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How Does Quality of Governance Influence Occurrence of Crime? A Longitudinal Analysis of Asian Countries

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Abstract:

Though the theoretical relationship between governance quality and crime is clear, there is no clear understanding regarding the specific characteristics of governance quality which prevent crime. To be specific, which type of crime is affected by which aspect of the governance quality is not clear. We propose to take a set of Asian countries and analyze the effect of quality of governance on the crime rates in these countries during the period of 1984 to 2014. Quality of governance is proxied by a set of indicators which include government stability, corruption, accountability, socioeconomic conditions and law and order, internal conflict, external conflict, military in politics, investment profile, religious tensions, ethnic tensions and bureaucratic quality. The types of crime analyzed in this study include homicide, burglary, robbery and kidnapping. Some economic variables like poverty, income inequality, unemployment, GDP growth and per capita GDP are used to control for the effects of governance quality on crime. We estimate the relationship by applying fixed effect model and random effects model. We also use System Generalized Method of Moments (GMM) method to check the issues of endogeneity. The results showed that socioeconomic conditions, corruption, law and order, external conflict, investment profile and ethnic tensions are significantly related with different categories of crime such as homicides, robbery, kidnapping and burglaries. Among different economic variables, only per capita GDP and income inequality had a significant negative relationship with homicides.

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1. Introduction

The quality of governance has a theoretically negative relationship with the occurrence of crime. However, empirical evidence does not find an unambiguous relationship between these variables. Several studies have found the decline in criminal activity as a result of improvement in the quality of governance. A study done in the Malaysian context found that good governance reduced crime of all types in Malaysia except violent crimes (Habibullah, M, S and Baharom, A, H et al 2016).

Another study by Asongu, S., & Kodila-Tedika, O (2016) investigated a relationship between crime and governance against the background of conflicts in Africa and found that some quality of governance was not significantly related with decline in crime rates. This study used various measures of governance quality such as such as regulatory quality, government effectiveness, political stability, rule of law and control of corruption. Among these variables, only the control of corruption was found to be the best apparatus for fighting the crimes and conflicts.

Extant literature on the direct relationship between the governance quality and crime rates is quite sketchy. We have a number of studies which analyzed the impact of governance quality on a set of economic variables. In addition to this type of literature, we have some studies which analyzed the relationship between the economic variables and crime rates. However, not much literature exists, in our knowledge, which analyzes the effect of the governance quality on the crime rates by incorporating a set of economic variables.

Good governance plays a significant role in the poverty reduction process. A significant relationship exists between governance and income inequality. When the income inequality gap increases, the poverty levels become more extreme which in turn is likely to increase criminal activities. A study by Akram, Z and Wajida, S et al (2011) showed that poverty is significantly related with poor governance. The quality of governance also affects the crime rate through income inequality. Brush, J (2007) showed a positive relationship between income inequality and crime rates in the context of US. Similarly, Choe, J (2008) investigated a relationship between income inequality and crime rates in the US. The results suggested that there is a strong and robust effect of income inequality on burglary while robbery is also strong and robust in most cases.

Crime may afflict both the developing and developed countries alike thus defying the intuitive link between good governance and developed world. A significant proportion of the population may

be victim of different types of crimes in the developed countries. According to the UN Interregional Crime and Justice Research Institute (UNICRI) estimates, 14.8% of the population in New Zealand suffers from property crime. Around 12.7% of the population in Italy, 12.2% in the UK, 10% in U.S and 3.4% Japan become victim to property crime. Effective public institutions such as police and judiciary put a check on the criminal activities. The criminals are rational and utility maximizing individuals. They will decide whether to commit a crime by comparing the benefits and costs of committing crime and compare the expected cost of being caught red handed and punished (Becker, 1968).

The crime has a huge cost in economic terms. The loss by organized crime sums up to 16% of per capita GDP (Pinotti, P 2015). This study seeks to identify any possible role of the quality of governance because that would be helpful in guiding the policy and will make a compelling case for making the quality of governance better.

2. Literature Review

The link between the political instability, which is an important measure of governance quality, and crime is well documented in the literature. Instability in Gambia, Guinea Bissau and Senegal is found to be directly responsible for high crime rates (Alumina, E. E. 2013). Drug trafficking, money laundering, arms manufacturing and arms trafficking, human trafficking, advance fee fraud, armed robbery, oil bunkering and piracy are the major forms of organized crimes in Nigeria (Alumina, E. E. 2013).

Quality of governance affects the crime rate both directly and indirectly through the mediating role of income equality, poverty and corruption. Hassan, T (2002) finds that poor governance is a hurdle in the implementation of pro-poor policies. The author further adds that reforms in the police, judiciary and tax collection system and public administration system are a precondition for poverty alleviation. Sittha, Pornpen (2012) found that the pro-poor growth policy pursued in Thailand in the absence of good governance failed to significantly reduce poverty. Sarker, A, E and Rahman, M, H (2007) investigated a relationship between governance and poverty alleviation for Bangladesh and found that Bangladesh could not effectively address the problem of poverty because of lack of institutional collaboration, massive corruption, lack of accountability and transparency and absence of rule of law.

[Henderson, J and Hulme, D et al \(2002\)](#) explored the relationship between economic governance and poverty reduction in the Malaysian context and found that misdirected development policies, irregularities in the bureaucratic operations and flawed economic planning and implementation explained the unsuccessful drive against poverty.

The corruption and governance quality are also found to be endogenously related with each other. A study found the significant impact of corruption on the quality of governance. [Montes, G. C and Paschoal, P. C \(2016\)](#) examined the relationship between corruption and government effectiveness and found that less corrupt countries have better public service standards and greater commitment to the development agenda.

Some studies also analyzed the role of some economic variables that can potentially mediate between crime and economic outcomes. [Habibullah, M, S and Baharom, A, H \(2009\)](#) found a long run relationship between crime and economic conditions and found that murder, armed robbery, rape, assault, daylight burglary and motorcycle theft have a long run relationship with economic conditions measured by real gross national product per capita. [Draca \(2015\)](#) reviewed the issue of the relationship between crime and economic incentives. In economic model of crime that changes economic incentives that alter the participation of individual in crime activities. The economic incentive divided into legal wages in the formal labor market and economic returns to illegal activities. They conclude that economic incentive has been matter for crime rate outcomes.

