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Entertaining Douglass North: Political Violence and Social Order

Karim Khan
Sadia Sherbaz

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Karim Khan

Pakistan Institute of Development Economics, Islamabad

and

Sadia Sherbaz

Pakistan Institute of Development Economics, Islamabad

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Pakistan Institute of Development Economics
Islamabad, Pakistan

E-mail: publications@pide.org.pk

Website: <http://www.pide.org.pk>

Fax: +92-51-9248065

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C O N T E N T S

	<i>Page</i>
Abstract	v
1. Introduction	1
2. Methodology	4
2.1. Theoretical Framework	4
2.2. Specification of the Model	5
2.3. Construction of Variables	8
2.4. Summary Statistics of the Data	10
3. Empirical Results	12
3.1. Major Episodes of Political Violence	12
3.2. Civil Wars	14
3.3. Inter-State Wars	16
3.4. Ethnic Violence	17
3.5. Terrorism	19
4. Conclusion	21
Appendix	23
References	28

List of Tables

Table 1.	Instrumental Variable Regression Results for Major Episodes of Violence	13
Table 2.	Instrumental Variable Regression Results for Civil War	15
Table 3.	Instrumental Variable Regression Results for Inter-State War	17
Table 4.	Instrumental Variable Regression Results for Ethnic Violence	18
Table 5.	Instrumental Variable Regression Results for Terrorism	20

ABSTRACT

Violence creates chaos or uncertainty, destabilises social and political structure, deters investment, and retards economic prosperity. In order to curtail violence, the society needs a social order which comprises a set of formal and informal institutions. The social order is aimed at structuring economic, social and political interactions. In this study, we examine what such a set of institutions implies for the mitigation of violence. We take four indicators of political violence, i.e. civil wars, inter-state wars, ethnic violence, and terrorism. In addition, we aggregate civil wars, inter-state wars and ethnic violence in order to get major episodes of the political violence. We find that for ethnic violence, terrorism, and major episodes of political violence, informal institutions are more efficient in decreasing violence. Also, they enhance the efficacy of formal institutions in mitigating these types of violence. In case of civil wars and inter-state wars, formal institutions are more effective; however, if the level of formalisation is not accompanied by commiserate informal support, then the formal institutions become ineffectual. Moreover, the results show that there is complementarity between formal and informal institutions in reducing violence; giving credence to the idea that without institutional reforms, violence cannot be prevented in modern societies.

JEL Classifications: D74, H13 H56, N40, O17, O43

Keywords: Violence, Social Order, Formal and Informal Institutions, Ethnic Violence, Civil Wars, Inter-State Wars, Terrorism, Major Episodes of Political Violence

1. INTRODUCTION

Violence is a prevailing contemporary problem that plagues both the developed and developing countries. It has a variety of implications for the economic, political and social aspects of life. In economic sense, it deteriorates infrastructure and property, creates chaos and uncertainty, deters investment, and retards economic prosperity [North, *et al.* (2009); Williamson (2009)]. In the political arena, violence and atrocities associated with it lead to forced displacement, refugee crisis, wars of secession, and mass political instability [Toole and Waldman (1993)]. Socially, violence creates long term psychological trauma in nation's youth, encourages gender discrimination and homicides, and results in new forms of violence [Blomberg and Hess (2006); Weidmann and Zurcher (2013)]. Thus, violence needs to be curtailed in order to have stability in humans' interactions and ensure social and economic prosperity. Since the World War II, there have been persistent attempts to prevent violence at the global level. However, the expectations, in this regard, have not been fully realised. For instance, according to Integrated Network for Societal Conflict Research (INSCR) (2016), the world has experienced 101 incidents of civil wars, over 60 inter-state conflicts and over 3000 instances of ethnic violence since 1946. Likewise, Global Terrorism Database (GTD) (2015) records more than a hundred thousand terrorist attacks worldwide since 1970s. Despite these occurrences, the post-World War II institutional transformation has been instrumental in reducing the battle related deaths since 1946 [Geneva Declaration Secretariat (2015)].¹

Violence, its onset, and intensity are decreasing functions of the institutionalisation within societies. Institutions as the humanly devised constraints restrict socially undesirable behaviour emanating from the interactions between individuals and groups [North (1991)]. Violence is one of such undesirable aspects of human interactions and is presumed to be controlled by the prevailing structure of institutions [Williamson (2009)]. The structure incorporates formal and informal institutions as both reinforce the efficacy of each other.² Alternatively, formal institutions might fail to root out violence when they are not supported by informal norms [Brinks (2003)]. In this study, we look for such interaction between formal and informal institutions as far as the mitigation of violence is concerned. We focus on political violence which is defined as acts

¹However, civilian casualties have been increased considerably, with civilians now comprising 90 percent of the war-related deaths.

²North (1991) explains that formal and informal institutions evolve together through the activities of households, firms, ethnic communities, and governments.

of aggression or hostility driven by the aspirations for affecting change in the government policies. We take four indicators of political violence, i.e. inter-state wars, civil wars, ethnic violence, and terrorism. In addition, we aggregate civil wars, inter-state wars and ethnic violence in order to get major episodes of the political violence. We want to assess how each of these types of violence is affected by the prevailing set of institutions.

Inter-state violence is an armed conflict between two or more states, which represents failure of foreign policy in resolving a variety of inter-state cleavages through dialogue and bargaining.³ With regard to inter-state wars, it is argued that it is extremely rare that two democracies would go to war against each other [Lemke and Reed (1996)]. This is justified by the fact that Democracies reflect public's satisfaction with respect to status quo and foreign policy. Second, when faced with a potential aggression, democratic leaders are inclined to allocate more resources for defense as compared to the autocrats [De Mesquita, *et al.* (1999); Schultz (1999)]. In other words, democracies are unattractive targets for invaders. Third, similarity in political structures makes it easier for countries to coordinate with each other on different issues [Souva (2004)]. In the same manners, similarity in informal institutions like common ethnic, religious and cultural attributes result in a convergent mental model which, in turn, avoids violent conflicts between countries [Denzau and North (1994); Werner (2000)].

Civil war is defined as a large-scale violent conflict between the state and non-state actors within the state's territory. Strong political institutions, protected property rights, contract enforcement mechanism, and the rule of law are instrumental in enforcing commitments and, thus, avoid civil wars [Walter (1997, 2004); Collier and Hoeffler (1998); Garfinkel and Skaperdas (2000); De Soysa (2002); Collier and Hoeffler (2004); Reynal-Querol (2005)]. For instance, in the presence of strong formal institutions, non-state violence specialists are not able to survive which declines the likelihood of civil wars [Fearon and Laitin (2003); Collier, *et al.* (2004); Blattman and Miguel (2010); Elbadawi and Soto (2015)]. Likewise, strong formal institutions avoid civil wars by making the distributive mechanism within societies fairer [Vreeland (2008)]. Also, consensual formal institutions increase the spending on public goods, leaving little to the incumbent or ruling elite which, in turn, declines the incentives of opposition to perpetrate violent civil conflict [Sawyer (2004); Bates (2008); and Goldstone, *et al.* (2010); Bang and Mitra (2017)].

Ethnic violence is an outcome of long-standing ethnocentric tensions. It can take many forms like riots, genocide etc. Ethnic violence is majorly initiated or exacerbated by the discontent arising from the perceived unjust distribution of resources [Posen (1993); Gurr (1993)]. For instance, information failures and the commitment problem, in this regard, creates mistrust within different ethnicities.

³Inter-state conflict that results in more than 1000 deaths is generally considered as a full-scale war; while those that result in fewer (than 1000) deaths are called Militarised Inter-state Disputes (MIDs).

In addition, the emergence of political opportunities also mobilises ethnic groups [Easterly (2001)]. Thus, safeguards with respect to power-sharing arrangements (electoral rules) and ethnic balance in public services are deemed as essentials for avoiding ethnic conflict [Lake and Rothchild (1996); Saideman, *et al.* (2002); Montalvo and Reynal-Querol (2005)]. Institutional attributes like federalism and representative democracy are helpful in this regard. As far as informal institutions are concerned; in ethnically homogenous societies, social networks provide security against expropriation. Such networks are severely impeded in societies that are ethnically divided [Brancati (2006)].

Terrorism is usually aimed at creating terror for political or ideological objectives [Turk (1982); Caplan (2006)]. It is more likely to appear in totalitarian structures; however, liberty and civil rights in democracies might proliferate the ideologies of terrorists. For instance, a parallel legal system that places procedural barriers to effective actions constrain democratic governments to prevent unrestrained opponents [Schmid (1992); Eubank and Weinberg (2001); Blomberg, *et al.* (2004a); Blomberg, *et al.* (2004b); Bellows and Miguel (2006); Krieger and Meierrieks (2011)]. Usually, terrorist groups operate in weak states which are characterised by non-functioning institutions, inefficient enforcement mechanism, and poor law and order [Newman (2007)]. Thus, the threat of terrorism can be reduced if institutions in such states are improved [Aksoy, *et al.* (2012); Wilson and Piazza (2013)].

