Effects of Socio-Economic and Political Factors on the Crime Rate in Pakistan

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Abstract

The present study is an attempt to explore the impact of social, economic and political factors and the event of 9/11 on crimes in Pakistan for the period 1984-2013. Three models have been estimated for political, economic and social factors separately. The political factors like corruption, law and order, 9/11 event, have been found to increase crimes, whereas government stability reduces the crimes. The economic factors such as poverty increase crimes whereas foreign remittances and external debt reduce crimes. In social factors human rights, human capital, income inequality and population density increase crimes. In short run, error correction terms indicate that there is convergence towards the equilibrium in all the models in case of any shock. Various diagnostic tests have been applied to confirm the reliability of results which indicate that there is no problem of autocorrelation and heteroscedasticity in the models. The study suggests that in order to mitigate criminal activities policy makers should focus on political, social and economic problems faced by Pakistan.

Keywords: Law and order, Human rights, Government stability, ARDL, Socio-economic and political factors

JEL Classification: A13, C01, H01, J83, K00, P47

I. Introduction

Any illegal act or activity that is punishable by law is crime. Crime is an act of human conduct that is harmful to others and the state is bound to prevent it. Crime renders the person liable to punishment as a result of proceeding instigated by the state organs assigned to ascertain the nature, the extent and the legal consequences of the person's wrongness" (for detail see Auolak, 1999).

The existing literature on crimes has pointed out various factors which not only affect the behavior of the people adversely but also encourage them to involve in criminal activities. These factors may be social (see for example Levitt,

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1996; Mocan and Ress, 2005), economic (see for example Freeman, 1995; Machin and Meghir, 2004; Gould *et al.*, 2002; Donohue and Levitt, 2001; Levitt, 2004; Raphael and Winter-Ebmer, 2001; Fleisher, 1966; Ehrlich, 1973; Allen, 1996; Kelly, 2000; Fajnzylber *et al.*, 2002 and Demombynes and Ozler, 2005; Britt, 1997; Kapuscinski*et al.*, 1998; Chamlin and Cochran, 2000; Levitt, 2001; Patemoster and Bushway, 2001; Carmichalel and Ward, 2001; Kleck and Chiricos, 2002) and political factors (Jacobs & Helms, 1996). The frequency of crimes depends upon the deterrence capacity of the judicial system (for detail see Becker, 1968; Ehrlich, 1973; Levitt, 1998). Furthermore, crimes largely depend upon the expectations of the criminals regarding punishment (see e.g. Levitt, 1997). In two decades, 1950s and 1960s, the academic discussion related to crimes was concentrated around the opinion that criminal activities largely depend on mental illness and social problems (for detail see Menninger, 1966).

Different disciplines of academia like law, sociology, criminology, geography, demography and psychology view crime in their own perception due to its complex nature. The relationship between crimes and different factors has been studied vastly which has led to the development of different theories related to crime. The strain theory presented by Merton's (1938) explains that most of the people feel frustrated when they find relatively successful people around them. Furthermore, an increase in income inequality makes them at bottom end to channel their disappointments into crimes. Shaw and Mckay (1942) present the social disorganization theory which suggests that societies are unable to regulate their members and as a result crimes emerge. The economic theory of crimes presented by Becker (1968) focuses on the identification of the social and economic outcomes of crimes in a country. Later on some studies related to crimes have been presented which throw light on the economic factors responsible for crimes in developed and developing countries (see for example DiIulio, 1996; Ehrlich, 1996; Eide, 1994;Freeman, 1996;Glaeseret al., 1996; Grogger, 1995; & Levitt, 1997, 1998).

In existing literature different factors have been identified which are responsible for crimes but there is no consensus on the causes of crimes. However, it is generally accepted that crimes have caused different implications relating to economic and social costs to the society. Due to crimes society has to incur miscellaneous costs which include injuries causing health issues, loss of work for victim's family, loss due to inability to attend the school, expenditures on recoveries from mental shock caused by crimes, adverse effects on quality of life and expenditures on security system like security guards, lock systems, alarm systems, self-defence etc. (for details see, Clotfelter, 1977; Becker, 1968; Ezell &Cohen, 2005). State has to devise

punishment policies for the eradication of crimes. In both developing and developed countries substantial resources have been used on police, courts, prosecutors and imprisonments for reducing the crimes (Donohue, 2007). According to Tella and Schargrodsky (2004), direct cost increases with the increase in crimes. Fajnzylber et. al (2000) point out that an increase in indirect cost leads to productivity loss, loss to human and social capital and reduction in labour market actions.

