What Explains Ethnic Violence?
Evidence from Hindu-Muslim Riots in India[*]

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Abstract

We utilize a unique data set on Hindu-Muslim riots at the state-level in India to investigate the determinants. We base our estimation on Negative Binomial procedure that controls for the count data characteristic of the dependent variable. Five major findings emerge. First, political competition and presence of right-wing Hindu nationalist parties in a given Indian state seems to have a positive and statistically significant impact on the number of communal riots; second, if the state legislative assembly has a majority of either a coalition government or regional or left-wing parties, it has exactly the opposite effect; third, we find no evidence of a negative impact of economic development per se on communal violence; fourthly, the greater proportion of the Muslim population, higher is the number of communal riots; lastly, past violence seems to have a positive recurring effect on the current events.

Keywords: Hindu-Muslim riots, BJP, Congress, Hindu Nationalist parties, Regional Parties, Political competition, Level of Development, Coalition govt.

JEL: D72, D74, O1

1   Introduction

"Riots" as Richard Nixon (1967) once argued "are spontaneous". However, this is not the case with Hindu-Muslim riots in India since early sixties, which seems to be a part of daily life in India. They are political, electoral, economic, cultural or linguistic in nature. Though there are cases before this period, those are more of a religious nature and are not based on any economic or political motivations. Hindu-Muslim or communal riots are omparatively recent phenomenon. Paul Brass in his famous book *The Production of Hindu-Muslim Violence in Contemporary India* (2003) conceived riots as a form of collective action that is developed in India primarily in the late nineteenth and twentieth centuries. We use a unique state-level Hindu-Muslim riots database in India collected by Varshney and Wilkinson (2004) to examine the socio-politico-economic basis of these communal riots or the factors behind those violence during 1981-1995 for the 16 major states of India. We find that political competition, presence of right-wing Hindu Nationalist parties and past events are the main drivers behind the occurrence of Hindu-Muslim riots during this period, while a coalition government or regional/left parties do exactly the opposite.

Communal or Hindu-Muslim riots in India have caused immense human and economic loss. By some measures, approximately 10,000 deaths and 30,000 injuries have occurred as a result of Hindu-Muslim riots since 1950. For example, the economic damage[1] from the 1992 Mumbai riots alone has been estimated at around INR 9,000 crore (USD 3.6 billion) (Wilkinson, 2006). **Table 1** reports the number of deaths in Hindu-Muslim riots in India in the eight major cities during 1950-95. These numbers may not be large in comparison with other sources of mortality, such as the number of "dowry-deaths" or the number of people who die on the roads, but ethnic riots threaten the stability of the country, the structure of society, as well as its economic development.[2] **Table 1** raise two important points. First, Hindu-Muslim violence occurs primarily in urban areas. Eight cities — Ahmadabad, Bombay, Aligarh, Hyderabad, Meerut, Baroda, Calcutta and Delhi[3] — account for a disproportionate share of communal violence in the country, 49 per cent of all urban deaths in Hindu-Muslim violence. **Figure**

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[1]Loss of production, sales, tax revenues, property losses, exports etc.

[2]In Mumbai's ready-made garment industry, for instance, where Muslims from the northern states of Uttar Pradesh and Bihar are employed in hand and machine embroidery, the 1993 migration of Muslims (due to the Mumbai Riots) back to their original towns and villages cost manufacturers more than $3 million a day in lost production (Times of India, January 25, 1993).

[3]The last two cities are not normally viewed as riot-prone. But they have had so many small riots and some large ones in the 1950s, that they are unable to escape the list of worst cities in a long-term perspective.

1 sketches state-level Hindu-Muslim conflicts in India during 1981-1995. It suggests that the lion's share of communal riots is concentrated mainly in three to four states. Furthermore, these eight cities represent only 18 per cent of India's urban population, which signifies that around eighty per cent of the urban population is not "riot-prone" (Varshney, 2002). Second, what explains the occurrence of such riots in India and how does one account for its variation both across space and over time? Several competing theories have been formulated to explain how different factors such as economic (Gurr, 1970; Gurr and Duval, 1973; Bolhken and Sergenti, 2010), social (Varshney, 2002), and political (Brass, 2003; Wilkinson, 2004) affect communal riots.

India's per capita death rate from Hindu-Muslim riots is low, when compared with death rates stemming from source of the world's other well-known ethnic tensions, such as the deaths in Northern Ireland, where since 1969, the relative number of deaths is 50 times higher[4]. But the importance of the Hindu-Muslim divide lies in more than just the number of people who have died in riots since independence, since both communities live side by side throughout the length and breadth of India and this cleavage poses a potentially much more serious threat (Horowitz, 2000). The primary goal of the present paper is to attempt to identify the most important factors that might affect a Hindu-Muslim riot or violence in India. We hypothesize that ethnic riots cannot exclusively be a result of a very limited number of factors, such as economic growth, electoral politics or civic mismanagement. Rather a complex interplay of several factors is at work. Paul Brass (2003) also asserts that "no single causal explanation of Hindu-Muslim riots and anti-Muslim pogroms will suffice to explain all or even most instances of such collective violence in India." We examine this question using a standard Negative Binomial regression, where the number of Hindu-Muslim riots is our dependent variable and the matrix of explanatory variables includes a mix of economic, social and political factors. Our analysis involves data for the 16 major Indian states from 1981 to 1995. The choice of this period is based on an important characteristic – more than half of the total number of riots and 65 per cent of the killings are reported during this period. We could not extend our analysis to the later years with the limitation stemming from problems of data availability.

In a recent work, Bohlken and Sergenti (2010) focusing on Hindu-Muslim riots in India

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[4] According to 1995 Royal Ulster Constabulary (RUC) figures, 3,462 people have died in the Northern Ireland conflict out a population of c. 1.5 million. Mervyn T. Love, Peace Building through Reconciliation in Northern Ireland (Avebury: Aldershot, 1995), p.38

during the same period finds strong evidence of a negative link between growth rates and riots, controlling for other factors such as economic inequality, demographic variables and political competition. Though our research is close to that of Bohlken and Sergenti (2010) in spirit, but it differs in the following important ways: first, we use the level of income as our measure of economic development instead of growth rate. We also use a more recent and broader definition of state-level per capita Gross Domestic Product (GDP)[5]; secondly, Bohlken and Sergenti (2010) do not use any explanatory variables which are designed to capture differences in institution and the role of political parties operating in a given state. We do so by including a very rich set of controls; finally, our estimations explicitly takes account of the count data nature of our dependent variable (which is the occurrence of the Hindu-Muslim riots) through a Negative Binomial approach, and also control for time-invariant state-specific heterogeneity through the use of Mundlak (1978) procedure.

Our findings are as follows: political competition and the presence of right-wing Hindu nationalist parties in a given state have a positive and statistically significant impact on the number of communal riots; secondly, presence of either a coalition government or regional or left-wing parties in the state legislative assembly has exactly the opposite effect; thirdly, we find no evidence of a negative impact of economic development per se on communal violence; fourthly, the greater the proportion of Muslims in the population, the higher is the likelihood of the occurrence of communal riots; fifth, past events seem to have a positive and significant recurring effect on current riots; and finally, civic participation seems to have no role in occurrence of a Hindu-Muslim riot in India

The rest of the paper is organized as follows: Section 2 presents a brief account of Hindu-Muslim violence in India, and reviews the literature. A description of various data sets used for the paper is provided in Section 3. Section 4 outlines our empirical strategy. The results from the two-stage least square (2SLS) estimations are discussed in Section 5. Section 6 concludes.

2   Background

The conflict between Hindus and Muslims in the Indian subcontinent has a complex history which is said to have begun with the Jihad of the Umayyad Caliphate in Sindh in 711 AD.

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[5]We use the 1993-94 base level State Domestic Product (SDP) series instead of the 1980-81 series. The advantages of using the 1993-94 series are described in detail in Appendix I.

The persecution of Hindus during the Islamic expansion in India during the medieval period is characterized by the destruction of temples and the anti-Hindu practices of the Mughal emperor Aurangzeb (Richards, 1995). More recently, increased levels of violence between Hindus and Muslims in India are observed immediately after independence as a result of the partition of the country into two new sovereign states. During the last sixty-five years, both the intensity and the frequency of riots have fluctuated: riots have occurred and re-occurred in many cities and towns, throughout the country, especially in the northern and western parts of India – 1,186 riot episodes occurred and 7,052 individuals were killed between 1950 and 1995 (Varshney and Wilkinson, 2004).

Following exceptionally high levels of violence during partition, the incidence of riots declined during the 1950s, rose slightly in the 1960s, and again declined during the 1970s. The average annual number of riots during this period is 16. In contrast, in the period between 1982 and 1995, an average of 48 riots occurred annually. Furthermore, a total of 674 riots are reported with a death toll of 4,687. Overall, the period between 1982 and 1995 saw half of the total number of riots and two thirds of riot-related deaths since independence. This is apparent from the numbers displayed in **Figure 2**.

The most common "argument" explaining the outbreak of an ethnic riot is, as Richard Nixon puts it, that they are stochastic in nature. In contrast, Brass (1997, 2003), Varshney (2002, 2008) and Wilkinson (2004) argues that most riots in India are planned or orchestrated, and are generally political in nature. By and large, ordinary citizens are recruited by political operatives. A typical example of is the Hindu-Muslim riots that erupted in 1991-92 during the construction of a Hindu temple in Ayodhya[6] to replace a mosque. Varshney, (2002) argues that the driving force is a large-scale mobilization effort undertook by the Bharatiya Janata Party (BJP) to incite anger against Muslims, and the result was a series of riots throughout the country. Instigating such riots is by no means a monopoly of one political party. Hasan (1990) points out that during the closing years of Indira Gandhi's rule in the early 1980s, the Congress Party (CP) also modified its secular outlook and chose to focus on the theme of Hindu hegemony so as to appeal to the Hindi-speaking northern states of India.

On the role of political competition on the likelihood of riots, Wilkinson (2004) and Brass (2003) have exactly opposite views. While, the former cites higher levels of party competition

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[6] A city in the state of Uttar Pradesh in India

to be statistically associated with lower levels of Hindu-Muslim violence; the latter focusing specifically on the patterns of Hindu-Muslim riots over four decades in the city of Aligarh in the state of Uttar Pradesh, concludes – intense political competition as one of the main causes behind communal riots. He also asserts that the communal riots (especially Hindu-Muslim) are both institutionalized and a political gimmick and are fomented in order to garner political support from a specific group of strategic voters.

On a different note, Varshney (2002) argues that a decline in civic associations/ engagement or a decline in social capital is the primary cause behind the increase in Hindu-Muslim violence citing polarized politics to be the most important mechanism which connects civic networks and ethnic conflict. Concentrating on the 2002 Gujarat communal riots, Varshney (2008) points out the role of political parties which account for an integral component of the civil society in a multiparty democracy like India.

