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Governance, Deterrence, and National Homicide Rate

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Governance, Deterrence, and National Homicide Rate

Dr. Barr Younker[α], Dr. Don Soo Chon[σ] & Dr. Theresa Pelfrey[ρ]

Abstract - By extending the deterrence theory to national level, the current study tested the hypothesis that ineffective government is largely responsible for higher homicide rate in a nation. The homicide data required for the test were collected from the World Health Organization and the information on governance from the World Bank's World Governance Indicators for 122 nations. The results from the regression models supported the deterrence theory. An ineffective and dysfunctional government was one of the primary sources for a nation's high homicide rate. Also, other control variables, such as relative poverty and ethnic heterogeneity, were positively related to the homicide rate in a nation.

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I. Theoretical Background

a) Governance and National Homicide Rates

"Governance" must be briefly defined before a further discussion on it. Kaufmann, Kraay, and Mastruzzi (2004, p. 253) defined "governance" broadly as "The traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected and replaced, the capacity of the government to formulate and implement sound policies, and the respect of citizens and the state for the institutions that govern economic and social interactions among them."

The overall performance of a government may affect the crime rate in many ways. A recent study by Nivette and Eisner (2012), based on the analysis of 65 nations, reported that legitimacy in a nation is related to reduced level of homicide. Nivette and Eisner (2012) advocated that criminologists, who used cross-national data sets, have not fully utilized the concept of legitimation in their studies, although it is a well discussed concept. Nivette and Eisner pointed out three important elements of legitimacy of government: legality, justification, and consent.

Legality is a government's compliance to laws, while justification is related to a government's willingness to follow norms and beliefs in a society. On the other hand, consent refers to citizens' agreement to governing authority in a nation. In short, Nivette and Eisner's work suggested the importance of a government' role and democratization of a government for reducing the level of violence in a society (see also Stamatel, 2009; Sung, 2006).

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Coming back to Kaufmann et al.'s definition of governance, one can point out three important factors of governance which may be associated with national homicide. First, an effective criminal justice system may be conducive to a lower violence rate because it leads to certainty, swiftness, and severity of punishment (Archer, Gartner, and Beittel, 1983; Cole and Gramajo, 2009). When a country has an effective court system, for instance, the citizens may tend to resolve their interpersonal conflicts in courtrooms, instead of using physical force (LaFree, 2005). These arguments are consistent with deterrence theory because the effectiveness of government creates more alternative and legitimate choices of action, which, in turn, lead to lower violence rate. Contrary, a citizen is more likely to rely on self-helps or extralegal methods to solve interpersonal conflicts, when he or she believes that their government and criminal justice system is ineffective for handling crime and violence. The self-help act may be conducive to creating more violence (LaFree, 2005; Nivette and Eisner, 2012).

Second, Cook (1980) contended that an effective government may create a good "legal environment" by providing due process and preserving constitutional rights of the accused, which, in turn, contribute to low crime rates. Conversely, a government with scant regard for human rights and political freedom of its citizens creates an environment of violence among citizens (Neumayer, 2003). Additionally, a citizen may feel less obligated to observe laws when the government displays a weak morality or legitimacy (LaFree, 1998).

In a similar manner, only fair administration of a criminal justice system produces *reintegrative shaming,* which deters criminal acts (Braithwaite, 1989). Sherman (1993) cautioned that unfair and arbitrary administration of justice can lead to "defiant" reaction by the punished because an individual obeys the law only when he or she believes that the law is applied fairly. Thus, procedural justice is very critical, and so are the certainty and severity of punishment (see also Nagin, 1998). Karstedet (2006) suggested that a government can control crime and social disorder when its institutions apply laws in a fair manner to its citizens. Azfar and Gurgur (2005) offer other explanation for the relation between an effective government and low violence rates. They considered that the people in nations with effective governments are more likely to

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trust police and report crimes. In other words, the people are likely to cooperate with the police and other criminal justice agencies when they believe their governments are effective. Thus, an effective government may contribute to better prevention and deterrence of crimes.

Finally, an effective government can contribute to minimization of corruption. Shelley (2003) argued that, after the collapse of the former Soviet Union, organized criminal groups started bribing government officials to protect their illicit businesses, such as money laundering, human trafficking, drug and weapon smuggling, and contract killings. On the other hand, Wu (2008) reported widespread bribery in other developing Asian countries, in the realms of the court system and licensing agencies. Ineffective legal systems in those Asian countries impede prevention of corruption by public officials. Thus, it is highly possible that a more effective government can lower the corruption level. Stated differently, widespread corruption is a sign of ineffective government, low accountability, and a weakened rule of law (Marquette, 2001). In short, a high level of corruption impedes efficient law enforcement simply because the law cannot be enforced by bribing.

