. These factors relate to the elements in the form of probabilities of apprehension which would impact the returns that the criminals would expect

from the crime. While making a decision to commit a criminal activity it is presumed that the potential criminal would assess the inherent risks of getting apprehended by the law enforcement agency and the resultant conviction and severity of punishment out of the commission of that crime (Becker, 1968 ; Ehrlich,1973). Thus these probabilities represent costs to the criminal and reduce the incentive to commit the crime and as such one can expect that they would have a negative association with crime. Similarly the extent of relevance of the variables from the socio economic domain has attracted the attention of economists studying the factors affecting crime. Literatures reviewed below would throw light on the relevance of these factors as determinants of crimes committed by criminals.

2.3.1 Role of Deterrence factors

The issue of deterrence effects of criminal justice system in terms of law enforcement agency, judicial system and jails attains a special significance. While utilising the economists' framework in studying the role of deterrent factors in crimes, researchers have taken various proxy variables to reflect the influence of these determinants. In estimating the effects of deterrence factors on crime rates, it has been seen that in most of the studies, law enforcement effects have been taken care of through the probability of apprehension and the severity of how an offender has been punished or police presence .Some authors have used detection rate, as the proxy for probability of apprehension while for others, conviction rate has been the relevant proxy. The prison population or average duration of being in the prison by an offender has been noted as the proxy for severity of punishment. In short, the effects of deterrence in terms of detection, conviction and punishment are likely to have the deterrence effect through the law enforcement as seen from the studies on deterrence discussed below.

A number of empirical studies has been concentrating on the issue of prevention policies to combat crime. In this context different variables affecting the criminal behaviour have been examined, and these include both men and machines in terms of growing strength of enforcement agencies (De Oliveira, 2003), expenditures incurred for the procurement of police equipments (Imrohoroglu et al. 2000) and so on. Number of people arrested in connection with commission of crimes (Corman et al. 1987, Corman & Mocan, 2000) and the figures of conviction have been also looked into as relevant variables in studies (Pudney et al. 2000; Funk & Kugler, 2003). In study by Levitt (1996), number of criminals sentenced to imprisonment has been considered. There are conflicting conclusions in such

studies. But a broad generalisation may be made saying that the possibility of getting convicted and undergoing sentence for the offence are effective ways for prevention of crime. This is due to the reason that generally criminal actions are not always connected with arrests, and it is also a fact that arrests may not always lead to convictions and imprisonments.

Dills et al (2008) have summarised the deterrence variables in this manner: (i) arrests per capita as a proxy for the probability of apprehension and punishment (ii) size of Police force (iii) incarceration rate (iv) capital punishment. It is assumed that all other variables are unchanged, the higher level of arrest should mean a lesser occurrence of crime. It is expected that imposition of capital punishment instead of life imprisonment increases the expected cost of crime which in turn would reduce heinous crimes like murder. There are different results from empirical studies on the effectiveness of capital punishment as a tool of crime reduction, e.g. study by Levitt (2003) did raise questions on the deterrent effect of death penalty, he observed that the quality of prison life may have a greater impact on criminal than capital punishment by using panel data of USA for 1950-1990.

In the study by Lau and Hamzah (2012), the deterrence factors have been taken as number of cases disposed of by the High Court, and the imprisonment rate along with recidivism rate while looking at the performance by the law enforcement agencies. The analysis examines the total crimes rate and its disaggregated levels like robbery, theft etc. and found that these appear to influence the different categories of crimes.

It is worth mentioning here that a distinction is being made by researchers between deterrence effects through the probability and severity of punishment and the deterrence effects through imprisonment. The latter has been termed as incapacitation effects or preventive effect (Han, 2009). This effect isolates the offenders from the potential criminal activities through imprisonment and thus the offenders are prevented from participating in future crimes. However, this preventive effect lasts till the imprisonment continues. The deterrence effect is expected to have an effect on both actual and potential criminals. As Levitt (1995) has put it, in practice, deterrence has different implication. It may so happen that criminals are not having adequate information about the possibility of detection. They may be extremely optimistic about their criminal activities and their abilities to get away without being detected. In some cases there may be substantial gap between the benefits for

the crime committed by them and cost of crime in terms of detection on imprisonment. The study by Levitt (1996) examined this aspect of incarceration in USA which showed a high quantum of incarceration from 1970 to 1990 without much impact on crime reduction. In this study, he looked at the relationship between size of prison population, the intensity of punishment and various crime rates while controlling for other variables determining crimes.

Mathur (1978) took two time periods, 1960 and 1970, and found a negative relationship between the certainty and the severity of punishment with all types of crimes, indicating rationality of the individuals in making decision on committing crimes.

The effect of police numbers on crime has been a matter of debate. Different studies have come up with different results. This may be due to the reason that sometimes it might so happen that more crimes attract deployment of more police which would appear to show as if higher numbers of police leads to more commission of crimes. An important study by Levitt (2002) points to the negative effect of the numbers of policemen on violent as well as property crime rates. He had used panel of 122 cities for the twenty years data (1975-1995). He found strongest evidence of negative impact for murder and robbery. Fajnzylber et al (2002) found police per lakh population and death penalty as deterrent variables for a number of countries (1970-1994).

Marvell et al (1996) had used pooled data from 49 states and 56 cities of US for the period 1973-1992 and found that police numbers and crime rates are differently related for select types of crimes. For example, they found significant negative correlation between number of police and homicide, robbery and burglary at the city level. Police employments and expenditures on police have also been used as proxy for variables to represent deterrence in crime and found to be associated with property crimes (Zsolt Becsi, 1999).

Han et al (2010) have utilised the quantum of detection of crime and percentage of population in prisons as measures of the law enforcement instruments since higher levels of detection and prison population are expected to have a negative relationship with the crime rate. The authors concluded, on average, that enhancement of detection of crime might be considered as an effective instrument in controlling property crimes, but

increased percentage in prison population may not necessarily decrease crimes against property.

In the analysis of crimes in America, under deterrence variables, police number per 100,000 residents and the judicial strength represented by number of incarcerated criminals per 100,000 residents have been considered by Oliver (2002). These two would reflect the probability of apprehension and the punishment for a criminal. Along with these deterrence variables, the author has introduced lagged crime rate variable to measure the effect of criminal inertia which means the present crime incidence being explained by its past incidence. This variable accounts for the crime rate one year prior.

Denny et al (2004)) have focused their attention on different types of crimes against property in Ireland using data for 1957-1998. The variables reflecting the status of criminal justice system in the form of custody rate and detection rate have negative associations with the level of crime. The study estimated that 1% increase in detection rates lowers the burglary crime by 3% while equal quantity of increase in numbers of custody decrease the burglary crime by 0.9%. They found that the detection rate is more effective in reduction of crime in rural areas while analysing burglary in Ireland between 1958 and 1998. The study by Sullivan (1990) indicates that enhancement in the probability of arrest and punishment is more likely to have a stronger deterrence effect than more severe sentencing. Similar result was obtained by Imrohoroglu et al (2004) in USA between 1980 and 1996 that increased probability of apprehension had a deterrent effect on the crime situation. Abraham(2011) found in case of India in the Panel data analysis of crimes (2001-2008) that police pursuance shows no significant effect, while other deterrence variables like judicial efficiency, represented by the number of cases of less than a year as a share of total cases, has a deference effect on crime. Thus in India, the author opined that efficiency in justice system leads to crime deterrence, however the role of police as a deterrent is not unambiguous. In the study by Sookram et.al (2009), the authors have indicated that in Trinidad and Tobago overall crime rate is rising heavily within the last decade, and the detection rate and crime were found to be negatively related. One of the objectives behind the study by Dutta and Hussain (2009) is to look into how the policy of crime deterrence through its different parameters have impacted the crime scenario in different states of India. They have used indicators like number of police per 1000 square kilo meter, number of IPC cases per civil policemen which reflect the load on police force in terms of detection and

crime prevention, number of arrests in IPC cases per '00,000 population in previous period and percentage rate of charge sheets filed. Another crime deterrence factor which relates to criminal justice system is the conviction rate in previous period reflecting the probability of getting punished for the crime committed. The speed of imposing penalty on the criminals has been sought to be represented by the data on IPC cases disposed off within 6 months. In the study crime rates are found to be positively associated with lagged arrest and conviction rates. Important conclusions relate to the presence of more police personnel and lesser work load in terms of fewer IPC case per civil policeman are seen to be correlated with lower rates of crime. High rates of charge sheeting in properly investigated cases also act as deterrence.

2.3.2 Role of Socio economic factors

A number of studies have attempted to look at the relevance of the socio economic variables while studying the determinants of crime using economic approach.

Association between rural backwardness and crime were analysed in the paper by Repham (1999). It was suggested that planners take into account the social outcome of rural development schemes such as tourism, highways, and service sector development. The author examined the spatial dynamics of crimes in terms of metropolitan & non metropolitan crimes during the period 1977-1995 in US using regression analysis. Some of the important indices of rural development were urbanisation, demographics, residential mobility, economic conditions, and transportation system. It is found that the socio economic variables used by the author in the analysis are more meaningful for crimes against property rather than violent crimes.

Zsolt Becsi (1999) had done aggregate trends analysis of crimes in the states of USA for the long terms period 1971 to 1994. The crimes are categorised into two main heads viz. violent and property crimes. The author used different explanatory socio economic variables like unemployment rate, public welfare, education, demographic division in terms of 15-24 years old etc. The author found estimated correlations were inconsistent with the expected association between crime and these variables.

To what extent income level of the individuals plays a role while deciding to commit a crime had been the subject matter of the study by Fleisher (1966). While putting forward the linkage between income and crime rates, he has explained that the reason for

assuming that low level of income enhances the tendency to commit crime lies in the fact that both their legitimate earnings and the opportunity cost of time actually spent in illegal activity, or in prison custody are low. Fleisher(1963) also examined the possibility of linking employment opportunities to the reduction of delinquency as a matter of public policy. It is expected that in high unemployment regime it becomes difficult for the younger population to enter the labour market which may increase the crime propensity of the latter.

Ehrlich (1973) pointed to the fact that income associated with criminal activities is considered to be more attractive by the poor individuals since the alternative through legitimate activities is lower in case of high unemployment rate. Thus commission of crime is affected by the unemployment factor in the society. In fact, legal labour market opportunities can be judged by looking at the underlying unemployment rate which when rises leads to fall in opportunities in the legal labor market thus encouraging such individuals to earn income through illegitimate actions like committing crime. Again, it is to be expected that income inequality would negatively affect crime situations depending on the individual's relative income position because a poor may be induced to committing crime due to increase in inequality since this would mean a wider gap in wage earnings of the poor and the rich. The gap would reflect in turn the differences between the legal and criminal activities. Therefore it has been concluded that increased inequality would mean more inducement for committing a crime.

All these had led a number of economists to study the relationship between crime and unemployment, labour market conditions, and income inequality. Oliver (2002) while analysing USA data on crimes has mentioned the two opposite effects of level and growth of economic activity in the society, the first one being the effect which means that increased economic activity would lead to creation of more employment opportunity in the legal sector, thereby negatively affecting the decision to commit crime through increase in opportunity costs. The second effect is seen from the fact that the growth in economy means an improvement in the income & wealth of other members of the society. This increases the potential benefit from a crime. Thus, the net effect of GDP on crime rates is ambiguous (Trumbull 1989). Han(2009) using OLS and fixed effects models in England and Wales , observes that socio-economic factors like unemployment will lead to lower crime rates due to the availability of fewer crime opportunities, especially property related crime. In their

study based on US state data, Raphael et al (2001) came to the conclusion that decreases in unemployment rates partly can account for decreases in property crime rates.

Machin and Meghir (2004) using the panel data for England(1975-1996), concluded that changes in wages at the bottom level of the wage distribution have a determining role in increased rates of crime. But the most significant result they found was that wages, especially of those people who are at the margin of committing crimes, are the most important determinants of crimes. And they conclude that wages are a better measure of legal alternatives than the unemployment rate in regards to the study of crimes and the economic incentives.

The increase in violent crimes has caused a lot of concern to the world community. It is not surprising that the aspect of violent crime and its possible determinants have been attracting the attention of the researchers. The objectives of most of such studies have been to analyse and understand the socio-economic causes of this genre of crime and draw policy conclusions accordingly. In their study on determinants of crimes in England & Wales, Han et al (2010) have taken to panel data analysis for the period 1992-2008 to look at different variables like unemployment rate, real earnings, proportion of young people and Gini Coefficient as an index for income inequality affecting both types of crimes – violent & property crimes –where violent crimes included violence against the person, sexual offences, robbery, and property crimes consisted of burglary, fraud, forgery, theft and handling. It was found that socio-economic variables have a limited role in determining crimes.

Fajuzysber (2002) had taken a worldwide sample of countries (1970-1994) for panel data analyses and results indicate that increase in income inequality has a positive association with rise in crime rates. Other variables included in the regression models are of the nature of demographics and culture like urbanisation, male population in the age group of 15-29 years. They concluded that the result may be an indication of the fact that large shares of homicidal incidents are basically economically motivated crimes.

In their study of USA property crimes between the period 1960-80, Joubert and Forsyth (1989) discussed the variations in crimes against property and concluded that a significant amount of variations in property crimes could be explained by the variables under consideration like per capita income, age distribution, urbanisation and population size.. In

prediction of such crimes they found that urbanisation rate plays the most important role. It was opined that very often property crimes are linked to economic conditions which are the results of uneven distribution of income. Similarly, per capita income, as an index of economic prosperity, is considered as a factor affecting such crimes. It is also noted that, at the micro level, crime data might show inverse relationship between individual wealth & property crime but in macro basis one would find a direct positive association between these two.

Imrohoroglu et al (2001) found that the strong status of the economy played an important role in the crime fall in the USA between 1980 - 1996. However, the decline rate was affected adversely by the growing inequality in the society; though they found that effect of unemployment on crime rate was not significant. The study by Anderson(2009) in South Africa found a positive relationship between crime and wealth. The analysis of crime by Denny et al (2004) did not find economic prosperities as having statistically significant effect on the crime rate.

A number of variables from the demographic field have been gaining prominence in crime studies because of their crime enhancing role. Not only the size of population but also the demographic composition in terms of availability of male population or the number of young males in the age group of 15-25 has been looked into in several studies. It is expected that higher the population in this range more crimes are likely to be there. When the unemployment rate is high, the difficulty to enter the labour market and get employment increases for the younger population and due to this there is attraction towards illegal earning making the opportunity cost of crime lower (Fleisher 1966, Ehrlich 1973). Joubert and Forsyth (1989) found that age composition of a society, practically the young population in the age group of 15-25, and population growth rates have an exponential effect on crime rate. Fajuzysber et al(2002) took male population in the age group of 15-29 years as one of the demographic variables in their study of homicidal cases of a number of countries and found a strong association of crime rates with this age group of people. Oliver (2002) has used the young population in the age group of 14-25 years. The demographic factor is represented by the percentage of population aged 16-64 to the total population in the study by Nunley et al(2011). There has been attempt to look at the relationship between metropolitan crimes in the US and socio-economic environment (Kaushal et al 1975). Apart from the influences of variables like unemployment rate, personal income, the study also looked at the

role of demographic variables like migration rate, racial imbalance, males as a percentage of total population. Racial imbalance has been represented by the ratio of white population to non-white population. The results of regression showed that the coefficients had come out significantly with signs as expected. In some studies, males as a percentage of total population have been taken as one of the explanatory variables while looking at the determinants of crimes as it is presumed that males are more likely to commit crime (Kaushal et al 1975). However, in the study by Denny et al (2004), the authors have used young males in the total population as a demographic factor and they found that the demographic factor in terms of young males has a direct impact on the level of crime in long run. Similar demographic variable i.e. proportion of young people as determinant of crime has been used in crime study of Wales and England by Han et al(2010).

Role of education as a determinant of crime has also been a matter of debate. Different empirical studies have come up with varied results with respect to the relationship between status of education and criminal activities. It is expected that if educational status is higher it would mean increased skills and this would lead to higher wages in the labour market. This would result in higher opportunity cost of criminal behaviour as is evident in the papers by researchers (Grogger, 1995,1998, Lochner and Moretti, 2001). It ensures increased returns to legitimate work, e.g. Freeman (1996) had empirically demonstrated negative relationship between wage and criminal activities. The opportunity costs associated with illegal activities would rise as wage rate increases for the individual who is educated. Thus higher the education higher is the opportunity cost of crime, since education has a positive influence on the wage rates earned by the individual. Also, the punishment as a result of commission of a crime becomes more costly for the individual who is more educated because incarceration for him would be costlier as that would mean losing more money being out of labour market which has been giving higher wage because of higher educational background (Lochner 2003, 2007).

Education's 'civilisation effect' has also been a matter of discussion. It talks about the moral values imparted through education and promotion of the virtues of hard work with honesty (Usher, 1997). The general argument here is that education can act as a vehicle to transport the moral values to the young population in the society and through this externality of education one can have a positive impact in reducing crime rates. It is also argued that education may also have significant impact on criminal behaviour through its

effect on patience and risk. Education results in encouraging individuals to be more patient. Thereby, it reduces the discount rate of future earning which results in reduction in the propensity to commit crimes(Lochner et al 2004, Machin et al 2010).

Another important variable that attracts the attention of researchers is the relationship between crime and inflation which has, however, been a matter of debate. It is thought that higher the standard of living, the lower is the marginal benefit of crime which would result in less willingness for participation in crime by an individual. Thus, if the individual's capacity to purchase the goods remains constant, the increased price level of basic needs may incite the person to commit crime, i.e. to increase his purchasing power by boosting the income level through illegitimate sources of income.

Coomer, (2003) had taken the annual percentage change in consumer price index along with other explanatory variables like unemployment, income, population, education, prison population for the USA, and found that unemployment, inflation and poverty rates were all positively associated with crime. Tang (2011) found inflation to be important determinant of variation in crime in Malaysia. Nunley et al (2011) have explored the impact of inflation and labour market dynamics on property crime rates in USA for the period 1959 to 2009. They found inflation to be statistically significant and positive while explaining all property crimes and thus there is the need for appropriate monetary policy on controlling property crime.

As mentioned earlier most of these studies suffer from the fact that they are based on macro data based on a particular geographical area and they are not micro individual behaviour data on criminal activity. It is also noted by Cornwell and Trumbull (1994), that a majority of empirical studies based on economic approach to crime study have revolved around the empirical estimation and testing of the model on the basis of aggregate level of the statistics mostly at the national level or state level. Though some of the studies are seen to be based on little more disaggregated level like county or district level, it is however imperative that such studies are done at individual level data so that proper inferences can be drawn from the study, as the economic model is basically related to the individual behaviour. However there are some studies that utilised micro level statistics to analyse the behaviour of individuals who were inmates in prison for committing crime. Such studies throw light on the role of specific deterrence programs on ex-offender's future

behaviour. But it also worth noting that the cost involved and complexity of having a sufficiently large random sample of population representative of individual criminal behaviour is a big obstacle in carrying out individual level crime study. It has also been noted by Corman and Mocan (1996) that while examining the deterrence hypothesis on the basis of micro data, the researcher needs a sample of population including both criminals and non-criminals. This type of analysis again is hindered by the cost factor. One such study by Witte (1980) utilised a sample of offenders released from the North Carolina prison system and found that the expected certainty and severity of punishment are important determinants of deterrence.

Apart from exploring literature in these regards based on developed countries, it would be of interest to look at studies exploring the role of socio economic factors in crimes in the developing countries.

Though the number of such studies in the context of the developing countries has not been very much, however, of late, one comes across several attempts to study the criminal behaviour in these countries by following economic approach to examine socio economic determinants of crime. It will be appropriate to review some such research works.

Studies on crimes in Pakistan have been carried out to look at some of the socio economic variables like urbanisation, poverty, education, developmental policies and other demographic elements that are likely to impact crimes in the country. Gillani et al 2009, for the period 1975-2007 found that there is a long run correspondence among the variables like crime, unemployment, poverty & inflation. It revealed that unemployment in Pakistan is one of the important causes influencing crimes. Also there exists unidirectional causality from price rise to crime. Inflationary impacts lead to fall in real income of the individuals thereby decreasing the purchasing power of the individuals, mostly affecting the people belonging to low income groups who might like to increase their income by participating in illegitimate sources of income. Their policy prescriptions suggest that the economic determinants of crime like – unemployment, inequalities, GDP growth, inflation level are required to be attended to so that the crime rate is controlled.

Auranzeb (2012) examined the causal factors of crime in Pakistan by using time series data for the period 1980-2010. The analysis shows that household consumption

data, GDP, population, literacy, wage rate, have strong positive effect on crime, while migration in and out of Pakistan and electricity crisis have weak positive effect on crime.

Highlighting the labour market conditions and the changes in real wages and how they influence the criminal behaviour of people, Abraham (2011) argued that the dismal conditions in the Indian labour market may be an important determinant in providing an explanation to the rise in crime rates recently, while exploring the socio-economic determinants of crime in Indian states during the period 2001-2008. Following the line of argument by others (Freeman 1996, 1999, Imai and Krishna 2004) he has shown that there is significant level of relationship between crime and labour market conditions like working on low wage rates and less employment opportunities. He used aggregate crime rate and then disaggregated them into different types of crimes like crime on body, crime on property and political crime. He conducted his study by taking two alternative definitions of unemployment in India, namely, open unemployment expressed as usual principle status unemployment rate and current daily status unemployment rate, the latter being the measurement of unemployment rate. As per the author, both these two types of unemployment are likely to have a positive effect on crime. An analysis of Indian states using panel data during the period 2001-8 shows that labour market conditions and income-wage inequality are important variables in explaining crime rate in India, notably crimes against body. Education, on the other hand, appears to play a role in reducing crimes against property. He concluded that labour market conditions play a significant role in creating crime situation in India. There is no significant relationship between crime rate and urbanization.

While analysing effects of socio-demographic variables in Malaysia, Lau and Hamzah (2012) have empirically tested their crime function model by looking at the total crimes, and at disaggregated level, they have taken property and violent crimes separately. The models have used the time series data (1973-2008). In the crime function, the explanatory variables relate to the fertility rate, GDP growth rate, population growth rate and unemployment rate. Not only total number of people but also the densities of population in congested neighbourhood are responsible for crime increase. In the study, GDP and the fertility rate were the leading variables which should be attended to by the policy makers while devising a plan to prevent crimes in the long run rather than the spending on widening the magnitude of law enforcement efforts which may be relevant only for short term effects.

The paper by Fafchamps et al, (2006) investigated the relationship between transitory poverty and crime from Madagascar. They found that transitory poverty has a direct association with crop theft and organised crime like cattle theft can be effectively reduced through rise in law enforcement forces.

In case of Trinidad and Tobago the authors opine that social and political instability leads to small crimes during economic recessions. It was found that two very important violent crimes like murder and kidnapping for ransom showed upward trend making the Trinidad and Tobago society more violent over the years (Sookram, et al. 2009). In the study they looked at the impact of the unemployment rate, the female labour participation rate and the skill of the labour force which was taken as the percentage of the labour force with tertiary education on serious crime in Trinidad and Tobago over the last forty years. They found that all these factors played a significant role in determining the crime rate.

Baharam et al(2008) made a study on Malaysia to see the relationship between crime and income inequality. Their analysis included total crime which was also disintegrated into different types of crime like violent crime, property crime, theft and burglary. The period of crime study was 1973-2003 The study showed that none of the criminal activities selected were correlated with income inequality.

However, in comparison to the developed countries, there are not many studies in this regard to see the association of price stability and crime rates in developing countries. The study by Tamaya et al (2013) has taken the monthly crime data and inflation figure for January, 2003 to September, 2007 in Philippines to examine if any relationship exists between these two. They found strong and positive correlation between crimes & inflation rates. The effort to stabilise the price level might lead to crime reduction overtime, they opined. For the possible linkage among price rise and crime rates in Malaysia, Tang (2009) examined the role of variables like inflation rate and unemployment on crime rate in Malaysia. This empirical result indicated that inflation and unemployment rates have a positive association with the rate of crime.

The paper by Anderson (2008) is an attempt to examine how the status of household-level poverty increases the susceptibility to crime in South Africa. The household level poverty has been measured by household expenditures per capita. Though they found a positive relationship between expenditures and the susceptibility to robbery, they failed to get any such relationship (that is statistically significant) between expenditures and the susceptibility to violent crimes such as murder, rape, and assault.

Dreze and Khera (2000) based their study on the district level crime data of murders and found that murder rates in India bear no significant relation to poverty or urbanization. While attempting to find out the role played by education on violent crime, they came to conclude that it has only moderate effect on the latter. A very significant result obtained in their results referred to the fact that there is a strong correlation between murder rates and the male female ratio. That is, they found that low rates of murder are observed in districts with a higher sex ratio. Therefore, they concluded that there appears to be a strong link between gender relations and violent crimes.

Nayar (1975) had examined the relationship between relative deprivation and the long term trends in crime in India. He was of the view that both national economic and political capabilities are inversely related to the criminal behaviour. He opined that violence and crime do not happen at random but are causally related to systematic performance in politics and economics.

The study by Sharma (2012) took up the issue of hate crimes against the SC/ST communities in India and the variables that might explain such crimes, where the perpetrators are motivated by prejudice towards a particular group or community. The author concluded that there is a positive association between changes in the relative economic positions among the lower castes and upper castes with changes in the incidents of hate crimes. It is noteworthy that the violent crimes are responsive to this economic gap between the upper and lower castes. The author suggests that such a study should be disaggregated up to the village level since the issues are highly localised and more dependent on village dynamics.

Dutta and Husain (2009) while examining the role of socio-economic variables on crimes had taken economic growth, inequality, urbanization and education. The

authors feel that more than general growth of the economy, the quality of growth is more important factor which is sought to be reflected through inequality, urbanization and level of education. In the case of education, the data used refer to percentage of persons with at least middle level of education. The Gini coefficients were calculated on the basis of data on expenditure levels. The data on important Indian states have been used from 1999 to 2005 which constitutes a panel data. The inequality index is found to be insignificant. They have found that economic growth increases crime rates. They explained this phenomenon by putting the onus on rising consumerism leading to a sharp increase in consumer demand. Coupled with restrictions on legal means to satisfy this demand, it would mean an increased tendency towards relying on criminal means to satisfy this demand. Their study also found that urbanization and education have a significant influence on crime.

2.5 Empirical studies on trends and patterns of crimes in India

Trend and patterns of crimes are being examined by researchers in macro and micro level. While studying the long term trends of crime, efforts have been made by different authors to focus on crimes at the national level, state or district level. Such type of analysis throws light on several dimensions of the crime scenario of the region under study, like temporal changes, spatial distribution, characteristics of the offenders in terms of gender, age, motivations and the crime hotspots indicating the frequencies of different types of crimes occurring in the area which would help the law enforcement agencies for taking effective crime prevention methods.

In the present study the review of literature in this case would highlight researches carried out in crime trend and pattern analysis in national level and also some studies based on Assam at the micro level.

Nagpal (1976) examined the crime trends and patterns of India during the 1960s . He noted the fluctuations in the crime rates of cognizable crimes during the period under study though there was a general trend of rise. There was steady increase or decrease in individual crime heads. He also looked at the percentage distribution of crime for the year 1971 and concluded that crimes like housebreaking and thefts had maximum contributions to overall crimes.

Jayamala (2008) used both primary and secondary data from District Crime Record Bureau of the district and also the details on nature, type and various factors of reported crimes were taken from the FIRs of police stations for the year 2002. While exploring the trends and spatial pattern of crime, the author had taken up the case of Coimbatore region on the basis of its administrative units, namely districts like Coimbatore, Erode, and Nilgiris. The spatial dispersion has been analysed on the basis of districts as well as territorial variations, like urban, and rural areas and it also analysed the types of crimes, and causes of such criminal activities. In trend analysis, the author indicated the select types of crimes from cognizable offences under IPC which included property offences, grave offences & crime against women, and also crime recorded under special and local laws were analysed. The result showed that demographic composition like age & sex along with environment variables provided good statistical explanation for different types of crimes like violent & property crimes as well as crimes against women. Through mapping, crime prone areas were also found out. The study on the basis of ecological factors identified some policy prescriptions for the police to contain crimes. Though the study covered substantial area comprising 3 districts in Tamil Nadu, generalisation of the conclusions would require more detailed study in terms of area covered, samples under taken, longer time series data etc. There are also variations in terms of demographic compositions, e.g. presence of migrant labourers etc. in the Nilgiri district, and all these require more exhaustive study.

In study of crime trends and patterns there have been very few victimisation surveys in the country. One such survey by K. Chockalingham(2003) was carried out in four major cities namely Chennai, Coimbatore, Madurai and Trichy in the state of Tamil Nadu. These cities are differently placed in the scale of urbanisation, that is, upper class, upper middle class and middle class population were more in Chennai while the other two cities have more of middle class and lower class population. The study found that the middle class and residential area had witnessed more of burglary crime. Another important point related to the conclusion was that reporting attitude of the victims is dependent on the value of loss incurred and seriousness of the crime.

Dutta and Husain (2009), while analysing the trend in crime rate, found an increase in the overall trend, together with a drastic decrease for the year 2003 in India. The rate of increase, however, was modest at 9.2% per year. They noted that over the relevant time there was hardly any dramatic change in the nature of crime. There was not much

change in the composition of total IPC crimes. Crimes against body and property remain the prominent types of offences. It is observed in the essay that the highest rise in crime has been in the category of crimes against body, then slight increase in economic crimes while property and public order crimes showed a decline.

Abraham (2011) examines the trends and patterns in crime rates across the states during the period 2001-2008. There are wide variations in the crime incidence between the states, Pondicherry showing the highest rate and the lowest crime rates were seen in the poorer states like Uttar Pradesh, Meghalaya and Nagaland. The author also looks at the disaggregated crime categories like body crime, property crime, and crime against women. Incidence of crimes against property were found to be marginally lower than the crime against body. There are significant regional variations in crimes when one considers the different types of crimes e.g. rate of crimes against property was the largest in Chandigarh and Mizoram, but the rates of crime against women were on the highest side in Delhi, Tripura, Madhya Pradesh. The author also calculated correlation matrix to examine the co-occurrence of different crimes. The aggregate crime rate had a high relation to body crime rate but for other crimes the correlation coefficient was much less. Also the correlation between body crime rates with that of property crimes and women body crimes were almost negligible.

Mukherjee (2007) has looked into the crime trends, pattern and distribution in state levels as well as metropolitan areas. The comparative status of different states with respect to crimes has been analysed. The author also has thrown light on the association of crimes and urbanisation/industrialisation. The urban life is characterised by rapid social change, migration of population, and much dependence on material goods. All these are likely to bear effects on the criminal situation in the urban areas. It was found that sex offences had increased across the cities and towns.

Dhanagare (1969) made a comparative study of different crimes in rural and urban areas of the country. His period of study covered 1964 to 1966 and data used were that of Crime in India publications. He considered two categories of crimes viz. the crime figures of property crimes and crimes against persons which were also disaggregated into different types of crimes in each category. While comparing the differential rates of crime in both urban and rural areas he noted that the general belief of overconcentration of crime in cities

and urban areas should be examined properly and should not be taken without adequately supported by the existing and relevant data. It is very often held that a larger proportion of crime in the cities is against property and in the villages against person. The author concludes that the attempt for such a generalisation about trends in crimes is an over-simplification of a complex situation. The countryside has experienced higher rates in case of offences relating to dacoity than the cities. And in kidnapping and abduction, the city rates are sufficiently above the rural rates.

In a micro level study based in Assam, Konch and Borbora (2013) examined the nature of criminality and the ecological background of the inmates lodged in four jails of upper Assam viz. Dhemaji, Lakhimpur, Dibrugarh and Jorhat jails. The respondents belonged to the age group of 18-35 years which is the highly productive age band. The methodologies used to collect data were through interviewing of 400 respondents who were also categorised as per their educational standards and rural-urban. Most of the interviewed persons were involved in murder and attempting to murder cases and to quite a high percentage were involved in rape cases. The study looked at the role of different ecological factors like family organisation, media, influence of peer groups, neighbourhood role, alcohol & addiction and the economic factors like unemployment, poverty and inequality in leading youths to crime. They found the interplay of all of these factors in motivating the youths to commit crime.

The study by Saikia (2015) attempts to throw light on the association between population growth and increasing rates of crime. Crime data were put to correlation study between population growth and density and crime rate. The researcher found very high correlation between growth of crime rate and population growth in a number of districts like Cachar, Dhubri and Kamrup. Also high population density had a determining effect on crime rise in these districts and other districts like Nagaon, Barpeta, Morigaon as concluded by the author who concluded that illegal immigrants might have contributed to the increased rates of crimes. However, this conclusion may be fraught with lot of problems since the quality of data used may be far from optimal.

The increasing trend in crimes against women in the all India level as well as in case of majority of the states has attracted the attention of researchers and policy planners. As a result one finds a substantial amount of literature coming up for discussion and analysis of the various issues involved in such types of crimes. In their empirical study the authors

Ahlawat and Kumar (2012) have analysed the trend and pattern of these kinds of crimes in the state of Haryana. They found the annual compounding growth rate (ACGR) of crimes affecting women for the period 2000-2011 has been 2.44%. They concluded that crime against women in India increased significantly for the period and the ACGR for India was estimated to be 2.87%. Their study found that ACGR of rape, kidnapping and abduction have been negative in Haryana.

In the micro level study on the 100 rape victims in Delhi it has been found that most of the victims were either illiterate or poorly educated upto 10th and 12th (Suri, 2013). Almost one third of the victims were found to be in the age group 11-15 years. In fact the age of all the victims interviewed fall in the ranges of 11-30 years indicating the risk involved for the young aged women population. Since a substantial proportion of the victims were of age groups belonging to minors, as shown by NCRB data, Delhi Police Annual report 2007, this indicates that they were less informed, unaware of the safety needs, and the lurking dangers in the neighbourhood. The socio-economic status of the victims reveals that a high proportion of victims were from lower strata of the social hierarchy (81%). It is important to note that in 78% of cases, the victims knew the perpetrators. While majority of the victims were sexually assaulted by close family members and relatives, while 19% were neighbours.

Study by Pattanaik (2001) took care of the population effect by looking at the incidents of rape with respect to the population figures in the states. The states like UP and Bihar had high incidents of this offence. He analysed the age wise distribution of rape victims and found that young women falling in the age group of 16-30 years had been the majority of the victims of rape. The low conviction rates showed insensitivity of the law enforcement agencies to this most heinous form of crime (Jayamala, 2008).

In a study at the micro level Subhadra (1999) examined the trends in crimes against women in Chennai. The author looked at the national level trend also and found that the overall trends in crimes against women from 1990 to 1994 registered a gradual steady increase of 45 per cent. It is seen from the progression of crime against women in Chennai in the period 1986 to 1996 as per the data available with the Chennai Crime Records Bureau that there had been a distinct upward climb in the incidences of dowry deaths and harassment for dowry, while in the other crimes, the trend was mixed.

In the study by Mukharjee et al (2001) the authors have calculated the three year average for the state level data from NCRB during 1995 to 1997 and for the analysis which is disaggregated to the district level, 1996 crime data were used. The different states have been analysed in terms of distribution of crime against women by placing them in four categories in ascending order of crime rate against women per million persons. It was found that the spatial pattern of distribution points to localisation of this class of crimes in the country, eg. all the big states like Rajasthan, MP, AP, Maharashtra are having coterminous geographical locations and they figure in high category of crime against women. In the district level study the authors have analysed the patterns in 437 districts for 1996 and conclude that there is enough variations across the districts within the states. As the authors noted, some category of crimes against women are absent in some areas eg. no dowry death cases in districts for some NE states like Manipur, Mizoram, Nagaland, Sikkim and for J&K as well. It is also found that Assam falls in the high rape districts category. The study looks at the correlation between crimes against women and some socio-economic factors like female literacy rate, percentage of females in the work force, and the female-male ratio. The female literacy rate and all categories of crimes against women were found to have no relation. The positive relationship was found between female work participation rate and crime against women which may be explained in terms of the higher risk faced by the women while going outside for work. There is negative correlation between crimes against women and female-male ratio.

While discussing rape victims and the offenders, Chikkara and Kodan (2012) have looked into the trends in growth of rape offence in the country and also analysed the pattern of major offenders of this heinous crime in the states and cities. They found that in different regions different types of offenders were identified as the significant offenders; thereby they concluded that policy prescriptions in control of rape offenses should take care of these variations.

While analyzing the factors that determine the status of women, Devi (2013) has noted that socio-economic indicators like income, poverty level and skill development leading to increased employment and better health facilities are also associated with the power dynamics of the society thereby having influences on crimes against women.

While analysing some select gender based violence of human rights, Das (2012) has brought various dimensions of violence against women into focus. Issues like domestic violence and witch hunting have been discussed in the background of patriarchal control over women in terms of men's perceived superiority over women. A very important sphere of violence very specially linked to the populace of this area of the country, namely, women in armed conflict situations has also been highlighted in the essay, since in the families affected by arms conflict situation, the women folks have to bear the additional responsibility of the households in absence of male members who might have been engaged in insurgency related conflict situations.

In his book, Kar (2002) has examined a number of demographic and socio-cultural aspects of the women population in the NE region states. Apart from discussing the general crime trends of these states vis-a-vis the rest of India, the author paid special attention to the issues concerning the crimes against women. For the period 1988-1995, the crime rate was lower than the country's average. However, the growth of crimes against women was significantly high (59%). The author has noted that the published statistics about crimes against women do not reveal the actual crime statistics in the country in this front. This is because the prevailing social taboo does not encourage women to report sex crimes of any sort to the police. Moreover the ignorance of a vast majority of women population about the legal redressal against different forms of gender related crimes prevents them from coming to police stations. The district level analysis revealed that most of the non-tribal dominated districts of Assam exhibited a high crime rate against women. The author concluded that the spatial pattern of gender crime incidence is closely associated with diverse population composition and occupational placements, urbanisation level and economic status which are also accentuated by illiteracy and lack of awareness.

Study by Lakshmi Iyer et al (2010) found that political representation has acted as a booster in increasing the number of reported cases against women. The political empowerment of women has resulted in reporting the crimes significantly when any offence against women takes place. They found that the reporting of crimes against women was 44% higher after political reservation of women had been implemented. As per their study, even total crimes show a significant increase after the empowerment of women.

In her study, Kalita (2014) has discussed the extent of domestic violence in Assam by referring to health survey which indicated that 17% of women in Assam justified violence by men on women.

2.5 Conclusion

From the above review of literature it becomes obvious that there are attempts to look at the criminal behaviour and underlying causes through different ways by the experts of various disciplines like psychology, sociology, criminology, education and latest entry here being the field of economics along with the modern statistical and econometric tools. Though most of these studies have been based on the social settings of the western developed countries, there are increasing instances of examining the crime and its causes in the developing countries too. The determinants of crimes identified in these economic studies of criminal behaviour have been broadly placed in the domains of deterrence and socio economic factors. Also the literatures that analysed trends and patterns of crimes have been reviewed. The increasing trend in crimes in the all India level as well as in case of majority of the states has attracted the attention of researchers and policy planners. As a result one can find a substantial amount of literature coming up for discussion and analysis of the various issues involved in criminal behaviour.

However, it is seen that there are very few studies that throw light on the changing pattern of crimes in the state of Assam. Moreover there is hardly any study that was come across during the literature review on the analysis of trend and patterns of crimes and determinants of criminal behaviour in the state of Assam and its districts. Therefore , it is imperative that a systematic study is carried out in case of the state of Assam and more so in a disaggregated level up to districts so as to look at the crimes and the its determinants along with a set of policy guidelines for effective crime management . This would help in distribution of scarce resources in crime control and prevention strategies in an economic and efficient manner in the state. To proceed in the present study further, it is important that the status of crime data is examined because the present analysis would be based on the crime data available from different sources and therefore in the next chapter efforts will be made to look at how crime data are generated from the police station level upwards to the national level and how much degree of accuracy and reliability may be assigned to these data for accuracy in research and analysis.

Chapter 3

Sources and Reliability of Crime Data

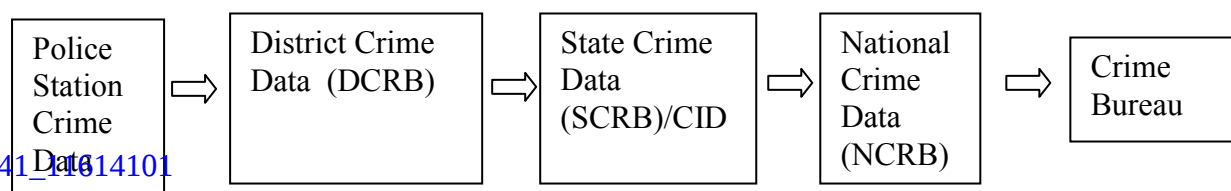
This chapter would deal in various issues regarding sources, collection and availability of data relating to crime. It would be appropriate to examine the degree of reliability of crime data since the analysis of criminal behaviour would be dependent on these.

3.1 Generation of crime data

When a cognizable crime has occurred the first step in the whole process of administration of criminal justice system to the crime victim is filing of the First Information Report (FIR). Then it is recorded and a case is registered under appropriate section of law. For cognizable crimes the police, on receipt of first information of commission of such a crime, have the responsibility to take action as prescribed in the book of law. However, for non-cognizable cases offences police is not given power to register an FIR, and carry out different steps of investigation like arrest of accused without the prior permission from the court of having jurisdiction.

Thus police stations are the primary source where the crime data are generated. The data originated in the police stations now flow to the District Crime Record Bureau (DCRB) who then feed these data to the State Crime Record Bureau (SCRB). SCRBs in different states are the coordinating agencies with the National Crime Records Bureau (NCRB) for providing state level crime statistics for final consolidation of national level data. Thus there are set procedures through which police station figures reach the district police Headquarters and from there the State Crime Record Bureau collect and collate. For the state level crime data, the NCRB reach out these State organizations so that the Crime in India report containing the crime data of district, state & national level can be published. Thus one gets the year wise publication of NCRB's Crime in India reports.

The flow chart of crime statistics from police stations to national level recording through the districts and states looks as follows:



3.2 Discrepancies in crime data and actual criminal behavior

Very often researchers in crime analysis come across discrepancies between the crime data and the actual extent of criminal behavior. The discrepancies between the actual crime scenario and the official crime figures may be found in two stages: some crimes may not be reported to the police and, even, out of the reported ones a substantial percentage may not be recorded by the law enforcement authority. Different issues that may affect the reliability of crime data are discussed below:

3.2.1 Under reporting of cases

It has been mentioned by several studies that crime incidents in India are to a great extent under reported and under registered (Dutta and Husain, 2009; Dreze, and Khera 2000, Sharma, 2012; Chockalingham, 2003). All of these studies have exposed the phenomenon of gross under reporting of crimes in our society. Such problems have been cited in studies relating to developed countries also (Dilulio, 1996; Kelly, 2000 ; Jesse Brush, 2007). Some of them quoted reasons for under reporting of crime incidents as discussed below:

- a) **Reluctance to file an FIR:** For filing an FIR of a cognizable offence the victim or another informant has to visit the police station. But very often the victim may be reluctant to do so due to the costs which may be either financial or psychological which may be more for a member of the vulnerable and disadvantage group of the community. In a conflict zone there may be fear of retribution for the informant.
- b) **Lack of social awareness:** Even some forms of crime might involve social taboo and embarrassment which would dissuade the complainant from coming to police station asking for police help in case of a crime like sexual assault, domestic violence etc. This means that there is likelihood of some particular types of crime may get higher reporting while others are underreported. Sometime the unfriendly and unsympathetic behaviour, and even occasional allegations of hostile attitudes of the personnel in the police stations may act as an obstacle in this case. It is also seen very often that crimes of less serious nature has the higher possibility of going unreported as against more serious ones (Hamzah et al 2012). Chockalingham (2003) found in his survey that

only 4% of the victims of sexual offences and 24% of assault victims had reported the crimes to the police and a lot of incidents of economic offenses like consumer fraud and corruption cases of different forms go un reported.

- c) **Mistrust on criminal justice system:** Another very important factor responsible for underreporting of crime is the perceived mistrust in police. If the victim has faith in the efficiency, motivations and the capability of the police to deliver there is an increased probability that the person in need of service from the police would come forward to report the crime that has been committed. For example since the conviction rate is miserably low in rape cases the victims of such crimes are reluctant to come forward to report in the apprehension that it would be a meaningless exercise as noted by the National Commission of Women (2003). There are occasional public outbursts also about the corrupt practices of police personnel acting as severe disincentives to approach a police station for crime reporting.

3.2.2 Under registration of cases

Under registration of even reported information of offences may be the result of fear of revenge by the higher police authority in perceived rise of criminal statistics. It has been estimated that only 50% of sexual harassment cases and 53% of domestic violence cases are registered by the police. Thus there are discrepancies between the actual crime scenario and the official crime figures, (Iyer et al, 2010; Banerjee et al, 2009)

3.2.3 The “hierarchical” counting of crime

The method of “hierarchical” counting in which crimes are counted as per the “most serious act” has also been considered as an important issue. The data published by the NCRB only takes into account the ‘principal offence’ in every FIR, which means the charge that attracts the maximum penalty decides the categorization of the offence. For example, in the case of a rape-and- murder, the ‘principal offence’ is murder since it attracts a maximum penalty of death. As a result, rapes that end in murder are recorded only as murders in NCRB’s statistics. Normally a typical FIR contains several charges of different nature involving different scale of prescribed penalty as per law. All these lead to undercounting of all crimes in the statistics of the NCRB.

This is noted very often by the researchers as phenomenon of ‘dark figure of hidden crime’ (Ziggy Mac Donald). Incidents of crimes not reported and registered would affect the research study on crime trend and determinants analysis. The under reporting and under recording may have a random or systematic variations. It is to be noted that some variables which are taken as determinants of crime may also likely to impact reporting behaviour of the individuals, for example, it is said that unemployed people in the short run may not like to report the crime. This issue of crime data discrepancy relates closely to the level of development of a society, which is most clearly reflected in the accessibility of the police. Thus, factors such as the number of police stations or telephones in a country affect reporting levels thereby affecting the quality and reliability of the results obtained from such data (Mark Shaw et al , 2003)

3.3 Need to supplement the data pool through victimization survey

Studies on victimization have been advocated for correcting the data sets since it is found to be more reflective of real picture in the field (Chakraborty 2001). This is a process through which the quantum of crime in a society is assessed by interviewing the victims of crime. It is often felt that victimization surveys could help determine the actual situation of crimes and levels of criminal victimization by eliciting responses and opinions of a cross-section of people on issues relating to crime and punishment, fear perception as well as the efficacy of the criminal justice system. These types of surveys prove to be helpful in knowing the pros and cons of offenders and victims handling strategies of the state. But collection of victimization data throughout sourcing private surveys requires high expenditure. Therefore, it is believed that the most practical way of estimating and analyzing unreported crime lies in adjusting reported data with victimization rates based on surveys conducted by government law enforcement agencies (Uppal, 1978). More over there is a need for identification of new types of offences for collection of statistics there on as noted by Committee on Crime Statistics constituted in October, 2010 by the Ministry of Statistics & Programme, Govt of India.

3.4 Conclusion

Thus it is seen that there are possibilities of under reporting and under registering of cases due to which crime data provided by NCRB may reflect only registered crimes rather than the actual crime situations in the country. However in absence of victimisation surveys in the macro scale NCRB figures have been used for crime analysis.

The crime data are generated at the police station level and then it travels from the concerned district HQ to the state SCRB and up to the national level i.e. the NCRB which finally makes the annual crime report available at the national level .Even though there are drawbacks in police crime data the tabulation of crimes known to the police is the best available index of crimes because it is the one "closest" to the total number of crimes committed and therefore it gives us a fair picture of the annual volume and nature of crime.(Nagpal ,1976).Though it has been recognized that underreporting is a serious issue, it is very difficult to actually ascertain the degree to which it affects the published statistics of crimes. Therefore, it is worthwhile to confine the study in relation to the registered crimes which are being published in Crime in India annually.