Crimes have become a challenging issue for the developing countries which forces the states to spend a huge amount of money on establishing and maintaining police and judicial system. The record indicates increase in crime rate in Pakistan over time for the last two decades which have made the security of individuals, private businesses and public institutions a challenging issue (for details see Table 1). Furthermore, there is an increase in terrorist attacks which have reduced the writ of the government in some areas of the country. It has also observed that crimes in Pakistan have been used for financing terrorist activities and it has become an alarming situation for the government during the last decade. Various terrorist organizations have been involved in robberies and ransom and this money has been utilized in terrorism by these groups.

Table 1: Reported Crimes in Pakistan Since 1996

Year	All Reported	Murder	Attempted Murder	Kidnaping	Dacoity	Robbery	Burglary	Cattle theft	Other theft	Others
1996	330493	9062	12437	7119	1188	6107	10526	5474	22939	255571
1997	370350	9304	12440	7876	1428	7793	13803	7141	21692	288777
1998	431854	10246	13080	7712	1533	7514	13771	6938	23107	347891
1999	417846	9332	12042	7491	1316	6337	13586	6877	20887	339931
2000	388909	8906	11224	7126	1297	7513	14433	6618	27661	304081
2001	378301	9528	11433	6546	1372	7672	13057	5542	18546	304605
2002	399568	9396	10945	6938	1631	8235	13318	5420	18363	325322
2003	400680	9346	11562	8450	1821	8434	13049	6742	20189	321087
2004	440578	9719	12678	9637	2338	11851	13647	7924	22024	350760
2005	453264	9631	12863	9209	2395	12199	12067	11884	24793	358223
2006	537866	10048	13729	10431	2895	14630	12872	13327	31166	428768
2007	538048	10556	13840	10725	3260	16639	12067	9388	29493	432100
2008	592503	12059	15083	15135	4529	19943	14943	8880	36023	465908
2009	616227	12491	14962	16313	4457	19138	15073	9456	35697	488640
2010	652383	13208	15478	18556	4727	21907	16638	8373	37878	515618
2011	673750	13860	15496	19806	4980	20632	18195	9345	42223	529213
2012	646900	13846	15338	20194	4269	17081	17638	9046	40102	509396

Pak army has destroyed the terrorists' shelters in the tribal area of the country and as a result there is a significant reduction in crimes observed particularly

in Karachi and Balochistan and other affected areas of the country. Many political and social factors like corruption, lawlessness and money laundering are also responsible for target killing and violent crimes in the country which have exerted bad impact on the development process of Pakistan economy. The present government has given free hand to Pak army and rangers for taking strict action against the militant groups, target killers and political parties involved in terrorism, violent crimes and corruption in the country. This has exerted huge financial burden on Pakistan economy.

Pakistan government has taken various measures to control crimes in the past but these measures did not appear to be fruitful. The scarification of Pakistan for war against terrorism has been acknowledged by the foreign countries. The terrorist attacks have diverted the attention of government from crimes and as a result there is a significant increase in crimes observed in Pakistan. Although the positive results of the actions of the Pak army and rangers have been realized but still there is a need to take more strict actions against the militants and it will be helpful in removing the sense of insecurity among people. From the above discussion it can be concluded that various factors are responsible for terrorism, corruption and crimes in Pakistan and it is indispensable to become familiar with the major causes and factors responsible for these problems in Pakistan. The present study is an attempt to determine the social, economic and political factors responsible for criminal activities in Pakistan and it may be helpful for the authorities and policy makers to formulate and implement effective policies for controlling and mitigating crimes.

II. Literature Review

The world is facing a rising trend in criminal and violent behavior overtime. It is commonly believed that crimes affect the quality of life, limiting educational opportunity, impeding access to possible job opportunities and discouraging the accumulation of assets. The extent of crimes determines the ability of a country in paving the way for sustainable economic growth. Fleisher (1966) discusses the role of income in committing the crimes by people. The study stresses that low income and low expected cost of crimes lead to an increase in the inclination of committing crimes. Furthermore, low income people view their legal lifetime earnings not much and they assume to lose comparatively small earnings if they have criminal record. They think that legal earnings are not only low but also the opportunity cost of time spent in jail is low.

Becker (1968) put forward a model of crimes based on cost and benefit analysis and expected utility. The study points out that people will commit crimes if they expect that their utility will be lower in some other activity. A

criminal pays the cost in terms of punishment and time cost in terms of custody. The study concludes that criminals are rational while making a comparison between costs and benefits of the criminal activities.