Despite the importance of governance in understanding crime, including homicide, only a few studies tested the link between governance and national homicide rate (e.g., Azfar, 2005; Cole and Gramajo, 2009; Fearon, 2011). Those studies were based on the hypothesis that an effective government can control crimes better. However, this line of reasoning is not totally new. James Q. Wilson and Barbara Boland (1976) introduced the "police efficiency" variable, obtained by an expert survey, which reflects the perception of law enforcement effectiveness.

They considered it an important predictor of low robbery rates in 26 cities of the United States. Recently, a few cross-national studies took advantage of World Governance Indicators (WGI) developed by the World Bank (Kaufmann, Kraay, and Mastruzzi, 2004). For example, Fearon (2011) reports that governance indicators are significantly and negatively related to national homicide rates. Cole and Gramajo (2009), who also studied the impact of governance on national homicide rate, found a statistically significant impact of WGI on national homicide rates. The contribution of Cole and Gramajo (2009) is important because they attempted to establish a link between governance and national homicide rate. However, the study had its limitations. First, they failed to discuss the theoretical background in detail. Cole and Gramajo (2009) made only a very brief mention of deterrence theory, and then stated that an effective government may be in a better position to control crime through its criminal justice system.

Therefore, it is necessary to review and discuss deterrence theory in greater detail. Second, Cole and Gramajo (2009) did not address the possible causality issue between the rule of law (RL), one of the six world governance indicators (WGI), and national homicide rate.

RL measures citizens' perception of the effectiveness of criminal justice system in their nations. However, they may perceive its effectiveness only when the homicide rates in their nations are low. In other words, homicide rate may be a cause, and citizens' perception of RL may be its outcome (Fearon, 2011). Thus, there is an urgent need to try to address that issue. At the same time, however, it may be beneficial to include the rule of law in the measure of the WGI because it may reflect people's perceptions of governments' ability to enforce laws. In other words, theoretically, the rule of law may be an important measure of deterrence. Therefore, the current study calculates the average of WGI *without* the RL and then compares its regression results with those calculated *with* the RL. The comparison enables examination of the impact of including the RL in the regression outcomes. Finally, Cole and Gramajo have not tested a possible interaction effect between governance and economic development because they may influence each other. Thus, the current study introduced the interaction term between economic development and governance. A more detailed discussion on this issue will be followed later.

b) Review of Deterrence Theory

Deterrence theory is based on the original works of European philosophers, such as Cesare Beccaria (1738~1794) and Jeremy Bentham (1748~1832) in the 18th and 19th centuries.

Bentham (1789) introduced the concept of utilitarianism that a human being acts to maximize pleasure and minimize pain. The concept suggests that a human being calculates the rewards and risks of committing a crime and also those of an alternative and legitimate action of choice before he or she actually commits a crime. On the other hand, Beccaria ([1764] 1963) argued that punishment must be certain, swift, and severe (in proportion to the seriousness of crime) to have its deterrence effect. This line of thinking, based on Bentham and Beccaria's works, is known as classical school of criminology.

This classical school did not gain resurgence until Gary Becker's (1968) seminal research (Mandes, 2004; Nagin, 1998). In his study of crime, Becker employed econometric approach to the classical criminology principle of Beccaria ([1764] 1963) and Bentham (1789). Based on the assumption of a rational human being who calculates benefits and costs of an action, Becker considered that criminal behavior is not an exception (see also Tittle, Botchkovar, and Antonaccio, 2011). He emphasized that certainty and severity are important for deterrence of criminal behavior

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because they increase the risk of committing crimes. He considered that a person is likely to commit a crime when the expected gains of a criminal act are greater than those of an alternative and legitimate action. Becker's research has great impact on the study of crime because he applied econometrics to the study of criminal behavior. Consequently, his work is considered more sophisticated than that of the classical school of criminology. After Becker's work, many other economists and criminologists employed deterrence perspective in their research. One of the reasons for the popularity of the deterrence theory is that the theory is straightforward and simple. The crime rate will be reduced when the punishment for the crime is certain and severe.

Previous studies on deterrence concentrated on formal sanctions by criminal justice agencies, such as police, court, and correctional institutions (e.g., Levitt, 1996; Sampson and Cohen, 1988). Also, those studies used a few indicators of deterrence, such as the number of law enforcement officers (Levitt, 1997; Marvell and Moody, 1996), arrest or clearance rate (Loftin and McDowall, 1982; Tittle and Rowe, 1974), law enforcement expenditure (Jacob and Rich, 1980-81), law enforcement tactics or aggressiveness of law enforcement (Sampson and Cohen, 1988; Wilson and Boland, 1978), prison population (Levitt, 1996, 1997; Marvell and Moody, 1997; Mocan and Gittings, 2003; Shepherd, 2001; Zimmerman, 2009), and death penalty (Cloninger and Marchesini, 2001; Dezhbakhsh, Rubin, and Shepherd, 2003; Ehrlich, 1975; Mocan and Gittings, 2003; Shepherd, 2005; Zimmerman, 2009). In other words, many previous works hypothesized that factors, such as a larger number of police officers, higher arrest rates, and aggressive law enforcement tactics, reduce crime rates because those factors enhance certainty of arrest. On the other hand, factors such as the size of prison population, death penalty, and execution were used to represent severity of punishment.