Having thrown light on the processes through which the crime data are generated, collected, and published and the limitations of these, in next chapter one may proceed to crime data analysis of Assam and its districts and highlight the changes in trend, patterns and compositions of criminal behaviour over time.

Chapter 4

Analysis of Crime Trends in the State and the Districts

In this chapter an analysis of trend and pattern of the criminal behavior in the state over time is presented. While doing so, both qualitative and quantitative methods have been used in analyzing and examining the available data. Apart from using statistical tools, the data have been examined through graphical and visual presentations. Different characteristics of crimes, their long term & medium term behaviour and the changes in composition of total criminal incidents have also been examined. Temporal and spatial distributional analyses of crimes over the districts in the last decade have been carried out.

4.1 Benefits of trend analysis

Trend analysis has been widely accepted as one of the important steps in looking at the effectiveness of cutting edge policing techniques and strategies, like problem oriented policing, crime mapping, hotspot identification etc. When measuring crime trends over time, it is essential to ensure that the periods analysed are long enough. If it is measured over a short period it may not provide the actual picture rather it may mislead the policy planners by highlighting random increases or decreases (Shaw, van Dijk and Rhomberg, 2003). Analyzing how the levels and patterns of crime change over time and across space is highly significant in devising policy prescriptions for better crime management in any society, though crime control activities constitute social phenomena closely associated with other social forces outside criminal justice agencies (Welch 1996; Yoon 1998).

This process of doing crime study to see the distribution and patterns of crimes would throw light on potential policy prescriptions to go for proper preventive policies by the authorities in the state. This would also help in proper resource allocation in terms of deployment of police personnel, mobilization of tools and equipments in the districts for crime prevention and management. It may be said that unlike other important economic and sociological parameters such as health, education, housing etc., in India there is not much emphasis on comprehensive and extensive research on trends and patterns of various crimes, and their relationship with other macroeconomic and sociological variables.

In the first part of this chapter a brief account of the profile of the state and its geographical divisions and regions are provided so as to understand about the spatial distribution of crimes in disaggregated level up to districts. In the second part, trends in total crimes in Assam have been discussed and a comparison made with the all India level crime trend for the period 1974-2012. Also in certain contexts crime figures of the period of immediate past (2000-2012) have been highlighted. Apart from total crimes in absolute figures, a comparative picture is also given with respect to crime rates taking crime per 1,00,000 population so that the increase in population during the time period is also taken into account.

In the third part, some important socio-economic parameters like state per capita income, urbanization, economic backwardness and their relations with the behavior of crime data have been explored. In the fourth part of the chapter spatial distribution of crimes have been looked at in the district level. The deterrence efforts by police have been examined in terms of important parameters like arrests, chargesheet rates, conviction rates, and recidivism so that one could draw inferences regarding crime control by the criminal justice system in the state.

4.1 Profile of the state

However before detailed discussion is made on the crime trends in the state of Assam, it would be worthwhile to look at the profile of the state in brief. Assam is situated in the North-East region of India. It has state boundaries with seven states viz. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal and international borders with two countries viz. Bangladesh and Bhutan. A narrow strip of about 25 km has linked the state with West Bengal.

The state of Assam was reorganized with the formation of separate states viz. Nagaland, Meghalaya, Mizoram and Arunachal Pradesh. There has been a strained inter-state relationship in the context of inter-state border dispute, between the different states in the area, particularly between Assam and Nagaland.

With a geographical area of 78,438 sq. km i.e, about 2.4 percent of the country's total geographical area, Assam provides shelter to 2.58 percent of the country's population.

The districts (27 in number) are further subdivided into 56 subdivisions and 145 revenue circles for the convenience of administration and revenue collection. The Deputy Commissioner is the executive head of the district with multifarious responsibilities like maintenance of law and order, revenue collection and recovery etc. The police administration in the district is under the control of the Superintendent of police who is responsible for crime control and prevention in the district. The following table shows the socio demographic indicators of the state:

Table 4.1
Socio demographic scenario of the state

Description	2011	2001
Population	31,205,576	26,655,528
Male	15,939,443	13,777,037
Female	15,266,133	12,878,491
Population Growth	17.07%	18.85%
Percentage of total Population	2.58%	2.59%
Sex Ratio	958	932
Child Sex Ratio	962	845
Density/km2	398	340
Area km2	78,438	78,438
Total Child Population (0-6 Age)	4,638,130	4,498,075
Male Population (0-6 Age)	2,363,485	2,289,116
Female Population (0-6 Age)	2,274,645	2,208,959
Literacy	72.19 %	63.25 %
Male Literacy	77.85 %	75.23 %
Female Literacy	63.00 %	51.85 %
Total Literate	19,177,977	14,015,354
Male Literate	10,568,639	8,188,697
Female Literate	8,609,338	5,826,657

Source : Directorate of Economics and Statistics.

4.2.1 Trends in total IPC crimes

As per the objectives, time series data of crimes recorded for the period 1974-2012 are taken to look at the trends of crime in the state of Assam. It may be noted that all

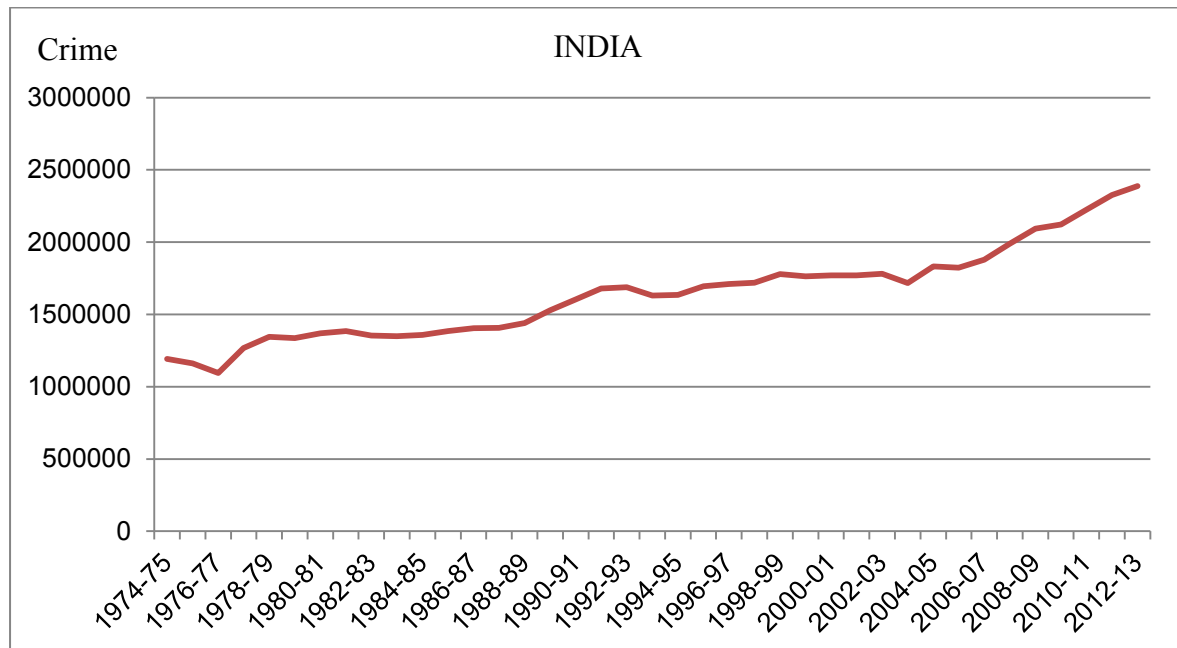
time series data have four basic components viz. trend, seasonal, cyclical and random components (Gujarati, 2010).

The year 1974 has been selected because there was a reorganization of states in the North East by splitting the then geographical boundary of Assam and thus another state Meghalaya came into existence since 1972. The details on crime data were shown separately for both the states of Assam and Meghalaya since 1974 in NCRB publications. Data on crime and their sub categories for the period under discussion are collected from the Crime in India Reports, published by NCRB. However, for filling up any gap, data from the state CID HQ (SCRB) were collected. Data on police forces have been taken from the Police Head Quarter. For the macroeconomic data like Net State Domestic Product per capita, urban population, district domestic products and development indices have been taken from the statistics published by the State Directorate of Economics and statistics and supplemented by the publications of Planning Commission. It is to be noted that while referring to crime rates in the present study, it would be measured as number of cases registered per 100000 population unless mentioned otherwise.

The two graphs below (Figures 4.1 and 4.2) are presented to compare the long term movements of crimes in Assam and in the country for the comparable period of time. The broad trends are obvious and these would allow one to observe the ups and downs in the criminal behaviour at the state and national level.

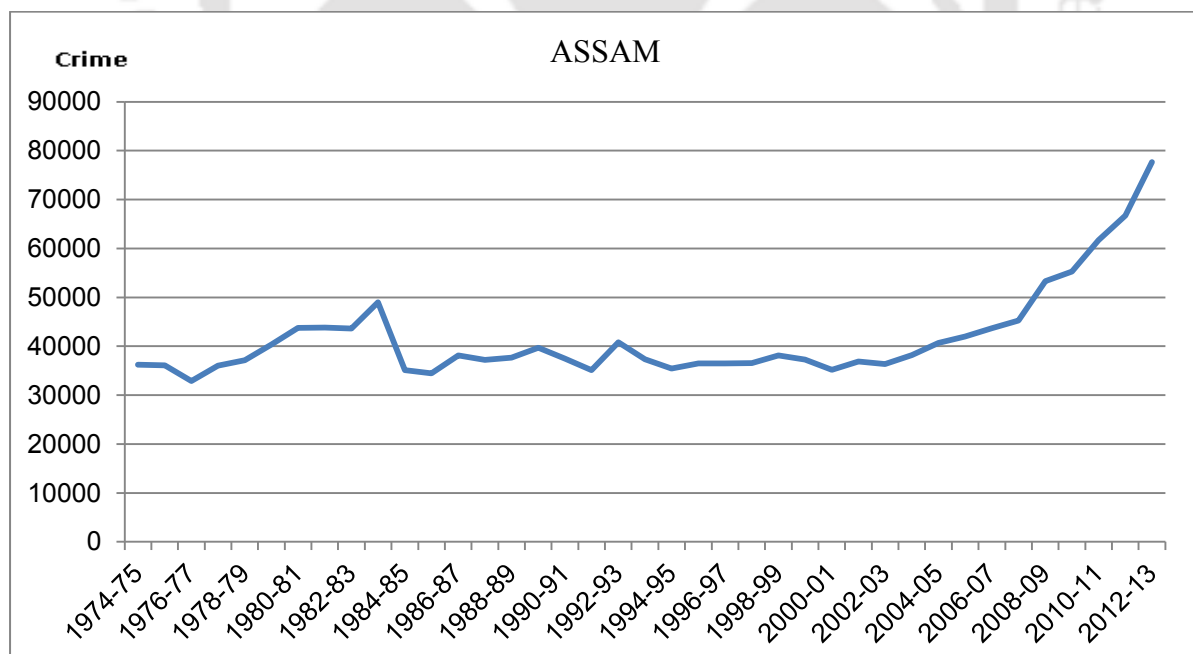
On the basis of the total registered cases during 1974 to 2012 one can see distinct phases of crime increase and decrease. In the first phase 1974 to 1978, there were very little variations in the number of total cases. But there was a sudden spurt of registered crimes in the period 1979 -1983. One may recall that this was the peak period of the movement against illegal immigrants in Assam from Bangladesh. The movement continued till 1985, when the Assam Agreement brought an end to it. Since the movement with its different forms of protests had been tapering down since 1984 due to the ongoing negotiations with different parties involved in the agitation, there was a reflection of this in the number of registered crimes coming down since 1984. There was not much change in the total annual crime volume in the period after this but since 2004-05 onwards the state had witnessed sharp increase in crime figures to 77,682 in 2012.

Figure 4.1
Total crime trend in India (1974-75 to 2012-13)



Source: Author's calculation from NCRB data

Figure 4.2
Total crime trend in Assam (1974-75 to 2012-13)



Source: Author's calculation from NCRB data

In comparison, the all India total IPC crimes also had a steady rise during this period. However, there are periodic ups and downs in this trend. One witnessed significant

Table 4.2

Descriptive Statistics for IPC crimes per 100,000 population in Assam

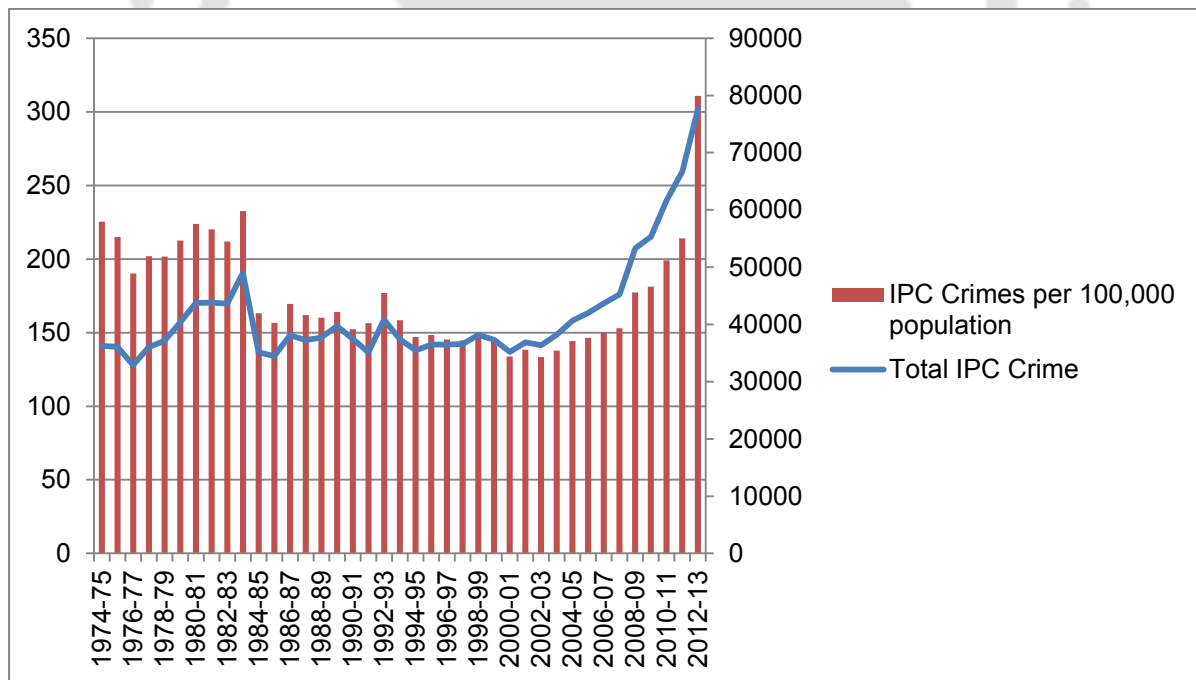
Year	Std deviation	mean	max	min
1974-2012	37.35	175.65	310.71	133.4
1974-1990	28.49	191.9	232.5	152.2
1990-2000	10.95	150.47	176.8	133.8
2000-2012	49.46	170.69	310.71	133.4

Source :Author's calculation from NCRB data

increase in such crime figure at the national level for the period 1989-90 and for subsequent years. Crime appears to be in almost constant rise in the period 1995-96 to 2002-03. Though the country witnessed a fall in total crime in 2003-04, there was again a sudden spurt in the crime volume at national level in 2004 -05 and 2007-08.

Figure 4.3

Total crime and crime rates in Assam



Source: Author's calculation from NCRB data

4.2.2 Trends in crime rates

The crime rate in terms of IPC crime per lakh population in the state (as shown in Figure 4.3) needs to be looked at so that one has an idea about the criminal behavior by neutralizing the population effect. It has been almost regularly above 200 per lakh population

since the 1970's through mid 80's and it started showing a decreased rate after that, though there were spikes of increase in years like 1992 with a high figure of 177. In the period during 1994 to 2004 the crime rates had maintained the level below 150 but it started rising since then which continued and reached a figure higher than 300 per lakh population.

4.3 Relationship between crime and select socio economic indicators

It would be of interest to relate some important socio economic parameters with the crime data so as to see the probable association amongst them as follows:

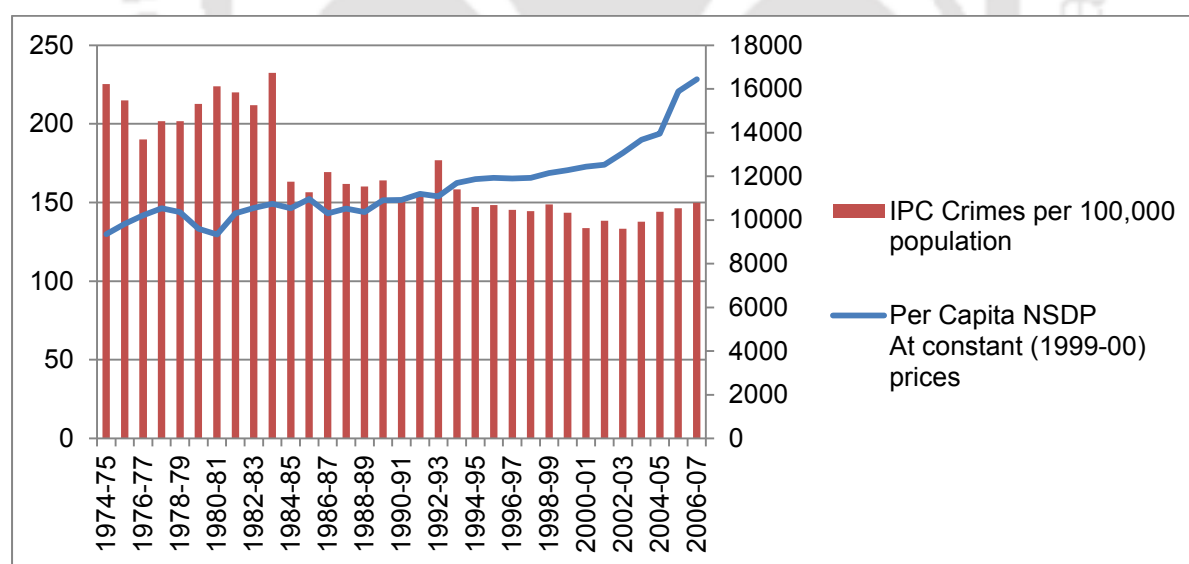
4.3.1 Relationship between state crime rate and per capita Net State Domestic Product

There has been continued interest in relating crime rates to changes in economic variables. Out of these, Gross Domestic Product (GDP) per capita has been most widely used by authors in their analysis. It has been a matter of debate amongst the economists regarding the effect of economic prosperity which is very often represented by proxy variables like per capita income or consumption on crime (Kevin Denny et al 2004). Conflicting effects on crime are generated by variables like economic prosperity. During the time when economy is better off resulting in economic prosperity, there may be less crime as some criminals may desist from committing crime since it makes the opportunity cost of crime higher than the lawful activities. There may be the possibility of another conflicting situation where crime level is higher since there are now more goods which may result in more reward in criminal activities. There may be another possibility where additional income accrued to the people through general macro economic prosperity leads to more allocation of resources to ensure security through burglary alarms and other costly gadgets for prevention of property crimes. Thus in the studies where the economic prosperity is taken as one of the determinants of crime, what one basically observes is the 'net effect' of these conflicting factors. A priori, it is expected that increases in GDP per capita are likely to reduce crime rates. This is due to the belief that economic prosperity would lead to fall in crimes. This is indeed what the UNODC finds in its 2011 Report on Global Homicide. The Report looked at the association between per capita GDP with homicide rates for different countries over a period of time. It was found that there was a strong negative relationship between GDP per capita and homicide rates. For instance, Soviet Union in the aftermath of its breakup witnessed GDP decrease coinciding with a surge in homicide levels. Similarly, homicide rates in South America decreased during periods of economic growth, while Central America witnessed also a decline in homicide rates during a period of steady economic growth

(UNODC, 2011). The Report observed that “the homicide rate usually increases when countries move from very high to lower levels of development”, as measured by the Human Development Index (HDI).

A similar exercise was carried out for the state of Assam for the period 1974-2007, depending on the availability of data on NSDP. The present study looked at the relationship between net state domestic product (NSDP) per capita and the crime rate, expressed as total IPC crimes per 100,000 populations, by plotting a graph with time on the horizontal axis, and the rate of crime on the left vertical axis, and the per capita NSDP on the right vertical axis. A look at the graph (Figure 4.4) clearly indicates a negative relationship between per capita NSDP and the crime rate, as expected from UNODC and other studies. However, on closer examination, there seems to be a steady increase in the crime rate from 2003-04 onwards, along with an increase in per capita NSDP. This observation about the positive relationship between per capita NSDP and crime rate in recent years is found to be in conformity with the result obtained from the panel data analysis that were carried out later on in this study.

Figure 4.4
Comparison between crime rates and per capita NSDP (1974-75 to 2006-07)



Source: Author's calculation from NCRB data

4.3.2 Relationship between crime and indices of backwardness in districts

To find the relation between backwardness and crime, one should be having an index of backwardness to place the districts in measurable scale of backwardness. In the

present study two alternative measures of backwardness have been used, viz. the backwardness index developed by the State Government (Statistical Handbook, Assam) and the index of backwardness developed by the Planning Commission, Government of India which would allow a national level comparison. It is to be noted that the parameters used by both the indices are different.

a) Backward districts as per state indices

The districts were grouped according to the backwardness index given by Statistical Handbook, Assam¹. The 5 year averages of the backwardness index for every district was calculated during the period 2007-08 and 2011-12.

The districts were then grouped into 4 categories as follows:

- 1) Districts with indices between 7 and 10.99 were clubbed as the *very high backward* districts.
- 2) Districts with indices between 11 and 14.99 were grouped as *high backward* districts.
- 3) Districts with indices between 15 and 18.99 were grouped as *medium backward* districts.
- 4) Districts with indices above 19 were to be classified as *low backward* districts.

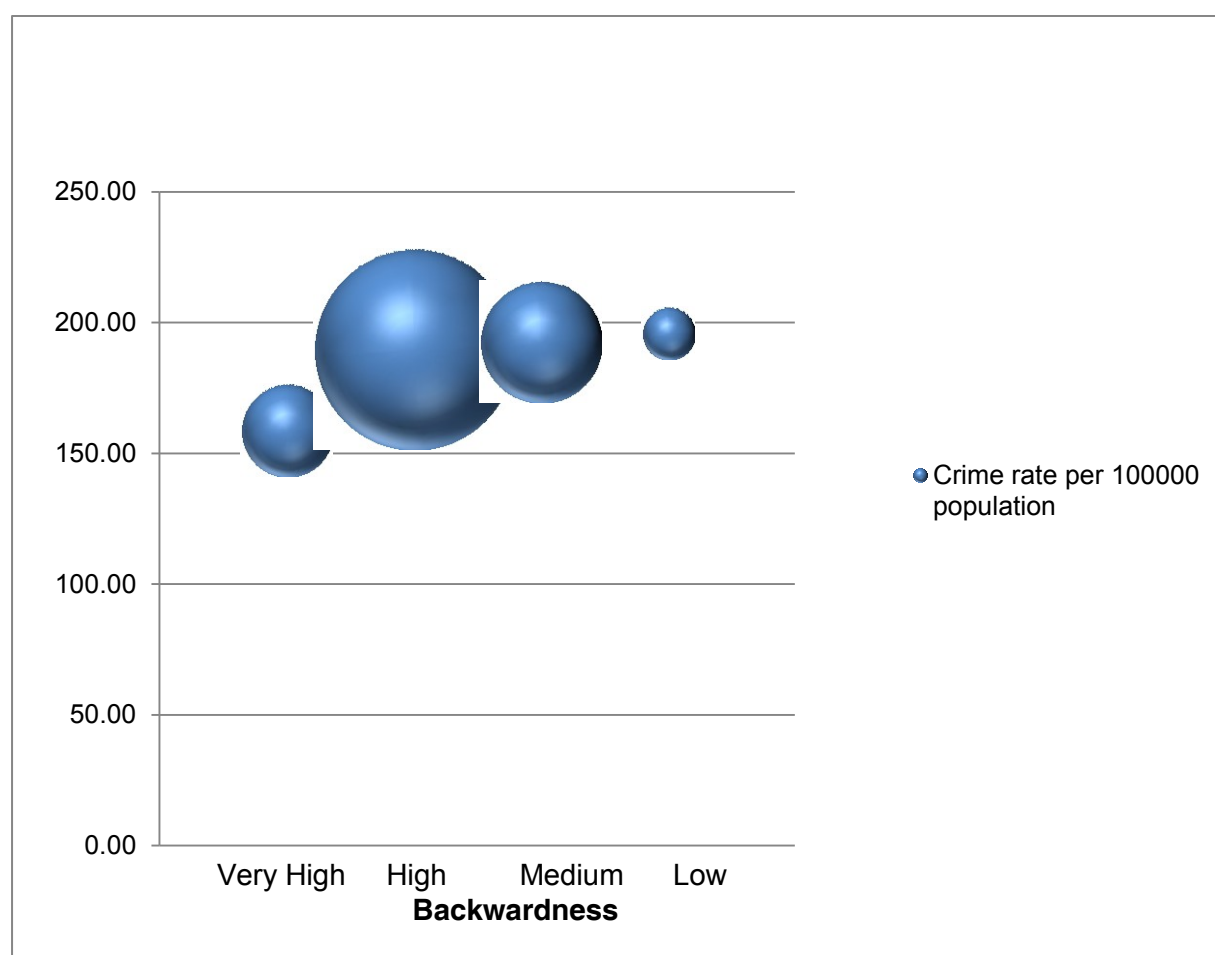
The number of districts included in the four categories is four, sixteen, five and one respectively. The district of Guwahati has been excluded as it has very high crime rates and regarded as an outlier, as it is a metropolis with different patterns of crime.

Crime rates for each of these districts were calculated from NCRB data for the year 2011, as the total registered IPC crimes per 100000 population. Population weighted average crime rates of the four district categories were estimated based on the proportion of population of each district in that category which acted as the weight. The weighted average crime rate for each district category was plotted, as shown in the bubble graph below (Figure

¹ The Composite Backwardness Index developed by the Assam Statistical Handbook uses the following indicators: geographical area, population (rural/urban), literacy rate, number of villages as per census, total number of primary schools, medical facilities in rural areas, number of primary health centres (R/U), family welfare centres, state dispensaries, community health centres, number of doctors under the existing facilities, midwives, number of scheduled commercial banks, number of villages having government water supply facilities, length of pucca PWD roads, number of villages electrified, number of registered factories, and total foodgrains available.

4.5). The size of the bubble is proportional to the total crime recorded in that district category. The larger size of the bubble for the *high backward* districts is due to the fact that a large number (sixteen) of districts are included in this category, and also it has the largest share of the total population of Assam.

Figure 4.5
Crime rate and Backwardness - (state index)



Crime rates per 1,00,000 Population.

Source: Author's calculation from NCRB data, Statistical Hand Book, Assam.

A look at the graph clearly indicates that the crime rate (which is a population weighted average of the crime rates of the respective districts in each category) increases as the backwardness of the districts falls. In other words, as development proceeds, the rate of crime increases. This finding of a positive correlation between the level of development and crime rate may not be surprising as Abraham (2011) finds such a pattern when he looks at the average crime rate (during the period 2001-2008) of various Indian states. The highest crime rates were recorded by the Union Territory of Pondicherry, followed by the highly developed

state of Kerala. The economically developed states such as Tamil Nadu, Rajasthan, Karnataka, Delhi and Chandigarh recorded comparatively high crime rates. The lowest crime rates were recorded in some of the poorest regions of the country such as, Uttar Pradesh, Meghalaya and Nagaland.

One can explain this apparent anomaly between the international level (as observed by UNODC) and the district and state level, as observed in the present study and by Abraham(2011) too, in the estimated correlation pattern by realizing the fact that the districts have the same state machinery and government agencies for law enforcement, unlike the different government structures that vary across countries. Thus, as the development level increases, a district is still exposed to the same level of law enforcement as before rather than concomitant rise in strength in police personnel and infrastructural support system. However, with development, the amount of economic transactions (and hence, other ancillary activities) increases, providing greater opportunities for committing crimes. Hence, it is expected that the rate of crime increase with the level of development in a district. For instance, the highest backward district (or in other words, the least developed) Dhemaji recorded an average (for the period 2005-13) of 129 and 33 theft and burglary cases respectively, while the highest developed district Sivsagar recorded averages of 400 and 128 cases in the corresponding categories. Again, in terms of murders, Dhemaji recorded 21 cases on average, while Sivsagar recorded 74 cases on average. Over time, as the country achieves higher development, resulting in greater resources being diverted towards law enforcement and job creation one can expect the crime rates to come down in the districts as well.

b) Backward districts as per the Planning Commission index

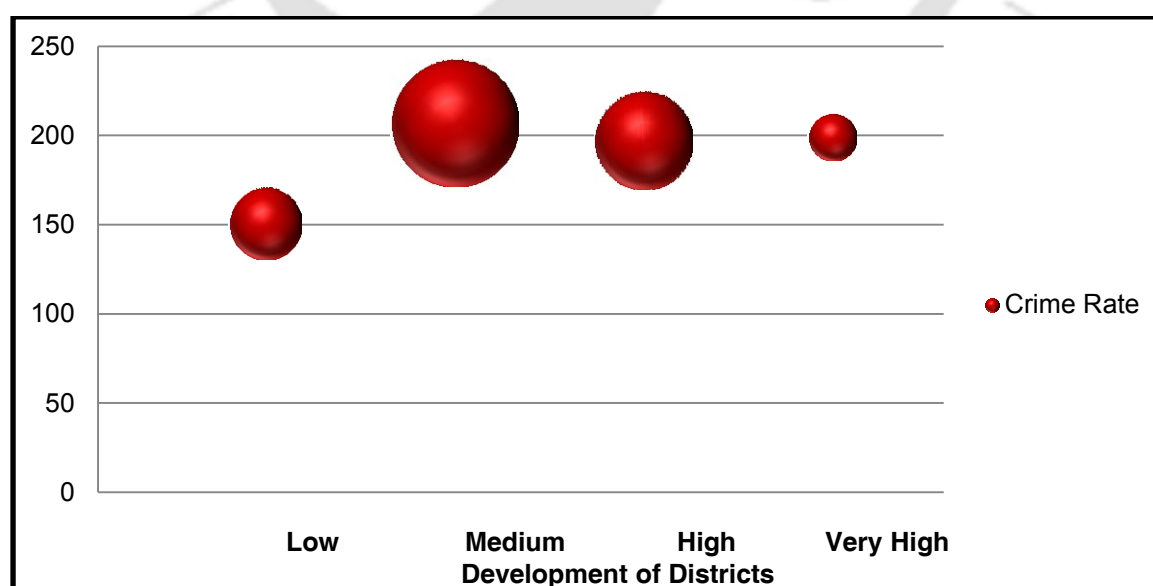
Now districts are classified as per the all-India index devised by the Planning Commission, Government of India, for studying the development of districts. Districts with a lower index are classified as lower developed districts, that is, the development of a district increases with the increase in the index number. Based on this, we classify the districts into four categories-

- 1) *Low development districts*
- 2) *Medium development districts,*
- 3) *High development districts*
- 4) *Very High development districts*

However, one must keep in mind that the same set of districts is not included under these categories, as that under the Assam Statistical Handbook's index (of Very High, High, Medium and Low Backwardness respectively)- the reason being that the two indices use different sets of parameters. However, a look at the Planning Commission's index for district's backwardness yields a similar result in comparison to the Assam Statistical Handbook's Composite Backwardness Index. As the level of development of a district increases, the rate of crime rises as greater opportunities for committing crimes emerge, through increased transactions and better technologies. Although an unambiguous positive trend was seen based on the Assam Statistical Handbook index, a slight ambiguity is observed in this trend when one looks at the Planning Commission index. In this connection one needs to look at the parameters that have gone into building this index, and those parameters that have been either excluded or added in comparison to the Assam Statistical Handbook index.

The Planning Commission's index is relatively less comprehensive as compared to the Assam Statistical Handbook Index. The former index is based on five parameters only: agricultural productivity per worker, agricultural productivity per hectare, agricultural wage rate, the SC/ST population and the poverty ratio in the district (one can refer to footnote 1 to get the list of parameters used by the Assam Statistical Handbook).

Figure 4.6
Crime rate and Backwardness (Planning Commission index)



Crime rates per 1,00,000 Population.

Source: Author's calculation from NCRB and Planning Commission, GOI.

The lack of adequate parameters means that the Planning Commission overestimates development in some districts, and underestimates development in others, resulting in some districts with lower crime rates being clubbed in the high development and medium development categories. The Planning Commission index pays greater attention to economic factors in determining development (four of the five parameters are economic), while little weightage is given to social (only the SC/ST population is included) and infrastructural factors, such as the presence of proper roads, electrification, water supply, gender equality, etc. For instance, a district may have a low poverty ratio, but there may be a lack of better transportation facilities (as measured by the availability of metal roads). In such a case, the crime rate may be low as criminals cannot commit crimes with ease in the absence of available getaways. Under such a scenario, such a district would be classified as a high development district under the Planning Commission index, but as a 'high backward' district under the Assam Statistical Handbook index. This district would display the same anomaly as was discussed in the previous paragraph. Thus, the inclusion of more parameters not only makes an index more comprehensive, but it also helps us to properly analyze the crime trend.

4.3.3 Relationship between crime rates and urbanization

It would be a matter of interest to look at the association between urbanization and crime rate, i.e to analyse the effect of growth of townships on the incidence of crimes since it is revealed in different literatures of research that these two variables are directly proportional. The increased density and high absolute number of population, slum areas and inhabitants in the deprived zones of the large cities, low neighborhood contact etc. are very often cited by the sociologists to explain the high probability of developing criminogenic situations in the urban areas. Dhanagare (1969) in his study showed that the differential crime rates in Indian cities and rural areas did not indicate that criminal behaviour is more pervasive in countryside as is generally believed. Nagpal (1976) has commented on the basis of 1971 data that the prevailing belief that crime rates were necessarily higher in urban areas as compared to rural areas was not supported by crime data. He found that states like Gujarat, Maharashtra, Tamil Nadu, West Bengal had almost 25% urban population but the crime rates in these states were not more than the states where the percentage of urban population was 10% or less.

If one goes through the analysis at the district level the findings are as follows. In 2011, the crime rate in the district of Cachar was 247 per lakh population with percentage of urban population being 18%. But in district like Jorhat with urban population being 20%

the crime rate was 114 per lakh population. Barpeta had a crime rate of 175 per lakh population with 8.7% urban populations. Again in the hill district of Dima Hasao, with thin density in the interior rural areas and concentration of population in the town being 29.19%, the crime rate was 103 per lakh population.

From the census data of 2011 it is seen that the share of urban population in Assam was 14.08% of the total population in that year. One finds that 19 districts had less than the state level percentage of urban population i.e 14.08%. These 19 districts had an urban population share of 45.6% in the state but contributed 61.18% of the total cognizable IPC crimes in 2011 in Assam. This points to the fact that criminal behavior cannot be taken as an urban phenomenon in the state. This is in conformity with some other studies. Similar finding was seen in the study by Dreze and Khera (2000) who based their study on the district level crime data of murders and they found that murder rates in India bear no significant relation to poverty or urbanisation. However, conclusion about positive association between crime and urbanization had been arrived at by researchers like Joubert and Forsyth, (1989). Similar finding was there for Cao and Maume JR. (1993) who concluded that urbanisation had significant impact on robbery rate.

4.4 Spatial Distribution of crimes:

It would be of importance to examine the geographical distribution of crime over different regions and districts in the state. This attempt would throw light on the issues of relative criminality of the districts in terms of registration of crimes, the comparative trends and the changes occurring over time. However it is to be mentioned here that frequent reorganizations of districts and the alterations of their geographical boundaries along with the carving out of new districts from the earlier existing units from time to time have made it complicated to go for a comparative analysis of the spatial distribution along with the temporal changes in criminal behavior.

4.4.1 Variation in crime trends in three broad regions in the state:

The State of Assam can be divided into three distinct regional divisions on the basis of geographical positioning, ethno cultural and linguistic diversities, viz. The Brahmaputra Valley, The Hills areas and The Barak Valley as follows:

1. The Brahmaputra Valley comprises of twenty two plain districts with a total area of 56194 sq. km. The Valley is named after the mighty Brahmaputra River that is flowing through a distance of 800 km from Sadia in the north eastern point to Dhubri in the western extremity. The river has been contributing to the evolution of the Brahmaputra Valley civilization since time immemorial.
2. The Hills areas consist of Karbi Anglong district and Dima Hasao district with a total area of 15322 sq. km. These two districts are in the hilly tract called the Borail Range which is situated in between the two valleys. The two less densely populated hill districts - Karbi-Anglong and Dima Hasao, separate the two valleys.
3. The Barak Valley covers three districts viz. Cachar, Karimganj and Hailakandi with a total area of **6922 sq.km**. The Barak river passes through these three southern districts and then enters into Bangladesh.

Thus, the three broad regions comprising contiguous districts in the states are the Barak Valley districts, the Brahmaputra Valley districts and the Hills districts. These districts are examined for the period 2005-2012 since the crime data for individual districts after the latest reorganization of districts are available from 2005.

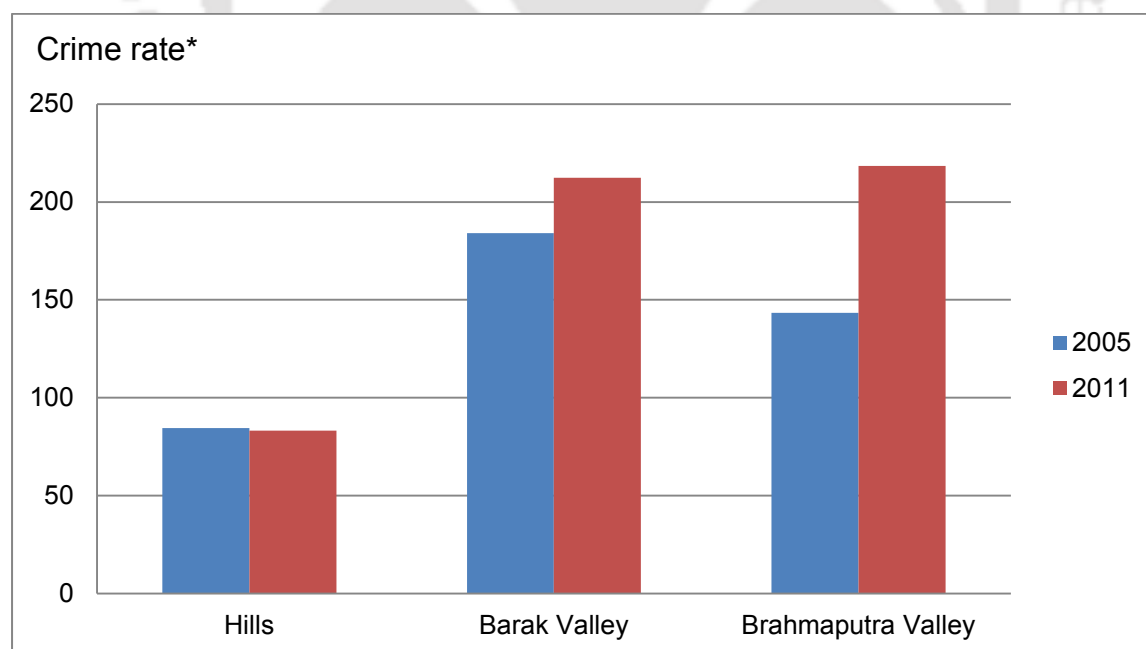
One can see wide variations on trends and changes with respect to criminal behavior among these broad regional divisions in the state.

In the hills region, incidents of total crime has been traditionally low. Both the districts are thinly populated. If one takes the period 2005-2011, there is not much growth in the total crime, growth rate being only 8%. Even if one looks at the crime rate, it is much lower than those of other two regions in the state. In fact the crime had come down from 84 to 83 per lakh population during the period. This is in contrast with the other two regions both in relation to recorded total IPC crimes and crime rates. In the Barack Valley, the growth for total IPC crimes was 23%, which in the Brahmaputra Valley, it came out to be 40% during 2005-2012. The crime rates also similarly showed higher growth in Brahmaputra Valley region (34%) which was more than the 13% growth in Barack Valley and the negative growth in Hills region. In fact, by 2011, both Barack Valley and Barhamaputra Valley regions have crossed the 200 mark in crime rate.

It may be worth mentioning that though the Hills region had been traditionally a peaceful area, it had seen onslaught of violence in terms of ethnic clashes and terror activities by rebel groups demanding separate Karbi & Dima Hasao land. However, for last few years the incidents of violence have decreased after most of the active rebel groups surrendered for peaceful negotiations with the Government. The Barak Valley area had been more or less free from organized extremist violence but still in terms of total crimes and crime rates it has been quite high in the ladder of criminality.

All the 3 Barak Valley districts have been showing a high crime rate, even though there are differences amongst themselves. For example, Cachar was the district with the highest crime rate within the group with 254 crimes per lakh population, in 2005, which was followed by 153 in Hailakandi and 100 in Karimganj. Karimganj and Hailakandi had their crime rates increased to 167 and 206 in 2011. All of them contributed 14.21% to the total crimes in the state in 2005, but the share came down to 11.59% in 2011. This southern region of Assam had contributed to 11.25% of state's population in 2005 and 11.6% in 2011.

Figure 4.7
Regional Variation in Crime Rates



* (per 100,000 population)

Source: Author's calculation from NCRB

The districts in Brahmaputra Valley contributed to the major shares in terms of crime rates and population of the state as the number of districts in the valley are much more in number. Moreover, all the districts have witnessed the scourge of terrorist activities of different forms and hues. There are wide differences amongst themselves in terms of criminal activities. The only metropolitan district in the state viz Guwahati (Metro) has been having very high crime rates of 495 in 2005 and 837 in 2011 showing a very high percentage change in the period 2005-2011. Since most of the other districts in the state show the crime rates which are not comparable to that of the Metro district, one may like to treat Guwahati (Metro) as an outlier in this comparative analysis of criminal behavior. One finds that several districts have lately crossed the high figure of 200 mark in crime rates. Districts like Darrang, Dhubri, Goalpara, Nalbari had crime rates of more than 200 in 2011 and they had much lower figures in 2005. Within the range of 150-200 crime rates there are 11 districts altogether in the state. All this means that most of the districts in Assam have been showing a very high criminality. The percentage change in crime rate in Kamrup district in the period (2005-2011) had reached 197% with district of Baska coming next.

4.4.1 Variations in inter-district crime trends:

For administrative and revenue purposes, the State has 27 districts including Kamrup (Metro) district and four districts under the Bodoland Territorial Council (BTC) areas. There have been occasional reorganizations of the state by creating new districts because of administrative conveniences as well as political and economic exigencies. The major bifurcation of existing districts into smaller units came about in the year 1983, 1985, 1989 and in 2003 with the signing of BTC (Bodoland Territorial Council) accord. After the reorganization of districts was completed by 2003-04, all the districts including the ones which were carved out of existing districts to create the Bodoland Territorial Council (BTC) started providing the crime data as independent geographical district units. Accordingly analysis of trends and patterns of crimes in the districts are being looked into during the period 2005 to 2012.

In 2005 the highest numbers of IPC cases were registered in Kamrup metropolitan district, where basically Guwahati City has been the main focal point. Cachar has been occupying the second place with regards to total registered IPC cases followed by Nagaon. If we look at the number of cases per lakh population to neutralize the impact of

Table 4.3
Variation in crime rates across the districts (2005-2011)

Sl. No.	Name of Dist.	% Contribution of districts to state IPC Cog. crime		% Contribution of districts to state population		Rate of Crime		% Change in Crime Rates (2005-2011)	Rank of criminality	
		2005	2011	2005	2011	2005	2011		2005	2011
1	Barpeta	4.77	4.47	5.28	5.43	131.54	174.96	33.01	15	17
2	Baska	0.74	1.17	3.19	3.06	33.70	81.43	141.62	27	26
3	Bongaigaon	1.99	2.27	2.33	2.35	124.25	205.46	65.37	16	9
4	Cachar	9.46	6.47	5.42	5.57	254.37	246.89	-2.94	2	3
5	Chirang	0.78	1.02	1.54	1.54	73.58	140.54	91.01	25	21
6	Darrang	2.78	3.96	2.97	2.91	136.32	288.77	111.83	13	2
7	Dhemaji	2.27	1.65	2.14	2.21	154.34	158.72	2.84	6	20
8	Dhubri	5.50	6.41	5.75	6.25	139.50	217.86	56.18	12	6
9	Dibrugarh	5.04	3.82	4.44	4.26	165.35	190.58	15.26	4	13
10	Goalpara	2.80	3.33	3.08	3.24	132.20	218.55	65.32	14	5
11	Golaghat	3.42	3.04	3.55	3.40	140.42	190.17	35.43	11	14
12	Guwahati	13.60	15.92	4.00	4.04	495.27	836.90	68.98	1	1
13	Hailakandi	2.14	2.05	2.04	2.12	152.84	205.61	34.53	7	8
14	Jorhat	2.36	3.24	3.75	3.50	91.77	196.79	114.45	22	10
15	Kamrup	2.14	4.33	4.91	4.87	63.69	189.06	196.85	26	15
16	K/ Anglong	1.65	1.15	3.05	3.10	78.74	78.65	-0.11	24	27
17	Karimganj	2.61	3.07	3.79	3.91	100.37	166.89	66.27	20	19
18	Kokrajhar	2.23	1.87	3.16	2.84	103.00	139.73	35.66	19	22
19	Lakhimpur	3.89	3.03	3.34	3.34	169.82	193.27	13.81	3	12
20	Morigaon	2.36	1.82	2.91	3.07	118.19	125.81	6.44	17	23
21	NC Hills	0.53	0.33	0.71	0.68	108.91	103.29	-5.16	18	25
22	Nagaon	8.53	9.06	8.68	9.07	143.23	212.24	48.18	9	7
23	Nalbari	1.80	2.77	2.63	2.47	100.13	238.23	137.91	21	4
24	Sivasagar	3.93	3.40	3.94	3.69	145.46	196.00	34.74	8	11
25	Sonitpur	6.75	5.48	6.26	6.18	157.23	188.62	19.97	5	16
26	Tinsukia	4.23	3.45	4.31	4.22	143.01	173.63	21.41	10	18
27	Udalguri	1.72	1.44	2.82	2.67	88.81	114.66	29.12	23	24

Source :Author's calculation from NCRB

population in criminal activity, it is seen that Kamrup metropolitan district has the highest figure of 495 cases per 100,000 populations. Whereas Cachar district shows recorded crime rate with 254 cases, the district of Lakhimpur comes third with 170 cases per lakh population. There is a wide variation in districts in terms of registered IPC offenses per 100,000

population, eg. the newly curved out district Baska has only 34 such cases, another new district Chirang has a figure of 74 cases and Kamrup (Rural) has 64 cases.