Ehrlich (1973) finds that there exists a direct association between crimes and unemployment. The study stresses that employment is an important indicator of income opportunities from legal sources and if there is an increase in unemployment rate then the involvement of persons in legal sources decreases. Furthermore, level of education, age structure and income inequality also contributes in making a decision of committing crimes. The main difference between Becker and Ehrlich studies is that Becker considers opportunity costs as well as explicit costs and benefits of a society while Ehrlich pointes out employment as an indicator of availability of income in a society.

Mathur (1978) tries to analyze the relationship between sentence measures and crimes by taking into account two time spans 1960 and 1970. The results of the study reveal that there is negative relationship between punishment and different types of crimes. Myers (1983) uses the random sample of criminals provided by federal prisons in 1972 and finds that punishment is not very effective means to control crimes rather it may be better to generate employment opportunities for reducing crimes.

Fajnzylber et al.(1998) conduct cross-sectional analysis using income inequality, education, per capita income and urbanization ratio. The study points out that income inequality is a significant factor responsible for crimes. The study concludes that a five percent increase in income inequality (Gini Index) leads to an increase of homicide rate by fifteen percent and many fold increase in robberies.

Fajnzylber et al. (2002) use correlational analysis, ordinary least square regression and GMM for panel data and find that an increase in income inequality leads to an increase in crimes. Bernstein (2002) investigates the relation between labor market circumstances and different crimes in Asia Pacific countries, using Johansen co-integration and granger causality tests for econometric analysis. The results of the study show the existence of long run relationship between unemployment and crimes.

Coomer (2003) studies the effect of different macroeconomic variables on crimes using ordinary least square method and conclude that with the increase in unemployment, inflation and poverty there is an increase in crimes. Gumus (2004) uses the city level data for determining the factors influencing crimes in urban regions. The results of the study show that

inequality, per capita GDP and percentage of black people are the most significant factors in determining the crimes in urban areas in the US. Unemployment and expenditures on police are also found to be significant factors in explaining crimes.

Teles (2004) tries to examine the influence of macroeconomic policies on crimes. The study points out that monetary and fiscal policies have significant influence on crimes. The results of the study reveal that fiscal policy influences crimes through public spendings and monetary policy influences crimes via inflation. Using Bartlett Corrected Trace test technique the study finds significant and positive impact of inflation on crimes and unemployment.

Tang and Lean (2007) try to determine the effect of inflation and unemployment on crimes in Malaysian economy for the period 1970-2006. The study concludes that inflation and unemployment have positive and significant impact on crimes in Malaysia.

Dutta and Husain (2009) investigate the determinants of crimes in India using state level data set for the period 1999-2005. The study considers urbanization, poverty, education, load on police force, economic growth, conviction, quick disposal of case as variables for observing their impact on crimes. The results of the study reveal that the socio economic and demographic factors have significant impact on crimes in India.

Gilllaniet al. (2009) conduct a study to determine the impact of poverty, unemployment and inflation on crime rate in Pakistan for the period 1975 – 2007 using Johansen Maximum Likelihood Co-integration and Granger Causality tests. The study tries to analyze the long-run relationship along with causality among the variables. The findings of the study provide an evidence of the existence of long-run relationship among crimes, unemployment, poverty and inflation in Pakistan. The causality results reveal that crime is Granger caused by unemployment, poverty and inflation in Pakistan.

Jalil and Iqbal (2010) investigate the relationship between crimes and several variables like urbanization, unemployment, income inequality and education in the context of Pakistan for the period 1964 – 2008. The results of the study show that there exists positive and significant relationship between urbanization and crimes. The study suggests that policy makers should provide employment opportunities to the workers in rural areas of Pakistan so that migration to urban areas can be reduced and it may helpful in reducing crimes in Pakistan.

Haddad and Moghadam (2011) explore socio economic and demographic determinants of crimes in Iran for the period 1994-2003. For econometric analysis the study uses the variables like literacy rate, migration, unemployment, population density, family income and conviction. The results of the study show that economic factors have significant impact on overall level of crimes but demographic factors have impact on some of the categories of crimes in Iran. The study suggests that there is a need to introduce certain effective measures for controlling crimes and it will be helpful in raising the pace of economic development in Iran.