As far as violence mitigation is concerned; formal institutions are necessary but grossly insufficient in ensuring civil rights and the rule of law. As an example, democratic institutions in developing countries are quite different from their counterparts in the developed countries. We can observe political and societal violence in new democracies, where the systematic violation of civil rights leads to de-legitimisation of the formal arrangements [Caldeira and Holston (1999)].⁴ In particular, the policies are benefitting privileged groups behind the façade of formal institutions in such societies [Da Matta (1991)]. Thus, the consolidation of formal institutions as a more holistic phenomenon requires due considerations for the social and cultural contexts or informal institutions. In this study, we focus on this aspect. We have three objectives. First, we want to see whether the informal institutions like trust, respect, tolerance and freedom reduce the incidence of violence. Second, we want to examine whether the formal institutions that constrain the executives' power reduce the likelihood of violence. Finally, we want to see whether there is any complementarity between formal and informal institutions in mitigating violence. We take data from cross-section of the countries across the globe. Rest of the study is organised in three sections. In Section 2, we provide and discuss methodology. Section 3 provides the empirical findings while Section 4 concludes the paper.

⁴The marginalisation of minorities, the mobilisation of violent ideologies, and the emergence of violence enterprises are quite common in such societies.

2. METHODOLOGY

In this section, first, we provide the theoretical framework of the study. Onwards, we discuss specification of the model along with the estimation technique, construction of variables, and preliminary analysis of data.

2.1. Theoretical Framework

Institutions are humanly defined rules or constraints that regulate and control all forms of human interactions [North (1990, 1991)].⁵ In particular, they are designed to prevent undesired or destructive activities [North, *et al.* (2009)]. Violence in itself is a form of behaviour that is destructive to humanity, property as well as to social stability. The primary function of the establishment of a social order is, thus, to curtail violence. In *Primitive Social Order* that existed in the hunter-gatherer society, the tribal traditions had the ability to limit violence. Likewise, in *Limited Access Order or Natural State* that has been prevalent for the last ten millennia, violence is prevented by the manipulation of economic structure by the politically vested interests for the purpose of generating and appropriating rents.⁶ This order is assigned to societies which reflect the natural response of civilisations to the threat of large-scale violence in the absence of strong formal institutions. The institutional structure in developing countries is characterised as *Natural State* where there is oligopoly in violence. Alternatively, the capacity to perpetrate mass violence is concentrated in a small set of elites [Francois, *et al.* (2015)].⁷ Such a coalition of elites create or extract rents either through taxation or through coercion in return for stability and security [van Besouw, *et al.* (2016)].⁸ In addition, the ruling elite tend to exert economic, political and military authority over the rest of society. This order is, however, highly divisive and creates rifts on the basis of social, ethnic and religious differences in the society. In *Natural States*, thus, violence tends to be prevalent as the privileges tend to be the potential sources of conflict.

Open Access Orders maintains social order through competition instead of rent creation, promoting economic and political development. *Open Access Order*

⁵These constraints can be both formal and informal. Formal institutions comprise the constraints on government behaviour enforced by legislative framework. Formal rules encompass constitutional constraints, legislative rules, and other political constraints [North (1990); North (1991)]. Informal institutions, on the other hand, are constraints in form of norms, culture, and customs that are not designed or enforced by government [Williamson (2009)]. Informal institutions are product of socially transmitted knowledge and formulate inherited values.

⁶ These elite are able to extract taxes in return for maintenance of social order and restricting violence. They continue doing so as long as the benefits of such behaviour exceed the cost, including the cost of limiting their owned direct appropriation [Acemoglu and Robinson (2006)].

⁷ In developing nations, elite comprise of political parties, ethnic groups and other forms of patronage networks. They join together into a coalition and commit to restrict violence.

⁸In most of the developing countries, monopolies, subsidies, exclusive trade licenses, redistribution of taxes, and the exploitation of natural resources etc. serve as instruments of rents creation and extraction.

is the characteristic of modern developed countries where there prevails democratic system along with capitalistic structure of the economy. In open access order, there is a set of well-functioning formal institutions, complemented by enabling informal constraints which not only prevent private predation but also put limits on the state's expropriation through legal sanctions. Thus, the most desirable scenario happens to be the open access social order that allows for the complementarity between formal and informal institutions in mitigating violence. Such complementarity is the main theme in this study.

2.2. Specification of the Model

We follow Williamson (2009) to specify our empirical model. Since different indicators of violence have different determinants, the control variables vary from indicator to indicator. However, our core specification remains the same which includes standalone variables for formal and informal institutions, the interaction and ratio terms between formal and informal institutions. The interaction and ratio terms are incorporated to assess complementarity between the two types of institutions. The core model takes the following form:

$$V_{k,i} = \beta_{k,0} + \beta_{k,1}FI_i + \beta_{k,2}II_i + \beta_{k,3}FI * II_i + \beta_{k,4}FI/II_i + \sum_{j=5}^n \beta_{k,j}X_{ji} + \mu_{k,i}$$

Where, $V_{k,i}$ is the k^{th} indicator of violence, FI_i is indicator of formal institutions, II_i is the constructed indicator of informal institutions, X_{ji} are the control variables. $\beta_{k,3}$ captures the impact of interaction between formal and informal institutions. The coefficient $\beta_{k,4}$ presents the effect of excessive formalisation relative to informal controls, studying the efficacy of formal institutions. Our dependent variables are inter-state wars, civil wars, ethnic violence and terrorism. Also, we add the scores of ethnic conflicts, civil wars and inter-state wars in order to get the aggregate of major episodes of political violence. Formal institutions provide a wider platform for voicing opinions and participation in policy-making. Also, they raise the cost of violence by providing a credible punishment mechanism. Thus, strong formal institutions would discourage violence.⁹ Informal institutions are also expected to limit the violence as strong informal institutions reflect the prevalence of mutual respect, sense of control and trust.¹⁰ In addition to their separate impacts, formal and informal institutions interact in mitigating violence as they reinforce the efficacy of each other. The ratio of formal to informal institutions, on the other hand, captures how an imbalance between formal and informal institutions will affect violence.

⁹In the presence of strong formal institutions, individuals or groups employ non-violent means to support their cause instead of resorting to nationwide warfare, riots or terrorist activity.

¹⁰Also, informal norms like ostracisation and exclusion, shame or guilt may induce an otherwise violently inclined individuals to refrain from violence.

We might have simultaneity bias as far as the relationship between violence and institutions is concerned. However, any institutional change that may be instigated by a violent event would fully manifest over a considerable period of time. Alternatively, institutions are highly persistent in the short run. For example, consider the American Civil War and its aftereffects, while slavery ended immediately, the struggle for meaningful civil rights for the African Americans did not culminate into a formal policy arrangement till 1965. Bellows and Miguel (2006) assert that while theoretically conflict may be able to instigate institutional change but there is little empirical evidence of immediate response. Likewise, O'Reilly (2018) finds that while civil wars in post-cold war era may have detrimental effect on the quality of formal institutions, the institutional framework itself remains unchanged. Considering all these arguments, we can assert that institutions in our econometric framework are exogenous and thus do not result in simultaneity bias. Since our analysis captures the state of institutions and onset of violence in the post-Cold War era, it is highly unlikely that violent events in this era would result in significant change in institutions.

We control for economic prosperity by using GDP per capita of countries. We expect that higher GDP would have inverse impact on the incidence of violence due to sufficiency of resources. However, a higher GDP per capita may incentivise violent specialists to perpetrate violence in order to exploit the larger size of potential rents. Also, if the historical ethnic, racial or economic inequalities have not been rectified with economic development; then more development may enhance the possibility of political violence. Likewise, we control for urbanisation as another indicator of economic prosperity. Urbanisation raises awareness with regard to the negative consequences of violence. Also, it increases opportunities for social and economic mobility which has rectifying effects on violence. However, it may also enhance the recruitment of militants by the violence specialists in urban squalors.¹¹ Furthermore, income inequality enhances resentment in society between various income groups which may result in civil war. In order to control for this possibility, we use Gini coefficient in the equation for civil war.

Trade openness increases the opportunity cost of engaging in violence and, thus, may be effective in mitigating political violence [Amodio, *et al.* (2017)]. However, if trade liberalisation results in increase in gains from appropriation owing to the rise of contestable income, we may expect increase in violence. The abundance of natural resources may be a potential source of violence in some countries. For instance, oil rich countries have been suffering from the Dutch Disease arising from over reliance on oil revenues. It usually give rise to dissention, frustrations and animosity against the state and other ethnic, social or political groups, leading to political violence. Oil rents may also instigate inter-state wars as other states may infringe on a country's sovereignty in order to

¹¹ Slums are associated with urbanisation and these areas reflect stark inequalities.

appropriate rents. Likewise, oil exporting countries may interfere in the affairs of other states on the basis of ideological differences and other vested interests which may result in inter-state war. In order to see these possibilities, we control for countries' status as net exporter of oil and petroleum.