Previous studies, however, were plagued by inconsistent findings and methodological weaknesses (Jacob and Rich, 1980-81). Some researchers even reported that the effect of deterrence variables on crime rates had been aggravating, rather than reducing (e.g., Jacobs and Rich, 1980-81; Wood, 2007). Many existing studies considered that a larger police force increases the crime rate. Fifteen of twenty-one studies, reviewed by Marvell and Moody (1996), reported a significant and positive relationship between the number of police officers and the crime rate. The inconsistent findings may be due to a possible simultaneous causality between deterrence indicators and crime rates. For instance, a government may increase the number of police officers because the crime rate is high. It suggests the possibility that crime rates influence the number of police officers (Bar-Gill and Harel, 2001). Similarly, crime rates may influence the size of prison population because a higher crime rate may lead to a larger number of arrestees, which, in turn, increases prison population.

To overcome a possible simultaneous causality between deterrence variables and crime rate, some of the previous researchers employed statistical techniques (e.g., Wilson and Boland, 1978), the common technique being the two-stage least-squares regression analyses by introducing an instrumental variable (Marvell and Moody, 1996). The instrumental variable should not be affected by key independent variables, and at the same time, it should not directly influence crime rate (Azfar, 2005). However, in social science, it is difficult to find such variable (Marvell and Moody, 1996). For the purpose of explanation, deterrence theorists used demographic variables as instrumental variables. However, in many cases, those demographic variables directly affect crime rates. In this regard, the progress of deterrence research has reached a stalemate.

The criticism on deterrence theory should not lead to the conclusion that government, especially the criminal justice system, has nothing to do with crime rate. History demonstrates that vacuum in law enforcement creates social disorder and violence. This is borne out by LA riots in 1992 and the social disorder that prevailed in New Orleans area after it was hit by hurricane Katrina in 2005. In those two cities, many cases of lootings and sexual assaults were reported with the weakening of the law enforcement. Consequently, federal government had to send national guards and other federal law enforcement agencies to those two cities.

Additionally, inconsistency in the findings of previous research on deterrence may imply that the deterrence effects of law enforcement and punishment are not well reflected by existing variables, such as the number of police officers, law enforcement expenditure, arrest rates, prison population, and death penalty. Cook (1980, *p.* 213) considered that the function of the criminal justice system is very important to understanding the crime phenomenon, as well as the so-called "root causes" of crime. Thus, as discussed previously, effectiveness of government may be a critical factor to homicide rates.

c) Other Contributing Factors to Homicide Rate

There are several competing factors which may contribute to homicide. First, one may argue that governance in a country can be influenced by the nation's economic development level. In other words, economically developed country may be better able to have higher level of governance because of its economic resources. Also, effective government can contribute to economic development. Thus, one may expect an interaction effect between governance and economic development in a nation. The current study

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created the interaction term and introduced it regression models along with World Governance Indicators (WGI).

Second, many precedent studies reported, fairly consistently, a positive association between income inequality and homicide rate, which many workers sought to explain by employing a critical economic theory. The lower social class people, frustrated by relative economic deprivation, display anger toward others, which results in violence (e.g., Braithwaite and Braithwaite, 1980; Chamlin and Cochran, 2006; Kick and LaFree, 1985; Lee and Bankston, 1999; Messner, 1989; Neapolitan, 1994, 2003; Pratt and Godsey, 2003; Wilkinson and Pickett, 2005).

Third, one of the important elements of social disorganization theory is ethnic heterogeneity (Shaw and McKay, 1942). Some studies in the United States used the percentage of black members as an indicator of population heterogeneity. Blau and Blau (1982) found a significant and positive link between the proportion of the black population and homicide rates. By employing the population heterogeneity indices developed by Alesina and others (2003) in a cross-national study, Chon (2012) demonstrated that ethnic heterogeneity aggravates the homicide rate in a nation. The control of racially heterogeneous communities on their residents' behavior is ineffective because social networking and communication among different ethnic groups are weak. Additionally, the level of trust among the members of different ethnic groups may be rather low (Blau and Blau, 1982; Hansmann and Quigley, 1982; Miethe and McDowall, 1993).

