GCU Economic Journal, Volume LI (1&2), 2018, pp. 1-23

An empirical investigation on the links between social exclusion and crime

Sara Ahmed* and Alvina Sabah Idrees**

Abstract: The study explores the elements of excludability related to the social frameworks which are responsible for fueling up the crime rates in a country. The study used proxies developed by the International Institute of Social Studies as a measure for Social Exclusion. The present study examines the relationship using secondary data sources. The data consist of 35 countries covering the time period from 1995 to 2014. The study uses Panel Auto Regressive Distributed Lagged Models (ARDL), purposed by Pesaran, Shin, & Smith (1997) based upon Pooled Mean Group (PMG) estimation. The intergroup cohesion, inclusion of minorities, interpersonal safety and trust and voice accountability had a significant relationship with crime rate. Some demographic and economic variables also had a significant relationship with crime rates. The study concludes that there exists a positive and significant long run relationship between social exclusion and crime. Greater participation in social spheres can play a positive role in building up the society as a whole which will help in combating crime rates.

Keywords: Exclusion, Crime, Voice and Accountability, Pool Mean Group, unemployment, GDP per capita, Demography
JEL Classification: Q56, N30, E24

1. Introduction

Socially excluded individuals are the ones who are deprived socially i.e. not being recognized or valued in contrast to other groups in the society. This deprivation is faced not by the individuals but by the group of people belonging to a specific group on the basis of religion, ethnicity or race. The concept mainly focuses on the social distances, marginalization, inadequate integration and lack of participation in cultural, social, political and economic activities. And this non-participation expedites the

*The authors is a graduate student of the Department of Economics, GCU Lahore.
**The author is a lecturer at the Department of Economics, GCU Lahore.

aggressive behaviors in those marginalized groups and thus urges them to involve in criminal offenses. The ethnic and racial discrimination, lack of freedom of speech, deprivation in basic facilities and lack of political participation will inevitably lead to a higher sense of deprivation that causes a higher involvement of such groups of people in criminal activities (Dertwinkel, 2008).

The Global Peace Index (GPI) has remained constant in the last few years. A number of indicators, used in determining the Global Peace Index, have deteriorated but others have improved. The societal safety and security domain have improved by the likelihood of fallen homicidal rates. However this improvement was counter balanced by the worsening effect of ongoing conflicts and militarization. The death toll has also been increased in the internal conflicts in some countries. A continuous deterioration in the impact of terrorism has also been the factor of not improving the Global Peace Index.

Deprivation makes people feel aggravated and this aggregation compels them to become criminals. Reducing crime rate is one of the priorities of the countries all across the world; as low rates of crimes are seen to be the most important feature of the increased economic growth. Crime reduction, therefore, is synonymous to decreasing the implicit cost of the nation that can lead to enriched wellbeing and quality of life. Despite the fact that policy makers are giving attention to the heightened crime rates, less focus has been placed regarding the institutional factors and elements of social exclusion that are causing the problem. Dilulio (1996) studied link of inadequacy of social capital as being an important determinant in raising the crime rates.

In most studies criminology is related to the economics i.e. the need for money to fulfill material requirements, the social factors i.e. the need of the education, health and other forums ensuring the participation of individuals in a society, and the political and the civil rights for everyone. Even though policies are giving attention to the heightened crime rates, less focus has been placed regarding the economic, social and institutional factors and elements that are causing the problem.

In the recent years, the social exclusion has also been used widely, however is not specifically defined. The social exclusion is not only concerned with current trajectories but also with the future projections (Atkinson, 1998). Thus, the social factors along with the economic factors also contribute to the individual's behavior towards criminal activities. These criminal activities report the levels of anxiety and stress of the people in the economy and give rise to the sense of insecurity and mistrust in the community. As the effects of crimes are not limited to the victims alone, the whole society feels the wave of threatening and uneasiness.

The criminal activities are stimulated when the individuals are having concerns about their social status and financial conditions. A social risk of falling into delinquent behaviors are closely connected with the life situations like unemployment leading to financial apprehension or the confinement of social independence.

The socio economic background is one of the major conjectures of the cognitive development of the individual in a society. Social exclusion raises the level of anxiety and stress among the people that give rise insecurity and mistrust in the community. Hummelsheim et al., (2011) provided qualitative evidence of the presence of insecurities due to criminal activities that are bound to exist through declining social trust and intergroup conflicts. Glaeser et al., (1996) found the evidence that high level of social interactions can help reducing crime rates in the county. Social interactions seem to create a sense of invulnerability and the feeling of trustworthiness among individuals.

