Pakistan Journal of Criminology
Vol. 10, Issue 2, April-June 2018 (72-93)

Impact of Crime and Corruption on GDP per capita
An Empirical Analysis of Cross-Country Data

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Abstract

Objective of this research is to inquire ways and means to enhance well-being of a society. Economy is one of the important dimensions of a society. Economic performance has direct relationship with the crime, law & order condition and corruption. In order to determine this phenomenon, paper's endeavor focuses on searching impact of crime rate, law & order condition, and rule of law on economic performance. This empirical studies utilizes PPP adjusted GDP per capita as proxy for economic performance. Nine (9) other variables have been utilized to represent crime, law & order conditions and corruption. This empirical study applies regression analysis including and excluding outliers with 2% Mahalanobis distance. Study shows that out of nine (9) exogenous variables eight (8) variables exhibit β coefficients significant at 99% and 95% percent confidence intervals. While variable related to rate of murders per thousand inhabitant found inconsistent with theory. Plausible cause of diversion from theory is misreporting of offenses in less developed countries and higher prevalence of carnage in the transitional economies. Indicators depicting feeling safe on streets and rule of law show highest elasticity out of nine variables. Elasticity of GDP per capita with respect to Corruption Perception Index (CPI) is also ranked high and found significant. The study concludes that institutional reforms in crime and law & order related institutions will directly enhance favorable environment for economic activities like tourism, foreign direct investment,industrial growth and consumer confidence. Low crime rate also reduces cost of investment, cost of transaction and direct security-related cost.

Key Word: Criminology, murder rate, crime index, institutions, Governance, Growth, GDP per Capita, Corruption, cross-country analysis

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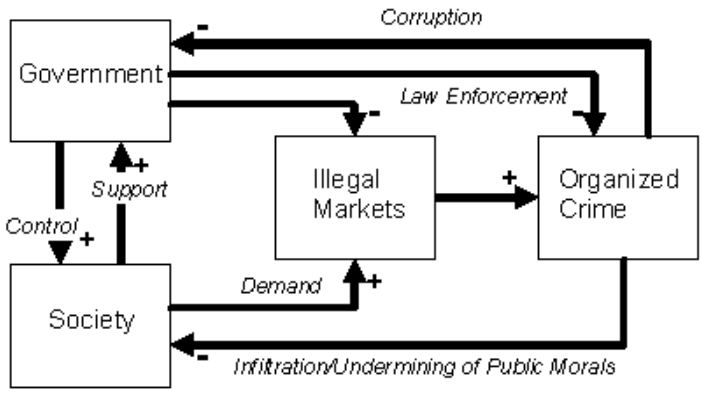
Introduction

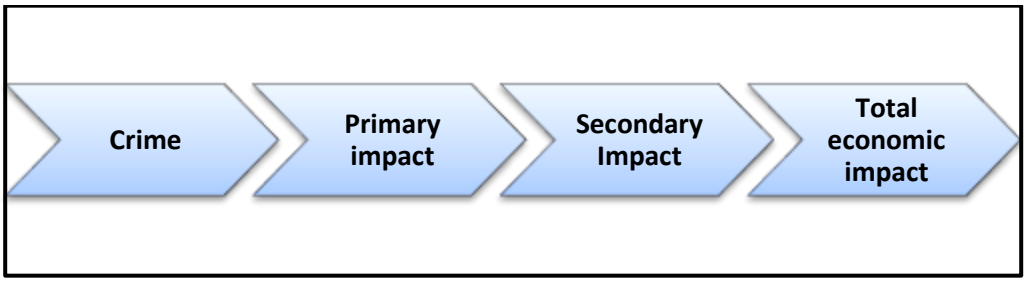
Low crime and tolerable law & order conditions are key success factors of a society. Studies related to crime and economy is not by and large a subject of criminology studies. Mainstream themes of criminology focus on law, judiciary, crime psychology, crime sociology, policing and related subjects (Akers & Jennings, 2016; Carrabine, Cox, Lee, Plummer, & South, 2009). This paper intends to satiate this gap in research in the field. As matter of fact, economy is a fundamental characteristics of wellbeing of citizens. Economics of crime has two aspects which includes behavioral aspect and institutional aspect (Khan, Ahmed, Nawaz, & Zaman, 2015). This paper's direct concern is to discover and probe institutional aspect of the issue in the New Institutional Economics frame work of analysis (Gmbh, 2018; North, 1993). A vast literature is available on economic impact of crime and criminal behaviors (Capdevielle, 1993; Chang & Wu, 2012; Malby & Davis, 2012; Ríos, 2016). Contrarily, crime, law and order situation, absence of rule of law also lay colossal consequence on normal economic performance of a society (Islam, 2016). Determination of impact of crime, law & order condition and corruption on economic performance through estimation of data has emerged as an important field of study (Capdevielle, 1993). Total economic cost crime in US has reached around one trillion dollars (Anderson 1999). Economic burden of crime on the Italian economy has been estimated around 38 billion euro which is equivalent to 2.6% of GDP in Italy (Detotto & Otranto, 2010). Crime cost in UK reaches around 60 billion pounds (Detica & Office of Cyber Security and Information Assurance, 2011).