Finally, many existing explorations on homicide refer to age structure because young age groups are more likely to commit homicides than older age groups (Chon, 2012; Hillbrand, 2001; O'Brien and Stockyard, 2006; Vollum and Titterington, 2001). For example, Pampel and Williamson (2001) report that the peak age group for committing murders is 25-34 years. In terms of gender, male subjects are considered generally more violent than female subjects and more likely to kill. Therefore, the effect of age and sex distribution in a nation needs to be controlled. One technique of controlling is to include the size (percentage) of a certain age group and sex of a nation in multiple regression analysis.

II. Method

a) Dependent Variable

The data on homicide rates came from the World Health Organization's (WHO) Global Burden of Disease (GBD) project (World Health Organization, 2006), which will be explained later. Interpol also provides homicide rate data, but the source of its data is problematic. Some Interpol member nations do not discriminate between "attempted murder" and "murder" and, therefore, count them together in arriving at the total number of murders. As a result, the data from those nations give an exaggerated number of total murders. The homicide statistics of the WHO are therefore more reliable than those of the Interpol.

The WHO's homicide information requires further elaboration on its content. The GBD is a large database of WHO, which covers 190 nations in the world and provides information on the causes of death (www.who.int/healthinfo/global_burden_disease/estimates_country/en/index.html). The GBD presents the homicide rate per 100,000 persons in a country. The WHO homicide statistics came from government's vital statistics (LaFree and Drass, 2002). Homicide is defined as death by injury from violence by others (World Health Organization, 2008). Many previous crossnational studies employed the average homicide rate over multiple years as a remedy for unusual fluctuation of homicide rate (e.g., Archer and Gartner, 1984; Avison and Loring, 1986; Braithwaite and Braithwaite, 1980; Chon, 2002; Krahn, Hartnagel, and Gatrell, 1986; Lee and Bankston, 1999; McDonald, 1976; Messner, 1989; Neapolitan, 1994). The WHO's first series of GBD was collected in 2002 and published in 2004; its second series was collected in 2004 and published in 2008. Thus, the current examination also used the average homicide rate of the WHO's 2002 and 2004 data.

b) Independent Variables

World governance indicators (WGI). The WGI project comprises six aspects of governance: voice and accountability (VA), political stability and absence of violence (PV), government effectiveness (GE), regulatory quality (RQ), rule of law (RL), and control of corruption (CC). The project for 2002 includes data from 186 countries for political stability and from 199 countries for VA. It provides one of the largest cross-country datasets on measuring governance (Kaufmann, Kraay, and Mastruzzi, 2004). Kaufmann, Kraay, and Mastruzzi (2004, 2008) briefly described the six dimensions of governance as follows. First, voice and accountability (VA) indicates the degree of citizens' participation in the election of their government officials. It also is a measure of freedom of speech, mass media, and assembly.

Thus, VA reflects civil liberty and political freedom of citizens. Second, political stability/absence of violence (PV) is related to the vulnerability of a government to be overthrown by unlawful and violent means. The absence of violence in this context refers primarily to collective violence such as a civil riot or a military coup, rather than individual or interpersonal violence. Government instability adversely affects the continuity of government policy. Third, government effectiveness (GE) is a measure of citizens' perceptions of the quality of public services and governmental policy making and implementation. It also is a measure of the competence and independence of the civil service.

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Thus, GE depends on the government's ability to implement sound policies and deliver public services. Fourth, regulatory quality (RQ) is government's capability to regulate businesses to optimize private sectors. For example, RQ includes controlling monopoly and illegal bank practices.

Fifth, rule of law (RL) relates to a citizen's confidence in a government's ability to enforce the law in the areas of contracts, protection of both individual and company's properties, and quality of police and courts. It also is related to the degree of government's ability to apply laws in a fair and predictable manner. Finally, control of corruption (CC) reflects the extent to which public power is used for private gain. It includes small- and large-scale corruption in both business areas and political fields.

The underlying data of the WGI came from polls from experts and surveys of various sources: individuals, firms, commercial risk-rating agencies, nongovernmental organizations, multilateral aid agencies, and other public sector organizations. The WGI data for 2002 came from 25 sources of 18 organizations (Kaufmann, Kraay, and Mastruzzi, 2004). The data sources include, but are not limited to, Freedom House's political rights and civil liberty index (http://www.freedomhouse.org). Some researchers employ the Freedom House and Transparency International statistics as measures of the political civil liberty of a nation (e.g., Greenberg and West, 2008; Sung, 2004, 2006). Freedom House lists all the nations that provide the highest to the lowest level of personal freedom. However, the WGI of the World Bank are more comprehensive than the data of either the Freedom House or Transparency International's sources because the WGI includes many more sources of information and other aspects of governance (see Appendix A for a complete list of data source for the WGI).

Kaufmann, Kraay, and Mastruzzi (2004) combined related indicators from multiple sources into aggregate governance indicators for each of six dimensions of governance. To address the differences in country coverage by various sources, they aggregated the data from individual sources so that the data cover a large number of countries. As a result, a researcher is able to compare governance indicators for a large number of countries. They used a complex unobserved-components methodology (UMC) to calculate aggregated governance indicators.