[Habibullah, M, S and Baharom, A, H \(2009\)](#) gauged the relationship between crime and income inequality in Malaysia. The results suggest that there exists no cointegration between income inequality and crime in case of Malaysia. The study fails to establish any significant relationship between crime and income inequality and also there exist no causality between the variables of the study.

[Kelly \(2000\)](#) examined the relationship between crime and inequality. The empirical result showed that inequality has no effect on property crime but strong impact on violent crime. The level of property crimes will be influenced in some ways by the distribution of income and wealth. The level of crime may be higher under regressive taxation and in richer neighborhoods ([Madden and Chiu, 1998](#)).

[Buscaglia, E and Dijk, J, V \(2003\)](#) found that organized crime and corruption are the outcomes of bad governance and discriminatory economic and financial regulations and poor judicial system are the drivers of bad governance leading to corruption and crime.

[Owusu, G and Ababio, M, et al \(2016\)](#) found that there exists an association between poverty and crime in Ghana only for some specific crimes such as sexual and property crimes.

[Cooray, A, V \(2009\)](#) found that there is an evidence of interaction between government expenditures and governance. The results suggest that countries with good governance make more effective use of public expenditure. [Wilson, R \(2016\)](#) estimated a unidirectional causality between economic growth and quality of governance in China, where the direction of causality runs from the quality of governance to economic growth.

[Bannaga, A and Gangi, Y et al \(2013\)](#) inspected a relationship between good governance and foreign direct investment in Arab countries. He found that FDI is related significantly with GDP, trade openness and many governance indicators in Arab countries. [Mehlum, H and Moene, K et al \(2005\)](#) argue that poverty and crime both impede economic growth. The author used a job creation model to study the results. He suggests that job creation may have a positive or negative externalities through crime. At low level of modernization job creation by one firm generates increasing crime but in case of high level of modernization job creation by one firm reduces crime. It is because at high level of modernization, the labor has become more scarce. So, the changing sign of externality at different levels of development generates a poverty trap.

Crime and unemployment are also significantly related with each other having a positive and a significant impact on each other ([Raphael \(2001\)](#), [Carmichael \(2001\)](#), [Yang \(1994\)](#)).

[Gillani \(2009\)](#) explore the relationship between crime, unemployment, poverty and inflation in Pakistan over the period of 1975-2007. The empirical result showed that there exist long run relationship between crime, unemployment, poverty and inflation. The uni directional causality running from crime to unemployment.

3. Methodology

3.1 Data Sources

We used secondary data on governance and crime for Asian countries (Pakistan, India, Bangladesh, Sri Lanka, Indonesia, Jordan, Thailand, China, Malaysia, Philippines, and Turkey). Data on governance is collected from International Country Risk Guide (ICRG). Data on crime is taken from United Nations office on Drugs and Crime (UNODC) for all the countries except Pakistan. Data of crime for Pakistan is collected from Pakistan Statistical year book available at Pakistan Bureau of Statistics. The data of other variables i.e. poverty, unemployment, GDP growth and Per capita GDP is taken from world development indicators (WDI) available at World Bank's data base. Data on income inequality as proxied by Gini coefficient is taken from UNU-WIDER.

3.2 Time Duration

The present study covers a time span from 1984 to 2014.

3.3 Model Specification

Model has been developed based on reviewed literature. The idea to pick this model for our research came from the study by [Habibullah, M, S and Baharom, A, H et al \(2016\)](#). We have augmented the model by adding some control variables like poverty, unemployment, income inequality, per capita GDP and GDP growth rate. We will use following model for estimating the relationship between crime and quality of governance.

$$C = f(gov)$$

$$C = f(gov, unemp, pov, gini, gdpgr, gdppc)$$

Below is the econometric form of the model.

$$C_{it} = \beta_1 + \beta_2 gov_{it} + \mu_{it}$$

$$C_{it} = \beta_1 + \beta_2 gov_{it} + \beta_3 unemp_{it} + \beta_4 pov_{it} + \beta_5 gini_{it} + \beta_6 gdpgr_{it} + \beta_7 gdppc_{it} + \mu_{it}$$

Where

C = Different Recorded Crimes

Gov = Governance proxied by different indicators of ICRG index

Unemp = Unemployment, total (% of total labor force)

Pov = Poverty gap at \$1.90 a day

Gini = Gini coefficient as a measure of income inequality

GDPgr = GDP growth (annual %)

GDPpc = GDP per capita (current US\$)

μ = Error term of the model

i = Number of cross sections

t = Time duration

3.4 Fixed Effect Model

In cross sectional studies, we assume that slope coefficients are constant. For this purpose, consider the following model

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \quad (1)$$

Here a subscript i on the intercept term shows that all the countries have different intercepts. The differences may be due to special feature of each country. The above written model 1 in literature is termed as fixed effect regression model. The term fixed effect is used because intercept may differ across the countries, each countries intercept does not vary over time i.e. it is time invariant. If we write the intercept as β_{1it} it will recommend that the intercept of each country is time variant. Fixed effect models capture all the effects which are specific to a particular individual and also do not vary over time.

3.5 Random Effect Model

Consider the following model

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \quad (2)$$

As in model 2 instead of treating β_{1it} as fixed we assume that it is a random variable with a mean value of β_1 . Intercept for an individual country can be written as

$$\beta_{1i} = \beta_1 + \varepsilon_i \quad i = 1, 2, \dots, N \quad (3)$$

Where ε_i is a random error term with a mean value of zero and variance of σ_ε^2 .

Substituting 3 into 2 we may get

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_i + \mu_{it}$$

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \omega_{it}$$

Where $\omega_{it} = \varepsilon_i + \mu_{it}$

The merged error term ω_{it} consists of two components i.e. ε_i which is the cross-sectional error term and μ_{it} which is the combined time series and cross sectional error term. The above model can be called as random effect model.

