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THE EFFECTS OF WEATHER-INDUCED MIGRATION ON SONS OF THE SOIL RIOTS IN INDIA

By RIKHIL R. BHAVNANI and BETHANY LACINA*

INTRODUCTION

INTERNAL migration is central to many well-known episodes of political violence. For example, the civil war in Sri Lanka was prompted by Sinhalese migration to traditionally Tamil areas.[1] The movement of ethnic Russians within the Soviet Union set the stage for strife as the Union dissolved.[2] Rioters in Tibet in 2008 targeted Han migrants resented for their affluence and links to the ruling ethnic group in China.

The belief that internal migration causes violence is apparently shared by many governments that regulate in-country movement in the name of stability. Ethnic-, domicile-, or descent-based controls on residence, travel, employment, or property ownership are maintained in countries as diverse as Australia, Brazil, Canada, China, India, Mexico, and the United States. Many postcolonial countries in Africa and Southeast Asia support particularly elaborate migration restrictions,[3] with governments claiming that limits on domestic migration are necessary to limit resource competition and ethnic violence.

Although the political salience of internal migration is clear, there is little systematic evidence of a causal effect of domestic migration on violence. Migration, like ethnic difference, may be a rallying cry in many conflicts and yet, on average, it has no effect on the probability of violence.[4] Most studies of migration and violent conflict focus on

[1] Fearon and Laitin 2011.
[2] Hale 2004.
[3] Feder and Noronha 1987; Peluso and Vandergeest 1987.
[4] Fearon and Laitin 2003.

international population flows.[5] Large-*n* studies of ethnic violence have not examined the role of internal migration.[6] Studies of the potentially destabilizing effects of rural-to-urban migration do not measure internal migration directly, and have found mixed evidence of a link between levels of or changes in urbanization and violence.[7]

This article uses weather shocks to interstate population movements in India between 1982 and 2000 to recover the causal effects of migration on rioting. We find evidence of a substantively and statistically significant effect of migration on riots. We also investigate the mechanisms by which migration causes riots. India was the generating case for the seminal theory of internal migration and violence—Myron Weiner's sons of the soil theory, which holds that migration is destabilizing when there is high unemployment among natives.[8] But we do not find that the effect of migration is greater in places with higher unemployment among natives.

We argue that the key mechanism linking migration and rioting is not unemployment but the political alignment of the host population. Host populations that are politically aligned with the central government can obtain central government concessions to offset nativist grievances and have a freer hand to use covert forms of repression, such as discrimination and police intimidation, to limit internal migration to their states and control the migrants who already live there. States that are less influential in New Delhi have fewer resources and less impunity to marginalize migrants through official channels. Therefore, nativism is more likely to manifest in frequent riots. Empirically, we find that the effect of migration on riots more than triples if an Indian state government is not politically aligned with the central government.

The main contribution of this article is in advancing the venerable sons of the soil literature by developing a new theoretical perspective on the intervening role of politics in the relationship between migration and violence and empirically testing the theory using subnational data from India. A second contribution is methodological, in that we make novel use of natural disasters in migrant-sending areas as an instrument to demonstrate a widely applicable strategy for recovering the causal effect of international and/or within-country migration on rioting. A

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[5] Martin 2005; Salehyan 2008; Salehyan and Gleditsch 2006; Shain and Barth 2003.
[6] For example, Cederman, Wimmer, and Min 2010; Christin and Hug 2006; Toft 2005; Urdal 2008.
[7] Buhaug and Urdal 2013; Urdal and Hoelscher 2012; Wallace 2013.
[8] Weiner 1978.

number of studies treat disasters as exogenous shocks to economic conditions, potentially leading to conflict.[9] Our strategy is different. We estimate population inflows based on natural disasters outside the area where we wish to predict conflict. While there are multiple possible channels by which natural disasters may cause conflict in the immediately affected area, these multiple effects are less of a concern here as we are studying conflict beyond the disaster zone.

We also contribute to the literature on natural disasters and climate change as a cause of civil conflict. A growing debate seeks to parse whether environmental scarcity and shocks to environmental carrying capacity in the form of natural disasters cause conflict.[10] Interwoven with that debate are attempts to project how climate-change-induced environmental shifts will impact levels of violence.[11] Migration due to climate change is one hypothesized driver of conflict. To date, scholars have concentrated on the destabilizing potential of international migration,[12] especially migration from the global south to industrialized countries. But environmental hardship causes far greater increases in internal and south-south migration.[13] This article shows a clear causal pathway from climate disasters to violence through domestic migration and identifies the political factors that condition domestic migration's effects.

The first section below reviews the theoretical literature on the link between migration and riots and presents our argument regarding the political context in which migration spurs nativist violence. The section following that explains our research design and how it overcomes some inferential problems that complicate the study of migration and riots. The penultimate section presents our empirical analyses—the results of the ordinary least squares (OLS) analysis, two-stage least squares (2SLS) analysis, tests for the conditional effects of migration, and robustness tests. We then conclude.

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[9] Bergholt and Lujala 2012; Brückner and Ciccone 2011; Hidalgo et al. 2010; Kapur et al. 2012; Miguel et al. 2004.

[10] Urdal 2005.

[11] Benjaminsen et al. 2012; Boston, Nel, and Righarts 2009; Burke et al. 2009; Burke et al. 2010; Hendrix and Glaser 2007; Koubi et al. 2012; Raleigh and Urdal 2007; Scheffran et al. 2012. For a specific focus on changes in rainfall patterns, see Gleick 2014; Hendrix and Salehyan 2012; Hsiang, Meng, and Cane 2011; Raleigh and Kniveton 2012; Theisen 2012; and Theisen, Holtermann, and Buhaug 2011. Wischnath and Buhaug 2014 find a positive correlation between changes in agricultural production and the severity of India's ongoing insurgencies.

[12] Reuveny 2007; Reuveny and Moore 2009.

[13] White 2011.

THEORY

Within-country migration is thought to cause violence because it leads to competition over resources, broadly defined. Thomas Faist and Jeanette Schade characterize the basic argument as neo-Malthusian: migration causes population to outstrip economic and environmental carrying capacity.[14] Political conflicts over migration in Northeast India and Bangladesh are the paradigmatic cases in this literature.[15] The neo-Malthusian perspective suggests a direct effect of migration on violence:

> —H1. Domestic migration causes riots.

Climate change is especially worrisome from this point of view because of its potential to rapidly increase migration as some regional environments are irreversibly degraded and weather disasters become increasingly frequent. A report by the International Organization for Migration predicts a conservative scenario of "increased migration of between 5 and 10 per cent along existing routes," and a pessimistic scenario in which "large areas of southern China, South Asia, and the Sahelian region of sub-Saharan Africa could become uninhabitable on a permanent basis."[16]

Analysis of nativist conflict in India has traditionally taken a different tact, concentrating on competition for the economic benefits of modernization. Weiner argues that in India, antimigrant violence occurs when "there is a high level of unemployment among the indigenous middle classes."[17] For example, the nativist Shiv Sena party built its original following among young middle-class voters concerned about unemployment, but did not win over the economically established middle class.[18] Thus, in the Indian context, migration is more likely to cause conflict when the middle class has unmet economic aspirations:

> —H2. Domestic migration in conjunction with high middle-class native unemployment causes riots.

In the remainder of this section, we detail our argument, which is that political alignment between the center and the host population is the critical intervening factor between migration and rioting.

We start with two observations about politics and rioting in India.

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[14] Faist and Schade 2013.
[15] Homer-Dixon 1994; Homer-Dixon 1999; Suhrke 2009.
[16] Brown 2008, 28–29.
[17] Weiner 1978, 285.
[18] Katzenstein 1979.

