

Segregation, Rent Control, and Riots: The Economics of Religious Conflict in an Indian City

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Abstract

Ahmedabad, India's sixth largest city, saw widespread religious violence in 2002. Using detailed neighborhood level data we show that riot incidence is positively predicted by a neighborhood's proximity to the, by now largely derelict, textile mills. Mill neighborhoods also exhibit higher levels of religious integration, a fact we trace to the historical religious heterogeneity in the mill worker population and lower mobility. We suggest that these lower mobility rates are related to low and controlled rents in mill neighborhoods. The pattern of violence is consistent with the view that residents, or property developers in the city, exploited an environment of heightened religious tensions to engage in a resource war.

1 Introduction

Religious conflict is an important issue in many ethnically diverse countries (Horowitz, 1985). A growing literature in economics suggests that conflict over resources may be an important predictor of such violence (see, for instance, Esteban and Ray 2007). A number of recent empirical papers provide evidence that negative economic shocks to a community, and the consequent struggle for control over resources, plays an important role in explaining the eruption of historic tensions into acts of violence (Miguel et al. 2004, Oster 2004 and Miguel 2005).

This paper studies the relationship between religious violence and living arrangements – in particular, residential segregation – within cities. That is, conditional on city-level demographics and the overall degree of ethnic tension, what are the characteristics of specific locations within

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a city where communal violence tends to emerge and what can this tell us about why some neighborhoods erupt in this manner instead of engaging in more subtle forms of aggression such as social exclusion or economic segregation?

Residential diversity at the neighborhood level has rarely been documented or even explored as an explanatory factor in studies of ethnic violence. Instead, the link between population composition and violence has mainly been studied by comparing cities or countries with differing levels of ethno-linguistic fractionalization (ELF) between which migration is limited and there is little overlap in access to markets and economic resources. At this level of aggregation, historic level of ethnic diversity is to some extent a mechanical predictor of communal violence, although existing evidence on the relationship between conflict and degree of ELF is mixed and very sensitive to how diversity is measured (Fearon and Laitin, 2003).¹

In contrast, at the neighborhood or building level within a city, residential arrangements arguably should reflect individual preferences. Since people can always choose to rearrange themselves within a city if their distaste for communal living is sufficiently high, diversity within very localized living arrangements should not positively predict outbreaks of communal violence. If anything, frequent localized interactions with other types may have a positive effect on tolerance and therefore a negative causal effect on conflict.

To examine the relationship between neighborhood demographics and violence we combine detailed neighborhood-level data on religious diversity with data on incidence of riot-related deaths in the Indian city of Ahmedabad over a three-day period of intense religious conflict that occurred in 2002. Recurring communal violence between Hindus and Muslims has become increasingly common in Indian cities over the last two decades of the twentieth century (Varshney, 2002), and nowhere is it more acute than in Ahmedabad. Correspondingly, residential arrangements in this city are remarkably segregated: By 2002, 71 percent of the population in our sample lived in completely homogeneous neighborhoods, a fact that presumably reflects increasing intolerance for living with members of another religion.

Here we concentrate on documenting one striking fact that emerges from the data: in the 2002 riots, incidents of violence were more likely to occur in integrated neighborhoods in the

¹The only measure of diversity that appears robustly correlated with conflict is polarization – a measure of diversity which is maximized when there are two equally sized groups (Montalvo and Reynal-Querol, 2005). However, as Esteban and Ray 2006 point out there is an important difference between the intensity of conflict, conditional on conflict breaking out, and the likelihood that conflict actually occurs. The latter may be lower in more polarized settings.

proximity of largely derelict textile mills. This poses a general puzzle for models of residential segregation. Presumably households with the strongest distaste for living with neighbors of a different religion should be the first to relocate to segregated neighborhoods and also be the first to participate in communal violence. To pose the question differently, why would individuals with sufficiently strong animosity towards people unlike themselves so as to commit acts of violence against them locate amongst those individuals in the first place, particularly in an environment of active informal real estate markets and a general trend of increasing residential segregation? Given the huge economic burden communal violence imposed on neighborhoods during the 2002 riots, it is hard to explain why highly unstable neighborhoods would not have “tipped” by way of voluntary segregation before reaching the point of intense conflict and thereby prevented economic catastrophe. If we take the classic Schelling (1971) model seriously, integrated neighborhoods should in fact be relative pockets of harmony since those with the highest levels of tolerance locate in these places.