Table 4.4

Rates of selected crimes (per 100,000 population) in districts for 2005 and 2011

Sl. No.	Name of District	Kidnapping		Rape		Murder		Dacoity		Robbery		Burglary		Theft	
		2005	2011	2005	2011	2005	2011	2005	2011	2005	2011	2005	2011	2005	2011
1	Barpeta	4.58	9.92	3.72	5.43	2.52	2.66	1.79	1.06	1.13	1.24	9.63	8.80	9.10	13.94
2	Baska	2.64	7.14	0.99	3.04	2.31	4.62	0.55	0.42	0.88	1.26	1.21	2.83	3.52	8.81
3	Bongaigaon	4.67	10.11	5.72	9.84	2.86	3.01	3.01	0.82	0.90	1.23	7.23	14.34	12.05	18.85
4	Cachar	7.12	10.25	3.30	4.26	3.30	3.69	1.23	1.44	1.29	1.15	12.49	7.09	26.28	32.20
5	Chirang	3.64	8.94	3.87	6.24	3.87	5.61	0.91	1.25	0.68	4.37	3.19	9.36	5.01	15.18
6	Darrang	3.89	22.03	5.54	10.46	2.95	3.74	2.36	0.44	0.94	0.55	9.32	17.73	12.38	19.05
7	Dhemaji	7.36	9.16	8.51	9.01	3.27	3.34	0.49	1.02	1.47	1.60	3.60	6.54	19.80	13.08
8	Dhubri	5.13	15.76	6.17	8.06	2.44	3.13	0.85	1.03	0.61	1.85	3.66	7.14	8.85	11.45
9	Dibrugarh	5.92	10.17	4.50	4.07	8.92	6.71	0.47	0.08	1.82	1.73	7.34	7.39	31.73	32.93
10	Goalpara	8.30	9.92	4.55	9.82	3.53	3.87	1.59	0.99	1.37	1.29	5.69	6.65	14.45	18.75
11	Golaghat	8.60	15.03	5.34	5.10	6.03	5.29	0.99	0.57	2.77	2.74	6.82	7.66	25.79	21.17
12	Guwahati	12.88	29.05	3.33	4.44	3.42	4.60	0.53	1.75	8.41	20.00	40.49	55.24	121.74	177.46
13	Hailakandi	6.02	11.84	3.10	9.26	3.10	3.03	2.07	0.61	1.03	0.91	9.29	10.02	11.36	18.82
14	Jorhat	4.12	7.79	2.71	4.49	4.77	4.40	0.00	0.46	0.94	2.75	5.05	12.56	18.24	31.81
15	Kamrup	6.15	10.28	5.22	4.15	2.22	2.90	1.43	1.25	0.93	2.37	6.86	8.04	15.01	24.72
16	K/Anglong	4.48	4.87	0.92	1.35	8.74	4.97	1.38	0.52	1.26	0.83	2.99	3.52	10.57	14.51
17	Karimganj	2.87	6.49	2.59	3.78	2.78	3.70	0.37	1.48	0.46	0.74	6.49	7.40	14.46	13.31
18	Kokrajhar	4.88	11.85	4.00	5.87	5.11	5.76	0.89	0.90	1.55	1.92	3.55	5.42	9.21	17.49
19	Lakhimpur	11.78	13.75	7.26	5.00	3.79	3.65	0.42	0.58	0.63	1.44	0.11	7.31	29.44	15.48
20	Morigaon	5.66	10.03	6.27	5.64	2.65	2.82	0.12	0.31	0.72	0.52	1.93	6.79	16.75	6.48
21	N C Hills	4.95	8.92	0.00	1.41	5.45	7.51	0.50	0.00	5.45	0.94	7.92	5.63	24.75	21.60
22	Nagaon	7.47	13.23	6.02	5.84	3.56	3.22	2.26	1.84	1.70	4.92	8.20	12.17	16.36	15.85
23	Nalbari	5.07	12.35	3.60	3.64	2.27	2.60	0.93	2.73	0.80	2.47	5.87	13.00	12.95	27.31
24	Sivsagar	6.49	11.48	3.38	4.26	5.43	5.30	1.07	0.09	0.80	2.70	6.94	11.91	24.64	32.96
25	Sonitpur	6.05	13.61	4.32	4.99	4.88	4.36	1.46	0.57	1.51	0.99	9.92	9.40	27.69	20.05
26	Tinisukia	6.10	11.63	3.41	4.64	7.48	7.45	1.38	0.46	2.03	2.58	7.24	8.66	30.41	30.40
27	Udalguri	2.49	8.05	2.61	3.37	4.85	4.45	1.37	0.60	1.49	1.44	6.09	7.45	13.18	8.89

Source :Author's calculation from NCRB

In 2012, the comparative picture remains the same with Kamrup (Metro) recording the maximum number of IPC offenses as 873.0. Kokrajhar had a very high growth

due to an abnormal situation that relates to the serious riots in that year in Kokrajhar district which resulted in a number of arson, and riotous situations leading to loss of life and property. Otherwise the total crime wise relative positions of districts like Nagaon (5980) & Kamrup (5022) show the usual high levels of crimes. Some other districts which remained unaffected by the reorganisation in 2003 by BTC formation may be looked at for comparative analysis of longer time period. One such district is Dibrugarh where the total registered IPC crimes saw a growth of 125% over the period 2001-2012. In the Barak Valley, Cachar district shows growth of 40% which was much lower than the state's growth of 139% during the period (2001-2012).

By taking care of the impact of population on total crime, it is seen that in case of Dibrugarh, IPC crime per 1 lakh population is 216 in 2012 while it was 131 in 2001 which was much lower and means that criminal activity has shown an increasing trend. Cachar district already had very high crime intensity eg. 238 per lakh population in 2001 and it reached 276 per lakh population in 2012.

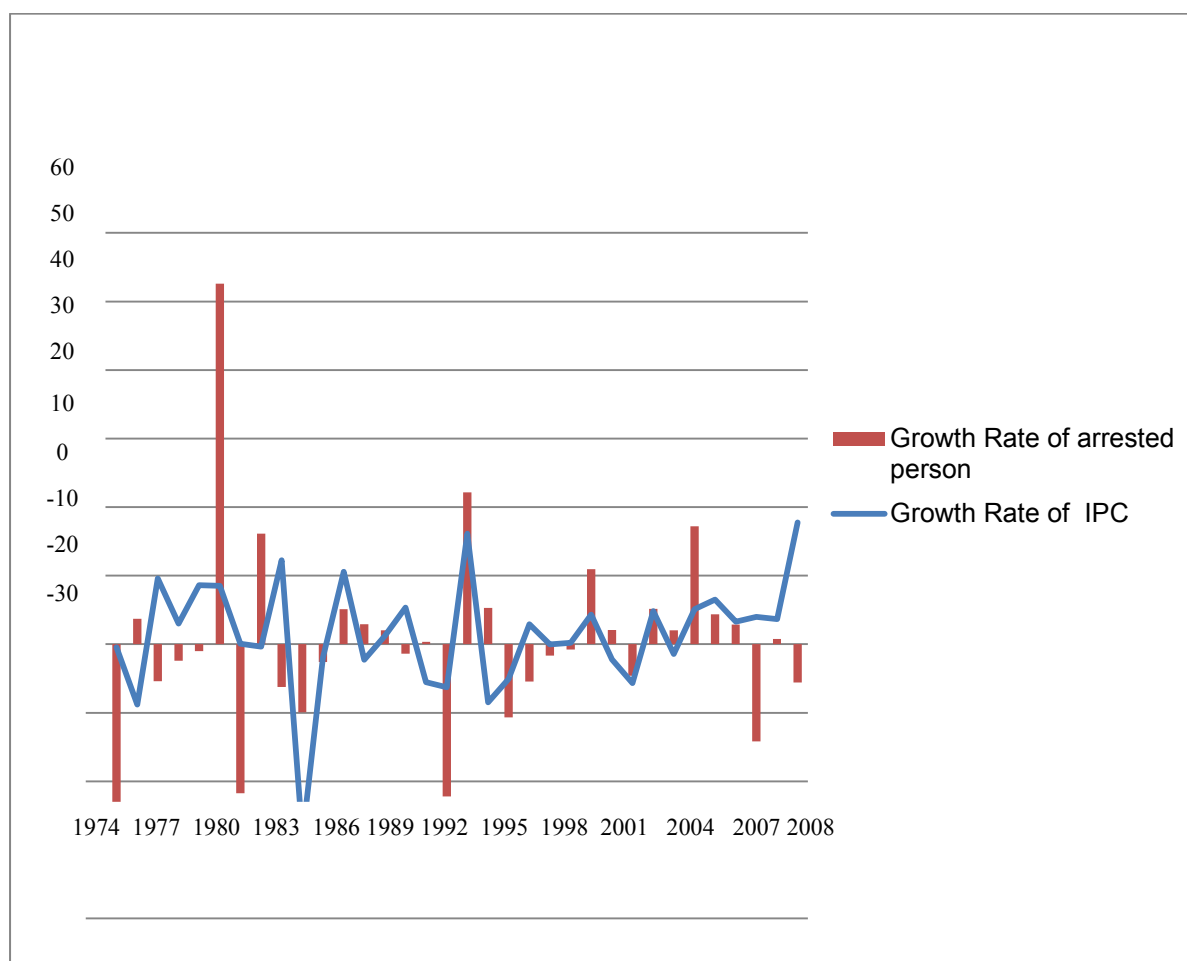
4.5 Trends in deterrence efforts:

In this sub section efforts would be made to look at the long term deterrence activities by the law enforcement agencies by examining some important indicators which can be taken as proxies for deterrence factors. These are arrests, charge sheet rates, and conviction rates which are discussed below. Also incidences of recidivism rate amongst the arrested persons would be found out since it would indicate to what extent an individual relapses into criminal activities after he is freed of any intervention by an agency of the criminal justice system.

4.5.1 Arrests effected by police:

Through the process of arrests, the suspected offenders are incapacitated from committing crime, and this is considered as an important step during investigation of an offence. Section 41 (1) (a) of Cr PC empowers a police officer to arrest any person who has been suspected in any cognizable offence or against whom a reasonable complaint has been made or credible information has been received. The number of arrests made by the police is seen to be having an impact in crime scenario since it is taken to be a proxy for increased police presence in a place.

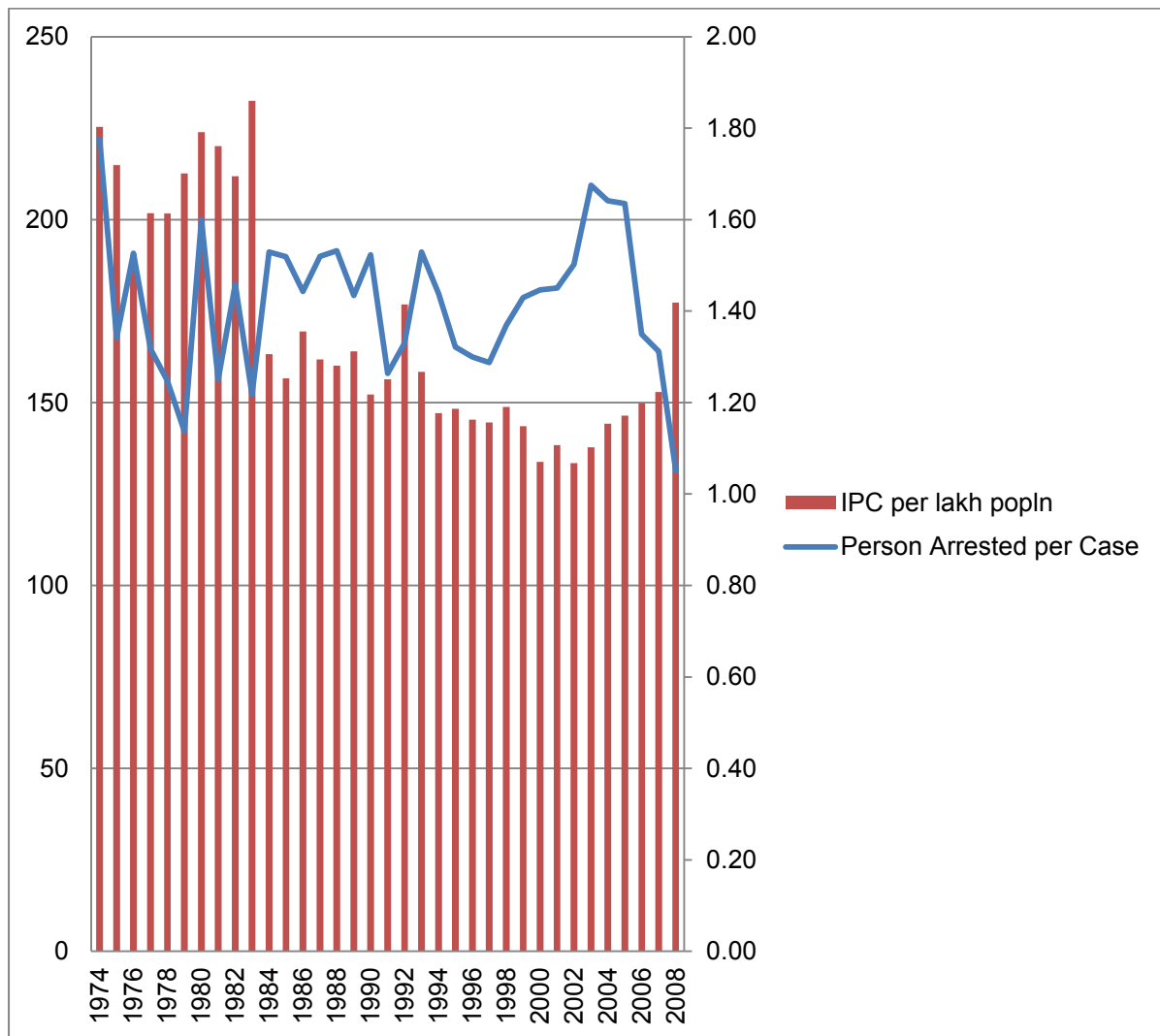
Figure 4.8
Growth in Arrested Persons and Recorded Crime 1974-2008



Source :Author's calculation from NCRB

The data on arrested persons provided by NCRB reports indicate that there has been steady increase in the number of persons arrested in total IPC cases in the state though there are fluctuations in some years. For example total number of arrested persons had increased from 69890 in 2010 to 72795 in 2012 with a decline in 2011 to 67146. It is to be mentioned that the data on persons charge sheeted mostly refer to the cases registered and investigated in earlier years since there is time gap for completion of the process of investigation which very often takes a longer time than expected due to increased burden on the investigating officer and other related factors. Therefore the person charge sheeted in a year may not be the person arrested for cases in the same year.

Figure 4.8
Crime Rate and Persons Arrested Per Case



Source :Author's calculation from NCRB

However, a broad picture emerges if one compares the data on arrested and charge sheeted persons in a particular year. It is seen that number of persons charge sheeted has decreased from 36232 in 2010 to 35286 in 2011 when there was a decline in persons arrested and it increased to 39549 in 2012 when the number of persons arrested were more. This indicates that police presence was felt more in 2012. The increased police action is generally expected to have a positive impact on crime control in a place.

One may like to look at the relationship between the arrested figures per IPC offence and its impact on the crime rate in the state. For the long period of 1974-2008 both

the figures have been put into graphs (Figure 4.8), and it is seen that in the first decade there was low rate of arrests per case and the crime rates had been found to be quite high. During the period between 1980 and 1983 when the agitation against the foreign nationals was at the peak, there had been higher crime rates. The following period was seen to have fluctuations in the arrest rate per crime. But the crime rate had been lower than the earlier level. There is slow upward movement of arrested rate since 1998 till 2006 and there was some discernible fall in crime rate in the state.

4.5.2 Charge sheet rates:

Assam has been showing very poor picture in terms of charge sheet rates of IPC crimes while comparing with other states. The CS rates are lower than the all India average rates both for the total cognizable crime under IPC and even for most of the individual crimes like rape, murder or property crimes. Eg. while in 2000, the all India average of C.S rate for total cognizable crime under IPC was 78.4%, in case of Assam for that year it was 53.8% which was much lower than the states like Kerala (93.4%). Similar picture is seen in case of 2004, 2008 and 2012, when Assam's C.S rates were 59.2%, 58.6%, & 54.1% while corresponding all India rates were 79.4%, 79.8%, 78.8% and states like Tamil Nadu (92.6% in 2004, 91.9% in 2008) and Kerala (95.4% in 2012) had shown much better percentage in terms of C.S rates.

Table 4.5
Comparative Charge Sheet and Conviction rates (in percentage)

Year	Assam		India	
	Charge Sheet	Conviction	Charge Sheet	Conviction
2000	53.8	21.1	78.4	41.8
2004	59.2	18.3	79.4	42.5
2008	58.6	16.2	79.8	42.6
2010	55.9	17.0	79.1	40.7
2011	54.3	19.9	78.8	41.1
2012	54.1	10.6	78.8	38.5

Source :Author's calculation from NCRB

One of the reasons for these low rates of C.S has been cited as the continuous engagement of police forces in anti insurgency operations over the years, placing the normal investigation work at the back seat. Moreover, as investigations in most of the terrorist related incidents were not forthcoming for charge sheets, the rate of C.S suffered. But even after the downward trend of such terrorist cases since 2005-06, not much headway had been made in the C.S rate. It is important to note that charge sheet reflects the quality of action by the police unlike the number of arrests which proxies for the quantity of police action (Laxmi Iyer et al, 2010).

The charge sheet rate showed wide variations amongst the districts. For example in 2004 districts like Nalbari (8.9) , Barpeta (12.9), Cachar (2.2), Lakhimpur (9.4), Karimganj (12.3), Hailakandi (12.9), Goalpara (2.3), showed a very poor performance in filing C.S. which remained far below State level C.S. rate of 59.2. In fact, the State level rate shows a reasonable figure due to the high C.S. rate in the two hills districts – Karbi Anglong (72.3) and Dima Hasao (93.3.) Otherwise, a large number of districts did not even cross the half way mark of the State level rate. However, the record of filing the cases in C.S. started showing improvement in the individual districts in recent time. Significant improvements have been noticed in Karimganj (86.0), Morigoan (72.5) and Hailakandi (68.4) by 2013.

4.5.3 Conviction rate:

The conviction rate has been defined as the ratio of the cases convicted to the total cases tried, in courts. The all India figure of conviction rate has not been of much satisfactory level. It is seen from NCRB publications that in 2000 it was 41.8 percent which was marginally higher as compared to 39.6 per cent in 1999. However in the year 2012 conviction rate came down to 38.5%. While making crime head-wise analysis it is found that the conviction rate was the highest (67.4%) in offences relating to sexual harassment. The next highest conviction percentage was 49.1 in cases of other IPC crimes and 47.4 per cent in cases of importation of girls. Very high percentages of acquittal/discharge of cases in which trials were completed were witnessed in cases of cruelty by husband and relatives (78.3%). One notices that some of the neighbouring north eastern states like Manipur, Mizoram and Nagaland have reported higher conviction rates for various crimes under IPC as compared to Assam during 2012. However one may like to look at the gap between the persons charge

sheeted and the persons convicted. For example the number of convicted persons in 2010 was 4182 which increased to 4648 in 2011 and declined to 3829 in 2013. This may throw some light on the extent to which the investigating officers had been successful in filing proper and sufficient pieces of evidence to the court during charge sheeting a case.

4.5.4 Recidivism

It is important to have a glimpse at the recidivism rate amongst the arrested persons since it would indicate to what extent an individual relapses into crimes after he is set free of any intervention by the criminal justice system. NCRB provides data on recidivism of arrested persons in terms of new and old offenders who were convicted in the past once, twice and thrice or more.

It is seen that such recidivism has been higher in Assam than that of national average. While the percentage of new offenders to total number of persons arrested in all India level was 90.7% in 2000, in case of Assam, it was 80.2%. This means that 19.8% of the offenders arrested were convicted in the past. If one looks at the breakup of the arrest made for past offences, it is seen that 15.7%, 3.1% and 1.1% offenders belong to the categories of offenders convicted once, twice, thrice or more in the past respectively but the corresponding all India figures are just 7.4%, 1.6% and 0.4%. The overall percentage of recidivism for the country is 9.4%. If one looks at the data for 2013, it is seen that Assam occupies the highest place amongst the States with a figure of 27.5% whereas all India level is 7.2%. The shares of arrested person convicted once, twice, thrice or more in the past also show an all round increase to 18.2%, 7.8% and 1.6% respectively which are more than that of the country as a whole in similar segments. All these indicate that a high proportion of criminals relapse into their criminal behavior after getting freedom from their past convictions.

The factors for this high recidivism are to be researched and appropriate measures are required to be prescribed. One important point worth mentioning may be the traditional role of police having surveillance on the old convicts. The earlier method of keeping a close watch on the persons convicted but released from incapacitation through regular police visits, and entry in patrol party registers have been mostly pushed to the backseat. Lack of such policing techniques may be the result of over engagement of police forces in law and order duties and VIP security with increased demand for anti-terrorism action. However to what extent anti terrorist actions are responsible for giving a slip to such

time tested policing method of crime control is also not very clear from the statistics of NCRB. For example terrorist infested states of J & K had only 0.3% of recidivism in 2013 but states like Nagaland had 24.2% along with states which are not affected by the terrorist violence have high recidivism like Kerala (21%), Tamilnadu (21%). If one considered the long term data from 1995 on recidivism among arrested persons in Assam, one sees fluctuations in percentage of habitual offenders vis-a-vis the new ones. For example, from 0.1% of habitual offenders, it increased to 20.6% in 1999; after 2000, it showed a fluctuating trend, then showing 20.5% in 2013.

The authority should try to have a well chalked out policy guideline regarding the schemes for desistance from crime in this matter including not only the police but also other stakeholders of the society for effective control of crime by preventing recidivism. Different programmes and services may be suggested to facilitate individual transformation who had encountered the intervention of incapacitation. However, as noted by UNODC on reintegration programmes, imprisonment alone will not address the problem of desistance from crime. The individuals after coming out of the prison may require a well co-ordinated programme to help their re-entry process into the social mainstream. This is full of emotional and social issues with practical problems of huge significance that needs careful handling. However, it would be of interest to have disaggregated data on recidivism to see the types of criminals in terms of different crimes relapsing into criminal activity.

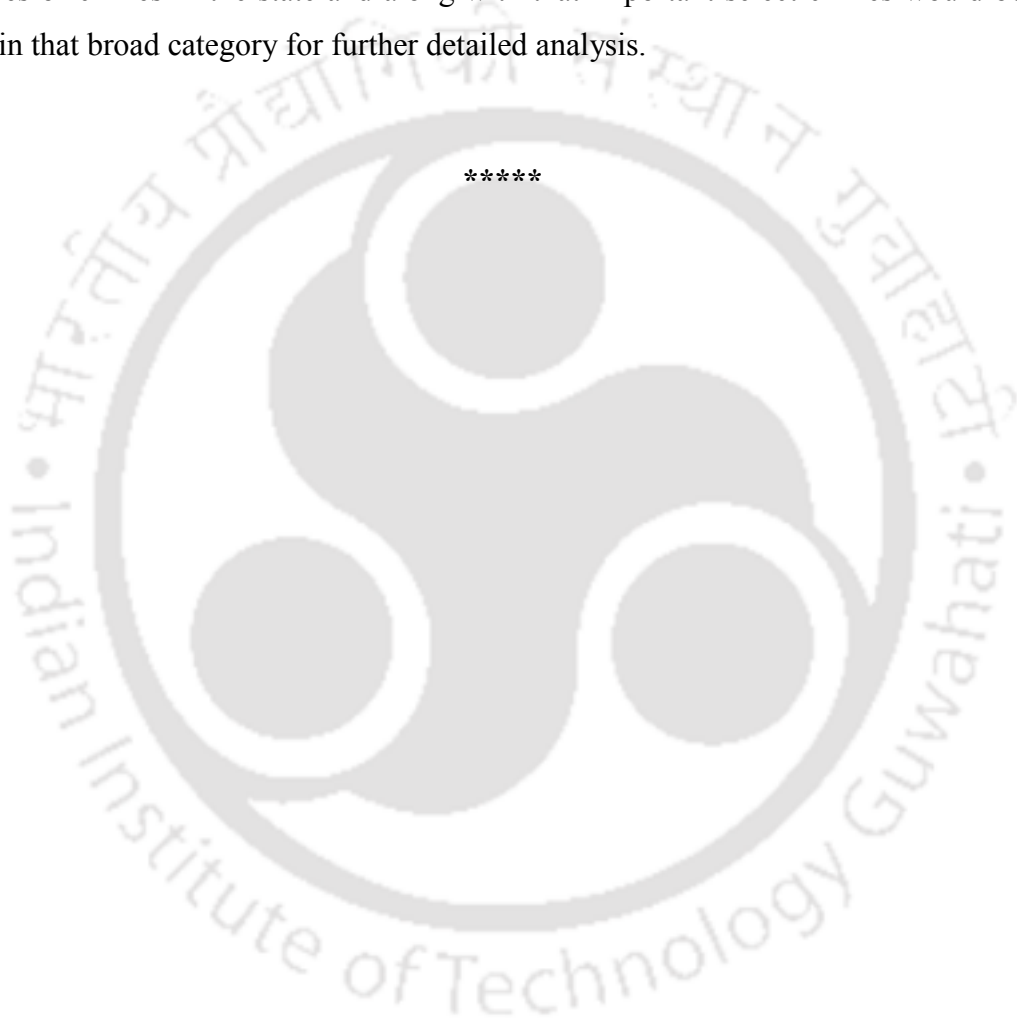
4.6 Conclusion:

It is indeed an accepted fact that descriptive information, reliable statistical inputs and proper research on such crime trends and patterns can help any law enforcement agency achieve its objective of efficient crime management in an accurate manner.

It is observed that the long term trends of total crimes have been more or less of similar nature in both at the national and at the state levels. However, the situations arising out of the Assam Agitation in the beginning of the 1980s resulted in sudden spark of crimes in the state, but in the period after this the broad pattern of crime scenario was in tune with the national trend. The present study also looked at the possible association of state crimes and other important parameters like backwardness and urbanization. Analysis was done in disaggregated level up to districts in terms of geographical distribution and pattern of crimes along with deterrence effort by the police and the criminal justice system.

However it is important to examine whether there have been changes in relative shares of different categories of crimes in the total criminal behaviour in the state. That is, one has to see how the compositions of these crimes have undergone changes and how they impacted the overall patterns of criminal behavior in the state.

Therefore, in next chapter, attempt is made to analyse the behavior of different categories of crimes in the state and along with that important select crimes would be taken up within that broad category for further detailed analysis.



Chapter 5

Analysis of Changes in Patterns and Composition of Crimes

This chapter would throw light on how total IPC cognizable crimes disaggregated into different classes of criminal behavior have been showing changes in patterns and compositions over time in the state and the districts. It also would highlight what pattern is discernible in case of individual crimes.

In fact, if the patterns of crime are analyzed properly it would help in prevention of crime by developing new strategies if one observes predictable and fairly regular pattern, and also one would prevent recurrence of criminal activities through appropriate shifts in allocation of scarce resources of law enforcement agency. In the successive discussion, efforts would be made to look at certain select criminal behavior too that have wider ramifications for the individuals and society as a whole, highlighting their temporal and spatial changes.

5.1 Classification of crimes

Crimes of different types would be discussed by classifying them into the following classes as per the categorization done in the Indian Penal Code:

- i) Crimes against body
- ii) Crimes against women
- iii) Crimes against property
- iv) Crimes against public order
- v) Economic crimes

5.2 Contributions of different classes of crimes to total IPC crimes

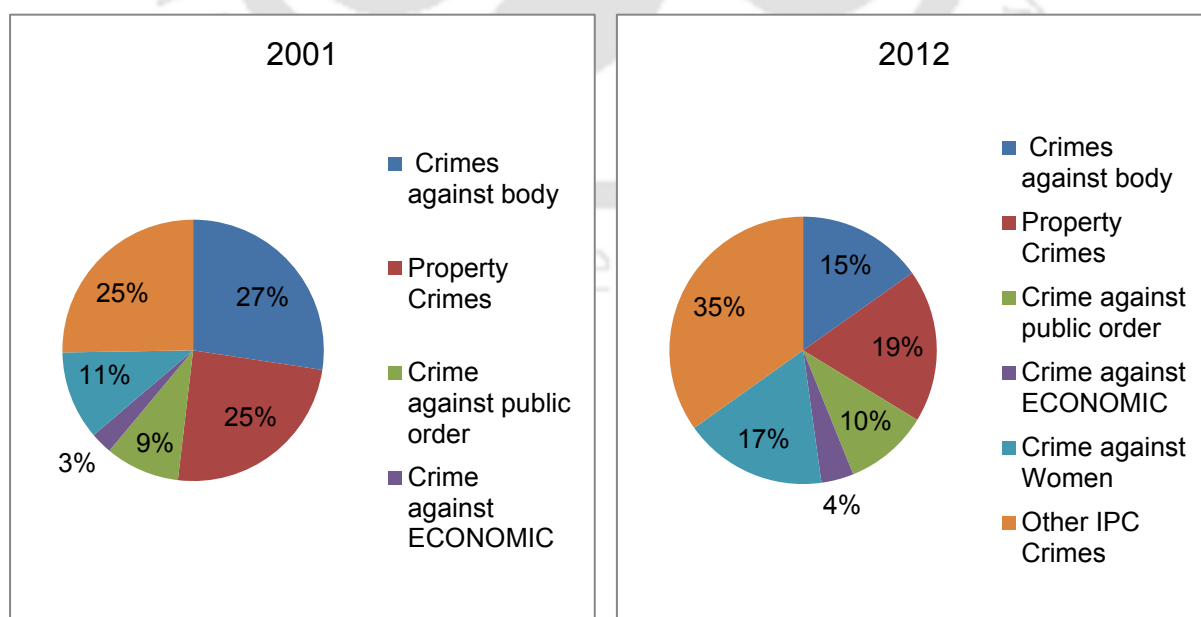
It is seen that there have been noticeable changes and shifts in the behavior of different classes of crimes over time. Some of the types of crimes have increased their relative importance while some others have been slowing down in their contributions to the total criminal activities in the state. For example, if one looks at the last decade one would notice that the relative share of body crimes has decreased. In fact it has come down by almost 50% of what it was in 2001. Similarly property crimes have also declined in terms of

relative contribution to total IPC crimes though the fall in percentage shares is not as much as in case of crime against body. In the year 2001 more than 50% of total IPC crimes came from these two types of crimes but in 2012 they could contribute 34% of total IPC crimes.

It is important to note that category of crime against women had during these period substantially increased the relative share. It was 11% in 2001 but by 2012 the percentage share of these types of crime reached very high figure of 17%. There is marginal increase in share by crime against public order during the period 2001 to 2012. Similarly there is marginal increase in crime in relating to Economic offences.

Therefore as seen from the graphical representation the decline in the share of crimes against body and property seems to have been compensated by the increase in the shares of other criminal behavior like crime against public order and women along with economic offences. Also the notable shift in the shares is seen in case of other IPC crimes. In fact the crimes under the head “other IPC crimes” have shown significant increase in percentage share from 25% to 35% in the last decade. This would mean that NCRB should go in for more disaggregation of these crimes which have been clubbed together as “other IPC crimes” to have a more meaningful insight into the pattern of analysis of the criminal behaviour.

Figure 5.1
Shares of different crimes

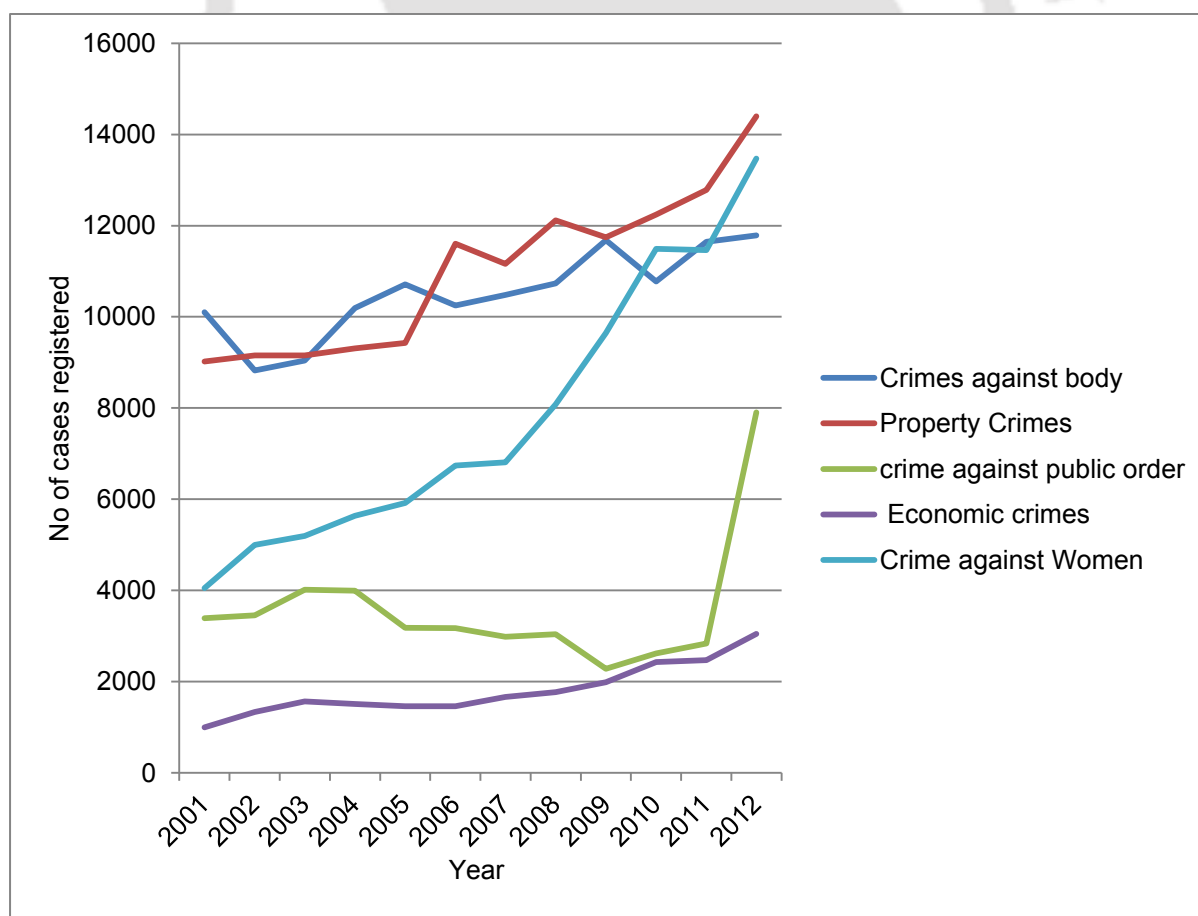


Source: Author's calculation from NCRB data

5.3 Trends in different categories of crimes

If one analyses the long term trends, it is seen that all classes of crimes have increased but at varying rates. For example, by taking the data for the last decade, the category of “Economic crimes” has shown sudden spurt in the years 2002, 2009 and 2012. These increases refer mostly to the fraudulent activities by the defaulting non banking financial companies who scrupulously collected deposits from innocent investors and disappeared. Crimes against public order have shown fluctuations in individual years, marked by an occasional increase due to the communal riots in specific years. In case of crimes against property, a more or less constant trend seems to prevail, with a sudden rise in 2006 and 2012. The crime against women has witnessed steep increases. Such type of crime has been cause of worry for the society and the policy makers as well. There has been a steady increase in the property crimes with significant rises in the years 2006 and 2012. Similarly the body crimes have seen steady increase with fluctuations in between.

Figure 5.2
Cases registered under different classes of crime



Source: Author's calculation from NCRB data

It is relevant to note that with the onset of militant activities in the late 80's in the state there have been frequent incidences of violent activities. Therefore, there is a need to look at the comparative trends both at the national and state level to get a proper comparison of what is happening in Assam in violence related crimes as defined by NCRB. These include violent crimes affecting body, property, public safety and women.

Table 5.1
Violent crimes

Year	Total Violent Crimes	Percentage Share To All-India Crimes	Rate Of Violent Crimes	Percentage to Total Cognizable Crimes Under IPC
2000	9628	4.1	36.6	27.4
2006	8874	4.3	30.4	20.3
2012	16847	6.1	54.2	21.7

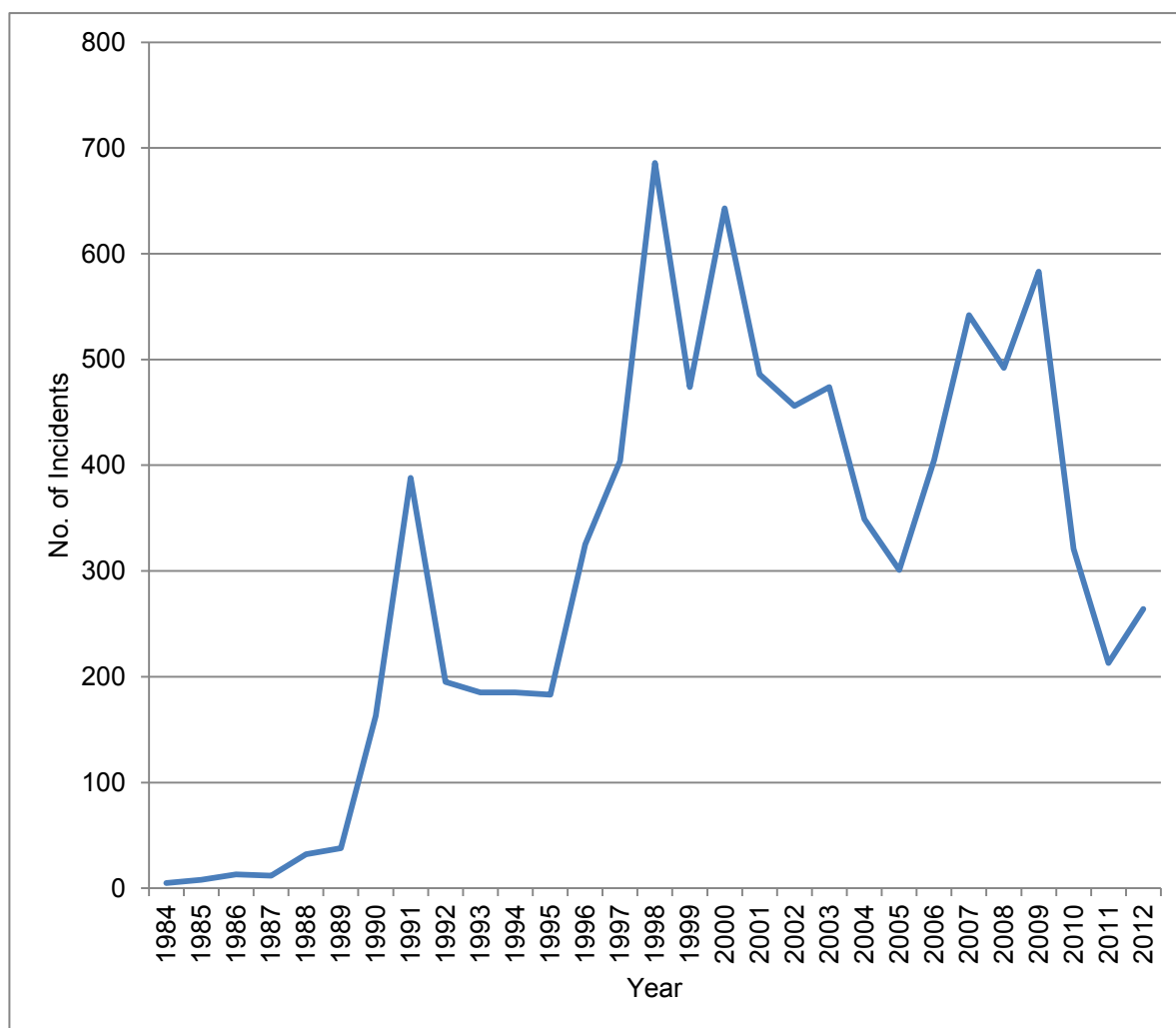
Source: NCRB

Looking at the figures in the recent times, one observes that the rate of violent crimes per 100000 populations in India increased from 21 in 2011 to 23 in 2012. However, Assam had much higher violent crime rate of 54.2 in 2012. In fact, Assam recorded the highest rate of violent crimes in both these years (2011 and 2012). Since there has been a fall in the rate of murders and other crimes against body, the primary contributor to this rise in violent crime rate in the state has to be from kidnappings and abductions and crimes against women. For instance, in 2012, the rate of kidnappings was 12.3 per 100000 population, as against the rate of 2.91 in 1974. The rate of kidnapping of women and girls was considerably higher at 27.6 in 2012. Interestingly, a state like Andhra Pradesh, which has a much larger population than Assam, had just 1870 reported kidnappings and abductions while the corresponding number of kidnappings for Assam was 3812- more than double the number of Andhra Pradesh in 2012. In fact, there are only two other states that have recorded higher number of kidnappings and abductions than Assam, and these are Rajasthan and Uttar Pradesh. This observation has continued to puzzle analysts.

The period from 2004 onwards marks the decline of insurgency in the state. A fall in murders and other crimes against body is therefore an expected trend. However, a

phenomenal rise in kidnappings cannot be accounted for without looking into the fact that the fall in insurgency in the state was accompanied by a surrender of a large number of militants,

Figure 5.3
Incidence of Terrorist violence



Source: : Author's calculation from NCRB data

some of who allegedly got involved in organized crime syndicates and rackets in the trade of large number of commodities such as transportation of coal to outside the state. Thus, it is argued that the scope for organized crime increased, and one of its manifestations is the rise in kidnappings for extortion. At the same time, some of the militant groups are still active in a number of pockets in the state who resort to kidnappings to extort money to manage their fast dwindling sources of finances. The following data obtained from the Assam Police would throw light on the changes over time in relevant aspects of militancy related violence in the state.

Table 5.2
Casualties from violent crimes.

Year	No. of incidents of terrorist violence	No. of civilians killed in terrorist violence	No. of persons kidnapped in terrorist violence
1984	5	1	-
1985	8	3	-
1986	13	8	-
1987	12	5	-
1988	32	24	-
1989	38	25	16
1990	163	45	146
1991	388	163	146
1992	195	72	54
1993	185	54	51
1994	185	88	48
1995	183	125	49
1996	325	263	105
1997	404	237	103
1998	686	387	148
1999	474	179	123
2000	643	412	111
2001	486	261	67
2002	456	218	109
2003	474	260	124
2004	349	203	46
2005	301	65	44
2006	405	131	79
2007	542	269	91
2008	492	260	94
2009	583	232	98
2010	321	56	90
2011	213	29	65
2012	264	39	83

Source: Assam Police

5.4 Trends in rates of different categories of crime

Further, it would be appropriate to look at how these different classes of crimes have undergone changes in their crime rates defined as crimes per 100,000 population. For example, in the recent past, there has been significant increase in the rate of economic crimes as was found in case of absolute number of crimes in the same category. From 3.8 economic crimes per 100000 populations in 2001, it almost tripled to 9.8 in 2012. A similar trend in crime rates for crimes against women was observed during this period. There has been a steady increase in case of property crime rates with a significant fall in 2004, the reason for which is not known. This might have something to do with the low registration of such cases. The sudden rise in the rate of public order crimes in 2012 may be traced back to the riotous situations in Kokrajhar and few other districts. On the other hand, the body crime rate only showed marginal decline during the relevant period.

Table 5.3
Crime rates per 100000 population under various categories

Year	Rate of body crime	Rate of Property Crime	Rate of Public Order Crime	Rate of Economic Crime	Rate of Crime against Women	Rate of Other IPC Crimes
2001	38.4	34.3	12.9	3.8	15.4	35.4
2002	33.1	34.4	13.0	5.0	18.8	32.2
2003	33.2	33.6	14.7	5.7	19.1	33.9
2004	27.0	24.7	10.6	4.0	14.9	26.6
2005	38.0	33.4	11.3	5.2	21.0	40.1
2006	35.7	40.4	11.1	5.1	23.5	36.4
2007	36.0	38.3	10.2	5.7	23.3	41.8
2008	36.2	40.9	10.3	6.0	27.3	59.4
2009	38.8	39.0	7.6	6.6	32.1	59.7
2010	35.4	40.2	8.6	8.0	37.8	72.7
2011	37.8	41.5	9.2	8.0	37.2	82.9
2012	37.8	46.2	25.4	9.8	43.2	86.9

Source: Author's calculation from NCRB data

5.5 Growth in the rates of different categories of crimes

In order to calculate the average annual compound growth rates in the rates of different classes of crimes in the state log-linear model has been used. The equation for log-linear model is as under:

$$Y_t = Y_0(1 + r)^t$$

where r is the compound rate of growth of Y . In order to make the equation linear, natural logarithm on both sides of the equation were taken,

$$\ln y_t = \ln y_0 + t \ln(1 + r)$$

Now letting $\beta_1 = \ln y_0$ and $\beta_2 = \ln(1 + r)$

$$\ln y_t = \beta_1 + \beta_2 t + u_i$$

Where: $\ln y$ = logarithm of regressand or dependent variable

β_1 = The intercept, β_2 = Coefficient of time, u_i = Disturbance term

After getting value of β_2 , ACGR has been calculated by the use of the following equation:

$$ACGR = \text{Antilog} \beta_2 - 1$$

Accordingly, the annual compound growth rates for the last decade have been calculated as shown in the table below:

Table 5.4

Annual compound growth rate of crime rates

Different classes of crime	Growth rates
Total IPC Crime	5.4%
Other IPC	0.2%
Women Crimes	9.3%
Economic Crimes	6.8%
Public order Crimes	1%
Property Crimes	2.7%
Body Crimes	0.63%

Source: Author's calculation from NCRB data

Different classes of crimes have shown varied rates of growth overtime in their crime rates. As per estimated compound growth rates of crimes per 100,000 population in individual classes of crimes one could observe that there are wide variation in the growth of crime rates. For the last decade (2001 to 2012) the annual compound growth rate of the rate of total IPC crime is 5.4% as against the lower rate of “other IPC offences” which stands at 0.2%. It is the matter of concern that offences under the head of crime against women the state has witnessed a very high growth rate in terms of crime per 100,000 population. The low growth rate for body crime rate during these period needs to be mentioned which is 0.63%. This is definitely in a much lower scale than that of property crime and public order crime. Another serious matter of concern is the high growth of economic crime rates which is 6.8% during the period. The increase growth rate of economic crime is required to be looked in to in a more exhaustive manner so that one can see the possible role of globalization and liberalization in the economy of the nation since early 1990's.

5.6 Crimes against body:

Crimes against body are considered as the most prominent of the violent crimes. According to Indian Penal Code such category of crime includes murder, attempt to murder, culpable homicide not amounting to murder, kidnapping and abduction, hurt, and death by negligence. It would be of relevance to study how the contributions of body crimes to the total IPC cognizable crimes have undergone changes over time. Such an analysis

would help one taking inferences with respect to relative importance of different types of criminal behaviour in crime management policy making.

There have been changes in the shares of these crimes over the period under consideration. Looking at the immediate past decade, it is seen that there has been a steady decline in the overall contribution of this category of crime to the total IPC crimes in the state.