"The model expresses the observed data in each cluster as a linear function of the unobserved common component of governance, plus a disturbance term capturing perception errors or sampling variation in each indicator. Thus the unobserved score of country j on indicator k, $y(j, k)$, is assumed to be a linear function of unobserved governance, g, and a disturbance term, $y(j, k)$: $y(j, k) = \alpha(k) + \beta(k).\ [g(j) + y(j, k)]$, where $\alpha(k)$ and $\beta(k)$ are known parameters that map unobserved governance $g(j)$ into the observed data $y(j,k)$ ($p.$ 258)."

Kaufmann, Kraay, and Mastruzzi's (2004) procedure for estimating the governance indicator is based on the assumption that the correlation between sources suggests that they are both measuring the same underlying unobserved governance dimension. To address sampling variability, however, Kaufamnn, Kraay, and Mastruzzi rescaled the aggregate indicators, obtained through UCM procedure, by subtracting the sample mean (from across countries) from each country, and dividing by the standard deviation across countries. Now all indicators virtually lie between -2.5 and 2.5, the standard normal units, which normally distributed with a mean of zero and a standard deviation of one. Higher scores indicate better governance. The rescaling of original sources makes it comparable across different data sources. Additionally, to create aggregated indicators, a weight was given to each original source. If two data sources are highly correlated to each other, greater weight is given to them (see Kaufmann, Kraary, and Mastruzzi 2004, 2007, 2008, 2011 for detailed procedures of estimating governance indicators).

One important advantage of using the World Bank's WGI is that they show the margin of error for each indicator (Kaufmann, Kraay, and Mastruzzi, 2008). At the same time, Kaufmann, Kraay, and Mastruzzi (2004) attempted to reduce the margin of error by adding new data sources, as a result of which the standard error decreased. For example, the standard errors for 2002 data range from 0.19 to 0.27, and those for 1996 data were from 0.26 to 0.39. Another advantage of using the WGI is that many pairwise country comparisons are statistically significant and practically meaningful. Sixty-five percent of all cross-country pairwise comparisons are statistically significant at 90% significance level. At the same time, the incremental changes in WGI' data over the years have been small and stable for many countries.

The WGI measures the perception of an individual, and Kaufmann, Kraay, and Mastruzzi (2008) justify the measure. First, perception is very important because it affects one's behavior. For example, one is not likely to rely on a judicial system when he or she perceives that the court system is inefficient. Second, in many cases, collecting objective- and fact-based data is not a viable option, especially when measuring the levels of corruption or the confidence that property rights are protected. Third, objective- and fact-based measures capture the *de jure* notion of laws "on the book," which differs from the *de facto* reality "on the ground." Additionally, the objective measures are subject to their own margins of error. Fourth, all kinds of measures of governance rely on judgment to some degree. Thus, the distinction between subjective and objective data is not necessarily accurate. Finally, one

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may doubt the expert perceptions included in the WGI because experts may be influenced by ideological differences or the recent economic condition of a nation. However, Kaufmann, Kraay, and Mastruzzi (2008) empirically tested it and determined that the assumed biases did not exist.

Other variables. The current study incorporates several other important variables, such as the interaction term between governance and GDP per capita, the Gini-coefficient of income inequality (GINI), ethnic heterogeneity (ETHNIC), the percentage of the age group of 20-34 years in the total population (AGE 20-34), and the percentage of female subjects (FEMALE%).

Some of those variables deserve further explanation. First, the GDP per capita represents the level of economic development of a nation. The GDP per capita in US dollars reflects purchasing power (Butchart and Engstrom, 2002). To calculate the interaction term, WGI was multiplied by GDP per capita. However, WGI and GDP were all centered by subtracting a mean of each variable from their original values to address a possible collinearity between the interaction term and its original variable (see Aiken and West, 1991). Second, the Ginicoefficient of income inequality is a popular measure of relative poverty (Messner, Raffalovich, and Shrock, 2002), which represents overall income inequality in a country. Theoretically, it varies from 0% (a perfect *equal* equality) to 100% (a perfect *unequal* income distribution across population). Third, Alesina and others (2003) proposed the following formula to estimate ethnic heterogeneity: $1\ j\ FRACT = 1 - \sum_{i=1}^{n} s_{ij}^2$ where *sij* is the share of group i ($i = 1 \ldots N$) in country j .

The formula shows the probability that two randomly selected individuals belong to two different ethnic groups. The value in theory ranges from zero, always the same group, to 1, always different groups. The data source for ethnic heterogeneity came from Alesina and others' (2003) research article. On the other hand, the data on age group (20-34) and gender distribution were obtained from the United Nations' *Demographic Yearbook* (2003-2005). All other independent variables were taken from the United Nations' Development Program's *Human Development Reports* (The United Nations, 2004).