Other studies point out that higher economic growth leads to lower propensity of ethnic groups to engage in violence (Gurr, 1970; Gurr and Duval, 1973; Bolhken and Sergenti, 2010). In contrast, political scientists such as Huntington (1968) and Olzak (1992) suggest the opposite to be true, i.e. economic development seems to play a positive role on the likelihood of Hindu-Muslim violence. However, Horowitz (2001), Varshney (2002) and Wilkinson (2004), argues that economic conditions appear to have no effect on ethnic violence at all. On a slightly different approach, Mitra and Ray (2010) builds a simple theory of inter-group conflict driven by differences in group-wise economic progress. Combining the dataset on Hindu-Muslim violence with large-scale household surveys on consumer expenditure conducted quinquennially[7] by the National Sample Survey Organization (NSSO) of India, they report that an increase in Muslim well-being[8] leads to a large and significant increase in religious conflict three years down the road, while an increase in Hindu well-being has no significant effect on future conflict.

The fact that Hindu-Muslim violence in India is mainly an urban phenomenon, suggests that, there could be a causal link between modernity and communal or ethnic violence. Moreover, the latest version of the modernity theory emphasizes on 'human development', shifting its focus from the economic argument to literacy rate[9]. Amartya Sen (1993, 1996), for example, points

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[7]Once in every five years

[8]Proxied by per-capita expenditure of Muslim families

[9]The Human Development Index includes literacy, health, in addition to income, each factor holding a third of the weight, The Human Development Report (New York: Oxford University Press)

out that Kerela, which has the highest literacy rate in the country scores low on the occurrence of communal riots, whereas, North India, which has a low human development index, attains a high rank in the incidence of communal violence. But, this argument relies heavily on the comparison of Kerala with Uttar Pradesh and Bihar. If we compare Rajasthan, which is another low ranked Human Development state with Kerela, the argument breaks down. Further, both Gujarat and Maharastra, have literacy rates as well as high incidence of riots. Rural India, which is not the primary location for communal violence, also has considerably lower literacy rates than urban India. Varshney (2002) demonstrates that literacy has no relation at all to whether a city will be prone to riots or not, insinuating that there is no systematic relationship between literacy and communal violence; while Engineer (1984) and Dhattiwala (2012) show the opposite.

3   Data

The data we employ in this paper stems from five different sources. First, the dependent variable. It is the total number of occurrences of Hindu-Muslim riots in a given year in a given state. We obtain this from the *Varshney-Wilkinson Dataset on Hindu-Muslim Violence in India, 1950-1995, Version 2*. We download the dataset from Inter-University Consortium for Political and Social Research (ICPSR). The dataset provides state-level occurrence of HIndu-Muslim violence or riots in 19 major states of India from 1950 to 1995. The source of the riot data was the Bombay edition of *The Times of India*, 1950-1995. For the purpose of this paper, we restrict our attention to 16 major states – Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Kerela, Madhya Pradesh, Maharastra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal – with time period ranging from 1981 to 1995. We decide to leave out the other 3 major states – Delhi, Manipur and Tripura – because of the non-availability of some of the major explanatory variables. Nonetheless, these 16 states cover around 95 per cent of the total Hindu-Muslim riots in India.

Apart from this data source on Hindu-Muslim riots, *Minorities Commission* of the Government of India in the post-independence period also reports aggregate figures for each of the state. But, since it has to depend on the supply from the *Home Ministry* of the Government of India, therefore, either sometimes it does not have any positive response, or the reports have no statistics at all. This new detailed dataset by the two political scientists fills

this highly coveted gap by providing data on the date of the incidence of the riot, place (name of city/town/village/district/state), its duration, the number of people killed, injured, arrested and the reported proximate cause of the riot. Further, this dataset, unlike the government statistics, provide data on 'communal riots' and not on 'communal violence'. The former term covers a substantial incident lasting for several days, while the latter signifies everything from a small-scale scuffle to a pitched battle. The Times of India certifies a large national incident as riot with four to five deaths and many more injuries[10]. Further, the newspaper reports sometimes do not make a distinction between intra-religious and inter-religious clashes, reporting them as communal. For example, the term 'communal' can comprise of clashes concerning Hindu-Sikh (as in the state of Punjab in the early 1980's), Christian-Muslim (in the state of Kerela) as well as Hindu-Muslim. So, a detailed understanding is required in order to code a riot as Hindu-Muslim. Unless, the description of the riot in the newspaper is supported by a discussion of issues involved, a communal riot is not coded as a Hindu-Muslim riot.

Secondly, we use the database of A. T. Bohlken and E. J. Sergenti, from their paper "Economic Growth and Ethnic Violence: An Empirical Investigation of Hindu-Muslim Riots in India" in *Journal of Peace Research* (2010). The key variable we use from this dataset is the percentage change in rainfall. The rainfall data, in turn was compiled from the Global Precipitation Climatology Project (GPCP) database[11]. To derive the rainfall estimates, the GPCP uses a combination of weather station rainfall gauge measures and satellite information on the density of cold cloud cover (which is closely related to actual precipitation). The source is NASA GPCP V2. Estimates are made at 2.5 latitude and longitude degree intervals. The units of measurement are in millimeters of rainfall per day and are the average per month. Bohlken and Sergenti (2010) multiplied each monthly average by the number of days in a given month, which gives an estimate of total monthly rainfall. Further, they add up all of the monthly estimates in a given year to generate an estimate of total yearly rainfall for each 2.5 latitude/longitude degree node.

Third, the data on coalition government and effective number of parties are from P. Chhibber and I. Nooruddin, "Do Party Systems Count? The Number of Parties and Government Performance in the Indian States", in *Comparative Politics*, (2004). The former is a dichotomous variable that takes a value of 1 in the presence of a coalition government and 0 otherwise,

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[10]The National Integration Council defines a major riot as one in which at least four people were killed
[11]http://cics.umd.edu/'yin/GPCP

while the latter calculates the effective number of parties receiving votes for the state assembly elections, using the formula, $n = \frac{1}{\sum p_i^2}$, where, n, is the effective number of parties and p_i is the proportion of votes received by each party in the elections. The data on the proportion of votes received by each party is put together from various issues of the Report on the State Elections by Election Commission. Another variable that we use in the paper from this dataset is of Urban Inequality. This variable comes from two sources: up to and including 1991, the source is STICERD[12] at the London School of Economics, based originally on data from the World Bank[13]; and for 1993 to 1995 comes from R. Jha, "Reducing Poverty and Inequality in India: Has Liberalization Helped?", *World Institute for Development Economics Research Paper No. 204*, World Institute for Development Economics Research, (2000). Data for 1992 is unavailable. We therefore, interpolate by taking the average of the 1991 and 1993 values.

Fourth, we also utilize the database of "The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India" by P. Aghion , R. Burgess, S. Redding and F. Zilbotti in the *American Economic Review* (2008). This dataset includes two different categories of variable: (a) indicators quantifying the political scenario: (i) cumulative number of years of various political parties since 1957 being in the state legislature, (ii) proportion of seats of different political parties in the state-legislature. These two variables are constructed from various issues on the State Elections by the Election Commission; and, (b) developmental indicators: (i) average head-count poverty ratio, (ii) state-level expenditures – development and education (Reserve Bank of India Bulletin, Various Issues).

Lastly, other major covariates include: (1) per-capita Gross Domestic Product (GDP), for 1993-94 base prices, (2) state-level population, (3) literacy rate and, (4) per cent of Muslims in the total population. While the former two comes from the Central Statistical Organization (CSO), the latter ones are drawn from the Census of India, 1991 and 2001.[14]

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[12] The Suntory and Toyota International Centres for Economics and Related Disciplines

[13] http://sticerd.lse.ac.uk/

[14] We have assumed the 1991 Census value, as if it prevailed from 1980 till 1990 and 2001 Census value from 1991-1995

4 Basic Statistics and Empirical Strategy

4.1 Descriptive Statistics

This section gives an overview of the 16 major Indian states in terms of Hindu-Muslim riots and other major explanatory variables. Column (1) in **Table 2** lists the average number of riots that broke out in each of the major 16 states of India over the period of 1950 and 1995. Columns (2) and (3) report the average number of people killed and injured as a result of those riots during the same time frame. The figures do point out that the severity of communal violence is concentrated majorly in the western part of India with also the number of people being killed and getting injured are highest in the states of Maharastra and Gujarat, respectively. This suggests that communalism is not only a serious issue in northern India, which is the popular perception, but also a major threat to western part of India as well. Among the states in the northern part of India, Uttar Pradesh tops the table with significantly higher number of occurrence of riots and also people getting killed and injured, followed by Jammu and Kashmir. In southern part of India, Karnataka has the highest outbreak of riots, while Andhra Pradesh leads the table in terms of the intensity of the riots (number of people getting killed plus injured). For the states in the eastern part of India, Bihar has the highest occurrence of Hindu-Muslim riots, the number of people killed and injured. Madhya Pradesh, which is the single state in the central region of India, however do not experience a high outbreak of riots, but has around 50 people getting injured on average per riot, which is quite a significant number given the average outbreak of riots in a given year is only around 1.5. **Figure 3** confirms our analysis from above. It reports the number of deaths per 1,000,000 of the urban population in each of the 16 states from 1950 and 1995. Gujarat, which has the highest number of the cases for the Hindu-Muslim clashes, also records the highest number of deaths in communal incidents, at around 117 per 1,000,000 of the urban population. Gujarat is followed by Bihar (78 deaths per million), Maharastra (45 deaths) and Uttar Pradesh (43 deaths).

Table 3 provides a quick account of the social, economic and political disparities in 16 different states of India. It reports the average values of various indicators (economic, demographic, social and political), which could possibly have an effect on the incidence of the riots, over the period of 1981 and 1995. Among the economic indicators, we use per capita income of state (level of development), urban inequality (to control for the urban nature of the riots), level of development expenditure (measure of state capacity as well as level of development)

and head-count ratio (measure of poverty). Percentage of Muslims and Literacy rates are used as the demographic variables, wheras, number of police personnel per 100 square km and total number of newspaper in circulation are the social indicators. As for the political controls, we use effective number of parties (controls for electoral/political competition), and proportion of seats of the political parties such as CP, BJP and Regional, in the state legislative assembly.

4.2   Empirical Specification

We use state-level aggregation of the Varshney-Wilkinson Data-series on Hindu-Muslim Violence in India for our empirical investigation. However, we are concerned about the fact that the state level aggregation conceals too much, thereby not permitting an adequate understanding of how violence is concentrated in a few cities and districts and what are the actual root causes beneath it. But, the problem is, even though the incidence of riots are being reported at the town or district level, most of the control or independent variables are concentrated at the state level. Therefore, we choose to focus on the state level on the effect of various economic, judicial, social and political variables on Hindu-Muslim violence in India.

Our dependent variable is – the number of occurrences of Hindu-Muslim riots in a state in a given year. Since the dependent variable is an integer count with high variance and high proportion of zeros, following Cameron and Trivedi (1998), we use a Negative Binomial process as the basic empirical specification. **Figure 4** re-iterates our claim about the regression design of the paper. Around 46 per cent of the entries report state-level riots as zero. Moreover, the variance also significantly exceeds the mean, which further motivates us to continue using the Negative Binomial specification.