First, India's state governments are generally sympathetic to nativist sentiment.[19] Domestic migrants are too few to be electorally powerful, a condition that is exacerbated by the fact that much migration is temporary.[20] Reflecting this, even political parties that have no overt ethnic or religious platform, for example, the Indian National Congress, heavily favor majority ethnic groups, particularly at the state level.[21] Weiner goes as far as to argue that because states are largely run with the interests of the majority group in mind, there is a race to the bottom regarding which Indian states are most hostile to migration.[22]

Second, rioting in India is often directed by natives against migrants. Rioting is rarely a result of migrant-led protest against the state government. Migrants often lack the resources and political networks necessary for activism.[23] Instead, nativist riots in India are probably more accurately characterized as pogroms that target migrants and their property, and often lead to a mass exodus of migrants from an area. Targeting of migrants by natives during riots has been documented in Maharashtra by Thomas Hansen and in Assam by Sanjoy Hazarika.[24] Steven Wilkinson persuasively argues that minority riots are rare because even the weakest state's police forces can prevent such violence when politicians ask them to do so.[25] It is also telling that the Communal Violence Bill that failed in India's Parliament in 2014 assumed that riots are by ethnic majorities and against ethnic minorities.

Building on these observations, we argue that all state governments seek to limit migrant resource competition with natives. The tools available to exclude and control migrants include intimidation by police and bureaucrats, government programs targeted to native-born populations, toleration of discrimination, and practices that allow or foment nativist rioting. Rioting is a relatively high-cost means of controlling migrants; property and lives are damaged and economic activity is suspended. The costs of rioting are, moreover, borne immediately, as compared with the costs of discrimination, which are incurred over time. Other

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[19] Although we believe that our characterization of India's state governments as generally pro-native is accurate, there is certainly variation in the political power of migrants. We control for this variation in our robustness tests. The degree to which antimigrant sentiment is mainstream in India stands in contrast to the situation in Europe; Dancygier 2010.

[20] In 1999, 97 percent of Indians lived in the state of their birth. The state or territory with the smallest native-born proportion was Puducherry, where 76 percent of the population was native; NSS 1999. Many migrants also vote in their place of origin rather than their adopted state; Deshingkar and Akter 2009.

[21] Brass 2003; Wilkinson 2004.

[22] Weiner 1978, 31, 368.

[23] Bryjak 1986; Fearon and Laitin 2011.

[24] Hansen 2001; Hazarika 1994.

[25] Wilkinson 2004, 65.

tools for controlling migrants are therefore the states' preferred means of satisfying nativists.

We argue that state governments that are politically aligned with New Delhi are better able than unaligned state governments to marginalize and control migrants without recourse to tolerating or organizing nativist rioting. States that are politically aligned with New Delhi are given more resources with which to privilege natives, are permitted to discriminate against migrants with impunity, and can use police and bureaucratic intimidation to control or expel migrants without fear of central interference. We summarize these channels of influence below. One piece of evidence that suggests nativists benefit from political alignment with the center is that migrant inflows to a state are fewer when the state government is politically aligned with New Delhi.[26]

A sizeable literature shows that states that are politically aligned with the government in New Delhi receive larger resource transfers from the center—resources that could be channeled to meet the demands of nativists.[27] For example, using data from 1972–95, Stuti Khemani finds that the alignment of a state government with the central government increases annual discretionary per capita transfers to the state by INR 91, or 72 percent, which is equivalent to 1.9 percent of per capita income in this period.[28]

Also, although Indian states are constitutionally prohibited from discriminating based on residency or origin, New Delhi has carved out legal territorial exceptions to those prohibitions. In addition and more informally, India's central government tolerates high levels of discrimination and intimidation of minorities by politically connected states. Bethany Lacina shows that Indian state governments with strong political ties to the center are more likely to discriminate against ethnic minority groups—including migrants—in their civil services and in higher education, key arenas of economic competition.[29] Finally, Indian states have day-to-day control of the police, providing coercive means, short of rioting, by which a state government can exclude migrants. The police in Mumbai, for example, routinely evict so-called "Bangladeshi" immigrants, who are oftentimes Muslim migrants from other parts of India. States that are politically aligned with the center are particularly well-placed to use their control over the police to limit or reverse migration. India's central government is able to declare "President's Rule"

[26] Controlling for riots and state fixed effects. See Bhavnani and Lacina 2015, Table 12.
[27] Khemani 2007; Rodden and Wilkinson 2004; Singh and Vasishtha 2004.
[28] Khemani 2007.
[29] Lacina 2010.

in states, dismissing the state government, taking over the bureaucracy, and sending in military and paramilitary forces if necessary. President's Rule is invoked if no party in the state legislature can form a government or in cases of a breakdown in law and order. Under President's Rule, state politicians are denied the ability to appease nativists, and violence tends to resume when the central forces withdraw, leaving migrants unprotected.[30] India's central executive, however, is often reluctant to dismiss copartisan state governments.[31] By our calculations, the odds of President's Rule being imposed in a state are halved if the state government is politically aligned with the center.[32] Differences in the application of President's Rule give the executive's copartisan state governments a freer hand to deter migrants and appease natives.

To summarize, states that are politically aligned with the center have the means with which to satisfy nativist demands in the face of migration. They are more likely to receive resources and legal concessions from the center, to discriminate against migrants in important arenas of economic competition, and to use police intimidation against migrants without fear of central intervention. The political alignment of central and state governments therefore tempers the effects of migration on sons of the soil violence. In a state where the government has little political influence at the center, nativist violence is more likely to be used to intimidate and eject migrants.

In light of this discussion, the third hypothesis we test is:

—H3. Domestic migration in conjunction with the political nonalignment of the host state government and the center causes riots.

The next section describes the problems of causal inference involved in studying migration and violence and introduces our research design.

A RESEARCH DESIGN FOR STUDYING MIGRATION AND RIOTING

Assessing the effect of migration on rioting is difficult because migration might be endogenous to rioting. Rioting can induce migration and, other factors being equal, migrants probably prefer destinations

[30] Fearon and Laitin 2011.
[31] Dua 1979; Kathuria 1990.
[32] Controlling for riots and state fixed effects, see Bhavnani and Lacina 2015, Table 5. States can also request central assistance with security. Since state governments are usually sympathetic to nativist interests, they request central intervention only if it is useful to protect natives rather than migrants. Thus, interventions at the request of state governments should not usually aggravate nativist grievances.

that are less prone to riots.[33] Migration is also influenced by government discrimination, as noted above, and by the regulation of population movements. Both, in turn, may reflect past conflict or expectations of future conflict.[34] To the extent that governments encourage or allow migration only to areas where the probability of violence is low, a selection effect mitigates against finding a relationship between migration and rioting. If a government promotes migration by a dominant group as part of a set of policies that discriminate against minority-majority regions, correlational studies might tend to overestimate the effect of in-migration on violence. Overall, we suspect that ordinary regression analyses may underestimate the true causal effect of migration on rioting, given the deterrent effect of rioting on migration and government policies intended to prevent migration to violence-prone areas.

Omitted-variable bias could also obscure the relationship between migration and nativist riots. For example, most studies of internal migration find that economic pull factors are an important determinant of migration.[35] Economic growth and prosperity may also make conflict less likely, biasing against finding a positive effect of migration on rioting. Unobservable factors that induce migration and encourage violence would create misleading positive correlations between these two variables.

To circumvent these problems, we measure domestic migration to each Indian state predicting in-migration with abnormal rainfall in all the other states of India.[36] Extreme rainfall may induce migration through economic hardship. Inadequate and/or excess rainfall has been used as an instrument for income to predict both riots and leftist insurgency in India.[37] A major problem faced by these studies is the many pathways—including migration—by which natural disasters may influence conflict. Multiple channels linking disasters to violence have been documented in India and elsewhere.[38] Our empirical strategy sidesteps this problem as our instrument is not disaster in the area of study but

[33] Moore and Shellman 2004 provide cross-national evidence of a relationship between violence and out-migration. Bohra-Mishra and Massey 2011b document similar patterns during the Nepalese civil war. See also Morrison and May 1994; Schultz 1971; Tolnay and Beck 1992.