Economic exclusion deprives individuals or set of individuals from the material needs and desires. On the other hand, social exclusion denies the access to the social or the political activities taking place in the country. This study will try to explore the factors and the elements relating to the social and the economic framework of the society, which are responsible for fueling up the criminal acts and offensive behaviors in the country.

2. Literature review

Ehrlich (1973) purposed a model describing the phenomenon of why an individual takes part in illegitimate activities. The data was taken across US states of year 1960, 1950 and 1940, taking into consideration the education, demographic and geographical factors. Later, Ehrlich (1975) studied the relation of crime and education by collecting the data from Bureau of Census of year 1960 on the median school year of all the offenders in state federal and local jails and workhouse. Garaham & Bowling (1995) used self-reporting method, adopted a national random sample of offenders and interviewed them about the background, their family life, their school experiences an aspects of their current life. The study found out that offending is strongly correlated with the parental supervision, the exclusion from school and poor family background. Fajnzylber, Lederman, & Loayza (1998) studied the factors responsible for the crime rates Latin America, Sub Saharan Africa, Eastern Europe, South and East Asia and Middle East. Income inequality had a positive and significant impact on the crime rates, the deterrence effects are significant and are playing an important role in determining the level of crime rates, the policy makers can serve in these regards to reduce crimes.

The study on demographic and economic variables responsible for increased crime rates was undertaken by Entorf & Spengler (2000). The study provided the widespread descriptive analysis of crime and the potential factors that impact the number of offenses in Germany. Bynner (1999) identified the risks involved due to the social exclusion, using longitudinal data of OECD studies. The study proposed that preschool intervention for the enhancement in the development of the children and in the adult life of the excluded group of people can help to reduce crime rates. Similarly, Jenson (2000) undertook an analysis on the marginalization of the Canadian society. The exclusionary distribution of resources i.e. economic, social and political, the lack of social integration and pathologies are found to be the the dynamics of the marginalization.

Cracolici & Uberti (2009) analyzed the level of crime rates in 103 Italian provinces by taking the data of the years 1999 – 2003. A rigorous study was undertaken on the basis of the graphical representations of some of the specific elements helping to analyze the situation of the criminal activities in the country. Geographical, demographical and deterrence

factors were found to be the main ingredients in determining crime rates. Meghir, Palme, & Schnabel (2012) studied the effect of educational reforms on the crime rates, by using a controlled experimentation on the respondents in Sweden. The study used the data from Swedish Population Census of the individuals born between 1945 – 1955. On the other hand, Andersen (2012) took a controlled experiment in Denmark to study the influence and the intensity of social training program on the crime rates of the unemployed in the country.

Qoli (2015) developed the hypothesis that marginalization is the major factor in increasing crime rates. The main purpose of the study was to examine whether social crimes and marginalization are related. The study analyzed how the family income, education, unemployment and immigration is linked with the social crimes and delinquency. It was concluded that there exist a relationship between marginalization and the social crimes in Gorgon. The present study tries to explore the factors and elements relating to the social exclusion that can be responsible for fueling up the criminal behaviors in a country.

A wide range of debate on the growing concern of increased discrimination and unequal behavior towards specific group or class of the society has been made. This prejudicial and biased behavior is faced in both the economic and the social setup of the country. The present study will try to explore the factors and elements relating to the social framework that are responsible for fueling up the crime rates in a country. The study used the proxies developed by the International Institute of Social Studies as a measure for Social Exclusion. These proxies are termed as the Indices of Social Development (ISD) The indicators included in the study to examine the effect of the social exclusion on crime are, intergroup cohesion, interpersonal safety and trust, inclusion of minorities and voice accountability.

3. Data sources

The present study examines the relationship using secondary data sources. The data consist of 35 countries covering the time period from 1995 to 2014 and the selection of countries is done on the basis of availability of

data. The data on crime has been taken from (UNODC) United Nations Office on Drugs and Crime. The seven categories of crimes included in this study are assault, kidnapped, theft, burglary, sex violence and homicides. Social exclusion indices that include intergroup cohesion, intergroup safety and trust and inclusion of minorities have been taken from the International Institute of Social Studies (IISS) and voice accountability has been taken from the World Governance Indicators (WGI). Some economic and demographic factors are also included as control variables in the study. The male unemployment rate, youth unemployment rate and GDP per capita is taken from the World Development Indicators (WDI). Male population measuring the count for males from the total population has been taken from United Nations Population Division.