Quantifying the causes of the Hindu-Muslim riots in India is rather difficult for at least two reasons. First, lack of systematic quantitative state-level time-series data on the occurrence of riots makes it almost impossible to estimate the causes empirically. A. Varshney and S. Wilkinson (2004) bridged this gap by constructing this database. A second challenge is to secure appropriate control variables. Aghion et al., (2008), Chibber and Nooruddin (2004) and Bohlken and Sergenti (2010) made some important contribution in terms of fulfilling our matrix of explanatory variables.

Detailed dialogue in our background section tells us, that the dependent variable will depend

on a mix of factors, operating at the state level, with possible regional and time-specific variations. The characteristics of our observed dependent variable motivate us to use the following Negative Binomial regression specification:

$$E(Riot_{it}/X_{it}, \varphi_i) = \varphi_i \exp(X_{it}'\gamma + \mu_t)$$

where, φ_i, μ_t are the region and time effects respectively in our panel regression. X_{it} is the vector of different economic, demographic, social and political variables. We estimate this regression equation using the Mundlak (1978) procedure. Mundlak (1978) argues that when individual effects are correlated with the explanatory variables in an error component model, the Generalized Least Square (GLS) estimator is given by the within estimator. Furthermore, in Mundlak's interpretation, the fixed-effects model is a model with random effects that correlate with the explanatory variables. Since, the individual (in this case, state) fixed-effects are expected to be highly correlated with some of the explanatory or right-hand side variables and one of our independent variables is the lagged dependent variable[15], therefore to control for both these issues, we use the Mundlak way of estimating our Negative Binomial regression.

Our key independent variables, income or the level of devleopment, is endogenous. Therefore, following Miguel et al., (2004), we use percentage change in rainfall at the $(t-1)$ period as an exogenous instrument for the level of development at the following or t-th period. The reason being – problem of reverse causality and correlated with individual or state effects. In case of the simultaneity problem, while on one hand, riots could lead to severe damage of property which had an effect on the level of income of the state; on the other, communal violence could deter investment thereby leading to a lower level of income. The former classifies change in income level as a result of violence, while the latter is the cause. Therefore, if income pertains to be endogenous, it could also bias the coefficients of other control variables as well. The rest of the variables are instruments for themselves. We estimate the first stage using ordinary least squares (OLS) and then use the predicted value for the per capita income to estimate our Negative Binomial specification in the second stage. Both these stages are estimated following the Mundlak procedure (1978). We consider the panel structure of the data and include both the state and year fixed effects. Furthermore, the significance of the over-dispersion parameter signifies that the parameter is significantly different from zero and the data is over-dispersed.

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[15]The theory suggests that fixed-effects estimation with a lagged dependent variable is not consistent.

Therefore, our decision of using a Negative Binomial technique is proper, rather than fitting the alternative: which is a Poisson model. We cluster our standard error at the state-level. We use different set of controls for different specification, which we discuss elaborately below. In all of the specifications, we use income, expenditure levels and population in logarithmic form, while the other controls are brought in linearly.

Economic factors, like the economic well-being of a state could very well influence the occurrence of a communal violence, i.e., the case of Hindu-Muslim violence in India (Fearon and Laitin, 2003; Miguel et al., 2004; Harms and Zink, 2005; Bohlken and Sergenti, 2010). To control for this likelihood, we use several variables – level of GDP per capita at the 1993-94 constant prices, urban inequality (measured by the Gini Co-efficient), literacy rate (to control for the argument about the likelihood of a riot and human capital, i.e., as the human capital increases, the probability of a communal violence decreases), and level of state expenditure – as a measure of state capacity (both development and education). The development expenditure of a state signifies the role of a state in increasing the state's capital stock, be it human, social or physical capital. Alternatively, it could also increase employment and wages (de Bartolome and Spiegel, 1997). Therefore, it could very well signify the role of state in bridging both the economic as well as the social gaps between the majority and minority groups of the state.

Incidence of a crime (in our case, Hindu-Muslim violence) depends closely on the deterrence mechanism adopted by the local or the state authority (Wilkinson, 2004; Chakraborty et al., 2007). State governments use police forces to prevent riots. Therefore, to control for the judicial factor, we use the number of police personnel per 100 sq. km as the preventive measure. The police variable might pose a reverse causality problem to our estimations, i.e., more riots might lead the state administration to post more police personnel at the riot affected areas. Therefore, to control for possible bias which might arise due to this problem, we use the variable at the $(t-1)$ period.

Spilerman (1970), Engineer (1984), Wilkinson (2004), argues that demographic factors like the share of the minority group in a town or state could also influence the likelihood of an ethnic violence. Riots are likely, when the percentage of majority and minority group are square. Therefore, to control for the demographic variables, we use percentage of Muslim population in each state. This data comes from the Census of India. Census occurs every ten years in India, so we use the 1991 census for the years 1981-1990 and 2001 census for the remaining years

(1991-1995). We also use the natural logarithm of total population in each state to examine if more populous states might experience a greater likelihood of Hindu-Muslim clash.

Brass (2003) and Wilkinson (2004) strongly points out the possible links between the political parties and the occurrence of a Hindu-Muslim riot in India. We use proportion of seats by each of the major political parties (BJP, CP, Left, Hindu and Regional parties) in state assembly to testify if there is a positive/negative relation between the presence of certain political party and likelihood of a Hindu-Muslim riot. We also use effective number of parties in our empirical analysis in order to control for the effect of electoral incentives on the instigation of riots. A coalition government might also signify the competitiveness of the political parties, which could have a dampening effect on the purpose of organizing communal violence. The measure, we use for coalition government is a dichotomous variable, which takes the value 1 if the state had a coalition government in that year and 0 otherwise.

Engineer (1984), Gubler and Varshney (2008), Urdal (2008) points out about the possible spillover effects of a riot. We use the total number of riots in adjacent states during the same year to control for the spatial dependence. We also use number of riots in $(t-1)$ period as the other spillover explanatory variable. The use of this variable is primarily for two reasons – firstly, to control for the vicious cycle of continual rioting (Posen, 1993) and the other is, as suggested by Bolhken and Sergenti (2010) for pure technical reasons. The inclusion of the lagged dependent variable as one of the explanatory variables would likely to remove serial correlation in the residuals which could allow satisfying the conditional dependence assumption required for the estimation procedures. However, this only makes sense, if the ethnic riots tend to occur in the same towns within a state.

5 Findings

5.1 Basic Results

Table 4 presents the basic 2SLS results. Column (1) controls for all possible factors that might influence a Hindu-Muslim riot – economic (log of per capita GDP, literacy rate and urban inequality), spillover effects (riots in the adjacent states and lagged riots), deterrent mechanism (police personnel per 100 sq. kilometer), demographic factors (total population, percentage of Muslims) and political institutions (coalition government and political competition). Our results

show that the level of development is positively and significantly correlated with the occurrence of a communal violence at 10 per cent level of significance. In other words, the likelihood of a Hindu-Muslim riot is positive if that region has a higher level of per capita income, i.e., the communal violence in India is not a holistic phenomenon and is concentrated mainly in the urban areas. The estimate indicates that for a one point of increase in the level of development, the difference between the logarithm of violence and the expected violence would increase by 0.582 units, given the other factors are held constant. Our result re-iterates the findings of Huntington (1968), Olzak (1992), Varshney (2002), Brass (2003) Wilkinson (2004)[16], but, it sharply contrasts the result about the negative association of income with violence a la Miguel et al., (2004), Bohlken and Sergenti (2010), Do and Iyer (2010). In a similar kind of study, Tadjoeddin and Murshed (2007) while examining the socio economic determinants of violence across districts in Java, find that violence increases with the increase of income or education. They attribute the positive relation between income and violence to the frustration and anger of the less fortunate.

The results also show that the likelihood of riots is significantly and positively affected by riots occurring at one-period lag. The logarithm of the expected ethnic riots would increase by 0.058 units with one point increase due to the riots occurring at the previous period. Our results confirm what Paul Brass (2002) termed as 'institutionalized riot networks' that foment violence. The result indicates that the level of current violence could be a culmination of factors like revenge for past events or past violence is an evidence for a political party of the continuing existence in a state. Similarly, Wilkinson (2004) using cumulative casualties in the previous 5 and 10 years find similar results. Fearon and Laitin (2003) develops a game theoretic model to explain 'spiral equilibrium', which accounts for the spillover effects from the past and other violence as one of the main mechanisms that leads to mutual violence, which spirals out of control.

The higher the percentage of Muslims in the total population, higher is the probability of a riot. To put it differently, the more the conflict of interest is, the greater is the odds of a Hindu-Muslim communal riot. This finding about the significance of the population is not unexpected, since, almost every comparative study of ethnic and non-ethnic[17] violence finds

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[16]Both of them argues that Hindu-Muslim riots in India are of urbane nature, concentrates among a handful of cities, which are mostly in the western and northern part of India.

[17]Like the US racial riots

that the level of violence increases with the increase in the minority population. Spilerman (1971) while investigating the standard list of underlying causes on the occurrence of black ghetto riots in the 1960s in US finds that the strongest predictor variable is – the size of the Negro population. On a slightly different perspective, Mitra and Ray (2010) demonstrates that an increase in Muslim per-capita expenditure lead to a large and significant increase in the likelihood of a Hindu-Muslim religious conflict. Increase in total population also significantly increases the likelihood of a Hindu-Muslim riot.

Drawing upon the literature on political competition and communal violence (Chhibber and Nooruddin, 2004; Wilkinson, 2004; Brass, 2002) – that the whole political order in post-independence period has been implicated in the persistence of Hindu-Muslim riots – we use two important variables capturing the essence of political competition – coalition government and effective number of parties. The non-linear estimates suggest that higher political competition to win a legislative seat or to increase the vote share in the parliament might lead to a positive effect on the likelihood of communal riots in India at 5 per cent level of significance, whereas, coalition government seems to have no effect. This result about the effect of political competition on the likelihood of riots is in complete contrast with Wilkinson (2004) who argues that higher political competition is significantly associated with lower levels of Hindu-Muslim violence. The major difference between Wilkinson's (2004) analysis and ours – is primarily the time period taken into consideration. Wilkinson (2004) analyzes his main argument about negative association between party competition and occurrence of riots by employing a dataset at the town-level which runs from 1961 to 1995, whereas, we concentrate only on 1981 to 1995. The most important phenomenon, which can be cited as the main difference in explaining the results is the rise of BJP and other Hindu-nationalist parties during the 1980s and 1990s. The BJP, which was previously called Jan Sangh, though a nationalist party in the pre-1980 regime, but could only, began to win elections at the state level from the early 1990s, and finally, they came to power as the central government in New Delhi in 1996. So, it seems that the political competition by BJP in wooing away the voters, primarily the Hindu Brahmins, on the basis of Hindu nationalist sentiment seems to be a major contributing factor explaining the likelihood of the riots significantly. In other words, the most effective method for elite-dominated ethnic parties is to mobilize those target voters who are at risk of voting for the main rival parties. In order to mobilize those crucial vote shares, the BJP used the issues of ethnic wedge to increase