We argue that one likely reason behind the observed spatial patterns of violence in this setting is the influence of tenancy rights on residential segregation in Ahmedabad. Mill neighborhoods, which were the most ethnically diverse in 2002, were the ones in which real estate markets functioned the most poorly due to the historic practice among textile mills of tying housing and employment. Textile mills, which had been the engine of both population and economic growth in city until the mid 1970s had employed both Hindus and Muslims. Importantly, they also established subsidized tenement housing (called ‘chawls’) for their workers close to the mills beginning in the mid-19th century (Bremner, 2004). Price controls under the Bombay Rent Control Act kept rents extremely low on these properties even after the mills had shut and granted unique tenancy rights to residents of these dwellings. Even after the mills closed, tenancy rights ensured that residents did not move out of these chawls. In fact, in many cases, they became de facto owners of their units, although they did not have the right to sell or rent out the dwellings (Mahadevia, 1999).

Because property rights were based on employment history, they were not transferable on the informal market. Hence, workers and ex-workers remained in more integrated neighborhoods even as the distaste for, or fear of, living among other religions rose on account of external events. We show that, for a given level of religious diversity, violence was twice as likely in mill neighborhoods. Further, this violence was predominantly directed against members of the

minority group. Finally, mill neighborhoods with none or low levels of religious diversity did not see increased violence suggesting that it was not being associated with a mill *per se* that caused the violence. We hypothesize that since mill residents could not easily be bought out the period of heightened religious tensions served as a useful veil for a resource war in these neighborhoods where the religious minority bore the brunt of the violence.

2 The Context: Ahmedabad

India created, between 1850 and 1914, the world's fifth largest cotton textile industry. This industry was concentrated in big textile spinning mills, most notably in two cities in Western India – Mumbai and Ahmedabad. The first textile mill in Ahmedabad was established in 1861, and the industry continued to expand until the mid 1960s when there were over 70 mills in Ahmedabad employing roughly 130,000 workers. The advent of power looms, starting in the mid-1970s, however, spelled the death knell for this industry. By 1997 only 11 of the mills were still active and over 85,000 workers had lost their jobs (Breman, 2004).

2.1 The evolution of city demographics

Today Ahmedabad is India's sixth largest city with a population of 5.3 million. Hindus make up roughly 84% of the city's population and Muslim's 11%. The city was founded in 1411 AD by Sultan Ahmed Shah who encouraged the migration of merchants, weavers, and skilled craftsmen into Ahmedabad (Gillion, 1968). In the 15th and 16th century Ahmedabad became an important center for the textile industry, and low caste Hindu and Muslim weavers were the mainstay of this industry.

The workforce of the first textile mill comprised 63 men drawn from the local area (Mehta, 1954). By 1879 Ahmedabad had four mills with a labor force of 2,012, mainly Muslims and low caste Hindus (GBP Vol. IV, 1879). The 1890 Report of the Indian Factory Commission of 1890 also states that most mill workers were either Muslims or Vaghri (Misra, 1975).

The fast expansion of the industry led to a labor demand which could not be met by this pool and the first half of the twentieth century saw significant in-migration and expansion of the city population. In 1872 Ahmedabad's population stood at over 116,000 of which roughly 20% was Muslim. By 1941, Ahmedabad's population had increased to 591,000 of which 130,000 were

workers in the textile industry. The two main social groups from which workers migrated into the city for mill work remained Muslims and low caste Hindus. Muslims seem to have manned the weaving departments almost exclusively, since most of the 10,000 workers involved in the weavers' strike during 1918 were reported to be Muslim (Mazumdar, 1973). The untouchables and low castes were largely confined to lower paid occupations in the spinning and frame departments (TLA, 1924).

Gillion (1968) argues that Ahmedabad appears to be the only great center of the cotton industry that possessed what may be called a separate mill population. In the 1920s, nearly one-third of Ahmedabad's population depended on the cotton industry (Census, 1921).

2.2 The evolution of city housing

The city of Ahmedabad was founded on the banks of Sabarmati river, and the main city center was enclosed by a wall in the late 15th century. The city consisted of puras or wards which were occupied by particular castes specializing in a certain economic activity (Gokhale, 1969: 190). There was a little separation between work and residence and most resided and worked in house clusters within the puras which were referred to as a pol which was often linked to a particular caste. In 1872 there were 356 pols (Gillion, 1968).

Initially, the rapid in-migration of textile mill workers into the city was accommodated by the old custom of founding puras. But, in the face of large population growth, this gave way to haphazard expansion of the city, in which mud and straw hovels proliferated in the proximity of the textile mills.

