Ethnic Favouritism in Environmental Disaster Payouts *

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July 30, 2025

Abstract

We study how political reservation influences the allocation of environmental disaster relief. Using restricted-access data on human-wildlife conflict in the Indian Himalayas, we first show that tribal communities are more frequently affected by wildlife attacks but receive less compensation than non-tribal groups. We develop a model of political reservation which explains how discrimination against the tribal minority arises. The model predicts that, under political reservation, minority leaders will direct more aid toward their own ethnic group, undoing discrimination. We test these predictions using quasi-random variation from India's system of reserving political seats for tribal candidates. Difference-in-differences estimates show that villages with tribal leaders receive higher levels of compensation per wildlife attack, and that compensation rises faster with tribal population share. This *ethnic favoritism* is primarily driven by tribal claimants being more effective at negotiating compensation for livestock losses under coethnic leadership. Our findings highlight the importance of political representation in promoting fairness in environmental disaster payouts.

Keywords: Political reservation, tribal communities, human-wildlife conflict, India
JEL Codes: Q01, Q54, Q56, D72, H11

*We thank Patrick Baylis and Frederik Noack for helpful comments. We also thank seminar and conference audiences at Macalester College, Queensland University of Technology, University of Exeter (Land, Environment, Economics and Policy Institute), NatCap TEEMS, and the AERE Conference for helpful feedback. All errors are our own.

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1 Introduction

Natural disasters caused nearly $300 billion USD in damages in 2022, with the burden shared unevenly across developed and developing countries. In developed countries, about 70% of private losses were covered by insurance, while in developing nations insurance coverage was just 14% (Straub, 2022). This leaves the global poor especially exposed, often relying solely on inadequate government relief. Systemic barriers also prevent marginalized communities from accessing the limited aid available[1]. As climate change increases the frequency and severity of natural disasters, the need for effective and equitable compensation strategies is becoming ever more urgent.

Can political representation of marginalized groups improve equity in government assistance for environmental disaster-related damages? We study this question in the context of an underexamined yet consequential environmental disaster—Human-Wildlife Conflict (HWC). HWC is a critical yet overlooked type of disaster, on par with wildfires, heatwaves, and floods. In developing countries, wildlife attacks cause livestock and property loss worth almost half of annual incomes (Braczkowski et al., 2023). In India, the death toll from human-elephant conflict alone is one-third of that from floods (Economic Times, 2024; Parida, 2020). As with most environmental disasters, minorities bear the brunt of HWC damage. In a recent survey of world leaders, developing country governments identified indigenous people as the main victims of HWC (World Bank, 2023).

Our setting is the government program compensating HWC in Himachal Pradesh, India. This is an ideal study setting for several reasons. First, it is home to over 5000 animal species and 36 protected areas (Gokhale, 2015). Second, Himachal Pradesh faces acute landscape fragmentation, narrowing the interface between humans and wildlife (Madhok, 2023). Third, 6% of its population belong to the Scheduled Tribe (ST) community, India's poorest and most politically excluded population groups. Tribal groups practice forest-dependent livelihoods, making them especially vulnerable to HWC. Obtaining compensation for HWC damages requires navigating a forest bureaucracy dominated by caste elites (Doner, 2022). While the Constitution mandates political reservation to remove such power imbalances, its effectiveness in promoting access and equity for environmental disaster relief is an open question.

We begin by exploring HWC payouts using a novel, restricted-access dataset covering all compensation claims approved by the Himachal Pradesh government between 2012 and 2020. This dataset, obtained in collaboration with the Indian Forest Service, includes detailed information on the village location, date of attack, predator species involved, ex-

[1] Poor and socially marginalized individuals may live in remote areas, face challenges with bureaucracy due to low formal education, or encounter systemic biases within elite-dominated government institutions.

tent of livestock loss, human injury or death, and the compensation awarded to victims. Our initial exploration reveals that: (i) tribal communities tend to live closer to forested areas, increasing their exposure to wildlife encounters; (ii) they experience a higher number of HWC incidents, although the estimates are somewhat imprecise; (iii) and perhaps most critically—victims in tribal villages receive significantly lower compensation for incidents involving human injury or death compared to those in less-tribal areas. These findings highlight a troubling pattern: while tribal groups face greater risk from wildlife, they may also be subject to inequities in the relief they receive.

To understand the role of politics in both generating and removing discrimination, we develop a political economy model of a public bad (HWC) characterized by selective discrimination against a minority group.[2] The executive branch is legally obligated to manage HWC by incurring abatement costs, and to individually compensate lost utility from HWC. The executive also retains discretion in allocating compensation, and may engage in discriminatory practices by withholding payments from minority victims and can either redistribute it as transfers to the majority, or can capture it as rent for itself.

To evaluate the impact of political reservation, we compare HWC levels and discriminatory behaviour under three distinct governance scenarios: (i) a benevolent government that seeks to minimize the combined costs of HWC and compensation, (ii) a majoritarian government where the elected executive always represents the majority and pursues political objectives beyond social cost minimization, and (iii) a reserved government where a minority representative is always elected, yet remains politically motivated.

Our model yields three testable predictions. First, less HWC is tolerated under a reserved government as the minority leader is motivated by abatement instead of discriminating against her own group. In contrast, the majoritarian government allows greater HWC, as more conflict allows greater discrimination and redistribution towards their own group. Second, minorities receive higher payouts per incident under reservation due to lack of discrimination. Third, the model predicts *ethnic favouritism* toward the minority: compensation rises faster with minority population share under reserved elections.

We test these predictions using a quirk in India's political reservation system which generates plausibly random variation in exposure to minority representation. States are allocated reserved constituency seats based on their share of the national tribal population. Seats are then allocated down to districts with the same formula. Finally, constituencies in each district are ranked by tribal population share and reservations are assigned from the highest ranked constituency until the total number of reserved seats for the district is reached. We exploit this discrete cutoff rule for identification and designate

[2] This model builds on the literature on political reservations and special interest politics (Anderson et al., 2015; Grossman and Helpman, 2008).

the three constituencies just below the cutoff in each district as our matched comparison group. Matching on tribal population share in this way ensures comparability of the reserved and matched unreserved constituencies along district characteristics. It also ensures comparability of tribal share across constituencies within districts. The main threat is that reserved and unreserved constituencies may vary along other dimensions, like natural resource access, that covary with tribal population and HWC outcomes. We include a variety of geography covariates to alleviate this concern.

Our empirical results corroborate all three model predictions. First, we find that tribal leaders tolerate less HWC compared to non-tribal leaders. Villages in reserved constituencies experience 6.2% less conflict with wildlife compared to those holding general elections. Second, compensation per incident is dramatically higher under tribal leadership; victims in reserved constituencies receive payouts 57% higher than victims *of the same type of animal attack* in general election constituencies. These two findings are consistent with the theory that tribal leaders face no incentives to discriminate and thus focus on abatement, leading to less HWC and higher payouts per incident.