The main difference between fixed effect model and the random effect model is that the former assumes that each country differs in its intercept term while the latter assumes that each country differs in its error term. When using a balanced panel data for analysis one might expect that the results of fixed effect model will be best. In other cases, when sample contains the limited observations then random effect model might be more suitable. The random effect model assumes

exogeneity of all the regressors and the random individual effects. The fixed effect model allows for endogeneity of all the regressors and the individual effects.

3.6 Generalized Method of Moments (GMM)

As in panel data we suffer from endogeneity biases, so to cater these issues of endogeneity we apply the system Generalized Methods of Moments (GMM) developed by [Blundell, R., & Bond, S. \(1998\)](#). We consider an autoregressive panel data model of the following form.

$$y_{it} = \alpha y_{i,t-1} + \beta_1' x_{it} + \beta_2' x_{i,t-1} + n_i + v_{it}$$

For $i = 1, \dots, N$ and $t = 2, \dots, T$ and $\mu_{it} = n_i + v_{it}$ is the usual fixed effects decomposition of the error term.

$$E(y_{i,t-s} \Delta v_{it}) = 0 \text{ for } t = 3, \dots, T \text{ and } s \geq 2 \quad (4)$$

Where
$$\Delta v_{it} = v_{it} - v_{i,t-1}$$

These depend only on the assumed absence of serial correlation in the time varying disturbances.

So the moment restriction in the above equation can be expressed as

$$E(Z_i' \mu_i^-) = 0$$

Z_i' is the $(T - 2) * m$ matrix given by

$$Z_i = \begin{bmatrix} y1 & 0 & 0 & \dots & 0 & \dots & 0 \\ 0 & y1 & y2 & \dots & 0 & \dots & 0 \\ \cdot & \cdot & \cdot & \dots & \cdot & \dots & \cdot \\ 0 & 0 & 0 & \dots & y1 & \dots & yT - 2 \end{bmatrix}$$

The generalized method of moments estimator based on these moment conditions minimizes the quadratic distance $(\mu'Z_NZ'\mu)$ for some matrix A_N , where Z' is the $m \times N(T - 2)$ matrix $(Z_1', Z_2', \dots, Z_N')$ and μ' is the $N(T - 2)$ vector $(u_1', u_2', \dots, u_N')$. This gives the GMM estimator for α as

$$\hat{\alpha}_{dif} = (\bar{y}'_{-1} Z A_N Z' \bar{y}_{-1})^{-1} \bar{y}'_{-1} Z A_N Z' \bar{y}$$

Alternative choices for the weights A_N give rise to a set of GMM estimators based on the moment conditions in eq. (1) all of which are consistent for large N and finite T . In general, the optimal weights are given by

$$A_N = \left(N^{-1} \sum_{i=1}^N Z_i' \hat{u}_i \hat{u}_i' Z_i \right)^{-1}$$

This is acknowledged as two step system GMM estimator.

4. Results and Discussion

To gauge out the relationship between crime and quality of governance we used 4 different forms of crime such as homicide, robbery, kidnapping and burglary. The results obtained from all of these four will be discussed one after another. Table 1 illustrates homicide, table 2 shows robbery, table 3 demonstrates kidnapping while table 4 summarizes the results of burglary as following.

Table 1

Independent Variables	Dependent Variable (Homicide)	Dependent Variable (Homicide)	Dependent Variable (Homicide)
	(1)	(2)	(3)
	Fixed Effect	Random Effect	System GMM
GS	44.35 (0.66)	81.20 (1.21)	-1386.5** (-3.07)
SC	-199.3* (-2.25)	-232.7*** (-3.40)	-2632.9** (-2.86)

COR	35.81 (0.20)	-32.01 (-0.22)	-11607.3** (-3.12)
LAW	67.70 (0.34)	288.4 (1.75)	15243.4** (3.14)
DA	-345.8* (-2.59)	-151.9 (-1.43)	1847.6* (2.12)
BQ	342.9 (1.50)	511.5** (2.72)	
IC	155.5 (1.74)	-6.136 (-0.08)	-479.9 (-1.74)
EC	418.8*** (4.82)	391.0*** (5.56)	-1540.7* (-2.14)
MP	248.6 (1.89)	62.29 (0.63)	
IP	-313.7*** (-3.82)	-328.3*** (-4.05)	3962.7** (3.10)
RT	200.8 (1.35)	-10.08 (-0.10)	2941.6 (1.93)
ET	381.9** (2.70)	179.4 (1.69)	-12440.5** (-3.13)
L.homicide			0.442** (3.10)
CONSTANT	5039.9*** (4.96)	6759.2*** (9.00)	
R^2	0.2154	0.2743	
Wald Chi-square			1427.29***
Arellano–Bond AR (2) [p-value]			-2.6858 [0.1272]
Sargan's stat. [p-value]			4.75e-22 [1.0000]

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

To establish the above mentioned relationship we employed four different techniques as like, fixed effect and random effect model. These estimation techniques are not good enough to deal with endogeneity biases so we employed system GMM developed by [Blundell, R., & Bond, S. \(1998\)](#).

Starting with fixed effect model we see homicides and socioeconomic conditions are having a negative and a significant relationship with each other which confirms that a decline in the socioeconomic conditions will have a hike in the homicide rates. Democratic accountability and homicides are also having a negative and a significant relationship with each other. It implies that when people are not held accountable it will have hiked homicide rates. Increase in external conflict will also increase homicides as they both are positively and significantly related with each other which may be very lethal for any economy. Investment profile is having a negative and significant relationship with homicide. These findings are supported by [Blanco, L., Dadzie, C. et al \(2014\)](#). Ethnic tensions give rise to many criminal activities which may result in many extreme upshots. Considering the positive and significant relationship between homicides and ethnic tensions which may pin point towards an unsafe society morale. The value of R^2 which is 0.2154 indicates that homicide is explained 21.54% by the independent variables. Furthermore, government stability, corruption, law and order, bureaucratic quality, internal conflict, military in politics and religious tensions are showing insignificant relationship with homicides. These variables could not be much effective in explaining the crime governance nexus.