"Cressey Model"

Fifg 1: The structure and operations of crime in America (Cressey,1969).

Cressey model describes crime nexus corrupts the government through penetration hence negatively influence its performance. Crimes in the society hamper the public morals due to its demonstration impact. Infiltration of criminals in the institutions weakens its performance. It also undermines very fabric of the society. Demand of illegal goods due to illegally earned money increases manifold. Consequently, supply of illegal goods including smuggled and illicit commodities like drugs, weapons, and luxury items encouraged also. The popping up of illegal markets becomes source of income for criminals and corrupt government functionaries. Due to spiral impact, it attracts new entrants of criminals (Detotto & Vannini, 2010; Freeman, 1999). Cost of law enforcement escalates as governments assert and enhance its intervention to curb the illegal activities including white color crimes like bribery, corruption in government corridors, illegal trade, smuggling, drugs, gang wars and petty crimes like purse snatching etc (Rosenfeld & Messner, 2013). The crimes not only increase cost of law enforcement and maintaining costs of peace but also expand illicit economy which causes to shrink the taxable legitimate income and government's revenue. (Cressey, 1969).



Source: Detotto, C. and E. Otranto (2010)

Crime impacts business through leakages in the economy. Criminal activities hamper economy through primary and secondary impacts. Primary impact of crime relates with cost to prevent crime which includes cost of locks, installation of surveillance system, security alarm systems, deployment of extra security personnel. Direct cost includes loss of property and life. As measure to respond the crime, the government and society have to bear cost of recruitment and training of law enforcement agencies, cumbersome persecution process and maintenance of large judicial infrastructure. As secondary stage cost involves reduce level of tourism, low foreign direct investment, reduction in productivity, extra security spending leading to extra burden on business. As a consequence businesses incur higher level of cost of running their affairs leading to less profit. Hence this phenomena disincentives future investment decisions of business comunities. The crime and worsening law & order situation induce industrial units to relocate from one place to another place. Higher cost of insurance and uncertainty hampers overall business environment (Detotto & Otranto 2010; Davidson, 999).

While exploring indirect impact of crime, rule of law, corruption on GDP per capita through econometric model, normally two modes are utilized. Either this task is accomplished through judging impact of crime on economy using time series data of two or three decades of a single country. Abridging the gap, researchers capture it by means of using variables under study for cross-country data at single point of time or panel data for longer period. Each modes-operandi has its own strengths and weaknesses. The consistent time series data on crime-related variables for a single country is seldom available for researchers with

exception. In case it is available, the problem of policy impact, economic cycles, and frequent changes in policing models and judicial efficiency efforts and alike scenarios prohibit the possibility of smooth data estimations. Impact of similar situation creates kinks in data and breaks in series which modifies estimation structure. Consequently this phenomenon prevents the estimated parameters as representative hence does not likely remain to construct a plausible theory. Cross-country data seems likely and appropriate to measure the effects of crime on economic performance due to many advantages (Barro, 1991). During recent years emphasis of world institutions on global governance to create better world has compelled many organizations to collect comparable statistics across the globe. Hence it is only the recent past when huge cross-country data sets are available to researchers (Sala-i-martin, 2006). Though vast coverage of cross country is appreciable but it lacks the time dimension of the data coverage. Despite of the absence of panel data, cross-country data based on single point of time provide ample starting point to construct a universal theory for economic performance, crime and crime-related phenomena. Hence it will satisfactorily provide statistical ground for authentication process for hypothesis under study (Balli, Guven, Balli, & Gounder, 2010; Barro, 1991).