4. The Theoretical Model

The study investigates the profound relationship between social exclusion and crime rates. Social Exclusion is the term originated in 1960's in France having close affinity with the happenings of the French Revolution. The term social exclusion has its roots in sociology and that is why the social exclusion does not only include the lack of material needs of the individuals, but undertake other elements such as lack of participation and the dismissal to the access of fundamental activities in a society (Mathieson, et al., 2008).

It points out to the situation, when beyond an individual's control, he or she is unable to take part in the general activities of the society. Social exclusion is a relative term as it concern itself with the status of one group of the society to another. According to many economists social exclusion is a dynamic process instead of being an outcome or a condition. In other words it means that an individual can pass in or out of such exclusion (Mathieson, et al., 2008). Social exclusion is deeply attached with the increasing criminal activities in a country. Social exclusion is the inability of the individuals to access the facilities or resources available in the country which are non-material in nature. And this inability results into sense of deprivation and unfairness, causing frustration and anxiety. Thus, this socially excluded group gets involved in the offensive activities.

Along with social exclusion factors, there are some economic and demographic factors as well that need to be taken into considerations. This association can be represented as the following functional form:

Crime Rate = f (Social Exclusion, Economic factors, Demographic Factors)

The study has used various proxies for social exclusion (SE) which include intergroup cohesion index (ICI), intergroup safety and trust index (ISTI), inclusion of minorities index (IMI) and voice and accountability (VA).

Intergroup Cohesion measures the ethnic tensions and sectarian rigidities and discriminations. If the group's interconnections are leading to the increased unrest and disturbances then it may cause the crime rates of the economy to rise. And this rise in inclusion of the groups will surly puts a decreasing pressure on the crime rates of the society (Staveren & Hoeven, 2012). This decreasing pressure will be due to the fact that when intergroup cohesion will increase, it will bring the harmony and equality in the existing groups and sectors of the economy. The value of the index reaches from 0 – 1 and the values closer to 1 shows that there exists higher level of social connections between different groups of the society. However, the value closer to 0 shows that the interrelations among society's groups are not favorable (Staveren and Hoeven, 2012).

Interpersonal Safety and Trust focus on the degree of the trust and security that strangers puts on each other. It becomes difficult to undertake a safe and secure society where norm do not exist or have been eroded overtime. The absence of norms and social values leads to the increased crime rates in the society (Heinemann & Verner, 2006). As social norms and values will encompass morality in the individuals which will bring down the crime rates. Interpersonal Safety and Trust Index also ranges from 0 – 1, where values near 0 shows that there is less social cohesion among the individuals of the society. And the values near 1 shows that higher social cohesion is existing among people of the society (Staveren and Hoeven, 2012.

Inclusion of Minorities measures the extent of the facilities and resources, present in the country, being used by the minority groups. The exclusion or the discriminated behavior with the minorities will bring the need for them, to engage in criminal acts to cover their rights. So high discrimination shows less inclusion of minorities thus, increasing crime rates (Heinemann & Verner, 2006). The value of the index reaches from 0 to 1. The proximity of the index to 1 represents that minorities have higher opportunities to participate and enjoy the facilities available to another majority group. However, the value of the index reaching to 0 shows there exist a systematic bias in social and economic resources in the minority groups of the country.

Voice Accountability refers to the availability of the rights to express their legal views and the accessibility to the power for selecting their government. This non-availability of the rights, in turn escalate the illegitimate behaviors in the minds of the ones who are unable to play their role in the establishment of the society (Jenson, 2000). As high voice accountability will ensure greater participation in the social set up of the country, thus lowering crime rates. The value of this index ranges from -2.5 to 2.5 approximately. The value closer to lower bound (-2.5) means that the freedom of expression and the right to choose the government are not favorable. But if the value is approximating to upper bound i.e. 2.5 means that individuals have the favorable right to express their thoughts and have the right to choose their governments.

The demographic factor included in the study is the total male population. Male population measures the number of people in the country of the age group 15 – 24. Males are considered to be more aggressive and hostile than the females; so the study has included this variable, as for the economies where male population is high the chance for the level of crime rate could also be high.

The economic factors included in the study are GDP per capita, youth unemployment rate and male unemployment rate. GDP per capita (GDP) is one of the most primary indicators of measuring economic performance of a country. This indicator is mostly used to analyze the standard of living of the individuals in general. It is the effective way to do a

comparative analysis of the countries with each other as it shows the relative performances of the countries. GDP per capita is expected to be negatively related to crime rates.