Moving towards the results of random effect model we see that socioeconomic conditions are negatively and significantly related with homicide. We see that Increasing bureaucratic quality will have an increased homicides rates because it is having a positive and a significant relationship with each other which shows that importance of bureaucratic quality disappears with an increase in the homicide rates. External conflict is having a positive and significant impact on homicides. Investment profile is significantly and negatively related with homicides. 0.2743 R^2 implies that 27.43 variation of homicides is explained by the independent variables. While the other variables like government stability, corruption, law and order, democratic accountability, internal conflict, military in politics, religious tensions and ethnic tensions are having the insignificant impact on

homicides. In other words, it can be said that these variables do not play an important role in the relationship between crime and governance.

Results of system GMM suggested that government stability, socioeconomic conditions and corruption are having a negative and significant relationship with crime. A decrease in government stability and socioeconomic conditions will push upwards the number of homicides in these countries. Law and order and democratic accountability are having positive and significant relationship with homicide. It means that when both law and order and democratic accountability are effective enough it decreases the level of homicides. External conflict and ethnic tensions are having a negative and significant relationship with homicide. While investment profile is positively and significantly related homicide. But the findings of [Blanco, L., Dadzie, C. et al \(2014\)](#) states a negative relationship between these two variables. Religious tensions and internal conflict remained insignificant showing no relationship with homicide. As in GMM the further diagnostic testing reveals that there is no issue of endogeneity and 2nd order autocorrelation because the p value of Sargan's statistics and Arellano-Bond is statistically insignificant.

Table 2

Independent Variables	Dependent Variable (Robbery)	Dependent Variable (Robbery)	Dependent Variable (Robbery)
	(1)	(2)	(3)
	Fixed Effect	Random Effect	System GMM
GS	1255.9*** (3.44)	1366.2*** (3.81)	26020.6*** (3.37)
SC	-1832.4*** (-3.83)	-1226.3*** (-3.34)	44269.5** (2.87)
COR	3586.9*** (3.78)	2083.1** (2.68)	27963.8* (2.55)
LAW	3493.7** (3.24)	3317.0*** (3.75)	1404.0 (0.32)
DA	-878.1 (-1.21)	114.3 (0.20)	-23139.5* (-2.31)
BQ	-1411.3 (-1.14)	823.0 (0.82)	

IC	-1203.6* (-2.49)	-1395.1*** (-3.34)	-33849.8*** (-3.30)
EC	1252.0** (2.67)	1600.8*** (4.25)	10980.6 (1.77)
MP	744.0 (1.05)	-373.4 (-0.71)	
IP	-1629.4*** (-3.67)	-2008.8*** (-4.63)	-24615.5*** (-3.48)
RT	339.0 (0.42)	-391.9 (-0.75)	-49421.1* (-2.47)
ET	2909.7*** (3.80)	1895.2*** (3.33)	21766.5** (3.02)
L.robbery			-0.107 (-0.83)
CONSTANT	-270.4 (-0.05)	770.6 (0.19)	
R^2	0.2910	0.3357	
Wald Chi-square			683.74***
Arellano–Bond AR (2) [p-value]			-1.1677 [0.2429]
Sargan's stat. [p-value]			4.24e-22 [1.0000]

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results of table 2 shows that robbery is having a positive and significant relationship with government stability in all the three models fixed effect, random effect and system GMM. The results suggest that an increase in the government stability will reduce the level of robberies. Socioeconomic conditions are significant and negatively related with robberies in fixed effect and random effect model but positively in GMM. The results of fixed and random effect are consistent and in line with the assumed results that a decline in socioeconomic conditions will boost the level of robberies but they are opposite in case of system GMM. Corruption is having a positive and

significant relationship with robbery in all the three models like fixed effect, random effect and GMM. It implies that the level of corruption can let the robbers give a free hand so that they could make robberies and when caught they could get their self's free by giving some amount of money which will be termed as corruption. Democratic accountability is negatively and significantly related with robberies. It indicates that when accountability process is diminishing it will have an increase in the robberies because people will not be held accountable for their bad activities. Internal conflict is something very dangerous because it is the ongoing issue inside the country which may prove to be more evil. As we can see that internal conflict is significantly negatively related with robbery in fixed effect, random effect and GMM. A decline in internal conflict will also decrease the robberies which in other words can be said as decrease in internal conflict will also reduce the crime. According to Sanín, F. G. (2006), the author says that in Colombia internal conflict is highly criminalized and have a low intensity. The author further adds that organized crime and terrorism have linkages in Colombian scenario. Investment profile is having a negative and significant impact on robberies in all the three models. Decline in investment will lead the people in the state of unemployment which will in turn boost robberies. On the other hand, external conflict is positively significantly related with robberies in fixed effect and random effect model. It directs that external hands involved will also influence the crime rates directly. Religious tensions have a negative and significant impact on robberies in case of GMM. A decline in religious tensions will also bring down the robbery levels. Ethnic tensions have a positive and significant impact on robbery in all the three models i.e. fixed effect, random effect and GMM. The findings suggest that ethnic tensions will boost up the level of robberies because people who are ethnically targeted will be the most victimized out of it.

The value of R^2 for fixed effect model is 0.2910 and for random effect is 0.3357 which means that 29.10% variation of robbery is explained by the explanatory variables in fixed effect and 33.57% variation of robbery is explained by the independent variables in random effect model. The diagnostic testing in GMM suggests that both the p values of Sargan statistics and Arellano-Bond are statistically insignificant which means that there is no issue of endogeneity and 2nd order autocorrelation. Furthermore, the remaining insignificant variables suggest that they have no role in explaining the crime governance nexus.