[34] Wallace 2013; Weiner, Katzenstein, and Narayana Rao 1981.

[35] Frees 1992; Newbold 2001.

[36] Union territories without self-rule are excluded from our analysis. We therefore include New Delhi (after 1993) and Puducherry, which have locally elected legislatures and chief ministers. Throughout this article, references to states should be taken to include New Delhi and Puducherry. See Table 10 in Bhavnani and Lacina 2015 for details of the states and years included.

[37] Bohlken and Sergenti 2010; Kapur, Gawande, and Satyanath 2012.

[38] On India, see Sarsons 2012. For other contexts, see Brancati 2007; Meier, Bond, and Bond 2007; Nel and Righarts 2008.

disasters in migrant-sending areas. We measure rainfall outside the area where we want to predict conflict and use these shocks to the supply of migrants to estimate population inflows. This represents a substantial advance over existing scholarship.

An extensive literature quantifies the effects of rainfall on the Indian economy and has begun to link it to migration. Shawn Cole, Andrew Healy, and Eric Werker estimate that rainfall levels a standard deviation above or below each state's optimal level leads to an average decrease in agricultural output of 5.4 percent.[39] Hanan Jacoby and Emmanuel Skoufias show negative effects on household incomes in India due to rainfall shocks.[40] Seema Jayachandran shows that rainfall shocks negatively impact wages in agricultural employment and presents suggestive evidence that these shocks therefore induce migration of rural laborers.[41] Separate work by Anjini Kochar and Elaina Rose show that adverse rainfall pushes more farm households into the wage-labor market which, again, often implies migration.[42]

Large population displacements due to flooding and landslides are also a recurrent problem in India. These disasters occur primarily during the monsoon season (heavy rains and tropical storms), which accounts for 75 percent of India's annual rainfall.[43] The EM-DAT data set reports that between 1983 and 2001 over 47,000 people were killed by flooding, storms, and landslides.[44] The average affected population in these floods was more than nine million people. A 1991 study found that up to thirty million Indians were displaced annually by flooding.[45]

In the remainder of this section, we introduce our data on migration, the key interaction terms of interest, rioting, our instrument, and the control variables we introduce to control for pathways other than migration by which rainfall shocks in one Indian state might cause violence in another. Summary statistics for all variables are displayed in Table 1.

INDEPENDENT VARIABLES

The migration data that we employ are from the 1991 and 2001 Census of India.[46] The census asks each person how long they have been resi-

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[39] Cole, Healy, and Werker 2008. See also Kumar 2011 and Mendelsohn, Dinar, and Sanghi 2001 on the climate sensitivity of agriculture in India.
[40] Jacoby and Skoufias 1997.
[41] Jayachandran 2006.
[42] Kochar 1999; Rose 2001.
[43] Mall et al. 2006.
[44] EM-DAT 2013.
[45] Cited by Lama 2000, 25.
[46] As of February 2015, migration data from the 2011 census have not been released.

TABLE 1
SUMMARY STATISTICS[a]

	Mean	St. Dev.	Min.	Max.
Ln male migrants[b]	9.3	1.7	4.9	13
Ln riots[c]	6.5	2.6	0	9.9
Ln unemployment (%), secondary educated male natives[d]	1.8	0.48	0.57	2.8
Center-state political match[e]	0.34	0.43	0	1
Abnormal rainfall instrument[f]	5.7	0.38	4.7	6.8
Abnormal monsoon rainfall[g]	0.15	0.26	0	1
Ln % degraded land[h]	3.4	0.86	0	4.6
Ln income per capita[i]	7.9	0.57	7.0	10
Ln domestic imports per capita[j]	6.7	1.7	0.32	9.9
Ln state population[b]	16	1.8	13	19
Ln native urbanization (%)[d]	3.1	0.57	1.7	4.6
Ln native male children's school enrollment (%)[d]	4.3	0.17	3.8	4.5
Ln % aged 15–24, native males[d]	3.0	0.079	2.7	3.2
Observations	138			

[a] All variables are measured at the state level as annual averages, based on periods of unequal length. See main text for details on averaging. See Table 10 in Bhavnani and Lacina 2015 for a complete list of states and periods included in the data.
[b] Directorate of Census Operations 1991; Directorate of Census Operations 2001.
[c] National Crime Records Bureau 2001.
[d] NSS 1983, NSS 1987, NSS 1999. Compiled by Minnesota Population Center 2011.
[e] Besley and Burgess 2002.
[f] See main text.
[g] Sontakke, Singh, and Singh 2008. Archived by IITM 2012 and IWP 2012.
[h] Department of Agriculture and Cooperation, Government of India, compiled by IndiaStat 2000.
[i] At constant prices. From the Reserve Bank of India, compiled by IndiaStat 2000.
[j] Annual Government of India volumes on *Inter-State Movements/Flows of Goods by Rail and River*.

dent in a place (less than a year, one to four years, five to nine years, ten to nineteen years, or longer) and the state from which they came. This implicitly defines a series of unequal time periods and in-migration in each of those periods. For example, in the 2001 census the number of people who report being resident in a state for one to four years (and previously living elsewhere in India) is equal to the number of people who moved to the state between 1997 and 1999, minus those who returned to their place of origin or moved to yet another state before 2001. The 2001 census figure is thus an estimate of the state's in-migration between 1997 and 1999. The number of people who report being resident in the state for five to nine years is an estimate of in-migration between 1992 and 1996, and so on. The resulting data have the following seven periods: 2000, 1997–99, and 1992–96 (from

the 2001 census); 1991 (imputed from the 1991 and 2001 censuses; we drop this due to some negative figures); and 1990, 1987–89, and 1982–86 (from the 1991 census). The statistical models below use state fixed effects, so that the regressions compare each period's average annual migration to the long-term average annual migration for the state. Following the structure of the migration data, the other variables we use are transformed into annual averages calculated over periods of unequal length. Throughout our statistical analysis, we use analytic weighting to account for the fact that some observations are the means of longer periods of time than others.[47]

We employ average annual male in-migration in our analysis. Data are logged to make them approximately normal. We focus on male migration because, historically, female migration between states is driven by arranged marriages and is less politically controversial.[48] However, our results are robust to the use of all migration.[49]

While the census data are generally considered to be of high quality, the migration data are likely to have some errors. Subjects may, for example, misremember their length of stay in their state of enumeration. Since this is likely to be a problem for longer recall periods, we do not extend our data set to 1972, which is as far back as we could go using the 1991 census. To the degree that the remaining errors are random, they will not bias our results. Migrants targeted by violence, however, might be more likely to try to pass as natives or to have left the area before being enumerated in the census. If the consequent underreporting of migration is severe, rioting could be negatively correlated with migration. If measured migration to riot-prone areas is higher than in otherwise comparable parts of India but lower than actual migration, OLS will overestimate the marginal effect of migration on rioting. The ambiguous biases of the migration data provide an additional reason to rely on an instrumental variable (IV) strategy, since IV estimates are less biased than OLS estimates in the presence of measurement error.

We are interested in how middle-class unemployment and the political alignment of the state condition the effects of migration. We calculate unemployment rates for native males with at least a secondary school education. We construct these series using the National Sample Survey (NSS).[50] In robustness checks, we substitute unemployment

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[47] Our results are robust with unweighted data. See Bhavnani and Lacina 2015, Tables 17–19.
[48] Weiner 1978.
[49] Bhavnani and Lacina 2015, Tables 29–31.
[50] NSS 1983: NSS 1987; NSS 1999.

among native urban males, native rural males, native primary school-educated males, and native illiterate males.