Table 5.5
Percentage contribution of different crimes against body

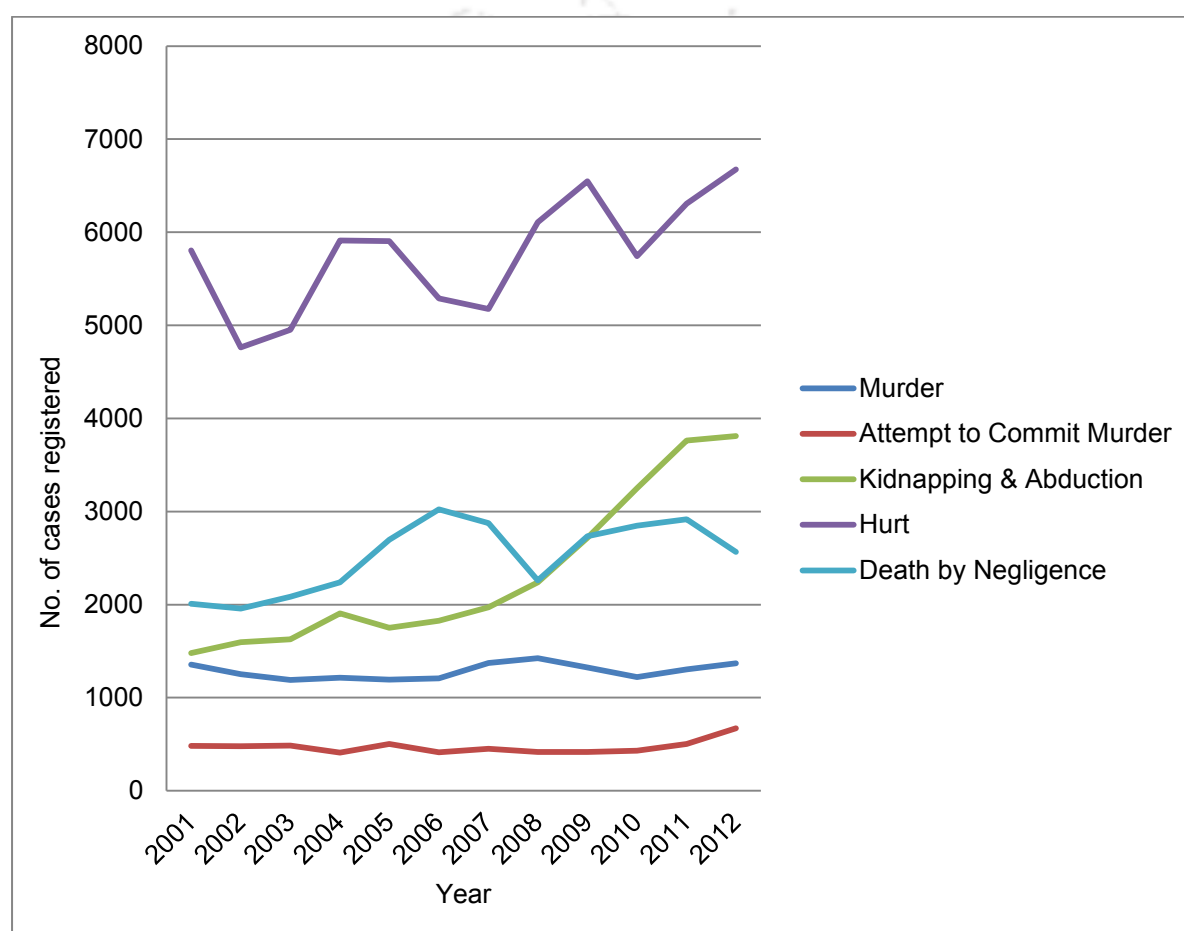
Year	% of crimes against body to total IPC crimes	Murder	Attempt to Commit Murder	C.H. Not Amounting Murder	Kidnapping & Abduction	Hurt	Death by Negligence
2001	29.85	12.14	4.31	0.36	13.25	51.96	17.99
2002	25.97	12.40	4.74	0.54	15.79	47.15	19.37
2003	25.65	11.46	4.67	0.46	15.67	47.66	20.08
2004	29.33	10.34	3.49	0.54	16.23	50.34	19.07
2005	28.09	9.81	4.13	0.96	14.39	48.55	22.15
2006	25.77	10.24	3.51	0.27	15.48	44.87	25.63
2007	25.27	11.49	3.77	0.91	16.49	43.29	24.05
2008	23.69	11.39	3.33	0.57	17.88	48.78	18.04
2009	24.90	9.60	3.03	0.25	19.73	47.53	19.85
2010	21.96	9.03	3.18	0.34	24.00	42.42	21.03
2011	22.01	8.78	3.40	0.32	25.36	42.49	19.64
2012	19.50	9.03	4.42	0.36	25.17	44.08	16.94

Source: Author's calculation from NCRB data

In recent times this decline has become more prominent. For example it is seen that the percentage share of this class of crimes amounting to 29.85% in 2001 came down to 19.5% in 2012, even though there are ups and downs in the intervening periods, eg. it increased from 25.65% in 2003 to 29.33% in 2004 and started declining since them. The growth of crime against body for 2001 to 2012 has been 61% against 132% total IPC crimes

during the same period. Though individual category of crimes like murder, attempt to commit murder, CH not amounting to murder have been showing almost a constant growth during this period, but other classes of crimes like kidnapping and abduction and hurt have experienced much higher growth. The graph below shows the trend of the various body crimes in the state in the decade from 2001 to 2012.

Figure 5.4
Breakup of crimes against Body



Source : Author's calculation from NCRB data

Just as the absolute trend depicts, a look at the percentage share of the various subheads (such as murder, attempt to commit murder, etc) under crimes against body clearly show a declining trend for all the subheads except kidnapping and abduction, whose share increased from 13.25% to 26.64% during 2001-2012. In fact, the share of kidnapping and abduction doubled during this period, while the actual number of crimes committed under this subhead more than tripled from 1480 to 4801. On the other hand, the number of murders

Table 5.6
Rates of different body crimes per 1,00,000 population

Year	Murder	Kidnapping	Extortion
1974	3.10	2.91	NA
1975	2.77	3.38	NA
1976	2.39	3.16	NA
1977	2.32	3.35	NA
1978	2.69	3.11	NA
1979	2.71	3.13	NA
1980	3.28	2.89	NA
1981	3.06	3.89	NA
1982	2.99	3.36	NA
1983	9.07	3.61	NA
1984	3.47	3.59	NA
1985	3.01	3.82	NA
1986	3.20	3.99	NA
1987	3.54	3.90	NA
1988	3.60	4.00	NA
1989	4.08	4.33	NA
1990	3.90	4.50	NA
1991	4.34	4.98	NA
1992	4.81	5.20	NA
1993	4.69	4.91	NA
1994	4.97	4.73	NA
1995	4.95	4.76	1.66
1996	5.73	4.57	2.17
1997	5.72	4.96	2.10
1998	6.49	5.68	1.97
1999	5.64	5.34	1.57
2000	5.66	5.29	1.57
2001	5.09	5.41	1.63
2002	4.84	5.88	1.59
2003	4.65	5.97	1.60
2004	4.41	5.90	1.38
2005	4.18	5.96	1.52
2006	4.32	6.29	1.59
2007	4.55	6.46	1.96
2008	4.74	7.48	2.11
2009	4.40	9.05	2.15
2010	4.02	10.69	2.99
2011	4.29	12.29	3.22
2012	4.39	12.23	3.45

Source: Author's calculation from NCRB data

has remained more or less constant. It was 1356 in 2001 and reached 1368 in 2012. These figures relating to murder may be contrasted to that of 498 in 1974 and there was slow rise of the incidents of murders over time. There was a drastic fall in the percentage of murders committed to total crimes against body from 12% in 2001 to 9% in 2012. However, although the number of cases registered as ‘hurt’ has increased nearly two times in absolute term, during this period, its share in total body crimes has actually seen a significant fall from 52 to 44%. The phenomenal growth of kidnappings and abductions of nearly 350% during this period has over shadowed every other subhead. Starting in 2001, both kidnappings and murders recorded a nearly equal crime rate of around 5 per 100000 populations. However, by 2012, the rate of kidnappings had again increased by nearly 2.5 times while that for murders actually declined.

The table above on crime rates of murder, kidnapping and extortion provides the rates of these subheads under body crimes for a comparative analysis during the period 1974-2012. However separate data for extortion was not provided in NCRB reports before 1995. Below there will be more detail analysis of trends and patterns of a few sub heads of crimes against body such as murder and kidnappings and extortions.

5.6.1 Murder

Murder is considered to be the most grave of all criminal offenses. UNODC (2011) has taken the definition of intentional homicide as “unlawful death purposefully inflicted on a person by another person”

The Indian Penal Code defines murder under section 300 as,

1. The act by which death is caused with the intention of causing death; or
2. The act done with the intention of causing such bodily injury as the offender knows to be likely to cause the death of the person to whom the harm is caused; or
3. The act done with the intention of causing bodily injury to any person, and the bodily injury intended to be inflicted is sufficient in the ordinary course of nature to cause death; or

4. Committing the act, knowing that it is so imminently dangerous that it must, in all probability cause death or such bodily injury as is likely to cause death and committing such act, without any excuse for incurring the risk of causing death or such bodily injury as aforesaid.

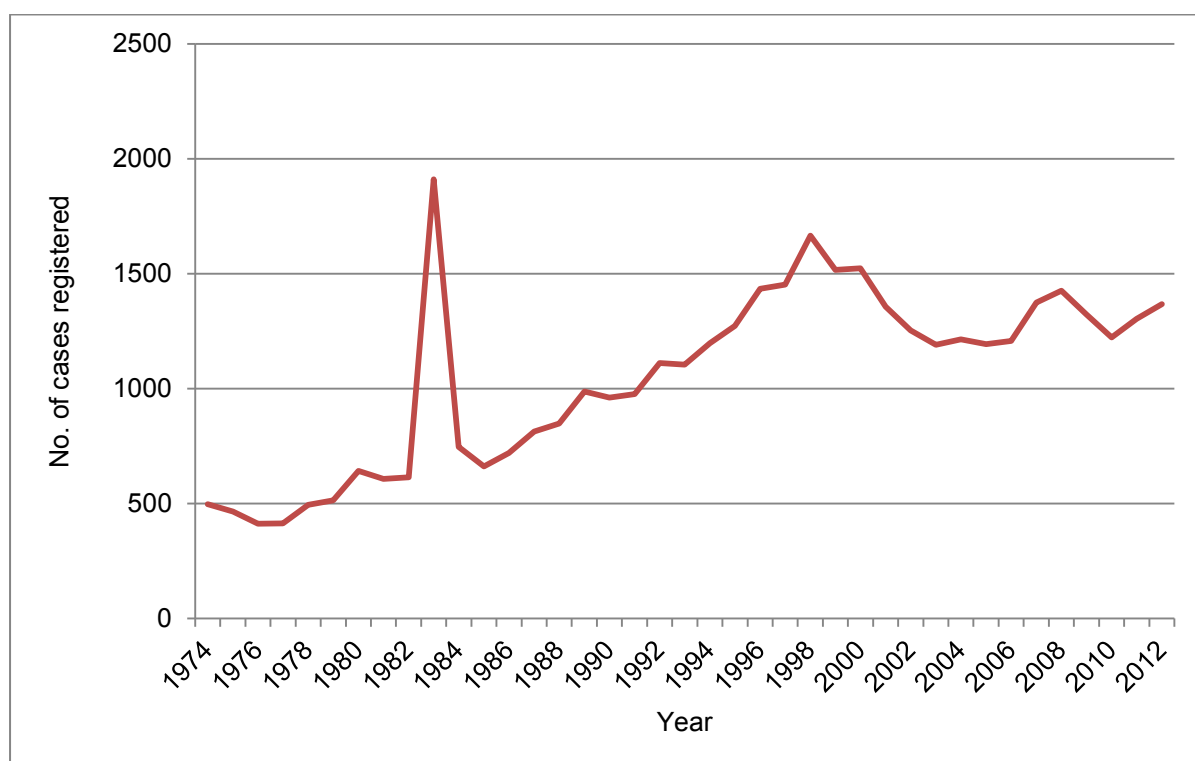
Issues relating to data on murder

There are two important sources of homicides data viz Police record / criminal justice system and public health system. Though nature of public health system data are more universal in nature, it is said that data from police sources can be counted as more detailed, complete and valid. (UNODC,2011). The homicides data for police are generally recorded in a more detail manner because of its importance to the society as the most heinous crime. Normally information coming to the police for registering a case contains the detailed inputs like the specifics victims, the suspected perpetrators, modus operandi of the offence etc. Moreover the homicides are generally not barked at the police station level, and more or less a complete picture on homicides incidents can be had without much possibility of underreporting & under registering since police register the homicides cases. It is a fact that murder or homicides data are usually more reliable than any other crime figure of the police data sources. This is because the loss of a human being is generally reported to the police. Still it is felt that there is a gap between the data at police station and the actual field level data as Marwah (2014) has found that there is difference in homicide data obtained from two different sources like NCRB (i.e the national level police data) and public health sources. He has also noted that the gap might be because of the fact that NCRB figures exclude data on death due to armed conflicts and operations by security forces.

Trends in murder

By looking at the data on incidents of murder in Assam in the long run one finds that the number of murder cases had been showing a steady increase till 1982, for example it was 498 in 1974 and increased 615 in 1982 though there were ups and down in the murder statistic due to the violent situation in 1983 arising out of Assam agitation against foreign national and the forcible election process for which there was a sudden spurt in homicidal incidents in 1983 showing a jump to a staggering figure of 1911. After the

Figure 5.5
Number of Murder cases registered



Source: : Author's calculation from NCRB data

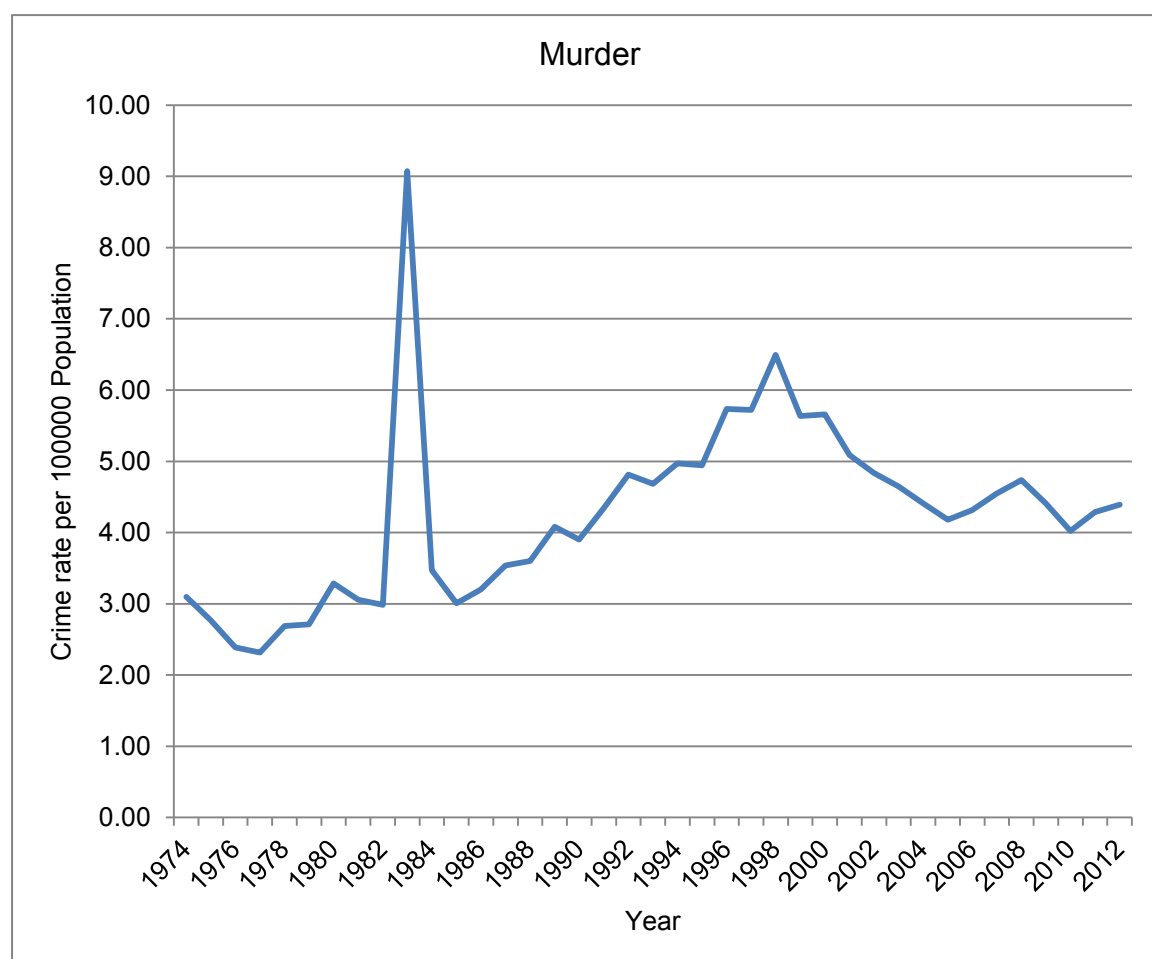
agitation was over and as the peace returned to the state the scenario in such cases improved and it was below 1000 till 1991. However after 1992 the cases of murder started showing steep increase. Most of this related to the violence by the terrorist element and occasional ethnic clashes. However after 2002 due to the surrender of members of some militant group the incident of homicides came down though there have been occasional increase or decrease of murder cases but mostly it was below 1400 till 2012. In fact if one looks at the murder rate in the state it is seen that there is a slight decline in the rate in last few years for example in 2001 murder incidents per 100,000 population were 5.09 in 2001 and 4.39 in 2012.

Share of murder cases in crime against body has come down, for example in 2001 share was 12.14% which came down to 9.03% in 2012.

The descriptive statistics have been calculated for the period 1974-2012 and further it has been sub divided into smaller periods to have a better understanding of these statistics. Average for the entire period 1974 to 2012 is 1051. This higher figure is mainly

because of the high murder rates in the period 1991 to 2000 which is 1326 against the comparative mean values of 1286 (2001-2012) and 724 (1974-1990). The maximum number

Figure 5.6
Crime rate of Murder per 1,00,000 population



Source: Author's calculation on NCRB data

of murders in a year was 1911 which occurred in 1983 in the entire 60 years. It may be recalled that the year 1983 had been the most turbulent year in the Assam movement.

As mentioned in UNODC (2011) report high level of homicide have been found to be associated with low human and economic development. Empirically it is seen that the prevalence of homicides incidents is more frequent in the countries with lower levels of human development and the countries which are facing high level of income inequality. Even the economic down turn effects the scale of homicides. For example, as noted in the

report, crimes relating to property and homicides had been affected by the worldwide financial crisis of 2008-09 which witness the decline in GDP and CPI (Consumer Price

Table5.7
Descriptive statistics of Murder

Period	1974-1990	1991-2000	2001-2012	1991-2012	1974-2012
Mean	724	1326	1286	1304	1051
Max	1911	1665	1426	1665	1911
Min	413	976	1191	976	413
St Dev.	354	225	82	160	389

Source: Author's calculation on NCRB data

Index) in several countries. The reverse effect is also not uncommon meaning the performance of economy also affected by the offences like homicides.

In the following sections discussions would be made on the important components of the homicides incidents in the states like murder motives, age of victims, availability of fire arms as contributory factors etc.

Motives of Murder:

In last few years NCRB has been publishing motives of murder in 13 categories. However these categories are not mutually exclusive, i.e. some of the cases might be cutting across other categories of motives too. Moreover there is a classification called “others” which take care of other categories not included in the other 12 classes. The others categories has the maximum presence in the motives of murder there by highlighting the fact that several classes of murder motives which could be put into other 12 classes actually take the lion's share (73% in 2012). One should try to put this in different categories in a more disaggregated manner to see the real reasons about the homicides It is to be mentioned that the different causes of murder or the motives behind murder are noted by the investigating officer during their course of investigation, so to what extent the cause or motive is revealed

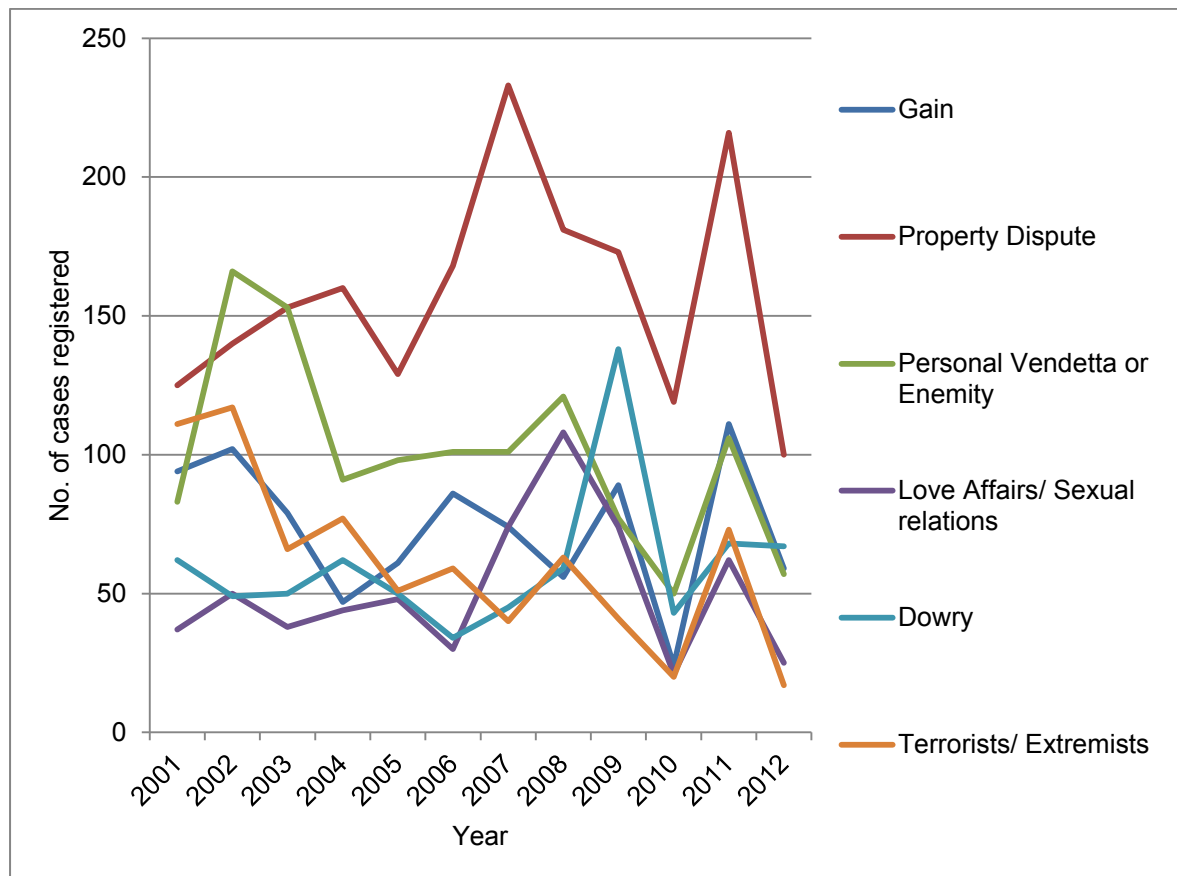
by the accused and recorded by the investigating police officer is also a matter of concern i.e. as to what extent these reflect the reality.

The 13 motives noted by NCRB data are: gain, property dispute, personal vendetta/enmity, love affairs/sexual causes, dowry, lunacy, witchcraft, terrorism/ extremism violence, political reason, communication, casteism, class conflict and other motives. As no clear definitions of these motives in NCRB documents are available one may have to set own assumptions while looking at these causes as narrated in the reports. It is seen from the list of different causes of murder (for the period 2001-2012) in Assam, excluding the other causes, it is property dispute that has been consistently higher than the other motives like gain, personal vendetta etc. The gain motive normally relates to acquisition of valuable materials like gold, jewellery cash etc. In several occasions it also would be connected with robbery, dacoity and extortion where murder had taken place. For the motive relating to property refers to grabbing of property, encroaching property like land, building etc. This cause is mostly found to be relevant in cases of family disputes or disputes amongst the community members in the neighborhood. It is worthwhile to note that motives of gain, property and personal vendetta as a whole have been contributing a high percentage to the total causes. It is 33.23% in 2011 and mostly it is remaining more than 20% since 2001 with only 15.78% in 2010 and 15.79% in 2012.

Some important observations result from the homicides caused by different motives. These are distinct shifts in the pattern of the motives. For examples, the gain motive behind homicides has been showing a decline. In the 1990's the incidents of homicides done to gain motives were quite high, mostly it was more than 100, but in the last decade it has shown a declining trend which is keeping much lower than 100, eg. gain motive caused 147 incidents of murder in 1990, 212 in 1992, but it came down to 24 in 2010, and 59 in 2012 (though a sudden high figure of 111 was shown in 2011). These are much lower than those of the other state in country. Almost similar picture arises in case of the motives of personal vendetta/ family. In case of motives with respect to love affairs/sexual relation, one witnesses increasing trend in the decade 2000-2010 in comparison with that of the earlier decade.

However, a major shift of motives for murder has been seen in the dowry related incidents. It is a well known fact that the menace of dowry had been unheard of social

Figure 5.7
Number of cases registered as against Motives of Murder



Source: : Author's calculation from NCRB data

custom amongst the local people in the state. The local socio cultural fabric did not approve such a custom that are very much prevalent in some other states in the country .It is very often believed that due to the liberalization and openness of the society through exchange of cultural values one could see the menace entering the social milieu of the state too. And this has a reflection in the crime pattern of the state. In 1990, the number of murder due to dowry motive was as low as 8, which increased to 23 in 1995, and reached 62 in 2001 and 67 in 2012.

Similarly the cases relating to witchcraft is also disturbing. This practice of branding an individual as “witch” is prevalent amongst some section of people of particular communities. Cultural factor, social prejudice, erroneous beliefs and customs in the society also influences crime in many places. One such crime is the killing and torture in the name of

witch craft. The superstitious belief of witches has been a perennial problem leading to severe form of violation of human rights in a number of states in the country. This is known by different nomenclatures in different places. While in Assam this is known as Daini system of witch craft, in Chhattisgarh, one would call this as Tonhi. Very often a woman (even a male folk being branded as a witch is very frequent) is said to be a Daini or Tonhi by the members of a community. It is accused that that the woman or man branded as witch is the cause of all ills in the community. She is falsely implicated as the one responsible for spreading deadly diseases that are afflicting the common people, especially the children. A concerted game plan is made to insult, humiliate and inflict mental and physical torture on the woman branded as a 'witch'. There are cases when such a 'witch' has been socially ostracized and publicly allowed to suffer from wounds. The tendency to put the blame on women for any natural or other calamities, including medical urgencies or epidemics that befell a village shows how superstition or social prejudices play a decisive role in this matter. These areas witnessed communal and ethnic conflicts, mistrust and hostility to Law enforcing agencies. The apathetic attitudes by development agencies, weak resource base, low level of skills & literacy had created a widening gap between administrative machinery and the villagers (Saikia 2012). Issue of empowerment of fringe communities needs to be looked at also in this case (Chakraborty and Borah, 2013). In fact the emotional stress and social ostracization of the victims, the stigma and social apathy towards the victims make this dehumanizing offense need a different strategy to tackle. Empowerment, in this context can be achieved by a process which enhances the ability of disadvantaged individuals or groups to challenge and change existing power relationships that place them in subordinate economic, social and political positions.

This type's belief in black magic and sorcery lead to torture, social ostracization and personnel trauma in the mind of the victim. There are number of difficulties in investigation of such cases since because of the involvement of majority of villagers it becomes difficult to get the timely information of commission of such offences in remote villages. More over some time the decision to declare someone a witch involves community decision making for which it is difficult to get evidences by the investigating agencies. Because such types of social prejudices are prevalent mostly in far flung and isolated areas even the reporting of cases is rarely forthcoming. Another problem in documentation of witch craft cases are in relation to the registration of the such cases under IPC as general homicides cases, though there are few states in the country where separate legislations have been made

to take care of this crime. The good news is that because of continuous awareness programmes launched by the state police through the police community initiative like Project Prahari and other social action groups, NGOs, women associations and publicity through media, there is general awareness on the part of the villagers and affected parties to come and lodge complains to the police about this crime. The more reporting and registering may be one of the reasons of the increase in witch craft related cases. The number of witch craft cases registered for 2010, 2011, and 2012 as per Statistical hand book of Assam are 11, 29 and 14 where as persons arrested are 52, 149 and 113.

Table 5.8
Share of different motives in total Murder cases

Year	Gain as % of Total	Gain, Property & Vendetta as % of Total	Terrorists as % of Total	Other Causes as % of Total
2001	6.93	22.27	8.19	59.88
2002	8.14	32.56	9.34	49.72
2003	6.63	32.33	5.54	54.41
2004	3.87	24.55	6.34	60.05
2005	5.11	24.12	4.27	63.07
2006	7.13	29.41	4.89	59.57
2007	5.39	29.69	2.91	58.22
2008	3.93	25.11	4.42	58.77
2009	6.73	25.62	3.10	55.25
2010	1.96	15.78	1.64	77.27
2011	8.52	33.23	5.60	50.12
2012	4.31	15.79	1.24	73.10

Source: Author's calculation on NCRB data

As the statistical data show there are a large number of homicides cases where the motives have been identified as terrorist/extremists activities. It is worthwhile to mention that Assam had been witnessing the scourge of terrorism since late 1980's after the agitation against the

illegal immigrants. There are cases of homicides by arms and explosive. A number of terrorist groups have been indulging in such nefarious activities like killing innocent people in the name of demanding either “independent statehood or nation”. It is seen from the table that the homicide cause due to terrorism has been declining in the latter half of the decade, due to intensive anti-terrorism and the insurgency operations by the security forces.

Incidents of homicides where love affairs/sexual relations are cited as motives are seen to be maintaining almost a stable percentage with the total murders: 2.7% (2001) and 1.82% (2012). The motives under love affairs/ sexual relations include the incidents which result from personal jealousy, denied love. There are also incidents of intimate homicides that result from intimate or known partners and even occasionally family members (UNODC, 2011). Such type of violence very often may be in the forms of domestic violence and abuse within the family unit itself one can trace back the causes of such violence to the status of a women in the society, extent of patriarchal dominance in the family structure, socio-economic factors, cultural and political situation in the country. However the record data on domestic violence is very poor because of social stigma and traditional values, such offences very often down come to police station for documentation see) uncertain parts of family members. In recent times in India there have been reports about women getting killed because of marrying a man from a community other than allowed by their own community members. This may be the reflection of patriarchal dominance on our social structure. (Marwah, 2014, UNFPA, 2003)

Another interesting observation for the data of motives of murder is that in the social system of Assam, traditionally caste has not been such a major issue like is in North India states. In fact caste related violence has been very rare in this state. However, the figures of 2011 and 2012 with caste related homicides of 6 & 41 needs to be seen with proper care. Whether these have overtone of caste difference one needs a proper scrutiny.

As mentioned by Dreeze and Khera (2000), a major share of murder is seen to have been committed on the issues of disputes relating to women and property both immoveable & immovable. Same is the case in Assam where combined motives of gain, property dispute, love affairs & sexual relation & dowry constitute almost one fourth of the motives. Philip Oldenburg (1992) noted a negative association between the incident of

murders and female –male ratio in the population in case of district level data for UP. The Dreeze and Khera essay found this was relevant even in all India case.

Age group wise victims of Murder

From the data on age group wise victims of murder in the state, it is seen that the individuals of the young and most productive age group (18-35 years) had to bear maximum the brunt of homicides. The percentage of total victims shows a very high figure in

Table 5.9
Gender distribution of Murder victims (18-35 age Group)

Year	Male	Female	Total	Male %	Victims (age group 18-35) as % of total victims
2000	1077	98	1175	91.66	77.15
2001	945	82	1027	92.02	75.74
2002	1119	107	1226	91.27	97.85
2003	1031	99	1130	91.24	94.88
2004	1061	80	1141	92.99	93.99
2005	1044	61	1105	94.48	92.55
2006	1039	74	1113	93.35	92.21
2007	1187	88	1275	93.10	92.79
2008	1267	103	1370	92.48	96.07
2009	1182	97	1279	92.42	96.67
2010	1081	86	1167	92.63	95.42
2011	1152	95	1247	92.38	95.70
2012	1225	77	1302	94.09	95.18

Source: Author's calculation on NCRB data

this age groups which was 95% in 2012. This shows how the young people in their most productive age group are being exposed to the incidents like homicides. The violence over the senior citizens may be highlighted by the homicidal data about the victims in the age group beyond 50 years of age. It is observed that though the absolute number of murder victims has come down from 102 in 2000 to 55 in 2008 and it has been almost in the range of

40 to 55 since then, it is matter of worry for the senior citizens who might have to depend on the protection of kith and kin or the neighbours. The gender related share by homicide victims have been more or less stable over the years, eg in 2000 the share of female victims in homicides incidents were (9 %), while in 2012 it is (8 %).

With respect to arrest in connection with murder cases in the state, it is interesting to note that 82.66% of the arrested persons in 2012 are in the age group of 18-45 years. In that year out of the total homicides arrests of 1650 belonging to all ages, 1364 persons belonged to 18-45 years. This means that the majority of the homicides cases, the young person of most productive age group are suspected to be involved.

Deterrence through charge sheet and conviction

Looking at the filing of charge sheets to murder cases, it is seen that though the charge sheet rate in murder cases in the state is much higher in comparison to other crimes, it is still lower than all India C.S rates in murder cases and even lower than that of many individual states. eg. 2012, the C.S rate in murder case is 77.4% in Assam against all India figure of 86.5%. In case of states like Odisha (97%) Andhra Pradesh (89.1%), Rajasthan (89.8%), Kerala (93.1%), the C.S rates in 2012 are much higher than Assam. One of the possible factors for this comparatively low C.S rate may be the prevalence of terror related incidents where in far flung areas the terrorists strike terror by killing innocent people either through targeted killing or planting explosives. Such cases require a long gestation period to investigate, also the required witnesses do not come forward to give evidence to the investigating officers for fear due to reprisal, intimidation etc. This may be an important reason why the law enforcement agencies find it difficult to charge sheet such cases of homicides due to lack of evidence, and witnesses. It is not hard to find such low C.S rates in murder in 2012 in other terrorist infected states like Manipur (19.4%), Nagaland (51.8%), Jharkhand (69.8%).

In case of conviction rates in homicides cases, the all India level is itself very low, even though the figure for Assam is marginally higher (37.6%) in 2012 than the all India conviction rate of 35.6%. The state shows a lower figure in comparison to some bigger states like Kerala (48.8%), Uttar Pradesh (48.6%) and there are other states like Karnataka (18.3%), Maharashtra (27.4%) etc. which have shown much lower conviction rate even though they had a better performance rate in terms of filing C.S rates.

Availability of fire arms and murders:

All murders are not caused by fire arms. But the UNODC (2011) report indicates that out of 50% of world's homicides 42% are committed with the help of firearms. Mostly it is seen that easy availability of firearms is likely to contribute to the commission of crimes against body like hurt, homicides etc. Also the growth of organized gangs of criminal activities thrives on how easily firearms are available. Even the intimate partners / friends / relatives become the victims of indiscriminate use of firearms leading to homicides. It is argued that that widespread availability of firearms has a profound influence on violent crime patterns (Cook 1983, 1987). Though the causation had not been proved it is widely opined that available evidences lead one believe the hypothesis that increased gun prevalence results in higher homicides rates.

It has been a matter of concern that some of the South East Asian countries including India have become a hot spot for proliferation of illegal fire arms due to the presence of insurgent and terrorist elements that are going on for a long time. The North East region of India has the longest history of insurgency. Since late in 1980's Assam has been witnessing the birth of multiple groups of such elements actively pursuing terrorist activities there by affecting the crime graph of homicides and other offences. The rebel groups have been getting their arms consignment from across the border through the clandestine international arms market. This sophisticated and ultra modern arms and weapons couple with the locally available guns known as country made guns have resulted in frequent use of these in homicides, robbery, dacoity etc. As seen from the data by NCRB, most of the fire arms used in homicides falls in the category of unlicensed arms. In the heyday of terrorism in the state, the use of such category of arms in homicides has been of a phenomenal magnitude for eg. in 2001, the number of murder victims caused by fire arms had been 259 out of which the un license arms were 236 and license arms 23. But with the incident of terror acts coming down the number of victims of murder by unlicensed arms came down to be 31, and that of license arms to 11, thereby making the total number of victims of murder by fire arms to 42 in 2012.

Though no conclusive study could identify the causation of gun ownership and homicides, there is no denying the facts that easy gun ownership has shown an association

with homicides. In India though there is reasonably strong legal provision regarding gun ownership the presence of huge clandestine availability of arms/weapons has adversely impacted the crime of homicide and by organized gang.

Spatial distribution of murder in district level –

It is important to look at geographical spread of homicide incidents upto district level. This is because the local factors which are specific to that particular territorial division may be of high relevance while understanding the pattern. The local causes may be found in population density, social and ethnic fabrics, level of literacy, incidence of poverty, urbanization level etc. Therefore different districts may point to variety of risk factors that may be affecting the homicides incidents in the districts in different degrees. Such an analysis based on the disaggregated level up to district can help the policy makers in devising effective crime control policy frame works.

While examining the inter district trends of murder, this study has taken the period of 2005 onwards because of the fact that the data for individual districts after latest reorganization are available to an extent since then. Wide variations in murder rates per 100,000 population in 2005 among the districts are noticeable. While Kamrup had murder rate 2.22, the districts like Dibrugarh, Karbi Anglong, Tinsukia had experienced high rates of murder eg. 8.92, 8.74, 7.48 respectively. The rise in murder offenses in 2011 in districts under Bodoland area has been the result of communal violence's that rocked these areas inhabited by the Bodo tribals and the immigrant Muslims. Violence hit districts like Baska, Chirang had witnessed higher murder rates in 2011 which increased from 2.31 to 4.62 and from 3.87 to 5.61. Significant increase in the rates was found in Dima Hasao too due to escalation of violence by terrorist elements. However, most of the other districts had experienced either mild increase or decrease in the murder rates during this period. For example, districts like Barpeta, Cachar, Marigaon etc. showed increase compared to 2005. Some districts like Dibrugarh, Golaghat, Karimganj witnessed significant fall in the murder rates in this period. A very noticeable fall in the rate is in the district of Karbi Anglong for 8.74 in 2005 to 4.97 in 2011, which was the result of fall in terrorist and ethnicity related violence.

Ten districts had lower murder rates in 2011 than in 2005. And almost all these are situated in the upper Assam areas. It is worthwhile to note that in these districts

there had been decline in activity of the extremist's organization during the period due to the surrender of the active militant groups operating there. However the fall in the murder rate in 2011 in some of these districts has not been commensurate with fall in total rates of crimes in the districts like Dibrugarh, Lakhimpur. For example even though there was a significant fall in the murder rates in Dibrugarh district in 2011 in comparison to that of 2005, i.e 8.92 in 2005 to 6.71 in 2011, one finds that there is significant increase in the total crime rate for this district in 2011 which was 190.58 as against 165.35 in 2005, thereby meaning that the fall in murder rate was upset by the increase in some other crimes. Similar is the case in several other districts resulting in the higher overall crime rate.

Urbanization and homicides rates

One may like to examine the possible associations between urbanization and homicides rates in the districts. This is because very often it is opined that crimes like murder have a strong urban basis. In case of different districts in Assam, we are looking at the percentage of urban population living in these districts along with the rates of murder. An interesting picture emerges here for 2011. The most of the districts with high urban population have shown higher homicides rates. For example, Dibrugarh with urban population percentage 18.36% had a homicides rate of 6.71 per 100,000 population. Similar situation is observed in cases of districts like Tinsukia & Jorhat with share of urban population 19.97% and 20.12% had murder rates 7.45 and 4.40 respectively. The Hills districts of Dima Hasao had urban population 28.67% with murder rate 7.51. However, Guwahati the only city in the state had 82.90% of urban population with murder rate 4.62. If one looks at the districts with low percentage of urban population one encounters somewhat lower rates of homicides. For example Nalbari, Morigaon with lower than the state level percentage of urban population i.e 10.72% and 7.65% respectively had lower murder rates 2.60 and 2.82 respectively.

This is contrast with the situation in terms of urban bias in total crime rates as seen in chapter four of the present study. Though there seems to be no direct relationship between urbanization and total crime rate per 100,000 population, one finds some sort of a urban bias in homicides rates across the districts. This finding is not in conformity with the result found by Dreze and Khera(2000) in their study . They found that urbanization had no significant role in the incidents of homicides.

5.6.2 Kidnapping and Abduction

The criminal act of kidnapping has been divided into two kinds by the section 359 of the Indian Penal Code --- (1) kidnapping from India , and (2) kidnapping from lawful guardianship. Kidnapping from India (sec 360 of IPC) relates to this, that , whoever , conveys any person beyond the limits of India , without the consent of that person or of some person legally authorized to consent on behalf of that person , is said to commit the offence of kidnapping from India. Kidnapping from lawful guardianship (sec 361 of IPC) relates to the this, that, whoever takes or entices a minor male under 16 years of age if a male , or under 18 years of age if a female , or any person of unsound mind , out of the keeping of the lawful guardianship of such minor or person of unsound mind , without the consent of such guardian, is said to commit the offence of kidnapping from lawful guardianship.

However, abduction as defined by sec 362 of IPC relates to the offence : whoever, by force compels , or by any deceitful means induces , any person to go from any place, is said to commit the offence of abduction. The essential components of abduction are:

- i) The offender enticed a person by deceitful means or by forcible compulsion to go away from any place ;
- ii) The offence of abduction was committed for any of the purposes enumerated in section 366 of the IPC.

Thus, in case of kidnapping, intention of the offender is wholly irrelevant. But in case of abduction intention of the offender is an important factor.

Trends in Kidnapping and abduction

Among crimes against body, the category of crime that has shown the highest increase, both in absolute and relative terms, is kidnapping and abduction. A look at the table of descriptive statistics below clearly shows a rising trend in absolute terms for kidnapping and abduction. The mean number of kidnapping and abduction cases reported between 1974 and 1990 was just 744, for a 16 year period, while the mean number of such reported cases shot up to 1279 between 1991-2000, which was a nineteen year period. This was a nearly 72 per cent increase between the two periods. However, what is even more remarkable is the period starting after 2000, that is, between 2001 and 2012. During this span of just eleven years, the mean number of crimes went up by nearly 80 percent to 2305 cases per year. A look at the variability, as measured by the standard deviation, shows that the latter period

(that is, 2001-2012) had the highest variability, as reflected by the highest standard deviation of 867 reported cases per year, as against 140 in the previous period. In fact, the variability is higher in the period 1974-1990 than in the period 1991-2000. One must also keep in mind that the latter period was the period when insurgency was at its peak in the state. What one fails to understand is why the kidnappings continued in their upward trajectory even in the first decade of this millennium when insurgency saw a relative decline in the first half of the decade.

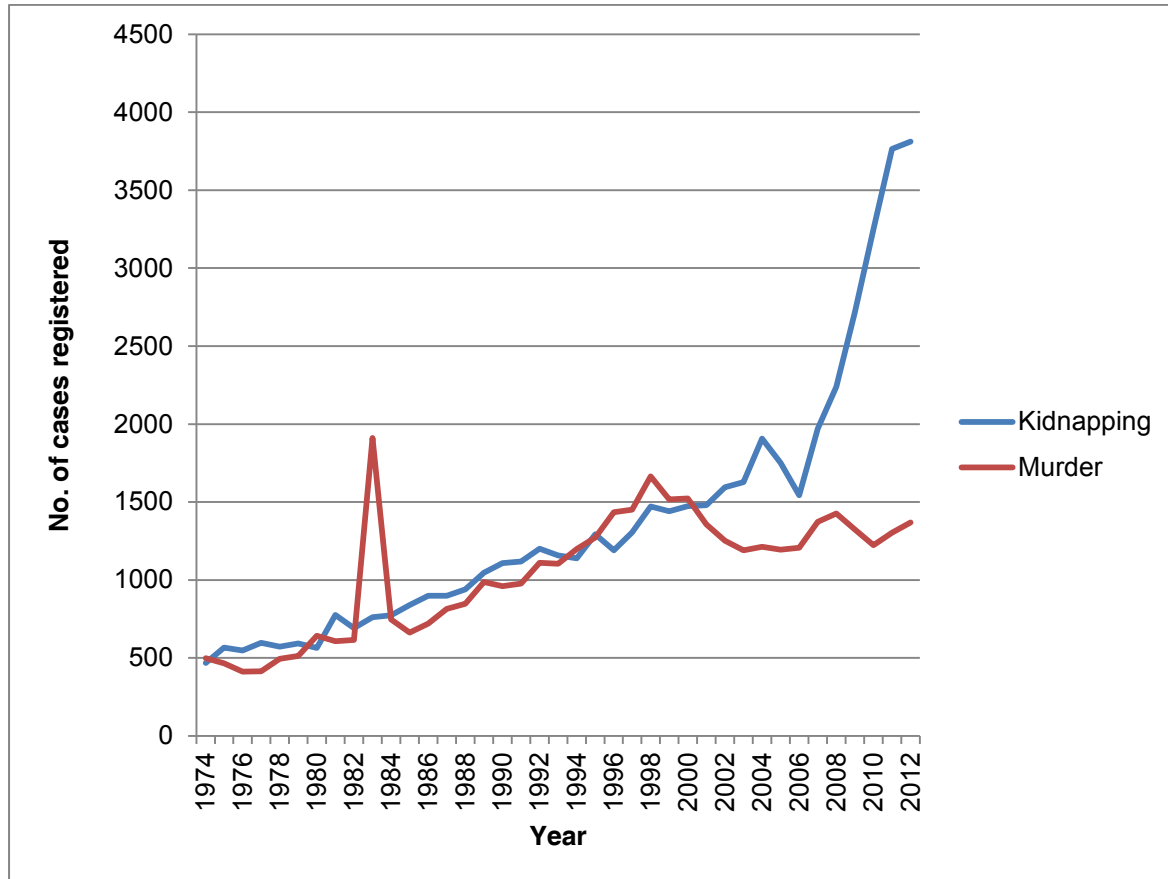
Table 5.10
Descriptive statistics of Kidnapping and Abduction

Period	1974-1990	1991-2000	2001-2012	1974-2012
Mean	744	1279	2305	1361
Max	1109	1474	3812	3812
Min	468	1118	1480	468
St Deviation	190	140	867	822

Source : Author's calculation on NCRB data

What is even more surprising is the fact that Assam recorded the highest number of violent crimes in the country in 2012, at a time when the most important component of violent crimes, that is murder, showed a relative decline or stagnation. A look at the graph below clearly shows this trend. Up to 2000, both murders and kidnappings were almost of equal magnitude, in terms of the number of cases reported, except for a sudden spike in murders in the mid 1980s, due to the Assam agitation and the rise of insurgency. However, after 2000, murders have seen a relatively declining trajectory, while kidnappings have seen a near exponential growth. By 2012, Assam recorded more than 3800 cases of kidnappings and abductions, while the number of murder cases stagnated at less than 1500. A look at the share of crimes against body also shows a similar trend. The share of most of the important crimes against body has fallen, such as murders, while it is only kidnappings and abductions that as shown an upward trend. In fact, Assam recorded more than double of this variety of crime than that of a state like Andhra Pradesh, which has a significantly larger population. As a result, the crime rate of nearly 15 in Assam was nearly five times that of Andhra Pradesh, which stood at 2.5 per 100,000 population.

Figure 5.8
Number of cases registered against Kidnapping & Murder

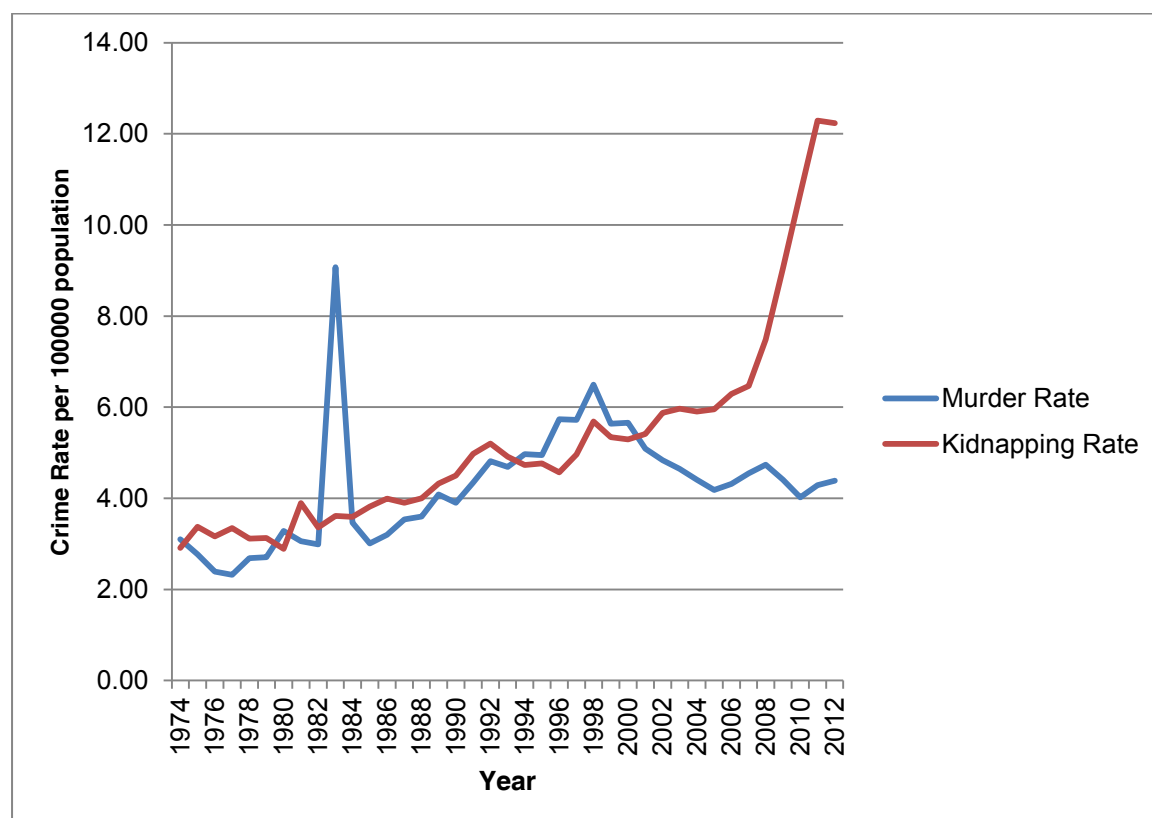


Source : Author's calculation from NCRB data

An increase in the absolute magnitude of any crime is generally seen with the increase in population. This means that much of the rise in crime can be accounted for by a rise in population. However, if the crime rate increases together with the rise in the absolute number of cases, this situation is a cause for concern, and reflects the need for introspection by the law enforcement agencies and criminal justice system to tackle crimes in the state. A look at the figure below clearly shows a near exponential rise in the crime rate for kidnappings and abductions, especially in the second half of the first decade of the millennium. This rise in the crime rate is a cause for worry, as it reflects a failure of the law enforcement agencies in tackling this menace, at a time when insurgency and other violent crimes have either remained stagnant or fallen. Not only this, the rise in kidnappings is marked by an increase in extortions, as expected. In 2006, only 406 cases of extortion were reported. This figure jumped to 909 in 2010 and 1074 in 2012, reflecting a nearly two and a

half fold increase. Coupled with this is the corresponding rise in the rate of extortions from 1.6 per 100000 population in 2001 to 2.0 in 2007 to 3.4 per 100000 population in 2012, again reflecting a more than two fold rise.