According Grönqvist (2011) criminal activities rise with the age and peak in late teens. And if the unemployment rate among youth is high, there is a possible chance that crime rates are higher. At this phase of the human life the individuals are more emotional and are more prone towards criminal activities when not having access to legal means of earnings. Youth unemployment rate measures the unemployment rate among youth of the economy and here the youth is defined as the number of population living in the range of 15 – 24 years.

Sabates et al., (2008) states that males are more aggressive and prone to undertake offensive or criminal activities as compared to female. Therefore, the study includes total male unemployment as a control variable. If the unemployment rate is higher among males of the economy they have more time to sit idle, giving them the opportunity of engaging in crimes. When high levels of unemployment among males exist in the economy, they are therefore urged to accomplish or to satisfy their needs through illegal means i.e. increasing crime rates in the country.

5. Estimation Techniques

The study uses Panel Auto Regressive Distributed Lagged Models (ARDL). The first step is to check the stationarity of the data. Panel Auto Regressive Distributed Lagged (ARDL) estimation is adopted when the variable is stationary at level or at first difference. In other words one must make sure that no variable is integrated of order 2, i.e. I (2). The dependent variable, however, must be integrated at order one i.e. I (1). The study used Levin, Lin, & Chu (2002) panel unit root tests to check stationarity of the variables.

When panel data estimation is considered, two general procedures are commonly exercised. At one extreme, separate equations for all cross sections is estimated allowing all parameters of intercept, slope, short run coefficients, long run coefficients and error variances to vary across

groups, known as Mean Group (MG) estimation (Pesaran & Smith, 1995). And at the other extreme the pooled estimation of random or fixed effect estimators is present, where the homogeneity assumption for all parameters except intercept is employed.

The pooled estimation through fixed or the instrumental variable approach of Generalized Methods of Moments (GMM) purposed by Anderson & Hsiao (1981; 1982), Arellano & Bond (1991) and Blundell & Bond (1998) do not produce consistent estimates in dynamic panel data analysis (Pesaran & Smith, 1995) and the estimates are also potentially misleading, unless the slope coefficients are in fact homogenous.

So a useful analysis which lay in between of the above two extremes was purposed and considered by Pesaran, Shin, & Smith (1997), named as Pooled Mean Group (PMG) estimation. This PMG (Pooled Mean Group) estimation technique combines both, the averaging and the pooling of the estimates, keeping in account the panel dynamics of the data. PMG is considered as the intermediate approach which allows the intercepts, short run coefficients and the error variances to vary across cross sections, but puts a constraint of homogeneity on the long run parameters. And in many economic theories, there exist a likely chance of the homogeneity in the long run estimates across different groups (Pesaran, Shin, & Smith, 1997).

Pooled Mean Group approach is applied when time series properties of non stationarity exist in the panel data. The common practice is to keep the time period i.e. T, greater than the number of total cross sections included, i.e. N. However, there exist studies that exist in the empirical research analysis using the T i.e. number of time period included, less than N, i.e. number of cross sectional groups included (Tan, 2006; Rafindadi & Yosuf, 2013; Gallegoa, Rodrígueza & Rodríguez, 2011).

Mean Group and the Pooled Mean Group specify the Short Run and the Long Run estimates of the model, along with the speed of adjustment showing the possible speed with which the equilibrium of the model will reach (Pesaran, Shin, & Smith 1995; 1997). This study intends to estimate the long run relationship between crime rates (CR) and the social exclusion (SE). As Exclusion is a long run process and the effects of

exclusion in short run might not be significant and revealing. The choice between PMG and MG is made on the basis of the Hausman Test.

6. Results

The study employs Levin, Lin, & Chu (2002) panel unit root tests to check stationarity of the variables which include. Crime rate, intergroup cohesion index, inclusion of minorities, male population and economic growth are of integrated order 1. These variables are non-stationary at level but stationary at first difference. However, interpersonal safety and trust, voice accountability, male unemployment and youth unemployment are stationary at level i.e. the integration order is 0. The results are provided in the Table 1.