To study the political resources of the host state's population we create a dummy variable for partisan alignment between the chief minister (the elected executive) of the host state and the ruling coalition in New Delhi. This indicator variable is coded as a 1 if the chief minister's party is in the prime minister's ruling coalition.[51]

Rioting Data

Our data on rioting comes from the Government of India, which defines riots as any group of five or more people that "uses force or violence in pursuit of a common aim."[52] Wilkinson has conducted detailed fieldwork noting how government riot data are collected and assessing their limitations, including the rather low threshold for defining a riot.[53] Fortunately for our study, he concludes that important factors influencing variation in how local police record rioting are likely to be enduring traits of particular states, such as levels of police corruption. Some of the cross-sectional idiosyncrasies of the rioting data will, therefore, be accounted for by our use of state fixed effects.

While the theories that we test concern violence by natives against outsiders, our dependent variable measures all rioting. This strategy follows a prominent strand of the conflict literature that argues that violent events cannot be reliably distinguished by the issue at stake due to the endogeneity of political interpretations of violence and because in most violent events participants have highly individualized motivations.[54] Despite this, data sets on relatively organized forms of conflict generally rely on the official statements of belligerents to code the issues at stake.[55] The same procedure is not possible when observing riots, since participants rarely issue statements about their reasons for rioting.

Our examination of all riots is particularly appropriate for the case of India due to the intense political competition between groups of elite to define what violent events are really about and the dominance of religion as a conflict frame.[56] The migration dimension to violence is severely underreported in India, particularly when migrants and natives

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[51] Periods of President's Rule, when the central government dissolves the state assembly, are coded based on the last government to hold office. We do not control for President's Rule since it is a post-treatment variable, in that it occurs partly in reaction to the political alignment or lack thereof between the center and the states; Dua 1979; Kathuria 1990. See also Bhavnani and Lacina 2015, Table 5.

[52] National Crime Records Bureau 2001.

[53] Wilkinson 2004, Appendix A.

[54] Brubaker 2004; Kalyvas 2003.

[55] For example, UCDP/PRIO 2013.

[56] Brass 1997.

are religiously distinct, and is also reported unevenly. For example, in 1986 there were riots in New Delhi involving Punjabi Sikhs who were both a religious minority and migrants. The *Times of India*, the country's newspaper of record, reported on October 27 that the riots began when "a group of Punjab migrants took to the streets."[57] The next day's report in the same paper referred to "communal" riots.[58] Indeed, we more systematically searched the *Times* for stories on migration-related violence for our time period and found an improbably low number of articles.[59] For example, the "sons of the soil" grievances of rioters in Assam in 1983 were clear: the riots coincided with elections that Assamese activists were boycotting, calling for voter rolls to be purged of illegally registered migrants.[60] But only one *Times* article on Assam's 1983 riots describes the sons of the soil controversy; other articles are silent about the actors' motivations or frame the riots in terms of a Hindu-Muslim divide. Due to the difficulties in isolating nativist riots, we use total rioting as our dependent variable. As reported below, we also conduct a placebo test of the relationship between migration and homicides. We do not find that migration causes an increase in homicides, which implies that migration specifically affects riots.

The Instrument and Controls

To construct our instrument, we focus on abnormal levels of monsoon rainfall.[61] Studies of the economic impacts of rainfall in India use both monsoon and annual rainfall.[62] The data suggest that the monsoon season is particularly important for population displacement.[63] The Indian Ministry of Agriculture defines "excess" monsoon levels as 20 percent above the historical average and "deficient" levels as 20 percent below that average. We create a dummy variable for whether a state had excess or deficient monsoon rainfall in a year and interact that term with the population of the affected state, divided by the distance between the af-

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[57] TOI News Service 1986a.
[58] TOI News Service 1986b.
[59] We searched ProQuest's *Times of India* archives using the following search terms (soil OR nativ* OR alien* OR migrat* OR language* OR linguist* OR chauvinis*) AND (riot* OR violen* OR militant* OR dead OR death* OR disturbance), and then read each article to code whether it referenced the occurrence of a migration-related riot.
[60] Hazarika 1994.
[61] In using an abnormal rainfall dummy to construct our instrument, we are following the literature on the effects of rainfall on economic outcomes. See text for details. In a robustness test reported below, we also employ a continuous measure of rainfall.
[62] Cole, Healy, and Werker 2008; Jacoby and Skoufias 1997; Jayachandran 2006; Kochar 1999; Rose 2001.
[63] Bhavnani and Lacina 2015, Table 13 shows that the measure of monsoon rainfall is a stronger correlate of migration than the measure of annual rainfall.

fected state and the potential host state.[64] Weighting by population and distance is inspired by the gravity model that has been used to predict trade flows.[65] The instrument for an individual state is the sum of this term across all other Indian states.[66] If the states are numbered 1 to n, the instrument for state i is:

$$\ln\left[\sum_{j \neq i} \frac{\text{Abnormal rainfall}_j * \text{Population}_j}{\text{Distance}_{ij}}\right]$$

This measure is positively correlated ($\rho = .3$) with average annual male in-migration. Figure 1 plots male migration against our instrument for abnormal rain in other states, and fits a locally weighted polynomial smoothing function to the data. The resulting curve is increasing over most of the range of the instrument.

Our expectation is that the effect of disaster-induced migration on riots is likely to be smaller than the overall effect of migration. The literature implies that internal migration is problematic because migrants exploit economic niches in which they have a comparative advantage over the host population. Migrants forced to move due to natural disasters are less likely to have selected their destination based on economic advantages or to have the resources to exploit those niches. The effects of disaster-induced migration on violence are therefore likely to be a conservative estimate of the effects of total migration on violence.

Our research design relies on an exclusion restriction, that is, the assumption that weather shocks in other Indian states do not affect riots by a channel other than migration. An obvious potential confounding channel for our instrument is weather disasters that affect multiple states. Our instrument may, in such cases, capture weather-related hardship in the host state as well as in its neighbors. In the analysis below we therefore control for rainfall in the host state.

Adverse rainfall shocks in another state may also create environmental externalities, particularly for states that share waterways. Very heavy rains may cause flooding or water erosion in neighboring states, while

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[64] Rainfall data are from Sontakke, Singh, and Singh 2008, archived by IITM 2012 and IWP 2012. Historical averages are calculated using data from 1813–2006. Following the practice of Parthasarathy, Munot, and Kothawale 1995, we calculate monsoon rainfall as the total rainfall from June to September.

[65] Frankel and Romer 1999.

[66] In a robustness test reported below, we account for the fact that migrants tend to move to states where their native language is spoken.
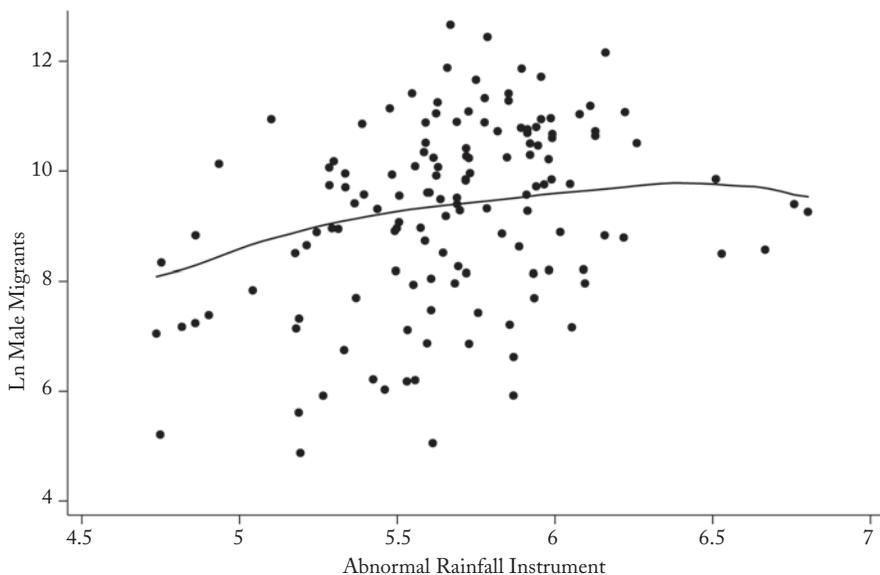
FIGURE 1
SCATTER PLOT OF ABNORMAL RAINFALL INSTRUMENT AND LOG MALE
MIGRANTS TO INDIAN STATES, 1982–2000, WITH A LOCALLY WEIGHTED
POLYNOMIAL FIT LINE

drought may lead to downstream wind erosion. In the regressions below
we control for host states' flood-affected areas and other forms of land
degradation to capture these environmental spillovers.[67]