Aurangzeb (2012) explores determinants of crimes in Pakistan for the period 1980-2010. The results of the study show that there exists a strong positive and significant impact of household consumption, GDP, population, literacy and wage rate on crimes in Pakistan. On the basis of its findings the study suggests that crimes reporting system in Pakistan needs to be improved and there is a need to reduce political influence on law enforcing departments.

The review of literature brings up that various political, social and economic factors are responsible for crimes in developing countries like Pakistan. Not many studies are available in the literature which have included social, political and economic factors responsible for crimes in Pakistan. The present study is an attempt to analyze the impact of social, political and economic factors on crimes in Pakistan. The results of this study may provide guidelines to the practitioners and policy makers to formulate and implement appropriate policies which may be helpful in reducing crimes in Pakistan.

III. Theoretical Framework

Fleisher (1966) describes that if probability of being caught is low and lawful conducts have low gains then in such situation people may involve in criminal activities. Becker (1968) formulates a model to consider the person's gain from crime, deterrents and the cost to the society. He presented the person's choice to commit a crime in functional form

$$C_j = C_j (P_j, F_j, U_j) \quad (1)$$

Where C is the number of crimes a person will commit, P is the probability that the criminal will be caught and convicted, F is the sentence if the criminal is convicted, lastly U represents all other economic, social, political, religious and psychological factors that stimulate the choice to commit a crime. As the criminal choice is made in uncertainty so the expected utility from such activity may be written as

$$EU_j = P_jU_j(Y_j - F_j) + (1 - P_j)U_j(Y_j) \qquad (2)$$

Here Y_j represents the gain from crimes. The equation shows that expected utility is not only dependent on gain from criminal activity but also on probability of sentence P_j against success $(1 - P_j)$ and punishment F_j. In committing a crime the individual will take a risk of reduction in income due to conviction, penalty, entering into criminal record and several other disadvantages. On the other hand, a person may act legally and can earn legal earnings and these earnings may also be subjected to risks, so net earnings from both actions are subjected to uncertainty. If we assume that two activities are mutually exclusive then one would commit crime if the expected utility from criminal activity is higher than legal activity. The expected gain from criminal activity depends upon various factors like: one's own time, various tools, resources used in transportation, expenses on information gathering, planning, committing criminal activity and disposing of criminal evidences. The cost if culprit is caught and convicted may be in the form of monetary fine, imprisonment, trial or it may be combination of these and the offender may find reduction in his future stream of income in legal activities due to entrance in criminal record. The alternative legal earning, one can have by utilizing ones time in legal activities and it is considered to be safer than criminal activities. If both activities are not mutually exclusively and there is less risk involved in criminal activity an individual may opt for both activities. Criminal activities not only have an influence on the criminals but also it affects the society and it may be defined as

$$L = D(C) + S(P, C) + bFPC \qquad (3)$$

Here D is the damage caused by criminal activity; S is the cost of sentence and bFPC is the total social cost from punishment. b represents the coefficient of the cost to society which is not only in monetary terms but also in social costs. The basic objective of the social public policy is to protect its citizens and it mainly includes protection from crimes. In the above function, public policy variables are represented by P and F. By minimizing this function with respect to P and F and solving the model, it can be found how to control the effect of crimes on the society by reducing the risk involved in criminal activities. This can be done in another way, by varying the variables that influence a person's choice to indulge in criminal activities. If there are ample opportunities available through legal activities, it may enhance the opportunity cost of crime and can make it very costly for the individuals to indulge in criminal activities which helps in reducing criminal activities in the society.

IV. Data and Model Specification

The data has been collected from: World Bank's database (World development indicators), Human Rights Dataset by (Cingranelliet al., 2014), Quality of Government basic dataset by (Dahlberg *et al*., 2016) and The Standardized World Income Inequality Database by (Solt, 2014). Descriptive statistics is presented in Table 2 which provides information about the variables included in the model. Pairwise correlations of the variables included in the study have been presented in Table 3.

Table 2: *Descriptive Statistics*

Variable name	Mean	Maximum	Minimum	Std Deviation
Log of Reported Crimes	12.856	13.420	12.216	0.349
Law and Order	2.696	3.920	1.000	0.772
Misery Index	15.426	32.711	6.952	5.678
Population Density	178.634	236.360	118.881	35.732
Poverty	29.575	36.300	21.350	3.585
Foreign Remittances % of GDP	4.374	8.284	1.453	1.883
Corruption	1.957	3.00	1.00	0.385
External Debt % of GDP	40.883	54.583	22.766	9.428
Income Inequality	32.552	38.537	29.825	1.926
Government Stability	7.711	10.833	2.166	2.437
Human Capital	1.685	2.021	1.384	0.214
Human Rights Index	4.506	7.000	1.000	1.538