Table 3

Independent Variables	Dependent Variable	Dependent Variable	Dependent Variable
	(Kidnapping)	(Kidnapping)	(Kidnapping)
	(1)	(2)	(3)
	Fixed Effect	Random Effect	System GMM
GS	-63.12 (-1.06)	-48.53 (-0.85)	497.7 (1.10)
SC	-121.1 (-1.56)	-192.9*** (-3.29)	10073.9** (3.12)
COR	-271.4 (-1.76)	-171.0 (-1.38)	-7327.4** (-3.18)
LAW	546.2** (3.12)	341.1* (2.42)	7533.4** (3.06)
DA	89.69 (0.76)	-12.61 (-0.14)	-3142.5* (-2.57)
BQ	510.5* (2.54)	331.3* (2.06)	
IC	-30.78 (-0.39)	10.51 (0.16)	-7201.9** (-3.28)
EC	70.84 (0.93)	91.30 (1.52)	3180.5 (1.76)
MP	-38.94 (-0.34)	-144.8 (-1.72)	654.1 (0.22)
IP	389.5*** (5.39)	402.1*** (5.80)	-4819.4** (-2.87)
RT	-166.5 (-1.27)	-94.76 (-1.14)	3378.3** (2.69)
ET	-110.4 (-0.89)	-30.65 (-0.34)	
L.kidnapping			0.192 (0.66)

CONSTANT	3589.6*** (4.01)	4286.7*** (6.67)	
R^2	0.2210	0.2509	
Wald Chi-square			7429.25***
Arellano–Bond AR (2) [p-value]			-1.3573 [0.1747]
Sargan’s stat. [p-value]			9.60e-21 [1.0000]

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results displayed in table 3 indicates that kidnapping is having a significant and negative impact on socioeconomic conditions while positively related with kidnapping in random effect model and system GMM respectively. The findings in random effect model confirm that a decline in socioeconomic conditions will boost up the level of kidnapping because people will use it in the presence of bad socioeconomic conditions as a method for their living. On the other hand, socioeconomic conditions when get good enough the kidnapping level instead of decreasing also increases. For this we can see the developed counties like England, Germany and Canada where the total number of kidnappings in 2015 was 2194, 4789 and 3555 respectively. Corruption is having a negative and significant impact on kidnapping in GMM. It implies that a reduction in corruption will also reduce down the kidnappings because people will be punished as the institutions and the personnel running those institutions will be more honest in completing their work. Law and order is having a positive and significant relationship with kidnapping in the three models i.e. fixed effect, random effect and system GMM. The findings shed light on the quality of law and order that increased law and order will bring down the kidnapping levels. Bureaucratic quality is also positively and significantly related with kidnapping in fixed and random effect model. These findings are in line with the findings of law and order that good quality of bureaucrats helps significantly in bringing down the kidnapping levels.

A decline in the democratic accountability will also have an upward trend in the kidnappings as because the results of GMM model suggests a negative and significant relationship with kidnapping. Internal conflict is having a negative and significant impact on kidnapping showed by GMM model. A decrease in internal conflict will bring about a reduction in kidnapping also. Investment is having a positive and a significant relationship with kidnapping in all the three models i.e. fixed effect, random effect and system GMM. The results indicate that due to

investment opportunities more output is produced which generates further employment that causes a cut in the criminal activities like kidnapping. Religious tensions show a positive and significant impact on kidnapping.

The value of R^2 for fixed effect and random effect is 0.2210 and 0.2509 respectively which shows that a 22.10% variation in kidnapping is explained by the independent variables in fixed effect while 25.09% variation in kidnapping is expressed by the explanatory variables in random effect model. Further moving towards the results of system GMM, the diagnostic testing suggest that there is no issue of 2nd order serial correlation and endogeneity because the value of Arellano-Bond and Sargan statistics is insignificant i.e. greater than 0.10.

Table 4

Independent Variables	Dependent Variable (Burglary) (1) Fixed Effect	Dependent Variable (Burglary) (2) Random Effect	Dependent Variable (Burglary) (3) System GMM
GS	-3.097*** (-4.47)	-3.630*** (-5.12)	-242.9** (-3.17)
SC	3.135*** (3.45)	3.175*** (4.38)	
COR	-0.330 (-0.18)	1.054 (0.69)	240.7** (3.28)
LAW	-5.429** (-2.66)	-6.410*** (-3.67)	93.68** (2.98)
DA	3.323* (2.42)	0.758 (0.68)	-50.22* (-2.20)
BQ	-2.547 (-1.09)	-5.669** (-2.84)	
IC	-0.0539 (-0.06)	1.772* (2.15)	252.7** (3.25)
EC	-4.484*** (-5.03)	-4.843*** (-6.50)	-437.9** (-3.18)
MP	-3.403* (-2.20)	-0.423 (-0.15)	-202.8** (-2.20)

	(-2.52)	(-0.41)	(-3.16)
IP	3.357*** (3.98)	3.735*** (4.35)	-107.1** (-3.17)
RT	-1.543 (-1.01)	0.867 (0.84)	-905.1** (-3.24)
ET	-6.180*** (-4.25)	-3.558** (-3.16)	1089.4** (3.16)
L.burglary			-0.374 (-0.98)
CONSTANT	136.9*** (13.12)	119.2*** (14.99)	
R^2	0.3820	0.4622	
Wald Chi-square			1990.60***
Arellano–Bond AR (2) [p-value]			-.43089 [0.6665]
Sargan's stat. [p-value]			3.91e-19 [1.0000]

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results displayed in table 4 showed that government stability is having a negative and significant relationship with burglary in all the three models i.e. fixed effect, random effect and system GMM. The findings suggest that a decrease in the government stability will cause a boost up in the burglaries. Socioeconomic conditions and burglary is having a positive and significant impact with each other in fixed effect and random effect model. The results say that an increase in the socioeconomic conditions will lower the burglaries but the results are opposite in one direction. In the second direction we see that countries like Canada, Germany and England where the total recorded burglaries in 2015 were 158935, 463929 and 411434 respectively (UNODC) respectively. Corruption is positively and significantly related with burglary in GMM model. The findings suggest that the burglars can get them self's free when caught, by giving some amount of money to the concerned personnel. Law and order is having a significant and negative relationship with burglary in fixed and random effect model but in GMM it has positive association with burglary. The findings of fixed and random effect model indicate that decrease in the law and order

will create a hike in the burglaries while in case of GMM an increase in the law and order will bring down the burglary rates. Bureaucratic quality is negatively and significantly related with burglary in random effect model. It implies that when bureaucratic quality falls down an increase is seen in the burglary rates. These findings are in line with the findings of law and order in case of random effect model.