Table 1: Panel Unit Root Test, Levin Lin & Chu (2002)

Variables	**At level**	**At 1st Difference**	**Order of integration**
Crime Rate (CR)	-1.081 (0.1397)	-6.502*** (0.000)	I(1)
Intergroup Cohesion Index (ICI)	3.774 (0.999)	-5.926*** (0.00)	I(1)
Interpersonal Safety and Trust (IST)	-4.924*** (0.00)	…….	I(0)
Inclusion of Minorities (IM)	0.6247 (0.7348)	-4.166*** (0.00)	I(1)
Male Population (MP)	-11.80*** (0.00)	…….	I(1)

Voice and Accountability (VA)	-3.674*** (0.0001)	…….	I(0)
Male Unemployment (MU)	-5.554*** (0.0000)	…….	I(0)
GDP per capita (GDP)	0.191 (0.5760)	-8.440*** (0.0000)	I(1)
Youth Unemployment (YU)	-4.407*** (0.00)	…….	I(0)

***significance at 1% and the values in ( ) provide the probability values

The study has first applied Mean Group (MG) and Pooled Mean Group (PMG) technique and the Hausman Specification Test is applied choose between the two. The specification test showed that the results from the PMG estimation technique are efficient and consistent which are provided in Table 2. The variables CR, EG, GDP, MP are converted into log terms.

Table 2: Pool Mean Group Estimates

Variables	**Model 1**		**Model 2**		**Model 3**	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intergroup Safety and Trust Index (ISTI)	-1.65128	-7.42*** (0.000)				
Intergroup Cohesion			-0.4045	-2.26** (0.024)		

Index (ICI)						
Inclusion of Minorities Index (IMI)					-2.0254	-3.36*** (0.001)
GDP Per Capita (GDP)	0.8127	4.24*** (0.000)	0.9473	6.88*** (0.000)		
Voice Accountability (VA)					-0.8142	-6.01*** (0.000)
Male Population (MP)			0.2031	1.52 (0.128)		
Youth Unemployment (YU)	0.0194	2.91*** (0.004)				
Male Unemployment (MU)					0.0193	2.64*** (0.008)
Constant	1.17086	4.48*** (0.00)	0.95786	6.51*** (0.000)	3.0118	5.59*** (0.000)
ECT	-0.1972	-4.83***	-0.3661	-8.61***	-0.2181	-5.73***
Hausman Test (Prob.)	(0.2724)		(0.2837)		(0.9367)	

**significance at 5%, ***significance at 1%, the values in () shows the probability of rejecting null hypothesis.

Model 1: The index of interpersonal safety and trust (ISTI) has the significant negative long run relationship with the Crime Rates. When Interpersonal Safety and Trust Index (ISTI) increases by one point the Crime Rates will decrease by 1.65%. As the Interpersonal Safety and Trust (ISTI) shows the level of trust and security an individual feels living in any neighborhood. The higher values of this index shows higher levels of trust and this leads towards reduced crime rates. When the individuals living in the society have higher trust levels among themselves, there will be less intent of criminal behaviors, due to greater harmony and understanding (Staveren & Hoeven, 2012).

Youth unemployment (YU) has the significantly positive long run relationship with crime, the results shows that when Youth Unemployment (YU) increases by one percentage, crime rate will increase by 0.019%. As the high value of Youth Unemployment (YU) means that high level of youth, who are willing to do the job but are not finding the job. This increases the factor of aggression and frustration in their minds, and urges them to engage in criminal activities to acquire their basic needs and desires (Grönqvist, 2011).

GDP per capita has the significant positive relationship with the crime rates. This positive direction of the relationship of crime and GDP per capita is not common. However Northrup & Klear (2014) also concluded this positive significant relationship of the two variables. The main argument provided by the study is that high GDP per capita levels also have the negative impacts in the society, the biggest negative impact GDP per capita can have on the society is the increasing inequalities (Naguib, 2015). These inequalities will bring the sense of unfairness and deprivation, resulting in increased crime rates. This positive relationship of GDP per capita and Crime rate is also present due to the fact that the economy is not experiencing the trickledown effect of the benefits of high GDP per capita. The result in this study also shows the positive impact of GDP per capita on crime rates in long run, the coefficient shows that as

the GDP per capita increases by one percent, the crime rates will rise up by 0.813%.

The speed of adjustment is -0.1972, which indicates that if any disequilibrium occurs in the short-run then variables will converge towards the long-run equilibrium level at the rate of 19.72% annually.

The equational form after putting the parameter estimated through PMG is:

$$\Delta lCR_{it} = -0.1972\ lCR_{i,\,t-1} + 1.171 - 1.651\ ISTI_{it} + 0.0914\ YU_{it} + 0.813\ lEGr_{it} + 0.477\ \Delta ISTI_{it} - 0.0018\ \Delta YU_{it} - 0.192\ \Delta\ lEGr_{it}$$

Model 2: ICI (Intergroup Cohesion Index) has the significantly negative long run relationship with the Crime Rates. When the value of ICI increases by one point, crime rates will decrease by 0.40%. Intergroup Cohesion shows the relations and the co-operations of the different identity groups in the society, so if this index has the higher value, meaning that the co-operation levels are high among different groups in the society so crime rates will be decreased (Staveren & Hoeven, 2012). The relationship between GDP per capita and crime rates is the same as established in model 1 with a minor change in the coefficient value. This shows the robustness of the results. Male Population (MP) also has the significant and positive long run relationship with the crime rates. The results of the PMG estimation shows that when the Male Population increase by 1% there will be an increase of 0.203% in the crime rates. Males are more aggressive so the societies with high male population often prone to report high Crime Rates (Sabates, 2008).