III. Results

a) Descriptive Statistics

The descriptive statistics in Table 1 suggest that homicide rates vary significantly from one nation to another. Japan registers the lowest homicide rate of 0.55, and South Africa the highest rate of 55.55 per 100,000 national population. The data indicate that studying the national variation of homicide rates is important for understanding violence. One common problem faced in the study of homicide is non-normal distribution of homicide data. The current study again confirms it. Previous researchers advised log transformation of homicide rates (Gartner, 1990: Messner, 1989). Accordingly, the present study also used log-transformed homicide data for regression analyses.

Cole and Gramajo (2009) used an average score of six WGIs which were discussed previously. To create a composite scale, however, the current study created a factor score out of those indicators, and introduced it as a new variable. Factor loadings for all six indicators are 0.87 or higher, while those for five indicators without rule of law are 0.88 or higher. Therefore, using average score, instead of six individual indicators, was considered legitimate.

(Table 1 about here)

b) Multiple Regression Models

Table 2 shows the outcomes of ordinary least-squares (OLS) regression analyses. First, one must discuss about the diagnosis of the collinearity issue prior to explaining the impact ofgovernance indicators on the homicide rate. No collinearity issue has been detected. VIF values for all variables were 1.8 or smaller. The regression model 1 showed the impact of the interaction term between GDP and WGI, with all six indicators included. The interaction term has a significant and negative association with homicide rate. Other variables such as income inequality (GINI) and ethnic heterogeneity had a significant and positive relationship with homicide. However, young age group distribution and gender failed to display any significant association with homicide. The regression model 2 added WGI into model 1. Now, the interaction term between WGI and GDP was no longer significant. Instead, WGI was significantly and negatively linked to homicide rate. However, other variables' significance levels have not been much changed, and they were not much influenced by the introduction of WGI in model 2.

Regression model 3 demonstrated the impact of the interaction term between GDP and WGIWL, five WGI indicators without Rule of Law. Again, the interaction term had a significant and negative association with homicide. Two other variables, GINI and Ethnic, were significantly and positively connected to homicide. However, age and gender distribution had no significant relationship with homicide. Now, the regression model 4 added WGIWL into model 3. The interaction term lost significance. However, WGIWL was significantly and negatively associated with homicide ($p \leq 0.001$). All other four variables maintained the same level of significances. The introduction of world governance indicators (WGI) improved model fit from 0.54 from in model 1 and 3 to 0.65 in model 2 and 4.

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(Table 2 about here)

IV. Discussion and Conclusions

Deterrence research has been subject to criticism on methodological grounds such as simultaneous causality. Also, previous deterrence research utilized relatively fewer variables.

However, the criticism of the deterrence theory should not lead to the conclusion that the government, especially the criminal justice system, has no repercussion on violence, including homicide rate. Cook (1980, p. 213) considered that the function of criminal justice system is very important to understanding the crime phenomenon, as well as the so-called "root causes" of crime. Thus, the effectiveness of government may be a critical factor for homicide rates. Based on the deterrence theory, which emphasizes the function of government and criminal justice system, the present study tested the relationship between governance and national homicide rate.

Whether the rule of law, one of six dimensions of governance indicator, was included or not, the present regression analyses indicated that governance is independently related to homicide rate rather than its interaction with economic development. The governance is significantly and inversely related to national homicide rate.

The rule of law applied by the criminal justice system is important for the deterrence of violence. However, the deterrence by an effective government may not be confined to the administration of the criminal justice system. One must understand the broader aspect of governance's relationship to the deterrence of violence. Governance may affect the violence rate in a nation in several ways. An effective government may lead to "legal environment" by producing impartial administration of justice, while protecting constitutional rights of the accused (Cook, 1980). An individual is likely to rely on the court system rather than violence when a nation has an efficient criminal justice system (LaFree, 2005). Conversely, the government, which does not honor the constitutional rights of a citizen, may create an environment for violence (Neumayer, 2003). In other words, as proposed by deterrence theorists, an effective government provides more alternative and legitimate choices of actions.

Another possibility is that a fair administration of criminal justice system produces *reintegrative shaming,* which, in turn, deters violence (Braithwaite, 1989). Sherman (1993) emphasized that unfair and arbitrary administration of justice produces "defiant" reaction by a perpetrator, instead of deterrence. One tends to follow the law only when he or she perceives that the law is applied without discrimination. Thus, the way law is enforced by a criminal justice agency, especially procedural justice, is important for criminal deterrence, as well as certainty and severity of punishment (see also Nagin, 1998). At the same time, the citizens in a nation with good quality governance are more willing to cooperate with law enforcement agencies because they have confidence in their law enforcement agencies (Azfar and Gurgur, 2005).