An Overview of Literature

Despite of the measurement of direct cost of crime, the indirect costs of crime are very large. Indirect costs determinants emerge through process of reduced confidence on market forces, reduction of foreign direct investment, hampering the business environment (Detotto & Vannini, 2010). Indirect losses cannot be calculated directly but through the opportunity cost of loss of economic activities which could not be performed due to criminal activities and behaviors in the economy (Ponemon Institute, 2015). However, the regression estimation can guide us to accomplish some domino effect which can impart us an idea of economic deficiency (Abadie & Dermisi, 2008; Freeman, 1999; Klein, 2009).In early 1980 data of 70 countries exhibit that relationship between corruption indices and growth is negative (Mauro, 1995). While examining the effects of many socio-economic variable including crime and corruption in the Italian provinces during 1971-1971, it was found that per capita income growth is negatively related to homicidal rates (Forni & Paba, 2000). The crime and growth show negative relationship in an imbalanced panel of 65 countries during the

period 1971-1999 (Cardenas (2007). The cross-country data analysis permits the utilization of vast amount of data for important variables such as crime indices, corruption-related indicators, law & orders and GDP per capita. The approach has been used to measure economic performance against number of socio-economic variables (Arulampalam, 2006; Barro, 1991; Moore & Shepherd, 2006). The univariate and multivariate series methodology have been used in crime and economic variable relation in many studies using cointegartion system (Brown, Mouritz, & Taylor, 2006). In Australian case Granger causality tested and auto regressive distributed lag (ARDL) model which utilizes diverse crime for seven dimensions including unemployment (Narayan & Smyth 2004). Economic growth has been studied for crime with other social-economic variables for regional data of Italy (Mauro & Carmeci 2007). ARDL model was applied to examine association of crime indicators and economic indicators (Detotto & Pulina, 2009). Income, crime and unemployment causality were checked in Taiwan (Chen 2007).

Hypothesis, Methodology and Data

The study aimed at to discover impact of crime and crime related variables on economic performance. In order to test the hypothesis that the crime and crime-related variables are significant in relation with GDP per capita, econometric modeling techniques are used. The purchasing power parity adjusted GDP per capita is one of the important indicators for economic performance of a country. It depicts overall wellbeing level in the country. However, in case of GINI coefficient which symbolizes income distribution in an economy is high, GDP cannot be considered an appropriate measure of overall economic well-being of an economy (Kuznets, 1955). At high level of GDP per capita with high GINI coefficient, it still holds a better sign of wellbeing in the society as big cake can still provides better share to poor to fulfill their subsistence level of needs. Contrarily with medium or low level of GDP per capita, high GINI coefficient exhibits the phenomena that majority of the population is in economic distress (Prados de la Escosura, 2017). Noneconomic determinants also severely affect the GDP in a country. Crime Level, Crime Index, Safety Index and indicator of

feeling of safety generally are indicators of perception about a country. Data often available is based on personal interviews.

Hypothesis Testing

The postulated theory under study of the crime impact on the economy will be validated by testing of hypotheses at two tiers. At first, a general hypothesis has been formulated. *At second tier β parameters in each regressions out of total none (9) regressions would be tested for verifying null hypotheses* H_{0i} *:* β_{oi} *=0 and alternate hypothesis represented as* H_{ai} *:* $\beta \neq 0$*. In case of statement represented as* $\beta_{0i} \neq 0$ *at 5% and/or 1% level of statistical lies outside the shaded area postulated theory will be accepted as true in alternative hypothesis as depicted in Fig-4. Null hypotheses located in the two tails (out sided in shaded area), it mains the value of* β_{oi} *=0 is rejected. Hence the theory that estimated value of* β_{oi} *has statistical worth for conceptualization of generalized theory about phenomenon understudy is validated. In this regards GDP as economic indicators has been regressed as endogenous variables with nine (9) crime-related variables.*