Figure 5.9
Comparative Crime rates for Murder and Kidnapping



Source : Author's calculation on NCRB data

Gender bias in incidents of kidnapping and abduction

The rise of kidnappings in Assam has seen almost an unparalleled growth in comparison to any other state in the country. Not only this, the kidnappings reflect a high level of gender bias against women, and the girl child. In 2012, Assam recorded 68 cases of kidnappings against children below the age of 18 years and all these children were girls. This refers to a kidnapping rate of 0.6 children per 100000 children population. Bihar, on the other hand, recorded a crime rate of 6.2 children per 100000 children population. While Assam

contributed just 0.37 per cent to the national total of kidnappings and abductions of children, Bihar contributed nearly 13.94 per cent.

Table 5.11
Kidnapping and Abduction cases in Assam

Year	Kidnapping & Abduction		
	Male	Female	Total
2001	410	1070	1480
2002	319	1276	1595
2003	277	1351	1628
2004	354	1552	1906
2005	295	1456	1751
2006	281	1544	1825
2007	500	1471	1971
2008	450	1789	2239
2009	626	2092	2718
2010	483	2767	3250
2011	572	3192	3764
2012	452	3360	3812

Source: NCRB

The gender bias inherent in the kidnappings in the state can be understood from the data discussed as follows. In 2012, of the 3812 cases of kidnappings reported in the state, nearly 2387 cases were against women in the category of 18-30 years as against just 173 cases against men in the same category. Thus, nearly 63 per cent of the cases reported in 2012 were committed against women. This is indeed startling. For instance, Bihar recorded just 1272 cases of kidnappings committed against women in the same category. In fact, there were 701 kidnappings of men in that category. West Bengal shows a very high number of kidnappings of women in this category of age. West Bengal recorded 3016 cases of kidnappings of women in 2012. At the same time, the number of kidnappings of men was 751 during that year in that category. On the other hand, the other North-Eastern states recorded low rates of kidnappings, especially women. For example, Arunachal Pradesh recorded just 550 cases of kidnappings of women, and 205 cases for men in the 18-30 year

age category in 2012. In cases of abduction of minor girls, we see an alarming picture. 122 such cases were reported in Assam in 2012, which accounted for nearly 15.08 per cent of the total number of minor girl abductions reported at the all India level. This boils down to a crime rate of 1.22 per 100000 of minor girls in the state. On the other hand, the corresponding rate at the all India level is just 0.19.

A number of explanations can be provided for this observation. It might be the case that Assam, being a less patriarchal society, might make it easy for girls to venture out more than their counterparts in states where gender bias is very dominant. This enhanced freedom can be associated with greater exposure to rackets engaged in women and child trafficking. It might also be the case that the hangover from the insurgency days is still there. This period saw the sudden rise in kidnappings and abductions. However, this argument fails to explain why kidnappings actually increased instead of remaining stagnant even after decline of insurgency. However, in the absence of detail data structure, it is not possible to draw any conclusion based on such a narrative.

Finally, the issue of law enforcement and deterrence is examined. A look at the NCRB data shows that, in 2010 the C.S rate for kidnapping and abduction was 55.5 per cent which clearly show the inability of the law enforcement agencies to undertake speedy and reliable investigation. What is even more dismal is that the conviction rate was only 16.6 % in that year. In 2012 the C.S rate came down to 53.1per cent and the conviction rate was much lower with 8.3 per cent in the year. It is seen that 49.25 per cent of the arrested persons were charge sheeted- a slightly better but not really a high rate. However, in terms of convictions, only 12.8 per cent of the charge sheeted persons were convicted. For the year 2012, it is seen that 48.8 per cent of the total number of persons arrested were charge sheeted and 6.78 per cent of the total persons charge sheeted got convicted. Thus, the inadequacy of the law enforcement agencies in the state to deal with kidnappings in terms of convictions has had a significant impact on the sudden rise in kidnappings and abductions in the state. The low rate of convictions shows that the investigating agencies have not been able to obtain the necessary evidence and sufficient basis for conviction of the accused, clearly indicating the gap in the process of investigation. It might also be the case that many of these reported kidnappings are family related kidnappings, issues, etc which were mutually resolved, requiring no convictions. Or, it may be the case that many of the witnesses turned hostile, in the situation where perhaps adequate protection to the witnesses was not forthcoming. The

inadequate deterrence to kidnapping and abduction appears to be a very valid argument given the experiences of a few other states. For instance, in 2012, Andhra Pradesh recorded charge sheet and conviction rates of 91.7% and 11.2% which are higher than the corresponding rates in Assam. Thus, although it is amply clear that scientific and evidence based investigation need to be emphasized more, an intense research is required into the societal dynamics of the issues relating to the increase in kidnappings.

5.7 Crime against women

The following crimes have been clubbed together in IPC and are put in the category of Crimes against women:

Rape, Dowry death, Cruelty by husband or his relatives, assault on women with intent to outrage her modesty, Insult to the modesty of women and Importation of girl from foreign country.

Such crimes relate to direct or indirect cruelty, which may be mental or physical, to women. Two noteworthy characteristics of this class of crimes, which may alternatively be termed as “violence against Women”, are that these are directed specifically against women, and only women are the victims. Violence may be taking place within the four walls of home, it is called domestic violence; when it is committed in the work place it is called sexual harassment in the work place. In case of domestic violence, the offenders are basically the family members like children, spouse, parents etc. Domestic violence is seen in the forms of threats intimation, emotional abuse, economic subjugation, rape etc. According to a global review of available data, it is seen that 35 per cent of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence (UNWOMEN,2013).

Apart from the IPC mentioned crimes against women, several crimes affecting the women are identified under special and local laws (SLL). These laws have come into existence to respond to the causes of women to meet the challenges that arose as special social and economic needs. NCRB in its Crime in India reports also discuss crimes under the four SLL acts, viz. (i) Commission of Sati (Prevention) Act, 1987; (ii) Immoral Traffic (Prevention) Act, 1956; (iii) Indecent Representation of Women (Prohibition) Act, 1986; and (iv) Dowry Prohibition Act, 1961. These are also categorized as crimes against women. It is worthwhile to mention that the number of offenses under these acts have not been much; a very insignificant proportion of crimes against women are contributed under these SLL acts

and that too have come down over time, eg. total number of cases under these acts contributing to the total number of crimes against women were 195 in the year 2001 under SLL like Immoral Traffic (Prevention) Act, 1956; Indecent Representation of Women (Prohibition) Act, 1986; and Dowry Prohibition Act, 1961 contributing 4.59% of the total cases against women.

The UNO in its Declaration on the Elimination of violence against women, 1983, defined violence against women as any act of gender based violence which would put a woman into physical, sexual or psychological harm/suffering. This also includes even threats of such acts, coercion or camping deprecation of liberty in public or private life. India had ratified the convention on Elimination of All forms of Discrimination Against Women (CEDAW) in 1993. There are also wide provisions in Indian Constitution and other acts, to ensure principle of gender equality and take measures for positive discrimination so that the age old socio-economic and political disadvantages can be neutralized and women be made equal partners in a democratic society with full participation by the women in the country's progress. The Constitution of India has articles like Article 14, and 16 conferring men and women equal rights and opportunities, Article 15 prohibits sexual discrimination. The Directive principle 39(a), (d) ensure right to means of livelihood/equal pay for both men and women.

Trends in Crime against Women

It would be important to look at the changes in the contributions of different types of crimes to the category of crimes against women. Rape contributed 5.1 per cent in 2001 to all India figure of rape, but this increased to 6.89 per cent in 2012. Similarly the share of kidnapping and abduction in all India crime of that category increased to 8.78 per cent in 2012 from 7.3 per cent in 2001. Even dowry deaths which were very unlikely crimes in Assam till the other day, have started claiming its share more and more over time. In 2001, dowry deaths under (sec 304 B IPC) contributed 0.9 per cent in 2001 to all India share of dowry deaths, but it showed an upward trend and touched 1.70 per cent in 2012. It is worth mentioning that the menace of dowry is slowly creeping into the social fabric of Assam. The state has been increasing its share in the all India figure. In case of cruelty by husband and relatives, the state's share in all India level was 2.5 per cent in 2001, but it has become more than double in its share by contributing 6.01 per cent in 2012. In crimes like molestation and insult to the modesty of women, Assam has increased its share.

Table 5.12
Incidence and rate of crime committed against women in Assam

Sl. No.	Year	Incident	Percentage Contributed to All-India	Rate Of Crime against women	All India rank as per rate of crime against women	All India rank as per percentage share
1	2001	4243	3	15.9	12	13
2	2002	5092	3.4	18.7	8	13
3	2003	5312	3.8	19.2	6	12
4	2004	5700	3.7	20.2	5	11
5	2005	6027	3.9	21	5	12
6	2006	6801	4.1	23.3	4	10
7	2007	6844	3.7	23.1	4	12
8	2008	8122	4.1	27	3	10
9	2009	9721	4.8	31.8	2	7
10	2010	11555	5.4	37.3	2	7
11	2011	11503	5	36.9	2	7
12	2012	13544	5.54	89.54	1	7

Source : Author's calculation on NCRB data

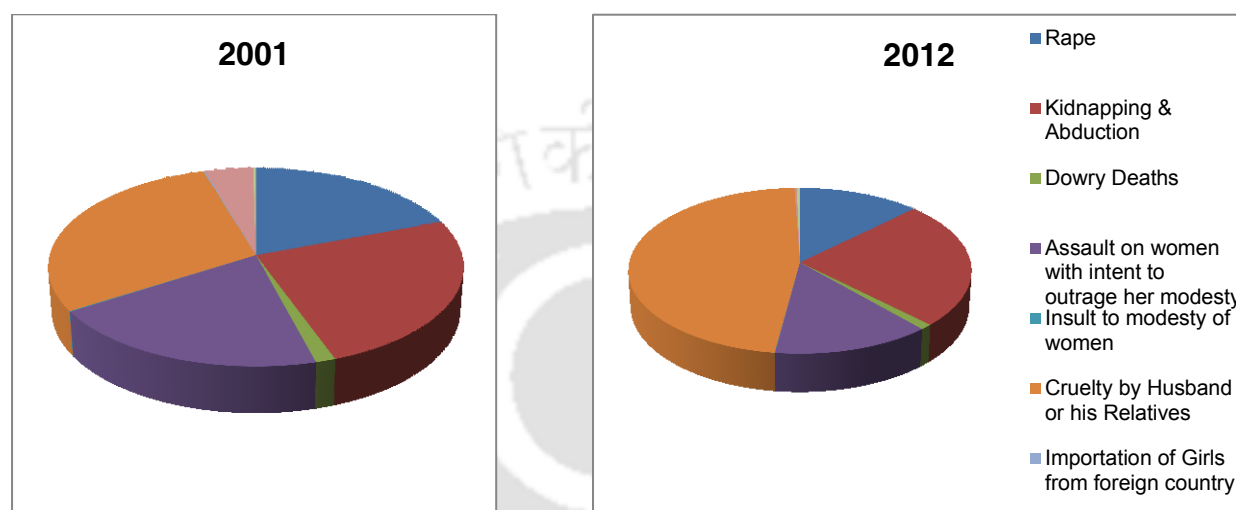
Female Population (in lakh) is taken for 2012 while computing rate of total Cognizable Crime against women.

A very disheartening trend is in terms of importation of girls under section 366 B of IPC. There was no such reported incident in 2001 in the state, but by 2012, this crime in Assam contributed by 3.39 per cent to all India crime of this types. Another important feature of the composition of the crimes against women is the increasing trend of crime like assault on women with intent to outrage her modesty (under section 354 IPC). The contribution of this offense to all India figure is 4.06 per cent in 2012. This has been higher than that of states with higher population like Bihar, Gujarat etc.

It is also important to note that incidence of all these crimes under crimes against women head has shown an increase overtime. As can be seen from the Table 5.12, the position of Assam has been worsening with respect to the crimes against women. The contribution of Assam to the national pool of such crimes has been increasing overtime. From a share of 3 per cent in 2001, it increased to 5.54 per cent in 2012 in all India figures of crimes against women. The state has worsened its rank from 13 in 2001 to 7 in 2012. That is,

Assam has been contributing more and more to the national statistics of crimes against women.

Figure 5.10
Different types of crimes against women



Source : Author's calculation on NCRB data

To take care of the population effect in crimes against women statistics, one would like to examine the rates of this category of crimes. Rates of crimes against women had been estimated by NCRB by dividing the total number of crimes by the total population of the state. However since 2012 the denominator has been changed to female population instead of the total population to make it more realistic in terms of how the crime is affecting the women population. It is seen that in terms of the rate of crime also Assam has been occupying higher and higher rank overtime. For example in 2001 Assam's rate of crime against women was 15.9 per 100,000 population with all India rank being 12. But in 2008, the rate increased to 27 and the all India rank became 3. In 2012 when the rate of crime was calculated per 100,000 female population, it was seen that Assam's crime rate in this category of crime was 89.54 with all India rank becoming 1.

A very important component of category of crime against women is dowry related death. There are declines in the number of cases registered in this head for the period 2010 to 2012. If one examines the final forms of these cases one finds that C.S rates were higher in dowry death cases, may be the reasons for such higher rate is the public awareness

against this heinous crime and the resultant pressure on the investigation agency on a speedy and result oriented investigation. Number of such cases registered in 2010 were 175 and number of charge sheeted cases were 132. But in this year the conviction was secured only in 13 cases. Similarly though persons arrested were 263 convicted persons were only 24. Matter did not show any improvement in 2012 either, rather in this year the number of persons arrested were 215, but convicted were 18 only. These are also much lower than the national average rates for the year.

With regards to incidences regarding assault on women with intent to outrage her modesty it is observed that the number of cases under this head has been also showing increasing trend.

5.7.1 Rape

Section 375 of the Indian Penal Code deals with rape. A man is said to commit “rape” who, except in the case hereinafter excepted, has sexual intercourse with a woman under circumstances falling under any of the six following descriptions:-²

First- Against her will.

Secondly- Without her consent.

Thirdly- With her consent, when her consent has been obtained by putting her or any person in whom she is interested in fear of death or of hurt.

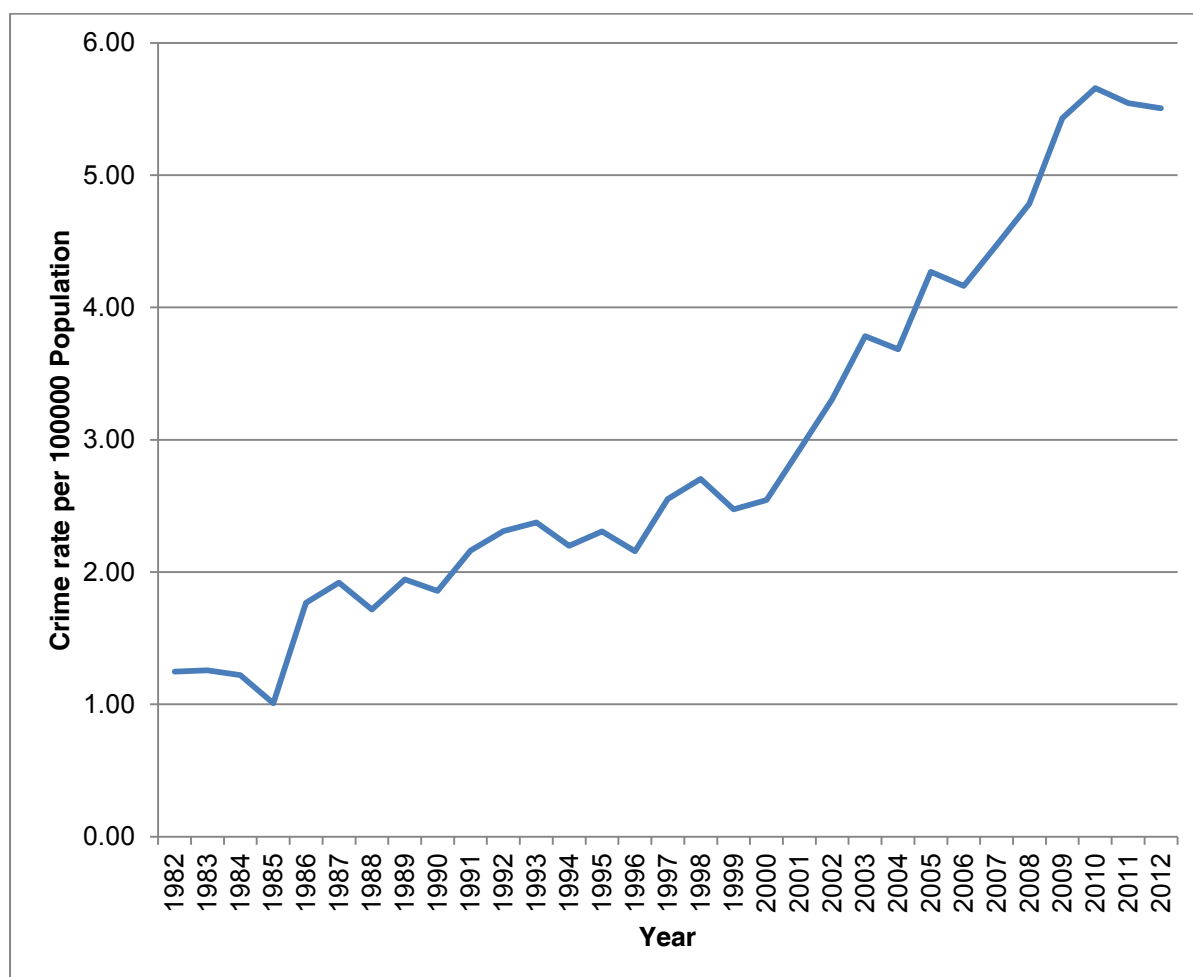
Fourthly- With her consent, when the man knows that he is not her husband, and that her consent is given because she believes that he is another man to whom she is or believes herself to be lawfully married.

Fifthly- With her consent, when, at the time of giving such consent, by reason of unsoundness of mind or intoxication or the administration by him personally or through another of any stupefying or unwholesome substance, she is unable to understand the nature and consequences of that to which she gives consent.

Sixthly- With or without her consent, when she is under sixteen years of age.

² To plug the gaps in the provision of rape in IPC there was some amendment of the law in 2013. The definition used in the present study is the one prior to that.

Figure 5.11
Crime rate of Rape per 1,00,000 population



Source : Author's calculation on NCRB data

Trend in rape cases

The long term trend in rape incidences in the state reveals that this heinous crime has been rising. The figures indicate that there was a significant upsurge of this category of offenses in the recent years. Rate of rape crime as measured by cases per 100,000 population has also shown an increasing trend. It was found to be 2.92 cases per 100,000 populations in 2001, but it has reached 5.51 cases for the year 2012.³

³ However, since 2013 NCRB has looked at the rate of rape cases as percentage of women population and this comes out to be 12.65 in 2013 in case of Assam which is significantly higher than the national figure of 5.69. The contribution of Assam to the pool of female population in the country is 2.58 per cent in 2013 but if one looks at the percentage share of registered rape cases in the total IPC offences in the state vis-a vis the country, it is seen that Assam's share is 5.75per cent which is much higher than big states like Bihar (3.35per cent), Karnataka (3.06 per cent) and so on. The rates have been found to be higher in cases of other North Eastern states like Meghalaya, Mizoram, Tripura, Arunachal Pradesh and their rates are also

While rape as percentage of total IPC crime in India was 1.04 in 2012, as against 0.91 in 2001, in Assam percentage of rape in total state IPC crimes was 2.2 in 2012. As the data reveal, there is no doubt that total rape crime has been showing significant increase in the country as well as in Assam.

Table 5.13
Descriptive statistics of Rape

Period	1991-2000	2001-2012	1991-2012
Mean	623	1348	1019
Max	774	1721	1721
Min	486	817	486
St Deviation	105	307	437

Source : Author's calculation on NCRB data

Descriptive statistics for rape at the state level have been calculated for different time periods. Again it has been sub divided into shorter periods to have a closer look at these statistics. Average for the entire period is 1019. This higher figure is mainly because of the high incidences of rape in the period 2000-2012.

It is seen that for the period 2001-2012, the average number of rape cases have more than doubled than what it was in the proceeding decade. Even the maximum number of rape cases has been much higher. There were wide variations in year to year registration of rape cases between these two decades, and for the entire period 1991-2012, there have been significant fluctuations year to year registration of cases, as can be seen from the standard deviations for the corresponding periods. There has been an increase of 116 per cent between the two decades on the mean level of crimes.

lower than the national average rate for rape. However NE states like Nagaland and Manipur have a different picture in this regard, their rates of rape are much lower , eg. 2.82 and 5.77 respectively. This shows the gravity of the matter. Assam contributed 5.1% in 2001 to all India rape crime figure, but this increased to 5.75% in 2013.

This shows the seriousness of the matter how rape has been occupying an important place in the crime scenario of the state.

Average annual compound growth rate of rape

The growth the compound growth rates were calculated by Kaur(2014) for both rape cases and rape victims as it was found by the author that rape victims are more than the number of rape cases registered since in a registered rape case there may have more than one victim. For the period 2001 to 2010, it was found that the growth rates of for the country during this period under study had been 4.4 per cent for rape cases. The rate increases to 6.60 if one takes the annual compound growth rate for rape victims. In the present study the average annual compound growth rate of rape has been done by taking the log-linear model. The estimated annual compound growth rate for Assam for registered rape cases comes out to be 7.16 per cent during 2001-2012.

If one compares the growth rate of rape cases at the national level it is seen, as calculated by this study, that Assam has been experiencing a higher compound growth rate for the period (2000-2012) which is estimated to be 7.16 per cent.

Rape incidents in the district level

Looking at the disaggregation level up to districts, one witnesses fluctuating trends in some of districts while some other districts are showing increasing trends, for example, Barpeta district had a figure of rape cases numbering 56 in 2005 which showed an increase to 123 in 2009. There is higher incidence of rape crime in Dhubri district where the figure has been higher than 100 cases every year (2005-2012), similar is the scenario in Nagaon district with significantly higher incidence of rape. It is interesting to note that incidence rape of has been very low in the hills districts viz Karbi Anglong & Dima Hasao, eg in 2012, Dima Hasao had only 8 reported rape cases while Karbi Anglong had 28 in the same year as against Dhubri (154) and Nagaon (173). Similar picture prevails for almost all the year for 2005-2012. It requires an exhaustive research work to find out if non reporting or non registration may be the cause or the social structure of the hills' tribal community has been an important factor for this.

Charge Sheets and Conviction Rates of Rape Cases

If one examines the disposal of rape cases, one finds that there is no significant improvement in quality of investigation of such type of cases. The C.S rates have not shown much progress, eg. the C.S rate 79.9 per cent in 2012 was much lower than the all

India C.S rate of 95.6 per cent. Thus in terms of filing C.S in rape cases the state has to go a long way to reach the national average. Similar picture emerges in conviction rates too, eg. conviction rate for Assam had been 19.2% in 2012 which was much lower than the national figure. One finds that in cases of persons arrested charge sheeted and convicted, there are wide differences pointing to the need for improvement in the quality of investigation. In 2010, total numbers of persons arrested under rape cases were 1629, but persons charge sheeted were 1153, while numbers of convicted persons were 117 showing the possibility of lack of evidences collected against the arrested and charge sheeted persons. One sees similar picture for the year 2012 as well when number of arrested persons were 1626, persons against when charge sheeted were filed were 1156, and conviction was secured against only 153 persons. Through these figures may related to the cases relating to earlier years, still one may take an opinions on these data since these stand as proxy for investigation quality. Compared with these figures it is not impossible to see that at national level, the results are better off. eg. 93% of the persons arrested were charge sheeted and 22% got convicted. Conviction rates are not of satisfactory level even at the national level reflecting the need for quality investigation.

In any analysis of rape incidents, it is important to know the victim offenders relationship. This is because a proper understanding of this relationship would definitely throw light on the aspect of safety and security for the women in the society. It also reflects to the issue of gender sensitivity and respectability towards women in the larger context of social institutions and their benevolent functions.

Victim-Offenders Relationship

From the data on the victim offenders relationship in incidents of rape in the state, it is observed that the majority of the cases offenders are known to the victims. This is the picture not only in Assam, but also it is reflected in the all India scenarios for example, in 2001, data indicate that is all India level, out of the total cases of rape unknown offenders committed this offence in only 16 per cent of the total cases. In rest of the cases, the incidents knew the offenders who were either parents/ close family members (2.73%), relatives (5.30%), neighbour (26.90%), or other known person (49.07%). In case of Assam in all the case of rape in 2001, the offenders were known to the victims. all of these were committed by persons like parents/close family members (97%), relatives (3.18%), neighbor (17.87%) and other known persons(77.96%). Similarly in 2005, out of total rape case offenders were known to the victims in 95.47% cases.. This finding points towards the need

for policy prescriptions to raise awareness level of the females regarding less predictable nature of behaviour with sexual overtones from the known persons like close relation and neighbors. Moreover, need for imparting value education and gender sensitization campaign have important roles to play in the matters. There is a growing need for an integrated approach to prevent the dangers of sexual assault by paying attention to the broader issues of family structure, disintegrating community life which can play a very important role in prescription of such crimes at home and the society by creating an environment of gender base non discrimination and social support system.

Rape and Population pattern

It may be of importance to examine if there is any possible association between prevalence of high incidence of rape and the population composition. If one looks at the crime figure of rape and the population in 2011 for different districts, it is observed that spatial distribution of rape has been diverse without showing any specific concentration within a community. For example, Dhemaji district had the highest percentage of tribal population, i.e. 47.45% of its population were tribal. The rate rape was 9.01 in per lakh population for the year 2011. But in Karbi Anglong district with tribal population of 56.33% in the same year had the rate of rape 1.35. Similar picture emerges from the other hills district, viz Dima Hasao having tribal population of 70.92% is with rate of rape being 1.41. Kokrajhar is another district with high share of tribal population. In 2011, it had 31.41% population belonging to tribal population, and the rate of rape was 5.87. Similarly if one takes up the cases of districts with prevalence of very low percentage of tribal population, one finds that no specific opinion can be put forward regarding the spatial dispersal of the crime and the demographic composition. For example, Hailakandi being a district with one of the lowest share of tribal population (0.10%) witnessed a very high rate of rape (9.26) per 100,000 population. Bongaigaon district with tribal population share of only 2.55% had a rate of this offense 9.84 while Darrang with only 0.91% tribal population had the highest rate of rape i.e. 10.46 while Golapara had rate of rape (9.82) with high tribal population percentage, i.e. 22.97% which was much higher than even the state average of tribal population i.e. 12.45%.

Thus it is seen that the spatial distribution of rape is diverse cutting across different communities, ethnic groups etc. as also opined by Kar (2002).

Relation between Rape and School Drop Out Rates

Another significant way to understand the relationship between rape and the socio economic variable like school dropout rates is by computing the z-scores. Consider a district j . It is needed to look at how the variable i varies across the districts. In order to do that, the z-score of every district j for that variable i is looked at as follows:

$$Z_{ij} = \frac{X_{ij} - \bar{X}_i}{\sigma_i}$$

Where

Z_{ij} = Standardised value of the variable i in district j ,

X_{ij} = Actual value of variable i in district j ,

$\bar{X}_i$ = Mean value of variable i in all districts,

σ_i = Standard deviation of variable i in all districts.

The positive values relating to the district's Z-score explain high level of rape and dropout rate and negative values the low level of rape and dropout rate in the study area. The z-score, thus, quantifies the departure of individual observations, expressed in a comparable form. It means it becomes a linear transformation of the original data.

Following this method, we obtain the following table for the rate of rape and the school dropout rate for the year 2011 for all the districts of Assam:

Table 5.14
Calculation of Z scores

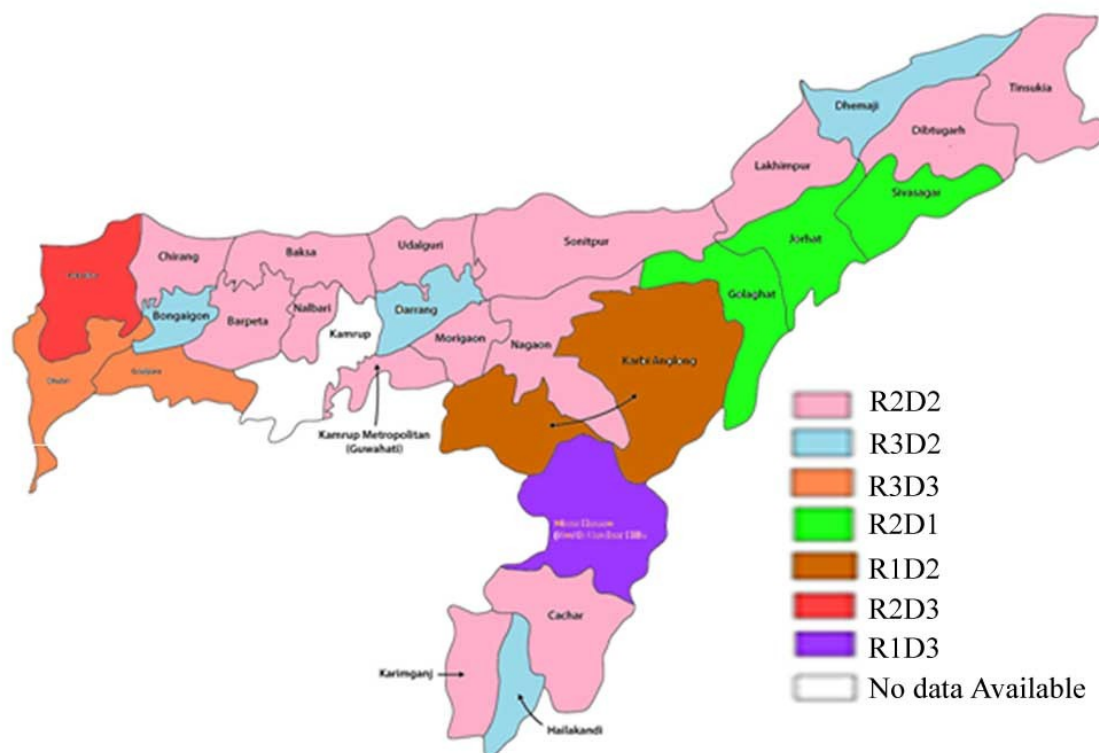
Name of District	Rate of Rape (per 100,000 pop)	School Dropout Rate		Z score			Relationship between Rape and Total Dropout
		Total (in %)	Girls (in %)	Rate of rape	Total Dropout	Girl Dropout	
Barpeta	5.434	15.00	13.00	-0.01	0.82	0.53	R2D2
Baska	3.043	15.40	14.70	-0.98	0.95	1.15	R2D2
Bongaigaon	9.836	12.40	11.50	1.78	-0.05	-0.04	R3D2
Cachar	4.263	10.70	10.10	-0.49	-0.59	-0.55	R2D2
Chirrang	6.237	15.00	14.20	0.32	0.82	0.97	R2D2
Darrang	10.463	12.20	12.70	2.03	-0.09	0.41	R3D2
Dhemaji	9.012	13.20	13.10	1.44	0.24	0.55	R3D2
Dhubri	8.06	19.60	17.60	1.06	2.33	2.21	R3D3
Dibrugarh	4.069	10.40	10.20	-0.57	-0.70	-0.52	R2D2
Goalpara	9.821	19.00	18.00	1.77	2.14	2.34	R3D3
Golaghat	5.104	8.80%	8.40%	-0.15	-1.20	-1.17	R2D1
Guwahati	4.444	11.70	10.80	-0.41	-0.26	-0.28	R2D2
Hailakandi	9.256	10.50	9.50	1.54	-0.66	-0.77	R3D2
Jorhat	4.491	7.90	8.20	-0.39	-1.52	-1.23	R2D1
K/Anglong	1.347	14.70	14.30	-1.67	0.74	1.00	R1D2
Karimganj	3.78	11.50	10.70	-0.68	-0.32	-0.34	R2D2
Kokrajhar	5.869	15.90	14.60	0.17	1.11	1.11	R2D3
Lakhimpur	5	11.70	10.90	-0.19	-0.27	-0.25	R2D2
Morigaon	5.643	12.00	10.70	0.07	-0.16	-0.32	R2D2
N C Hills	1.408	15.80	11.00	-1.65	1.08	-0.21	R1D3
Nagaon	5.839	10.10	8.60	0.15	-0.80	-1.09	R2D2
Nalbari	3.641	11.20	9.50	-0.74	-0.42	-0.78	R2D2
Sivsagar	4.261	7.70	7.60	-0.49	-1.58	-1.46	R2D1
Sonitpur	4.987	9.50	9.00	-0.19	-0.99	-0.94	R2D2
Tinisukia	4.635	11.60	11.50	-0.34	-0.29	-0.03	R2D2
Udalguri	3.365	11.70	10.80	-0.85	-0.27	-0.31	R2D2

Source : Author's calculation on NCRB data

Using this analysis we find that there are only two districts that have low rates of rape (R1). These are the hill districts of Karbi Anglong and NC Hills. Six districts have high rates of rape (given by R3), and all of them lie in the Brahmaputra and Barak valleys. The remaining districts have medium rates of rape. A look at the dropout rates suggest that only three districts have low dropout rates (given by D1). These are Sivsagar, Jorhat and Golaghat which are located in Upper Assam. Four districts have high dropout rates (D2) while the rest have medium dropout rates (D1).

It is usually expected that there should be a positive relationship between dropout rates and rapes, as a large number of these crimes is thought to be the result of patriarchal mindsets which can be dispelled through education. A look at the table above seems to suggest such a finding. Twelve districts had medium rates of school dropout and rapes (R2D2) while two districts had high rates for both (R3D3). A high dropout rate and a low rape rate (R1D3) is characterized by only one district (NC Hills). However, this trend is not robust at all, for we do find districts that have moderate levels of rape and high dropout rates and vice versa.

Figure 5.12
Districts of Assam
(Rate of Rape and Dropout Rate : Z-Score)



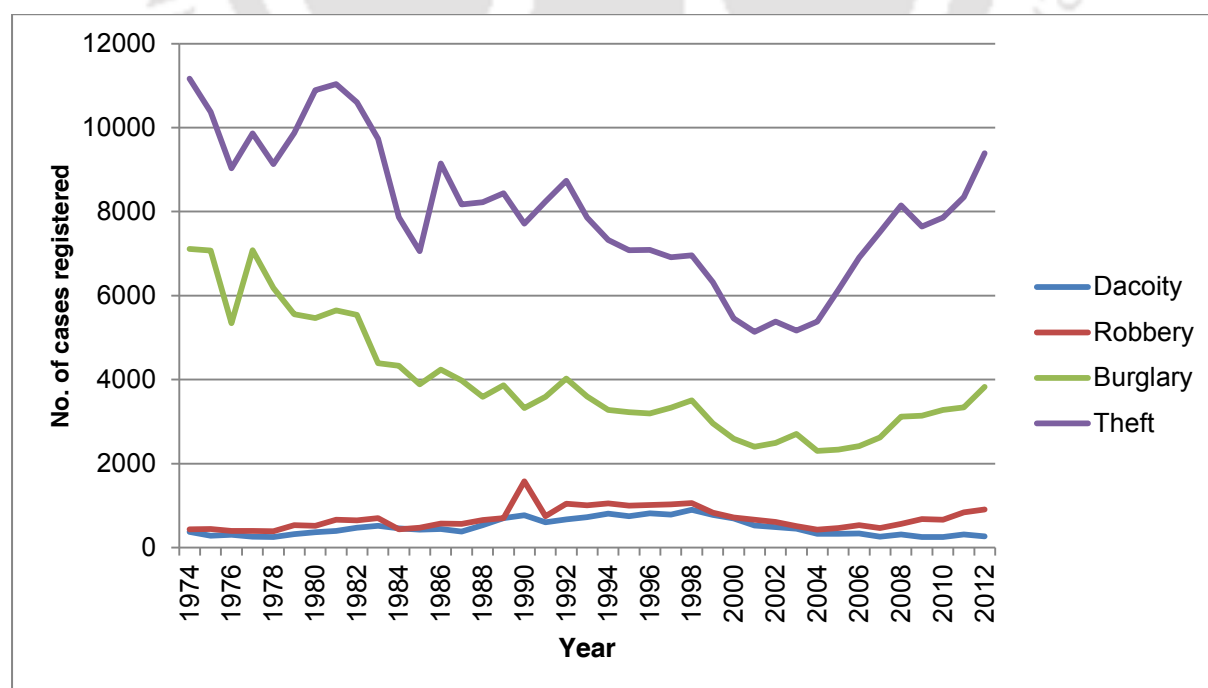
Source : Author's calculation on NCRB data

5.8 Crimes against Property

In human civilization it is of utmost importance that protection is provided by the state not only to the person of the individuals in the society but also of their property. Crimes against property have been a subject matter concerning the performance of law enforcement agencies in most societies. Such crimes may vary from country to country as per existing laws, but broadly they take care of all offenses, the central theme of which is generally the material bases of criminality. The basic focus of these crimes is more on the criminal offenses against property rather than persons.

The Indian Penal Code has dealt in offenses against property in chapter xvii which include crimes under different sections of IPC like Theft, Extortion, Robbery, Dacoity, Criminal misappropriation, Criminal breach of trust, Receiving stolen property, Cheating under Indian, Fraudulent deeds and dispositions of property, Mischief, Criminal trespass. However, NCRB crime report clubs the following crimes as crime against property – dacoity, preparation and assembly for dacoity, robbery, burglary, theft. Accordingly discussions in the present study are restricted to these crimes while analysis is carried out on crime against property. It may be noted that the crimes belonging to the preparation and assembly for dacoity constitute a very negligible amount in the category of property crimes.

Figure 5.13
Incidents of crimes against property



Source :Author's calculation from NCRB data

It is seen that the importance of property crimes in relation to total crimes has been showing a remarkable declining trend in the years. The percentage of such crime to total IPC crimes of the states was as high as 49 per cent of total crimes in 1977. With some fluctuations in the following few years, it remained above 30 per cent till 1981, and after that it showed further decline after that which it came out to be 24.11 per cent in 2001 which showed minor fluctuations between 2001 to 2005, and there was a sudden increase to 25.36 per cent in 2006, after which it again started coming down. Even in terms of absolute numbers such crimes have shown a decrease. For example, total property crimes in the state stood as high as 17603 in 1977, and this high figure remained for the following years till 1982 only with an exception in 1978 when the property crime was 15956. The abnormal increase may be attributed to the disturbing law and order situations in this period out of the agitation against the illegal immigrants from Bangladesh when the law enforcement agency was over stressed with the management of law and order in the state rather than paying needed attention in controlling other forms of crimes. The following years one witnessed the fluctuations in total recorded property crimes.

If one looks at the percentage share of different components of this category of crime it is seen that share of dacoity has been declining in its contribution to the total crime against property. For example in 2001 dacoity contributed 5.9 per cent to property offences but since 2004 its share started come down and by 2012 it became almost 1.85 per cent. Similarly though there are fluctuations in the contribution of robbery to this category of crime its share has started decreasing from 7.61 per cent in 2001 to 6.30 per cent in 2012; then one can witness some occasional increases in absolute number of robbery. But for the 12 year period of 2000-2012 there is a broad decline in trend. Burglary is almost remaining constant in terms of its contribution to crime against property. The only crime, namely theft, has shown an upward trend. Theft has increased its contributions to crime against property from 59.48 per cent in 2001 to nearly 65.24 per cent in 2012. It is to be noted that theft has been the most important contributor to the kitty of property crime for the entire period, and the share has been more than two third. There is a vast difference between theft and burglary in terms of contribution to property crime. Preparation and assembly as a crime, has very little contribution which never reached even 1 per cent, rather its contribution has come down from over time to 0.05 per cent in 2012.

There is a significant decline in crimes against property in 2005 and 2006. However the percentage share of burglary remained almost constant while other property crimes like theft, robbery and dacoity had shown significantly low figure. The sudden declining trend of total property crimes including dacoity, robbery and theft since 2000 to 2006 could not be explained. The reason may be non registration or non information of cases in this period. Even the increase of almost 2000 crimes in 2012 and 2011 is difficult to explain.

One important conclusion may be that there is a shift in the pattern of crime in the realm of property crime. There is a shift from the violence ridden crime to the crimes which are resorted through not very violent means. For example, most of the time, dacoity and robbery are experienced with the component of violence and these crimes required the offenders to come in face to face encounter with the victims, where the latter come across fear and intimidation, threat of life and even actually experiencing injury and mental trauma.

Table 5.15
Percentage share in crimes against Property in Assam

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Dacoity	5.90	5.17	5.15	3.87	3.54	2.75	2.68	2.58	2.14	2.03	2.39	1.85
Robbery	7.61	6.63	5.72	5.43	4.78	4.69	4.44	4.69	5.79	5.41	6.55	6.30
Burglary	26.85	27.35	28.48	27.34	23.91	25.08	23.32	25.98	26.81	28.25	26.03	26.56
Theft	59.48	60.66	60.38	63.03	67.53	67.38	69.46	66.14	65.08	64.22	65.01	65.24
Prepn. for Dacoity	0.16	0.20	0.28	0.33	0.23	0.10	0.11	0.61	0.18	0.10	0.03	0.05

Source : Author's calculation on NCRB data

Relationship between property crimes and urbanization

In their study of USA property crimes between the period 1960-80, Joubert and Forsyth (1989) noted that level of urbanization is a very significant determinant of property crime. It is stated very often that urbanization process brings in inadequate housing, broken families, heterogeneous population, and industrialization and all these have direct or indirect impacts on property crimes. This is the reason why the urban areas or business places become the targets for crimes like robbery. These areas provide hot spots, and offer opportunities for other subsidiary crimes like swindling, pick-pocketing, extortion and stealing. It is argued that crimes like robbery and theft are an urban phenomena (Cook, 1983; Gabor et.al, 1987, Sampson, 1985).

In the present study while looking at the role of urbanization in the property crime the census data of 2011 has been considered. And this is compared with the property crime data of that year. There were 19 districts which had less than the state average percentage of urban population i.e. less than 14 per cent. If one looks at the total property crime of these districts, one finds that they all contributed to 51 per cent of total property crime in the state and these 19 districts have 45 per cent of urban population. And also it is seen that 49 per cent of property crime came from 9 districts having urban population higher than state level. If one goes to disaggregated level to see the districts in terms of property crimes and urban population, it is seen that Cachar having urban population of 18 per cent has a crime rate of 41.88 per 100,000 population. Similarly Dima Hasao with high urban population i.e. 29.19 per cent had witnessed property crime rate of 28.17 per cent. Guwahati with the highest urban population of 82.70 per cent had property crime rate of 254.44. Looking at some of the districts having lower urban population than the state level average, the following picture emerges. Districts like Hailakandi with urban population 7.30 per cent, and Darang 5.98 per cent had property crime rate 30.35, and 37.78 respectively. Another district, Jorhat, had high percentage of urban population and the property crime rate was 47.57. A very definite conclusion regarding the influence of urbanisation on property crime in the state cannot be made. The disaggregated level data at district level present diverse experiences in this regard.

Trends in components of property crimes :

It will be worthwhile to discuss the trends in important components of property crimes and see how they behaved during the period of study. The following table

shows the movement of different crime rates under the head of property crime for the period 1974-2012.

Table 5.16
Different property crime rates per 1,00,000 population

Year	Robbery	Dacoity	Burglary	Theft
1974	2.72	2.33	44.24	69.47
1975	2.63	1.70	42.15	61.78
1976	2.28	1.78	30.90	52.24
1977	2.22	1.46	39.63	55.23
1978	2.12	1.37	33.56	49.61
1979	2.80	1.68	29.27	52.03
1980	2.67	1.86	27.96	55.73
1981	3.34	1.98	28.40	55.47
1982	3.16	2.28	26.92	51.50
1983	3.31	2.46	20.85	46.21
1984	2.01	2.12	20.12	36.55
1985	2.13	1.95	17.67	32.07
1986	2.56	1.98	18.83	40.67
1987	2.44	1.64	17.30	35.50
1988	2.79	2.26	15.26	34.93
1989	2.91	2.90	15.97	34.86
1990	6.39	3.13	13.47	31.32
1991	3.32	2.67	15.98	36.65
1992	4.51	2.90	17.44	37.84
1993	4.28	3.07	15.26	33.32
1994	4.37	3.35	13.59	30.39
1995	4.05	3.05	13.11	28.79
1996	4.05	3.26	12.72	28.23
1997	4.07	3.09	13.19	27.34
1998	4.15	3.50	13.67	27.14
1999	3.19	2.99	11.37	24.31
2000	2.73	2.64	9.85	20.74
2001	2.47	1.96	8.95	19.11
2002	2.24	1.78	9.14	19.69
2003	1.84	1.63	9.76	18.65
2004	1.52	1.17	8.18	19.14
2005	1.64	1.15	8.19	21.53
2006	1.84	1.15	8.37	23.89
2007	1.58	0.89	8.96	25.67
2008	1.92	1.06	10.51	27.46
2009	2.26	0.84	10.45	25.45
2010	2.18	0.82	10.79	25.84
2011	2.73	1.01	10.85	27.12
2012	2.91	0.85	12.27	30.14

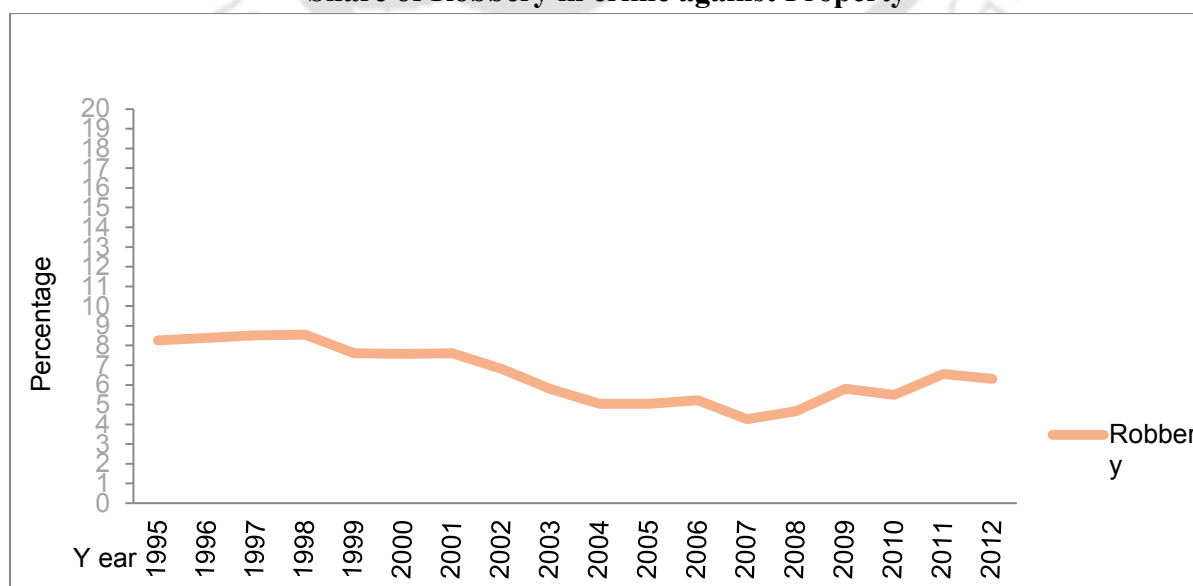
Source : Author's calculation on NCRB data

5.8.1 Robbery :

Robbery belongs to the category of crimes against property .The importance of robbery may be understood from the fact that very often, it is considered as an index of the general level of crime in a place because the statistical data on robbery may be taken as more representative of the general crime trend as compared to other varieties of crimes against property such as theft or burglary which are of lower magnitude in terms of their severity and intimidating characteristics.The use of violence and threat resulting in physical injury and psychological trauma to the victims, apart from loss of property, induces the victim to report the matter to the police more frequently than other property crimes (Mark Shaw et al 2003).