Control of corruption, one of the WGI, may lead to the reduction of violence. As discussed previously, corruption among government employees weakens the enforcement of laws simply because the laws are not enforced for personal gain. Shelley (2003) pointed out that, since the collapse of the former Soviet Union, the high level of violence in Russia was due to high incidence of corruption among public sectors and the inappropriate connection between government employees and organized criminals.

The regression results for ethnic heterogeneity index also deserve a brief explanation. Three underlying causes of social disorganization, as proposed by Shaw and McKay (1942), are poverty, ethnic diversity, and residential mobility. Thus, one of the important variables in this study was ethnic heterogeneity. The more ethnically heterogeneous a society is, the higher its homicide rate. As social disorganization theorists posited, an ethnically and culturally diverse society faces an obstacle in enforcing common values and norms among its members. Unlike ethnic heterogeneity, the distribution of gender and younger age group did not show any significant relationship with homicide rate. However, the finding is not surprising because many other studies also failed to find a significant relationship between young age group size and homicide rates (Gartner, 1990; Lee, Maume, and Ousey, 2003; Reid, Weiss, Adelman, and Jaret, 2005; Rosenfeld, Messner, and Baumer, 2001).

Limitations of the current study should be recognized. First, the current study has tested only an *indirect* relationship between governance and homicide rate. In other words, the current work used governance as a latent variable for deterrence. Thus, based on the discussion above, future researchers should investigate the specific mechanisms of ineffective governance's relationship to a high level of violence within a country. In other others, there is an urgent need to find an intervening variable(s) between governance and homicide rate.

Second, the current study employed deterrence theory to explain the link between governance and national homicide rate. However, different criminological theories share some common elements. It is possible to explain the link between governance and national homicide rate by employing other criminological theories. For example, strain theory can be used to explain the link between them. An effective government may be better able to provide legitimate means for obtaining goals. On the other hand, if ineffective government fails to provide legitimate means for

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obtaining goals, people are likely to adopt violence or homicide. This reasoning is partially supported by a significant correlation between the WGI and the Gini-index of income inequality (r = -0.36, $p \leq .01$). The WGI is negatively associated with the Gini-index of income inequality. Therefore, this interpretation may be possible; an ineffective government may lead to an increase in income inequality. Many developing countries in Africa, Latin America, and Southeast Asia are subject to high level unequal distribution of wealth. People may perceive the system is unfair and legitimate means for obtaining goals is blocked when they experience a high level of income inequality. As a result, people are more likely to adopt violent behaviors. Another candidate theory for explaining the relationship between governance and homicide rate is control theory. Ineffective government would deteriorate social bonds and the ability of society to control itself, thereby "freeing" people to commit violence. In short, since governance is a relatively new variable in the literature, it leaves the discussion open for other theoretical interpretations.

In spite of the limitations, the current research suggests that a dysfunctional and ineffective government limits a nation's ability to control social disorder and violence. Thus, the government's capability to control its citizens' violent acts is critical to a country. Furthermore, the regression models of this study explain approximately 65% of the variation in the homicide rate. The introduction of governance indicators improves the fit of regression models. The results of this study suggest that future deterrence studies should make full utilization of the data available on governance indicators. Also, future study may test the relationship between governance and violence by employing a different unit of analysis or governments, such as a city and a state within a nation.

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Table 1 : Descriptive Statistics

	N	Min.	Max.	Mean	SD
WGI	122	-1.58	2.05	0.0060	1.00
WGIWL	122	-1.62	2.06	0.0056	1.00
GDP	122	580.00	61190.00	9454.75	10761.22
GINI	122	24.70	74.30	40.47	9.79
AGE(20-34)	122	18.57	28.01	23.17	2.23
FEMALE%	122	42.70	58.40	50.88	1.80
ETHNIC	122	0.00	0.93	0.42	0.24
HOMICIDE	122	0.55	55.55	10.30	10.09

Note. WGI= an average World Governance Indicators (factor score); WGIWL= World Governance Indicators without rule of law (factor score); GDP = GDP per capita; GINI = Gini-coefficient of income inequality; AGE(20- 34)= percentage of the age group between 20 and 34 among a total population; FEMALE% = percentage of females among a total population; ETHNIC = ethnic heterogeneity; HOMICIDE= homicide rate per 100,000 population.