The speed of adjustment value of this PMG result suggests that the system of crime rates involving the variables of Intergroup Cohesion, GDP per Capita and Male Population, will adjust in the direction of the equilibrium at the rate of 36.6% annually.

Following equation will be constructed of the PMG results:

$$\Delta lCR_{it} = -0.366\ lCR_{i,\ t-1} + 0.9578 - 0.405\ ICI_{it} + 0.947_{2i}\ lEGr_{it} + 0.203\ lMP_{it} + 0.006\ \Delta ICI_{it} - 0.413\ \Delta lEGr_{it} - 4.348\ \Delta lMP_{it}$$

Model 3: The results from the PMG estimation, suggested that Inclusion of Minorities Index (IMI) and Voice and Accountability (VA) has the negative impact on Crime Rates in long run, i.e. as the value of any of these indices increases, the crime rate will decrease. However Male Unemployment has the positive relationship with the crime rates in long run, as unemployment among males of the society increase aggressive behavior, leading to the increased crime rates.

The speed adjustment value in this equation is -0.2818, and is also significant, meaning that the equilibrium of this equation will be achieved annually with the rate of 28.18%. In other words the variables involved in this equation will be adjusted and will converge in the direction of the equilibrium in a year at the rate of 28.18%

The coefficient values from the from the PMG estimation, of long run, suggest that if the IMI (Inclusion of Minority Index) increase by one point the crime rates will be decreased by 2.02%. As the inclusion of minorities shows that the groups, which are likely to fall behind are now enjoying their society's role, so their likelihood to involve in the criminal activities will be decreased significantly. Through inclusion individuals will not feel being discriminated. They will be satisfied with the feeling of playing their role in the activities taking place in the social framework and being a valued member of the society. Therefore they will be less frustrated which will reduce the criminal acts (Heinemann & Verner, 2006).

Voice and Accountability (VA) also has the negative significant relationship with crime, showing that as the index of Voice Accountability increases, crime rates will fall by 0.84%. It is due to the fact that voice and accountability ensures the participation of the individuals' right of freedom of speech and the participation in the political set up. The higher value of this index will confirm the role of the individuals' in making and building up a society. This will, for sure, puts a decreasing pressure on the crime rates of the country. In other words Voice and Accountability will

bring the sense of belonging and self-satisfaction of being a part of the society in the individuals (Jenson, 2000). The individuals will have less frustration and anxiety if they are ensured that their voice will be heard and they can actively take part in the society's setup.

Male Unemployment (MU) is having a positive and significant relationship with Crime Rates. As the value of Male Unemployment (MU) increases by one percentage it will increase the crime rates by 0.019%. When Male Unemployment is increased, there is the chance that these unemployed males prone towards the illegal and offensive activities to satisfy their needs, thus increasing the Crime Rate. Males are more aggressive (Sabates et al., 2008). Increased unemployment in the males will push them towards criminal activities. They will steal and will undertake fraudment activities to satisfy their material needs – they would kill for money to generate income.

The equation constructed using the PMG results is:

$$\Delta lCR_{it} = -0.2182\ lCR_{i,\,t-1} + 3.012 - 2.025\ IMI_{it} - 1.842\ VA_{it} + 0.019\ MU_{it} + 4.514\ \Delta IMI_{it} + 0.249\ \Delta VA_{it} + 0.0126\ \Delta MU_{it}$$

7. Conclusion and Policy Recommendations

The empirical estimation through Pooled Mean Group (PMG) analysis of 35 countries, from year 1995 – 2014 concludes that there exists a positive and significant long run relationship between social exclusion and crime. The indicators of the social exclusion were intergroup cohesion, inclusion of minorities, interpersonal safety and trust and voice accountability. Male population, male unemployment, youth unemployment, GDP per capita were included as control variables. The use of PMG estimation was consistent and efficient. The results suggested that the indicators of social exclusion have the significant negative relationship with the crime rate in the long run.