Diversity and fractionalisation are expected to have profound effects on violence. Different languages results in inability to communicate or understand each other's point of view which, in turn, creates misunderstandings and even animosity, resulting in increase in violence. Likewise, ethnic fractionalisation results in hyper-ethnocentrism or ethnic divide [Kimsey and Fuller (1998)].¹² Accordingly, ethnic minorities may resort to ethnic violence, civil war or terrorist activities by feeling disenfranchised. We also have the possibility of hypo-ethnocentrism as diversity and proximity may generate greater understanding which may actually result in reduction in violence. In order to see these impacts, we control for ethno-linguistic fragmentation. We also control for a country being land locked in inter-state wars as a land-locked country tends to be dependent on its transit neighbours for trade and transport. Also, land locked countries are dependent on political situations of the transit neighbours. Both of these reduce the bargaining power of nations and weakens their status in international conflict, resulting in inter-state disputes. The equation for inter-state war also includes average incidences of terrorism in countries since 1990. Terrorism in recent history has been a source of conflict between countries, especially those that are political rivals. School enrolment is incorporated in the equations for ethnic violence. Enrolling in and attending school means proximity and contact with children from different ethnicities and races which results in reduction in ethnic cleavages. Likewise, unemployment among male youth is major cause of the economic, social and psychological distress which reduces the opportunity cost of engaging in terrorist activities. In order to see this possibility, we control for the unemployment among male youth in case of terrorism.

We expect a simultaneous bias, especially with respect to GDP per capita, i.e. the prevalence of violence might affect economic growth. Therefore, we resort to the approach of instrumental variable instead of Ordinary Least Squares (OLS). The instrumental variable estimation can be carried out by Two Stage Least Square (2SLS), Generalised Methods of Moment (GMM) or Limited Information Maximum Likelihood (LIML). Bound, *et al.* (1995) postulate that when the excluded instruments are only weakly correlated with the endogenous variable, the tests of significance have incorrect size, i.e. the estimated standard errors of 2SLS and instrumental variable estimators may be too small. We confirm with the Cragg and Donald (1993) statistic that our excluded instruments are weak and hence calls for remedial or alternative estimation techniques. One such estimator is Limited Information Maximum Likelihood (LIML), which is a linear combination of the OLS and 2SLS estimate, with weights (depending on data)

¹² Fractionalisation enhances with language barriers or income inequality.

that eliminate the 2SLS bias. LIML estimator was proposed by Anderson and Rubin (1950) and is the maximum likelihood equivalent of the 2SLS estimator. Thus, we use LIML estimation and it improves the Cragg-Donald Wald F statistic results by revising the critical values.

2.3. Construction of Variables

With regard to terrorism, we use the Global Terrorism Database (GTD) which reports the incidents of terrorist activities after the end of cold war.¹³ We take the average for each country for the available period. The data on ethnic violence, civil wars and inter-state wars is accessed from the dataset of Major Episodes of Political Violence (MPEV) which is constructed by the Centre of Systemic Peace (CSP) [Marshall (2013)]. The scores on these indicators range from 0 to 10, with zero showing no violence of that particular type and 10 indicating extermination and annihilation.¹⁴ Thus, higher score indicates intense destruction of human and physical resources. Again, the data is averaged for the post-cold war period. Additionally, aggregate of scores for ethnic violence, civil wars and inter-state wars is taken to assess the prevalence of overall political violence for each country.

We construct the variable of informal institutions by following the methodology of Williamson and Kerekes (2011). The authors identify four distinct categories of culture, i.e. trust, respect, control, and obedience that serve as rules governing interactions between individuals. In order to get data on these variables, we use the World Values Surveys (WVS) which explores cultural values and beliefs across the globe. In addition, we control for the prevalence of *tolerance* within a country in order to develop a comprehensive measure of informal institutions. *Trust* (T) is measured through the survey question: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” The level of trust is captured in each country by adding the number of respondents that answered, “Most people can be trusted”. A high score in trust is, thus, indicative of a more cohesive society [Reemtsma (2012)].

The survey question used for describing *Control* (C) is: “Some people feel they have completely free choice and control over their lives, while other people feel that what we do has no real effect on what happens to them. Please use this scale (from 1 to 10) where 1 means “none at all” and 10 means “a great deal” to indicate how much freedom of choice and control in life you have over the way your life turns out”. An aggregate control component is found by averaging all the individual responses and multiplying them by ten. Lack of control may lead

¹³ GTD is published by University of Maryland, USA.

¹⁴ Events like the holocaust or nuclear attack on Japan during the World War II are assigned the score of 10. Likewise, the score of 1 implies that the violence has been *Sporadic or Expressive*. The impact is generally short term and localised.

to the feeling of helplessness and exclusion, which exacerbates grievances and increase likelihood of conflict. *Respect (R)* is capture through a question: “*Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five*”. *Respect* is defined as the percentage of respondents in each country that stated the quality “*tolerance and respect for other people,*” as being important. *Respect* encapsulates permissiveness for outside the identity group interactions, which may lead to widespread understanding and acceptance for opposing outlooks, leading to reduction in the likelihood of violence. *Obedience (O)* in the society is depicted by the percentage of respondents that identified obedience as a desirable quality in social interactions. Obedience within a society allows for violence specialists to command higher degrees of control. With regard to *Tolerance (T)*, Bomhoff and Lee (2012) have used the question, “*On this list are various groups of people. Could you please mention any that you would not like to have as neighbours?*” to indicate tolerance in the society. Percentage of respondents who indicate that they would not like to have “*people of different race*”, and/or “*immigrants/foreign workers*” as neighbours, is taken as an indicator of intolerance in society.

Trust, respect and control tend to remove grievances, increase acceptance towards other groups, and lead to more cohesive social construct which, in turn, enhances inter-group interactions. All these factors tend to reduce the likelihood of violence. *Obedience* allows violence specialists to exploit deep rooted traditional beliefs and mobilise a large number of people for instigating unrest. Likewise, prevalence of *intolerance* contradicts the values encapsulated in trust, respect and freedom which may stimulate violence. By adding the indicators of trust, respect and freedom and subtracting obedience and intolerance, we get an indicator for violence mitigating informal institutions. We then convert this measure to a relative scale which ranges from 1 to 10, with 10 representing the country with the higher quality of informal institutions. Thus, the final indicator for informal institutions (II) is:

$$II_i = (T_i + R_i + C_i) - (O_i + I_i)$$

In order to measure the strength of formal institutions, we use five indicators that capture extent and degree of the constraints on power of the chief executive of a country. These are Plurality (PL), Proportional Representation (PR), Checks and Balances on Chief Executives (CBCE), System (S) and FINITTRM. In Plurality systems, political representatives are elected using a winner take all rule. It assumes the value ‘1’ if this system is in place and zero otherwise. Following Glaeser, *et al.* (2004), we take average for the variable over the post-cold war years. Proportional Representation means that representation in the elected body of legislators is determined by percentage of the electoral votes received. It equals one if candidates are elected using a proportional

representation system, and zero otherwise. The value of ‘Checks and Balances on Chief Executives’ ranges from 1 to 6, where 1 represents a non-competitively elected legislature and six represents elected representatives in legislature. Lower score implies almost absolute power with the executive and higher score implies higher constraints on the executive. The value of System ranges from zero to 2. Zero represents a presidential system, while one represents a system in which the president is elected by assembly, and 2 represents parliamentary system. The last indicator is ‘FINITTRM’, which is a binary variable that takes the value one if there is a constitutional limit on the number of years the executive can remain in power before new elections must be called and zero otherwise. Average of these indicators is taken from 1991 to 2015. Then, using the Principal Components Analysis (PCA), a composite index of formal institutions is constructed. The generated index is then rescaled to range from 1 to 10, with 1 representing no constraints on the power of the executive while 10 showing little authority given to the executive. For data on these indicators, we use the Database of Political Institutions (DPI) constructed by Beck (2000).