Table 3:   *Pairwise Correlation of Variables*

	Crime	Human Rights	Law and Order	Misery Index	Population Density	Poverty	Remittances	Govt. Stability	Human Capital	Income Inequality	Corruption	External Debt
Crime	1.000 —											
Human Rights	–0.439*** (0.015)	1.000 —										
Law and Order	0.727*** (0.000)	–0.500*** (0.004)	1.000 —									
Misery Index	0.444*** (0.013)	–0.150 (0.427)	0.324** (0.080)	1.000 —								
Population Density	0.974*** (0.000)	–0.451*** (0.012)	0.742*** (0.000)	0.427*** (0.018)	1.000 —							
Poverty	0.778*** (0.000)	–0.419*** (0.021)	0.676*** (0.000)	0.386*** (0.034)	0.790*** (0.000)	1.000 —						
Remittances	–0.208 (0.269)	–0.337** (0.067)	–0.222 (0.236)	–0.413*** (0.022)	–0.184 (0.330)	–0.096 (0.611)	1.000 —					
Govt. Stability	0.579*** (0.000)	–0.328** (0.076)	0.826*** (0.000)	0.264 (0.157)	0.645*** (0.000)	0.599*** (0.000)	–0.121 (0.523)	1.000 —				
Human Capital	0.964*** (0.000)	–0.502*** (0.004)	0.704*** (0.000)	0.397*** (0.029)	0.989*** (0.000)	0.755*** (0.000)	–0.071 (0.707)	0.610*** (0.000)	1.000 —			
Income Inequality	0.219 (0.244)	–0.354** (0.054)	–0.037 (0.843)	0.078 (0.678)	0.160 (0.396)	0.304** (0.101)	0.646*** (0.000)	–0.046 (0.805)	0.238 (0.203)	1.000 —		
Corruption	0.093 (0.624)	0.147 (0.435)	0.164 (0.383)	0.075 (0.692)	–0.016 (0.931)	0.079 (0.675)	–0.424*** (0.019)	0.112 (0.555)	–0.097 (0.608)	–0.120 (0.525)	1.000 —	
External Debt	–0.620*** (0.000)	0.549*** (0.001)	0.403*** (0.027)	–0.158 (0.402)	–0.650*** (0.000)	–0.439*** (0.015)	–0.438*** (0.015)	–0.295 (0.112)	–0.737*** (0.000)	–0.461*** (0.010)	0.407*** (0.025)	1.000 —

In parenthesis ( ) are probabilities. ***, ** represents five and ten percent level of significance respectively

The results depict that there is strong positive correlation between: population density and crimes, human capital and crimes, government stability and law and order, population density and human capital. There is weak positive correlation between: misery and income inequality, corruption and misery, government stability and corruption. There is strong negative correlation between external debt and human capital. There is weak negative correlation between: poverty and remittances, human capital and remittances, law and order and inequality, government stability and inequality, corruption and population density, corruption and human capital.

Model Specification

The general form of the models for political, economic and social factors affecting crimes may be written as

Political Model

$$LCRIME = r_0 + r_1 Corruption + r_2 Law\,and\,Order + r_3 Govt.\,Stability$$
$$+ r_4 D + \sim_t \tag{4}$$

Economic Model

$$LCRIME = s_0 + s_1 Poverty + s_2 \operatorname{Re}mit\tan ces + s_3 Misery + s_4 D$$
$$+ s_5 External\,debt + \sim_t \tag{5}$$

Social Model

$$LCRIME = x_0 + x_1 Human\,Rights + x_2 Human\,Capital + x_3 Inequality$$
$$+ x_4 Population\,density + \sim_t \tag{6}$$

Variables Description

Crime

Crime is the dependent variable and is referred to the total number of crimes reported to the police.

Government Stability

This is an assessment of the government's ability to carry out its declared programs, and to stay in office. A score of 4 points means to Very Low Risk and a score of 0 point is equal to Very High Risk. It is expected that higher government stability may lead to low crimes. It is due to the fact that if government stays in office and is carrying out its programs properly it will generate opportunities of earning and people will be less likely to be involved in criminal activities.

Corruption

Financial corruption is most common form of corruption. For econometric analysis the present study considers actual or potential corruption in the form of excessive patronage, nepotism, job reservation, favor for favors, secret party funding and suspiciously close ties between politics and business. It is expected that higher corruption level may increase crimes as there is less risk involved of being punished if caught. It provides the culprits the ways to get escape from punishment by paying bribe and it encourages him to get involved in criminal activities.