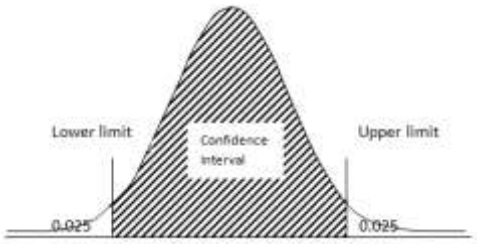


Fig 4 : Depiction of region of 95% confidence interval for rejection of H_0 and Acceptance of H_a at 5%. Source: Wooldridge, 2001& Gujarati, & Porter, 2009

Total ten (10) parameters of estimated equations have been tested for statically significance. With the criteria that percentage of statistical significance at 5% and/or 1% of total parameters estimated will decide the acceptance or rejection of hypothesis postulated in the theory. While testing for significance outlier in the observation/variables disrupts the power of postulating theory due to the reasons, the parametric value of β_{oi} becomes insignificant. Though the phenomenon may appear from various dimensions like ortho-gonality, multi-co-linearity, hetrokedsticity etc,, it lies beyond of scope of this study. To keep

simpler for non-econometric readers, only two variables model has been used (Doppelhofer, 2013). The outlier in the economic and crime data may appear due to varied size and circumstance of the economies under study. Small size country like Mauritius or Micronesia would get weight equal to big countries like USA and China but their peculiar situation which may not confirm the generalized nature of theoratical postulates. For testing β_{oi} value excluding outlier Mahalanobis Distance[3] of 2% has been used . In the model, all 10 parameters have been recalculated for recalculated through two tiers resgressions (De Maesschalck, 2000). In each case the parameters have been compared in both case for scrutinize the impacts of outliers on the model.

H_0 = *Crime and corruption related indicators do not hinder and affect the economic performance of a country.*

H_a = *Crime and corruption related indicators hinder and affect the economic performance of a country.*

Model Estimation

Eq-1 depicts original form of the model. Benefits of the model include that it comprise nonlinearity of relationship between the exogenous and endogenous variables in original form. Second benefit of the model is that its logarithmic formulation makes the model statically speaking a linear shape. Which prpovided added benefit that *parametric value of β_{oi} in each case just becomes equivalent to elasticity between two variables under study. For common reader, this formulation provided added benefit of simplicity of interpretation* (Gujarati 1999).

$$E_{ji} = a\, Z_{ji}^{\beta 0ij} \qquad \text{Eq-1} \qquad (i=1\ldots9)\ ,\ (j=1)$$

$$Log(Ej_i) = log(a) + \beta_{oji}\, log(Zj_i) \qquad \text{Eq-2} \qquad (i=1\ldots9)\ ,\ (j=1)$$

$$Log(E_{ij}) = log(a) + \beta_{oij}\, log(Zj_i) + \varepsilon j_i \qquad \text{Eq-3} \qquad (i=1\ldots9)\ ,\ (j=1)$$

Data Description

[3] Trimmed OLS for excluding outlier under condition of Mahalanobis Distance>2% of the sum of the absolute residuals.

This study uses nine (9) variables for 110 countries for year 2014 collected from various sources which have been elaborated in *Annexure A*. Purchasing power adjusted GDP per capita data has been taken from World Bank data bank. It covers year 2014 to make is compatible with time span coverage of other variables. Series of GDP per capita as shown in Table 1 has coefficient of variation equivalent to 0.746 which makes this series suitable for regression analysis. Corruption perception index is a well-known and highly cited index to depict corruption across the countries. It is maintained and compiled by Transparency International. It ranges between 0-10. Least corrupt is represented by zero and values 10 depicts the most corrupt . Indicators showing control of corruption and rule of law have taken from World Bank data bank (Custer et al., 2003; Keefer, 2004; Kurtz & Schrank, 2007) . Details of unit and sources of Crime Index, safety index, crime level index and homicidal have been given in the *Annexure-A*.