The first textile mills were located inside the walled city but high population density and limited open space within the walled city led to further mills coming up outside the walled city. Mills tended to locate near the main railroad which ran alongside the walled city. Today mill areas cover roughly 350 hectares in downtown Ahmedabad.

Mill workers were commonly provided rental housing in tenements owned by the mill directly, which was subsidized for employees with extremely low rents. Breman (2004) dates the start of mills providing workers housing to the turn of the century when they started building one-room tenements or chawls with shared water supply and latrines. Rental housing offered by the mill-owners was conditional upon continued employment Lakha (1988).

Since 1948, rental charges for all private housing in Ahmedabad have been regulated by the

Bombay Rent Act of 1948. This act defines the standard rent for a private premise as the rent at which the premises were let on September 1, 1940. Increases in rent above the standard rent are restricted to a maximum of 25% . The Act also gives tenants the right to sub-lease the property of heirs of the original tenants. The standard rent of mill-housing was typically lower than for non-mill housing since mill accommodation was given as part as the employment contract.

2.3 The Evolution of Riots and Segregation

Over the last half century, Ahmedabad has gained a reputation as one of India’s more riot-prone cities Varshney (2002). After Independence, the first major Hindu-Muslim riots in the city broke out in 1969. Thereafter, there were riots in 1981, 1985, 1986, 1990-1991 and in 1992. The 1990s were a period of increased Hindu-Muslim tension across India, and this period also marked the start of significant residential segregation along religious lines in Ahmedabad Mahadevia (2003).

In this paper we focus on the most recent episode of religious riots in 2002. A train-burning incident in north Gujarat town of Godhra on 27th February triggered wide-scale Hindu Muslim violence across the state. The most intense period of rioting occurred within three days, February 28-March 2, although sporadic violence continued until June 2002. Close to 2000 persons were killed, and almost 200,000 households were economically or physically displaced. Ahmedabad was among the worst affected cities.

3 Findings

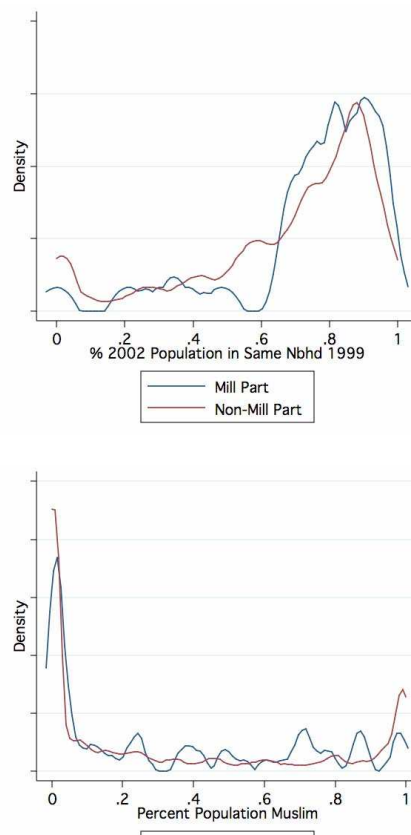
Our unit of analysis is an electoral part in Ahmedabad – a group of contiguous neighborhoods (or households) which share the same electoral booth. To identify whether a part includes a textile mill we start with two lists of textile mills in Ahmedabad, one from 1917 (Gillion, 1968) and one from 1975 (Gazetteer of India). A part is defined as a mill part if at least one neighborhood in that part bears the name of a mill (a neighborhood developed by a mill was usually named after the mill). For those mills for which we were unable to identify neighborhoods in this manner, we physically verified which mill they were in using fieldworkers in Ahmedabad. Our sample includes parts from all electoral constituencies in Ahmedabad that contain at least one mill. Overall, our sample consists of 2440 parts of which 5% are mill parts. The average part in our sample has 10 neighborhoods and 278 households.

To construct our measure of neighborhood diversity we use a name-based algorithm to identify the religious identity of households in the 2002 electoral rolls (for details see Field et al. 2007). In 2002, just before the riots, the muslim population share in mill parts was 23% and in non-mill parts was 11%. Religious fractionalization is 0.05 in non-mill parts and 0.13 in mill parts. In Panel A, Table 1 we test the differences in distributions of muslim population share and religious fractionalization using the Kolmogorov-Smirnov equality-of-distributions test, and reject the null hypothesis of samples coming from the same population (see Figure 1).