Third, we find clear evidence of ethnic favouritism in HWC payouts. We establish this novel finding with a matched difference-in-difference design comparing the disparity in payouts between tribal- and non-tribal villages in reserved constituencies to the same disparity in unreserved constituencies. Villages with a 10 percentage point (pp.) larger tribal population share receive 4.6% more compensation per incident when the leader is tribal compared to when the leader is non-tribal. This suggests that ethnically aligned villages receive greater relief. To demonstrate the strength of our matched difference-in-difference design, we show that estimates are similar when using five constituencies just below the cutoff as the control group instead of three. Estimates are also stable when using the full set of unreserved constituencies as the comparison group.

An important inferential concern is reporting bias; if reservation encourages minorities to report minor damages that they otherwise would not have reported, then our coefficients may be downward biased. We address this with a test for systematic reporting bias, and find no evidence that reservation changes the number of low-, medium-, or high-value claims made in tribal-dominant villages.

In the final section, we explore the mechanisms underlying the observed increase in compensation under coethnic leadership. Compensation rates are officially fixed based on the type of livestock lost, raising the question: how do tribal claimants secure higher payouts when represented by tribal leaders? Informal interviews with forest officers in Himachal Pradesh suggest that the species classification system is subject to negotiation. First, claimants may bargain with inspectors to classify their livestock as a higher-value breed (e.g., a cross-bred cow rather than a local breed). Second, they may negotiate the reported quantity of livestock lost to increase the total compensation. According to forest officers, the success of such bargaining is largely contingent on the relationship established between claimants and local political leaders.

We identify bargaining over the reported quantity of livestock lost as the most plausible mechanism driving ethnic favoritism in compensation. We test this formally by sequentially introducing fixed effects for livestock breed and then for the number of animals lost into our main difference-in-differences specification. Our estimated effect remains robust to controlling for breed, but becomes statistically insignificant once we control for the number of animals lost. This pattern suggests that variation in reported quantity—rather than breed—is central to the observed ethnic favouritism.

Our findings are not intended to endorse corruption. Rather, we wish to highlight how political reservation can help marginalized groups achieve more equitable outcomes in an institutional environment where informal bargaining and rent-seeking already exist.

Our paper brings novelty to environmental economics, political economy, and ecology. First, we provide a micro-level analysis of a unique environmental disaster in the context of a large developing country. Prior work on environmental disasters has typically studied aggregate economic impacts of disasters either in the United States (Deryugina, 2017; Deryugina et al., 2018; Marcoux and Wagner, 2023) or globally (Botzen et al., 2019; Kahn, 2005; Hsiang and Jina, 2014).[3] Our data allow us to examine how relief is distributed across villages using individual-level information. We are also the first to focus on human-wildlife conflict, a significant yet underexplored environmental disaster.

Second, we contribute to several sub-literatures in political and public economics. While prior work on minority political representation in India has largely focused on poverty alleviation (Pande, 2003; Chattopadhyay and Duflo, 2004; Clots-Figueras, 2012; Bhalotra and Clots-Figueras, 2014; Chin and Prakash, 2011; Kaletski and Prakash, 2016), and how politics shapes environmental outcomes (Balboni et al., 2023, 2021; Burgess et al., 2012; Gulzar et al., 2021; Jagnani and Mahadevan, 2024; Lipscomb and Mobarak, 2016), we are unaware of any study examining how leader identity influences disaster relief.

We also advance the literature on the role of bargaining in the allocation of public transfers. Olken (2007) show that grassroots monitoring in Indonesia does little to improve public goods provision. We extend this by showing that local influence over targeted spending becomes effective when paired with coethnic political representation. Similarly, Reinikka and Svensson (2004) find that wealthier Ugandan schools leverage bargaining power to secure larger shares of education funds. We show that ethnic align-

[3] An exception is Gordon et al. (2024), who use granular data on earthquake relief in Nepal. Our work combines granular data on disaster relief with a political economy perspective, focusing on ethnic alignment between victims and local leaders.

ment with leadership also boosts bargaining power, highlighting another key mechanism in the distribution of public transfers.

We also join a long-standing theoretical literature in political economy by extending prior work (Besley and Coate, 1997; Anderson et al., 2015; Chattopadhyay and Duflo, 2004; Gulati, 2008). Our model provides a broad representation of how political reservation can influence the distribution of compensation, generating specific, testable predictions. Our difference-in-differences empirical strategy is directly derived from this framework, ensuring a tight connection between theory and evidence.

Lastly, we integrate economic tools into the ecological literature on HWC. As Dickman et al. (2011) notes, economic analysis remains underutilized in conservation science. Our study formalizes an economic logic for understanding HWC relief and applies causal inference methods to generate policy-relevant insights.

The next section provides institutional background. Section 3 presents the data and documents three stylized insights about inequities in HWC exposure and compensation. Section 4 sets up a political economy model to articulate the logic giving rise to discrimination in disaster relief. Section 5 tests model predictions and presents empirical results. Section 6 discusses mechanisms and Section 7 concludes.

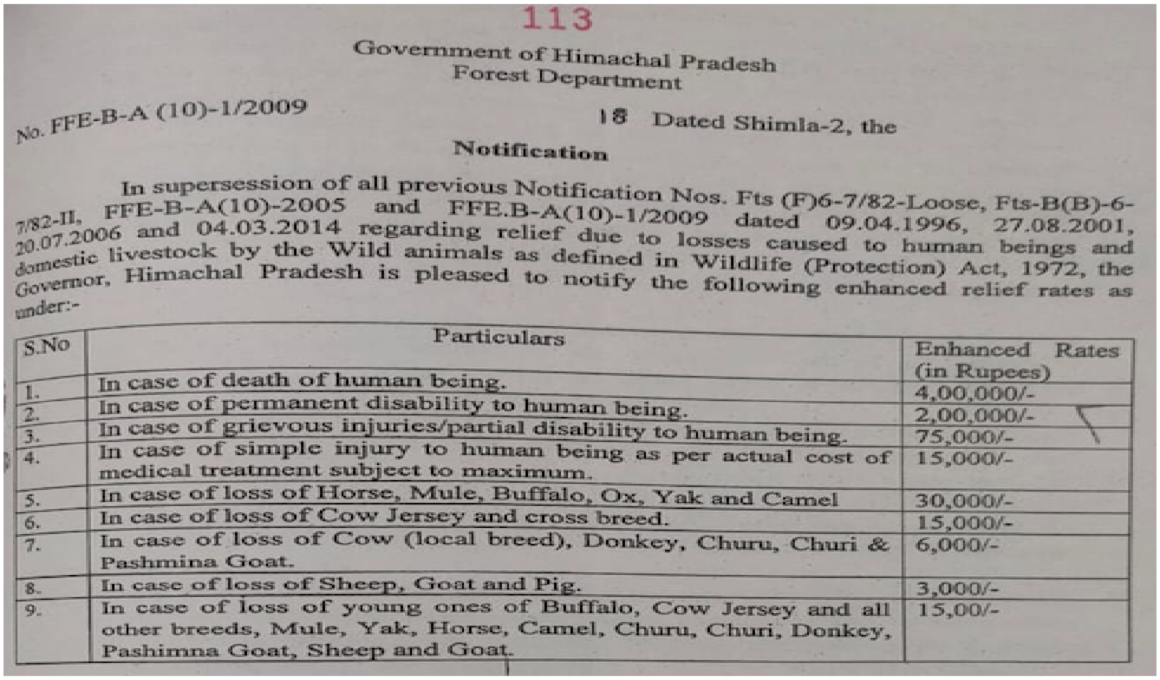
2 Background

This section provides necessary background on human-wildlife conflict in India and the bureaucracy for obtaining compensation. It also describes India's tribal community—our study group—and the system of affirmative action designed for their empowerment.