the salience that favoured their party. For example, both upper castes Hindus and Muslims live disproportionately in urban areas in most states. In Uttar Pradesh, for example, Muslims and upper castes Hindus accounts for a sizeable portion of the urban population. Since, these groups vote cohesively, they often constitute the two main voting blocs in bipolar urban races. Therefore, the challenge for upper-caste politicians and parties in urban areas is how to win over those pivotal Hindu voters. This kind of polarization paid off for the Hindu nationalist parties in the elections, with the riot-affected towns saw a jump in the share of BJP's vote far larger than that in towns not affected by violence. For example, towns affected by violence registered an increase in the vote share of BJP by an average of 24 per cent, while, in a non-affected town saw the vote share of BJP to go up by only 7 per cent (Wilkinson, 2004). The hypothesis that Hindu-Muslim violence in the late 1980s and early 1990s improved the BJP's electoral performance is also supported by Christopher Jaffrelot's research on riots and state elections in Madhya Pradesh in the 1990s (Jaffrelot, 1998). Madhya Pradesh, a Muslim-ruled princely state, registering more than 20 per cent Muslims of the urban population, always had elected a handful of Muslims MLAs[18]. After the December 1992 riots, which broke out in the urban areas of Madhya Pradesh, Jaffrelot find those to be instigated by Hindu nationalist organizations, and the 1993 elections saw for the first time in Madhya Pradesh's history of not a single Muslim candidate being elected for the state legislature. For example, in the north Bhopal constituency, the BJP candidate after winning the 1993 elections against the Muslim independent candidate credited his victory to the riots (Jaffrelot, 1998). Further, in Uttar Pradesh, between the 1989 and 1991 state elections, around 19 riots took place in small portion of urban constituencies, in which BJP had been one of the top finishers. In Kenya, for example, Daniel Arap Moi was accused of fomenting intertribal violence in order to bolster his KANU (Kenya African National Union) party's chances of winning in the 1992 election. Paul Brass (2003) Ashar Ali Engineer (1984) and Bohlken and Sergenti (2010) also argues that intense political competition led to the occurrence of communal riots in India and the primary cause of Hindu-Muslim riots in India is the pursuit of political advantage at any cost.

Column (2) introduces poverty ratio of different states in India. Poverty ratio has been calculated as the headcount ratio. Except for the effect of lagged riots, all the other significant effects vanish. This might be due to the problem of multicollinearity between the level of development and the poverty ratio variable. Columns (3) and (4) replace per capita GDP of

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[18]Member of Legislative Assembly

a state by the natural logarithm of development and education expenditure, respectively. We employ development and education expenditure in order to investigate, if the effect is different when development is measured as a part of the state capacity. The results do not change. We do not find any significant effect of the level of development on the likelihood of a Hindu-Muslim riot. However, other results from column (1) do hold.

5.2 Political Factors

Table 5 introduces the role of different political parties in our non-linear regression estimation on the Hindu-Muslim communal violence in India. We use two different types of indicators – proportion of seats by different political parties in the state assembly and cumulative number of years since 1957 when a certain political party has majority in state legislative assembly.

Column (1) regress the proportion of seats by BJP on the occurrence of Hindu-Muslim riots in India, controlling for the economic factors, spillover effects, deterrent mechanism, demographic factors and political competition. The point estimate indicates that the log of the expected Hindu-Muslim violence would increase significantly at 5 per cent level of significance, by 1.658 units with one point increase in the proportion of seats of the BJP. Our finding strongly iterates the conclusion of Brass (2002), Wilkinson (2004) and Dhattiwala (2012). Brass (2003) in his path-breaking book[19] points out that Hindu-Muslim opposition, tensions and violence provide the principal justification and the primary source of strength for the political existence of a family of Hindu nationalist organizations, among whom, BJP is the leading political organization. He points out that BJP in the 1980s adhere to broader ideology of Hindutva, or Hindu nationalism, which theoretically exists independently of Hindu-Muslim antagonisms, but in practice has thrived only when the opposition is either present explicitly or implicitly. The Hindu communal sentiment has served mostly BJP in various states of India and also the Shiv Sena in the western state of Maharastra to be in power. These parties launched numerous Hindu-oriented campaigns since Independence in which Muslims have been portrayed directly as obstacles to the achievement of national aspirations. One of the most massive campaigns that have been launched by this consolidation was the Ayodhya movement in the mid-1980s and early 1990s, with deliberate provocations against the Muslims, which plagued the entire nation with a series of brutal riots between 1989 and 1993. The rise of the BJP in the late 1980s as

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[19]Brass, Paul R, (2003), *The Production of Hindu-Muslim Violence in Contemporary India*, Seattle: University of Washington Press, 2003

a national political party through this nationwide campaign also coincided with the beginning of the end of the Congress dominance both in the state of Uttar Pradesh, the most important state of the country, and the country as a whole. In a bitterly contested national election, the Congress was defeated by a coalition of non-Congress parties in 1989. All the political scientists or sociologists studying the Hindu-Muslim riots of India confirms that the Ayodhya movement contributed significantly to other social changes taking place in India around the same time-particularly the controversy over reservation of places in public sector jobs for a large section of India's Hindus commonly referred to as 'backward castes'. This Ayodhya movement transformed the strength of BJP both in India and in the state of Uttar Pradesh into a virtually new and much stronger political formation than ever before, which reflected both in the elections of 1991 and 1996[20]. Dhattiwala (2012) using the town-level data on Gujarat for the waves of violence in 1990-93 and 2002 also show that right-wing politics (BJP) is positively associated with Hindu-Muslim violence. Following Olzak (1992), it can be argued that the right-wing Hindu Nationalist parties orchestrated Hindu-Muslim violence in order to gain an advantage for political resources, i.e., to win over a crucial portion of the vote share in order to have a majority in the state legislature. The indicator of right-wing politics being positively associated with ethnic violence in India also provides further proof of the instrumental utility of ethnocentrism. For example, during the 1990-93 riots in Gujarat, there is significant power threat operative in rural areas of Gujarat, based on perceived threat created among the tribal of those areas against the Muslim landlords.

However, when we control for the role of BJP in the likelihood of Hindu-Muslim riots, we find that the level of development is positively and significantly associated with the occurrence of a communal riot. We also find two new results – literacy rate is positively related with the likelihood of a riot and presence of a coalition government has a negative influence. A one point increase in literacy rate would increase the difference of the log of the expected communal violence by 0.172 units. Human capital has been theorized as a correcting mechanism for the likelihood of occurrence of riots, i.e., education increases individual tolerance making it less likely to participate in the acts of violence (Sen, 1992; Bobo and Licari, 1989). Our results are in complete contrast to these well-established studies. The rate of literacy being positively associated with the occurrence of violence points toward the success of discourses of

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[20]In 1991, BJP became the main opposition party in the Parliament of India, whereas, in the 1996, it came into power at the national level with an unassailable majority.

ethnocentrism used in educational systems in India to create notions of nationalism based on myths, i.e., Muslims as outsiders. Though our finding is against the general trend of literature concerning the index of violence and development, but, in a recent study, Dhattiwala (2012) also finds that intensity and occurrence of violence as well as the probability of the riot turning fatal are positively linked to the rate of literacy in a town. Engineer (1984) also carefully notes that more than 'illiterate masses', educated elite from both the communities play a role and aggravates the communal situation. In a backward society, education, though not always, but, becomes an instrument of generating communal consciousness and identity. The potentialities of 'Hindu' and 'Muslim' identity have been exploited by the educated elite from both the communities. The positive association of literacy rate with the likelihood of violence indicates that in a developing economy, it would be wrong to assume that, development would lead to increased secularisation in direct proportion to the rate of development.

On the other hand, the estimates suggest that a coalition government may help in preventing communal riots at 10 per cent level of significance. This means, when there is a hung parliament, every political party tries to play safe in order to retain their power in the state legislature, thereby, not giving a chance to its political rivals to out-compete them from the state legislature. Lijphart (1996) identifies India to be de facto 'consociational' state since independence. By the term 'consociational', he meant a 'grand coalition' that would include representatives of all the main ethnic groups, a minority veto over important legislation and minority proportionality in government and employment. He argues that the 'consociational' character of a state helps in mitigating the communal violence across different states in India. Wilkinson (2004) and Bohlken and Sergenti (2010) also did find a negative relation between the coalition dummy and the incidence of riots.

Column (2) introduces the role of CP using the proportion of seats by the CP at the state legislative assembly. The estimate in column (2) reports that one point change in the proportion of seats by Congress Party of India would significantly decrease the difference of the log of the expected Hindu-Muslim riots by 0.696 units at 5 per cent level of significance, controlling for economic, social and political factors. It could be due to the way the CP is structured. It is an ethnically inclusive party that grants cultural autonomy to its religious and linguistic minorities, ensures minority 'proportionality' in politics, education and government employment, and also gives minorities a veto over important social and religious legislation. Therefore, given this

argument, the negative relation between the Congress rule and the incidence of a communal riot is not completely unexpected since Congress has always been a highly heterogeneous party that included communal politicians as well as staunch secularists in its greatest period of dominance. I continue to find level of development to be positively and significantly correlated with riots, though the effect decreases in this case as compared to column (1).

Column (3) introduces the role of regional parties on the likelihood of a communal riot. Controlling for all state and year unobserved characteristics, we seem to find no significant relation. Column (4) adds up the proportion of seats by the BJP and other Hindu nationalist parties to create a consortium of political parties, titled as 'Non-Secular'. We find positive and significant role of non-secular parties on the occurrence of a Hindu-Muslim riot in India during the period of 1981 and 1995. Our point estimates indicate that a one point increase in the proportion of seats in the state legislature of the 'Non-Secular' parties would increase the difference of the log of the expected Hindu-Muslim violence by 0.386 units.

Column (5) sums up the regional parties and the left parties to form a consortium of parties called 'Secular'. The estimates show a strong negative correlation between secular parties and outbreak of a communal violence – Hindu-Muslim riots are expected to decrease significantly by 0.872 units with a one point increase in the proportion of seats by the secular parties in the state legislative assembly. The left parties in India have a strong secular ideology and a greater degree of party discipline, which contributes significantly towards decelerating the communal violence in India. For example, the three states (West Bengal, Kerela and Tripura) which are ruled by the Communist Party of India experience much lower riots than other regions. However, in addition to this, some of the regional parties are also very secular. For example, the number of Hindu-Muslim riots in Bihar nonetheless fell sharply after Laloo Prasad Yadav[21] took office as chief minister in 1989. In 1992, when Hindu-Muslim riots broke throughout in India after the destruction of Ayodhya mosque, Bihar was one of the few states to remain peaceful. The reason for this was the arrest of the returning militants from the Ayodhya site before they could reach their towns and villages and strict instructions to the district magistrates and police station officers that if they allow any riots to break out in their towns, they will have to compensate with the loss of their jobs. Other incidents like Mulayam Singh Yadav[22], chief minister of Uttar Pradesh in the late 80s and early 90s ordering all government office signs to be in Urdu as well as

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[21] He was a member of a regional political party named Janata Dal, led by Vishwanath Pratap Singh.
[22] Member of a regional party name Samajwadi Party in Uttar Pradesh

Hindi[23] or Chief Minister of Bihar, Jagannath Misra[24] recognizing the Muslim religious school the same official status as those from the state schools[25] speaks about the secular content of the regional parties as well.