Table 1: Descriptive Statistics

Variable. Description	**Mean**	**Maximum**	**Minimum**	**Std. Dev.**	**Coefficient of Variation**
GDP** per capita (PPP)*	29023.29	109100.00	2100.00	21653.86	0.746
Corruption perception index	4.91	9.70	2.10	2.40	0.488
Control of Corruption	1.97	4.12	0.49	1.12	0.567
Rule of law	2.65	4.33	0.79	1.03	0.390
Accountability	2.49	3.78	0.57	0.97	0.389
Crime Level	45.20	91.25	12.72	20.30	0.449
Crime Index	43.27	77.58	16.90	14.99	0.346
Ranking position in crime	56.83	83.10	22.42	14.98	0.263
Feeling Safe while walking in streets	75.73	96.59	26.67	15.78	0.208
Homicide rate per year per thousand	8.19	71.00	0.00	12.72	1.552

**Purchasing Power Parity, **: Gross Domestic Product*

Result of Estimation and Discussion

GDP per capita with unit in purchasing power parity has been regressed with eight crime-related variables. The results shown in the estimated model at Eq-3-A have been taken from OLS estimation output depicted in Table 2A in the software Eviews. All 9 equations have regressed twicely with and without outliers.

Estimation Equation:

*LOG(GDPPC_PP) = C(1) + C(2)*LOG(CRIM_LEVEL)* *Eq-3*

Substituted Coefficients:

LOG(GDPPC_PP) = 12.89880 -0.805760 **LOG(CRIM_LEVEL)* *Eq-3-A*

According to the results shown in the Table 2B value of coefficient of crime level -0.80 is statically significant at level of 1% and 5%. Hence it rejects the null hypothesis $H_0 : \beta_{oi} = 0$. The alternate hypothesis is accepted with confidence interval of 99%. The Fig 3 exhibits estimated line fitted along with original data with and graphical representation of residue against each observation. *Fig 3* depicts actual, fitted and residual graph of GDP per capita (PPP) of crime level of Eq-3-A.

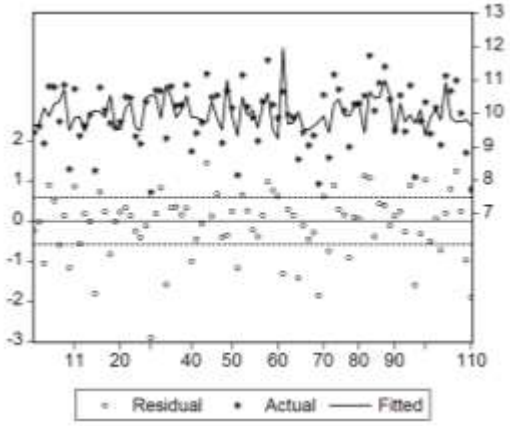


FIG 3 : ACTUAL, FITTED AND RESIDUAL GRAPH OF GDP PER CAPITA AND CRIME LEVEL EQUATION.

TABLE 2:

COMPARISON OF ALL B VALUES ESTIMATED GDP PER CAPITA (PPP) AS ENDOGENOUS VARIABLE AND CRIME RELATED VARIABLES AS EXOGENOUS VARIABLES IN SEPARATE EQUATIONS USING OLS METHOD

ENDOGENOUS VARIABLE: LOG(GDPPC_PP)

Exogenous Variables	No of Obs.	Coefficient	t-stat	Prob.	Ho at .05	Ho at .01
LOG(CRIM_LEVEL)	109	**(-0.806)	-6.107	0.000	Rejected	Rejected
LOG(CRIME_INDX)	110	**(-1.373)	-7.620	0.000	Rejected	Rejected
LOG(SAFE_IND)	110	**(1.507)	6.925	0.000	Rejected	Rejected
LOG(FEEL_SAFE)	109	**(1.600)	6.206	0.000	Rejected	Rejected
LOG(RATE_MURD)	107	-0.062	-0.909	0.365	Accepted	Accepted
LOG(CUR_PI)	92	**(1.525)	12.744	0.000	Rejected	Rejected
LOG(CONT_CORR)	98	**(1.002)	10.665	0.000	Rejected	Rejected
LOG(RUL_LAW)	98	**(1.396)	9.985	0.000	Rejected	Rejected
LOG(VC_ACC)	98	**(0.719)	4.601	0.000	Rejected	Rejected

Note: * and ** denotes rejection of Ho: B2=0 at 5% and 1% level of significance respectively.