The last channel that might link rainfall in one Indian state to vio-
lence in another is economic externalities. When the economy of one
state suffers due to abnormal rainfall, its neighbors may experience eco-
nomic slowdown as a result of contagion effects, such as interruptions
in the supply of food or raw materials. To control for this possibility, we
include host state per capita income and unemployment as regressors.
We also explicitly control for the flows of goods into a state by rail,
water, and air. To construct this series, we draw on an annual Govern-
ment of India publication, *Inter-State Movements/Flows of Goods by Rail*

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[67] Categories of degraded land recorded by the Department of Agriculture and Cooperation, Gov-
ernment of India, are water and wind erosion, ravines, salt affliction, water logging, mining wastes,
shifting cultivation, degraded forests, and "special problems."

and River, and note the per capita weight of goods shipped from other Indian states in each period.[68]

We believe that the plausible channels by which rainfall in one Indian state would be correlated with riots elsewhere are exhausted by migration, economic and environmental spillovers, and the correlations between states' weather. In addition to these variables, we control for the host state's initial population. We calculate urbanization, rate of school enrollment, and size of the youth cohort for state natives, ensuring these variables are "pretreatment." In robustness tests, we explore the use of further controls: rioting in other Indian states, electoral competition, net migration, and natural disasters in neighboring countries.

Empirical Results

Preliminary analysis of our data suggests that male in-migration is directly related to rioting. Figure 2 shows a scatterplot of male migration and the incidence of riots, overlaid with a locally weighted nonparametric smoothing function. As expected, the incidence of riots climbs with increased migration. Model 1 of Table 2 uses OLS to model the bivariate relationship between migration and riots.[69] The bivariate analysis shows a positive and statistically significant relationship between migration and riots. A 10 percent increase in male migration is associated with a 9 percent increase in the incidence of riots. Model 2 of Table 2 adds controls and state fixed effects to the bivariate OLS analysis of rioting.[70] The multivariate specification suggests that migration increases

[68] The complete set of annual reports was surprisingly hard to come by. None of the libraries listed in WorldCat in the United States and abroad had the full set, and several volumes were missing from India's leading libraries as well. The government department that published the data did not have the missing volumes we needed, either. Data are therefore missing for 1979–80, 1983–84, and 1984–85. To construct a consistent data series, we created a list of the major goods that were consistently tracked by government reports, and totaled the weight of these goods. The goods tracked over time were cement, coal, and coke; pulses other than gram (chickpeas) and gram products; rice not in the husk; wheat; lime and limestone; oils (kerosene); salt; sugar excluding khandsari sugar; and wood and timber. (Khandsari sugar is a cottage-industry sugar). These goods formed 87 percent of the total goods moved across state boundaries via rail, water, and air in 1971–72, and constituted 73 percent of the total goods moved in 2000–1. We were unable to track goods moved via road, although we expect these to be highly correlated with the data we have. Sikkim is accessible only by a single highway through West Bengal. All goods bound for Sikkim by rail, water, or air must be routed through West Bengal. Therefore, we use the figures for recorded flows of goods to West Bengal for Sikkim as well.

[69] Throughout our regression analysis, we calculate Newey-West standard errors in light of the autocorrelation between a state's observations.

[70] The full model results for Tables 2–4 are in Bhavnani and Lacina 2015, Tables 7–9. We do not include period fixed effects in these tables, since they are singly and jointly statistically insignificant. Regressions with period fixed effects are presented in Bhavnani and Lacina 2015, Tables 52–54. Our OLS results are unchanged after the inclusion of these variables. The magnitude and signs of the 2SLS coefficients remain approximately the same. However, the first-stage *F*-statistics for migration and its
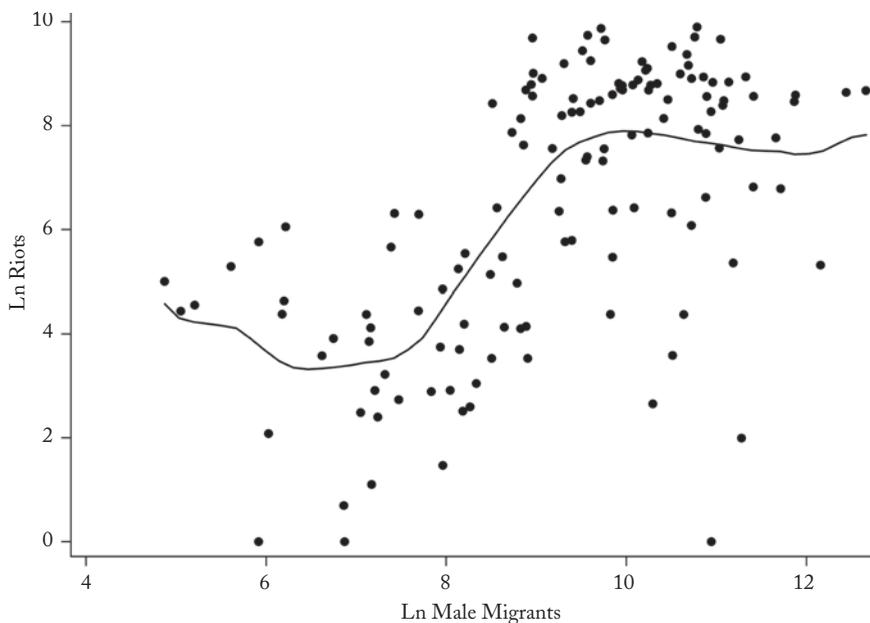
FIGURE 2

SCATTER PLOT OF LOG MALE MIGRANTS AND LOG RIOTS IN INDIAN STATES,
1982–2000, WITH A LOCALLY WEIGHTED POLYNOMIAL FIT LINE

rioting to a statistically significant degree. A 10 percent increase in male migration is associated with a 3 percent increase in rioting.

The results of a 2SLS analysis are reported in Table 2, models 3 and 4. The first-stage regression (model 3) uses the rainfall instrument to predict in-migration. The second-stage regression (model 4) models riots.[71] In addition to the (untestable) exclusion restriction, 2SLS regressions depend on the strength of the relationship between the instrument and the independent variable(s) of interest. Model 3 indicates that our rainfall instrument is positively and statistically significantly associated with migration. A Wald F-test

interactions are severely reduced. This increases the standard errors for the 2SLS estimates, even as the period fixed effects themselves remain singly and jointly statistically insignificant. As an alternative to the inclusion of period fixed effects, we control for the temporal component of weather shocks using an all-India measure of the population adversely affected by monsoons in each period. The new control is the logarithm of the number of people across the country affected by abnormal monsoons; Bhavnani and Lacina 2015, Tables 55–57. To calculate this variable, we sum the population of states affected by abnormal monsoons. Our results are robust to this alternative specification.

[71] Although the data underlying our dependent variable are count data rather than continuous measures, following Angrist and Pischke 2008, we use 2SLS rather than combining an instrumental variable with nonlinear models, a procedure that requires much stronger distributional assumptions (pp. 190–92 and 197–98).