Table 2 : OLS Regression Estimates: Homicide Rate (log transformed)

Variables	1	2	3	4
Constant	-2.984 (2.746)	-3.348 (2.392)	-2.949 (2.749)	-3.436 (2.418)
WGI * GDP	-2.2E-05*** (0.001) [-0.283]	-7.0E-05 (0.001) [-0.088]	—	—
WGI	—	-0.501*** (0.081) [-0.438]	—	—
WGIWL *GDP	—	—	-2.3E-05*** (0.001) [-0.283]	-8.2E-06 (0.001) [-0.101]
WGIWL	—	—	—	-0.482*** (0.081) [0.421]
GINI	0.049*** (0.008) [0.417]	0.045*** (0.007) [0.383]	0.049*** (0.008) [0.416]	0.045*** (0.007) [0.386]
AGE (20-34)	-0.014 (0.041) [-0.028]	-0.035 (0.035) [-0.068]	-0.014 (0.041) [-0.027]	-0.036 (0.036) [-0.070]
FEMALE%	0.052 (0.043) [0.082]	0.074 (0.038) [0.117]	0.052 (0.043) [0.081]	0.076 (0.038) [0.119]
Ethnic	1.573*** (0.301) [0.337]	0.999*** (0.278) [0.214]	1.579*** (0.301) [0.339]	1.014*** (0.281) [0.217]
Adj. R^2	0.549	0.658	0.549	0.652

Note.

1. unstandardized regression coefficients, standard errors in parentheses, and standardized regression coefficients in brackets; N=122.
2. WGI= an average World Governance Indicators; WGIWL= World Governance Indicators without rule of law; GDP = GDP per capita; GINI = Gini-coefficient of income inequality; AGE(20-34)= percentage of the age group between 20 and 34 among a total population; FEMALE% = percentage of females among a total population; ETHNIC = ethnic heterogeneity; HOMICIDE= homicide rate per 100,000 population.
3. *$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

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Appendix A : Data Sources of 2002 World Governance Indicators

Source	Publication	Type	Number of countries
Afrobarometer	Afrobarometer Survey	survey	12
Business Environment Risk Intelligence	Business Risk Service	poll	50
Business Environment Risk Intelligence	Qualitative Risk Measure	poll	115
Columbia University	State Capacity Project	poll	98
Economist Intelligence Unit	Country Risk Service	poll	115
European Bank for Reconstruction and Redevelopment	Transition Report	poll	26
Freedom House	Nations in Transition	poll	27
Freedom House	Freedom in the World	poll	192
Gallup International	Gallup Millennium Survey	survey	60
Gallup International	50th Anniversary Survey	survey	44
Gallup International	Voice of the People Survey	survey	46
Heritage Foundation/ Wallstreet Journal	Economic Freedom Index	poll	161
Institute for Management and Development	World Competitiveness Yearbook	survey	49
Latinobarometro	Latinobarometro Surveys	survey	17
Political Risk Services	International Country Risk Guide	poll	140
Price Waterhouse Coopers	Opacity Index	survey	35
Reporters Without Borders	Reporters Without Borders	poll	138
Global Insight's DRI McGraw-Hill	Country Risk Review	poll	111
State Department/ Amnesty International	Human Rights Report	poll	159
World Bank	Business Environment and Enterprise Performance Survey	survey	18
World Bank	World Business Environment Survey	survey	81
World Bank	Country Policy and Institutional Assessment	poll	136
World Economic Forum	Global Competiveness Report	survey	75
World Economic Forum	Africa Competiveness Report	survey	23
World Markets Research Center	World Markets Online	poll	186

Note : recreated from Kaufmann, Kraay, and Mastruzzi (2004, *p.* 256)

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Appendix B : Summery Statistics on Governance Indicators

	Voice/ Account-ability	Political stability	Government effectiveness	Regulatory quality	Rule of law	Control of corruption	Overall
Number of Countries	199	186	195	195	195	195	194
Median number of sources per country	7	6	6	6	8	7	7
Proportion of countries with only one data source	0.10	0.11	0.10	0.10	0.10	0.10	0.10
Average standard error	0.21	0.27	0.22	0.22	0.19	0.21	0.22

Note. Source : Kaufmann, Kraay, and Mastruzzi (2004, p. 262).

Appendix C : Zero-Order Correlation Matrixes

	WGI	WGIWL	GDP	GINI	AGE	FEMALE%	ETHNIC
WGI	1.00						
WGIWL	.999**	1.00					
GDP	.858**	.852**	1.00				
GINI	-.360**	-.352**	-.421**	1.00			
AGE(20-34)	-.402**	-.404**	-.453**	.343**	1.00		
FEMALE%	.075	.088	.006	-.069	-.350**	1.00	
ETHNIC	-.401**	-.400**	-.413**	.291**	.123	.085	1.00
HOMICIDE	-.676**	-.663**	-.685**	.603**	.268**	.103	.521**

Note. 1. WGI= an average World Governance Indicators; WGIWL= World Governance Indicators without rule of law; GDP = GDP per capita; GINI = Gini-coefficient of income inequality; AGE(20-34)= percentage of the age group between 20 and 34 among a total population; FEMALE% = percentage of females among a total population; ETHNIC = ethnic heterogeneity; HOMICIDE= homicide rate per 100,000 population.
2. ** ≤ 0.01 level.

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