The IPC section 390 defines “Robbery”. Simply, robbery relates to the offence of theft of property where there are components of fear, physical violence or even threats of violence. In this kind of offence, perpetrators take away the property against the will of the possessor by the application of violence or intimidation. Thus in all robbery, there is either theft or extortion. . It is having ingredients of a property crime as well as that of crime of violence (Cook,1987,1983). The subject matter of robbery has been widely discussed in terms of modus operandi, execution and, its organisation. The robbery may be armed or unarmed and it may be committed on varied places like the highway, commercial places, dwellings, houses etc. It is particularly fear inspiring as it usually involves surprise attack by the perpetrators on the innocent victims. Very often high levels of such crimes is taken as an indicator of the illegal activities of well organized criminal gangs.

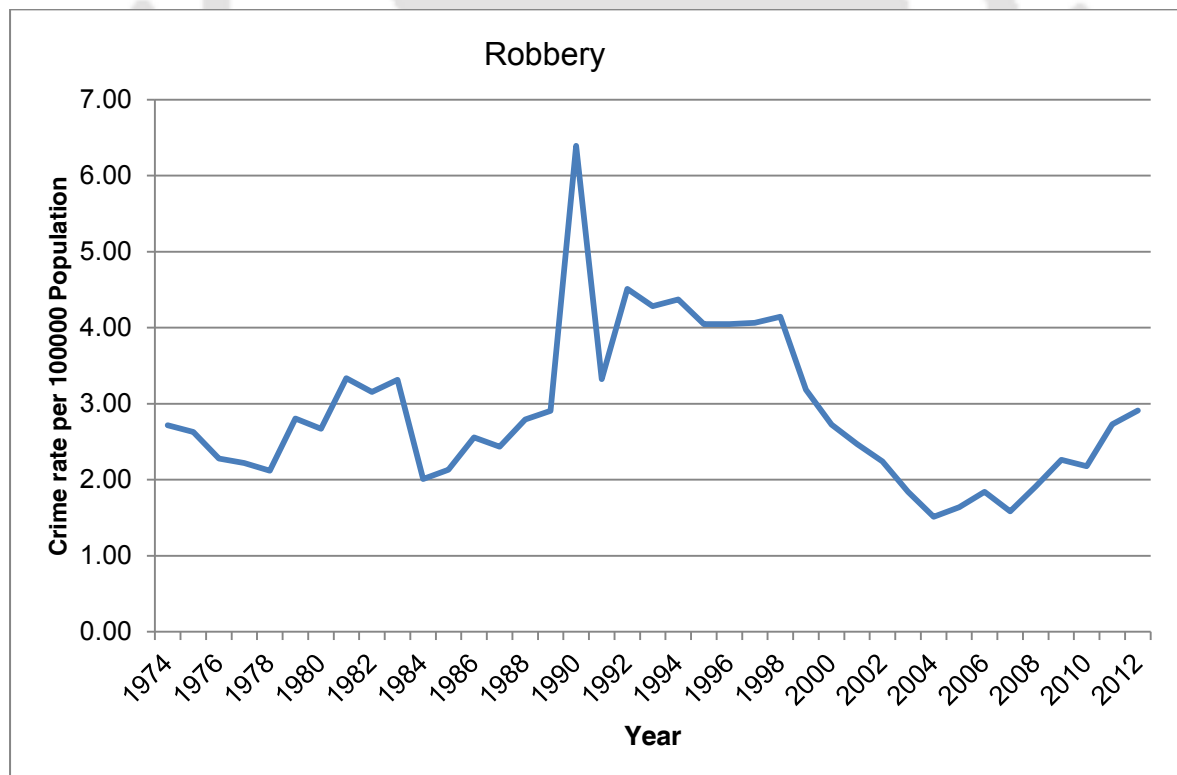
Figure 5.14
Share of Robbery in crime against Property



Source : Author's calculation on NCRB data

Share of robbery in the four main types of crimes against property has remained constant in the time period under discussion. This has been in the range of 2 to 5 per cent. However, the increase in this crime has been significant in the decade of 1990-2000 to the tune of 8% of property crimes after which the trend shows a little less share of robbery since 2003. Incidentally this decade has seen the entry and peak of terrorist violence. Maybe some of the cases had been related to the violent activities of terrorists though this requires separate in-depth study; otherwise there is no known cause to explain these spikes in the increased robbery rate. Other than the hike in the 1990s, the share of robbery to total property crimes has remained stable. The absolute numbers of robbery incidents have been showing some fluctuating trend on year to year basis till 1998 when it had the maximum number, up to 1082 cases, after which it shows a declining trend reaching 451 in 2005 which is almost comparable to the figure of 437 in 1974. There is a slow increase since 2005 and it reached 907 in 2012.

Figure 5.15
Crime rate of Robbery per 1,00,000 population



Source : Author's calculation on NCRB data

The robbery rate in terms of per 100,000 population has also been showing a more or less constancy during the period till 1990, then like the absolute figure of robbery incidents the rate of robbery increased. However, since 2001, there has been a decline in the rate, eg. while the rate of robbery was 2.47 in 2001, it came down to 1.84 in 2003, and 1.58 in 2007, but it showed some increasing tendency since 2008 when it became 1.92 and in 2012 it had increased to 2.73.

Incidence of robbery has been showing different trends in different districts. In Cachar, number of robbery cases was 48 in 2000 and decreased to 21 in 2010. In Dhubri, number of robbery cases reported was 14 in 2000, but increased to 37 in 2010. The decreases were seen in districts like Dibrugarh (46 in 2000; 15 in 2010), Goalpara (22 in 200; 4 in 2010). Some of the districts like Karimganj showed almost unchanged or marginal changes in the occurrences of robbery in the last decade, eg. it was 9 in 2000, and decreased to 7 in 2010 in Karimganj, Sivsagar decreased in 32 in 2000 to 17 in 2010.

The descriptive statistics have been calculated for the entire period 1974-2012 and further it has been sub divided into smaller periods to have a better understanding of these statistics.

Table 5.17
Descriptive statistics of Robbery

Period	1974-1990	1991-2000	2001-2012	1974-2012
Mean	594	975	622	700
Max	1575	1082	907	1575
Min	390	741	451	390
St Deviation	276	131	140	262

Source : Author's calculation on NCRB data

Charge Sheet and conviction rates in robbery:

As in other crimes the experience of Assam in terms of charge sheeting robbery cases has not been a satisfactory one. The all India C.S percentage has been significantly higher than that of Assam. For example, the rates of filing charge sheets in Assam for the years 2010, 2011 and 2012 had been 46.9, 53.7 and 49.5 in percentage while that of all India rates for the respective years had been 70.6, 69.2 and 70.7 in percentage. It is

interesting to note that from the middle of the last decade, the percentage in regards to C.S rates has been better and this is the period when the terrorist violence has been waning due to surrender of a number of members for different militant groups.

The picture in conviction rate is worse than that of C.S rates when one compares this with the all India picture. For example 2012 conviction rate in Assam robbery cases was 16.2, while in all India rate was 28.6. The percentage of Assam in relation to other states in this regard is also poor, eg. in 2012, the conviction rate for robbery cases in Tamilnadu (40.9), UP (53.7), Uttarakhand (62.8), and in neighbouring NE region states like Mizoram (66.7), Nagaland (80), Sikkim (66.7).

All these indicate that there is a need to improve the quality of investigation of such cases so that these result in conviction. It is seen that number of persons arrested has come down even when the number of cases registered has been more. For example, in 2010, 2011, & 2012 the number of persons arrested in robbery cases were 1094, 985, and 950 respectively as against the total numbers of robbery cases registered in the state, viz 662, 837, and 907 respectively. It is worthwhile to note that majority of the persons arrested in this crime belong to the age group of most productive group of people, eg. in 2012 out of the total 950 arrested persons 78.4 per cent belonged to the age group of 18-45 years. And 14 persons were under 18 years of age. However, it may be noted that robbery in the state has been a crime dominated by males since there is no arrested female robber as per the data available.

Places of Occurrence

If one looks at the robbery by places of occurrence, a similar picture like that of burglary emerges. Here also one can see a shift away from residential premises to commercial establishments and others which include banks, railways, boats and ship etc. This shift may be the result of the following factors: (a) Increased commercialization due to growth of liberal economy that has paved the way for establishment of market and shopping places. (b) Citizens are going in for more secured residential system with increased home security measures. (c) There is increased police presence in the form of patrolling, private security services etc. It is noted that urbanization and life-style types have significant effects on the incidence of robbery in the urban areas (Cao and Maume, 1993). It is seen empirically that most of the cases of robbery is localised in specific areas with public and

business/commercial setting (Gyamfi 1998). It may be mentioned that some geographical areas provide greater opportunity for certain criminal activities than others. This spatial opportunities of crime is due to the conglomeration and movement of people, money, goods and services across places. This is the reason why the urban areas or business places become the targets for crimes like robbery. The composition of booty received during robbery has undergone some changes in recent times. Robberies of electronic and photographic equipment have started becoming common though portable electronics were stolen only half as compared to cash (Sethi et al 2009).

However, one can see that the highway robbery incidents also have come down, though marginally. This reduction may be attributed to the increased vigilance in the high way though one could have expected such crimes to increase with the extension of highway networks etc.

Table 5.18
Percentage share of Robbery by place of occurrence

Year	Residential Premises	Highway	Commercial Establishments	Others
2012	14.9	5.5	7.9	79.6
1990	68.5	6.3	1.8	25.1

Source : Author's calculation on NCRB data

5.8.2 Dacoity

As per IPC section 391, when five or more persons conjointly commit or attempt to commit a robbery or where the whole number of persons conjointly committing or attempting to commit a robbery, and persons present and aiding such commission or attempt amount to five or more, every person so committing, attempting or aiding is called “Dacoity”.

Thus the following important points are highlighted about dacoity:

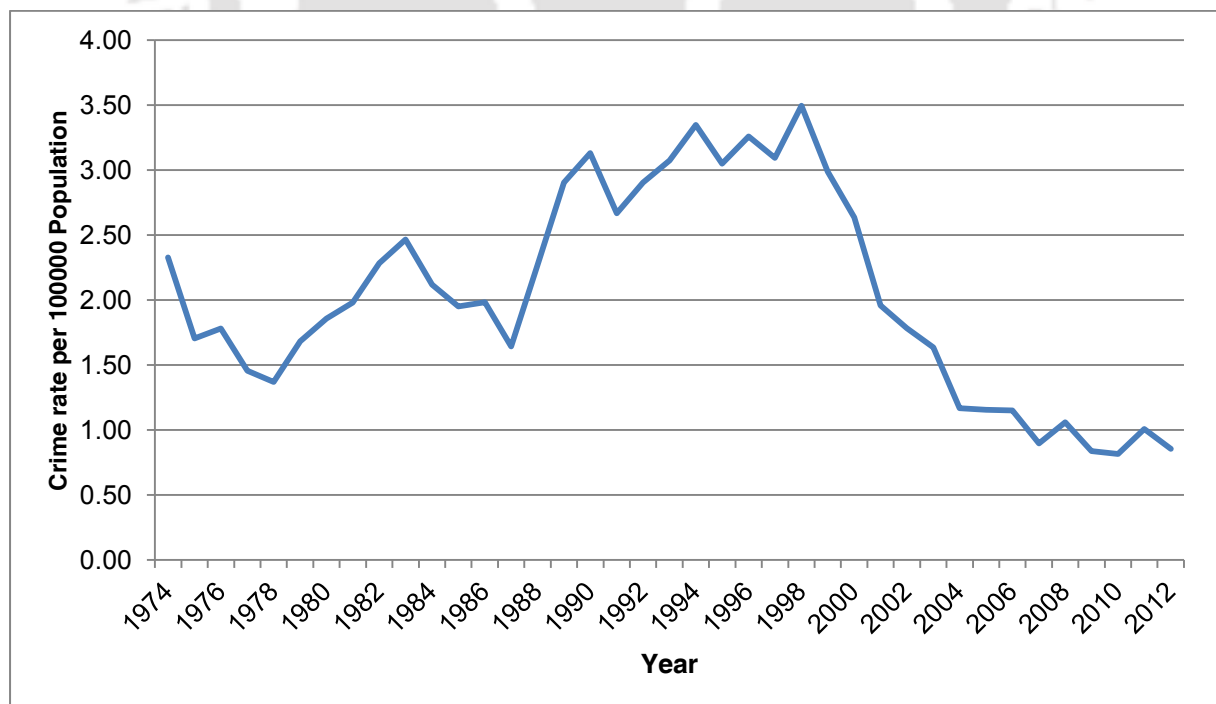
1. Dacoity is the aggravated form of robbery.
2. The main difference between robbery and dacoity is number of participants in committing wrong. In an offence of dacoity, there must be five or more persons.

3. Dacoity is more serious and heinous offence than robbery.
4. In dacoity, every member of the gang of dacoity is punished, whether he takes active part or not. If one of members of dacoity commits wrong defined under this section, all the members are held liable for punishment.

Dacoity has been provided an important place in the writings of historians. This kind of crime has been adequately discussed in the travelogue. It is a term which comes down from times when organized robbery was a part of the ordinary social system (Henderson 1913). This is because through the ages, dacoits have raided their targets, looted money and other valuable even by killing. In most cases they resort to this crime as a source of livelihood or profession. (Sahito et al 2009).

There has been steady increase in dacoity cases till mid 80's, the extent of increase was much more since 1986 after which it came down significantly in the year 1990. This may be attributed to the movement of security forces in the interior areas as a measure against terrorists as there was special operation executed in the vulnerable areas.

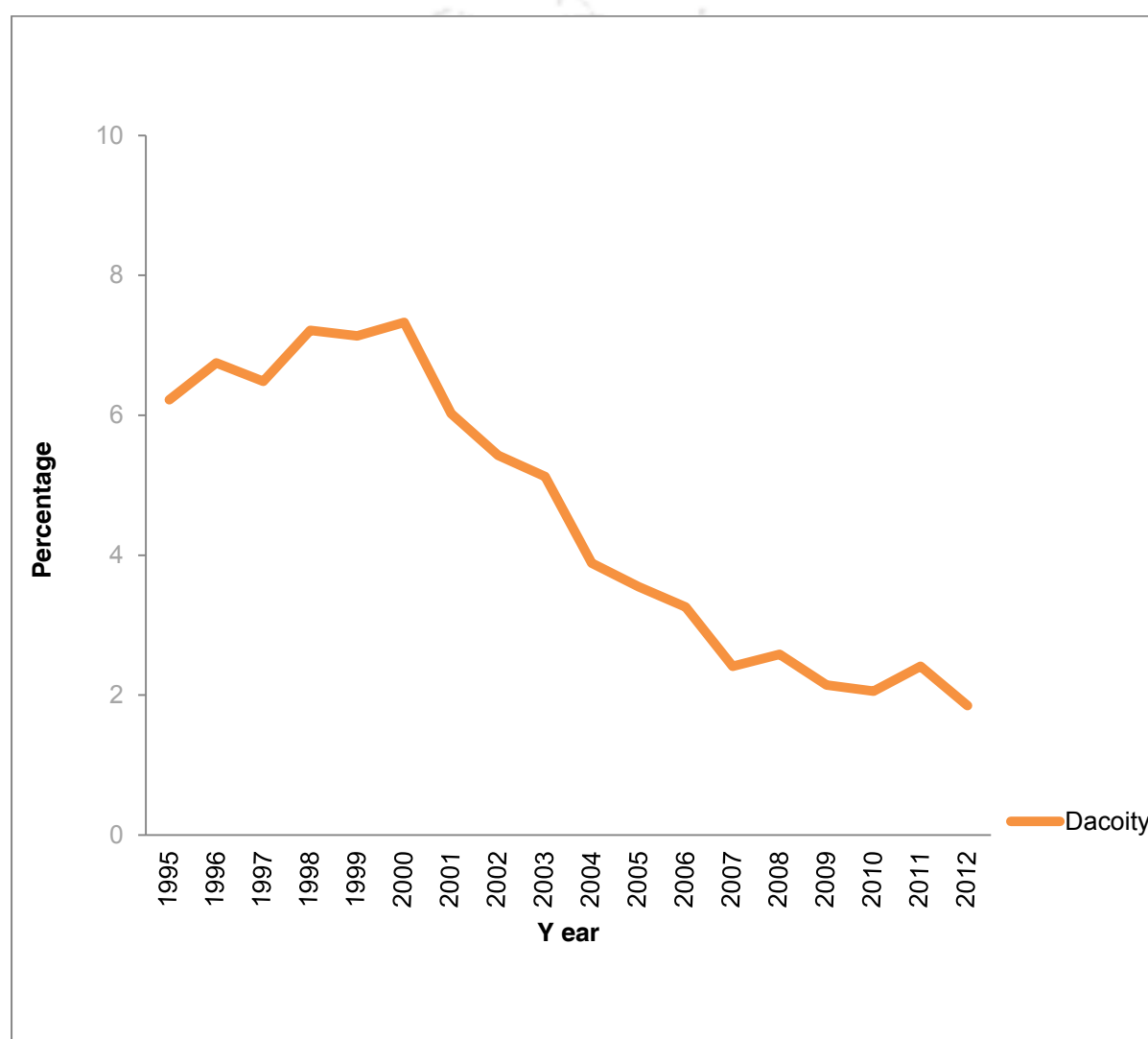
Figure 5.16
Crime rate of Dacoity 100,000 population



Source : Author's calculation on NCRB data

Share of dacoity cases in the crime against property has been showing a declining trend in the recent past. From little above than 6 percent in 1995 it has come down to 1.85 percent in 2012 remaining constant in the time period under discussion. The absolute numbers of dacoity incidents have been showing some fluctuating trend on year to year basis in the entire period. But the number has come down significantly to 266 in 2012.

Figure 5.17
Share of dacoity in crime against Property



Source : Author's calculation on NCRB data

The descriptive statistics have been calculated for the entire period 1974-2012 and further it has been sub divided into smaller periods to have a better understanding of these statistics. Average for the entire period 1974 to 2012 is 489. This higher figure is mainly because of the high dacoity rates in the period namely 1991 to 2000 which is 764

against the comparative mean values of 427 (1974-1990) and 348 (2001-2012). It may be mentioned that in the decade 2000-2010 there is a marked decline of dacoity.

Table 5.19
Descriptive statistics of Dacoity

Period	1974-1990	1991-2000	2001-2012	1974-2012
Mean	427	764	348	489
Max				928
Min				248
St Deviation	144	93	94	203

Source : Author's calculation on NCRB data

Charge sheet and conviction rates in Dacoity :

As in other crimes the experience of Assam in terms of charge sheeting dacoity cases has not been up to satisfactory level. The all India C.S percentage has been significantly higher than that of Assam. For example, the rates of filing charge sheets in Assam for the years 2010 and 2012 had been 57.6 and 58.8 percentage while that of all India rates for the respective years had been 76.4 and 77.8 percentage. It is interesting to note that from the middle of the last decade, the percentage in regards to C.S rates has been better and this is the period when the terrorist violence has been waning due to surrender of a number of members from different militant groups.

The picture in conviction rate is worse than that of C.S rates when one compares this with the all India picture. For example, in 2012 conviction rate of dacoity cases was 20 per cent in Assam, while all India rate was 21.1 per cent. The percentage of conviction rate in Assam in relation to other states in this regard is also poor, eg. in 2012, the conviction rates for dacoity cases were in Tamil Nadu (24.2), UP (54), Haryana (32). However, Assam has done better than some states like Odisha (12.5), Kerala (15), Gujarat (8.9).

All these indicate that there is a need to improve the quality of investigation of such cases so that these result in conviction. It is seen that number of persons arrested has come down even the number of cases registered has been more. For example, in 2010 & 2012 the number of persons arrested in dacoity cases were 816 and 485 as against the total numbers of dacoity cases registered in the state were 248 and 266 respectively. It is worthwhile to note that as in incidences of robbery, majority of the persons arrested in this

crime belong to the age group of most productive group of people , eg. in 2012 out of the total 485 arrested persons, 84.53 per cent belonged to the age group of 18-45 years. However ,it may be noted that dacoity in the state has been a crime dominated by male and there is no arrested female dacoit.

Places of occurrence:

By places of occurrence, a similar picture like that of burglary and robbery emerges. Here also one can see a shift away from residential premises to commercial establishments and others which include banks, railways, boats and ship etc. This shift may be the result of the factors like increased commercialization due to growth of liberal economy leading to growth of establishment of market and shopping places, preference for going in for home security measures, and increased police presence. However, one can see that the highway robbery incidents also have come down, though marginally. This reduction may be attributed to the increased vigilance in the highway though one could have expected such crimes to increase with the extension of highway networks etc.

Table 5.20
Percentage share of Dacoity by place of occurrence

Year	Residential Premises	Highway	Commercial Establishments	Others
2012	46.2	2.6	10.5	40.6
1990	78.9	6.4	1.8	13

Source : Author's calculation on NCRB data

5.8.3 Theft

In case of theft, the following ingredients constitute the crux of the offence as per the definition in IPC:

1. The property must be movable;
2. The property must be taken out of possession of another person resulting in wrongful gain by one and wrongful loss to another;
3. Dishonest intention to take the property;
4. It should be taken without the consent of that person

Movable property is defined in Section 22, IPC as including ‘corporeal property of every description, except land and things attached to the earth or permanently fastened to anything which is attached to the earth’.

The movable property which is subject of theft must be in the possession of the prosecutor. The police in India register cases of theft under the IPC sections from 378 to 382. Intention is the most important component of the offence. To determine whether an offence is a theft or not one must analyse the intention part of the crime. The intention to take dishonestly exists, when the taker intends to cause, ‘wrongful gain’ to one person and ‘wrongful loss’ to another.

The high incidence of theft has shown a declining trend. From 11168 in the year 1974 to 7057 in 1985 with intermittent increases in between and it reached 5633 in 2000 though there have been fluctuations before that.

The descriptive statistics have been calculated for the entire period 1974-2012 and further it has been sub divided into smaller periods to have a better understanding of these statistics.

Table 5.21
Descriptive statistics of Theft

Period	1974-1990	1991-2000	2001-2012	1974-2012
Mean	9314	7503	6134	7871
Max	11168	8736	9394	11168
Min	7057	5633	955	955
St Deviation	1265	803	2658	2189

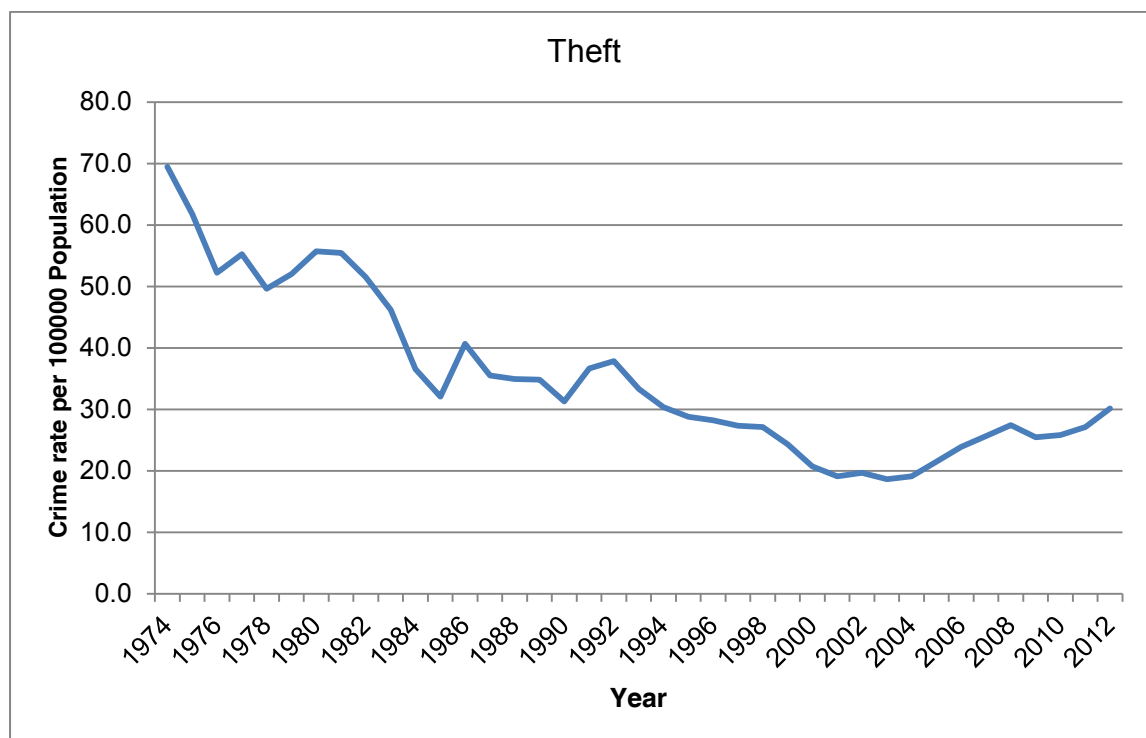
Source : Author’s calculation on NCRB data

Average for the entire period 1974 to 2012 is 7871. This higher mean is mainly because of the high number of cases in the first period namely 1974 to 1990 for which mean is 9315 against the comparative mean values of 7503 (1991-2000) and 6134 (2001-2012).

Share of theft in the crime against property has been remaining constant in the time period under discussion. This has been in the range of 59 to 64 per cent. However, there was sudden decline in the years 2005 and 2006 to the tune of 24 per cent and 27 per cent respectively. There is no known cause to explain these declines. Otherwise this crime is

keeping almost a fix percentage in the share of property crime. The absolute numbers of theft incidents have been showing some fluctuating trend on year to year bases in the entire period.

Figure 5.18
Crime rate of Theft per 100,000 population



Source : Author's calculation on NCRB data

There has been a marked decline in the rates of theft measured per 100,000 population as can be seen from the graph above.

Charge sheet and conviction rates:

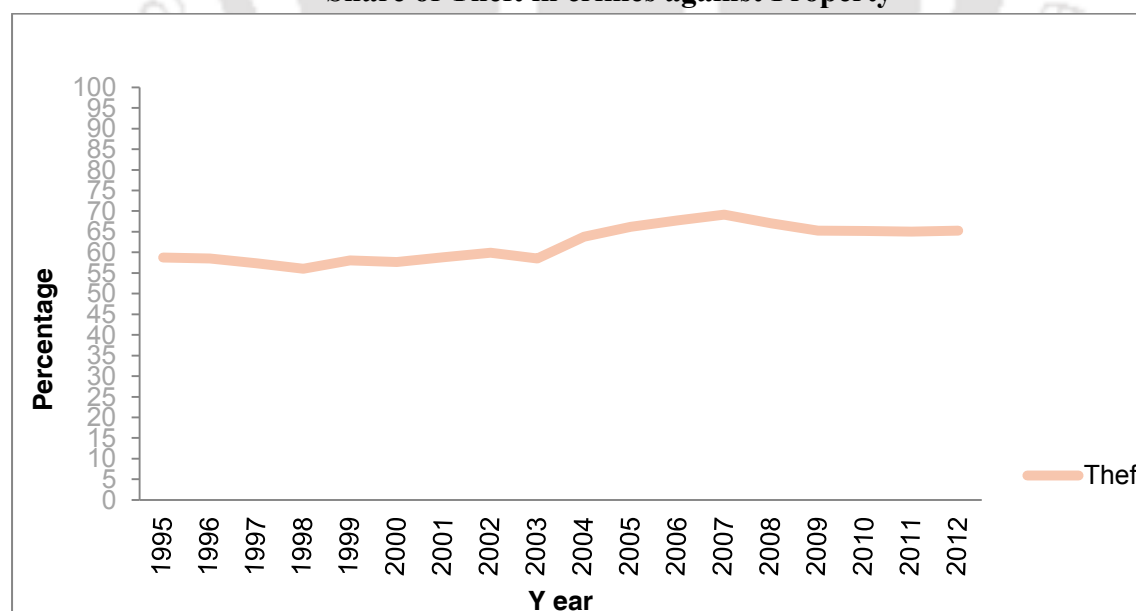
As in other crimes the experience of Assam in terms of charge sheeting theft cases has not been up to satisfactory level. The all India C.S percentage has been significantly higher than that of Assam. For example, the rates of filing charge sheets in Assam for the years 2010, and 2012 had been 34.8 and , 32.7 percentage respectively while that of all India rates for the respective years had been 37.7, and 34 per centage. It is interesting to note that the percentage in regards to C.S rates has not been improving in last decade too even though this is the period when the terrorist violence has been waning due to surrender of a number of members from different militant groups.

The picture in conviction rate is worse than that of C.S rates when one compares this with the all India picture. For example, in 2012, conviction rate in Assam theft

cases was 14.8, while in all India rate was 33.3. In comparison to other states Assam's record in case of CS rates is poor, eg. in 2012, the conviction rate for theft cases in Tamil Nadu (56.9), UP (60.4), Haryana (42.9). However, Assam has done better than some states like Karnataka (8.9), Odisha (9.3), West Bengal (4.3).

All these indicate that there is a need to improve the quality of investigation of such cases so that these result in conviction. It is seen that number of persons arrested has come down even the number of cases registered has been more. For example, in 2010 & 2012 the number of persons arrested in theft cases were 9079 and 9073 as against the total numbers of theft cases registered in the state, viz 7860 and 9394 respectively. It is worthwhile to note that as in incidences of robbery, majority of the persons arrested in this crime belong to the age group of most productive group of people, eg. in 2012 out of the total 9073 arrested persons, 82.82 per cent belonged to the age group of 18-45 years. A substantial number of persons (486) were under 18 years of age. However, it may be noted that theft in the state has been a crime dominated by male, there are a few arrested females involved in theft cases.

Figure 5.19
Share of Theft in crimes against Property



Source : Author's calculation on NCRB data

Places of occurrence:

While discussing theft by places of occurrence, one can see a shift away from residential premises to commercial establishments and others which include banks, railways, boats and ship etc. This shift may be the result of the factors like increased commercialization.

Table 5.22
Percentage share of Theft by place of occurrence

Year	Residential Premises	Highway	Commercial Establishments	Others
2012	31	0.4	11.1	57.5
1990	77.5	0.7	3.1	18.7

Source : Author's calculation on NCRB data

5.8.4 Burglary :

The burglary cases are filed under the Indian Penal Code sections 454/380 IPC (Day Burglary) and 457/380 IPC (Night Burglary).

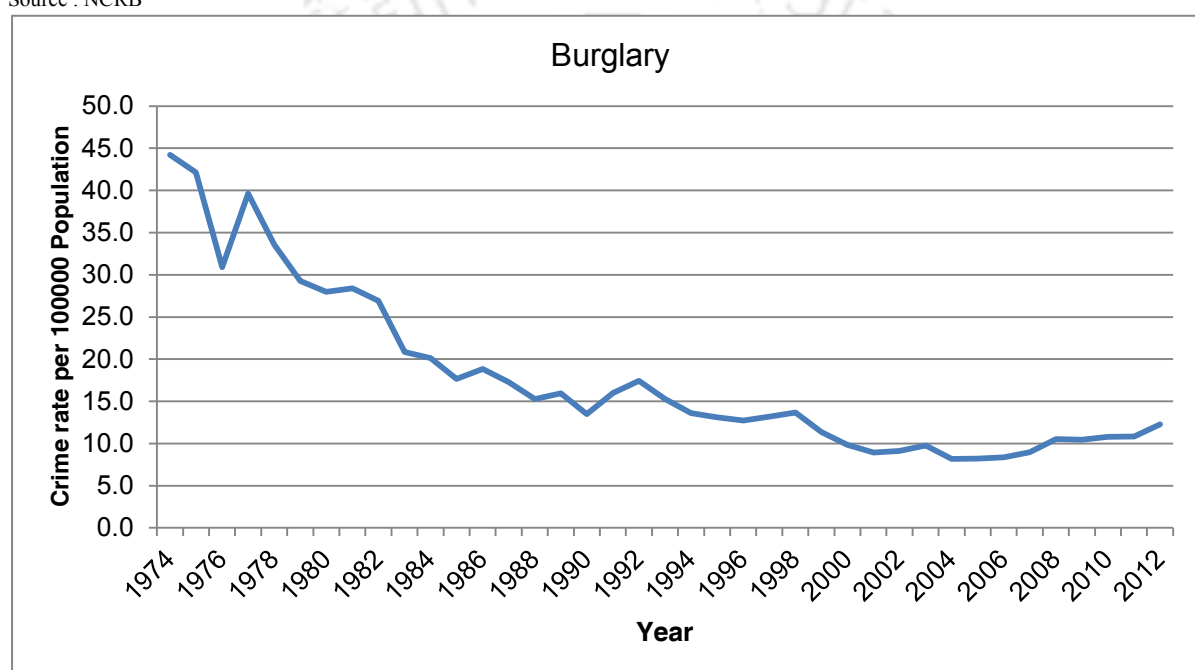
Burglary refers to the offense of entering a building or a part of it as a trespasser with an intent to steal or commit damage. Criminal trespasses may be of different forms, eg. house trespass, aggravated forms of house trespass, Lurking House-trespass, House breaking. An act of the house-trespass becomes aggravated offence based on the seriousness of the act. Burglary is an offence committed by breaking the doors or windows of houses, shops, etc. for stealing the property. The properties are taken away by the burglars by damaging the buildings, and sometimes by threatening the house members.

Burglary has been attracting the attention of the researchers and one comes across a number of studies in relation to the trends, determinants, modus operandi used in incidents of burglaries. Sophisticated methods of entry, such as cutting a hole in the roof or a wall are employed in less number of cases. Under this opportunity theory, it is presumed that rate of burglary or theft is dependent on number of opportunities made available to the offenders. The undergoing changes in the urban life styles in terms of living single life or the employees commuting far away from home due to employment necessities or for routine activities have paved the way for creation of opportunities.

The absolute numbers of burglary incident in the state have been showing some fluctuating trend on year to year bases till in the entire period. But the number has come down significantly from the highest number in 1974 and reaching the minimum in 2005, which, however, again showed a rise. It is also important to note that the rate of burglary in the state has been going down over the time. From a very high rate of burglary with more than 40 per 100,000 population in 1974, the rate declined to near around 10 by 2012.

Figure 5.20
Crime rate of Burglary per 100,000 population

Source : NCRB



Source : Author's calculation on NCRB data

The descriptive statistics have been calculated for the period 1974-2012 and further it has been sub divided into smaller periods to have more detail understanding of these statistics. Average for the entire period 1974 to 2012 is 4008. This higher figure is mainly because of the high burglary rates in the first period namely 1974 to 1990 which is 5095 against the comparative mean values of 3493 (1991-2000) and 2896 (2001-2012). It may be mentioned that in the first half of 2000 to 2010 there is a marked declined of burglary from 2000 to 2007 after which it is showing again increase in the incident in absolute number rather than relative position in the overall crimes against property which was around 28 percent up to 2004. This is because there is a significant decline in crimes again property in

2005 and 2006 for which the percentage share of burglary remained almost constant since other property crimes like theft, robbery and dacoity had shown significantly low figure

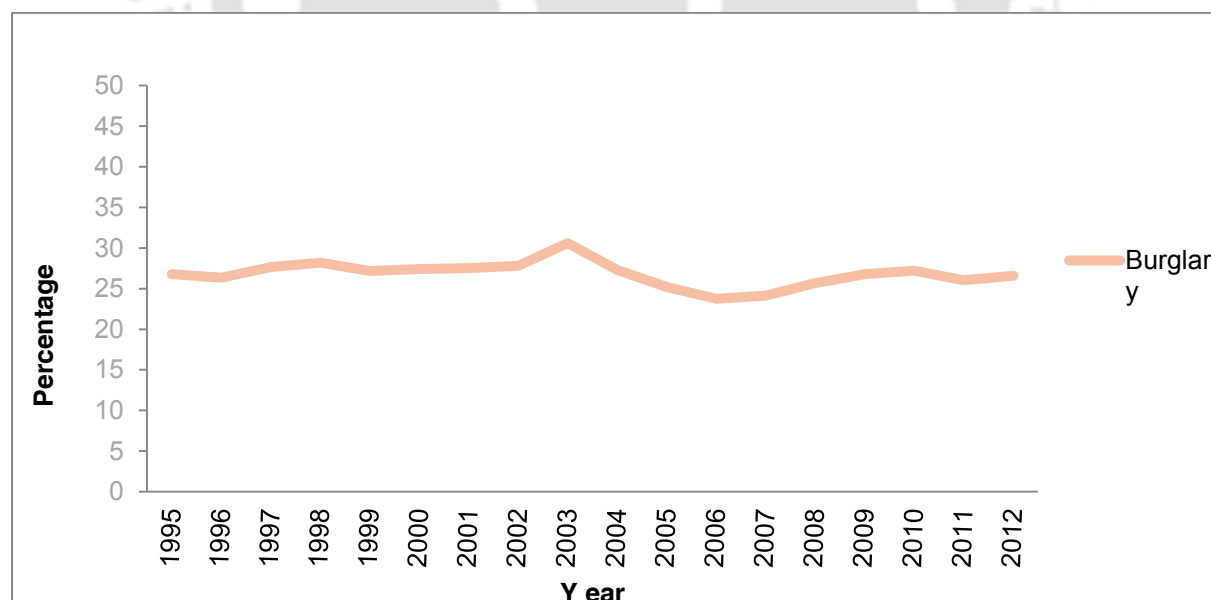
Table 5.23
Descriptive statistics of Burglary

Period	1974-1990	1991-2000	2001-2012	1974-2012
Mean	5095	3493	2896	4008
Max	7112	4025	3825	7112
Min	3320	2756	2255	2255
St Deviation	1261	323	484	1323

Source : Author's calculation on NCRB data

Share of burglary in the crime against property has been in the range of 28 to 40% during the time period under consideration, though there are occasional ups and downs by some margins.

Figure 5.21
Share of Burglary in the crime against Property



Source : Author's calculation on NCRB data

Charge sheet and conviction rates in Burglary:

As in other crimes the experience of Assam in terms of charge sheeting burglary cases has not been up to satisfactory level. The all India C.S percentage has been significantly higher than that of Assam. For example, the rates of filing charge sheets in Assam for the years 2010, and 2012 had been 27.7, and 25.2 on percentage while that of all India rates for the respective years had been 37.7, and 42.1. It is interesting to note that from the middle of the last decade, the percentage in regards to C.S rates has been better and this is the period when the terrorist violence has been in lower scale.

The picture in conviction rate is worse than that of C.S rates when one compares this with the all India picture. For example 2012 conviction rate in Assam burglary cases was 11.9 per cent, while in all India, rate was 29.7 per cent. The percentage of Assam in relation to other states in this regard is also poor, eg. in 2012, the conviction rates for burglary cases in Tamilnadu (51.8), UP (54.1), Hariyana (31.9) were higher than that of Assam. However, Assam has done better than some states like Odisha (8.1) and Gujarat (6.9).

All these point to the need for improving the quality of investigation of such cases so that these result in conviction. It is seen that number of persons arrested has come down even when the number of cases registered has been more. Like any other types of crimes against property, it is worthwhile to note that in incidences of burglary, majority of the persons arrested belong to the age group of most productive group of people, eg. in 2012 out of the total 3281 arrested persons, 80.64 per cent belonged to the age group of 18-45 years. 141 persons were under 18 years of age. It may be noted that burglary in the state has been a crime dominated by male, there was an insignificant participation by females and total 7 women were arrested in burglary cases in 2012.

Places of Occurrence

If one looks at the burglary cases by places of occurrence, a very important picture emerges. There has been a shift away from residential premises to commercial establishments and others which include banks, railways, boats and ship etc. This shift may be the result of the factors like increased commercialization and resultant growth of liberal economy opening more possibilities for establishment of market and shopping places, increased home security through use of modern security equipments, intensive police

presence etc Whenever a structure is found unoccupied there is more likelihood of burglary being committed in the place (Shover 1991). Very frequently burglary is seen as outcome of opportunities provided for the crime to be committed (Cook 1986). The engagement of the individuals has increased outside their homes due to professional and commercial needs. Lifestyle (Hindelang, Gottfredson, and Garofalo 1978) and routine activities theories (Cohen and Felson 1979) relate to opportunity approach to burglary crime. The high value commercial goods are becoming more targets of the burglars leading to increased risk of trading and business places to burglary. This trend has been assisted by the facts that more elaborate security and alarm systems preferred by the householders have reduced the number of incidents of burglary in residential places. The growth of private security agencies and ongoing neighbourhood watch schemes & community policing measures as well as the night patrolling by village defense party members does add muscle to the police patrol which very often find it difficult to cover for interior areas in the rural side due to paucity of police strength. It is also a fact that construction and design of new building/structures has taken lot of state of the art preventive and hardening measures against burglary and theft like improved locking, alarms system, visual identification of witness etc.

Table 5.24
Percentage share of Burglary by place of occurrence

Year	Residential Premises	Highway	Commercial Establishments	Others
2012	31.9	0	13.1	55
1990	87.5	0.7	3.7	8.2

Source : Author's calculation on NCRB data

From the table another important shift one may highlight is the fall in highway burglary overtime. This is more of a result of special highway patrolling by the special police party to prevent such occasions. Also since the highways are busy with more volume of traffic till late night, it is acting as a deterrent in incidents of commission of burglary. It is worth mentioning the fact that the offenses of burglary are being regarded as male bastion(Jayamala).

It is not possible to throw light on the modus operandi employed by the burglars while commissioning the crime since the required data are not documented. Micro

level study in this regard would be able to analyse whether the offenders had entered the premises by breaking the lock, cutting window bolts, making holes on the roof or walls etc.

Details of data on the types of booties got by the burglars are not available. But one can presume that the items stolen in burglaries might be undergoing change in tune with the changes in types of household goods by owner of the house where burglars make their entry. Generally, it is seen that the burglars target the cash, valuables like jewelry, high valued household goods like electronic gadgets etc. The items normally the burglars would like to take away include cash, jewelry, and portable items and over time these have been changing to office equipment, video and sound equipment and electronic goods having public demand. It is mentioned that the items change with demand and supply (Gould 1969), and this may be the reason for current popularity of electronic and home stereo items for burglars.

5.9 Crime against public order

Crimes against public order include riots and arson. As per Section 146 of Indian Penal Code, whenever force or violence is used by an unlawful assembly, or by any member thereof, in prosecution of the common object of such assembly, every member of such assembly is guilty of the offence of rioting.

Thus one notices that the following ingredients are to be there in commission of the offence of rioting.

- i) The accused persons must be five or more in number and form an unlawful assembly;
- ii) The accused must be animated by a common object;
- iii) The force or violence must be used by the unlawful assembly or any member thereof in prosecution of the common object.

The mere use of force by a number of men assembled does not render all of them liable for rioting. The essence of the offence lies in the use of force to achieve common purpose. If the common object of an assembly is not illegal, it is not rioting even if force is used by any member of that assembly.

To constitute the offence of rioting there should be at least five persons and force should be used in prosecution of the common object. If the number is less than five there could be no unlawful assembly and consequently no rioting.

The offense of arson has been referred to in sections 435/436 of IPC. The ingredients of Sec. IPC 435 are in terms of destruction of property, more in the nature of movables. However, Sec. 436 refers to destruction of immovable property like building, temple, godown etc.

The importance of maintenance of public order as fundamental and basic function of the state can be seen from the fact that the manifold issues connected with this have been widely raised in the major statutes of the land. The police is to maintain the public peace and prevent commission of such offenses.. Through different sections in Criminal Procedure Code (Cr.PC) police and magistracy have been given well defined power to disperse an unlawful assembly with a view to maintenances of public peace and order

Trend in offences against Public Order

In a society with multifarious aspirations and ambitions of different ethnic, religious and linguistic communities, it is of great importance to maintain public order and tranquility. The state has been witnessing violence of different sorts- terrorism driven death and destruction, communal tensions, ethnic conflicts- all having impacts on the public order. Apart from that intolerance revealed during agitations, for fulfilling public demand etc. leading to sudden spurt of violence in the forms of injuries to life and property, burning of police stations, vehicles, attacking the govt. property etc. have wider ramifications and affect the investors' confidence in a negative manner. Violence of these sorts has very often been categorized as political, communal agitational and organized forms of violence.

If the law and order agencies fail in their duty to maintain peace and order in the midst of violent conflicts arising out of religions caste, ethnic, language and other forms of disputes the state would face a chaotic situation resulting in loss of faith and trust by the people of the state on governance. All these pose a big challenge to the police system in maintenance of peace and order (Subramanian,1992, 2007).

Violence has been an important instrument of parties all over the world as through this the political parties want to gather political support and realize vested political motives involving the party members in a multiparty democracy like India where a vast majority of electorate is illiterate and still ridden with caste conflicts. Though Constitution of India Article 19 (I) has given the freedom of assembly in a peaceful manner, it is seen that

very often agitation by political parties or different groups of the society on various issues take a violent turn giving rise to agitational violence. Similarly, the hostility between two or more communities give rise to communal violence resulting in wide scale loss of persons and property. India has witnessed the scourge of such violence out of hatred behavior continuously. In Assam in 1960 there was wide scale violence between two linguistic communities on the issue of declaration of state language as Assamese. Situations arose again in 1972 on the declaration of medium of instruction in education. However the worst form of hatred between communities was witnessed during the agitation against illegal immigrants in 1980-83. The cases of arson and riots had increased significantly during this period. Then there have been intermittent clashes between ethnic groups resulting in violence in few limited districts where these groups inhabit. Such violence were seen in the districts of Kokrajhar and NC Hills.