TABLE 2
MIGRATION AND RIOTS

	OLS		2SLS: 1st Stage	2SLS: 2nd Stage
	Ln Riots (1)	*Ln Riots* (2)	*Ln Male Migrants* (3)	*Ln Riots* (4)
Ln male migrants	0.88***	0.30**		0.55***
	(0.15)	(0.14)		(0.20)
Abnormal rainfall instrument			0.89***	
			(0.16)	
Observations	138	138	138	138
Fixed effects	no	yes	yes	yes
Controls[a]	no	yes	yes	yes
Tests of Statistical Significance of Migration				
Wald *F*-test	35***	4.5**		7.8***
Anderson-Rubin χ^2				8.6***
Test of instrument strength				
Wald *F*-test[b]			31***	

Newey-West standard errors in parentheses; *$p<0.10$, **$p<0.05$, ***$p<0.01$

[a] Control variables, measured for the host state, are abnormal monsoon rainfall, land degradation, income per capita, unemployment among secondary-school educated male natives, trade flows from other states, population, urbanization among the native population, native male children's school enrollment rates, and the share of the native male population aged 15–19.

[b] In the one instrument case, the Angrist-Pischke *F*-statistic and Kleibergen-Paap *F*-statistic are equivalent to the results of a Wald test that $\beta_{Instrument} = 0$ in the first stage equation. Stock and Yogo 2005 calculate that in 2SLS with a single instrument and a single endogenous variable, if the first-stage Wald test *F*-statistic is greater than 16.38, the rejection rate of a 5 percent Wald test of the statistical significance of the endogenous regressor will be ≤ 10 percent.

comparing the first stage of the regression with and without our instrument reports $F(1,102) = 31$. The conventional rule-of-thumb is that *F*-statistics of more than ten are an indicator of a strong instrument.[72]

Model 4 demonstrates the payoff for accounting for the endogeneity of migration. The estimated effects of migration on riots is larger than in the corresponding multivariate OLS regression (model 2), suggesting that endogeneity concerns due to selection (for example, if governments discourage migration to areas with nativist sentiment), omitted variables, and errors in the measurement of migration do indeed attenuate the OLS estimate of the effect of migration on rioting. (The state fixed effects and other controls still explain some of the covariation between

[72] Staiger and Stock 1997.

migration and violence. Reflecting this, the coefficient on migration in the 2SLS specification [model 4] is smaller than the coefficient on migration in the OLS specification with no controls [model 1].) The 2SLS regression suggests that a 10 percent increase in male migration leads to a 5.5 percent increase in rioting, an effect that is statistically distinguishable from zero at the 1 percent level.[73]

MIDDLE-CLASS UNEMPLOYMENT AND THE EFFECTS OF MIGRATION

Another goal of our analysis is to investigate factors that may condition the positive relationship between in-migration and violence. The first of these is middle-class unemployment. The second is the political alignment of the host state's population.

Table 3 lays out OLS and 2SLS analyses that now include an interaction term for migration and unemployment rates for secondary-school-educated native males. The latter is our proxy for middle-class unemployment. The literature suggests that the aggravating effect of migration on violence should be greater in places with higher unemployment among the middle class. The expectation of a positive coefficient on this interaction term is borne out in the OLS model for rioting (Table 3, model 1), although this point estimate is not statistically significant.

In the first stage of our 2SLS analysis there are two instruments: the abnormal rainfall instrument and that instrument interacted with unemployment. There are also two endogenous regressors: migration and the interaction term for migration and unemployment. The first-stage regressions (models 2 and 3) are therefore just identified, and so the point estimates in the second stage are unbiased even in the face of weak instruments, which are a concern here.[74] As before, the point estimate on the interaction term for migration and unemployment is positive but statistically insignificant (model 4). The coefficient on the interaction term also changes signs in the robustness tests presented below. We examine the interaction of migration and resource competition by looking at male migration to urban (rather than to urban and rural) areas. The urban-residing middle class may be especially likely to resent economic competition with migrants, or collective action—especially rioting—

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[73] The results from model 4 are depicted in a partial regression plot in Bhavnani and Lacina 2015, Figure 4.

[74] The Kleibergen-Paap F-statistic—a test for the significance of the instruments in the first stage—is only 2.3. Therefore, a standard F-test of the joint statistical significance of migration and the migration/unemployment interaction term in models 6 and 7 will reject the null too frequently; Stock and Yogo 2005. The Anderson-Rubin χ^2 test is asymptotically robust to weak instruments. This test finds that the endogenous regressors are jointly significant.

TABLE 3
INTERACTION BETWEEN MIGRATION AND UNEMPLOYMENT

	OLS	2SLS: 1st Stage		2SLS: 2nd Stage
	Ln Riots (1)	Ln Male Migrants (2)	Interaction Term (3)	Ln Riots (4)
Ln male migrants	0.21 (0.28)			0.15 (0.68)
Ln male migrants x Ln unemployment	0.049 (0.18)			0.19 (0.31)
Ln unemployment (%), secondary educated male natives	−0.87 (1.5)	−1.1 (1.6)	0.078 (2.8)	−2.0 (2.6)
Abnormal rainfall instrument		0.55 (0.60)	−0.77 (0.87)	
Rainfall instrument x Ln unemployment		0.19 (0.30)	1.5*** (0.51)	
Observations	138	138	138	138
Fixed Effects	yes	yes	yes	yes
Controls[a]	yes	yes	yes	yes
Tests of Joint Statistical Significance of Endogenous Regressors				
Wald F-test	2.7*			4.2**
Anderson-Rubin χ^2				8.5**
Tests of Instrument Strength				
Angrist-Pischke F-statistic		2.1	4.7**	
Kleibergen-Paap F-statistic[b]		2.3		

Newey-West standard errors in parentheses; *$p<0.10$, **$p<0.05$, ***$p<0.01$

[a] Control variables, measured for the host state, are abnormal monsoon rainfall, land degradation, income per capita, trade flows from other states, population, urbanization among the native population, native male children's school enrollment rates, and the share of the native male population aged 15–19.

[b] Stock and Yogo 2005 calculate that in 2SLS with two instruments and two endogenous variables, if the first stage Kleibergen-Paap's F-statistic is less than 3.63, the rejection rate of a 5 percent Wald test of the joint statistical significance of the endogenous regressors will be over 25 percent.

might be easier in urban settings. We find little evidence of variation in the effect of urban migration by levels of urban male unemployment.[75]

It is worth noting that the preceding analysis (and the analysis of political alignment below) is an exploration of heterogeneity in the treatment effect of migration, rather than a causal analysis of the direct and interacted effects of unemployment (and political alignment) on rioting. In other words, our analysis explores whether exogenous shocks to

[75] Bhavnani and Lacina 2015, Table 32.

migration have different effects under different conditions. We therefore give no causal interpretation on the coefficient on the uninteracted unemployment (and political alignment) variable. Our work is therefore akin to the literature on the effect of immigration on employment and on the effect of foreign aid on economic growth.[76] For example, the latter literature argues that aid boosts growth when countries have good policies. Empirical tests of that contention instrument for foreign aid and its interaction with policy, but they do not instrument for the uninteracted policy term.[77]

As noted above, our research design captures the effect of disaster-induced migration. Such migrants may lack the resources necessary to compete economically with the middle class. A study that focuses on shocks to high-skilled migration might find more support for H2 than we have uncovered. Conversely, disaster-driven migration may cause economic competition in other sectors of the economy. The studies noted above on rainfall and migration in India suggest that many of these migrants are employed in agriculture; studies of climate change in Africa similarly conclude that agricultural and rural populations are the most likely to move due to changing natural conditions. Recent studies of migration in Nepal have shown that higher-status individuals are less likely to move in response to adverse environmental conditions.[78] Because our focus is disaster-induced migration, it may be more appropriate to look for effects of economic competition in the rural or low-skill sectors. We tested for interactions between migration and unemployment among primary-school educated native males, unemployment among nonliterate native males, and unemployment among rural native males.[79] The results do not imply differing effects of migration when low-skilled or rural unemployment varies. But our results are not definitive, given the persistence of weak instrumentation of the interaction between unemployment and migration.