2.4. Summary Statistics of the Data

Given the availability of data, we construct indicators of the formal and informal institutions for 89 countries by using the period from 1991 to 2015. In this way, we are able to control for the institutional upheaval, resulting from the end of cold war especially in the Central Asian and Eastern European States. For other controls, like economic development, education, youth unemployment etc., we use World Development Indicators (WDI) of the World Bank. Ethnolinguistic Fractionalisation is taken from Alesina, *et al.* (2003).¹⁵ We rely on cross-sectional data; however, the data is highly variable-specific, depending on the availability of data. The use of cross-sectional data is justified by two factors. First, the panel is not balanced, i.e. in some countries; the variables are averages over longer periods but in other cases, they are the averages over smaller periods. Second, institutional variables are highly persistent. For instance, democracy in developed countries and monarchy in Arab countries are persistent over the whole period covered. The details of summary statistics are given in tables A1, A2, and A3 in the appendix. On our measures of political violence, the average scores across the globe are 0.63, 0.06, 0.08 and 0.12 per annum for major episodes of violence, inter-state wars, civil wars and ethnic violence, respectively. Alternatively, on global level, we have more ethnic violence as compared to civil wars and inter-state wars. Likewise, the average number of incidents of terrorist activities across the globe is 9.61 per annum. Afghanistan has received the maximum number of terrorist incidents, i.e. 187.34 incidents per annum. Civil wars are frequent in Africa while inter-state wars are recurrent in North America. In terms of ethnic

¹⁵The details on the definition of these variables are given in table A5 in the appendix.

violence and terrorism, Asia dominates across the globe. In Africa, we experience the highest number of major episodes of overall political violence.

The average score on formal and informal institutions for our sample is 5.85 and 5.59, respectively. The continent-wise comparison shows that Europe dominates in terms of the prevalence of both formal and informal institutions while Africa is characterised as the continent with weak formal and informal institutions. Major episodes of overall political violence, civil wars, ethnic violence, and terrorism is highest in countries where we observe weak formal institutions and weak informal institutions, while inter-state wars are highest in countries where the informal institutions are though strong, but the formal institutions are weak. The relationship between our indices of institutions and violence has been assessed by a simple scatter diagram along with a simple linear relationship.¹⁶ As is visible in figure A1 in the appendix, both formal and informal institutions are negatively linked with almost all types of political violence. In case of ethnic violence and terrorism, informal institutions are seemingly more effective as compared to formal institutions. However, for inter-state wars and civil wars, formal institutions seem more effective in mitigating violence. This analysis not only confirms, for the most part, the existence of relationship between institutions and violence but also provides us basis for a more in-depth analysis.

On the basis of our constructed indices of institutions, we categorise the countries into four possible combinations of formal and informal institutions.¹⁷ Our bench-mark in this regard is the score of 5 on these indices, i.e. institutions in a country are strong if the score achieved by that country on our index is equal to or greater than 5. This categorisation is shown in table A4 in the appendix. Column 1 represents countries with strong political rules and strong informal constraints which implies that these countries not only have effective formal conflict resolution mechanisms but also have cultural values that inhibit violent tendencies. Thus, such countries are not likely to experience mass violence. Majority of the countries in this quadrant belong to the OECD and almost all of them are considered to be highly developed. The most striking feature is that the United States is not in this list. In fact, the United States lies in quadrant 2, owing to the presidential system and lack of proportional representation. None of these countries have experienced civil war since 1990, only Russia has engaged in inter-state conflict. However, incidences of ethnic violence were experienced by many of these countries. Other than Colombia and Russia, the incidents of terrorism are also not commonplace.

Column 2 exemplifies existence of the less developed formal institutions with strong informal constraints. In such countries, we conjecture that the informal institutions would be effective in limiting the incidence of violence as

¹⁶ Institutions are taken on x-axis while various types of political violence are taken one-by-one on y-axis.

¹⁷We are following Williamson (2009) in this regard.

mobilising people towards violence may be difficult with higher levels of trust, respect and tolerance, even in the absence of strong formal institutions. Based on our indices, this quadrant includes only a small number of countries with the United States being the most significant. Kazakhstan, Kyrgyzstan and Uzbekistan are unitary states where the electoral process is known to be highly questionable because the chief executive (President) exercises immense control. South Korea has seen increase in the power of the chief executive since 2005, which may be the reason for its lying in this quadrant. The occurrence of civil war is extremely rare in these countries, with only exception being the Georgia. Ethnic violence is also experienced by Kyrgyzstan only. Terrorist activities remain low in these countries as well. Countries in the column 3 portray the situation where formal constraints are effectively enforced but the informal institutions are weak. In such countries, the values espoused by formal institutional reforms have not been assimilated in the society. The role of institutional arrangements in terms of violence mitigation remain ambiguous. Column 4 represents countries with weak formal and informal institutions. These societies are expected to be marked with frequent episodes of violence, as both formal and informal constraints would be ineffective. It is notable that majority of these countries are situated in Africa or Middle East and happens to be highly dependent on natural resources especially petroleum.

3. EMPIRICAL RESULTS

In this section, we discuss the findings of our study. We are reporting the results by the type of violence.

3.1. Major Episodes of Political Violence

Table 1, comprising five columns, shows the results in case of major episodes of the overall political violence. Columns 1 and 2 assess the impact of informal and formal institutions, respectively, on major episodes of violence. As can be seen, informal institutions are more effective in the mitigation of violence as compared to formal institutions. Column 3 strengthens this finding, once we control for both in the same specification. As is shown by the coefficient, a 10 percent improvement in informal institutions reduces the average incidences of major episodes of political violence by 3.5 percent. This implies that cultural values are more effective in mitigating violence as compared to formal constraints on the powers of executives. In column 4, we find that although formal institutions alone are ineffective in controlling violence; they can be effective if they are supported by informal institutions. Alternatively, in the presence of violence inhibiting cultural constraints, formal constraints on chief executives become effective in controlling violence. Thus, we observe complementarity between the two types of institutions. Such complementarity is, further, confirmed by the coefficient for the ratio of formal institutions to informal institutions. The ratio

Table 1

<i>Instrumental Variable Regression Results for Major Episodes of Violence</i>					
Variables	Dependent Variable: Major Episodes of Violence				
Explanatory Variables	1	2	3	4	5
Informal Institutions	−0.3294* (0.1970)	—	−0.3490* (0.2087)	—	—
Formal Institutions	—	0.0534 (0.2080)	0.0936 (0.2001)	0.2641 (0.2271)	—
Formal Institutions*Informal Institutions	—	—	—	−0.0329* (0.0181)	—
Formal Institutions/ Informal Institutions	—	—	—	—	0.1896 (0.3360)
Per Capita GDP	0.5261 (0.3615)	0.1779 (0.3638)	0.4228 (0.4335)	0.3736 (0.4510)	0.2397 (0.2369)
Linguistic Fractionalisation	2.2244** (0.9211)	2.2126** (0.9216)	2.1874** (0.8903)	1.9727** (0.8765)	2.2727** (0.9572)
Oil Exporter	0.4812 (0.3415)	0.6037* (0.3260)	0.5404* (0.3269)	0.3776 (0.3199)	0.5682 (0.3539)
Trade Openness	−0.0138*** (0.0049)	−0.0127*** (0.0041)	−0.0127*** (0.0042)	−0.0133*** (0.0043)	−0.013*** (0.0044)
Intercept	−2.1499 (2.4611)	−1.2798 (2.6549)	−1.7633 (2.7994)	−2.6474 (3.4846)	−1.7578 (2.3869)
Number of Observations	75	75	75	75	75
Under-identification Test (LM Statistic)	19.791*** p-value: 0.003	16.339** p-value: 0.01	14.752** P-value: 0.0223	15.656** P-value: 0.0157	20.844** p-value: 0.0020
Hansen J Statistic	1.021 p-value: 0.9609	1.813 p-value: 0.8744	1.744 P-value: 0.8833	3.748 P-value: 0.5862	1.846 p-value: 0.8700

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent. Robust Standard Errors in the Parenthesis.

Instrumented: Per Capita GDP with Instruments: Capital Formation, Unemployment, Legal Origins (UK), Primary Enrollment Rate, Land Locked,

term, incorporated in column 5, is insignificant which confirms that if formalisation exceeds informal support, the institutional impact becomes insignificant. This also signifies the need for institutional balance, i.e. formal institutions need to be supported by equally powerful informal institutional setup.

As far as other controls are concerned; per capita GDP has a positive though insignificant effect on violence. This shows that increase in per capita GDP is either accompanied by higher levels of inequality or results in higher potential rents, creating incentives for involvement in violence. Linguistic

fractionalisation is also found to be significantly violence promoting. This implies that the lack of communication between diverse groups results in ignorance and misinterpretation of others' perspectives and can be a significant instigator for violence. Further, linguistic fractionalisation also provides the violence specialists a tool for spreading incendiary information about other groups. Likewise, if a country is net exporter of oil, it is likely to face higher incidences of mass violence as dependence on oil is indicative of potential rents that can be extracted. Trade openness is found to be significant and violence inhibiting, giving credence to the idea that trade enhances the opportunity cost of violence.