Table 5.25
Descriptive statistics of Rioting

Period	1974-1990	1991-2000	2001-2012	1974-2012
Mean	5071	4103	2914	4159
Max	9917	6763	5077	9917
Min	3713	3406	1808	1808
Stdev	1535	990	839	1513

Source : Author's calculation on NCRB data

Data on riots reveal that there have been occasions when the state had witnessed riotous situations which had pointed to the underlying maladies in the socio-political and ethnic fabric of the society. As discussed, the upsurges in the incidents of riots may be analysed in terms of the conflict situations that have been plaguing the state in the forms of agitational politics, linguistic & ethnic conflicts, communal tensions. Agitations to disrupt the operation of governmental authorities so as to attract its attention to issues of 'concern' occasionally leads to violence and cause major destruction of life and property. As noted by Verma (1997) about the frequently observed characteristics of these democratic modes of protests and agitations, it is found that that most of these would very often involve a degree of violence which may be originating from either side of the agitators or the law enforcers. Assam witnessed a large number of agitations based on the popular demand for

establishment of infrastructural facilities like bridges, roads or other locally felt requirements. One can point to the broad based agitation by the local people demanding setting up of refineries to utilise the locally available crude oil. The historically most significant agitation initially started as student movement and later on attracting the attention and cooperation of different strata of people was the demand for expulsion of illegal immigrants who crossed the international boundary illegally and settled in various districts. The agitation continued for more than five years in the first half of the 1980's. Occasionally the movement turned violent in selected places resulting in loss of life and property. The reason for sudden increase in incidence of riots during 1978-1983 can be traced back to this factor. Number of riots in 1977 increased from 3783 to 6042 in 1982. The election of 1983 was also opposed by the agitators and this also led to violent protests occasionally. All these led to the exorbitantly high figure of incidents of riots and it increased to 9917 in 1983. After the agreement signed between the agitators and the government in 1985 such incidents are found to have come down and it remained in the level of below 5000 till 1991. However, the classes between the ethnic groups in some of the districts with significant prevalence of tribal population like Kokrajhar, Sonitpur had resulted in upsurge of riotous incidents to 6763 in 1992.

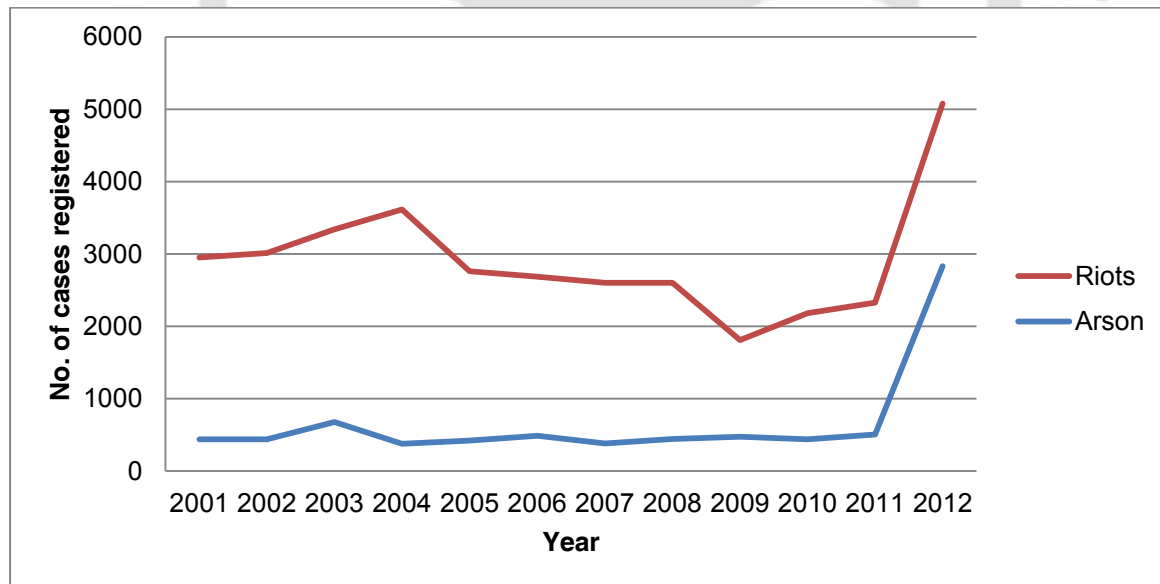
Occasional ethnic clashes between tribal communities in the Hills districts, between tribals and Adivasis in the district of Kokrajhar and between tribals and the immigrant religious majority people have resulted in death and destruction of life and property in some of the districts in the state. Some such major incidents broke out in 2012. These incidents led to pushing up the graph of riots and arson related violence in that year to very high figure, eg. number of incidents in case of riots and arson rose from 2328 and 506 in 2011 to 5077 and 2830 respectively in 2012. Incidents of riots and arson more than doubled leading to crimes against public order rise to 7907 in 2012 as against 2834 in 2011.

It is to be noted here that the reasons for such conflict are to be seen and analysed in historical prospective in the North Eastern States. Political groups and factions of all hues have been capitalizing on the inner dialectics of the multi ethnicity existence in the social life of the area. A lot many times this plays an important role in turning an ordinary local issue affecting some groups or communities into a riot situation for political mileage(Brass, 2005). The demolition of Babri Masjid sparked off communal riots in some specifically minority inhabited areas in the state leading to increase in riots in 1992.

The violence between the Bodo tribal population and the immigrant Muslims in 2012 had led to increase in incidents of riots and arson. Significant involvement of terrorist elements in these riots and arson is a cause of worry since their well equipped cadres were suspected to participate in the carnage.

There are several factors lending support to the threat to the public order and tranquility of the state. Presence of multitude of militant groups for ages has been a persistent problem for the state. Some of these have laid down their arms and are in the process of negotiation and their demand within the authority. The demands are also of various nature, while some of them have been asking for separate identity in through curving out of separate state within the country while others are fighting ‘War’ against the country for ‘sovereign’ and independent country. Some of the splinter groups factions are still active challenging the security forces in their task in maintenance of public order. All these are making a serious dent on the peace and order of the state and its people.

Figure 5.22
Breakup of crimes against public order

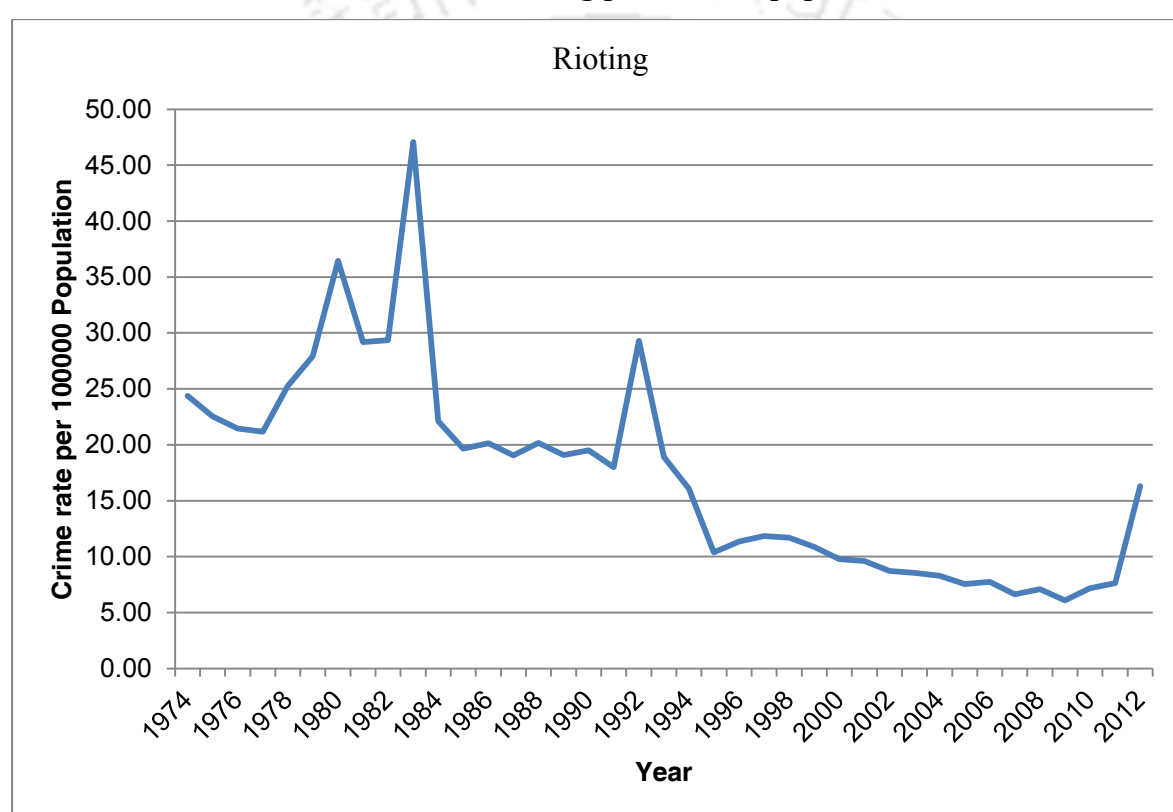


Source : Author's calculation on NCRB data

Another serious problem chronically has been faced by the law enforcement agencies are the issues relating to the unabated migration problem of illegal immigrants from Bangladesh. Apart from the public agitation in the first part of 80's lasting for several years with losses in workdays because of strikes and other forms of agitations , there was

considerable loss of persons and property. There have been occasional outbreaks of protests against the unsolved issue of illegal immigration. Ethnic classes arising out of the conflicts between multifarious ethnic groups have also been a cause of worry in the domain of maintenance of public order. Along with these, other issues like construction of big dams, river connectivity are potential areas that would attract the attention of the security force in the sphere of maintenance of public order. Therefore it is very clear that the state should function in such a way that public order is maintained.

Figure 5.23
Crime rate of Rioting per 100,000 population



Source : Author's calculation on NCRB data

There have been frequent discussions on the increasing propensity of a crowd turning into a violent mob. . In incidents of accidents and public protests on local issues it is seen that the crowd easily turns violent, burns the vehicles destroys the govt. property and attacks the government officials resulting sometime in riots and arson of considerable magnitude. This intolerance and susceptibility of people in a protest action which started peacefully then turning into a frenzy mob has been a cause of concern since it leads not only to a disruption of public order but also loss in life and property. Though apparently such

group appears to be purposeless there may be the “pent up” grievances and anger against the governmental policies and authorities like police, administration, business and this anger gets flared up over minor incidents. In recent times, such types of violence have been causing worries for the law enforcement agencies and the members of the society as a whole. It has been felt many a time the real reason for crowd being riotous is not genuinely scrutinised for which the causes of mob violence are not properly addressed. No attempt is generally made to find out the perpetrators of such violence, but the whole incident is just termed as merely an outburst of collective anguish where the actors remain hidden. It is to be noted that such events of crowd resorting to violence are frequently seen as means to gain political short term gain. Also very often mass violence has been seen as a form of collective humiliation of public officials (Chakrabarty, 2007). While discussing preventive strategies of law and order, there have been references to the impact of social media in spreading hatred amongst the users, thereby affecting the situations negatively. In any riot situation involving different community groups, rumour mongering very often worsens the situation and law enforcement agencies find it difficult to quell the spate of violence. However, it is also being suggested that since social media is first to sense the simmering heat between groups in conflict the law enforcement agencies should be alert about any such issues being the subject matters in social media posts. And the service providers should have a cooperative role in this matter to stop spread of hatred and misgivings. Whether there is a need for closing down the social media site at situations of severe law and order problems is a debatable point.

Charge Sheets and Conviction Rates

However a cause of concern is in terms of low charge sheet and lower conviction rates of cases relating to riots and arson. It is important that the miscreants

Table 5.26
Percentage of charge sheet/conviction against persons in Riot and Arson.

Year	RIOTS			ARSON		
	2010	2011	2012	2010	2011	2012
% of Person Charge Sheeted over Person Arrested	56.78	52.66	56.75	33.17	44.52	54.91
% of Person Convicted over Person Charge Sheeted	5.83	4.75	3.36	17.15	9.19	2.87

Source : Author's calculation on NCRB data

engaged in violent activities by being partners in a violent mob should be brought to book and presented for justice so that it acts as a deterrent in attempt to commit crimes against public order. But the data on disposed charge sheeting and conviction do not show a satisfactory picture. For example in 2010, out of the incidents of riots, lower than 50 per cent of the cases were charge sheeted. The figures improved slightly with 60.4 per cent in 2012. Similarly the cases where conviction was secured had been abysmally low with 8.3 per cent in 2012. One comes across similar situation with regard to cases of arson. The C.S. rates here are poor, eg. 37 per cent in 2010, and 39.8 per cent in 2012. Conviction rates are similarly very low in case of arson namely, 20.9 per cent in 2010, and 10.3 per cent in 2012. Though these charge sheeted or convicted cases related to the cases of earlier years, it also holds good that the picture broadly reflected the quality of investigation and prosecution with presentation of sufficient evidence.

Table 5.27
Charge sheet and conviction rates (in percentage) of Riots

Year	Assam		India	
	Charge Sheet	Conviction	Charge Sheet	Conviction
2000	67.0	11.0	90.5	28.8
2005	71.8	10.2	91.5	21.6
2010	49.8	8.3	90.9	21.7
2011	60.7	11.5	91.5	21.5
2012	60.4	5.1	92.0	18.5

Source : Author's calculation on NCRB data

It is also worthwhile to look at the data relating to arrested persons leading to conviction. Due to the incidents of riots between the Bodo tribals and the immigrants allegedly settled in the land of the locals illegally in the year 2012, the number of cases and arrested persons had increased substantially to 11426 from 10112 in 2010, but the number of incidents of arson and arrested persons against arson cases were remaining almost unchanged in the years under discussion.

Table 5.28
Charge sheet and conviction rates (in percentage) of Arson

Year	Assam		India	
	Charge Sheet	Conviction	Charge Sheet	Conviction
2000	51.4	19.0	66.0	23.2
2005	48.4	18.5	69.0	21.4
2010	37.0	20.9	68.1	19.3
2011	49.6	20.3	68.3	18.2
2012	39.8	10.3	67.6	15.6

Source : Author's calculation on NCRB data

5.10 Economic Crimes

Economic Offences form a separate category of criminal offences. Such offences not only victimize individuals with pecuniary loss but can also have serious repercussions on the national economy and impact on the nation's security and governance (Sarkar and Tiwari, 2001). NCRB has clubbed the incidences known as criminal breach of trust, cheating and counterfeiting under the category of economic offences.

Criminal Breach of Trust as defined in the Chapter XVII under section 405 of Indian Penal Code states, 'Whoever, being in any manner entrusted with property, or with any dominion over property, dishonestly misappropriates or converts to his own use that property, or dishonestly uses or disposes of that property in violation of any direction of law prescribing the mode in which such trust is to be discharged, or of any legal contract, express or implied, which he has made touching the discharge of such trust, or wilfully suffers any other person so to do, commits criminal breach of trust.'

The essential ingredients of the offence of criminal breach of trust are;

- 1) The accused must be entrusted with the property or with dominion over it,;
- 2) The accused must dishonestly use or dispose of that property or wilfully suffer any other person to do so in violation,

- (a) Of any direction of law prescribing the mode in which such trust is to be discharged, or;
- (b) Of any legal contract made touching the discharge of such trust.

The distinguishing feature of the offence of criminal breach of trust is 'dishonest misappropriation' or 'conversion to own use' another's property. This however is similar to the offence of criminal misappropriation defined u/s 403. But in respect of criminal breach of trust, the accused is entrusted with property or control over the property, which may be both movable as well as immovable property. Thus the distinctive elements of Criminal Breach of Trust are thus 'entrustment' and 'dishonest misappropriation'. Cheating is defined by IPC in section 415 in this way:

“Whoever, by deceiving any person, fraudulently or dishonestly induces the person so deceived to deliver any property to any person, or to consent that any person shall retain any property, or intentionally induces the person so deceived to do or omit to do anything which he would not do or omit if he were not so deceived, and which act or omission causes or is likely to cause damage or harm to that person in body, mind, reputation or property, is said to “cheat”. As per the explanation given —a dishonest concealment of facts is a deception within the meaning of this section.

The essential ingredients of the offence of cheating are as follows:-

- i) Deception of a person either by making or misleading representation or by other action or omission;
- ii) Fraudulently or dishonestly inducing the person ---
 - a. to deliver any property to any person ; or
 - b. to consent that any person shall retain any property ; or
- iii) Intentionally inducing the person to do or omit to do anything which he would not do or omit if he were not so deceived , and which act or omission causes or is likely to cause or harm to the person in body, mind , reputation or property .

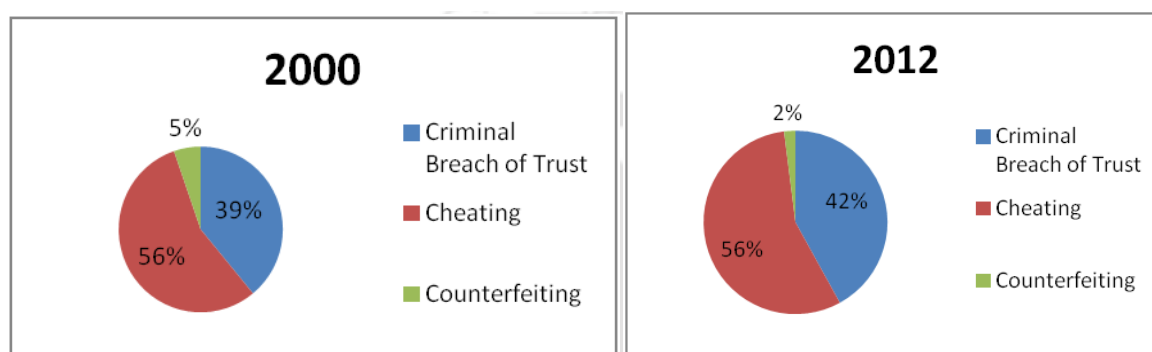
As per section 489A of IPC whoever counterfeits, or knowingly performs any part of the process of counterfeiting, any currency-note or bank-note, shall be punished.

Analysis of Trend and pattern of economic offenses

Relative contributions of the different components of economic offences have been more or less constant during the period. Share of cheating incidents has been more than the other two crimes. Detected number of counterfeiting cases was the minimum in the category.

Figure 5.24

Share of components of Economic Crimes



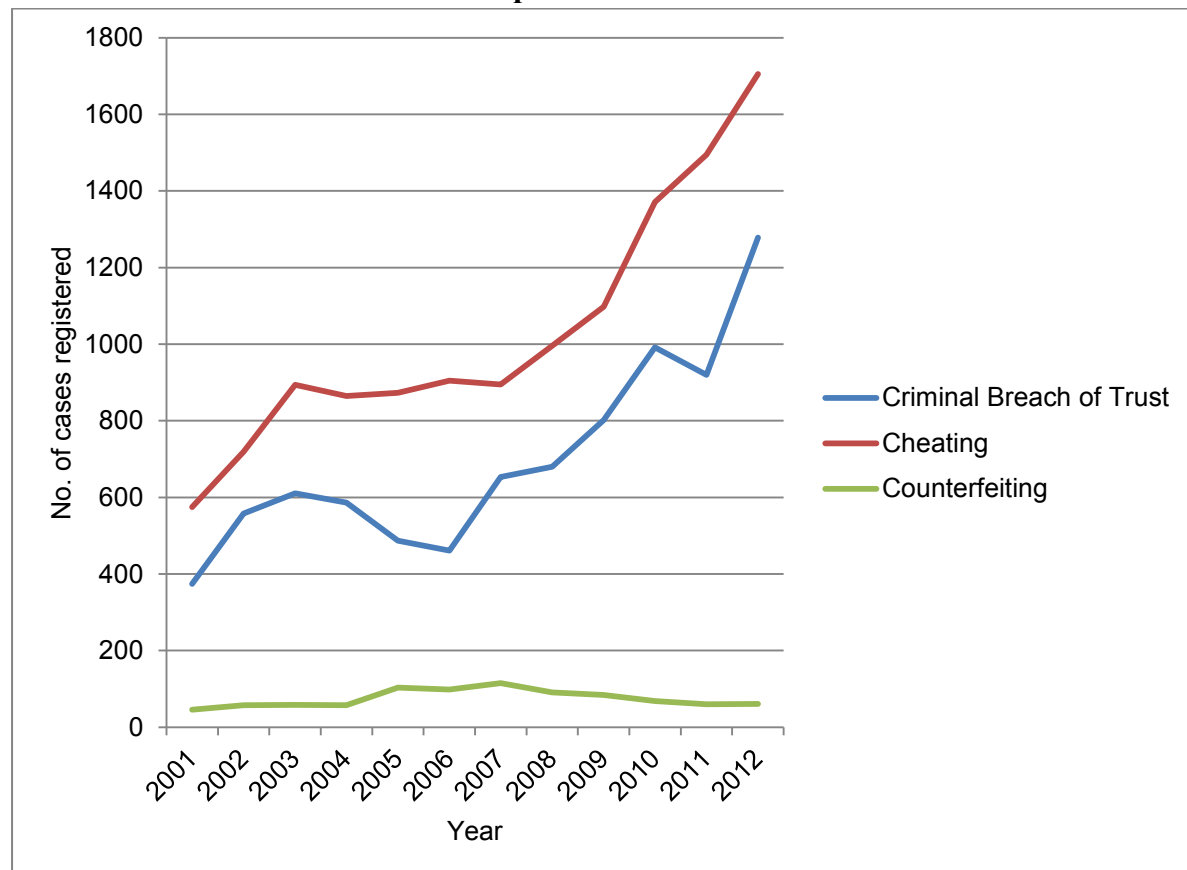
Source : Author's calculation on NCRB data

Number of registered cheating cases has occupied little over 50% of the total economic crimes all most all the time barring a few intermittent years. For example, in 1980, there were 517 numbers of criminal breach of trust (CBT) cases in the state, and this showed some decline in the 1990's. It came out to be 399 in 1990 as per NCRB annual report. But the cheating cases showed an increase from 492 in 1980 to 537 in 1990. It is seen that in some years the contributions of CBT in total economic crimes has been more than that of cheating, but in the post 1990 period cheating incidents have outweighed the number of registered CBT. In fact, it is seen that cheating cases have been increasing at a higher rate and their numbers have been continuously higher than the CBT cases in recent times.

The rates of these two types of crimes have been on the rise. The number of CBT incidents per 100,000 population have increased from 1.4 in 2000 to 4.1 in 2012. Similarly incidents of cheating per 100,000 population is increasing from 2 in 2000 to 5 in 2012. However as far as the rate of detected incidents of counterfeiting cases are concerned there is no change, and it has been 0.2 through this period.

It may be mentioned here that there was an economic policy shift at the national level and the Government had gone for liberalization and opening up of the economy in the early part of 1990's. Though this did not have immediate implication in the economic

Figure 5.25
Breakup of Economic crimes



Source : Author's calculation on NCRB data

offences in the country, it was thought that as the time passed, there might be some discernible effect on the economic crime front. It is seen from the crime data that out of these types of crimes CBT showed a figure of 374 in 2001 and this increased to 558 in 2002 after which upward trend continued and reached a figure of 1278 in 2012. Similar trend is found in case of cheating too, and one finds that such type of crime which was 575 in 2001 rose to 719 in 2002 and the upward surge continued reaching 1705 in 2012. After the gestation period of liberalization of economy in the first part of 1990's, there was increase in activities in the economy and one would like to argue that under such situation there was an

upward shift of economic offences, particularly in the sphere of both CBT and cheating cases registered.

Table 5.29
Charge sheet and conviction rates (in percentage) of Criminal Breach of Trust.

Year	Assam		India	
	Charge Sheet	Conviction	Charge Sheet	Conviction
2000	59.6	14.2	71.2	32.3
2005	58.7	21.7	76.2	27.6
2010	53	25.2	70.2	32.7
2011	55.6	26.1	71	31.2
2012	49.6	14.5	24.8	73.7

Source : Author's calculation on NCRB data

While looking at the disaggregated data up to district level, it is seen that there are wide variations in the number of economic offence cases registered in the districts eg. in 2012, Baska district witnessed 20 incidents of economic offences, but there were 248 number of cases in Barpeta districts , 274 incidents recorded in Dhubri district, and 522 incidents recorded in the district of Guwahati city. Also it is to be noted that while in some district CBT cases have occupied dominant place, in other districts one finds majority of cases registered belonged to cheating. eg. in 2012, Jorhat recorded cheating & CBT cases numbering 117 and 45, but Dibrugarh had 33 incidents as cheating but 68 incidents as CBT. There is no definite trend in this regard for the long period under discussion with respect to individual district.

Out of the economic offences it is seen that detected cases of counterfeiting of currency notes still occupies a very insignificant role. However a note of caution may be placed here that the number of incidents recorded as counterfeiting is actually the number of detected cases by the security or other agencies likes economic offences wing, banks etc. That is, more the number of detection, more the number of cases registered. There is general agreement that incidents detected cases are just the tip of the iceberg only. Because the transit and circulation of counterfeited currency notes suspected to have increased overtime with the

clandestine growth of organized gangs in the national as well as international spheres. It may very often turn out to be the vehicle for terror funding if not adequately controlled and checked. (Kumar and Prakash, 2014).

Table 5.30
Charge sheet and conviction rates (in percentage) of Cheating.

Year	Assam		India	
	Charge Sheet	Conviction	Charge Sheet	Conviction
2000	59.2	22.9	73.3	31.4
2005	62.4	19.6	74.9	27.4
2010	51	17.9	72.1	29.2
2011	45.8	14.1	69.2	27.5
2012	40.9	10.6	72.6	24.3

Source : NCRB

There has been increase in detection of counterfeited currencies. As per NCRB data, the total number of FICN seized in the entire country and recovered in the years 2009-10 was Rs 26,81,54,186, in 2011-12 it was Rs 26,50,16,311.

In 1980, in Assam, the number of such cases was 4, which increased to 15 in 1990, and overtime it rose substantially in recent times. In 2000, it was 50, while in 2007 and 2012, number of detected cases came out to be 103 and 61. District wise detection cases do not show a definite trend. While Dhemaji detected 6 cases in 1990, and in the same year it was 4 cases in Kamrup, but in 2012, we have 19 cases in Guwahati City and 1 cases in Dhubri.

Table 5.31
Detection of FICN

Year	Cases regd.	person arrested	No. of FICN denomination wise						Total
			1000/-	500/-	100/-	50/-	20/-	10/-	
2011	70	81	668	1578	213	3	-	-	Rs.1478450/-
2012	55	63	500	2104	1059	122	200	100	Rs. 1669000/-

Source : Assam Police

It is of importance to note that with the advent of economic liberalization and globalization regime different varieties of economic offenses have started showing its head. Such criminal activities have been aided by the innovative technologies and modern gazettes. A new avatar of this type of crime has surfaced to cheat ordinary investors and misappropriate their deposits through launching of dubious financial entities of different hues.

It has come to notice that in recent years a large number of companies have been conducting money collection and circulation activities all over the country without permission from regulatory authorities like RBI(Reserve Bank Of India) or SEBI(Securities and Exchange Board of India). These companies are floated ostensibly for doing business on real estates and housing, hotels and holiday packages, insurance schemes and for marketing of different kinds of consumer products. Though most of these entities are duly registered under the Companies Act, they are notorious for conducting their business on the sly. They operate different types of deposit schemes. Many a time they are engaged in collective investment schemes under disguise. With a view to avoid the legal and procedural provisions of the RBI Act, they disguise their deposit schemes under the schemes of monthly or quarterly payments towards booking of a flat or a plot of land, sometime as installment payments for a tour package, or booking of consumer product. In a number of occasions they take recourse to illegal issue of shares or debentures in the midst of huge number of investors as private placement without taking proper approval from the regulatory authority like SEBI. The customer is offered a choice not to purchase the product or service like tourism and seek refund of the money with high rate of interest instead. Thus it is seen that no investor would purchase the product and rather he takes back the booking amount with interest. In the whole affair there is no transaction or production/sale of goods or services, but it is just recycling of money or money circulation act.

It is observed that such companies carry on their business by opening branches in small and distant townships of the state and lure the small depositors by high rates of interest taking advantage of low literacy level and paucity of poor penetration level of banking and other financial institutions. It is important to note that the functioning of these dubious companies are guided by business models which are unsustainable and very often they operate in the style of the pyramidal or Ponzi schemes through money circulation rather

than effecting any economically productive activity. They simply collect deposits and keep recycling the money leading to bankruptcy.

In the last decade the incidents of cheating the poor investors and running away with their money committing misappropriation by such companies have reached a significant level. As per CID data, till 2012 the total number of such incidents recorded reached 274 cases throughout the state. The number of companies involved in such offenses were found to be 127. To hoodwink the regulatory authorities these entities multiply to form sister companies or group of companies which disappear after a certain period of time after taking crores of small investors' money. Under appropriate sections of cases are taken by police under IPC only after the company has defaulted in returning money to the investors and investors are convinced that a fraud has been committed. Thus before any police action could prevent this fraud, the companies would run away with the depositors' money. Due to this lot of states have gone for promulgation of state acts to secure the interests of the depositors.

Globalisation, liberal economic regime and the advent of modern technologies have thrown up imminent challenges to law enforcing authorities with new varieties of crimes and new breed of criminals trying to outwit the police. Cyber crime is one such new crime which has been attracting the attention of law enforcement agencies and policy makers. This is because such type of crime can create havoc in the entire state functioning, day to day life, state security and economy of the land. The distinctive features of economic offences as compared to traditional varieties of criminal behaviour are that they have the more lethal power to cause damage in the society and in the economic sphere cutting across national boundaries in terms of security threats and harm to national integrity. These call for a need to update the members of the law enforcement authorities with new and advanced knowledge and skills. Circulation of counterfeiting currencies is an important economic offence that requires strict vigil and counter actions by the police since this type of crime has a destabilizing effect on the national economy and it may have effects on the crossborder terrorism and on national security as warned by the RBI, also impacting the inflation scenario of the economy. Assam is considered to be providing the transit route for carrying out this offence because of its proximity with the countries like Bangladesh, Nepal etc. thereby artificially increasing the money supply and putting inflationary pressure. There is a substantial gap between the actual circulation and seizures of FICN by the law enforcement agencies.

5.11 Conclusion

It is observed that the pattern and composition of the various crime categories have undergone perceptible changes over time. These changes involve shifts not only among the various categories but also within these categories. However, there is nothing to suggest that the relative contributions of all crimes remain unchanged in the time period under consideration. In fact, the share of some crimes have fallen drastically while a few others, like crimes against women and economic crimes, have come into prominence. Controlling for the effects of increasing population, by taking crime rates, we again observe changes, more or less in line with the total crime counts. Furthermore, some of the crimes were looked at in relationship with a few socio economic variables, like urbanization, school dropout rates etc. However a more detailed econometric analysis will be done in the next chapter to examine crime determinants belonging to socio economic variables and from the domain of criminal justice system.

Chapter 6

Determinants of Crime: Time Series and Panel Data Analysis

In this chapter efforts are made to estimate models of economics of crime by following the line of arguments of Becker (1968) and its extensions by Ehrlich (1973) so as to examine the determinants of criminal behaviour in the state of Assam during the relevant period under study. To identify the factors responsible for crimes in this region this study would follow two methodological approaches, viz Time series study and Panel data study. The time series analysis has examined the role of different crime determinants taking the state as a whole for the period 1976-2008 depending on the availability of relevant data. However in the Panel data methodology the empirical study on crime factors has been carried out by taking the time and cross sectional data over the districts in Assam for the period 2004- 2012 based on the latest reorganisation of the districts and availability of district wise data on relevant variables. Both these approaches have their advantages and disadvantages that would be discussed during the course of the study.

6.1 Theoretical Discussion

It is important to note that the present study would utilise the theoretical formulations and frameworks initiated by the pioneering works of Becker (1968) while constructing the model of economics of crime to determine the factors responsible for criminal behaviour in the state. The ground breaking work by Becker had led to wide ranging discussions and empirical works by economists on the criminal behavior as a matter of rational choice. For the criminal the rationality of the decision is based on the cost benefit analysis because he would like to decide on the basis of whether benefit from the crime outweighs the cost involved which are in the forms of loss of legal earning from alternative work opportunities, losses resulting from probability of getting caught and other potential costs that may involve incapacitation through prison and penalty.

Becker (1968) puts forward the expected utility from committing an offence as follows :

$$EU_i = P_i U_i(Y_i - F_i) + (1 - P_i) U_i(Y_i)$$

where, Y_i is the income of the individual criminal (which includes both monetary and psychic incomes) from an offense, U_i is his utility function and F_i is the monetary equivalent of the punishment, P_i is the probability of his apprehension.

Then,

$$\frac{\partial EU_i}{\partial P_i} = U_i(Y_i - F_i) - U_i(Y_i) < 0$$

and

$$\frac{\partial EU_i}{\partial F_i} = -P_i U_i'(Y_i - F_i) < 0$$

The above two relations hold as long as marginal utility of income is positive. This leads to the conclusion that the expected utility of a criminal act goes down as probability of being caught and severity of punishment increases. Therefore, the number of crimes that an individual would commit would have a negative association with the probability of apprehension and the severity of punishment. He also mentions that the analysis could be expanded by incorporating the costs and probabilities of arrests, detentions and trials not resulting in conviction.

While looking at the aggregated level of offences, Becker moves on to calculate the total offenses where all individual's offenses are weighted average of the variables like P , F and U . These variables change with variations in personal attributes like level of education, age, family and cultural values etc. But simplifying the matter he has taken the average values of P , F , U there by formulating the market offense function as: $O = O(P, F, U)$.

Thus in Becker's model, costs and benefits for a crime determine decision to commit crime as Oliver(2002) puts it in simpler terms, where costs of the crime will be equal to the probability of punishment (P) times the cost of punishment (C).

Therefore the individual decision to commit crime is conditioned by the following formulation:

$$(b-PC) > 0$$

Accordingly, the difference would reveal that the number of criminals rises as benefit b rises, and falls as P or C rises.

From it, one finds that any policy to reduce crime has to reduce the benefits of crime, and raise the probability of apprehension or increase the costs of punishment which is conditional upon being apprehended.

In the present study, the crime function would have crime rates and a number of crime related explanatory variables to form the empirical model, such as law enforcement and socio-economic conditions.

6.2 Analysis of Time series data by application of VECM

Time series data is, many a time, commonly preferred as useful data structures while conducting research into the factors influencing criminal behaviour. This is more relevant in case of examining the role of macro variables like economic growth, inflationary index etc. While using time series analysis to look at the relationship between crime rates and some of the important macro variables like per capita income and inflation in terms of consumer price index in the state and deterrence factors the utmost care is taken to avoid the non stationarity problem in time series data. Conventional regression estimators have good properties when applied to covariance-stationary time series, but difficulties are experienced when applied to non-stationary processes resulting in spurious regressions (Granger & Newbold, 1974, Corman et al, 1997). This means that if there are two independent random walk processes, and a regression is carried out of one on the other it will result in a significant coefficient, even though they are not related, thereby giving rise to the spurious relationship. With the introduction of co integration technique, researchers have been able to avoid the spurious results in their attempts to analyse non-stationary variables and look at long run association between the variables. There are procedures through which one could avoid such a situation of spurious regression results and look at the long run and short-run econometric relationships between non-stationary variables by estimating Vector Correction Model (VECM). These models are employed when economic time series appear to be 'first-difference stationary,' while their levels show unit root or non stationary behaviour.

Thus to determine the long-run association between the non-stationary variables in question, econometric model based on Vector Error Correction Model has been estimated in the present study. The Johansen approach of co integration is applied to test for the long-run relationship among the variables. It is to be noted that when variables in a system are found to be co-integrated, it is inferred that they have a long-run equilibrium relationships. In his essay, Granger (2004) pointed out that a pair of integrated series would be co-integrated if they have the property that a linear combination of them is stationary. The work by Johansen and Juselius (1988, 1990) provides a way to determine the long-run relationships between variables in a series. Their tests involve two likelihood ratios (LR) test statistics for the number of co-integrating vectors: namely the trace test and the maximum eigenvalue test.

6.3 Specification of Models:

It is dealt widely in literature that different classes of crimes may be result of different factors whose impacts are felt differently as short and long term determinants with varied magnitudes. Total crimes consist of elements of both violent and property crimes along with other crimes. But it is seen that violent crime are unique case of crime activities which can be influenced by variety of motives and it may not occur in a predicted direction in the long-run. However this is normally not so to some extent with property crimes. It is argued that violent crime might be influenced more by short-term influences rather than by the long-term determinants (Field 1990). Therefore it is felt that there is a need to test the model separately for different categories of crimes (Hamzah and Lau 2013). Accordingly two models have been looked into. The total crime model is based on the total IPC crimes in the state. The second model deals with burglary and theft crimes taken together. From the more inclusive definition of property crimes, viz. dacoity, robbery, burglary and theft, the present study has used only the last two kinds of crimes since it may be presumed that these two types may represent property crimes with least or nil violence components (Seals and Nunley, 2007).

Since the present study aims at examining the dynamic properties of the relationship between crime rate and its determinants, the functional form involves a multiple regression equation. . However, as the time series data structure has limited sample size it is difficult to include a wide range of explanatory variables into the model of the present study.

As there is a limited degree of freedom in time series data with small sample size, it may not be appropriate to include too many variables in the study (Masih and Masih, 1996, Kelaher and Sarafidis, 2011). Therefore the possibility of bias that results from omitted variable bias cannot be avoided in such studies (Ehrlich, 1977).

While trying to capture the essence of this study as well as depending on the findings of previous studies, the model is represented in the following functional form :

$$\text{Crime Rate} = f(\text{Income, Inflation, number of arrest, number of civil police})$$

In the above model both economic and deterrence determinants of crimes are considered.

In a linear function these can be represented as below:

Model I : (Total crime)

$$cr_t = \alpha + \beta_1 pcy_t + \beta_2 cpi_t + \beta_3 arrest_t + \beta_4 police_t + \varepsilon_t$$

Model II : (Burglary and theft crime)

$$btr_t = \alpha + \beta_1 pcy_t + \beta_2 cpi_t + \beta_3 arrest_t + \beta_4 police_t + \varepsilon_t$$

Where, cr is the total IPC crime rate per 100,000 population,
btr is the burglary plus theft crime rate per 100,000 population,
pcy is the per capita net state domestic product.

cpi is the consumer price index,

arrest is the number of persons arrested per 100,000 population,

police is the number of civil policemen per 100,000 population

α is the constant,

β is the estimation parameter.

ε_t is error term

Models are transformed into log linear model. All the data are converted into log form.

Model I : (Total crime)

$$lcr_t = \alpha + \beta_1 lpcy_t + \beta_2 lcpi_t + \beta_3 larrest_t + \beta_4 lpolice_t + \varepsilon_t$$

Model II : (Burglary and theft crime)

$$lbtc_r_t = \alpha + \beta_1 lpcy_t + \beta_2 lcpi_t + \beta_3 larrest_t + \beta_4 lpolice_t + \varepsilon_t$$

It is to be noted that the first two explanatory variables, viz, pcy and cpi relate to economic factors while other two viz. police and arrest represent the deterrence factors. However one may like to mention that variable like economic prosperity is said to have conflicting effects on crime rate as discussed by several studies (Fleisher 1963, 1966, Ehrlich 1973, Bennett 1991, Denney et al, 2004). During the time when economy is better off, and there is more economic prosperity, some criminals may desist from committing crime since it makes the opportunity cost of crime higher. Another conflicting situation might be generated where possibility of crimes is higher since there are now more goods resulting in more reward. There may be another possibility where additional income accrued to the people through general macro economic prosperity leads to more allocation of resources to ensure security through burglary alarms and other costly gadgets for prevention of property crimes. Therefore, the economic prosperity is taken as one of the explanatory variables in analysis of crime determinants so as to look at the 'net effect' of these conflicting factors.

The Consumer Price Index (CPI) is used as a measure of inflation in the economy. It is to be noted that price stability is regarded as an important determinant of criminal behavior. This is due to the fact that rise in prices leads to decrease in real income of an individual, especially in the lower income group, thereby resulting in reduction of purchasing power. Because of this, it is very often argued that individuals belonging to these low income groups have to raise their income for maintenance of existing living standards through legitimate or illegitimate activities which may result in more crimes (Gillani et.al 2009, Tang 2007).

Amongst the deterrence variables, it is expected that the increase in police presence would lead to an increase in probability of apprehension and hence, to a reduction in

crime. Furthermore, a higher number of policemen would lead to proper investigation and disposal of cases thereby influencing severity of punishment through criminal justice system.

Similarly, arrests would have deterrence effect through incapacitation and fear of apprehension, leading to increase in opportunity cost of committing a crime.

6.4 Sources of Data

All the variables represent time series for the period 1976-2008. The time period has been chosen on the basis of data availability due to the bifurcation of the two states Assam and Meghalaya as separate geo political entities.

Data on crime and their sub categories for the period under discussion are collected from the Crime in India Reports published by National Crime Record Bureau (NCRB) annually. However, for any gap in crime data required to be filled up, it was taken from the state CID HQ (State Crime Record Bureau, SCRB). All crime rates were based on crimes per 100,000 populations. For the macroeconomic variables, namely, Net State Domestic Product per capita (which has been used as proxy for economic growth and prosperity) as well as Consumer Price Index for Agricultural Labourers (Base 1960-61 = 100) for the state have been taken from the statistics published by the State Directorate of Economics and Statistics, and also supplemented by the publications of Planning Commission, Labour Bureau and Census Reports, Government of India. The number of police personnel collected from NCRB and also supplemented by Assam Police source, has been used as a proxy for police strength for deterrence. Similarly data on arrests have been taken from NCRB.

6.5 Methodology and Discussion on Empirical Results:

6.5.1 Unit root tests:

It is imperative that before testing for co-integration with the help of Johansen-Juselius method and subsequently proceed to estimate a VECM, one goes for the unit root test and tests for order of integration for the crime variables and other macroeconomic and deterrence variables. This is because methodology in co integration analysis involves finding a stationary linear combination of a set of non stationary variables. Since many macroeconomic series appear to be non stationary, as Nelson and Plosser (1982)

affirm, it is required that the stationarity of the series is checked. It may be noted that stationarity is an important issue since its presence can influence the behavior of the series.

If it is assumed that there are two non stationary random processes viz. x and y , then one may get a spurious regression if one models the relationship between x and y as a simple OLS relationship as shown in the following equation: $Y_t = a + bX_t + e_t$.

Several unit root tests exist to check for stationarity of the series. In order to proceed for the co integration analysis, one must establish that the variables possess the same order of integration. Generally through differencing operations a series is differenced and one generates first differenced values, the second differenced values etc.

A variable is called integrated order of d , $I(d)$, if it has to be differenced d times to become stationary (Kennedy, 1996) The results are shown in the Table 6.1 which indicate that all the relevant variables are non stationary in levels but are first difference stationary, that is, they are $I(1)$ (Gunes, 2007).

Table 6.1
Unit Root test

Variables		Level		First Difference	
		ADF	lags	ADF	Lags
i.	lcrimrate	-1.213	1	-6.047***	0
ii.	lburgtheft	-1.471	1	-6.268***	0
iii.	lpcy	-0.682	1	-6.246***	0
iv.	lcp	-1.069	1	-4.012**	1
v.	lpolice	-2.064	1	-5.707***	0
vi.	larrest	-3.146	1	-5.593***	1

Note: *** and ** denote statistical significance at 1% and 5% level respectively.

Source: Author's calculation using STATA

6.5.2 Co integration test

It is to be noted that before estimating a VECM, cointegration test is carried out between the variables under consideration for the possibility of long-run relationship among them. For doing this the present study utilizes the Johansen (1988) and Johansen and Juselius (1990) multivariate maximum likelihood estimation procedure. Instead of putting in the detailed discussion on these procedures a brief exposition is provided here since there are

number of literatures where these methodologies have been widely discussed (Dickey *et al.* 1991, Cuthbertson *et al.* 1992).

The exposition on this technique is done by defining an autoregressive representation having a k -lag vector as follows:

$$X_t = \alpha + \Pi_1 X_{t-1} + \Pi_2 X_{t-2} + \dots + \Pi_k X_{t-k} + v_t \quad (t=1, 2, \dots, T) \quad (1)$$

Here X_t and α refer to a $px1$ vector of non-stationary $I(1)$ variables and a $px1$ vector of constant terms respectively. v_t represents a $px1$ vector of white noises with mean zero and finite variance. $\Pi_1, \Pi_2, \dots, \Pi_k$ are coefficient matrices.

After reparametrising the above equation (1) one gets the following,

$$\Delta X_t = \alpha + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \dots + \Gamma_{k-1} \Delta X_{t-k+1} + \Pi X_{t-k} + v_t \quad (2)$$

where $\Gamma_i = -(I - \Pi_1 - \Pi_2 - \dots - \Pi_i)$ ($i=1, 2, \dots, k-1$)

and

$$\Pi = -(I - \Pi_1 - \Pi_2 - \dots - \Pi_k) \quad (3)$$

Through the estimates of Γ_i and Π in equation (2) one can get necessary information on the short-run as well as long-run adjustments to changes in X_t . It is pertinent to note that the prime interest of the Johansen and Juselius methodology lies on the parameter matrix Π , since this includes information about the long-run association among the variables in the data vector. The number of cointegrating vectors in the system is determined by the rank r of this matrix Π , $\text{rk}(\Pi)$.

To detect the presence of co integration among the variables, co integration test has to be conducted. In this study, the Maximum Likelihood method of Johansen (1988, 1991) test and Johansen & Juselius (1990) been adopted to conduct the co integration test for the macroeconomic variables. These results are placed in Table 6.2. While finding out the co integration two statistics were used, that is, maximum eigen value statistic (L_{max}) and trace statistics (L_{trace}). The Johansen-Juselius, (JJ), procedure utilizes these two test statistics to determine the number of co integrating vectors.

The trace test statistic, for the null, hypothesizes that there are at most r number of co integrating vectors. The maximum eigenvalue test statistic constructs the null hypothesis as at most r co integrating vectors, and the alternative hypothesis as $r+1$ co integrating vectors.

It is to be noted that once variables are proven to be cointegrated, there will also be the existence of a corresponding ECM representation (Engle and Granger 1987). For co integrated model, the significance of the error correction term is tested in VECM.

For VECM specifications, Model I of the present study can be specified in the following manner. (For brevity the specifications for the other model have not been written below).

$$\begin{aligned}
\Delta cr_t &= \alpha_1 + \sum_{i=1}^l \beta_{1i} \Delta cr_{t-i} + \sum_{i=1}^l \gamma_{1i} \Delta pcy_{t-i} + \sum_{i=1}^l \delta_{1i} \Delta arrest_{t-i} + \sum_{i=1}^l \phi_{1i} \Delta police_{t-i} + \sum_{i=1}^l \tau_{1i} \Delta cpi_{t-i} + \theta_1 ECT_{t-i} + \varepsilon_{1t} \\
\Delta pcy_t &= \alpha_2 + \sum_{i=1}^l \beta_{2i} \Delta cr_{t-i} + \sum_{i=1}^l \gamma_{2i} \Delta pcy_{t-i} + \sum_{i=1}^l \delta_{2i} \Delta arrest_{t-i} + \sum_{i=1}^l \phi_{2i} \Delta police_{t-i} + \sum_{i=1}^l \tau_{2i} \Delta cpi_{t-i} + \theta_2 ECT_{t-i} + \varepsilon_{2t} \\
\Delta arrest_t &= \alpha_3 + \sum_{i=1}^l \beta_{3i} \Delta cr_{t-i} + \sum_{i=1}^l \gamma_{3i} \Delta pcy_{t-i} + \sum_{i=1}^l \delta_{3i} \Delta arrest_{t-i} + \sum_{i=1}^l \phi_{3i} \Delta police_{t-i} + \sum_{i=1}^l \tau_{3i} \Delta cpi_{t-i} + \theta_3 ECT_{t-i} + \varepsilon_{3t} \\
\Delta police_t &= \alpha_4 + \sum_{i=1}^l \beta_{4i} \Delta cr_{t-i} + \sum_{i=1}^l \gamma_{4i} \Delta pcy_{t-i} + \sum_{i=1}^l \delta_{4i} \Delta arrest_{t-i} + \sum_{i=1}^l \phi_{4i} \Delta police_{t-i} + \sum_{i=1}^l \tau_{4i} \Delta cpi_{t-i} + \theta_4 ECT_{t-i} + \varepsilon_{4t} \\
\Delta cpi_t &= \alpha_5 + \sum_{i=1}^l \beta_{5i} \Delta cr_{t-i} + \sum_{i=1}^l \gamma_{5i} \Delta pcy_{t-i} + \sum_{i=1}^l \delta_{5i} \Delta arrest_{t-i} + \sum_{i=1}^l \phi_{5i} \Delta police_{t-i} + \sum_{i=1}^l \tau_{5i} \Delta cpi_{t-i} + \theta_5 ECT_{t-i} + \varepsilon_{5t}
\end{aligned}$$

Above equation consists of α as the constants, θ as cointegration vector which is the Error Correction Term (ECT) and $\beta, \gamma, \delta, \phi, \tau$ refer to the estimation parameters.