Columns (6)—(10) run the same set of regressions like columns (1)—(5), but by replacing the proportion of seats by the political parties by the cumulative years since 1957 that a political party had a majority in the state assembly. The results concerning BJP, the Regional parties, the 'Non-Secular' and the 'Secular' parties continue to be the same. The most interesting observation which comes out of column (7) is - the positive association of the Congress party rule and the incidence of ethno-communal violence. The positive correlation indicates that, the longer the Congress party ruled a state, the more likely is the increase in the occurrence of Hindu-Muslim riots. Wilkinson (2004) points out that CP lacked the 'consociational' character in the Nehruvian period (1947-1966) and became 'consociational' in the post-Nehruvian period. He further shows that the Congress rule between the period of 1950 and 1995 is positively associated with the prevalence of riots in a state. Wilkinson argues that it is the weak party discipline of the Congress Politicians that have fomented and prevented communal violence for political advantage. For example, Congress governments failed to prevent some of the worst riots, like, the Ahmedabad riots of 1969, the Moradabad riots of 1980 or the Meerut riots of 1987. Further, there are also allegations on some Congress ministers to have instigated the Hindu-Muslim violence[26]. I continue to find positive effect of the level of development, lagged riots, total population percentage of Muslims in the total population and political competition on the probability of occurrence of a Hindu-Muslim riot.

5.3   Other Socio-Politico Variables

Table 6 introduces new socio-politico indicators. Varshney (2002) contends that civic association or participation can help in mitigating the riots. However, it is extremely difficult to measure civic association or participation quantitatively. Following Putnam (1995), who suggests that high levels of newspaper reading may contribute to civic engagement, we include both total number of newspapers in circulation and total number of newspapers (results not

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[23]For details on the recognition of Urdu in Bihar, see Muslim India 2, no. 21 (September 1984), pp. 433; 7, no. 82 (October 1989), p.458; India Today, July 16-30, 1980, pp. 27-28.

[24]Member of a Regional party named Janata Dal (United) in Bihar

[25]India Today, August 31, 1983, pp. 24-25

[26]In the state of Bihar, ex-chief minister K.B. Sahay was allegedly involved in the 1967 Ranchi riots

reported) to check whether civic participation do have a role of the likelihood of a communal riot in India. Column (1) uses total number of newspapers in circulation as the indicator for civic engagement. As the result suggests, we find no significant correlation between civic engagement and a communal riot. We also substitute total number of newspapers in circulation by total number of newspapers, but the results do not change (not reported).

Column (2) includes an election dummy (the variable equals 1 for the election year and zero otherwise) to see if the election plays any significant dampening role on the occurrence of riots in that given year. We find no relation between an election and Hindu-Muslim riot. Column (3) introduces voter turnout as another indicator for political competition. We define voter turnout as the percentage of total votes (valid plus invalid) to the electoral size. We do not find any effect. Column (4) regress another electoral competition indicator, i.e., number of electoral seats in the state legislature on the occurrence of communal violence in India. The result indicates that with the increase in the number of seats in the state legislature, there is positive and significant effect on the incidence of riots. The reason could be that – with the increase of a single electoral seat in the state legislature, the active political parties in the state would resort to orchestrate Hindu-Muslim violence in order to swing a certain section of the population to increase its voting share. Columns (5) and (6) regress the number of candidates and a dummy for the president rule, respectively. But, none of them are significantly correlated with the occurrence of a Hindu-Muslim riot.

6 Robustness Check

Table 7 does the robustness check of our results by replacing the incidence of occurrence of Hindu-Muslim riots by the intensity of the riots. We define the intensity of Hindu-Muslim riots by adding together the number of persons injured, killed and arrested due to Hindu-Muslim violence in a given year in a given state. The results do not seem to differ much from our previous results with the exception being the effect of regional parties on the likelihood of violence. Column (4) in **Table 7** finds higher proportion of regional parties has a dampening effect on the likelihood of intensity of riots. And the effect is significant at 10 per cent level. Level of development, lagged riots, total population, percentage of Muslims in a state, literacy rate, presence of BJP or non-Secular parties seem to be positively and significantly affecting the intensity of riots; whereas, a presence of a coalition of government or regional parties in the

state legislature significantly dampens the intensity of a Hindu-Muslim communal violence. We do not find any significant effect of political competition on the intensity of riots.

7   Conclusion

Our paper investigates the factors behind the occurrence of Hindu-Muslim communal violence during 1981-1995 across the major 16 states of India. It test the theories of two contemporary political scientists (S. Wilkinson and P. Brass) on Hindu-Muslim violence of India. A third most influential scholar in the field of communal violence relating to India is A. Varshney, whose book *Ethnic Conflict and Civic Life* address the role of civil society in Hindu-Muslim riots, by emphasizing the effects of interethnic civil engagement, especially in the form of associations on ethnic conflict in India. However, we also test the effect of civic association by using an indicator, but, since, proper and reliable data[27] on the indicators of civil society at the state-level over time are almost impossible to obtain in case of India, therefore, it is out of our scope to study properly the effects of networks of civil society structure on the ethno communal riots in India.

The non-linear two-stage regression analysis of our paper suggests five broad conclusions concerning the persistence of Hindu-Muslim communal violence in the specific form called "riots". Firstly, we find ample evidence in support of our main hypothesis, i.e., about the multiplicity regarding the causes of Hindu-Muslim conflicts in India. We find that causes of Hindu-Muslim violence in India in the post 1980s are not mutually exclusive. While the political scientists in this field generally acknowledge that any single theory by itself is unlikely to explain the occurrence of all Hindu-Muslim riots, several of them nevertheless suggest that the presence or absence of a single factor is most determining whether or not violence will take place, and when and where it does.

Second, based on available evidence, past event of communal violence between the Hindus and Muslims in India significantly increases the likelihood of present ethno communal violence. Violence in the past might influence the incidence for violence in the present is by creating the urge for revenge on the part for the victims. The most common explanation for the way in which the past level of violence influences the present, focuses on the way in which communities

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[27]Even though we control for the civic engagement with the total number of newspapers, we need proper index of civic association, which depends on a variety of factors.

assess their security and the threat posed by the other community (Wilkinson, 2004). Others like Brass (2003), agrees about the "representations of collective pasts" and the way "collective memories are transmitted through generations" are of considerable importance in contributing to the persistence of communal violence in India.

Third, the presence of Hindu nationalist parties at the state legislature is another determining factor for the outbreak of Hindu-Muslim communal violence across states in India, especially during the 80s and the 90s. It is crucial for these nationalist political parties to maintain the communal tensions, accompanied from time to time by lethal rioting at specific sites, which is essential to emphasize the essence of militant Hindu nationalism. Varshney (2008) examining the role of state in ethno communal violence in India concluded that to the extent that a state in controlled by a communal party, the clashes, tensions or the rumours confronting the local interethnic civic mechanisms will be that much stronger.

Fourth, the presence of local or regional parties and left parties helps in mitigating or preventing the communal riots to happen. Agrahakar (2005) quotes the evidence of drastic reduction in the communal violence both in Andhra Pradesh and Hyderabad with the rise of the regional party, named Telegu Desam Party (TDP) in the political sphere of Andhra Pradesh, a south-eastern state of India. Last, but the most important, is the inter-party competition to mobilize a certain sections of the voting mass to gain political advantage in the elections. Agraharkar (2005) studying the role of political incentives and the occurrence of Hindu-Muslim violence demonstrated that, within the context of Hyderabad, Hindu-Muslim violence can best be understood through a framework of incentives and disincentives that guide the actions of both the local and state-level political parties in creating riots and failing to prevent them from occurring. He establishes that in the case of Hyderabad, it's not only BJP, but also the political party of Hyderabad's Muslim community, known as Majlis-e Ittehadul Muslimeen (MIM) who also did mobilize a certain section of their ethnic communities through communal violence in order to out-compete their closest rival, i.e., BJP in the elections. Both the study of Agraharkar (2005) and Brass (2003) focusing very specifically on two of the most riot-prone areas of India, Hyderabad and Aligarh, respectively, about the search of the causes for the riots also confirmed about the direct causal link between the intense political competition and the incidence of riots.

Unlike other influential studies, we find evidence of greater Hindu-Muslim riots in areas with high level of economic development. It confirms the theory that communal violence in India

is generally an urban phenomenon. Studies of Agrahakar (2005), Brass (2005) also points out that the riots are very location-specific and they differ in characters based on the city/town incentives involved with it. Therefore, an examination of the local incentives to prevent or foment riots would be much enlightening to explain about the incentives involved in organizing or the production of Hindu-Muslim violence. Since, the riots of 2002 Gujarat, the incidence of Hindu-Muslim violence has decreased drastically, so the question that could really be posed, therefore, is whether the incentives have been changing for the state governments, local political leaders, and even individuals who may once have benefited or harmed from the dreadful Hindu-Muslim riots in India or is there any creation of interethnic civic engagements that is actually playing a role in the prevention of violence in a sustained basis.