We have argued that greater religious fractionalization in mill parts reflects lower mobility because of the particular tenancy arrangements that residents of mill housing faced. To check for lower mobility we matched households across the 1999 and 2002 electoral rolls for a subset of five constituencies in our sample. In mill parts, 73% of the 2002 population lived in that neighborhood in 1999. In non-mill neighborhoods, this number is much lower at 64% of the 2002 population (see Figure 1).² Column (3), Panel A of Table 1 shows that we can reject equality of mobility rates across mill and non-mill parts (p-value 0.10).

We measure riot incidence in a part by whether any adult residents in that part were certified as killed in the 2002 riots and whose families were compensated by the government.³ We matched victims to parts using the same electoral data which we use to define our sample (on this, see Field et al. (2007)). We observe 221 deaths in our sample, which are spread across 6% of the parts. The incidence of deaths was disproportionately higher in mill parts – 11% mill parts, but only 5% of non-mill parts, witnessed a death. In Panel B of

Figure 1: Muslim population share and Mobility rates, for mill and non-mill parts



²Details of these calculations are in Field et al. (2007).

³We obtained the list of victims and their beneficiaries who received compensation from the Collectorate office.

Table 1 we show that this difference in death rates across mill and non-mill parts is statistically significant (column (1)), the likelihood of a death is 5% higher in a mill part.

Table 1: Mills, Religious Fractionalization and Riot Deaths

Panel A: Kolmogorov-Smirnov Test for Equality of Distribution			
	Muslim Pop.	Religious Frac.	Mobility
	(1)	(2)	(3)
D	0.333	0.34	0.2
P-value	0	0	0.1
Panel B: Average Effects			
	Any death	Muslim death	Hindu death
Mill part	0.05	0.04	0.02
	(0.02)	(0.02)	(0.01)
Param p-value	0.01	0.03	0.23
Nonparam p-value	0.025	0.05	0.22
Panel C: Regression			
	Any death	Muslim death	Hindu death
Religious	0.24	0.28	-0.05
Frac.*Millpart	(0.13)	(0.09)	(0.09)
Millpart	-0.02	-0.04	0.02
	(0.03)	(0.02)	(0.02)
Religious	0.20	0.18	0.03
Fractionalization	(0.04)	(0.03)	(0.03)
Number	-0.001	-0.002	-0.001
neighborhoods	(0.001)	(0.008)	(0.000)
Number	0.02	0.00	0.02
households	(0.01)	(0.01)	(0.01)
Observations	2440	2440	2440

Notes

1. In Panel A Muslim Pop is percent muslim households, Religious fractionalization is $2 * \text{muslim pop} * (1 - \text{muslim pop})$ and mobility is % of households in the neighborhood in 1999 who are still living in the same neighborhood in 2002. All variables are defined at the part level.
2. Any death is a dummy=1 if any riot related deaths occurred in the part. Muslim death=1 if any muslims were killed and hindu death=1 if any hindus were killed.
2. In Panel A we report the K-S Test for equality of the millpart and non-mill part distributions. In Panel B non-parametric p-values are computed using Fisher's exact (1935) p-values. In Panel C we report regressions results where all regressions include jurisdiction fixed effects.

In Panel C we turn to a regression analysis, and examine the link between religious diversity, presence of a mill and incidence of riot deaths. In column (1) of Table 1 we see that religious fractionalization positively predicts riots. Further, this relationship is twice as strong in a mill part. Further, this relationship is driven by muslim deaths.

Overall, we interpret our findings as consistent with the theory that insecure tenure rights associated with mill housing led to relatively intolerant members of different religious groups

living in close proximity. This, in turn, made these neighborhoods much more susceptible to violence in February 2002 as a means of forcing out members of a different ethnic group. Future work will use more recent population census data to investigate whether ex-mill areas indeed became as segregated as the rest of the inner city post-riots as this hypothesis suggests.

4 Conclusion

These findings provide empirical support for the hypothesis that tenancy rights granted to ex mill workers distorted residential relocation choices that may otherwise have mitigated the impact of rising religious tensions on community deaths and property destruction. Once the mills closed, preferential treatment of these lands under the Bombay Rent Act implied that residents were granted stronger than average tenancy rights. Since tenancy rights are not transferable on formal or informal real estate markets, mounting tensions between Hindus and Muslims in Gujarat (possibly fueled by worsening economic conditions throughout the city) led to a territory war rather than segregation in these locations. As tension mounted, acts of violence and intimidation were used to push out residents belonging to the religious minority group.

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