Law and Order

"Law and Order" form a single component, but its two elements are assessed separately, and each element is scored from zero to three points. To assess

the "Law" element, the strength and impartiality of the legal system are considered, while the "Order" element is an assessment of popular observance of the law. Thus, a country can enjoy a high rating of 3 in terms of its proper judicial system, but a low rating of 1 if it suffers from a very high crime rate due to reason that law is routinely ignored without effective sanction (for example, widespread illegal strikes). It is expected that an improvement in the law and order situation leads to a significant reduction in crimes.

Poverty

Poverty is measured by head count ratio (HCR) which tells us about the percentage of people living below poverty line (1.25$). It is expected that if there is an increase in poverty it may lead to an increase in criminal activities. When people face difficulties in meeting basic necessities of life through legal ways then they are much likely to be involved in criminal activities.

Remittances

Remittance is the amount remitted by emigrants of Pakistan. It is expected that more inflows of remittances may be helpful for people to meet their basic needs and people will be less inclined towards criminal activities.

Misery Index

Misery index is an additive index composed of inflation and unemployment. It is expected that an increase in misery may lead to an increase in criminal activities. If there is high inflation, purchasing power of the people will be reduced and if there is unemployment as well it will further add to suffering of the people and it may lead to an increase in the possibility of get involved in criminal activities.

External debt

External debt may have positive or negative impact on crimes. It may reduce criminal activities if it is spent on the welfare of the masses. If it is not utilized in promoting human welfare and is lavishly spent on political bribes etc. it may lead to an increase in criminal activities. Therefore, the impact of external debt on crimes in Pakistan is uncertain.

Human Rights

This is an additive index constructed from the Foreign Movement, Domestic Movement, Freedom of Speech, Freedom of Assembly & Association,

Workers' Rights, Electoral Self-Determination, and Freedom of Religion indicators. It ranges from 0 (no government respect for these seven rights) to 14 (full government respect for these seven rights). The expected sign of the coefficient of human rights may be positive or negative depending upon the prevailing situation in a country.

Index of Human Capital

Human capital index is based on number of years of schooling (Barro/Lee, 2012) and returns to education (Psacharopoulos, 1994). Human capital may increase or reduce crimes in Pakistan and it is dependent upon the use of acquired knowledge in the development activities or non-development activities. If it is utilized on positive activities it will reduce crimes and if it is used on negative activities it may lead to an increase in crimes.

Inequality

Inequality is measured by GINI coefficient of income inequality. It may be expected that higher inequality may lead to an increase in criminal activities because higher income disparities may induce deprived people to violate the rules and regulations and commit crimes and lower income inequality directs the people to avoid involvement in criminal activities.

Population Density

Population density is the number of people living in per square kilometer. It is expected that if there is high density of population it may be difficult to manage the people which may lead to poor law and order situation in the country and it may become easy for individuals to commit crimes.

Dummy of 9/11

This variable has been used to capture the effect of 9/11 event on crimes in Pakistan. It assumes the value 1 after 9/11 and zero for other years. Pakistan has been a key player in war against terrorism and an increase in scale and frequency of criminal activities has been observed in Pakistan after 9/11.

Research Methodology

The Autoregressive Distributed Lag (ARDL) technique developed by Pesaran*et al.* (2001) has been applied in this study. This technique is a blend of autoregressive and distributed lag models. It overcomes the issues of endogeneity and autocorrelation so the estimated parameters are unbiased and efficient. ARDL technique can be used without worrying about the order of integration of variables, they may be of order I(0) or I(1) or mixture of both.

However, it requires that neither of the variables is integrated of order 2 or higher. For observing the order of integration of variables, ADF and KPSS test have been used and the results are presented in Table 4.