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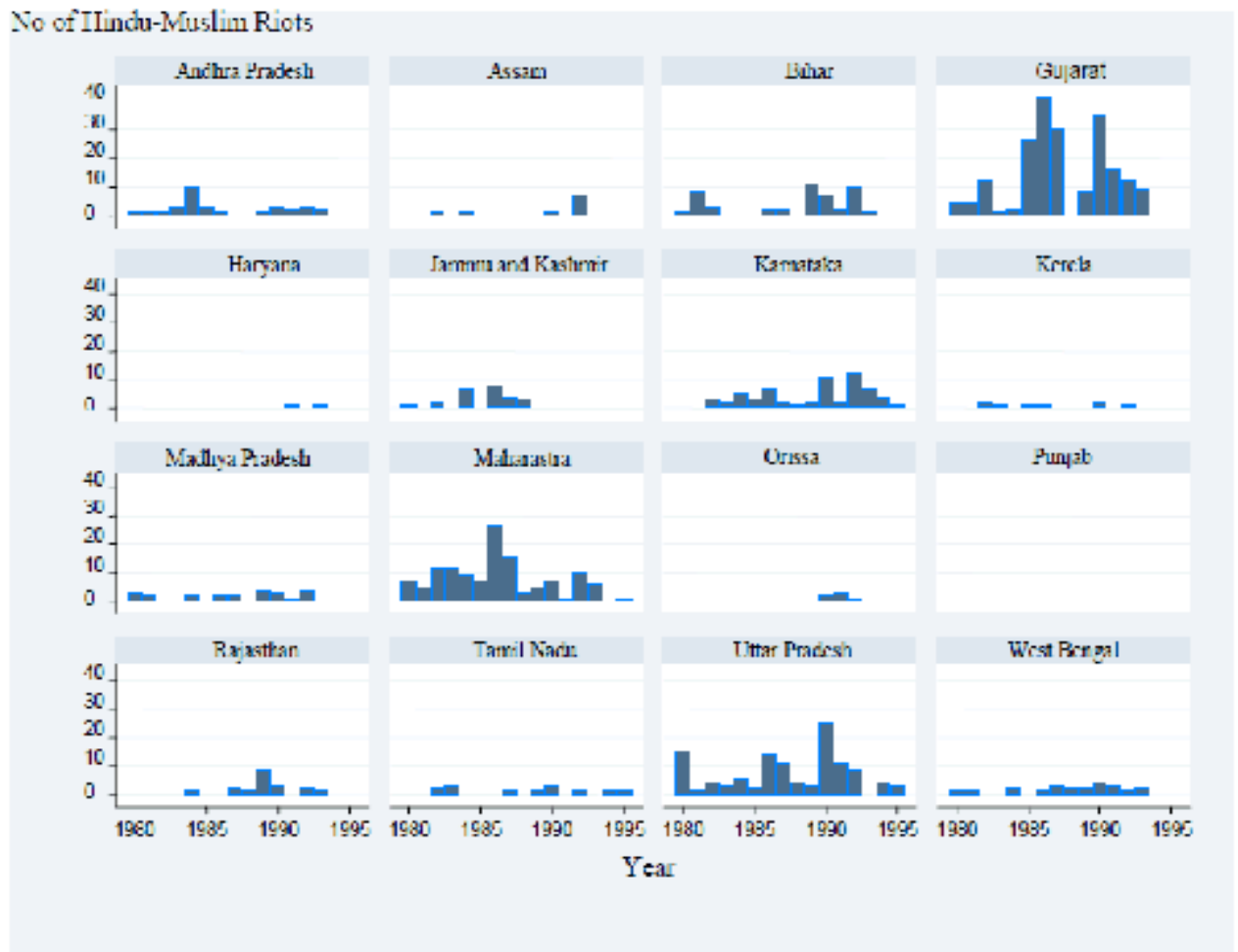
Figure 1 State-Wise Hindu-Muslim Riots in India, 1980-1995
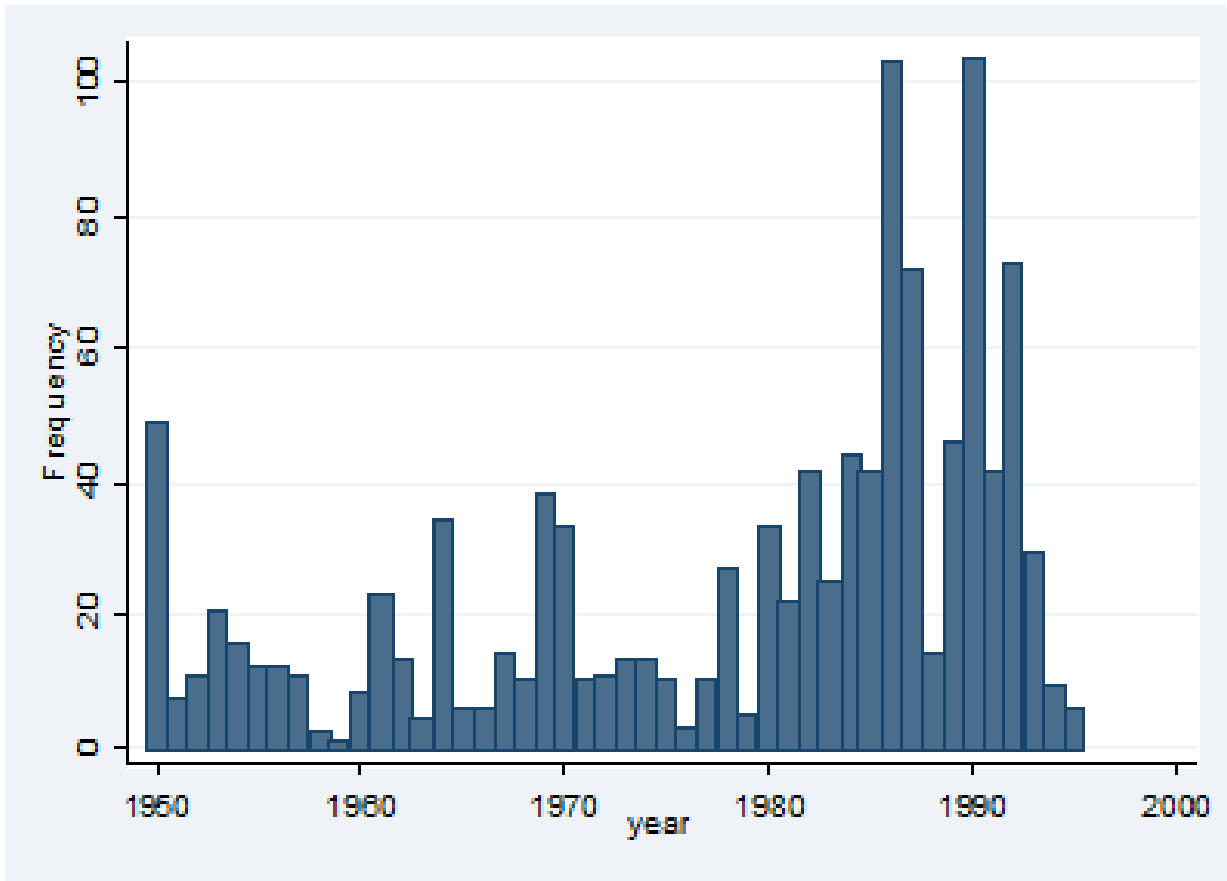
Figure 2 Hindu-Muslim Riots in India, 1950-1995
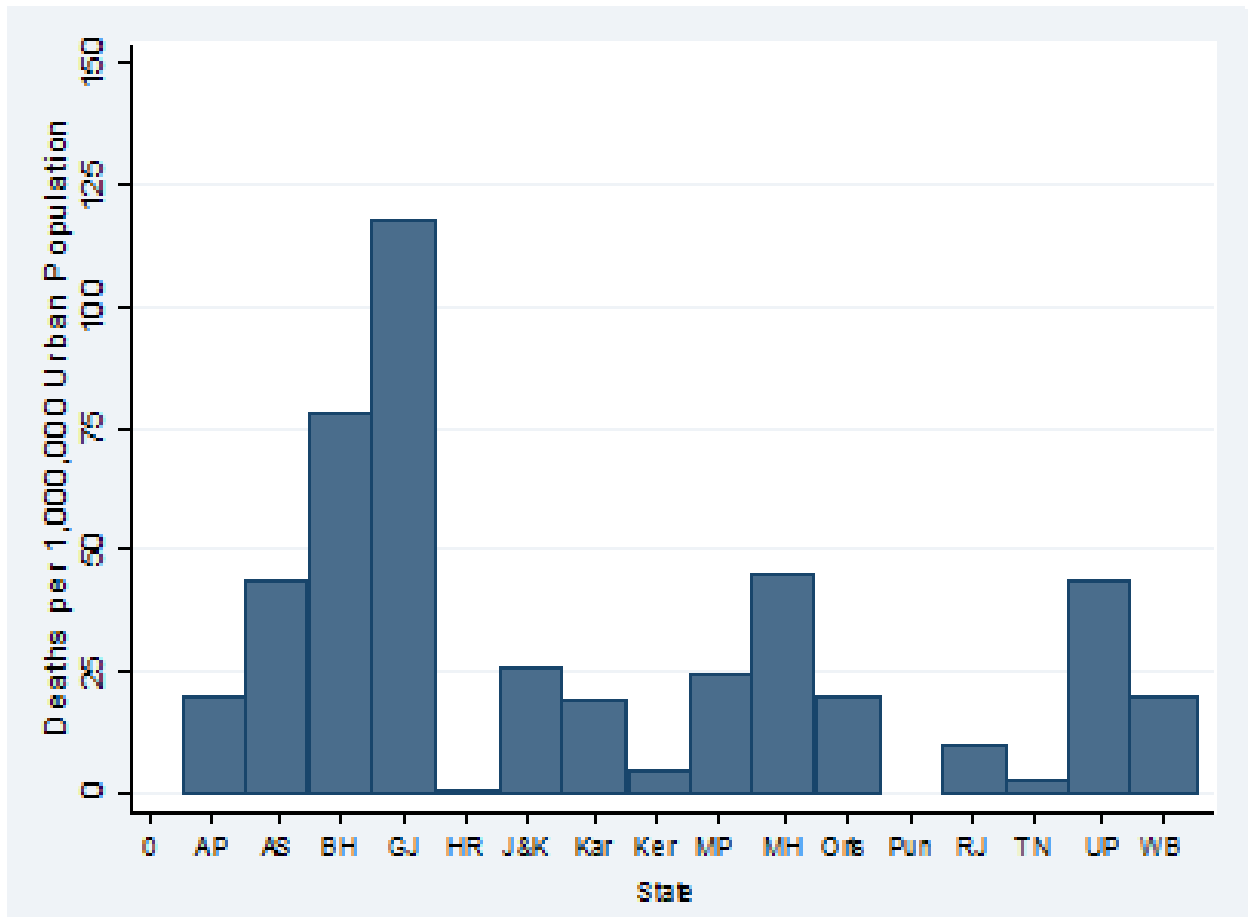
Figure 3 Deaths per 1,000,000 of Urban Population, State wise, 1950-1995