Since the results revealed that all series of the present study are of the same order of integration as shown in Table 6.1, one can now go for the co integration test. Selection of lag is of utmost importance before conducting the co integration test. And Johansen test of multivariate co integration test requires specification of sufficient time lags. Generally AIC and SBIC criteria of lag selection are chosen for determination of optimum lag length. It is worth mentioning that in case of annual data, it is seen that different studies have preferred the maximum lag length to be 2 or 3 (Enders 2004, Tang 2009, Han 2009). In the present study, accordingly, the maximal lag length is taken to be 2 while finding out the optimal lag length taking into account the relatively small sample size and nature of annual data.

Upon placing the variables through the co integration test, in the case of total crime model, the trace test reveals that there are at most two co integration vectors among the variables. Therefore, following the result of trace statistics the null hypothesis of existence of at most two co integrating relationship cannot be rejected at 5% level of significance . But here one faces problem of interpretation of result when there exist multiple co-integration

vectors. It has also been argued that the maximum eigen-value statistics may be preferred over trace statistic as this statistic has the sharper alternative hypothesis in deciding the number of co integration vectors present in a system of non-stationary variables (Enders, 2004) Therefore, in the case of total crime model, the existence of one co integration vector as confirmed by maximum eigenvalue test statistics has been taken in the present study. It is seen that in the case of Burglary-theft crime model, both the trace and the maximum eigenvalue tests led to the same conclusion – the presence of one co integrating vector. From here, one can conclude that, in both the models, the cointegration space is uniquely defined by a single vector (Harris and Sollis, 2003). All this leads one to conclude that there exists a long-run relationship between the series.

Table 6.2
Johansen and Juselius Co-integration Test

PANEL 1: Total Crime

No of obs : 32

Sample : 1977-2008

Trend : Constant

Lags : 1

maximum rank	L_{trace}	5% critical value	L_{max}	5% critical value
r=0	97.39	68.52	48.52	33.46
r=1	48.87	47.21	27.00	27.07
r=2	21.86*	29.68	16.23	20.97
r=3	5.63	15.41	5.54	14.07

PANEL 2: Burglarytheft Crime

No of obs : 32

Sample : 1977-2008

Trend : Constant

Lags : 1

maximum rank	L_{trace}	5% critical value	L_{max}	5% critical value
r=0	85.45	68.52	39.80	33.46
r=1	45.65*	47.21	22.47	27.07
r=2	23.18	29.68	16.89	20.97
r=3	6.29	15.41	5.64	14.07

Source: Author's calculation using STATA

Thus, from the above two panels it is seen that the Johansen co-integration test confirms the existence of a unique long run relationship among the variables, namely, total crime and burglary plus theft , economic factors like per capita net state domestic product and inflation, and deterrence factors like presence of police and number of arrests by police.

As the existence of co-integration between variables suggests a long term relationship among the variables under consideration the VEC model can be applied. The estimated equations for different crime models after Johansen normalization are shown below (Johnston and Dinardo, 1997).

Model 1: Total Crime

$$lcrimerate = 0.45 lcp_i - 0.64 lpcy + 1.31 larrest - 1.53 lpolice + 8.68$$

Model 2: Burglarytheft Crime

$$lburglarytheft = 1.03 lcp_i - 2.41 lpcy + 2.38 larrest - 3.12 lpolice + 22.52$$

All the estimated explanatory variables are found to significant at 1% significance level for both the specifications.

Since all the variables are in natural logarithms the estimated coefficients are interpreted as elasticity. The co-integrating regressions result suggests that for the long-run equation, income per capita has a negative relationship with crime in the state. It is seen that increase in per capita income by 1% there would be decrease in total crime rate by 0.64%. It is quite expected that when the general economic prosperity rises there is every possibility that the crime goes down as the legal income level is higher there by increasing the cost of criminal activity. As has been noted by Fajnzylber et al (2002) economic prosperity through growth generally leads to variations in the opportunity cost of crime with the assumption that the increased activities actually have greater influence in the legal sector of the economy. All this results in decline in crime with the improvement in job availability or rising wage level. It was seen in the trend analysis chapter four of the present study that the increased level of income per capita had led to decrease in crimes.

The long run relationship between inflation and criminal activity is positively related as expected since the rise in prices reduces the real legitimate earning for the people, thereby making illegitimate earning through criminal activity more lucrative as was obvious in essays of Becker(1968) and Ehrlich(1973). For 1% increase in inflation, total crime rate is increased by 0.45%. This coefficient was found to be significant at 1% level of significance. In several

studies the association between inflation and crime rates have been indicated (Allen,1996, Omotor, 2009, Torruam et al.,2014,Seals, 2007)).

In the present study, the expected sign is seen in the estimated coefficient of one of the deterrent variables, namely, number of civil police. As seen in the estimated equation of the total crime the more the number of police the less number crime is committed. Thus presence of police is an important deterrence factor against crime. The estimated elasticity is found to be quite high which shows that 1% increased in civil police man would lead to reduction in burglary-theft crime rate by 3.12% and total crime rate by 1.53%. Often there is public hue and cry to raise the members of police as a measure to counteract the rising rate of crime. It is widely believed that greater the presence of police in the streets and crime infested areas, better is the crime prevention because the show of police patrol as well as the quick investigation of criminal cases would act as deterrent to committing crime. Negative relationship may point to the fact that the more the cases registered there are demands for recruitment or deployment of more police which would have a deterrence effect on crimes and finally that would mean less crimes being committed as Levitt (2002) showed this in case of USA. Accordingly, one can come across several analytical studies by taking empirical data to examine the linkage between crimes and numbers of police available in the law enforcement department (Levitt 1997;Marvell and Moody,1996; Nagin,1998)

However the behavior of the variable arrest needs more explanation. The sign of the coefficient is found to be different than what is normally expected since the positive sign of the coefficient of variable arrest indicate that there is positive association between crimes and arrest of criminals by police. It may be mentioned that the fear of incarceration through imprisonment can act also deterrence factor as it raises cost of crime. Thus incarceration has both the deterrence and incapacitation effects. Though there should be an inverse relationship between incarceration and crime, the association does not seem to be that straight forward and obvious. This is due to 'hardening effect' or adverse peer group reaction that the criminals go through due to incarceration which may result in more participation in crimes (Chen and Shapiro , 2004). Thus the extent of crime reduction through incarceration would depend on the resultant effect of these opposing forces. Dills et al (2008) observed that arrest rates and crime correlate positively, contrary to what is expected. This positive correlation does not prove the arrest probability has no deterrent effect, nor does it imply that higher

arrests increase crime. Also it is seen in the chapter four of this study on trend analysis that most of the arrest didn't result in incapacitation of offenders in the jail because of poor investigation leading to low rate of charge sheet and conviction. When crime rate increases there is rise in work pressure on the criminal justice system impinging on the effectiveness and efficiency of the police and the court system which has to suffer from delay in their sentences with more number of charged offenders. (Han, 2009). This means that though figures of arrest increase, the lack of concomitant incapacitation would lead to lack of desired effect on the crime.

Also, it may be noted that a number of empirical studies have questioned how the authorities and the prevention policies can combat crime better. Different variables have been tested, such as the growth of police force (De Oliveira, 2003), the money spent for the appropriate equipment (Imrohoroglu et al. 2000), people who have been arrested (Corman et al. 1987, Corman & Mocan, 2000), convicted (Pudney et al. 2000; Funk & Kugler, 2003) or sentenced to imprisonment (Levitt, 1996). The results are still ambiguous, but it seems that the possibility of sentencing and conviction are more effective ways for crime prevention than the others. That is because, in most cases, criminal actions are not always connected with arrests, and arrests do not always lead to convictions and imprisonments. However, since the sample size in the present study is not a big one there must be caution in accepting the conclusion here.

It is to be noted that the sets of elasticity of the coefficients of estimated equations are found to be different for different crime models which means that the dependent variables respond in different degrees to the changes in explanatory variables. Specifically, as seen in the above estimated models, economic variables (income and price index) have a larger effect on burglary and theft in comparison to total crimes, as the former type of crimes are property related offences. Even in case of deterrence factors like police presence and arrests, one can see the higher degree of impact by these factors on burglary-theft crime.

It would be worthwhile to proceed to the short run relationships between the different variables and their adjustments towards the long run equilibrium relationship. A look at the error correction terms for both the models shows that though they are positive,

they are insignificant. This might be the result of the lack of sufficient lags arising from paucity of data that might result in insignificance (Raja and Ullah 2013, Miller 1991). Also it is argued that although the coefficient on the error correction term must be negative for the stability of the long run equilibrium relationship for a bivariate model, it need not be the case for a multivariate model due to the interplay of numerous feedback mechanisms between the different variables in the models (Ansari and Ahmed, 2007; Rousseau and Wachtel, 1998; Enders, 1995). It is also seen that inflation does not play a role in influencing crime in the short run. This is expected, as it takes some time for the purchasing power of an individual to be reduced as a result of an onset of inflation (Tang, 2009). On the other hand, police presence has a significant impact (at 10% level of significance) on the total crime rate in the short run. A rise in police presence significantly reduces the crime rate in the short run, which is fully according to expectations.

6.6 Panel Data Study

Many a time the researchers prefer panel data study because such type of data set contains more information and accordingly one expects to get more reliable estimates even in more complex behavioural model specifications. Very often it is argued that crime studies with macro level time series data may not lead to proper conclusion, because criminal behaviour has its space specific variations and influencing factors which may be examined through the panel data analysis (Levitt 2001). It also provides more scope for sample variability. This is due to the fact that it has its inherent advantage with the existence of both the dimensions of cross section and time. As Hsiao (2005, 1986) has mentioned, in panel data one may expect to have more degrees of freedom thereby allowing for better accuracy in inference of model parameters. Panel data sets generally provide a larger pool of data with less co linearity among the variables which is very often more in the cross section or time series presentation of data. It may be mentioned that very often the omitted variables are correlated with those variables which are included in the study thereby affecting the inferences of the study. Panel data set allows for controlling the influences of variables that have been omitted from the study since such type of data set contains information on both the inter temporal dynamics and the individual specificities of the entities. Panel data sets have the ability to control for individual heterogeneity. If one does not control for these unobserved individual specific heterogeneity it would lead to bias in the resulting estimates (Baltagi, 1998).

Since the different districts have their own heterogeneity and area specific attributes, it is expected that the Panel data study would provide a more appropriate estimate. The district level panel data for the period 2004-2012 over 23 police district areas in Assam has been used in this study. The time period for panel study has been selected keeping in mind the reorganisation of districts in 2003-04. This will help in exploring the relationships between crime rates and their explanatory variables which are drawn from socio economic and deterrence domain based on the information that is dependent on both geographical areas and time. As noted by Nayar (1975) it is of much better value to look at the district level crime data to analyse the socio economic correlates of the criminal behavior. Such a data structure will provide the capacity to control for fixed effects which are area-specific and otherwise correlated. The crime function in the present study would have total crime rate as dependent variable and some explanatory variables, such as law enforcement, socio-economic conditions and demographic factors on the basis of available data. However the prison population variable in Panel study includes the figures of both convicted and under-trial prisoners highlighting the incapacitation effect and these are different from the arrest data in time series analysis. Panel study would also include more variables as per availability of data from socio economic domain as noted below thus broadening the scope of the analysis. But due to lack of disaggregated data on different crime categories the panel data study has only one model based on total crime rate.

6.6.1 Model Specification and Data sources

The statistical technique of multiple regression analysis is commonly preferred to determine the relationship between crime rate and its determinants. This allows one to examine the individual effects of multiple independent variables on a single dependent variable. Through this technique it is possible to find out which explanatory variables account for a substantial amount of the variation on the recorded crime rates over a time period and across geographical or cross sectional units. For the present study the Panel data analysis has been limited to total crime model only due to lack of appropriate disaggregated data structure across the districts which had experienced recent reorganization of administrative boundaries.

The hypothesized form of the crime rate function as considered in the present study takes the following form:

$$CR = f(CPM, VPM, PP, CSR, DR, PCDDP) \dots (1)$$

Dependent Variable:

CR stands for crime rate which is taken as number of IPC crimes per 100,000 population. Data for this variable have been taken from different annual reports of NCRB which publish Crime in India reports every year. Also additional requirement if any was met from the crime data of the SCRB (CID).

Independent Variables:

The set of independent variables consists of the following:

- I. Number of IPC Cases per Investigating Officer (CPM). This would proxy for the deterrent variable. This would express the work load a civil police man has to bear during investigation. It is expected that less the work load for an investigating officer more will be police efficiency and the probability of a criminal getting apprehended and thereby deterred from committing a crime is more. Data sources for this has been the CID of the state police, Crime in India Reports by NCRB, and Assam Police Head Quarter for data on the number of civil police men engaged in investigation of registered cases.
- II. Vehicle per Investigating Officer (VPM). This would also proxy as another deterrent variable. The increased availability of vehicles is expected to increase the mobility of police in space and time thereby adding to deterrence. This logistical support for the police would increase the probability of apprehension and would result in efficient and prompt investigation. Data sources for this have been the Assam Police Head Quarter reports collected from the districts' police offices.
- III. Percentage of IPC cases investigated in which charge sheets were filed (CSR). This stands for another variable falling in the category of deterrence. Higher charge sheet rates i.e. the detection rates would mean more efficiency in deterrence as it would result in incapacitation and judicial intervention. Data collected from annual Crime in India Reports of NCRB, and State Crime Records Bureau.
- IV. Prison population (PP). This is used as proxy for deterrence through increasing probability of incapacitation and punishment by the criminal justice system resulting in negative relationship with the crime rates. Data sources are the Annual publication

of Statistical Hand books by state Directorate of Statistics and Economics, and the data collected from the Office of the Inspector General of Prisons, Assam.

It is obvious that the above independent variables from I to IV belong to the category of deterrence variables. The detection rate and prison population are measures of the law enforcement instruments and criminal justice system. In fact the logic for using these two deterrence variables in the crime model relates to two channels through which these two variables could reduce crime rate. When these two variables take higher values the ex-ante cost of committing a crime is increased due to the increase in the expected probability of getting apprehended (Becker, 1968, Ehrlich, 1973, 1975, 1996, Grogger, 1991). Another way through which these variables would work is that the increased level of detection rate and prison population also reduce crime rate simply because more people are being incarcerated affecting adversely the availability of criminals from the overall pool to commit crime. Since these probabilities represent costs to criminals, their expected signs are negative, that is, they discourage potential crime. Again, these probabilities are dependent on different indicators causing deterrence for the criminals in their illegal acts such as police mobility and availability, proxied here by the variable VPM, and work load for the investigating officers in the form of cases per investigating officer, proxied here by the variable CPM.

- V. Per capita district domestic product at factor cost (PCDDP) at constant 2004-05 prices. This would proxy for economic prosperity and belongs to the class of socio economic variables. Data sources are the annual publications of Statistical Hand Books by state Directorate of Statistics and Economics, Census of India, CSO, Planning Commission of India documents.
- VI. DR which stands for Dropout rate at primary level education is taken as a proxy for education status which is taken to be another important determinant of crime belonging to the class of socio economic variables. It is said that skill development is achieved through higher levels of educational attainment and this results in higher returns in the labour market, thereby increasing the opportunity cost of criminal behaviour (Freeman, 1991, 1996, Grogger, 1995, 1998, Lochner and Moretti, 2001). Education is also discussed to have a 'civilization effect', by improving moral stance and promoting the virtues of hard work and honesty (Fajnzylber et al 2002, Usher, 1997). The general argument here is that education can act as a vehicle to transport

the moral values to the young population in the society and through this externality of education one can have a positive impact in reducing crime rates (Usher, D 1997).

Data sources are the Annual publication of Statistical Hand books by state Directorate of Statistics and Economics and Sarba Siksa Abhiyan, under state government.

Data on 23 districts have been used from 2004-2012. Though total number of districts in the state presently are 27, empirical testing has been limited to 23 districts since some of the data for the newly created districts are individually not available. It is to be noted here that the districts in Assam were reorganized in 2003-2004. Data availability has been constrained due to delay in setting up of infrastructural and administrative support systems needed for management of separate data for different district units due to which 23 districts have been considered in the present study by clubbing some new districts like Baska, Chirang, Udalguri and Guwahati Metro with the old ones which existed before the new reorganization. Also in the present panel study the model has been postulated and estimated for total IPC crime rate and not disaggregated to different classes of crimes like burglary and theft as was done in the state level time series study done earlier due to data problem.

The implicit form of the model takes the following form with the variables narrated above:

$$CR_{it} = \beta_0 + \beta_1 CPM_{it} + \beta_2 VPM_{it} + \beta_3 PP_{it} + \beta_4 CSR_{it} + \beta_5 DR_{it} + \beta_6 PCDDP_{it} + \varepsilon_{it}$$

Where $i=1,2,\dots,23$, i.e. i stands for the i^{th} cross sectional unit

$t=1,2,\dots,9$, i.e. t stands for the t^{th} time period

and it is assumed that the error term obeys the classical assumptions.

All variables are in logarithm and the time invariant district specific characteristics are controlled by estimating a fixed effect model in the present study (Neumayer, 2003).

6.6.2 Results and Discussion

The result of the analysis using panel data estimation across the districts and over the given period of time employing the fixed effects model is placed below in Table 6.3

Table 6.3
Panel study results
Dependent variable-lcaseper1,00,000population

	Coef.	Std. Err.	t	P> t
lprisonpopulation	0.016	0.040	0.41	0.683
lchargesheetrate	-0.018	0.012	-1.54	0.125
lcaseperi/o	0.657	0.031	21.44	0.000
ldropout rate	-0.004	0.014	-0.26	0.792
lpercapitaddp	0.801	0.091	8.78	0.000
lvehicleperi/o	-0.221	0.039	-5.69	0.000
cons	-4.79	0.889	-5.39	0.000

Source: Author's calculation using STATA

Thus, from the results of the fixed effect model in Table 6.3, it can be seen that the coefficients PCDDP and some deterrence variables are statistically significant. It is expected that dropout rate would significantly affect criminal activities. But it is found that this variable is statistically not significant in the present study. In this context, it is worthwhile to note that the data structure of dropout rate in this study comprises of only those who dropped out before completing the lower primary level. It is obvious that this stratum of dropouts would constitute a very miniscule quantum of people without sufficient skill to compete in the legitimate job market. It would be more meaningful to use a broad based data of dropouts taking into account the individuals who failed to complete higher classes like upper primary to make it more inclusive in its coverage. However, due to lack of such detailed data, disaggregated up to district level, the present analysis had to be restricted to the lower primary dropout rate only. Again, the estimated coefficient of the per capita income variable in the district level indicates a positive influence of economic prosperity on crime level. Thus, one can see that when the district fixed effects are controlled through the fixed effect model of panel data analysis, the net effect of income variable on crime becomes positive and this is consistent with the results of panel data study by Dutta and Hussain(2009).

As expected, the coefficient of deterrence variable in terms of vehicles per I/O is negative. This means that the more the logistical support in terms of increased mobility the less will be crime committed. This would provide mobility support for the police organisation which would increase the probability of arrest and allow for efficient and prompt investigation. Logistical support has been proxied by the availability of vehicles per

investigating officer since this would mean effective deterrence over time and space. More mobility through increased availability of vehicles per investigating officer would mean more visibility of police personnel and more arrests. This would put the criminals at greater risk leading to increased expectation of higher costs of doing offences. As a consequence there would be desistence or specific deterrence from indulging in further criminal activities. Even this would lead to a deterrence effect on the potential criminals. Two important ways of crime control have been in terms of patrolling the crime prone areas and investigating the offence so as to bring the criminals to the judicial authorities for punishment. Patrolling is thus considered an effective strategy for crime control by preventing it as well as interrupting during progress of crime commission. Moreover, it creates an atmosphere of confidence amongst the people. In fact poor patrolling is despised by the local people. Choklingam(2003) in his victimization survey of crimes in four major cities in south India had referred to the benefit of patrolling by the police in deterrence. In a terrain like the hill districts of Assam or in the villages or suburban areas where the population density is thin, through foot patrolling less purpose would be served due to the distances involved. In such spatial characteristics one would like to go for police patrol on vehicles to bring more mobility and distance coverage. Though such patrol strategy would lessen the scope of citizen contact and visibility, it would be more effective because of the speed and surprise involved in it. A patrol car is likely to deter crime and also it gives feeling to the citizens about police being present. In a state like Assam where there are terrorists threat due to the presence of rebel and insurgent groups, it is required that police is given more vehicle to cover more geographical areas through patrol and take resort to proactive policing like security checks, visiting the suspects place etc. Also vehicles would help police in quick and effective investigation processes like searching the places of suspected criminals taking interrogation statements etc. It is also important that police on vehicles control public order in time through quick mobility. The estimated crime rate function for Malaysia demonstrated that increases in the numbers of police and patrolling activities in the potential crime areas would decrease the crime in Malaysia (Tang,2011).However, in some other studies the police patrolling has been found to have no effect in crime prevention (Philipson and Posner,1996).

The deterrence variable viz. cases per I/O is showing a positive sign. This means that more the number of cases per investigating officer the more is the number of crimes committed. This is because the civil police will not be in a position to pay more attention to the investigation, thus, less probability of the criminal being arrested and

convicted of the crime committed. If more cases are to be investigated by an investigating officer there would be dilution in the effort in apprehension of offenders and investigation of the cases since there would be more pressure on the available resources in the police stations, thereby affecting the result and timely disposal of cases which in turn would affect positively on the criminal activities. All these mean that one would expect a positive relationship between crimes and cases per policeman. Lesser work load in terms of fewer IPC cases per civil policeman are seen to be associated with lower crime rates (Dutta and Hussain, 2009).

The negative sign of charge sheet rate is as expected but it is not significant. The reason for such an observation may be because of the low conviction rates experienced in the state. As a result, although charge sheets do act as a deterrent, the failure to convict a criminal does not increase the real costs to the criminals in the long run. It is also to be noted that the positive sign of variable like prison population in the estimated equation is not found to be significant. This is almost similar to the finding in the Time series analysis presented in this chapter earlier where arrest variable had such a sign. It may be mentioned that crime rates are found to be positively related to lagged arrest and conviction rates in India (Dutta and Hussain, 2009). Corruption and malpractices prevailing in most Indian jails making it difficult for most inmates and convicts to change and reform their criminal behaviour has been cited as one reason. In fact, people convicted or sent to judicial custody over minor offences often end up being hardened criminals after getting exposed to the corrupt and criminal jail environment (Piehl and DiIulio, 1995). Furthermore, arrests and convictions make it increasingly difficult for that individual to get access to legitimate means of livelihood, thereby incentivising criminal behaviour in many cases (Grogger, 1995, Holzer et al, 2003, Pager, 2003, Seiter and Kadela, 2003). In other words, there seems to be a case of a 'crime trap', where it is the same set of criminals undertaking criminal activities, with even better precision and efficiency. NCRB data clearly show such a trend of recidivism, with nearly 10% of the arrested persons having previous criminal records. Thus the conclusions found in the time series and panel data analysis of the present study are closely related to what other researchers have found.

6.7 Conclusion

The empirical exercise carried out in this chapter with respect to the determinants of criminal behaviour in the state of Assam shows the roles of these factors in two approaches of study viz. Time series analysis and Panel data analysis. Both the

approaches have identified socio economic and deterrence variables which would impact the crime scenario. In the VECM model the study brought out the effects on crimes by per capita income, inflation and also the role of variables from criminal justice system like arrest and the number of civil police. In the fixed effect model of the panel data study, varied demographic pressures, social heterogeneity and the unequal nature of the economic growth process across the districts were controlled for. Accordingly, one can observe the influences of income, logistic support for law enforcement agency and work load on civil police as having significant effect on crime situations in the state. In both the analyses it is seen that most of the variables are found to have expected signs barring a few.

In the next chapter the resultant policy prescriptions that arise out of the empirical findings of this study would be dealt upon. Also one would like to look at the shortcomings and further possibilities of this study in the chapter to follow.

Chapter 7

Summary of Findings, Conclusion and Policy Suggestions

Human society has been witnessing crimes since its inception. There have been crimes in different degrees depending on the stages of human civilization and forms of socio political structure. Rise in incidence of criminal behaviour has been a matter of grave concern resulting in debates and discourses amongst the experts from diverse fields. All pervasive criminal activities are likely to have a negative impact on economic environment, thereby, bringing in adverse results in economic growth, investment and other parameters of the market dynamics. Moreover, this results in social unrest, anarchy, and loss of faith in law and governance. In a situation of high crime rates, the quality of life of the citizen is adversely affected since there is a threat to personal life and property. That's why criminality has been a cause of concern amongst the law abiding and peace loving citizens.

Both short term and long term economic environment gets jeopardised due to high incidence of crimes since direct costs of crimes fall on heavily on the business enterprises and other households and give rise to a feeling of insecurity and fear, thereby, preventing the flow of funds for investment and business purposes. In most cases, one witnesses a flight of funds. One can see the increase in amount of security related expenses cutting into the profit margin and reducing the competitiveness of the firms and also one witnesses the diversion of scarce public resources from productive to security related protective products and activities that do not contribute to society. The material resources utilised by the provision of these goods and services could be better placed for the creation of public utilities rather than the avoidance of crime situations.

Analysis of factors responsible for criminals' behaviour has been the subject matter of sociologists, criminologists and, in recent times, the economists. The recent entry by the economists using the understanding and logic of economics along with the utilisation of sophisticated tools of econometrics and statistics has attracted the attention of policymakers. Becker (1968) specified an economic model of crime stating crime as any other economic activity based on rational choice so that the criminal would base his/her

decision on a cost- benefit analysis and then decide to commit crime if the benefit is bigger than the cost.

The present study can be viewed as a contribution to the fields of comprehensive research work on criminal behaviour in the state of Assam and its districts. This should be a unique piece of research work as no such research is known to have been conducted, focusing on the determinants of crimes in the state of Assam and its districts. It has addressed the issues concerning the long term trend, patterns and shifts in the composition of crimes so as to make an assessment of the nature and magnitude of the crimes, to explore the causes and determinants of criminal behaviour while framing out appropriate policy guidelines for better crime management in the state.

However, before arriving at the final concluding points and the resulting policy frameworks it is imperative that the principal findings of the study are presented. A summary of these findings is placed in the following sections.

7.1 Principal Findings

The study has empirically brought out the following trends and changes in crime and its pattern in the state and the districts over a long time period 1974-2012:

- The overall crime scenario shows an upward trend and this is similar to that of all India behaviour in terms of crime movement. The figure of nearly of 35,000 annual recorded crimes in 1974-75 rose to the figure of 77,682 in 2012-13. Even crime rate in terms of IPC crimes per 100,000 population has shown substantial increase, eg. from less than 150 it rose to almost double during the period 1990 to 2012.
- It is observed that the long term trends of total crimes have been more or less of similar nature in both at the national and at the state levels. However the situations arising out of Assam agitations in the beginning of the 1980's resulted in sudden spark of crimes in the state, but in the period after this the broad pattern of crime scenario was in tune with the national trend. On the basis of the total registered cases during 1974 to 2012 one can see distinct phases of crime increase and decrease. In the first phase 1974 to 1978, there were very little variations in the number of total cases registered in the state.

The figures remained mostly in the range of 35,000. But there was a sudden spurt of registered crimes in the period 1979 to 1983 rising up to 48,979 due to the mass unrest resulting out of the long period of agitation against illegally entered foreign nationals from Bangladesh.

- There are wide variations in incidents of recorded crimes amongst the districts. Even in terms of rate of crime per 100,000 population, districts differ. For example by taking the impact of population on total crime, it is seen that in case of Dibrugarh, IPC crimes per 1 lakh population is 216 in 2012 while it was 131 in 2001. Cachar district already had very high crime intensity eg. 238 per lakh population in 2001 and it reached to 276 in 2012. Most of the districts in Assam have been showing a very high criminality. Kamrup district in the period (2005-2011) had experienced 196.85 per cent change in crime rate. Looking at three broad divisions of the state viz. Barak Valley districts, the Brahmaputra Valley districts and the Hills districts for the period 2005-2012 it is seen that all the 3 Barak Valley districts have been showing a high crime rate, even though there are differences amongst themselves. The districts in Brahmaputra Valley contributed to the major shares of crime and population of the state as the number of districts in the valley are much more in number.
- There was a negative relationship between increase in per capita net state domestic product (NSDP) and crime rates during the period 1994-95 till 2002-03. This was in keeping with the expected trend since it is expected that economic prosperity would lead to fall in crimes. However, one observes a different picture in recent times. There seems to be a steady increase in the crime rate from 2003-04 onwards, along with an increase in per capita NSDP. This observation about the positive relationship between per capita NSDP and crime rate in recent years is found to be in conformity with the result obtained from the panel data analysis.
- While analysing the deterrence factors one finds that the state has been showing a very low performance level in terms of filing charge sheets and securing convictions which reflect poor quality of investigative efforts. In cases of all classes of crimes the state's rates of charge sheets and convictions have been far less than of all India averages.

- It is seen that recidivism too has been higher in Assam than that of national average. While the percentage of new offenders to total number of persons arrested in all India level was 90.7 per cent in 2000, in case of Assam, it was 80.2 per cent and this means that 19.8 per cent of the offenders arrested were convicted in the past. If one looks at the data for 2013, it is seen that Assam occupies the highest place amongst the States with a figure of 27.5% whereas all India level is 7.2%. One may conclude that there is increase in recidivism in the state.

Thus the above discussion satisfies the objective of analysis of crime trends in the state as well as in the districts. While analysing the compositions and pattern of changes in different classes of crimes as well as more detailed examinations of a few select crimes relating to homicides, rape, kidnapping, robbery, public order maintenance, etc, the following picture emerges:

- There have been significant changes in the patterns of crimes in terms of shifts and composition of different classes of offences. For example, in 2001, the relative contributions, in percentages, of crimes against body, property, public order and economic offences to total IPC crimes were 45, 37, 14 and 4 as against the relative shares of these types of crimes of 37, 36, 20 and 7 respectively in 2012. Thus, two classes of crimes, viz. crimes relating to public order and economic offences are becoming more important in terms of contribution to total crimes in the state. This is as per expectation after the liberalization and opening up of the Indian economy since 1990's and the growth of agitational politics impacting public peace and order in the state.
- Assam has occupied the top place as the most violent state in recent times, e.g, the rate of violent crime per 100,000 populations was found to be 54.2 as against national average of 22.7 in 2012. Since there has been a fall in the rate of murders and other crimes against body, the primary contributor to this rise in violent crime rate in the state has been kidnappings and abductions and crimes against women.
- Share of homicide cases in crime against body has come down. For example, in 2001, the share was 12.14 per cent which came down to 9.03 per cent in

2012. It is seen from the list of different causes of murder in the state of Assam that it is property dispute that has been consistently higher than the other motives like gain, personal vendetta etc. It is worthwhile to note that motives of gain, property and personal vendetta as a whole have been contributing a high percentage to the total causes. It was 33.23 per cent in 2011.

- A major shift in motives for murder has been seen in the dowry related incidents. The number of murders due to dowry motive increased by over 700 per cent between 1990 and 2012. In case of motives with respect to love affairs/sexual relation, one witnesses increasing trend in the decade 2000-2010 in comparison with that of the earlier decade. As the statistical data show there are a large number of homicide cases where the motives have been identified as terrorist/extremist activities. It is seen from the table that the homicide cause due to terrorism has been declining since 2003.
- Individuals belonging to the young and most productive age group (18-35 years) had to bear maximum brunt of violence. The percentage of total victims show a very high figure in this age groups eg. in 2000, it was found that 75.83 per cent of victims belonged to this age group, while in 2012, the figure shot up to 95 per cent.
- Looking at the filing of charge sheets relative to the total number of murder cases, it is seen that though the charge sheet rate in murder cases in the state is much higher in comparison to other crimes, it is still lower than all India C.S rates in murder cases and even lower than that of many individual states. In the majority of the homicide cases, young persons of the most productive age group (18-45) are suspected to be involved. In case of conviction rates in homicides cases, the all India level is itself very low; the figure for Assam is much lower than the national figure.
- Though there seems to be no direct relationship between urbanization and total crime rate per 100,000 population, one finds some sort of urban bias in homicide rates across the districts.
- Among crimes against body, the category of crime that has shown the highest increase, both in absolute and relative terms, is kidnapping and abduction. The inadequacy of the law enforcement agencies in the state to deal with

kidnappings in terms of filing charge sheets and securing speedy convictions has had a significant impact on the sudden rise in kidnappings and abductions in the state. The low rate of convictions shows that the investigating agencies have not been able to obtain the necessary evidence and sufficient basis for conviction of the accused, clearly indicating the gap in the process of investigation.

- It is seen that the importance of property crimes in relation to total crimes has been showing a remarkable declining trend in the years. The percentage of such crime to total IPC crimes of the states was as high as 49 per cent of total crimes in 1977 which came down to below 20 per cent by 2012. Even in terms of absolute numbers such crimes have shown a decrease.
- One important conclusion is that there is a shift in the pattern of crime in the realm of property crimes. There is a shift from the violence ridden crime to the crimes with less or no violence eg. shifting from robbery and dacoity to burglary with little violence.
- Share of robbery in the four main types of crimes against property has remained constant in the time period under discussion. This has been in the range of 2 to 5 per cent. Incidence of robbery has been showing different trends in different districts. One can see a shift in places of occurrences in cases of robbery away from residential premises to commercial establishments and others which include banks, railways, and boats etc.
- Share of dacoity cases in the crime against property has remained constant in the time period under discussion. This has been in the range of 1 to 4 per cent. By places of occurrence, a similar picture like that of burglary and robbery emerges.
- The high incidence of theft has shown a declining trend. This crime is keeping almost a fixed percentage in the share of property crime.
- The evolution of market places, rapid construction of commercial hubs and shops, malls have led to shift of places of burglary incidents to commercial and business places. The high value commercial goods are becoming targets for the burglars, leading to increased risk of trading and business places to burglary. As more elaborate security and alarm systems have been preferred by the households there is reduction in the number of incidents of burglary in

residential premises. It is also a fact that construction and design of new building/structures has taken state of the art preventive and safety measures against burglary and theft like improved locking and alarms system, visual identification of witness etc.

- It is important to note that incidence of crimes against women has shown significant rise overtime. The relative rank of criminality of Assam has been worsening with respect to the crimes against women. The contribution of Assam to the national pool of such crimes has been increasing overtime. From a share of 3per cent in 2001, it increased to almost double in 2012 in all India figures of crimes against women. The state has worsened its rank from 13 in 2001 to 7 in 2013. In 2012 when the rates of crimes were calculated per 100,000 female population it was seen that Assam's crime rate in this category of crime was 89.54 capturing all India top rank.
- With regards to incidence of assault on women with intent to outrage her modesty it is observed that number of cases under this head have been also showing increasing trend.
- Assam contributed 5.1 per cent in 2001 to all India rape crime figure, but this increased to 5.75 per cent in 2013. In case of rape, it is seen that the rate of rape for Assam for that year was 12.65 which was found to be more than double than that of all India rate of 5.69. When calculating the annual compound growth rate (ACGR) for rape during 2000-12, it is found to be 7.12 per cent per year, significantly higher than the national average. In case of victim-offender relationship, it is found that 100 per cent of the offenders were known to the victims in 2001 and 2013. The spatial distribution of rape is diverse, cutting across different communities, ethnic groups etc as found by examining the composition of population and the incidence of rape in the districts and this goes against the common belief that rape incidents are more prevalent in tribal areas.
- It is usually expected that there should be a positive relationship between dropout rates and rapes, as a large number of these crimes is thought to be the result of patriarchal mindsets which can be dispelled through education. Calculation of z scores on rape and school dropout rates in this study seems to suggest such a finding. Twelve districts had medium rates of school dropout

and rapes while two districts had high rates for both. A high dropout rate and a low rape rate was found in only one district (NC Hills). However, this trend is not robust at all.

Thus, the above discussion fulfils the objective of looking at the trends and changes in patterns of different crimes over time in the state and district level.

Then the determinants of crimes as proposed in the study objective were examined. For this, two approaches were adopted, namely, time series analysis of crime data by using VECM in the state level and district panel data analysis of crimes which gave us both cross section and time series advantages across the districts. As per these analyses based on statistical and econometric tools, the factors which are found to have impacted the crime scenario in the state are as follows:

- In the present study, a long run association between economic prosperity and crime in the state was found. Economic growth generally leads to variations in the opportunity cost of crime with the assumption that the increased activities actually have greater influence in the legal sector of the economy. All this results in decline in crime with the improvement in job availability or rising wage level. Thus, crime enhancing effect of economic prosperity is outweighed by the benefits of economic growth if it is in unison with employment generation.
- Logistic supports to the law enforcement agencies play an important role in ensuring deterrence to criminal activities. Enhancement of mobility of police force over space and time as proxied in the model of study by vehicle per investigating officer would have a significant negative effect on crimes.
- It is seen that more the presence of police more is the impact on crime deterrence because the show of police patrol as well as the quick investigation of criminal cases would act as deterrent to committing crime. The work load on civil police in a police station is an important factor in prevention and detection of crimes. The more the number of cases per investigating officer the more the number of crimes committed. This is because the civil police will not be in a position to pay more attention to the investigation, thus, less probability of the criminal being arrested and convicted for the crime committed.

- The negative value of charge sheet rates coefficient is as expected but it is not statistically significant. The reason for such an observation may be because of the low conviction rates experienced by the criminal justice system in the state. As a result, although charge sheets do act as a deterrent, the failure to convict a criminal does not increase the real costs to the criminals in the long run.
- The long run relationship between inflation and criminal activity is positively related as expected since the rise in prices reduces the real legitimate earning for the people, thereby making illegitimate earning through criminal activity more lucrative.

From the above discussion it is seen that all the proposed objectives of the study that were mentioned in the beginning are fulfilled.

7.2 Conclusion

The study has examined the crime scenario in the state of Assam as a whole during the long time span from 1974 to 2012 and also in the districts in a more disaggregated level. While doing so, it has reviewed the relevant literatures which discussed the different definitions and approaches to study of crimes and based its analysis on the economic approach whereby criminal behaviour is seen as a matter of rational choice, like any other economic activity.

The study analysed the trends and changes in patterns of different crimes. There is rise in not only the total IPC crimes recorded but also increase in the rate of crime defined as crimes per 100,000 population. Though some districts have shown better results in crime management over time there is general upward trend of crime all across. The different classes of crimes have shown upward movement but their relative contributions to total crime in the state have undergone changes. Within a category of crime also there are shifts in individual crime type. There is a significant shift towards more violent crimes. Some criminal behaviour generally unheard of in the state have started occupying an important place in the crime list of the society, eg. dowry related offences or trafficking of girls to outside destination, outraging the modesty of a woman etc. The violent crimes in the form of long drawn out terrorist activities have resulted in increase in other forms of crimes like

kidnapping, abduction, extortion and so on. The most significant development has been the rise in all sorts of crimes against women, most prominent being rape incidents.

It is found that crimes and economic prosperity have shown a long run association. Logistic support to the investigating agencies is found to be an important factor in enhancing the probability of apprehension and other deterrence to crime commission. It is seen that mobility and speed of the police force and law enforcement agencies play an important role in ensuring deterrence to criminal activities. Enhancement of mobility of police force over space and time would have a positive impact in crime control mechanism. Also the quantum of work load per civil policeman is an important determinant of crime. Inflation appears to be a strong determinant of crime in the state by reducing the real value of legal earning and thereby lessening the cost of committing crimes.

7.3 Policy Suggestions

1. It is seen in the present study that economic prosperity and crime in the state have a long run association. There are two possible ways through which economic growth affects the crime situation in the society, the first one being the effect that increased economic activity would lead to creation of more employment opportunity in the legal sector, thereby negatively affecting the decision to commit crime through increase in opportunity cost. The second effect is seen from the fact that the growth in economy means an improvement in the income and wealth of other members of the society. This increases the potential benefit from a crime. In the face of these two opposing forces it may be concluded that if increased level of economic growth leads to higher impact on employment then it could be expected that the effect of increased income per capita would lead to reduction in crime. Thus economic growth not commensurate with sufficient employment creation is likely to cause a positive impact on crime. Thus the result throws light on the issue of nature of growth that would yield sufficient job creation. One may also like to explain this phenomenon by putting the onus on rising consumerism leading to a sharp increase in consumer demand. Coupled with restrictions on legal means to satisfy this demand, this may lead to an increased tendency towards relying on criminal means to satisfy this demand. Simultaneously, rising education levels – without any corresponding increase in economic opportunities for the masses – might result in increasing frustration with legal means of livelihood, thereby

increasing crime rates. Therefore the study points towards need for growth with creation of sufficient employment so as to have a deterring effect on crime.

2. It is seen that increased mobility of the law enforcement agencies would have a significant positive impact on crime control. The logistical support for the police organisation which would increase the probability of arrest and efficient and prompt investigation is to be ensured by providing more vehicles since this would mean effective deterrence over time and space. Two important ways of crime control have been in terms of patrolling the crime prone areas and investigating the offence so as to bring the criminals to the judicial authorities for punishment. Patrolling is thus considered an effective strategy for crime control by preventing it as well as interrupting crime during its progress. Moreover, it creates an atmosphere of confidence amongst the people. In fact, poor patrolling is despised by the local people. There are different types of advantages and disadvantage of both types of patrolling ---- a foot patrolling enables a police officer to have a regular citizen contact instilling confidence in police actions but it has limitation in terms of geographical coverage. In a terrain like the hills districts of Assam or in the villages or suburban areas where the population density is thin, foot patrolling is less likely to serve the purpose due to the distances involved. In such spatial characteristics one would like to go for police patrol on vehicles to bring more mobility and distance coverage with sufficient speed and surprise. In a state like in Assam where there are terrorist activities due to the presence of rebel and insurgent groups, it is required that police is given more vehicles to cover more geographical areas through patrol and take resort to proactive policing like security checks, visiting the suspects' place etc. Also, vehicles would help police in quick and effective investigation processes like searching the places of suspected criminals, taking interrogation statements etc. Different studies on the utility of patrol cars have revealed the positive contribution it makes in crime management.
3. An important deterrence factor is the work load per investigating officer and police presence. The more the number of cases per investigating officer the more the number of crimes committed. This is because the civil police will not be in a position to pay more attention to the investigation; thus less is the

probability of the criminal being arrested and convicted of the crime committed. Therefore, there is a need for augmenting the availability of civil police so that work load per civil police is lessened, and it leads to effective deterrence through improvement in quality of investigation, filing of charge sheets resulting in conviction. The poor charge sheet and conviction rates point to the need for improvement in quality of investigation through use of modern scientific aids and gazettes and a well trained pool of human resources.

Thus it is imperative that the work load per civil police is lowered so as to pave the way for its more intensive utilisation of talent in investigation. Enhancement of police strength would not only lead to better quality of investigation but also would add to the police presence leading to deterrence by increasing the probability of arrest and incapacitation through imprisonment. The growth of private security agencies and ongoing neighbourhood watch schemes & community policing measures are required to be encouraged so as to fill up the gap in the strength of civil police. The night patrolling by voluntary village defence party members do add muscles to the police patrol who very often find it difficult to cover far flung and interior areas in the rural side.

4. The factors for high recidivism are to be addressed and appropriate measures are required to be prescribed. The traditional role of police having surveillance on the old convicts had been a time tested strategy which led to keeping a close watch on the persons convicted but released from incapacitation in the prison through regular police visit, and entry in patrol party registers. This practice has been pushed to the backseat. Lack of such policing techniques may be the result of over engagement of police forces in law and order duties, VIP security along with increased demand for anti- terrorism operations. However, in recent times, after the incidents relating to militancy are coming down in the state, appropriate attention is to be paid to the time proven measures of policing to curb the rise in crimes. The authority should try to have a well chalked out policy guidelines regarding the schemes for deterrence from crime in this matter including not only the police but also other stakeholders of the society for effective control of crime by preventing recidivism. Different programmes and services may be suggested to facilitate transformation of individuals who had undergone the intervention of

incapacitation. The incarcerated individuals after coming out of the prison may require a well co-ordinated reintegration programme helping their re-entry process in to the social mainstream. This is full of emotional and social issues with practical problems of huge significance that needs careful handling.

It would be of interest to have disaggregated data on recidivism to see the types of criminals in terms of different crimes relapsing into criminal activity.

5. The increase in crimes against women needs to be addressed from strict enforcement of law and through prompt legal remedies. The finding that in almost all cases of rape the offenders were known to the victims points towards the need for policy prescriptions to raise awareness level of the females regarding less predictable nature of behaviour with sexual overtones from the known persons like close relatives and neighbours. Moreover, need for imparting value education and gender sensitization campaigns have important roles to play in such matters. The rigorous implementation of provisions for empowerment of women through political representation needs to be adhered to. There is a growing need for an integrated approach to prevent the dangers of sexual assault by paying attention to the broader issues of family structure, disintegrating community life which can play a very important role in prevention of such crimes at home and the society by creating an environment of non-discriminatory gender base and social support system. It is usually expected that there should be a positive relationship between dropout rates and rape, as a large number of these crimes is thought to be the result of patriarchal mindsets which can be dispelled through education.
6. Another very significant development is seen very often during localised incidents leading to the birth of a violent mob. In incidents of accidents or public protests on local issues, it is seen that the crowd easily turns violent, burns the vehicles, destroys the government property and attacks the government officials resulting sometimes in riots and arson of considerable magnitude. This intolerance and susceptibility of people to a protest action which started peacefully then turning into a mob frenzy has been a cause of concern since it leads not only to a disruption of public order but also loss in life and property. However, it is worth mentioning that though such groups

appear to be purposeless and whimsical , these may be the pent up grievances and resulting anger against the governmental policies and organs like police, administration, and this anger gets flared up over minor incidents. This means that such issues of immense importance which might flare up in future if not tackled in time should be dealt with adequate sincerity. Also a cause of concern is in terms of low charge sheet and lower conviction rates of cases with regards to riots and arson. It is important that the miscreants engaged in violent activities by being partners in a violent mob should be brought to book and placed for justice so that it acts as a deterrent in attempts to commit crimes against public order.

7.4 Limitations of the Study

The present study examined the trends, patterns and the determinants of criminal behaviour in the state of Assam. It also had gone into disaggregated level up to districts. Though the study is unique in the sense that no other known research work had attempted to look into the important parameters that the present study did, it is not free from its limitations. Some of the limitations are noted below:

- It is generally argued that since Becker's model had tried to examine the behaviour of an individual in the background of cost benefit analysis of a potential criminal act, it is imperative that the validity of the model should be seen through empirical analysis of individual behaviour at the micro level. However, due to non availability of such micro data, macro observations are taken as aggregated data for a wide geographical entity.
- The study is based on the available data of registered IPC offences. It has been mentioned by several studies that crime incidents in India are to a great extent under-reported and under-recorded leading to discrepancies between the actual crime scenario and the official crime figures. Studies on victimization have been advocated for correcting the data sets since it is found to be more reflective of real picture in the field. Many a time even recorded offences are wrongly classified too.
- This study has addressed mainly the trends and patterns of IPC offences. The contributions to total crime scenario including other offences too, apart from

IPC crimes, need to be looked at while discussing the overall crime situation in the state.

- Frequent reorganization of districts has made the data maintenance a complex affair in the district level because of changes in geographical jurisdictions of police districts, thereby creating difficulties in long term district level disaggregated study.
- Because of limitations regarding availability of socio economic data for the districts over time, more variables could not be examined to find out their possible influences in committing crimes.

7.5 Implications for Future Research

The present study has thrown light on the nature and types of criminal behaviour and how they have undergone changes over time in the state of Assam and its districts. Though the study has been carried out within the geographical boundaries of Assam, its findings may have equal relevance for other geographical areas beyond this state. The result of the present study may be taken as supportive for additional as well as complimentary work to examine the socio economic and other deterrence factors of criminal behaviour in the state.

As is evident from the discussions above, there are gaps where more intervention in terms of detailed research can be suggested. These may include utilising victimisation data to fill up crime data gap, and inclusion of more socio economic variables to examine determinants of crimes.

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