The inequalities in the provision of education must be addressed to reduce the levels of crime rates in the country. The policies that can find ways to

address the issues relating to the access, attendance and increased opportunities for individuals after the attainment of education should be effective in reducing the crime rates. The local authorities, mayors and councilor, can be very effective in this manner as they can make sure more efficiently that education is well maintained and easily accessed in their locality.

Inclusion of Minorities has the significantly negative impact on the crime rates as high level of Inclusion of minorities ensures lower exclusion thus lower crime rates. Voice accountability also has a significantly negative relationship with the crime rates, as crime rates are reduced with the increase in the ability of people to express their views and with the ability to participate in political setup of the economy. Male unemployment is found to be significant and positively related to the Crime Rates in the long run.

Interpersonal Safety and Trust is significant and is negatively associated with the crime rates, as it shows the degree of trustworthiness that an individual places on the other. High trust levels ensure greater level of safety and security among the people. Youth Unemployment and Economic Growth, showed the positive significant relationship with the crime rates. Here Economic Growth is positive as there is no trickling effect of the income earned by the individuals.

Therefore, social exclusion indicators must also be tackled in a way that maximum possible individuals have the feeling of participating and playing their role in the building up and formation of the society as a whole. The inclusion of minority groups and the peoples' ability to have the freedom to speak and elect their government must come as the first foremost priority of the policy makers. The opportunities for the males to participate towards the betterment of the society must be enhanced so that they have less time to engage in illegal activities.

The policy makers must try to increase the pace of trickledown effect of the increased economic growth. The inclusive growth strategies must be employed, so that most of the individuals get benefitted from the increased production and income levels of the economy. Growth is

inclusive if it supports high levels of employment and rising wages. For developing countries, this means acquiring competitiveness in new sectors and technologies. The empirical results support the policy propositions that innovation is a powerful driver of employment growth, that innovation-driven growth is inclusive in its creation of unskilled jobs, and that the underlying innovations are fostered by a pro-competitive business environment providing ready access to information, financing, export opportunities, and other essential business services that facilitate the entry and expansion of young firms (Mello, 2012).

References

Anderson, T. W., & Hsiao, C. (1981). Estimation of Dynamic Models with Error Components. *Journal of the American Statistical Association, 76*(375), 598-606.

Anderson, T. W., & Hsiao, C. (1982). Formulation and Estimation of Dynamic Models Using Panel Data. *Journel of Econometrics, 18*(1), 47-82.

Andersen, S. H. (2012). *Unemployment and crime: Experimental evidence of the causal effects of intensified ALMPs on crime rates among unemployed individuals* (No. 38). Rockwool Foundation Research Unit, University Press of Southern Denmark. Retrieved from http://www.rockwoolfonden.dk/app/uploads/2015/12/Unemployment-and-crime_38.pdf

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies, 58*(2), 227-297.

Atkinson, A. B., & Hills, J. (1998). *Exclusion, Employment and Opportunity.* Research paper no. CASE 004, Centre for Analysis of Social Exclusion, London School of Economics, London.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journel of Econometrics, 87*(1), 115-143.

Bynner, J. (1999). *Risks and Outcomes of Social Exclusion Insights from Longitudinal Data*. Institute of Education, University of London, London. Retirved from https://www.oecd.org/edu/school/1855785.pdf

Cracolici, F. M., & Uberti, E. T. (2009). Geographical Distribution of Crime in Italian Provinces: A Spatial Econometric Analysis. *Jahrbuch Für Regionalwissenschaft, 29*(1), 1-28.

Dertwinkel, T. (2008). *Economic Exclusion of Ethnic Minorities: On the Importance of Concept Specification.* ECMI Issue Brief no . 19, European Centre for Minority Issues (ECMI).

Dilulio, J. J. (1996). Help Wanted: Economist, Crimes and Public Policy. *Journal of Economic Perpectives, 10*(1), 3-24.

Ehrlich, I. (1973). Participation in Illegitimate Activities: A Theoretical and Empirical Investigation. *Journal of Political Economy, 81*(3), 521-565.

Ehrlich, I. (1975). On the Relation between Education and Crime. In F. T. Juster (Ed.), *Education, income, and human behaviour.* (pp. 313-338) National Bureau of Economic Research (NBER).

Entorf, H., & Spengler, H. (2000). Socioeconomic and demographic factors of crime in Germany: Evidence from panel data of the German states. *International Review of Law and Economics, 20*(1), 75-106.

Fajnzylber, P., Lederman, D., & Loayza, N. (1998). *Determinants of crime rates in Latin America and the world : an empirical assessment.* The World Bank Publications.