Source: Varshney, A., (2002), Ethnic Conflict and Civic Life, Yale University Press
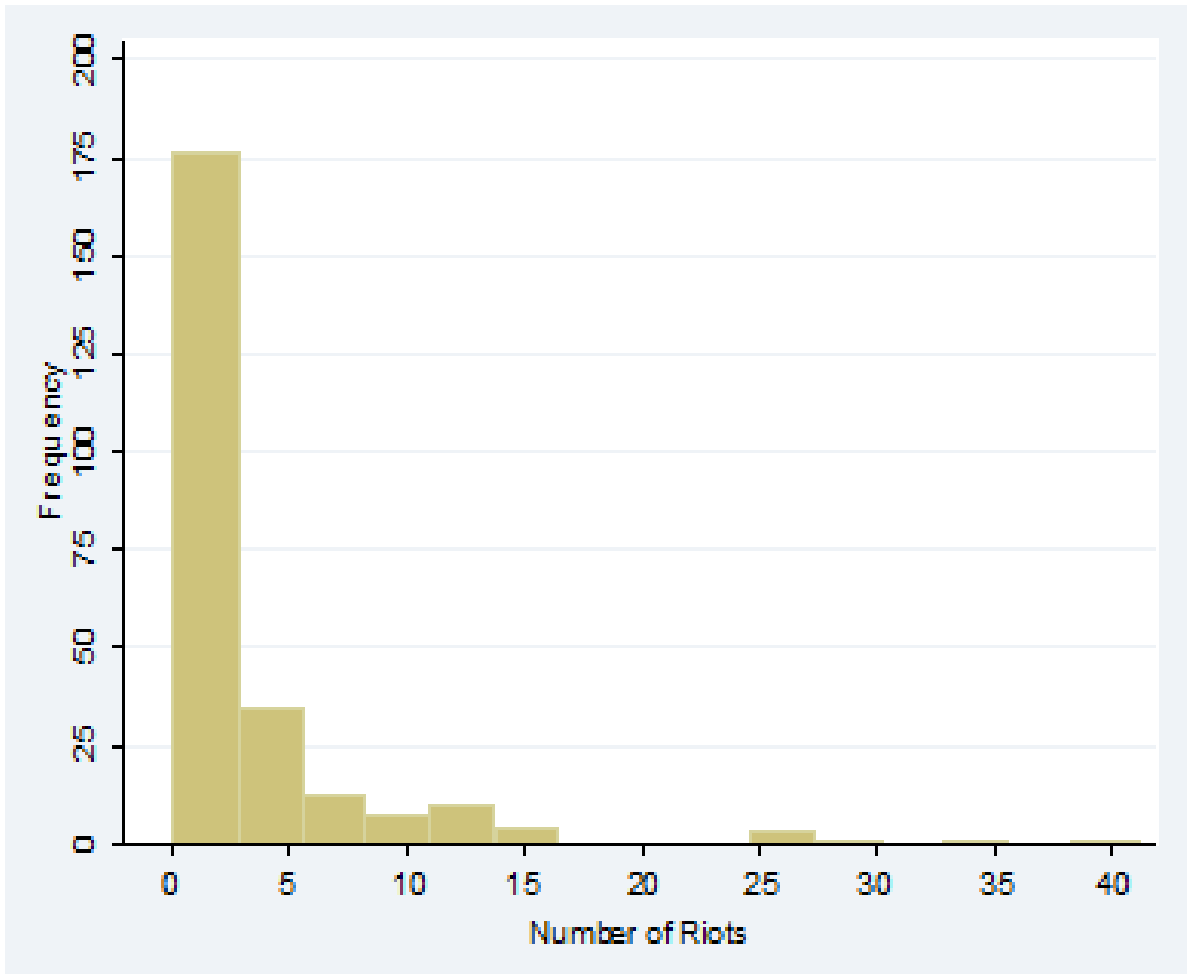
Figure 4 Frequency Distribution of Hindu-Muslim Riots in India, 1981-1995

Cities	Deaths, 1950-95
Mumbai	1137
Ahmedabad	1119
Hyderabad	312
Meerut	265
Aligarh	160
Baroda	109
Delhi	93
Calcutta	63

Notes: These cities experienced a minimum of 50 deaths in 10 riots over 5-year periods.
Source: Varshney, A., (2002), Ethnic Conflict and Civil Life, Yale University Press.

Table 1: India's Most Riot-Prone Cities, 1950-95

State	No. of Riots	Killed	Injured
	(1)	(2)	(3)
West			
Gujarat	12.50	58.56	212.69
Maharastra	7.88	72.69	207.50
North			
Uttar Pradesh	7.13	62.44	103.00
Jammu & Kashmir	2.78	2.22	96.56
Rajasthan	1.19	4.38	17.81
Haryana	0.13	0.25	0.13
Punjab	0.00	0.00	0.00
South			
Karnataka	3.88	14.94	53.25
Andhra Pradesh	1.94	19.50	54.25
Tamil Nadu	0.81	1.94	10.75
Kerela	0.50	0.31	4.00
East			
Bihar	2.94	37.56	19.69
West Bengal	1.38	6.69	15.44
Assam	0.63	6.38	7.19
Orissa	0.38	1.00	2.88
Central			
Madhya Pradesh	1.44	12.06	49.63

Notes: Author's own calculation.

Table 2: Average Values of the Conflict Data, 1950-95

State	PCI	Ur_IN	Dev_Exp	HC_Ratio	Per_Mus	Li_Ra	Pol_100sqkm	News_Cir	Effec_Part	Prop_CP	Prop_BJP	Prop_Regio
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
AP	5717.22	33.56	177.23	35.94	9.00	46.56	21.40	2575.13	2.91	0.40	0.04	0.43
AS	5202.25	29.03	148.34	44.37	29.26	56.25	50.44	640.73	5.86	0.41	0.09	0.24
BH	3601.69	32.31	91.10	61.11	15.16	42.18	41.46	2655.60	5.71	0.44	0.26	0.02
GJ	8567.07	30.11	189.31	41.33	8.84	63.81	29.84	2217.11	3.27	0.57	0.18	0.00
HR	9207.32	30.48	209.50	24.64	5.02	59.71	52.81	316.50	4.55	0.32	0.45	0.01
JK	5330.17		296.69	27.74	66.97	57.29	13.01	243.16		0.31	0.03	0.56
KA	5865.29	34.47	167.53	44.43	11.84	57.93	24.13	2463.70	3.40	0.51	0.36	0.00
KR	5372.85	38.58	150.82	38.97	23.79	90.70	77.29	6067.16	8.87	0.27	0.05	0.11
MP	4842.92	32.87	137.89	50.21	5.05	49.93	18.96	2875.30	3.14	0.62	0.03	0.00
MH	9858.88	35.38	179.93	49.21	9.98	67.58	38.58	8201.75	4.62	0.66	0.07	0.07
OR	4410.05	35.82	148.12	47.06	1.91	54.44	20.09	965.85	2.95	0.56	0.36	0.00
PB	11033.33	29.64	203.55	17.97	1.31	61.60	88.20	1605.15	3.74	0.47	0.07	0.30
RJ	4897.33	31.58	126.53	45.26	8.16	45.36	14.49	2323.23	3.84	0.51	0.14	0.00
TN	6454.31	35.47	194.40	44.29	5.50	65.01	45.05	5670.41	3.96	0.21	0.03	0.69
UP	4535.18	33.19	111.36	42.14	17.61	47.49	50.81	7365.53	4.95	0.45	0.22	0.00
WB	5378.96	34.65	136.62	35.94	24.16	61.34	83.40	5052.11	3.41	0.14	0.01	0.09

Notes: Author's own calculation. The numbers in the above table are simple averages calculated over all the major 16 states of India for the period 1981 to 1995. AP - Andhra Pradesh, AS - Assam, BH - Bihar, GJ - Gujarat, HR - Haryana, JK - Jammu and Kashmir, KA - Karnataka, KR - Kerela, MP - Madhya Pradesh, MH - Maharastra, OR - Orissa, PB - Punjab, RJ - Rajasthan, TN - Tamil Nadu, UP - Uttar Pradesh, WB - West Bengal. PCI - Per Capita Income (measured in INR); Ur_IN - Urban Inequality (Gini Coefficient); Dev_Exp - Natural logarithm of Development Expenditure; HC_Ratio - Head-Count Ratio (indicator for poverty ratio in each state); Per_Mus - Percentage of Muslims in total population; Li_Ra - Literacy Rate; Pol_100sqkm - is Number of police personnel per 100 sq. km; News_Cir - Total number of newspapers in circulation; Effec_Part is effective number of parties which denotes political competition variable; Prop_CP - proportion of seats by the Congress party in the state legislative assembly; Prop_BJP - proportion of seats by the Bharatiya Janata Party in the state legislative assembly; Prop_Regio - proportion of seats by the regional political parties in the state legislative assembly.

Table 3: Socio, Economic and Political Scenario for 16 major states in India, 1981-1995

<table>
<thead>
<tr><th></th><th colspan="4">No of Hindu-Muslim Riots</th></tr>
<tr><th></th><th>(1)</th><th>(2)</th><th>(3)</th><th>(4)</th></tr>
</thead>
<tbody>
<tr><td>Level of Development</td><td>25.52
(15.22)^c</td><td>15.893
(17.148)</td><td>15.155
(13.421)</td><td>18.797
(16.647)</td></tr>
<tr><td>Riots$_{t-1}$</td><td>0.07
(0.03)^a</td><td>0.05
(0.03)^a</td><td>0.02
(0.02)</td><td>0.02
(0.02)</td></tr>
<tr><td>Log (Total Population)</td><td>11.63
(6.68)^c</td><td>6.29
(5.15)</td><td>30.81
(27.34)</td><td>12.40
(11.07)</td></tr>
<tr><td>Per cent of Muslims</td><td>1.81
(0.87)^b</td><td>0.92
(0.96)</td><td>1.02
(0.70)</td><td>0.21
(0.13)^a</td></tr>
<tr><td>Literacy Rate</td><td>0.10
(0.08)</td><td>0.09
(0.08)</td><td>−0.05
(0.05)</td><td>−0.15
(0.13)</td></tr>
<tr><td>Coalition Govt</td><td>−0.47
(0.40)</td><td>−0.52
(0.47)</td><td>0.41
(0.49)</td><td>0.72
(0.74)</td></tr>
<tr><td>Political Competition</td><td>0.41
(0.17)^b</td><td>0.28
(0.19)</td><td>0.07
(0.14)</td><td>0.20
(0.11)^c</td></tr>
<tr><td>Poverty Ratio</td><td></td><td>−0.02
(0.04)</td><td></td><td></td></tr>
<tr><td>Other controls</td><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>N</td><td>164</td><td>164</td><td>164</td><td>164</td></tr>
<tr><td>State Fixed Effects</td><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Year Fixed Effects</td><td>Yes</td><td>Yes</td><td>Yes</td><td>Yes</td></tr>
<tr><td colspan="5">1st Stage Regression</td></tr>
<tr><td>R-Square</td><td>0.84</td><td>0.87</td><td>0.82</td><td>0.86</td></tr>
<tr><td>F-Stat</td><td>113.27</td><td>245.00</td><td>4437.91</td><td>1942.69</td></tr>
</tbody>
</table>

Table 4: Basic 2SLS Results

Notes: The dependent variable is the number of Hindu-Muslim riots in a particular year in a state. The Level of Development is natural logarithm of per capita income of a state in columns (1) - (2). In columns (3) - (4), per capita income is substituted by the development and education expenditure of a state, respectively. We use %Δ in rainfall at $(t-1)$ to instrument for the current PCI. Coalition Govt is binary variable. Political Competition is the effective number of parties in a state. Poverty Ratio is the head-count ratio. Other controls include total number of riots in the adjacent states, number of police personnel per 100 sq. km at $(t-1)$ period and urban inequality (gini coefficient). Numbers in the parenthesis are clustered standard errors. Standard errors are clustered at the state-level. ^{c},^{b},^{a} denotes significance at 10%, 5% and 1% level. Intercepts are not reported.