Table: 3

COMPARISON OF ALL B VALUES ESTIMATED GDP PER CAPITA (PPP) AS ENDOGENOUS VARIABLE AND CRIME RELATED VARIABLES AS EXOGENOUS VARIABLES IN SEPARATE EQUATIONS USING TRIMMED OLS METHOD SKIPPING OUTLIER FOR 2% MAHALANOBIS DISTANCE

ENDOGENOUS VARIABLE: LOG(GDPPC_PP)

Exogenous Variables	No of Obs.	Coefficient	t-stat	Prob.	Ho at .01	Ho at .05
LOG(CRIM_LEVEL)	99	**(-0.854)	-8.319	0.000	Rejected	Rejected
LOG(CRIME_INDX)	99	**(-1.448)	-10.154	0.000	Rejected	Rejected
LOG(SAFE_IND)	102	**(1.570)	8.588	0.000	Rejected	Rejected
LOG(FEEL_SAFE)	99	**(1.699)	7.774	0.000	Rejected	Rejected

LOG(RATE_MURD)	96	-0.040	-0.728	0.469	Accepted	Accepted
LOG(CUR_PI)	79	**(1.437)	15.844	0.000	Rejected	Rejected
LOG(CONT_CORR)	83	**(1.172)	17.362	0.000	Rejected	Rejected
LOG(RUL_LAW)	83	**(1.677)	16.341	0.000	Rejected	Rejected
LOG(VC_ACC)	82	**(0.726)	6.036	0.000	Rejected	Rejected

Note: * and ** denotes rejection of Ho: B2=0 at 5% and 1% level of significance respectively.
$ Trimmed OLS for excluding outlier under condition of Mahalanobis Distance>2% of the sum of the absolute residuals.

Impact of crime level on GDP per capita is – 0.806 as a result of OLS estimate and it's impact slightly increases during OLS trimmed estimation – 0.854 . Since model is in log-linear form, hence its coefficients depict elasticity of change in its original value. It means that when crime level *decreases* by one percent the GDP per capita (PPP) *increases* by 0.8 percent. It is consistent with the theory. Null hypothesis (the crime level has no impact on crime) is rejected at both 1% and 5% confidence interval. Alternate hypothesis is accepted which lies within the range of 99% & 95% confidence interval.

Impact of crime index as depicted in the table 2 and 3 validated at both 99% and 95% acceptance regions. It can be observed that GDP per capita is more sensitive to crime index than crime level. It shows that one percent decline in crime index causes an increase in GDP per capita by a factor of 1.44 percent. It depicts that the value of elasticity is more than one percent.

Table 4. Depiction of Elasticity Analysis of GDP per capita (PPP) w.r.t Cross-country data of crime-related variables.

Variable. Description	**Value of elasticity at normal OLS w.r.t. GDP§ per capita**	**Value of elasticity at Trimmed$ OLS for outlier**	**Rejection or acceptance of Alternate**	**Relation-ship direction**	**Sensitivity**

	(PPP)°	**w.r.t. GDP§ per capita (PPP)°**	**Hypothesis (Rejection of null hypothesis)**		
Crime Level	**(-0.806)	**(-0.854)	H_a accepted	Negative impact	Low
Crime Index	**(-1.373)	**(-1.448)	H_a accepted	Negative impact	High
Ranking position in low crime rate (Safety index)	**(1.507)	**(1.570)	H_a accepted	Positive impact	High
Feeling Safe while walking in streets	**(1.600)	**(1.699)	H_a accepted	Positive impact	High
Homicide rate per year per thousand	-0.062	-0.040	H_a Rejected	-	-
Corruption perception index	**(1.525)	**(1.437)	H_a accepted	Positive impact	High
Control of Corruption	**(1.002)	**(1.172)	H_a accepted	Positive impact	Medium
Rule of law	**(1.396)	**(1.677)	H_a accepted	Positive impact	High
Accountability	**(0.719)	**(0.726)	H_a accepted	Positive impact	Low

Note: * and ** denotes rejection of Ho: B2=0 at 5% and 1% level of significance respectively.