Table 4: *Unit Root Tests*

ADF Unit Root Test					KPSS Unit Root Test			
Variables	Test Statistic	Critical Value	Prob	Order of Integra-tion	Variables	Test Statistic	Critical Value	Order of Integra-tion
CRIME	−1.29	−2.967	0.639		CRIME	0.697	0.463	
CRIME	−5.88	−2.967	0.000	I(1)	CRIME	0.095	0.463	I(1)
MISRY	−4.159	−2.967	0.003	I(0)	MISRY	0.406	0.463	I(0)
HUR	−2.571	−2.967	0.11		HUR	0.392	0.463	I(0)
HUR	−5.58	−2.967	0.000	I(1)	LNO	0.492	0.463	
LNO	−1.142	−2.967	0.685		LNO	0.062	0.463	I(1)
LNO	−4.061	−2.971	0.004	I(1)	REMITANC	0.198	0.463	I(0)
REMITANC	−2.008	−2.967	0.281	I(1)	COURPT	0.098	0.463	I(0)
REMITNC	−4.272	−2.971	0.002		EDEBT	0.451	0.463	I(0)
COURPT	−2.430	−2.971	0.14		GOSTAB	0.413	0.463	I(0)
COURPT	−5.540	−2.971	0.000	I(1)	HC	0.697	0.463	I(1)
EDEBT	−0.341	−2.967	0.906		HC	0.191	0.463	
EDEBT	−4.199	−2.971	0.002	I(1)	POPDNSTY	0.714	0.463	
GOSTAB	−1.545	−2.967	0.496	I(1)	POPDNSTY	0.268	0.463	I(1)
GOSTAB	−5.069	−2.971	0.000		POV	0.595	0.463	
HC	−1.131	−2.971	0.936		POV	0.176	0.463	I(1)
HC	−2.349	−2.971		I(1)	GINI	0.185	0.463	I(0)
POPDNST	−0.978	−2.971	0.742					
POPDNSTY	−3.332	−2.971	0.0895	I(1)				
POV	−1.444	−2.971	0.546					
POV	−6.057	−2.971	0.000	I(1)				
GINI	−1.759	−2.967	0.391					
GINI	−5.670	−2.967		I(1)				

The results of unit root test indicate that some variables are integrated of order zero i.e. I(0) and some variables are of I(1) and there is no variable having I(2), so ARDL approach can be employed safely.

In Table.5 the results of bound test are presented. The results reveal that the value of calculated F statistic is greater than the critical upper bound value at 5% and 10% level of significance in all three models, so the null hypothesis of no co-integration is rejected and it is concluded that there exits long run relationship among the variables in all the models.

Table 5: *Bounds Test*

Model No.	Lower Bound Level of Significance		Upper Bound Level of Significance		F Statistic	Decision
	5%	10%	5%	10%		
1	2.86	2.45	4.01	3.52	5.07	Cointegration exists
2	2.62	2.26	3.79	3.35	3.88	Cointegration exists
3	2.56	2.2	3.49	3.09	4.24	Cointegration exists

After establishing the long run relationship the next step is to estimate the long run and short run coefficients. The results of long run relationship are reported in Table 6. The first column depicts the results of first model with political factors. The first variable of this model is corruption which has positive sign and it is statistically significant indicating that corruption leads to an increase in crimes. The possible reason for this relationship is that there is less risk involved of being punished if caught in committing crimes. Furthermore, in Pakistan people find various ways to get escape from the punishment by paying bribe or using other tools of corruption. The coefficient of law and order appears to be negative which is consistent with the expectation. It states that if there is improvement in law and order it may lead to decrease in criminal activities. The probable reason may be that the criminals fail to retaliate and cannot commit more crime due to strict law and order. Government stability is turned out to be positive having statistically significant coefficient value. It shows that an increase in job opportunities, increase in successful programs and consistent government policies making people feel comfortable and people are less likely to be involved in criminal activities. With regard to the dummy variable of 9/11, it appears to be positive and significant which means after 9/11 Pakistan has been facing serious retaliation from extremist groups which have diverted the attention of the government towards terrorism. In response, criminals get the benefit of this situation and get inclined towards crimes.

Table 6: *Long Run Results*

			1	2	3
Corruption			0.337** (0.031)		
Law and Order			0.240*** (0.014)		
Govt. Stability			−0.049** (0.069)		
9/11 Dummy			0.573*** (0.000)	0.169** (0.039)	
Poverty			0.337** (0.031)	0.041*** (0.000)	
Remittances			0.240*** (0.014)	−0.095*** (0.000)	
External Debt				−0.023*** (0.000)	
Misery Index				0.00062 (0.885)	
Human Rights					0.039** (0.029)
Human Capital					0.734* (0.052)
Inequality					0.014* (0.079)
Population Density					2.362*** (0.000)
Constant			11.780*** (0.000)	12.99*** 0.000	−2.444 (0.167)
Diagnostic Tests	Auto	F-Statistic	1.424 (0.268)	0.425 (0.660)	1.209 (0.327)
		Obs*R-squared	5.563 (0.134)	1.504 (0.471)	4.124 (0.127)
	Hetro	F-Statistic	0.286 (0.951)	0.438 (0.906)	1.577 (0.197)
		Obs*R-squared	2.530 (0.924)	5.743 (0.836)	14.565 (0.203)