No of Hindu-Muslim Riots

	Proportion of Seats by Political Parties					Cum Majority Years since 1957 of a Political Party				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Level of Development	40.57 (23.32)^c	37.30 (16.89)^b	19.18 (17.89)	33.39 (17.73)^c	34.43 (17.68)^c	25.90 (16.06)	24.39 (14.34)^c	26.24 (14.61)^c	26.50 (16.75)	24.82 (14.86)^c
Riots$_{t-1}$	0.07 (0.04)^b	0.07 (0.03)^a	0.05 (0.03)	0.08 (0.03)^a	0.08 (0.03)^a	0.07 (0.03)^b	0.06 (0.02)^a	0.06 (0.03)^b	0.07 (0.03)^b	0.07 (0.03)^b
Log (Total Population)	22.87 (12.32)^c	18.96 (7.43)^b	9.23 (7.35)	17.16 (8.26)^b	17.53 (7.91)^b	12.55 (6.79)^c	2.94 (1.77)^c	12.90 (5.71)^b	12.67 (7.23)^c	8.19 (4.94)^c
Per cent of Muslims	2.35 (1.37)^c	1.96 (1.01)^c	1.07 (1.03)	2.41 (1.07)^b	2.58 (1.10)^b	1.40 (0.90)	2.05 (0.98)^b	1.14 (0.84)	1.45 (0.94)	1.85 (0.90)^b
Literacy Rate	0.17 (0.09)^a	0.11 (0.07)^c	0.11 (0.08)	0.08 (0.07)	0.06 (0.06)	0.14 (0.08)^c	0.11 (0.08)	0.10 (0.07)	0.12 (0.08)	0.10 (0.08)
Coalition Govt	−1.25 (0.71)^c	−1.31 (0.61)^b	−0.28 (0.44)	−0.94 (0.57)^c	−1.18 (0.63)^c	−0.11 (0.43)	−0.54 (0.42)	−0.63 (0.40)	−0.26 (0.43)	−0.52 (0.44)
Political Competition	0.50 (0.23)^b	0.47 (0.18)^a	0.32 (0.20)	0.43 (0.18)^b	0.36 (0.16)^b	0.35 (0.18)^c	0.33 (0.15)^b	0.44 (0.18)^b	0.39 (0.19)^b	0.44 (0.18)^b
State Legislature_BJP	5.16 (2.26)^b					0.30 (0.13)^b				
State Legislature_CP		−2.42 (0.94)^b					0.25 (0.14)^c			
State Legislature_Regio Part			−1.53 (1.21)					−0.18 (0.13)		
State Legislature_Non-Sec				2.39 (1.19)^b					0.14 (0.07)^a	
State Legislature_Sec					−2.88 (1.29)^b					−0.06 (0.06)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	164	164	164	164	164	164	164	164	154	164
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1st Stage Regression										
R-Square	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
R-Square	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
F-Statistics	176.36	159.63	251.91	235.18	185.92	135.45	218.62	261.59	104.45	334.25

Table 5: Role of Politics

Notes: The dependent variable is the number of Hindu-Muslim riots in a particular year in a state. We use %Δ in rainfall at $(t-1)$ to instrument for the current PCI. Coalition Govt. is a binary variable. The Level of Development is natural logarithm of PCI of a state. Political Competition is the effective number of parties. State Legislature_BJP, State Legislature_CP, State Legislature_Regio Part, State Legislature_Non-Sec, State Legislature_Sec is the proportion of seats for the BJP, Congress Party, regional political parties, "non-secular" (BJP+other Hindu) parties, "secular" (Left+Regional) paries at the state legislature, respectively. Other controls include total number of riots in the adjacent states, number of police personnel per 100 sq. km at $(t-1)$ period and urban inequality (gini coefficient). Numbers in the parenthesis are clustered standard errors. Standard errors are clustered at the state-level. ^{c}, ^{b}, ^{a} denotes significance at 10%, 5% and 1% level. Intercepts are not reported.

	No of Hindu-Muslim Riots					
	(1)	(2)	(3)	(4)	(5)	(6)
Level of Development	7.77 (12.03)	17.58 (15.58)	17.00 (15.70)	22.24 (18.24)	15.11 (17.26)	46.05 (51.45)
$Riots_{t-1}$	0.03 (0.03)	0.05 (0.03)	0.04 (0.03)	0.06 (0.03)^c	0.05 (0.03)	0.08 (0.07)
Log (Total Population)	7.81 (8.91)	7.26 (6.56)	7.07 (6.63)	−0.22 (9.61)	7.84 (6.78)	28.56 (30.09)
Per cent of Muslims	0.53 (0.72)	1.21 (0.88)	1.15 (0.85)	1.03 (0.99)	0.90 (0.97)	2.38 (2.64)
Literacy Rate	0.12 (0.09)	0.07 (0.08)	0.06 (0.07)	0.17 (0.10)^c	0.11 (0.08)	0.27 (0.27)
Coalition Govt	−0.42 (0.32)	−0.48 (0.42)	−0.47 (0.43)	−0.53 (0.51)	−0.51 (0.49)	−1.13 (1.19)
Political Competition	0.11 (0.164)	0.33 (0.17)^c	0.33 (0.17)^c	0.33 (0.20)^c	0.24 (0.20)	0.48 (0.48)
Total No. of Newspapers	−0.001 (0.001)					
Election Dummy		−0.08 (0.24)				
Voter Turnout (%)			−0.003 (0.022)			
No of Electoral Seats				0.17 (0.09)^c		
No of Candidates					−0.0001 (0.0002)	
President Rule Dummy						−1.44 (1.61)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	150	164	164	164	164	147
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
	1st Stage Regression					
R-Square	0.89	0.866	0.866	0.868	0.866	0.829
F-Statistics	399.80	135.20	114.83	317.00	585.02	103.97

Notes: The dependent variable is the number of Hindu-Muslim riots in a particular year in a state. The Level of Development is natural logarithm of PCI. We use %Δ in rainfall at $(t-1)$ to instrument for the current PCI. Coalition Govt is binary variable. Political Competition is the effective number of parties. Total No. of Newspapers is the number of newspapers in circulation combining all the languages. Election Dummy is a binary variable which denotes 1 if the election is within one year. No of Electoral Seats is the total number of electoral seats in a state. No of Candidates is the total number of candidates who filed nominations to contest an election. President Rule Dummy is also a binary variable denoting 1 if a president rule has been imposed in a given year. Other controls include total number of riots in the adjacent states, number of police personnel per 100 sq. km at $(t-1)$ period and urban inequality (gini coefficient). Numbers in the parenthesis are clustered standard errors. Standard errors are clustered at the state-level. ^{c},^{b},^{a} denotes significance at 10%, 5% and 1% level.

Table 6: Civic Participation and Other Political Indicators

| | Intensity of Riots- Total Number of Casualties | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)
Level of Development	40.19 (22.68)^c	33.87 (22.46)	56.73 (31.15)^c	32.42 (22.27)	39.54 (25.87)	39.48 (25.87)
Riots$_{t-1}$	0.09 (0.04)^b	0.08 (0.04)^c	0.08 (0.04)^c	0.07 (0.04)^c	0.07 (0.04)^c	0.07 (0.04)^c
Log (Total Population)	23.70 (12.35)^c	15.55 (8.92)^c	31.49 (16.04)^c	15.12 (8.93)^c	19.51 (11.38)^c	18.87 (10.93)^c
Per cent of Muslims	2.17 (1.18)^c	1.99 (1.25)^c	3.42 (1.81)^c	1.92 (1.24)	2.45 (1.52)	2.53 (1.58)
Literacy Rate	0.26 (0.13)^b	0.22 (0.11)^b	0.27 (0.12)^b	0.19 (0.10)^c	0.19 (0.10)^b	0.18 (0.09)^b
Coalition Govt		−1.03 (0.62)^c	−2.23 (0.98)^b	−1.12 (0.61)^c	−1.58 (0.83)^c	−1.68 (0.90)^c
Political Competition		0.19 (0.21)	0.46 (0.29)	0.22 (0.21)	0.28 (0.24)	0.21 (0.20)
State Legislature_BJP			6.70 (3.03)^b			
State Legislature_Regio Part				−1.40 (0.85)^c		
State Legislature_Non-Sec					2.66 (1.52)^c	
State Legislature_Sec						−2.64 (1.64)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	164	164	164	164	164	164
	1st Stage Regression					
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R-Square	0.85	0.87	0.87	0.87	0.87	0.87
F-Statistics	234.88	349.78	176.36	251.91	97.62	185.92

Table 7: Robustness Checks

Notes: The dependent variable is the total number of casualties (Killed + Injured + Arrests) due to a single Hindu-Muslim riot in a particular year in a state. The Level of Development is natural logarithm of PCI of a state. We use %Δ in rainfall at $(t-1)$ to instrument for the current PCI. Coalition Govt is binary variable. Political Competition is the effective number of parties in a state. State Legislature_BJP, State Legislature_CP, State Legislature_Regio Part, State Legislature_Non-Sec, State Legislature_Sec is the proportion of seats for the BJP, Congress Party, regional political parties, "non-secular" (BJP+other Hindu parties, "secular" (Left+Regional) paries at the state legislature, respectively. Other controls include total number of riots in the adjacent states, number of police personnel per 100 sq. km at $(t-1)$ period and urban inequality (gini coefficient). Numbers in the parenthesis are clustered standard errors. Standard errors are clustered at the state-level. ^{c}, ^{b}, ^{a} denotes significance at 10%, 5% and 1% level. Intercepts are not reported.

Appendix I

Why 1993-94 SDP data series is different

The Bohlken and Sergenti (2010) paper, which is very close to our study in terms of its scope used the State Domestic Price (SDP) data of 1980-81 base year prices. They use the income variable based on the 1980-81 constant price series data. In contrast, we use the SDP data of 1993-94 base which has certain improved features as compared to the old base price series data. Firstly, the 1993-94 base SDP are based on the United Nations system of national accounts (SNA) 1993. Secondly, the new GDP and SDP series revised the production boundary in a number of sectors, notably, agriculture, real estate and finance. It has also shifted the occupation force database from the census to the National Sample Survey (NSS). Finally, it has incorporated some new dynamic economic activities, such as the software, which were not included in the earlier series. Therefore, the SDP series from the earlier base year prices cannot be compared with the new revised series of 1993-94.

Methodology of extending the 1993-94 series for the period 1980-81 to 1992-93

For extending the 1993-94 series backwards, firstly, we compute the price correction factor, which we define as the ratio of implicit deflator for 1993-94 series to the 1980-81 series for the 1993-94. The price correction factor is computed for each state and sector separately. We then calculate the SDP deflators for the years 1980-81 through 1992-93 as the weighted averages of appropriate sub.sectors' indices. The weights for the period 1980-81 through 1992-93 are assumed to be the same as in the 1993-94 series. Since, the database and the defintion of production sectors have changed in the 1993-94 series, we incorporate these changes first by computing the average ratio of 1993-94 series to 1980-81 series data at current prices for the common period (1993-94 to 1996-97) available. We then compute quantum correction from the data for a number of years beacuse changes in production may not be adequately captured by a single year's data. Similar to the price correction, quantum correction is also calculated for each sector and for each states. We backslide the quantum correction factor for production change by a geometrically declining rate to unity for the year 1980-81. By dividing the computed current price series (corrected for production changes) by the computed price deflator (corrected for price changes), we compute the constant price SDP series for each sector and state for the

period 1980-81 through 1992-93 that are consistent with the 1993-94 series data. The CSO also extends the 1993-94 series backward by assuming fixed price correction factor. Our method is certainly an improvement, where we assume that all production changes do not occur at the same rate over time, so the correction factor must decline as the new series is extended backwards.