3.2. Civil Wars

The results, in case of civil wars, are shown in Table 2 which is decomposed into five columns, in similar arrangement to table 1. Columns 1 and 2 shows that both the informal and formal institutions are instrumental in reducing civil wars; however, informal institutions are more effective as compared to their formal counterparts. For instance, a 10 percent improvement in institutions reduces civil wars by 1.2 and 0.88 percent in cases of informal and formal constraints, respectively. The significance of formal institutions remains intact while the significance of informal institutions weakens once we control for both in column 3. However, the magnitude of the coefficient of informal institutions in absolute terms is still greater which implies that informal constraints have a greater role in reducing incidents of the civil wars as compared to formal constraints. The interaction term incorporated in column 4 is negative but insignificant, giving no idea with regard to complementarity. However, column 5 shows that formal institutions are ineffective in mitigating violence in the absence of corresponding and equivalent informal support. Civil wars are usually politically motivated which find support when a significant proportion of the populace feels unrepresented by the formal government structure. Consequently, the likelihood of civil wars is limited in open access orders which are characterised by considerable control over the power of the executives. Similar is the case with informal structures, i.e. deep-rooted cultural values may inhibit the recruitment process of violence specialists.

With regard to other controls, increase in per capita GDP has positive and significant effect on civil war, indicating that countries with higher per capita GDP face more incidences of civil war. Alternatively, a higher GDP per capita may entice violence specialists to perpetrate violence in order to extract the potential rents. Likewise, a higher GDP per capita may instigate civil wars if the effects of economic growth are not trickled down enough to control inequalities. Interestingly, ethnic fractionalisation has an inhibiting effect on civil war. This means that ethnic fractionalisation can lead to hypo-ethnocentrism where diversity and proximity generate greater understanding of the other ethnic groups. Thus, in the presence of productive heterogeneity, mass support will be difficult

Table 2

Instrumental Variable Regression Results for Civil War

Variables	Dependent Variable: Civil War				
	1	2	3	4	5
Informal Institutions	−0.1161* (0.0678)	—	−0.1210* (0.0767)	—	—
Formal Institutions	—	−0.0876** (0.0367)	−0.0768** (0.0347)	−0.0522* (0.0296)	—
Formal Institutions * Informal Institutions	—	—	—	−0.0075 (0.0061)	—
Formal Institutions/ Informal Institutions	—	—	—	—	−0.0131 (0.0296)
Per Capita GDP	0.1984* (0.1079)	0.1989* (0.1002)	0.2904* (0.1572)	0.2669 (0.1720)	0.1083 (0.0740)
Linguistic Fractionalisation	0.6981** (0.3081)	0.7629*** (0.2998)	0.7830*** (0.2993)	0.7360** (0.3039)	0.6581** (0.3168)
Ethnic Fractionalisation	−0.6488 (0.4255)	−0.7302* (0.4177)	−0.7963* (0.4199)	−0.7659* (0.4314)	−0.5037 (0.4258)
Oil Exporter	0.1944 (0.1454)	0.1847 (0.1652)	0.1650 (0.1475)	0.1007 (0.1423)	0.2313 (0.1697)
Trade Openness	−0.0025 (0.0018)	−0.0036* (0.0020)	−0.0037* (0.0021)	−0.0039* (0.0024)	−0.0022 (0.0017)
Urbanisation	−0.0087* (0.0048)	−0.0117* (0.0060)	−0.0121* (0.0061)	−0.0119* (0.0064)	−0.0086* (0.0049)
Gini Coefficient	0.0046 (0.0080)	0.0103 (0.0092)	0.0075 (0.0087)	0.0122 (0.0090)	0.0061 (0.0089)
Intercept	−0.9045* (0.4816)	−1.1144* (0.5715)	−1.1792* (0.6347)	−1.6034 (1.0393)	−0.8627 (0.5450)
Number of Observations	61	61	61	61	61
Under-identification Test (LM Statistic)	19.452*** p-value: 0.0069	18.080*** p-value: 0.0116	19.266*** P-value: 0.0074	19.845*** P-value: 0.0059	19.521*** p-value: 0.0067
Hansen J Statistic	4.334 p-value: 0.6316	3.882 p-value: 0.6926	3.812 P-value: 0.7021	4.007 P-value: 0.6757	5.039 p-value: 0.5388

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent. Robust Standard Errors in the Parenthesis.

Instrumented: GDP Per Capita

Instruments: Capital Formation, Unemployment, Primary Enrolment Rate, Export of Natural Resources, Legal Origins (UK), Land Locked

to garner on the basis of ethnicity, leading to decline in average incidences of civil wars. Somewhat similar results can be observed in the work of Collier and Hoeffler (2002). Likewise, trade openness restricts civil wars which, again, implies that income-enhancing trade openness raises the opportunity cost of violence, exhibiting decline in incidence of civil wars [Amodio, *et al.* (2017)]. Urbanisation is also useful in mitigating civil wars. Higher levels of modernisation and dissemination of the contemporary ideals of non-violence may reduce violent efforts for political motives. It may also reflect an increase in opportunities for social and economic mobility which, in turn, will limit the chances of civil wars. Countries' status as net exporters of oil and inequality measured by Gini coefficient have positive but statistically insignificant effects on civil wars. Alternatively, potential rents and inequalities might instigate the incidence of civil wars.

3.3. Inter-State Wars

We show the results of inter-state wars in Table 3. As can be seen from the table, formal institutions are more effective in mitigating inter-state wars as compared to informal institutions. In specification shown in column 2, a 10 percent improvement in formal institutions reduces the incidence of inter-state wars by around 0.5 percent. This reveals that strong formal institutions ensure reliable contract enforcement mechanism, prevalence of the rule of law and credible commitments in inter-state relationships which reduce the probability of inter-state wars. Moreover, with respect to inter-state wars, there is lack of complementarity between formal and informal institutions as is shown by insignificance of the interaction term. However, the insignificance of the ratio between formal and informal institutions depicts that, in the absence of equivalent violence inhibiting cultural constraints, formal institutions become ineffective in controlling violence.

Additionally, economic development, indicated by GDP per capita, trade openness and being net exporter of oil and petroleum have no effects on inter-state wars. The dummy for a country being land-locked shows that land-locked countries are expected to experience more incidents of inter-state wars. Alternatively, the dependence on neighbouring transit countries raises stakes in any inter-state dispute which may reduce the opportunity cost of conflicts. Likewise, land locked countries tend to be dependent on the political situation of the transit neighbours. Both of these enhance the probability of being engaged in inter-state wars. Terrorist activities increase the incidence of inter-state wars, giving the idea that cross-border terrorism is one of the major causes of inter-state disputes. In other words, regional, political and economic rival nations tend to hold each other responsible for acts of terror taking place on their soil. Such rivalry can escalate into a war.

Table 3

Instrumental Variable Regression Results for Inter-State War

Variables	Dependent Variable: Inter-State War				
Explanatory Variables	1	2	3	4	5
Informal Institutions	-0.0105 (0.0295)	—	-0.0187 (0.0319)	—	—
Formal Institutions	—	-0.0467** (0.0214)	-0.0469** (0.022)	-0.0336* (0.0202)	—
Formal Institutions * Informal Institutions	—	—	—	-0.0030 (0.0024)	—
Formal Institutions/ Informal Institutions	—	—	—	—	-0.0197 (0.0277)
GDP Per Capita	0.0745 (0.0706)	0.1075* (0.0549)	0.1289 (0.0809)	0.1399* (0.0709)	0.0713 (0.0443)
Trade Openness	0.0003 (0.0006)	-0.0002 (0.0006)	0.0070** (0.0031)	-0.0004 (0.0006)	0.00019 (0.0006)
Oil Exporter	0.0891 (0.0585)	0.0589 (0.0571)	0.0560 (0.0559)	0.0329 (0.0540)	0.0968 (0.0626)
Land Locked	0.2834*** (0.1002)	0.2784*** (0.0961)	0.2906*** (0.1016)	0.2645*** (0.0952)	0.3002*** (0.1043)
Terrorist Activity	0.0068** (0.0032)	0.0070** (0.0031)	0.0070** (0.0031)	0.0069** (0.0031)	0.0069** (0.0032)
Intercept	-0.7318 (0.5544)	-0.7782* (0.4522)	-0.8634 (0.5506)	-0.9927* (0.5539)	-0.7401 (0.4652)
Number of Observations	65	65	65	65	65
Under-identification Test (LM Statistic)	25.485*** p-value: 0.0003	32.443*** p-value: 0.0000	29.057*** P-value: 0.0001	26.793*** P-value: 0.0002	31.678*** p-value: 0.0000
Hansen J Statistic	6.152 p-value: 0.2917	4.623 p-value: 0.4636	4.198 P-value: 0.5213	4.382 P-value: 0.4959	5.684 p-value: 0.3382

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent. Robust Standard Errors in the Parenthesis.