Democratic accountability is significant and has a positive relationship with burglary in fixed effect model while show negative impact on burglary in case of GMM. The findings of fixed model indicate that an increase in the accountability process will bring down the level of burglaries while on the other hand GMM model says a decrease in the accountability will boost the level of burglaries because people will not be punished for their evil activities. Internal conflict holds a positive and significant association with burglary in random effect model and GMM model. The findings shed light on the things that increase in internal conflicts will cause a hike in the burglaries because miss management inside the country has an impact on criminal activities. External conflict is negatively and significantly related burglaries in all three models. It implies that a decrease in external conflict will also bring a downfall in the burglaries because external hands and external factors get failed in the conspiracy process. When military comes in politics the level of crime and criminal activities are reduced because of the good enough security of the military and by the efficient policies and their search operations. Military in politics is negatively related and has a significant impact on burglary in case of fixed effect model and GMM model.

Investment profile has a significant and a positive association with burglary in case of fixed and random effect model but exhibit a negative relationship with burglary in case of GMM. The findings of fixed effect and random effect model indicate that when investment increases it brings down the crime rates because the output level increases and more employment is generated. While GMM indicates that a decline in investment will cause an increase in the burglaries because it may not further create employment for the people. Ethnic tensions show a significant and a negative association with burglaries in case of fixed effect model and random effect while have positive relationship in case of GMM. The results of fixed effect and random effect model imply that decrease in the ethnic tensions will bring a decline in burglaries because when people will not have ethnic issues with each other than the crime rate will be reduced. On the other hand, GMM model suggests that an increase in the ethnic tensions will also boost up the level of burglaries because people will be targeted ethnically and they will get more victimized.

The value of R^2 for fixed effect and random effect model is 0.3820 and 0.4622 respectively. It indicates that 38.20% variation in burglaries is caused by the explanatory variables in case of fixed effect model while 46.22% variation in burglaries is explained by independent variables in random effect model. The diagnostic testing in GMM suggests that both the p values of Sargan statistics and Arellano-Bond are statistically insignificant which means that there is no issue of endogeneity and 2nd order autocorrelation. Furthermore, the remaining insignificant variables suggest that they have no role in explaining the crime governance nexus.

To establish the association between crime and governance by incorporating some economic variables like unemployment, poverty, income inequality as proxied by Gini, per capita GDP and GDP growth rate. We used the same different forms of crime such as homicide, robbery, kidnapping and burglary as used earlier above. Table 5 illustrates homicide, table 6 shows robbery, table 7 demonstrates kidnapping while table 8 summarizes the results of burglary as following.

Table 5

Independent Variables	Dependent Variable (Homicide)	Dependent Variable (Homicide)	Dependent Variable (Homicide)
	(1)	(2)	(3)
	Fixed Effect	Random Effect	System GMM
GS	48.32 (0.37)	-86.95 (-0.76)	-1580.1 (-0.56)
SC	518.5* (2.45)	139.0 (0.98)	
COR	560.7 (1.56)	298.2 (0.98)	-5527.9 (-1.79)
LAW	486.7 (1.28)	264.3 (0.96)	
DA	-48.39 (-0.23)	-15.25 (-0.08)	
BQ	-547.4 (-1.60)	-709.3 (-1.89)	

IC	-123.2 (-0.69)	8.180 (0.05)	
EC	433.4 (1.75)	-41.26 (-0.21)	
MP	-944.1** (-2.91)	-264.7 (-1.20)	
IP	309.6 (1.58)	-48.51 (-0.28)	-753.1 (-0.21)
RT	-304.3 (-1.01)	181.4 (0.95)	
ET	267.3 (1.49)	131.6 (0.81)	1061.0 (0.81)
POVERTY	20.15 (0.90)	-15.97 (-1.67)	-142.2 (-1.70)
UNEMP	36.05 (0.31)	68.12 (1.30)	-1338.0 (-0.89)
GINI	-22.67 (-0.31)	112.5** (2.68)	637.7 (1.10)
GDPGR	34.47 (0.89)	32.34 (0.81)	312.7 (0.49)
GDPPC	-0.688*** (-3.69)	-0.454*** (-3.40)	0.620 (0.86)
L.homicide			2.080 (1.35)
CONSTANT	4419.1 (0.95)	7188.0*** (3.41)	
<i>R</i> ²	0.2091	0.5897	
<i>Wald Chi-square</i>			5543.79***
<i>Arellano–Bond AR (2)</i>			.08164 [0.9349]
<i>[p-value]</i>			
<i>Sargan’s stat.</i>			1.11e-18 [1.0000]

[p-value]

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results displayed in table 5 shows that socioeconomic conditions are having a significant and a positive impact on homicides in case of fixed effect model. It implies that an increase in socioeconomic conditions will also increase the homicide rates. If we consider the case of developed economies like USA, Russia and France where socioeconomic conditions are very good enough but still they have an increase in the homicide rates. The total number of registered homicides in USA, Russia and France in 2015 are 15696, 16232 and 1017 (UNODC) respectively. Military in politics is significantly and negatively related with homicides in case of fixed effect model. The results suggest that when military is involved in politics there is a decline in the homicide rates because of tough punishments given by the army. Gini is having a positive and significant association with homicides in the random effect model. It indicates that when the income inequality gap increases people tend towards criminal activities as like homicides because they find it a better job and killing the people. Per capita GDP is having a negative and significant impact on homicide in fixed effect model and random effect model. The findings indicate that when per capita GDP falls down the level of homicides increases as these results are in line with the assumed results. The remaining economic variables are insignificant which means that they have no role in explaining the nexus between crime and governance.

The value of R^2 for fixed effect model is 0.2091 and for random effect model is 0.5897. It means that 20.91% variation in homicides is explained by the independent variables in fixed effect model while a 58.97% variation in homicides is explained by the independent variables in the random effect model. Further moving towards the results of system GMM, the diagnostic testing suggest that there is no issue of 2nd order serial correlation and endogeneity because the value of Arellano-Bond and Sargan statistics is insignificant i.e. greater than 0.10.