$: Trimmed OLS for excluding outlier under condition of Mahalanobis Distance>2% of the sum of the absolute residuals.

°: *Purchasing Power Parity,* **§***: Gross Domestic Product*

Citizen's perception about general safety is represented by safety index. Safety index shows high sensitivity level and has positive impact on GDP per capita which is equivalent to 1.5 percent. It validates the theory which says that when perception about safety increases in country, economic activity and business flourish due to less transaction cost. In this case, the null hypothesis (which postulates no impact) is rejected at 99% and 95% statistical confidence interval.

Variables used for feeling safety while walking in the street is an indicator of quality of life-related to common people's daily routine life. The trading and consumer confidence require high safety in the market places. The ultimate result emerges in the shape of flourishing business, industrial production hence boosting economic activities which leads to higher GDP per capita. This indicator ranked at the top due to its highest elasticity figure which is equivalent to 1.699. This β value has been estimated through trimmed OLS excluding cases with absolute value of error greater than 2% aka Mahalanobis distance (De Maesschalck, 2000). Trimming of OLS impacted the parameter by just an increasing of 0.99. However, it depicts that all data regarding this variable is consistent with the theory. Exclusion of outliners has little effect on results.

Homicide rate per thousand of inhabitants is only variable where data doesn't confirms theory that low homicide rate will increase economic activities. Consequently there will be an increase GDP per capita. The null hypothesis is accepted that parametric value in this case is equivalent to zero. Immediate cause of this logically inconsistent result with the theory seems because of reporting of true data in less developed countries. Data quality in the less developed country is wel known phenomenon. Security and law enforcement agencies try to suppress reporting to enhance supposedly false depiction of law and order situation in their areas of jurisdiction. Second major systematic cause is attributable to phenomena specific to transitional economies. In transitional economies, as GDP per capita increases, gap of economic gains amongst the economic classes in such society tends to widen (Kuznets, 1955; Melikhova & Čížek, 2014).

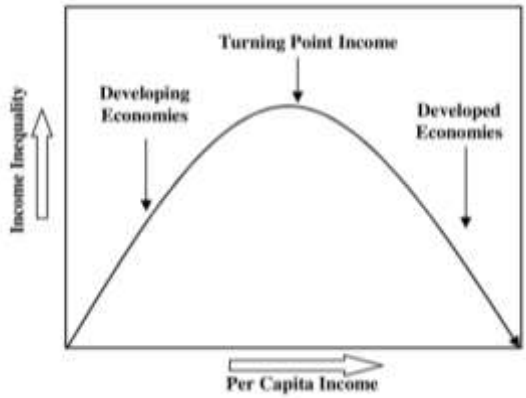


Fig. 5 Kuznet inverted U Hypothesis (Kuznets, 1955; Melikhova & Čížek, 2014)

Conflicts between have & have not's and rate of murder increase. However, at high level of GDP per capia, law enforcement agencies and society are more efficient. Hence theses countries are peaceful than countries in economic transitional. Crime reporting standards increase however the levels of crime and murder rate decrease overall. It concludes that due to reporting issue of data in less developed countries and class conflict due to imbalanced economic growth in countries with economic transition creat abnormality in the data Consequently, results of econometric studies provide inconsistent results with general wisdom.

Estimation results of corruption perception index assembled by Transparency International (TI) and Control of Corruption index from World Bank provide further confirmation of theory that less corruption perception and higher efforts to control the corruption have positive impact on economy and GDP per capita income in a country. Coefficients of Rule of law and accountability in the regression with GDP per capita are significant at 99% confidence interval, highly sensitive and confirm positive relationship with GDP per capita. Moreover, the rule of law in a country has highest impact when compared with all other repressors under study, which depicts similar results to our earlier estimates. Feeling of safety and rule of law is a direct depiction of performance and efficiency of institutions at aggregate level.