2.1 Human-Wildlife Conflict

Human-wildlife conflict (HWC) shares many characteristics with conventional environmental disasters. As humans encroach deeper into wildlife habitat, escalating human-wildlife encounters lead to crop destruction, livestock loss, and human death. In India, Human-Elephant Conflict (a subset of HWC) claims about 500 human lives per year (Economic Times, 2024). And while not traditionally counted as HWC, snake bites take an additional 50,000-64,000 lives annually (Mohapatra et al., 2011). To put these fatalities in perspective, floods in India cause 1500 deaths every year (Central Water Comission, 2012; Singh and Kumar, 2013; Parida, 2020). While elephants inflict the most damage (Gulati et al., 2021; Sukumar, 2003), conflict with large carnivores like tigers and leopards also cause human injuries, deaths, and major financial losses (Karanth and Madhusudan, 2002).

HWC is an especially important, devastating, and frequent environmental disaster for



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Government of Himachal Pradesh
Forest Department

No. FFE-B-A (10)-1/2009 18 Dated Shimla-2, the

Notification

In supersession of all previous Notification Nos. Fts (F)6-7/82-Loose, Fts-B(B)-6-7/82-II, FFE-B-A(10)-2005 and FFE.B-A(10)-1/2009 dated 09.04.1996, 27.08.2001, 20.07.2006 and 04.03.2014 regarding relief due to losses caused to human beings and domestic livestock by the Wild animals as defined in Wildlife (Protection) Act, 1972, the Governor, Himachal Pradesh is pleased to notify the following enhanced relief rates as under:-

S.No	Particulars	Enhanced Rates (in Rupees)
1.	In case of death of human being.	4,00,000/-
2.	In case of permanent disability to human being.	2,00,000/-
3.	In case of grievous injuries/partial disability to human being.	75,000/-
4.	In case of simple injury to human being as per actual cost of medical treatment subject to maximum.	15,000/-
5.	In case of loss of Horse, Mule, Buffalo, Ox, Yak and Camel	30,000/-
6.	In case of loss of Cow Jersey and cross breed.	15,000/-
7.	In case of loss of Cow (local breed), Donkey, Churu, Churi & Pashmina Goat.	6,000/-
8.	In case of loss of Sheep, Goat and Pig.	3,000/-
9.	In case of loss of young ones of Buffalo, Cow Jersey and all other breeds, Mule, Yak, Horse, Camel, Churu, Churi, Donkey, Pashimna Goat, Sheep and Goat.	15,00/-

Figure 1: HWC Compensation Rates (Government of Himachal Pradesh, 2018)

those living near India's forests. Like other disasters, its burden is unevenly shared—an important environmental justice concern. As we show in Insight 1 (Section 3.4), India's tribal communities are more vulnerable to HWC. A key political tool for mitigating the unequal burden is compensation for losses, a topic we turn to next.

2.2 The Compensation Bureaucracy in Himachal Pradesh

India's Wildlife (Protection) Act (1972) *recommends* compensating financial losses from HWC, but does not mandate it. Most Indian states offer independently determined ex-gratia compensation for human injury, death, livestock loss or other property losses from HWC (Karanth et al., 2018). In Himachal Pradesh, residents are eligible for compensation for livestock loss, human injury, or the associated loss of life, and rates range from ₹3000 for livestock loss to ₹400,000 for loss of a human life (Figure 1). Rate changes over the years are documented in Table A1. Crop destruction is not compensated.

Compensation claims are handled by the State Forest Department, which follows a chain of command illustrated in Figure B2. This hierarchy informs our choice of fixed effects in the empirical design (Section 5.1). We illustrate and explain the hierarchy of the forest bureaucracy in Appendix C. The structure of the bureaucracy is elaborate, and relevant if we are to understand how individuals claim compensation for wildlife conflict. For our purposes it is important to note that the roles within the bureaucracy, and the pro-

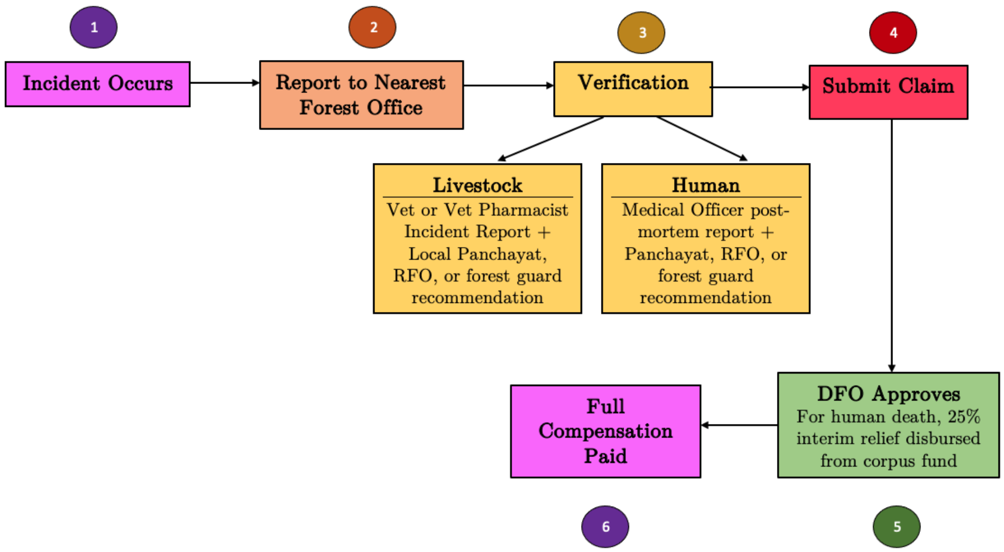

Figure 2: Filing a Claim for HWC compensation in Himachal Pradesh

motion of bureaucrats is determined by the democratically elected government. In other words, elected constituency leaders wield *power* over the compensation bureaucracy.[4]

Figure 2 illustrates the process of obtaining compensation and how victims interact with the bureaucracy at each stage. On suffering a loss due to HWC, an individual first reports the incident to the nearest forest office within seven days. A formal claim must be filed within one month with the nearest Regional Forest Officer (RFO). The claim can be filed where the applicant lives or where the loss occurred and includes details such as the predator animal, type and number of livestock lost, location and time of the event, and photographic evidence. The full list of reported items is described in the Data section.