Instrumented: GDP Per Capita

Instruments: Capital Formation, Unemployment, Primary Enrolment Rate, Urbanisation, Asia/Africa

3.4. Ethnic Violence

The results, presented in Table 4, depict greater effectiveness of informal institutions in controlling ethnic violence. Column 1 shows that a 10 percent improvement in informal institutions reduces ethnic violence by around 1.3 percent. Ethnic violence is an outcome of hyper-ethnocentrism, that occurs when one ethnic group feel its interests and identity threatened by other ethnic groups. Such cleavages or marginalisation can result in riots, fighting, civil war or genocide. In such a scenario, formal institutions (as is apparent from the

Table 4

Instrumental Variable Regression Results for Ethnic Violence

Variables	Dependent Variable: Ethnic Violence				
Explanatory Variables	1	2	3	4	5
Informal Institutions	-0.1293* (0.7301)	—	-0.1277* (0.0711)	—	—
Formal Institutions	—	-0.0031 (0.0336)	0.0051 (0.0377)	0.1131* (0.0676)	—
Formal Institutions * Informal Institutions	—	—	—	-0.0199* (0.0108)	—
Formal Institutions/ Informal Institutions	—	—	—	—	0.0401 (0.0621)
Per Capita GDP	0.4852* (0.2887)	0.3436* (0.2020)	0.4715* (0.2820)	0.5075 (0.3147)	0.3523* (0.2038)
Ethnic Fractionalisation	0.1950 (0.3260)	0.2302 (0.2597)	0.2055 (0.2893)	0.1778 (0.2948)	0.2494 (0.2979)
Linguistic Fractionalisation	0.5057* (0.2950)	0.3836 (0.2394)	0.4923* (0.2890)	0.4860 (0.3021)	0.3942 (0.2634)
Trade Openness	-0.0031** (0.0016)	-0.0020 (0.0012)	-0.0030* (0.0015)	-0.0028* (0.0016)	-0.0020 (0.0013)
Net Secondary School Enrollment	-0.0185** (0.0090)	-0.0170** (0.0075)	-0.0182** (0.0086)	-0.0206** (0.0100)	-0.0175** (0.0079)
Latitude	0.7061 (0.4157)	0.3467 (0.3439)	0.7014 (0.4065)	0.7974* (0.4385)	0.3938 (0.3420)
Intercept	-2.5080 (1.8526)	-1.9443 (1.3607)	-2.4458 (1.7370)	-3.3054 (2.2253)	-2.0862 (1.4630)
Number of Observations	66	66	66	66	66
Under-identification Test (LM Statistic)	10.197** p-value: 0.0372	10.792** p-value: 0.0290	9.954** P-value: 0.0412	9.256* P-value: 0.0550	10.895* p-value: 0.0278
Hansen J Statistic	2.873 p-value: 0.4116	1.115 p-value: 0.7735	3.102 P-value: 0.3762	2.846 P-value: 0.4160	1.011 p-value: 0.7987

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent. Robust Standard Errors in the Parenthesis.

Instrumented: GDP Per Capita

Instruments: Capital Formation, Unemployment, Primary Enrolment Rate

insignificant coefficients for formal institutions) might be ineffective in neutralising the situation. However, informal constraints that incorporate values like trust, respect and tolerance can result in hypo-ethnocentrism. Alternatively, when people of varying ethnicities interact with each other in a respectful manner and prefer non-violent avenues of conflict resolution, it reduces the possibilities of ethnic violence.¹⁸ The coefficient of interaction term is negative and significant

¹⁸Increase in communication dispels a number of misperceptions and makes it much more difficult for violence specialists to mobilise support for perpetuation of ethnic violence.

which implies that, in the presence of violence inhibiting informal constraints, formal constraints become more effective in reducing ethnic violence. The complementarity is further strengthened by the insignificance of ratio term which shows that, in the absence of informal constraints, formalisation is not effective in mitigating ethnic violence. In general, violence inhibiting cultural values induce policymakers to legislate and implement measures that protect ethnic minorities and prevent ethnically motivated violence.

Ethnic fractionalisation has no effect on ethnic violence; however, linguistic fractionalisation enhances the possibilities of ethnic violence. In other words, the lack of communication associated with linguistic differences may enhance misunderstandings between different ethnic groups which may create an atmosphere of mistrust and disrespect for diversity. This atmosphere of animosity provides an opportunity to violence specialists to instigate mass violence. Per capita GDP also enhances ethnic violence which brings into focus the issue of distribution of economic benefits among different ethnic groups. Economic development may incentivise violence specialists to engage in violence using ethnic and linguistic differences for their own interests. The negative coefficient of trade openness signifies that increase in trade leads to higher opportunity cost of violence. Alternatively, the trade-related opportunities incentivise different ethnic groups to seek out non-violent ways of extracting rents instead of engaging in violence. Moreover, education reduces ethnic violence as is shown by the negative and significant coefficient of secondary school enrolment rate. Education has a formative effect on mind and behaviour that increases the acceptance of diversity and reduces hyper-ethnocentrism. Also, education increases the opportunity cost of violence by adding to individual's ability to earn. This will induce people to avoid engaging in ethnic violence. Geographical location measured by latitude is not significant in explaining the incidences of ethnic violence.

3.5. Terrorism

Terrorism, whose results are shown in Table 5, is inversely affected by informal institutions. As is evident from columns 1 and 3, a 10 percent improvement in informal institutions reduces average terrorist activities by around 60 incidents per annum. Overall, the first four columns show that better violence inhibiting informal rules are more effective in preventing incidences of terrorism as compared to formal institutions. Cultural values like trust, respect, tolerance increase the value of human life, leading to distrust towards violent activities. Thus, people in more tolerant and respectful societies would not be induced to partake in terrorist activities. The insignificance of formal institutions reflects the insufficiency of legislation in preventing terrorism. However, formal constraints become effective in preventing terrorism when they are supported by strong informal institutions. This is depicted by the negative and significant

Table 5

Instrumental Variable Regression Results for Terrorism

Variables	Dependent Variable: Terrorism				
Explanatory Variables	1	2	3	4	5
Informal Institutions	-6.2212* (3.3677)	—	-6.3474* (3.553)	—	—
Formal Institutions	—	-0.5332 (2.4875)	-0.0730 (2.5362)	2.7489 (2.7653)	—
Formal Institutions * Informal Institutions	—	—	—	-0.5389* (0.3039)	—
Formal Institutions/ Informal Institutions	—	—	—	—	0.5720 (4.1877)
Per Capita GDP	11.7216** (5.2357)	4.9740 (4.4372)	11.8243* (6.1890)	10.1215 (7.007)	4.1328 (2.8894)
Ethno-Linguistic Fractionalisation	16.2028* (8.3891)	15.9770* (8.4628)	16.5431* (8.5207)	15.3699* (8.5354)	15.5443* (8.1078)
Oil Exporter	4.1059 (8.4589)	5.9753 (7.511)	4.2801 (7.7746)	2.3125 (7.2271)	6.2449 (8.5122)
Trade Openness	-0.1948** (0.0878)	-0.1687** (0.0818)	-0.1905** (0.0851)	-0.2007** (0.0859)	-0.1589** (0.0812)
Youth Unemployment (Male)	-0.1465 (0.4297)	0.2944 (0.4547)	0.1561 (0.4519)	0.2458 (0.4454)	0.2889 (0.4535)
Intercept	-63.2753 (38.9926)	-38.6760 (37.7409)	-64.0706 (42.4296)	-76.1431 (59.7396)	-35.1255 (32.0391)
Number of Observations	78	78	78	78	78
Under-identification	19.927***	21.286***	17.729***	17.303***	24.825***
Test (LM Statistic)	p-value: 0.0013	p-value: 0.0007	P-value: 0.0033	P-value: 0.0040	p-value: 0.0002
Hansen J Statistic	3.505 p-value: 0.4771	6.162 p-value: 0.1872	3.503 P-value: 0.4774	5.565 P-value: 0.2341	6.319 p-value: 0.1766

* Significant at 10 percent; ** Significant at 5 percent; *** Significant at 1 percent. Robust Standard Errors in the Parenthesis.

Instrumented: GDP Per Capita

Instruments: Capital Formation, Primary Enrolment Rate, Legal Origins (UK), Land Locked, Latitude

coefficient of the interaction term between formal and informal institutions. Moreover, the insignificance of ratio term further strengthens this argument. This shows that terrorism is first and foremost a cultural phenomenon and cultural constraints on violent behaviour are needed to make formal rules more effective in thwarting terrorist activities. Thus, we have complementarity between formal and informal institutions in mitigating terrorist activities.