Table 6

Independent Variables	Dependent Variable	Dependent Variable	Dependent Variable
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	(Robbery)	(Robbery)	(Robbery)
	(1)	(2)	(3)
	Fixed Effect	Random Effect	System GMM
GS	-893.5 (-0.94)	367.7 (0.50)	-4489.2 (-1.51)
SC	-5258.8** (-3.45)	-2450.3** (-2.69)	
COR	6554.2* (2.53)	5527.0** (2.82)	
LAW	3207.8 (1.17)	3230.4 (1.81)	
DA	1353.2 (0.88)	1224.7 (1.02)	
BQ	-4625.8 (-1.87)	-4487.3 (-1.86)	
IC	-2049.8 (-1.59)	-2697.8* (-2.33)	
EC	-462.6 (-0.26)	515.7 (0.40)	
MP	4828.0* (2.06)	1619.2 (1.14)	
IP	-1641.0 (-1.16)	-1915.6 (-1.73)	-10297.0 (-1.64)
RT	-1068.2 (-0.49)	-1381.4 (-1.13)	5928.9* (2.03)
ET	3872.8** (2.99)	4646.8*** (4.42)	17786.6 (1.65)
POVERTY	158.0 (0.98)	-31.26 (-0.51)	-63.58 (-0.49)
UNEMP	37.90 (0.05)	-856.8* (-2.53)	5077.6 (1.11)
GINI	-5.482	159.3	442.0

	(-0.01)	(0.59)	(0.45)
GDPGR	24.01 (0.09)	-207.9 (-0.80)	-1176.9 (-1.15)
GDPPC	1.691 (1.26)	0.276 (0.32)	7.991 (1.43)
L.robbery			-0.684 (-0.76)
CONSTANT	33411.8 (1.00)	26066.0 (1.92)	
R^2	0.2941	0.6079	
<i>Wald Chi-square</i>			5215.17***
<i>Arellano–Bond AR (2)</i>			-1.3783 [0.1681]
<i>[p-value]</i>			
<i>Sargan's stat.</i>			3.60e-19 [1.0000]
<i>[p-value]</i>			

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results displayed in table 6 showed that socioeconomic conditions are having a negative and significant association with robberies in the case of fixed effect and random effect model. It indicates that a decline in the socioeconomic conditions will boost up the level of robberies. Corruption is having a positive and significant impact on robberies both in fixed effect and random effect model. It implies that when the level of corruption will be increased it will also have a hike in the robberies. Internal conflict is negatively and significantly related with robberies in case of random effect model. The results show when internal conflict in the country are reduced it will have a reduced rate in the number of robberies because internal issues afflict the country very much. Ethnic tensions show a positive and a significant impact on robberies in fixed effect model and random effect model. The findings indicate that people who are ethnically targeted will be the more victimized out of this. These results are in line with the earlier results of robbery presented in table 2. Unemployment is having a significant and negative relationship with robbery in case of random effect model. The findings suggest that decrease in the unemployment will also cause

upsurge in robberies which is an unambiguous relationship. The remaining economic variables does not help in explaining the crime governance nexus because they turned out to be insignificant.

The value of R^2 for fixed effect and random effect models are 0.2941 and 0.6079 respectively. It means that 29.41% variation in robbery is explained by the independent variables in fixed effect model while 60.79% variation in robbery is explained by the independent variables in random effect model. The diagnostic testing of system GMM suggests that there is no issue of 2nd order autocorrelation and endogeneity because the p values of both Arellano-Bond and Sargan statistics is statistically insignificant i.e. greater than 0.10.

Table 7

Independent Variables	Dependent Variable (Kidnapping) (1) Fixed Effect	Dependent Variable (Kidnapping) (2) Random Effect	Dependent Variable (Kidnapping) (3) System GMM
GS	50.23 (0.33)	-55.95 (-0.42)	
SC	-323.8 (-1.32)	-386.6* (-2.33)	
COR	504.6 (1.22)	435.6 (1.22)	
LAW	-478.6 (-1.09)	179.3 (0.55)	
DA	-224.3 (-0.91)	56.93 (0.26)	-11207.2 (-1.24)
BQ	196.5 (0.50)	209.4 (0.48)	
IC	-58.29 (-0.28)	-284.9 (-1.35)	
EC	-256.7 (-0.90)	198.9 (0.85)	14262.8 (1.32)

MP	397.0 (1.06)	-66.46 (-0.26)	
IP	-275.1 (-1.22)	284.2 (1.41)	38094.7 (1.35)
RT	274.1 (0.78)	-534.5* (-2.40)	
ET	244.1 (1.18)	276.0 (1.44)	3688.6 (1.01)
POVERTY	-73.67** (-2.85)	-1.259 (-0.11)	836.6 (1.27)
UNEMP	-311.0* (-2.32)	-166.4** (-2.70)	-1295.1 (-0.47)
GINI	-97.90 (-1.14)	-78.52 (-1.60)	-9357.6 (-1.34)
GDPGR	4.164 (0.09)	20.01 (0.43)	-887.4 (-1.05)
GDPPC	0.473* (2.20)	0.515*** (3.30)	-2.370 (-1.27)
L.kidnapping			-2.265 (-1.27)
CONSTANT	19201.2*** (3.59)	10145.3*** (4.12)	
R^2	0.1659	0.5575	
<i>Wald Chi-square</i>			4147.09***
<i>Arellano–Bond AR (2)</i>			-0.03075 [0.9755]
<i>[p-value]</i>			
<i>Sargan's stat.</i>			7.71e-16 [1.0000]
<i>[p-value]</i>			

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7 shows the results where we can see that socioeconomic conditions have a significant and negative relationship kidnapping. The findings indicate that a decline in the socioeconomic

conditions will boost up the level of kidnappings. Religious tensions and kidnapping have a significant and negative relationship in the case of random effect model. A decline in the religious tensions will reduce the kidnapping levels also. Poverty and kidnaping is showing a significant and negative association with each other in fixed effect model. It indicates that when the level of poverty is decreased kidnappings are still having an increasing rate because the people who get themselves out of poverty traps they are still in the habit of committing crime. Unemployment also shows a significant and negative relationship with kidnapping in the case of fixed effect and random effect model. These findings are in line with the above findings of unemployment as mentioned in table 6. GDP per capita have a positive and significant impact on robberies in fixed effect and random effect model. The findings imply that an increase in the GDP per capita will cause an increase in the kidnapping levels. The rest of the economic and other variables does not explain the association between crime governance nexus because these turned out to be insignificant.