In the case of livestock loss, a local veterinarian visits the incident site to verify that livestock death was caused by wildlife. However, many Himalayan regions are so remote that the nearest forest or veterinary office is hours or days away. These remote mountainous areas are often where minority populations reside, including tribal communities and pastoralists. The Himachal Pradesh government therefore grants locally elected representatives, including the village chief (Pradhan), and the local veterinarian pharmacist the authority to verify cattle losses[5]. While this rule improves bureaucratic efficiency, it

[4]In other words, citizens can hold public officials accountable via their elected representatives.

[5]Quote from Forest Department Notification FFE-iB-A (10)-1/2009 (Figure B1): "ii) Verification of loss of cattle that was actually caused by wild animal can be done by the Pradhan/Up Pradhan of Panchayat/Patwari/President Notified Area Committee, Chairman, Municipal Committee, Commissioner/ Mayor/Deputy Mayor, Municipal Corporation of the area/ Elected Member of the Cantonment Board area/Councillor of the area, Range Office/Deputy Ranger/Forest Guard or any other forest officer higher in rank than a Range Officer, Veterinary officer, or Veterinary Pharmacist or officer authorized by Veterinary

also creates opportunities for strategic bargaining between victims and local officials to affect compensation amounts, especially if the two belong to the same ethnic group. We explore this process as a mechanism underlying ethnic favouritism in Section 6.

In the event of human death, only medical officers can submit a postmortem report. For grievous injury cases, the medical officer submits a partial or permanent disability certificate as well as medical treatment costs. For simple injuries, a prescription slip is submitted. The RFO then scrutinizes the application and submits it to the Divisional Forest Officer or the Wildlife Warden, who authorizes all claims. All approved claims are then conveyed to the head of both wildlife and territorial sections.

While this compensation system is designed to mitigate negative effects of HWC, unequal access to the system remains a concern. Marginalized communities, especially tribal groups, face barriers to access when they petition a forest bureaucracy dominated by caste elites and rooted in colonial power imbalances (Doner, 2022). As we document in Insight 3 (Section 3.4), tribal communities receive less compensation than non-tribals for the same type of HWC damage. Next, we present an overview of India's tribal population and the system of affirmative action aimed at reversing historic discrimination.

2.3 Scheduled Tribes and Political Reservation

Scheduled Tribes India's tribes, or *Adivasis*, are widely regarded as its earliest inhabitants. Pre-independence censuses refer to tribes as "animist", "hill and forest tribes", and "backward tribes" (Ambagudia, 2011). Post-independence, the label Scheduled Tribes (ST) was adopted for administrative purposes. We primarily use the term "tribe" or "tribal group" throughout the paper to avoid overuse of acronyms. Per the 2011 Census, tribes comprise 9% of India's population, and 6% of the population of Himachal Pradesh.

We focus on tribal groups as our study group for several reasons. First, they are characterized by severe economic deprivation and sociopolitical exclusion. In Himachal Pradesh, their illiteracy rate is 42% higher, and their salaried employment share 133% lower, than the general population (World Bank, 2017). Second, tribes are forest-dependent (Insight 1, Section 3.4), geographically isolated and, thus, have limited contact with the State. Tribal areas are especially remote and mountainous, reducing access to the forest bureaucracy. Third, tribes in Himachal include migratory pastoralists (Sheth and Saberwal, 2023), seasonally traveling with goat and sheep herds in search of pasture. Seasonal routes through the lower and upper Himalayas expose them to a variety of omnivores and carnivores: brown and black bears, snow leopards, common leopards, and macaques.

officer of the area. iii) All DFOs in HP shall be final authority to sanction all cases of relief claims on account of losses caused by the wild animals to humans and domestic livestock."

Pastoralism also complicates access to compensation for HWC, as they deal with changing administrative boundaries and unfamiliar representatives and forest officers.

This legacy of poverty, exclusion, and geographic isolation has left India's tribal community especially vulnerable to economic shocks, including those perpetrated by environmental disasters. This vulnerability was the basis for creating its political quota system. The central question of this paper is whether this system is able to mitigate the negative impacts of HWC.

India's Political Reservation System India's political quota system originated through the Poona Pact of 1932, which allocated 148 state legislative seats for "depressed classes", which includes Scheduled Castes (SCs) and Scheduled Tribes (STs), across (then) provincial assemblies (Das, 2000). On independence from British Rule, political reservation was constitutionally mandated and continues to allocate seats for SCs and STs in the (now) state and national assemblies. In these constituencies, only candidates from the reserved group (SC or ST) can stand for election. The goal is to increase minority representation in an effort to redirect resources towards them. We focus on STs for the rest of the paper.

Reserved seats are allocated through a cascading sequence, with a quirk that introduces quasi-random variation in which constituencies are selected for reservation. First, reservations in the State Assembly are allocated based on their share of the national tribal population. Himachal Pradesh has 68 seats in the State Assembly, and 4% of India's tribal population, giving it $68 \times 0.04 = 3$ reserved seats for tribes. Second, seats are allocated down to districts with the same formula[6]. Third, constituencies within districts are ranked by minority population share and reserved seats are assigned starting with the highest ranked constituency (i.e., with the highest tribal population share) until the total number of reserved constituencies for the district is reached (Ambagudia, 2019).

Using this third step of seat allocation, we establish a discrete cutoff to identify counterfactual constituencies. The three constituencies ranked just below the cutoff in each district serve as the comparison group, approximating a matched sample where "matched" refers to matching reserved and unreserved constituencies on minority population share. The advantage of this approach is that matching within districts ensures that reserved and matched unreserved constituencies are balanced on district characteristics such as district level institutions, bureaucracy, elevation, ruggedness, and climate, all of which co-vary with tribal population share and HWC incidence.

This approach results in a matched difference-in-difference design that does not exploit policy timing per se, but follows the same logic by comparing outcomes between

[6]For example, a district with 25% of Himachal Pradesh's tribal population receives $0.25 \times 3 = 0.75$ seats. This will be rounded to the nearest integer (1 seat) in the final allocation calculation.