Per capita GDP has positive effect on terrorism. Higher GDP per capita increases potential rent and, hence, creates incentives for engaging in violence. Further, if increase in GDP per capita is accompanied by high levels of

inequalities, then it can lead to increase in animosity against the higher income groups which can make it easy for violence specialists to recruit individuals and carry out acts of terrorism. Ethno-linguistic fractionalisation is enhancing terrorism which is indicative of the dire impact of ethnic rivalries [Kimsey and Fuller (1998)]. The language or ethnicity based socio-economic inequalities marginalise or disenfranchise minorities which may increase terrorist activities. Trade Openness discourages terrorism. This implies that trade openness increases economic opportunities for investment and employment which, in turn, can be instrumental in reducing terrorist activities. The coefficients of oil exporter dummy and male youth unemployment are predominantly positive but insignificant. This means that while these are having positive effect on terrorism, this effect is less likely to materialise.

4. CONCLUSION

Institutions comprise rules that structure social, economic and political interactions between individuals and groups in a society. These rules, both formal and informal, constrain socially undesirable behaviour by forming opinions regarding, and in response to, the behaviour of other people. Violence is socially undesirable behaviour emanating from such interactions between individual and groups. In all of its forms, violence is costly to the society. The costs may be economic or non-economic, depending upon the context and type of the violence. In order to avoid such costs or attain prosperity in society, violence has to be contained and prevented. Alternatively, societies establish social order, comprising both the formal and informal institutions, in order to curtail violence. In this study, we explore this link in detail by capturing major types of political violence. In particular, we are interested in studying the role played by formal and informal institutions in the mitigation of violence. In addition, we examine how informal rules interact with formal institutions in mitigating violence. In other words, how effective formal institutions would be when they are not supported by their informal counterparts.

We find that, for political violence as a whole, ethnic violence, and terrorism, informal institutions are more efficient in decreasing violence. Also, informal institutions make formal institutions more effective in the mitigation of these types of violence. This implies that values like trust, control, respect and tolerance are instrumental in reducing ethnic violence, terrorism and major episodes of political violence. In case of civil wars and inter-state wars, formal constraints are more effective as compared to informal constraints. However, in the absence of informal institutions, formal institutions become ineffectual in mitigating violence even in case of civil and inter-state wars. Constrained and accountable chief executives avoid civil and inter-state wars; however, their initiatives in this regard should be supported by the prevalence of values like trust, control, respect and tolerance. The results depict that there is complementarity

between the two types on institutions in reducing violence, giving credence to the idea that without institutional reforms, violence cannot be prevented across the globe. In other words, these results identify the need for exploring the determinants of institutional change especially, in case of the informal institutions.

Further, the analysis of control variables depicts the efficacy of trade openness in preventing political violence. This provides support to the policy of greater openness and liberalisation. Economic prosperity, shown by per capita GDP, is either ineffective or is promoting political violence. It, however, does not imply that national income should be reduced; rather, it draws attention to distributional issues which may be resulting in the emergence of grievances between alternative groups. Hence any policy that leads to increase in per capita GDP has to be evaluated vis-a-vis its effect on the distribution of income. The negative effect of urbanisation on civil wars depicts an encouraging trend in the modern economic and social structure. The role of education in prevention of the ethnic violence is also notable and presents the need to invest in education for all.

While the issue explored in our work has not been investigated before with such details, our study does leave out further venues for research. Given the significance of informal institutions in limiting violence, the factors behind informal institutional change need to be studied and analysed with greater details. Likewise, our measure of formal institutions incorporates strictly the political dimension and it may be interesting to explore the effect of non-political aspects of governance on violence.

Appendix

Table A1
Summary Statistics of Overall Sample

Violence						
Variable	Unit	N	Mean	Standard Deviation	Minimum	Maximum
Major Episode of Political Violence	Average magnitude score since 1991	89	0.63	1.26	0	7.54
Interstate-War	As Above	89	0.06	0.25	0	2.04
Civil War	As Above	89	0.08	0.31	0	2.15
Ethnic Violence	As Above	89	0.12	0.32	0	1.58
Terrorism	Average number of incidents since 1991	92	9.61	25.63	0.03	187.34
Determinants of Violence						
Variable		Observations	Mean	Standard Deviation	Minimum	Maximum
Informal Institutions		93	5.59	1.47	1	10
Formal Institutions		86	5.85	1.81	1	10
Per capita GDP (Constant US Dollars)		91	15970.24	15066.27	810.14	82999.45
GDP Growth (%)		92	3.79	1.98	-1.00	10.44
Trade Openness (% of GDP)		92	81.17	50.81	23.37	362.71
Linguistic Fractionalisation		90	0.34	0.27	0.002	0.92
Ethnic Fractionalisation		90	0.40	0.23	0.002	0.93
Ethno-Linguistic Fractionalisation		87	0.75	0.45	0.004	0.99
Urbanisation (%)		76	25.49	19.64	3.49	99.84
Gini Coefficient (%)		84	37.45	8.00	24.57	61.5
Youth Unemployment Rate (male %)		92	18.53	10.78	1.43	58.08
Net Primary Enrolment Rate		86	90.97	9.38	51.27	99.97
Net Secondary Enrolment Rate		75	74.46	21.35	13.85	98.98

Table A2

Violence in Society by the Type of Institutional Structures

	Strong Formal Institutions and Strong Informal Institutions	Weak Formal Institutions and Strong Informal Institutions	Strong Formal Institutions and Weak Informal Institutions	Weak Formal Institutions and Weak Informal Institutions
Major Episode of Political Violence	0.313 (0.866) [0, 4]	0.352 (0.50) [0, 1.27]	0.788 (1.679) [0, 7.54]	0.989 (1.412) [0, 5]
Interstate-War	0.001 (0.007) [0, 0.04]	0.149 (0.266) [0, 0.67]	0	0.126 (0.416) [0, 2.04]
Civil War	0	0.01 (0.035) [0, 0.12]	0.058 (0.147) [0, 0.46]	0.224 (0.530) [0, 2.15]
Ethnic Violence	0.057 (0.144) [0, 0.62]	0.007 (0.023) [0, 0.08]	0.148 (0.325) [0, 1]	0.223 (0.476) [0, 1.58]
Terrorism	4.17 (9.07) [0.04, 43.57]	1.666 (2.054) [0.1, 6.73]	10.60 (18.252) [0.05, 83.39]	18.898 (42.892) [0.03, 187.34]

Note: This table gives average, standard deviation (in parentheses), maximum and minimum [in square brackets].

Table A3

Violence in Society and Institutions (Regional Comparisons)

	Africa	Asia	Europe	South America	North America
Major Episode of Political Violence	0.805 (0.83) [0, 2.5]	1.10 (1.94) [0, 7.54]	0.053 (0.137) [0, 0.54]	0.611 (1.4) [0, 4]	0.508 (0.774) [0, 1.85]
Interstate-War	0.034 (0.141) [0, 0.58]	0.13 (0.426) [0, 2.04]	0	0	0.134 (0.3) [0, 0.67]
Civil War	0.271 (0.596) [0, 2.15]	0.08 (0.252) [0, 1.15]	0	0	0.092 (0.206) [0, 0.46]
Ethnic Violence	0.201 (0.468) [0, 1.58]	0.204 (0.391) [0, 1.38]	0.024 (0.077) [0, 0.31]	0	0.03 (0.067) [0, 0.15]
Terrorism	6.566 (9.669) [0.08, 28.82]	20.64 (43.97) [0.03, 187.34]	2.836 (5.209) [0.04, 18.93]	8.32 (14.87) [0.22, 43.57]	3.388 (2.883) [0.43, 6.73]
Informal Institutions	4.339 (0.635) [3.37, 5.66]	5.502 (0.885) [3.77, 7.54]	6.247 (1.539) [2.1, 10.01]	5.256 (1.81) [1, 6.9]	5.914 (2.04) [2.36, 8.18]
Formal Institutions	4.59 (1.216) [1.73, 6.45]	4.96 (2.144) [1, 10]	7.108 (1.309) [3.76, 8.96]	6.29 (0.68) [4.66, 6.86]	6.13 (0.49) [5.34, 6.55]

Note: This table gives average, standard deviation (in parentheses), maximum and minimum [in square brackets].