Political Alignment and the Effects of Migration

We next test whether the political alignment of the host state with the center conditions the effect of migration. We code political alignment as a dummy variable, which is set to 1 when the host state's chief min-

[76] On immigration and employment, see Angrist and Kugler 2003.
[77] Burnside and Dollar 2000; Rajan and Subramanian 2008. A means to recover the causal effect of unemployment on the effect of migration on rioting would be instrument for unemployment. But causal interpretations of instruments for multiple endogenous variables are controversial; Angrist and Pischke 2008, 64–66; Angrist 2010.
[78] Bohra-Mishra and Massey 2011a; Masset, Axinn, and Ghimire 2010.
[79] See Bhavnani and Lacina 2015, Tables 33–35.

ister is in one of the parties that is in the government coalition in New Delhi, and average this variable over the uneven lengths of our periods. A negative coefficient on this variable interacted with migration would imply that the effect of migration on riots is lower when the host population has political leverage with the center.

Table 4, model 1, estimates the interaction term on male migration and political alignment using OLS. As expected, the coefficient on the interaction term is negative, but it is not statistically significant.

We next move onto our instrumental variable analysis. The Angrist-Pischke statistics for the first-stage regressions (models 2 and 3), which test for instrument strength, suggest that the two endogenous regressors are well estimated. Once we instrument for migration, the estimated effect of migration is positive and statistically significant, and the interaction term is negative and statistically significant (model 4). This result is as expected: the effect of migration is attenuated in instances where the center and the state are politically aligned.

The predicted mediating role of political influence on the effects of migration on rioting is plotted with its 90 percent confidence interval in Figure 3. The estimated marginal effect of migration on riots decreases steeply as the political match variable, which is continuous since it is averaged over periods, increases. A 10 percent increase in migration is associated with a 6 percent increase in rioting in a state unaligned with the central government and a 2 percent increase in rioting in a state aligned with the center.[80] The estimated effect of migration on riots is statistically significant at the 10 percent level until a political match score of about .8, which covers 72 percent of the observations. Note that despite the overlapping confidence intervals at the extremities of this graph, the null hypothesis that the effect of migration is the same when political match equals 0 and when it equals 1 can be rejected at the 1 percent level.

We again underscore that we have not estimated the causal impact of political alignment per se (politically matched state periods likely fundamentally differ from nonpolitically matched state periods in ways that are not controlled for by state fixed effects), or its interactive effect with migration on rioting. We have identified, rather, a context—states whose governments are politically unaligned with the center—where the elasticity of rioting with respect to migration is high. Our results

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[80] After standardization of the independent variables, the coefficient on the interaction of political match and migration is −0.29. The coefficient on the interaction of political match and unemployment is 0.15, that is, the estimated substantive significance of the conditional effect of political alignment is twice that estimated for unemployment. See Bhavnani and Lacina 2015, Tables 14–16.

<div align="center">

TABLE 4

INTERACTION BETWEEN MIGRATION AND POLITICAL ALIGNMENT OF HOST STATE

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	OLS	2SLS: 1st Stage		2SLS: 2nd Stage
		Ln Male Migrants	Interaction Term	
	Ln Riots (1)	(2)	(3)	Ln Riots (4)
Ln male migrants	0.27**			0.62***
	(0.13)			(0.20)
Ln male migrants x Political match	−0.023			−0.40***
	(0.077)			(0.16)
Center-state political match	-0.14	−0.67	−0.59	3.3**
	(0.75)	(1.3)	(2.3)	(1.4)
Abnormal rainfall instrument		0.90***	−0.63**	
		(0.18)	(0.29)	
Rainfall instrument x Political match		0.077	1.7***	
		(0.24)	(0.39)	
Observations	138	138	138	138
Fixed effects	yes	yes	yes	yes
Controls[a]	yes	yes	yes	yes
Tests of Joint Statistical Significance of Endogenous Regressors				
Wald *F*-test	2.3			6.0***
Anderson-Rubin χ^2				15***
Tests of Instrument Strength				
Angrist-Pischke *F*-statistic		37***	18***	
Kleibergen-Paap *F*-statistic[b]		10***		

Newey-West standard errors in parentheses; *$p<0.10$, **$p<0.05$, ***$p<0.01$

[a] Control variables, measured for the host state, are abnormal monsoon rainfall, land degradation, income per capita, unemployment among secondary-school educated male natives, trade flows from other states, population, urbanization among the native population, native male children's school enrollment rates, and the share of the native male population aged 15–19.

[b] Stock and Yogo 2005 calculate that in 2SLS with two instruments and two endogenous variables, if the first stage Kleibergen-Paap's *F*-statistic is greater than 7.03, the rejection rate of a 5 percent Wald test of the joint statistical significance of the endogenous regressors will be ≤ 10 percent.

are also robust to instrumenting for political alignment by taking advantage of exogenous shifts in the partisan composition of the central government.[81]

[81] See Bhavnani and Lacina 2015, Table 51. We instrument for changes in political alignment (recall that since our regressions include state fixed effects, we think of all variables in terms of changes) with those changes due to changes in the central government, and not at the state level. Changes in political alignment due to governmental changes at the center are a plausible instrument since the latter would necessarily be correlated with changes in political alignment (since they are a component of political alignment) and since they likely only affect rioting through their impact of changes in political alignment (that is, the exclusion restriction holds). The resulting equations are just identified, which means that the estimated effects are unbiased despite weak instrumentation. The second-stage results remain consistent with the main results.
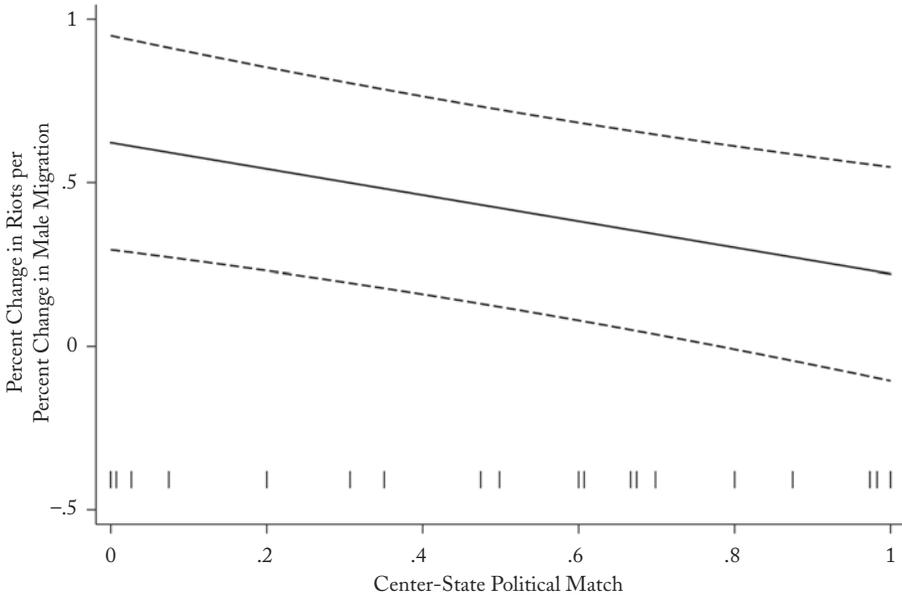
FIGURE 3

EFFECTS OF MIGRATION BY LEVEL OF POLITICAL MATCH BETWEEN
CENTER AND STATE GOVERNMENTS[a]

[a] With 90 percent confidence intervals (based on Table 4, model 4). Rug plot displays the distribution of the political match variable.