Gallegoa, M. S., Rodrígueza, F. L., & Rodríguez, J. V. (2011). Tourism and trade in OECD countries. A dynamic heterogeneous panel data analysis. *Empirical Economics, 41*(2) , 533-554.

Garaham, J., & Bowling, B. (1995). *Young People and Crime.* A Research and Planning Unit Report no. 145, Home Office Research and Statistics Study , London.

Glaeser, E. L., Sacerdote, B., & Scheinkman, J. A. (1996). Crime and Social Interactions. *Quarterly Journal of Economics*, 507-548.

Grönqvist, H. (2011). *Youth Unemployment and Crime: New Lessons Exploring Longitudinal Register Data*. Working Paper No. 7, Swedish Institute for Social Research, Stockholm University.

Heinemann, A., & Verner, D. (2006). *Crime and Violence in Development A Literature Review of Latin America and the Caribbean.* World Bank Policy Research Working Paper 4041, The World Bank.

Hummelsheim, D., Hirtenlehner, H., Jackson, J., & Oberwittler, D. (2011). Social Insecurities and Fear of Crime: A Cross-National Study on the Impact of Welfare State Policies on Crime-Related Anxieties. *European Sociological Review, 27*(3), 327-345.

Jenson, J. (2000). *Thinking about Marginalization: What, Who and Why?* Canaian Policy Research Networks Inc. (CPRN), Ottawa, Onttario. Retrived from http://cprn3.library.carleton.ca/documents/15746_en.pdf

Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: asymptotic and finite sample. *Journal of Econometrics, 108*(1), 1-24.

Meghir, C., Palme, M., & Schnabel, M. (2012). *The Effect of Education Policy on Crime: An Intergenerational Perspective*. Working Paper No. 18145, National Bureau of Economic Research.

Naguib, C. (2015). *The Relationship between Inequality and GDP Growth: an Empirical Approach*. Working Paper Series No. 631, Luxembourg Income Study (LIS), Cross-National Data Center, Luxembourg.

Northrup, B., & Klaer, J. (2014). *Effects of GDP on Violent Crime.* Econometric Analysis Research Papers. Retrived from https://smartech.gatech.edu/handle/1853/51649

Pesaran, M. H., & Smith, R. P. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, *68*(1), 79-113.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1997). *Pooled Estimation of Long Run Relationships in Dynamic Heterogenous Panels*. DAE Working Papers Amalgamated Series, Department of Applied Economics, University of Cambridge.

Qoli, P. K. (2015). The Effect of Marginalization on Crime Rate (Case Study: Koi Mohtasham Gorgan). *Bulletin of the Georgian National Academy of Sciences, 9*(2), 61-64.

Rafindadi, A. A., & Yosuf, Z. (2013). *An Application of Panel ARDL in Analysing The Dynamics Of Financial Development And Economic Growth In 38 Sub-Saharan African Continents*. Paper presented at the Kuala Lumpur International Business, Economics and Law Conference.

Sabates, R., Feinstein, L., & Shingal, A. (2008). *Educational Inequality and Juvenile Crime: An area-based analysis*. Research Report No. 26, Centre for Research on the Wider Benefits of Learning, Institute of Education, London.

Staveren, I. V., & Hoeven, R. V. (2012). *Global Trends in Labour Market Inequalities, Exclusion, Insecurity and Civic Activism.* International Institute of Social Studies. Retrieved from http://hdl.handle.net/1765/38412

Kang Yong Tan (2009) A pooled mean group analysis on aid and growth. *Applied Economics Letters, 16*(16), 1597-1601. DOI:10.1080/13504850701604128.

United Nations Office on Drug and Crime. (2014) Assault, Kidnapped, Theft, Burglary, Sex Violence and Homicides 1995 – 2014. Retrieved from: https://dataunodc.un.org/crime

Barro, R. J., & Lee, J.-W. (2010). A New Data Set of Educational Attainment in the World, 1950–2010. National Bureau of Economic

Research (NBER) Working Paper Series. Retrieved from http://www.barrolee.com/

Indices of Social Exclusion. (2014) Intergroup Cohesion, Intergroup Safety and Trust and Inclusion of Minorities. Retrieved from: http://www.indsocdev.org/data-access.html

World Governance Indicators (2014) Voice Accountability. Retrieved from: https://info.worldbank.org/governance/wgi/#reports

World Development Indicators, The World Bank (2014) Unemployment Rate, Male Unemployment Rate, Youth Unemployment Rate and GDP per capita. Retrieved from: http://wdi.worldbank.org/tables