The value of R^2 for fixed effect and random effect models are 0.1659 and 0.5575 respectively. It means that 16.59% variation in kidnapping is explained by the independent variables in fixed effect model while 55.75% variation in kidnapping is explained by the independent variables in random effect model. The diagnostic testing of system GMM suggests that there is no issue of 2nd order autocorrelation and endogeneity because the p values of both Arellano-Bond and Sargan statistics is statistically insignificant i.e. greater than 0.10.

Table 8

Independent Variables	Dependent Variable (Burglary) (1) Fixed Effect	Dependent Variable (Burglary) (2) Random Effect	Dependent Variable (Burglary) (3) System GMM
GS	-2.284 (-1.39)	-1.951 (-1.38)	
SC	-1.200 (-0.45)	1.481 (0.85)	
COR	-7.622 (-1.70)	-0.643 (-0.17)	

LAW	-9.200 (-1.93)	-6.689* (-1.97)	
DA	1.920 (0.72)	-0.530 (-0.23)	40.45 (1.20)
BQ	4.753 (1.11)	4.754 (1.03)	
IC	2.585 (1.16)	1.514 (0.68)	
EC	-7.530* (-2.43)	-2.817 (-1.15)	-89.11 (-1.69)
MP	0.956 (0.24)	0.773 (0.28)	
IP	-0.804 (-0.33)	3.383 (1.60)	-195.6 (-1.14)
RT	7.777* (2.06)	1.022 (0.44)	
ET	-6.128** (-2.73)	-4.285* (-2.13)	4.925 (0.54)
POVERTY	-0.433 (-1.55)	0.116 (0.99)	-8.682 (-0.79)
UNEMP	-0.135 (-0.09)	-0.196 (-0.30)	-5.010 (-0.30)
GINI	0.486 (0.52)	-0.641 (-1.24)	58.69 (1.27)
GDPGR	-0.0779 (-0.16)	0.246 (0.50)	-1.977 (-0.70)
GDPPC	0.00261 (1.12)	0.00246 (1.50)	-0.00468 (-0.12)
L.burglary			3.156 (0.72)

CONSTANT	156.5* (2.70)	97.19*** (3.75)	
R^2	0.2863	0.5788	
<i>Wald Chi-square</i>			5433.22***
<i>Sargan's stat.</i> <i>[p-value]</i>			3.12e-15 [1.0000]

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8 shows the results of burglary. We can see that law and order is having a negative and significant impact on burglaries in case of random effect model. The findings indicate that a decrease in the law and order will push up the level of burglaries. These findings are in line with the earlier findings of random effect in table 4. External conflict shows a significant and negative association with burglaries in fixed effect model. It implies that a decrease in external conflict reduces the level of burglaries. These results are also in line with the earlier results of fixed effect model in table 4. Ethnic tensions show a negative and significant impact on burglaries in fixed and random effect model. The findings states that when ethnic tensions are reduced it also reduces the level of crime such as burglaries. The remaining economic and other variables fails to establish any relationship between crime and governance owing to be insignificant.

The value of R^2 for fixed effect and random effect models are 0.2863 and 0.5788 respectively. It means that 28.63% variation in burglary is explained by the independent variables in fixed effect model while 57.88% variation in burglary is explained by the independent variables in random effect model. The further diagnostic testing in GMM suggests that there is no issue of endogeneity as because the p value of Sargan statistics is insignificant i.e. greater than 0.10.

5. Conclusion and Policy Recommendation

The present study focuses on the nexus between crime and quality of governance in the context of 11 Asian countries, viz., Pakistan, India, Bangladesh, Sri Lanka, Indonesia, Jordan, Thailand, China, Malaysia, Philippines and Turkey for the time span of 1984 to 2014. We analyzed the relationship between crime and governance to see how the quality of governance affects incidence of crime and also analyzed what role certain economic variables play in combating the crime. Economic variables like unemployment, poverty, income inequality, per capita GPD and GDP growth rate have been used. Fixed effect and random effect model are applied to check the

relationship between the desired variables. We also applied system GMM to account for endogeneity problem.

The findings suggest that different indicators of governance are significantly related with different categories of crime such as homicides, robbery, kidnapping and burglaries. Almost all four types of crime are affected equally by the governance indicators. Socioeconomic conditions, corruption, law and order, external conflict, investment profile and ethnic tensions are significantly related with crime. Among all the economic variables, only per capita GDP and income inequality had a significant impact on homicide.

The policy implications drawn from the study implies that governments must focus on the law and order to eliminate the level of crime indulging activities. Better socioeconomic conditions including employment opportunities could result in diminishing returns of crime rates. Moreover, governments must focus upon the unbiased accountability process so that the culprits must be punished and brought to the court of law.

5.1 Limitations of the study

This study examined the relationship between crime and governance and afterwards some of the economic variables were also incorporated to establish the relationship between crime and governance nexus in the context of selected 11 Asian countries. We used four forms of crime such as robbery, homicide, burglary and kidnapping and a set of twelve governance indicators such as government stability, socioeconomic conditions, law and order, corruption, democratic accountability, bureaucratic quality, internal conflict, external conflict, ethnic tensions, religious tensions, military in politics and investment profile.

Researchers can further carry out research on the crime governance nexus by considering the other forms of crime. The twelve indicators of governance can be jointly indexed to check out the overall governance impact on total crime and different categories of crime. On the other hand, we used five economic variables i.e. unemployment, poverty, income inequality, per capita GDP and GDP growth rate in our study. Furthermore, researchers can consider a number of other economic variables as like education, population and many others to examine the crime governance nexus. Moreover, time series studies can be made in the context of different countries as well as pooled

studies of different regions of the world can also be undergone to check out the relationship and compare the magnitude of results across time series studies and panel studies.

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