ROBUSTNESS TESTS

In this section, we summarize a series of robustness tests. These consistently find that migration causes riots and that this effect is exacerbated when there is a political disjuncture between the state and center.

To begin, since migration data from the Census of India are for periods of uneven length, we annualize and weight them by period duration. For transparency, we check and confirm that our results are robust to not weighting the data.[82] We also investigate the influence of outliers by sequentially dropping periods and states from the analysis and by Winsorising the key variables.[83]

Our main regressions employ log male migrants, rather than migrants' share of the population, as an independent variable since our rioting data is not population normalized, and since its coding requires a specific number (rather than a proportion) of people participating or

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[82] Bhavnani and Lacina 2015, Tables 17–19.
[83] Bhavnani and Lacina 2015, Tables 20–25.

killed (see the research design section above for details). In addition, our instrument is not normalized by host-state population, since this would introduce a host-state characteristic into the calculation of the instrument, which would violate the exclusion restriction. The population share of migrants might be an alternative independent variable of interest, however, since we might expect the effect of migrants to operate once migrants are a sizable group relative to natives.[84] We also consider total male and female migration as a robustness check.[85]

One potential violation of the exclusion restriction in the analysis is that weather shocks cause violence locally and that other states then experience violence by contagion. In robustness checks, we therefore control for a population- and distance-weighted measure of rioting in other Indian states.[86] These regressions also control for electoral competition (the effective number of parties and the average electoral margin of victory in a state) that might accentuate violence. Controlling for the effective number of parties also controls for another possible confound, the potential political power of migrants.[87] This confound is possible because India's fragmented party system tends to provide minorities with potential openings.[88] We also include variables describing population movements out of and within the state: net migration to the state, the initial stock (rather than flow) of migrants, and the average length of residency of male natives. Finally, the robustness checks control for natural disasters in neighboring countries, which might induce international migration, and the nationwide disaster-affected population. The results remain robust to all these inclusions.

To examine whether our analysis is getting at sons of the soil violence, we conduct a placebo test of the effects of migration on homicides.[89] Recall that the sons of the soil hypothesis suggests that migration causes riots but does not cause criminal homicides. Although riots can result in fatalities that may be recorded as homicides, riot-related killing is a small fraction of all homicides.[90] Therefore, migration-related riots should not produce significant variation in homicide totals. A correlation between migration and homicides would suggest that an omitted factor accounts for both variables. Our analysis suggests that there is no

[84] Bhavnani and Lacina 2015, Tables 26–28.
[85] Bhavnani and Lacina 2015, Tables 29–31.
[86] Bhavnani and Lacina 2015, Tables 36–38.
[87] Aktürk 2011; Dancygier 2010.
[88] Wilkinson 2004.
[89] Homicide data are the crime data least subject to reporting biases; Iyer et al. 2012.
[90] A comparison of the deaths due to Hindu-Muslim riots in Varshney and Wilkinson 2006 and homicide data suggests that even in years of exceptionally severe rioting, rioting deaths account for less than 3 percent of all homicides.

relationship between homicide and migration, alone or interacted with unemployment or political alignment.[91]

In another set of robustness tests, we employ two alternative instrumentation strategies. In addition to weighting the abnormal rainfall dummy for each migrant-sending state by its population and inverse weighting it by the distance between it and the host state, we also inverse weight this term by linguistic dissimilarity.[92] This instrument helps test the intuition that migrants are likely to move to regions where their language is spoken, and continues to predict male migration, which in turn predicts riots. The estimated interaction terms remain consistent with the main results. We also use historical rates of out-migration for each Indian state to weight natural disasters and find our results to be robust.[93] A third alternative instrumentation strategy substitutes a continuous, standardized measure of rainfall for the abnormal rainfall dummy that we employ and that is standard in the literature.[94] The new instrument yields a far weaker first-stage F-statistic, below the conventional threshold of 10, probably reflecting the fact that rainfall discontinuously affects migration. Although the weaker instrumentation inflates the standard errors of our second-stage estimates of the effects of migration and its interactions, the sign of the coefficients remains consistent with our main findings.[95]

Conclusions

This study investigates the long-hypothesized causal relationship between internal migration and riots in the large-n setting provided by India's states. To isolate the causal effect of migration on rioting, we instrument for migration within India using abnormal rainfall in migrant-sending states. These shocks allow us to recover estimates of the effects of disaster-induced migration. The data indicate that migration, on average, leads to rioting in the host area.

We also specify the mediating mechanism connecting migration to riots. The data do not support the hypothesis that the effects of migration on rioting are higher where a large number of middle-class na-

[91] Bhavnani and Lacina 2015, Tables 39–41.
[92] Bhavnani and Lacina 2015, Tables 42–44.
[93] Bhavnani and Lacina 2015, Tables 45–47. The weighting by historical migration rates follows Kleemans and Magruder's 2014 work on Indonesia, and Mckenzie and Rapoport 2007 and Munshi 2003 on Mexico.
[94] The standardized rainfall measure is rainfall for the state-period minus the historic mean rainfall for the state divided by the historic standard deviation of rainfall for the state.
[95] Bhavnani and Lacina 2015, Tables 48–50.

tives are unemployed. This finding is consistent with the literature on anti-immigrant sentiment in the US, which has been shown to have a minimal economic basis.[96] We instead hypothesize and find evidence that migration prompts riots where host populations are not politically aligned with the central government. In our view, states aligned with the center are not peaceful because they are sympathetic to minorities, rather influence at the center gives host states resources and political cover to appease nativists and to intimidate or coerce migrants into moving elsewhere. Host populations without political influence in New Delhi are less able to use these means to assuage nativist sentiment, and resort to rioting instead.

Further research on nativism in India should directly investigate the substitution between nativist riots and other nativist policies, including targeted resource transfers and discrimination. Scholars might also wish to examine additional heterogeneity in treatment effects and investigate, for example, whether migrants from particular states or religious or language groups are associated with greater rioting. In 1999–2000, India's National Sample Survey asked questions about short-term migration for the first time.[97] As more data of this type becomes available, the effects of circular migration and long-term migration should be compared. Our identification strategy could also be modified to disaggregate and compare the effects of migration induced by positive and negative shocks due to India's monsoons. Similarly, the effects of migration may vary across the broader range of environmental shocks in sending areas.

Future scholarship should also assess the external validity of our findings, including by investigating whether the new political mechanism that we posit mediates the relationship between migration—including international migration—and rioting elsewhere. We would expect our theory to help explain variation in antimigrant violence in other diverse, politically decentralized countries, or in contexts like the European Union. The political mechanism detailed here might also plausibly mediate the relationship between migration and other kinds of violence, including insurgency.

Our research design should be replicable in a number of developing countries. That is, a number of other censuses have internal migration data embedded in them, and weather-related shocks to migration can probably be used as an instrument for migration in other agriculture-dependent contexts. Population- and distance-weighted natural

[96] Hainmuller and Hiscox 2010; Malhotra, Margalit, and Hyunjung 2013.
[97] Deshingkar and Farrington 2009.

disasters may also be a useful instrument for rural-to-urban and international migration. The null effects reported by existing studies of rural-to-urban migration may be artifacts of endogeneity. Studies of the link between international migration and civil conflict could be re-analyzed using our strategy to isolate the causal effects of population movements as opposed to other mechanisms of conflict contagion.

We have used natural disasters to estimate the impact of migration on rioting. However, the effect of disaster-induced migration is an interesting estimand on its own, given the debate over the role of environmental shocks and climate change in conflict. Our research suggests that India is vulnerable to increased conflict if natural disasters substantially increase the flow of domestic migrants. However, we also show that the political circumstances of the host population are an important intervening variable. That finding suggests that policy levers have the potential to mitigate the cycle of climate change, migration, and violence in India. Future research should investigate the specific interventions that are most effective for interrupting that cycle in India and elsewhere.

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