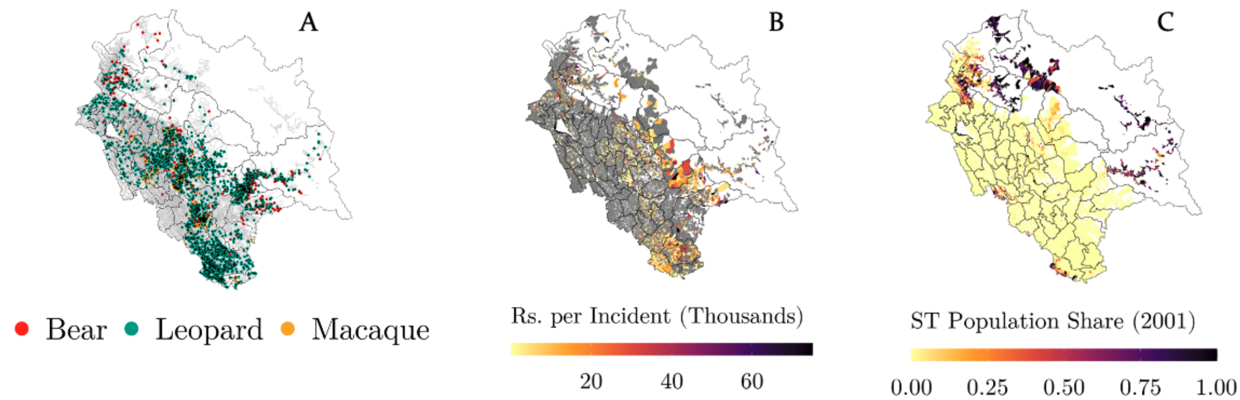

Figure 3: Distribution of Human-Wildlife Conflict, Compensation, and Tribal Population

Note: Boundary lines denote assembly constituencies. Panel A shows locations of HWC incidents. Panel B shows mean compensation within villages. Panel C shows ST population share from the 2001 census.

more- and less-tribal villages (treatment intensity) across reserved and matched unreserved constituencies. More details on the empirical strategy are in Section 5.1.

3 Data

We study the political economy of HWC compensation using a newly assembled dataset combining geotagged individual compensation claims with village-level data on tribal population shares and constituency reservation status. The resulting victim-level panel spans all villages with HWC claims filed in Himachal Pradesh between 2012 and 2020 and includes both demographic and political characteristics.

3.1 Compensation Claims

We obtained a restricted-access panel of HWC compensation claims through our partnership with the Indian Forest Service. Claim-level data are otherwise not publicly available in India[7], or any other country to our knowledge. Our panel covers the universe of claims made at local forest offices between 2012-2020. A claim refers to a single HWC incident, during which multiple livestock could have been killed. Data are geocoded to the village centroid and include: date, predator animal, case type (livestock loss, human injury, or human death), livestock species killed (cow, goat, etc.), number of livestock lost, and compensation paid. For claims with multiple livestock species killed, each species is listed separately while compensation is reported as a lump sum.

[7] Previous work has thus been limited to the state-level (Karanth et al., 2018)

Table A2 shows that leopard, bear, and macaque attacks are most common (Panel A). Bear attacks receive the highest payout, three times more than leopards and six times more than macaques. In terms of case type, livestock loss is the most common outcome (Panel B), receiving compensation worth ₹9,240 per incident on average. In the rare event that human death occurs, compensation is fifteen times higher.

Figure 3A plots locations of HWC incidents coloured by predator animal. Leopard (green) and bear (red) attacks are common statewide, whereas Macaque attacks (yellow) occur only in the south, where tribal population is low (Panel C). We thus focus on bear and leopard incidents while decomposing our regression estimates by animal (Section 5).

3.2 Village Covariates

The first set of covariates capture village demographics. In the absence of data on victim identity, we characterize HWC incidents by the tribal population and economic development of the village where each incident occurred. Tribal population share is computed using tribal and total population counts from the 2001 Census. Figure 3C plots this variable: lower Himachal is largely devoid of tribal communities whereas the mountainous Upper Himachal region is dominated by tribes. Village economic development is proxied by nightlights, obtained from the VIIRS satellite product (Elvidge et al., 2017). We use this to account for confounding differences in livestock herd size and value across tribal and less-tribal villages between reserved and unreserved constituencies.

The second set of covariates capture natural resource access, a key determinant of HWC. To characterize village exposure to HWC, we compute the distance from each village centroid to the nearest water body, protected area, and forest. Distance to water is measured by the straight-line distance using inland water shapefiles from ISCGM/Survey of India[8]. Distance to the nearest protected area is measured in the same way using shapefiles from the Science for Natural Data Portal[9].

Measuring distance to the forest is more complex. We first obtain forest cover (250m resolution) for the baseline year from the Vegetative Continuous Field (VCF) satellite product (Townshend et al., 2017). We then classify pixels with $>$ 40% forest as dense based on the Indian government definition, and clump adjacent dense cells into "patches". Lastly, we compute the straight-line distance from each village to the nearest forest patch.

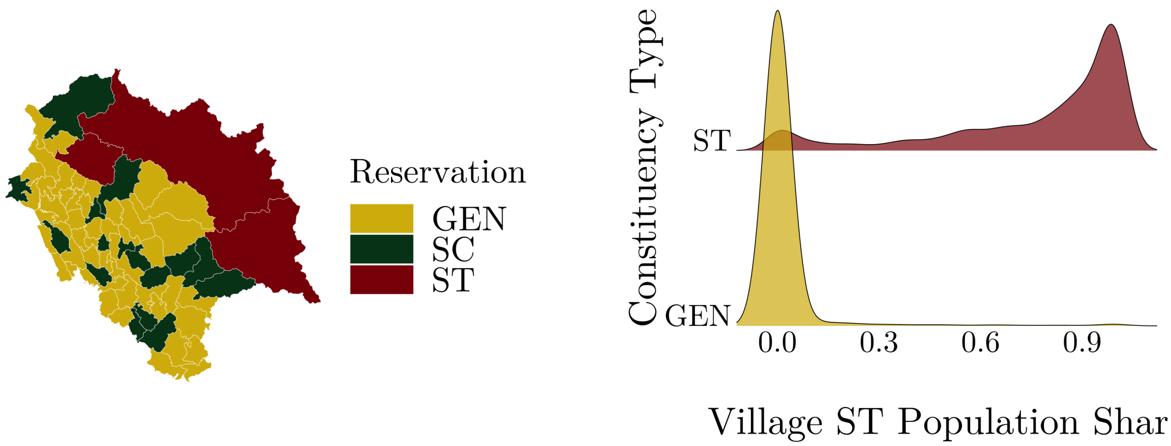

Figure 4: Political Reservation and Tribal Population

Note: Panel A is a map of assembly constituencies obtained from Datameet. Panel B shows histograms of tribal population across villages within constituency types. ST constituencies are reserved for ST candidates, SC constituencies for SC candidates, and GEN for general election constituencies.

3.3 Political Reservation

Himachal Pradesh has 68 state assembly constituencies (Figure 4A). We obtain electoral data for each one from the SHRUG database (Asher et al., 2021), including winner name, party, and reservation status in every election. There are three constituencies reserved for tribal leaders (red), where tribal population share is highest (Figure 3C). There are also 16 SC reserved constituencies scattered around the state (green). The remaining 49 are unreserved, where general elections are held (yellow).

Constituencies have a median of 239 villages. Figure 4B shows the tribal population distribution across villages within constituencies. Most villages in tribal reserved constituencies are over 60% tribal (red). However, there is also a mass near zero, implying that some villages in tribal reserved constituencies have a small tribal population. This characterizes a unique empirical setting for studying targeted spending toward co-ethnics since leader ethnicity is the majority in some villages and the minority in others.