***, **, * represents the one, five and ten percent level of significance respectively, and in parenthesis probability values are presented

In 2nd model the 9/11 dummy is significant which confirms the fact that alliance with NATO after 9/11 appears to be significant contributor in increasing criminal activities in Pakistan. These results are consistent with the findings of Nadeem et al. (2016). Poverty carries positive sign which is statistically significant. It shows that if there is an increase in poverty may lead to an increase in crimes. This may be due to the fact that poor may be unable to meet basic necessities of life and they become inclined towards criminal activities. Foreign remittances play significant role in reducing crimes in Pakistan. Foreign remittances enhance welfare of the people and they are less likely to be involved in criminal activities.

The coefficient of external debt is negative and significant indicating that it helps in reducing crimes in Pakistan. In Pakistan with the help of external debt

various development projects have been introduced and completed. It provides job opportunities to the labour force which helps in reducing crimes in Pakistan. The coefficient of misery index appears to be insignificant which reveals that the role of misery index in crimes is quite negligible in Pakistan.

As far as social factors are concerned, most of the variables have significant impact on crimes in Pakistan. However, the coefficient of human rights carries positive sign which is opposite to the expectations. The possible explanation of this positive coefficient is that human resources and human capital are used in negative activities and people use highly sophisticated ways to commit crimes and also misuse the human rights for exerting pressure on law enforcing agencies and get escape from the arrest or punishment.

The validity of all the estimated models are tested through standard diagnostic tests. Diagnostic tests relating to residuals suggest that there is no problem of autocorrelation or heteroscedasticity observed in the models.

Table 7: *Short Run Results*

	1	2	3
D(COURPT)	0.017 0.755		
D(LNO)	0.083*** 0.019		
D(GOVSTAB)	−0.017** 0.074		
D(DMY)	0.031 0.677		
D(POV)		0.013** 0.075	
D(REMITNCE)		−0.063*** 0.013	
D(EDEBT)		0.001 0.660	
D(EDEBT(−1))		0.008 0.223	
D(DMY)		−0.051 0.523	
D(MISRY)		0.0004 0.88	
D(HUR)			0.013 0.235
D(HUR(−1))			−0.023*** 0.021
D(HC)			0.696** 0.054
D(GINI)			0.025*** 0.008
D(GINI(−1))			0.018*** 0.033
DLOG(POPDNS)			76.420*** 0.000
DLOG(POPDNS(−1))			−25.30** 0.109
ECM(−1)	−0.345*** 0.001	−0.669*** 0.0037	−0.947*** 0.000

*** represents the one percent level of significance

The short run dynamics are presented in Table 7. The error correction terms in all the models carry negative sign which are also statistically significant. This is an indication of the existence of the long run relationship among variables in all the model. The magnitude of the error correction terms relating to all the models reveal the speed of adjustment from disequilibrium to equilibrium which is appropriate.

V. Conclusion

For the past ten years, Pakistan has been facing severe problems like terrorism, corruption, increase in violent crimes and sense of insecurity among people over time. It exerts adverse impact on the smooth functioning of Pakistan economy. This study is an attempt to determine the social, economic and political factors responsible for criminal activities in Pakistan and it may be helpful for the authorities and policy makers to formulate and implement effective policies for controlling and mitigating crimes.

This study is an attempt to explore the impact of Political, economic and social factors and the event of 9/11 on crimes in Pakistan for the period from 1984 – 2013 using Autoregressive Distributed Lag (ARDL) Model. Three models have been estimated for political, economic and social factors. In political factors corruption, law and order and 9/11 event have been found to increase crimes, whereas government stability reduces crimes. In economic factors poverty increases crimes whereas foreign remittances and external debt help in reducing crimes. As far as social factors are concerned human rights, human capital, inequality and population density increase crimes. The short run results indicate that there exists convergence towards the long run equilibrium in all the models as error correction term are negative and significant. Various diagnostic tests confirm the reliability of results indicating that all the models are free from the problems of heteroscedasticity and autocorrelation. The study suggests that policy makers should focus on political, social and economic problems for controlling the criminal activities. For this purpose there is a need to strengthen the law enforcing agencies and effective and appropriate policies should also be formulated and implemented for controlling corruption and crimes on priority basis.

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