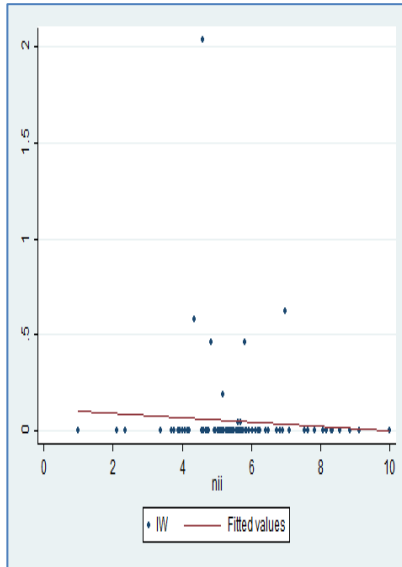
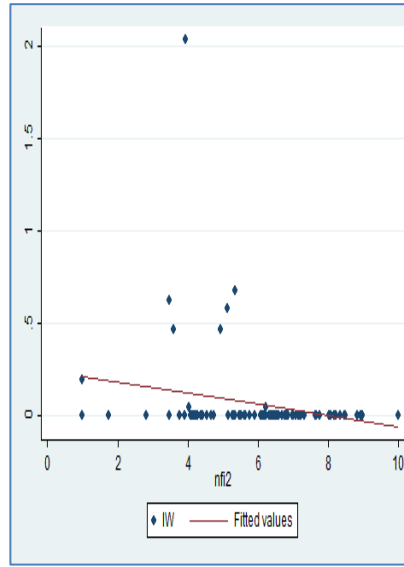
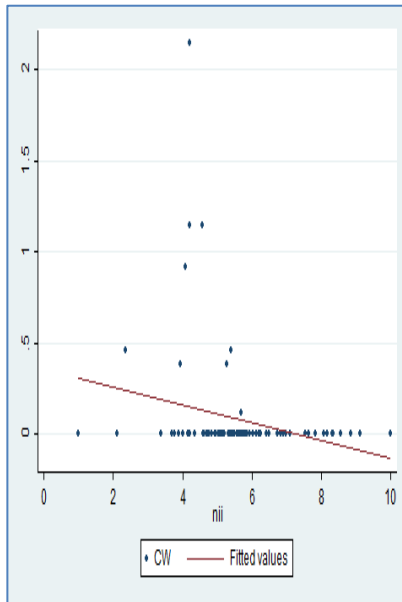
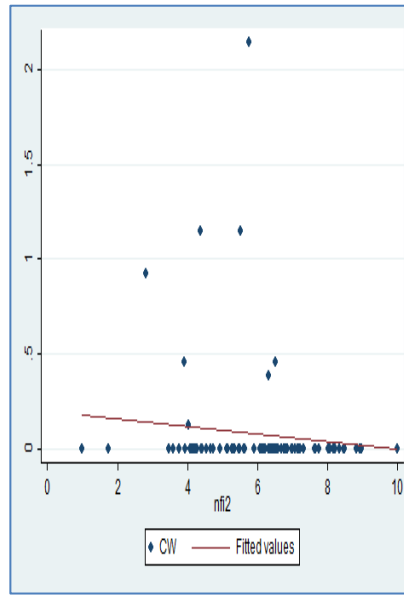
Table A4

<i>Possible Combinations of Formal and Informal Institutional Arrangements</i>			
1. Strong Formal Institutions and Strong Informal Institutions	2. Weak Formal Institutions and Strong Informal Institutions	3. Strong Formal Institutions and Weak Informal Institutions	4. Weak Formal Institutions and Weak Informal Institutions
Argentina, Australia, Canada, China, Colombia, Cyprus, Czech Republic, Dominican Republic, Finland, France, Germany, United Kingdom, Hong Kong, Hungary, Italy, Japan, Latvia, Macedonia, Mexico, Moldova, Netherlands, New Zealand, Norway, Poland, Puerto Rico, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Uruguay	Azerbaijan, Bahrain, Chile, Georgia, Guatemala, Kazakhstan, Kyrgyzstan, South Korea, Taiwan, USA, Uzbekistan, Vietnam	Albania, Brazil, Bulgaria, Croatia, Cyprus, Ecuador, El Salvador, Estonia, India, Indonesia, Israel, Libya, Malaysia, Peru, Qatar, Serbia, South Africa, Thailand, Trinidad- Tobago, Turkey, Ukraine, Venezuela	Algeria, Armenia, Bangladesh, Belarus, Burkina Faso, Egypt, Ethiopia, Ghana, Iran, Iraq, Jordan, Kuwait, Lebanon, Lithuania, Mali, Morocco, Nigeria, Pakistan, Philippines, Rwanda, Singapore, Tanzania, Tunisia, Uganda, Yemen, Zimbabwe

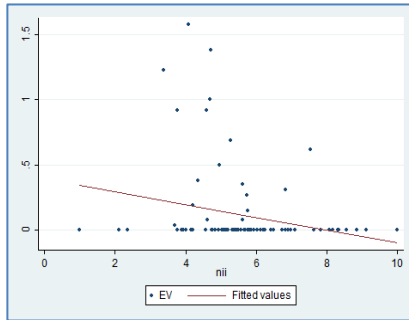
Table A5

Definition of Variables and their Sources of Data

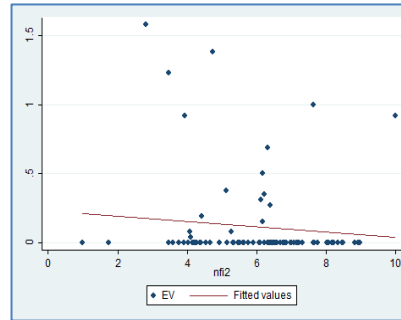
Variable	Definition	Source
Terrorism	Violence perpetrated by non-state actors in order to promote and spread fear. It is politically motivated and is intended to project a particular point of view. Average incidents of terrorism since 1991.	Global Terrorism Database
Ethnic Violence	Ethnic violence is motivated by ethnic animosity and conflict. It ranges from ethnically motivated strikes and riots to ethnic cleansing and genocide. Unlike terrorism ethnic violence is almost always targeted at people belonging to perceived adversary ethnic groups. Average magnitude score since 1991.	Major Episodes of Political Violence (MPEV) published by Center for Systemic Peace (CSP)
Civil Wars	A civil war is the armed conflict between structured groups within the same country. This conflict is generally politically motivated to gain control of the country, to achieve succession for a particular region within the country or to alter government policies. Average magnitude score since 1991.	Major Episodes of Political Violence (MPEV) published by Center for Systemic Peace (CSP)
Inter-state Wars	Conflict between two or more states, which use their respective armed forces in the conflict. Inter-state conflict that results in more than 1000 deaths is generally considered as a full-scale war. Average magnitude score since 1991.	Major Episodes of Political Violence (MPEV) published by Center for Systemic Peace (CSP)
Informal Institutions	Cultural values that potentially govern interactions between various agents in the society. Incorporate values of trust, respect, tolerance, freedom and obedience. The value of the index has been rescaled to lie between zero and one. Average score of the index for the last four rounds has been calculated.	World Value Survey (WVS) by Institute for Comparative Survey Research, Austria
Formal Institutions	Institutional constraints on the power of the executive incorporating plurality, proportionality, system of governance and limits to terms of the executive. The value of the index has been rescaled to lie between zero and one. Average score of the index since 1991 has been included.	Database of Political Institutions
Economic Progress & Development	GDP per Capita (in constant \$), GDP Growth Rate [Average taken since 1991]	World Development Indicators
Education	Net Primary Enrollment Rate, Net secondary Enrollment Rate	World Development Indicators
Urbanisation	Percentage of population living in urban area	World Development Indicators
Youth Unemployment	Youth Unemployment among Males aged 15-24 years (% of total labour force within the age group)	World Development Indicators
Linguistic Fractionalisation	The probability that if two people are randomly selected from the population they would be speaking different languages	Alesina, et al. (2003)
Ethnic Fractionalisation	The probability that if two people are randomly selected from the population they would be of different ethnicities	Alesina, et al. (2003)
Trade Openness	Total trade as percentage of GDP (average taken for data since 1991)	World Development Indicators

Fig. A1. Institutions and Political Violence**I. Informal Institutions and Inter-State Wars****II. Formal Institutions and Inter-State Wars****III. Informal Institutions and Civil Wars****IV. Formal Institutions and Civil Wars**

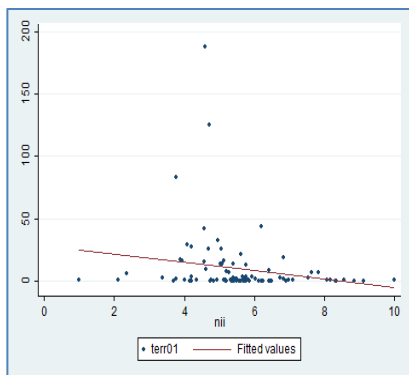
V. Informal Institutions and Ethnic Violence



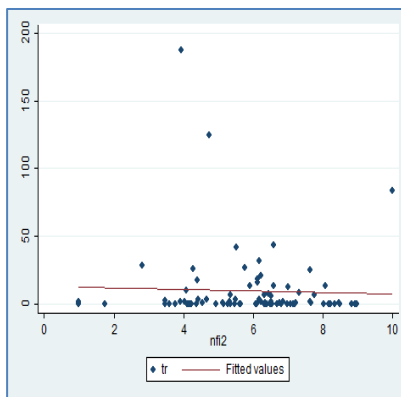
VI. Formal Institutions and Ethnic Violence



VII. Informal Institutions and Terrorism



VIII. Formal Institutions and Terrorism



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