Table A3 summarizes HWC payouts in reserved and non-reserved constituencies. On average, payouts are about ₹8,000 higher per incident in reserved constituencies compared to non-reserved constituencies. This is true even controlling for animal (Panel A) or case type (Panel B). While there may be many explanations, we explore the possibility that higher payments under reservation may mitigate discrimination.

[8] Data available at: https://maps.princeton.edu/catalog/stanford-jq724hb1204

[9] Shapefiles available for download at: https://data.mendeley.com/datasets/6jhr4xfs3x/1/files/48675100-c852-4847-82eb-82c5afe64454

Table 1: Three Empirical Insights from the Data

	Distance to Nearest:		HWC	Compensation	
	(1)	(2)	(3)	(4)	(5)
	Forest	P.A.	# Conflicts	Human	Livestock
Village ST Share	-1.090***	-0.653***	0.016	-0.500*	0.288*
	(0.230)	(0.197)	(0.074)	(0.270)	(0.173)
Geography Controls	No	No	Yes	Yes	Yes
Data	village	village	village-yr	victim-yr	victim-yr
Estimator	OLS	OLS	Poisson	OLS	OLS
Forest Division FEs	✓	✓			
Forest Division × Year FEs			✓	✓	✓
Predator FE				✓	✓
Observations	17161	17161	2706	866	2982
R^2	0.340	0.412		0.760	0.616

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Columns 1-2 use census and satellite data for all of HP, whereas columns 3-5 use our HWC panel. In column 3, data are at the village-year level. In columns 4-5, data are at the incident level. Geography controls include: distance to nearest forest, protected area, water body, and nightlights. Standard errors are clustered by village.

3.4 Empirical Patterns

Having described the data, we now highlight key data patterns relating to inequities in HWC exposure and compensation. These insights lay the groundwork for the formal model that follows in Section 4.

Insight 1. *Scheduled Tribes are more exposed to HWC.*

The first insight from the data is that tribes are more exposed to HWC by virtue of living closer to forests. We establish this empirically by comparing how village proximity to forests varies with tribal population share:

$$log(Distance_{vf} + 1) = \alpha + \beta \cdot ST_{vf} + \gamma_f + \epsilon_{vf} \quad (1)$$

The subscripts v and f index the village and forest division, respectively. $Distance_{vf}$ measures kilometres from the village centroid to the nearest forest patch. We add one to *Distance* before taking the logarithm to account for zero values, i.e., villages inside forested areas. ST_{vf} is village tribal population share. γ_f is a forest division fixed effect which accounts for some divisions having higher forest cover than others.

We find $\beta < 0$, implying that tribal-dominated villages are closer to the forest edge compared to less-tribal villages in the same forest division (column 1, Table 1). Villages with larger tribal populations are also closer to protected areas (column 2). These results reflect a general pattern of natural resource dependence among tribal communities.

Insight 2. *Scheduled Tribes experience greater wildlife conflict.*

The second insight is that tribes experience more wildlife conflict. To show this, we estimate the correlation between tribal population and a village-year count of HWC events:

$$Conflicts_{vft} = \alpha + \delta \cdot ST_{vf} + \mathbf{X}'_{vft}\Omega + \theta_{ft} + \epsilon_{vft} \tag{2}$$

where v, f, and t index the village, forest division, and year, respectively. $Conflicts_{vft}$ denote the number of HWC incidents and ST_{vft} is the village tribal population share. $\mathbf{X}'_{vft}$ is a vector of geographic covariates including distance to forests, water, protected areas, and nightlights. θ_{ft} are forest division-by-year fixed effects, which account for potential rotation of divisional forest officers, who are in charge of administering HWC claims. We estimate δ with poisson maximum-likelihood since the outcome are event counts.

Our regression finds a positive yet statistically insignificant association between tribal population share and HWC incidence. While $\delta > 0$ implies that the count of HWC increases across villages within the same district as ST share increases (Table 1, column 3), estimate imprecision implies that we cannot assert this difference as being meaningful.

Insight 3. *Scheduled Tribes receive smaller compensation amounts for similar conflict events.*

The third insight is that tribes are compensated less for wildlife attacks, which hints at possible discrimination. We establish this with panel regressions on claim-level data:

$$log(Compensation_{iavft}) = \alpha + \zeta \cdot ST_{vf} + \mathbf{X}'_{vcft}\Omega + \theta_{ft} + \eta_{ia} + \epsilon_{iavft} \tag{3}$$

where i, a, v, f, and t index the incident, predator animal, village, forest division, and year, respectively. $Compensation_{iavft}$ denotes compensation paid on claim i and, as before, ST_{vf} is tribal population share. $\mathbf{X}'_{vft}$ is the same set of covariates as Equation 2 and θ_{ft} are forest division-by-year fixed effects, which account for potential rotation of forest officers. Animal fixed effects, η_{ia}, ensure that comparisons are made between incidents involving the same predator. We estimate separate regressions for incidents involving human injury/death and livestock loss to account for differences in how compensation is determined. Compensation amounts are more directly comparable across incidents involving human casualties, as these are typically filed as single-incident claims. In contrast, livestock-related claims often involve multiple animals, each compensated at a different rate depending on the species, making per-incident comparisons less straightforward.

Our results show that $\zeta < 0$ for HWC cases involving human death or injury (Table 1, Column 4). This suggests that, for the *same type of animal attack*, villages with larger tribal populations receive systematically lower compensation. A 10 percentage point (pp.) increase in the tribal population share is associated with a 5% reduction in compensation.

By contrast, we find $\zeta > 0$ for HWC cases involving livestock loss (Table 1, Column 5), suggesting that tribal-dominant villages receive higher payouts per incident. A 10 pp. increase in tribal share corresponds to approximately a 3% increase in compensation.

These findings indicate that for comparable human losses, compensation is lower in tribal villages. While higher tribal share is also associated with greater compensation for livestock losses, these incidents are difficult to compare due to variation in the number and type of animals involved, each valued differently under the rate schedule (Figure 1).

Summary of Empirical Patterns These three data insights highlight both the vulnerability of India's tribal population, in terms of exposure to HWC, as well as the inadequacy of the compensation bureaucracy for mitigating damages. The fact that tribal communities receive lower compensation for similar conflict hints at possible discrimination. It also raises the question of whether mandating tribal representation in local politics can help re-direct transfers toward tribal communities and undo such inequities.

4 Model

In this section we develop a political economy model of a public bad with selective discrimination[10]. The model illustrates how discrimination in compensation for the public bad can arise and generates testable predictions about how political reservation alters incentives for discrimination. Proofs are in Appendix D. We subsequently test model predictions in Section 5 using India's political reservation system as a natural experiment.