Conclusion

The empirical study based on regression analysis of cross-country data using OLS and trimmed OLS for more than 100 countries confirms that decrease in crime, upturn in feeling of safety amongst citizens, increase in rule of law, intensifying efforts to curb the corruption will impact GDP per capita income positively and significantly. Issue of under reporting of crime particularly killing in less developed countries is an institutional issue. The law enforcement agencies try to suppress the crime figures to exhibit intuitional performance in particular locality. While developed countries have higher efficiency in crime reporting. Figures of murder per thousands inhabitant do not confirm general theory in this cross country analysis. Institutional reforms are highly desirable in the less developing countries.

Since the GDP per capita is consequent of economic performance of political, economic, judicial, performance of the law enforcement and many other institutional variables, It required to rethink management perspective in the government spheres. Improvement in safety, control on corruption and low crime rate in a country attracts foreign investment, enhances tourism income, ensures security of investment and builds up consumer confidence are important parameters for intervention which can plausibly improve economic performance. These dimensions provide an economy to uplift its status from sluggishness to vitality. Consequently, a peaceful and vibrant economy has better perspective to reach from lower to higher income level and middle to higher income categories. Low crime rate also reduces cost of investment, cost of transaction and direct security-related cost. The paper concludes that governments should focus on enhancement of judicial efficiency, police reforms, education and training of society through inclusive and participative institutional reforms in the government involving all the segments of the society.

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Annexure: A.

DATA DESCRIPTION AND SOURCES

s. no	Abbreviation	Variables description	Data Units	sources
1	GDPPC_pp	GDP per capita (Purchasing Power Parity adjusted) 2015	in US $ PPP	World Bank Data 2014 www.worldbank.org
2	Crim_level	Crime Level ranking	1-100 One=Best , 100= worst	World Survey by http://www.nationmaster.com 2014
3	Crime_Indx	Crime Index ranking	1-100 One=Best , 100= worst	World Survey by https://www.numbeo.com 2014
4	Safe_Ind	Ranking position in crime	Level of crime. Based on 0-100 , 0=worst 100=best	World Survey by https://www.numbeo.com 2014
5	Feel_safe	Feeling Safe at day while walking in streets	per 100,000 inhabitants	World Survey by http://www.nationmaster.com 2014
6	Rate_murd	Homicide rate per year	Per thousand	World Survey by http://www.nationmaster.com 2014
7	CUR_PI	Corruption perception index	0= worst 10=best	*World Survey by Transparency International 2014*
8	CONT_CORR	Control of Corruption	0=worst 5=best	*Daniel Kaufmann, Natural Resource Governance Institute*

9	RUL_LAW	over all Rule of law situation in the country	0=worst 5=best	*(NRGI) and Brookings Institution Aart Kraay, World Bank Development Research Group 2014*
10	VC_ACC	Overall effectiveness of Accountability mechanism in the economy	0=worst 5=best	

Annexure: B.

Detailed Eviews output for Equation 3.

Dependent Variable: LOG(GDPPC_PP)
Method: Least Squares
Sample: 1 110
Included observations: 109

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.89880	0.492933	26.16743	0.0000
LOG(CRIM_LEVEL)	-0.805760	0.131946	-6.106722	0.0000

R-squared	0.258448	Mean dependent var	9.922937
Adjusted R-squared	0.251518	S.D. dependent var	0.896012
S.E. of regression	0.775183	Akaike info criterion	2.346743
Sum squared resid	64.29726	Schwarz criterion	2.396126
Log likelihood	-125.8975	F-statistic	37.29206

Durbin-Watson stat	2.144662	Prob(F-statistic)	0.000000

Annexure C:

Table 2

Dependent Variable: LOG(GDPPC_PP)	Method: Least Squares
Number of Observations After Adjustment	109

Variables	Coefficient	Std Err	t-stat	Prob.	Ho at .05	Ho at .01
Constant	**(12.899)	0.493	26.167	0.000	Rejected	Rejected
LOG(CRIM_LEVEL)	**(-0.806)	0.132	-6.107	0.000	Rejected	Rejected

R-squared:	0.258	DW stat :	2.145
F-stat:	37.292		

Note: * and ** denotes rejection of Ho: β_{oi} =0 at 5% and 1% level of