4.1 Set-up

Group Utility The economy consists of two groups $i \in \{s, n\}$, denoting Scheduled Tribes, s, and non-tribes, n. Population is normalized to unit mass, with $\pi < \frac{1}{2}$ denoting the share of s (the minority). Each group is potentially exposed to a public bad, X, which we interpret as HWC for the remainder of the model. Utility for group i linearly

[10] The model combines insights from existing models of political reservation (Besley and Coate, 1997; Besley et al., 2004; Anderson et al., 2015; Old, 2020; Chattopadhyay and Duflo, 2004), special interest politics (Grossman and Helpman, 2008), and their application to environmental contexts (Aidt, 1998; Gulati, 2008).

increases in private income, y_i, and decreases with exposure to the public bad:

$$U_i(y_i, X) = y_i - \alpha_i X,$$

where α_i parameterizes the marginal disutility from X. We assume $\alpha_s \geq \alpha_n$ to incorporate Insight 1, that s is more vulnerable to HWC. We also assume s is poorer than n, given by $0 < y_s \leq y_n$, in line with official statistics (Ministry of Tribal Affairs, 2023).

Abatement Costs Given animal populations, human encroachment, and other landscape features, a natural equilibrium level of HWC emerges, $\bar{X}$. The executive arm of an incumbent government can set $X < \bar{X}$ at an Abatement Cost (AC) given by:

$$AC = \frac{\beta}{2}(\bar{X} - X)^2,$$

where β parameterizes the marginal cost of abatement actions such as investing in conservation education, fencing, and other measures.

Discrimination In principle, the executive must compensate losses from X. Without discrimination, group i is compensated $\alpha_i X$ and final utility is $U_i = y_i$. In practice, the executive can discriminate against s by reducing their compensation and redistributing a portion of withheld funds to n. This follows from Insight 3, where we showed that STs receive lower payouts than non-tribals for similar types of HWC. Formally, letting $\delta \in [0,1]$ be the proportion of discrimination, s is paid $(1-\delta)\alpha_s X$ instead of $\alpha_s X$. The assumption that δ is non-negative implies that discrimination against n is not possible.

Political Costs of Discrimination Discrimination also induces rent-seeking behaviour. Let θ be the proportion of funds withheld from s lost to grifters. Both discrimination and rent-seeking lower re-election chances. The Political Cost (PC) of discrimination is:

$$PC = \underbrace{\theta\delta\pi\alpha_s X}_{\text{political cost}} + \underbrace{\frac{\delta^2}{2}\pi}_{\text{alienation cost}},$$

where $\theta\delta\pi\alpha_s X$ is the portion of diverted compensation from s lost to corruption. We assume that the political cost of rent-seeking increases linearly in the proportion of the rent seeking, θ. In addition, $\frac{\delta^2}{2}\pi$ is the political cost of alienating the tribal group, s. We assume that this increases quadratically in the proportion of discrimination, δ.

With discrimination, compensation to s is $(1-\delta)\alpha_s X$, and final utility is $U_s = y_s - \delta\alpha_s X$. Compensation to n becomes $\alpha_n X + \frac{(1-\theta)\delta\alpha_s X}{1-\pi}$, and final utility is $U_n = y_n + \frac{\pi}{(1-\pi)}(1-\theta)\delta\alpha_s X$. Summing compensation to both groups, the total Cost of Compensation (CC) is:

$$CC = [\pi\alpha_s + (1-\pi)\alpha_n - \theta\delta\pi\alpha_s]\, X$$

Next, we will derive the level of δ and X under a social planner and compare it to two elected political outcomes, one under general and the other under reserved elections.

4.2 The Social Planner

To benchmark the socially optimal allocation, a social planner chooses the proportion of discrimination, δ^*, and the level of the public bad, X^*, to minimize social costs:

$$\arg\max_{\delta,X} \{-(CC + AC + PC)\}$$

Taking the first order conditions yield:

$$\delta^* = 0$$
$$X^* = \bar{X} - \frac{1}{\beta}\left(\pi\left(\alpha_s - \alpha_n\right) + \alpha_n\right)$$

The detailed derivation is in Appendix D.1. In words, the planner does not discriminate because doing so only adds to political costs, without any aggregate benefit. The optimal allocation of X is the natural level less the linear population weighted sum of marginal damages for each group divided by the marginal abatement cost[11].

4.3 Election Process

We now model the political process, either a general election (n wins) or a reserved election (s wins)[12]. Politicians are citizens and have the same preference as their ethnic group, a simplifying assumption which enables us to abstract from political selection. The politician from group i chooses δ and X to minimize social costs, which increases re-election chances, while also caring about their own utility[13]:

$$\arg\max_{\delta,X} \{-(CC + AC + PC) + \gamma U_i\} \qquad \text{where } i \in \{s, n\}$$

Where γ is a weight on group i's utility. We solve for optimal δ and X under general and reserved elections, and then present a set of theoretical results about ethnic favouritism in HWC compensation.

[11] We assume that the parameters in our model satisfy the conditions necessary for $X^* > 0$, in other words, we assume that $\bar{X} > \frac{1}{\beta}\left(\pi\alpha_s + (1-\pi)\,\alpha_n\right)$.

[12] This assumption is backed by the fact that $< 2\%$ of STs win unreserved seats (Old, 2020).

[13] This assumption is common in special interest–incumbent models (Grossman and Helpman, 2008).

General Elections A representative from the majority non-tribal group n is always elected. After substituting their utility into Equation 4.3, the first order conditions of their maximization problem yield:

$$\delta^g = \frac{\gamma(1-\theta)}{(1-\pi)}\alpha_s X^g > 0 \tag{4}$$

$$X^g = \bar{X} - \frac{1}{\beta}\left(\pi\left(\alpha_s - \alpha_n\right) + \alpha_n - \frac{\gamma(1-\theta)\pi}{(1-\pi)}\delta^g\alpha_s\right) \tag{5}$$

The detailed derivation is in Appendix D.2. In words, Equation 4 implies that there is discrimination against the minority under general elections. The majority incumbent obtains personal benefit from discrimination, and does so until the marginal benefit from discrimination equals the re-election cost from alienation of the minority. Discrimination increases in the weight that n places on their utility, and falls as rent-seeking rises.

Equation 5 implies that a larger amount of HWC may be tolerated by the majority incumbent as increasing HWC increases the personal benefit from discrimination. Note that if $X^* > 0$ is positive, then $X^g > 0$ is too.

Reserved Elections A representative from the minority tribal group s is required to be elected. After substituting their utility into Equation 4.3, the first order conditions yield:

$$\delta^r = \delta^* = 0 \tag{6}$$

$$X^r = X^* = \bar{X} - \frac{1}{\beta}\left(\pi\left(\alpha_s - \alpha_n\right) + \alpha_n\right) \tag{7}$$

The detailed derivation is in Appendix D.3. Like the social planner, the minority executive does not discriminate. This is because we assumed discrimination only reduces compensation to the minority, and there is no way to discriminate against the majority (i.e. $\delta \in [0,1]$). Therefore the tribal executive has no incentive to discriminate and will behave like the social planner in equilibrium[14].

4.4 Testable Predictions

We close the model with equilibrium comparative statics that yield predictions about the impact of reservation on conflict, compensation, and discrimination. Each theoretical prediction has an empirical analog, which we test in the next section.

[14] While we make a restrictive assumption of no possible discrimination against the majority, a more plausible version—that the cost of discrimination against the majority is higher than the cost of discriminating against the minority—will also yield a similar outcome. This is because even under reservation, government machinery and law enforcement are dominated by the majority, making it harder for the minority to discriminate as successfully as the majority. For this more plausible assumption, we will see a reduced level of discrimination, instead of its elimination.

Proposition 1 (Conflict tolerance under reserved elections)**.** *Less human-wildlife conflict is tolerated under reserved compared to general elections.*

Proof. $X^g - X^r = \frac{1}{\beta}\gamma(1-\theta)\frac{\pi}{(1-\pi)}\delta^g\alpha_s > 0$, since $\delta^g > 0$ from Equation 4. □

Under general elections, the leader from n tolerates additional HWC because more conflict implies more scope for discrimination and, as a result, more utility-enhancing redistribution towards their own group. Under reserved elections, the leader from s faces no benefit from discrimination and thus focuses only on abatement.

We test Proposition 1 with a *simple difference* regression that compares the HWC frequency in reserved and unreserved constituencies (Section 5.2). Our second proposition evaluates how payouts for these incidents varies across the two types of constituencies.

Proposition 2 (Compensation paid to s under reservation)**.** *Under reserved elections, s receives higher compensation relative to general elections.*

Proof. $\alpha_s X^* - (1-\delta^g)\alpha_s X^g = \delta\alpha_s X^* > 0$. See Appendix D.4 for full proof. □

When moving from general to reserved elections, two competing forces affect compensation to the minority. First, removing discrimination increases compensation per incident. Second, lower HWC decreases overall compensation (Proposition 1). The elimination of discrimination dominates because the marginal damage from HWC is larger for minorities ($\alpha_s \geq \alpha_n$), providing higher utility from fair compensation compared to n.

Our empirical test of Proposition 2 compares average payouts to tribal groups in reserved versus unreserved constituencies. Formally, we test $\frac{CC^r}{X^r} - \frac{CC^g}{X^r} \geq 0$ with a *simple difference* design on victim-level data (Section 5.3). In the absence of data on victim identity, this serves as a valid test since reserved villages are 70% tribal (Table A4).

The third proposition, and key theoretical result of the paper, arises from a comparative static that varies tribal population share. The comparative static evaluates the change in average compensation per incident as the proportion of tribal constituents rises in reserved relative to the same change in unreserved constituencies.

Proposition 3 (Ethnic Favouritism: Tribes)**.** *The increase in average compensation when tribal population share rises is higher under reservation than the increase under general elections.*

Proof. $\frac{\partial}{\partial\pi}\left[\frac{CC^r}{X^r}\right] - \frac{\partial}{\partial\pi}\left[\frac{CC^g}{X^g}\right] = \delta\alpha_s\theta > 0$. Full proof in Appendix D.5. □

When tribal population share rises, average compensation paid also rises since their marginal disutility is higher ($\alpha_s \geq \alpha_n$). Under general elections, part of this increase is diverted by rent-seeking. In reserved elections, however, the full increase in compensation reaches the constituents. As a result, compensation per incident rises faster with the tribal population share under reserved elections, a phenomenon we call *ethnic favouritism*.

Our target theoretical parameter, $\delta\alpha_s\theta$, is designed to map to a *difference-in-difference coefficient* given our data. We explain this in greater detail in the next section.

5 Main Results

This section presents evidence of ethnic favouritism in environmental disaster payouts by empirically testing each model prediction. Our identification strategy relies on a policy rule that generates quasi-random variation in which political seats are reserved for minorities, giving rise to plausible control groups: other constituencies that are similar but face general elections (see Section 2.3).

5.1 Empirical Design

Our empirical design for testing Propositions 1-3 consists of comparing HWC outcomes across villages in reserved and unreserved constituencies. Credibility of this design is based on the discrete cutoff rule for allocating reserved seats (Section 2.3). Selecting the three constituencies just below the cutoff for comparison yields a matched sample with a better counterfactual than if we had chosen all unreserved constituencies in the district or state. Matching within districts ensures the estimation sample is balanced on district geographic characteristics that may covary with tribal population share and HWC outcomes.

Despite the matched sample, there remain potential threats to validity. The first concern is that matching only ensures balanced tribal population shares; there may still be imbalances along other dimensions. Indeed, our balance Table A4 shows that, while differences in covariates between reserved and matched unreserved (column 5) constituencies are smaller than reserved-unreserved differences (column 4), the differences are statistically significant. This means that matching is somewhat imperfect. We address by controlling for these covariates in all specifications.

The second concern is that matching reduces sample size, a common issue with cutoff-based estimators. This also means that estimates are only locally valid. We therefore present full-sample analogs of all regressions as robustness checks for comparison.

The third concern is that constituencies could have been gerrymandered. However, a detailed study by Iyer and Reddy (2013) finds that the redrawing of constituencies in 2008 was largely devoid of strategic political motives. We are therefore confident that the matched sample features quasi-random variation in seat reservation.

Lastly, estimate validity depends on the extent of reporting bias. Reservation may empower minorities to report incidents that they would otherwise not have reported. If the distribution of compensation *amounts* remains unchanged, this would only add precision without biasing estimates. Yet if the distribution does change under reservation, e.g., due to a lower cost of reporting under reservation, our estimates may be biased. We address this in two ways. First, we design a test for reporting bias in Section 5.4.1, and find no evidence. Second, the dependent variable in all our regressions is compensation paid *per incident*, and the coefficient on reservation reflects average compensation. If reservation prompts more reports of low-damage incidents, the coefficient will be biased downwards, counter to our theoretical prediction of higher payments under reservation. Therefore, if our results validate the theory, they hold in spite of reporting bias and not because of it.

5.2 Results: HWC in Reserved Constituencies

Estimation Framework Proposition 1 from the model states that HWC is lower under reserved elections. We test this with the following equation:

$$HWC_{vcft} = \alpha + \delta \cdot R_{cf} + \mathbf{X}'_{vcft}\Omega + \theta_{ft} + \epsilon_{vcdt} \tag{8}$$

where HWC_{vcft} is the number of HWC incidents in village v, of constituency c, in forest division f, at time t. R_{cf} indicates whether the constituency seat is reserved for tribes. The time index is dropped since reservation status does not change during our study period. In the matched sample, $R_{cf} = 0$ for the three unreserved constituencies in the district just below the tribal population cutoff. $\mathbf{X}'_{vcft}$ is a vector of village covariates described in Section 3.2. Forest division-by-year fixed effects, θ_{ft}, account for divisonal forest officer identity. We include these since HWC reports and compensation amounts are approved by divisional forest officers, a position which can be shuffled annually.

δ is the empirical analog of $X^G - X^*$ from the model. $\delta < 0$ is the empirical confirmation of Proposition 1, which states that the number of HWC claims in constituencies reserved for tribes is lower than in unreserved constituencies. The intuition is that, absent reservation, the marginal benefit of discrimination exceeds the abatement cost of reducing HWC. Once the incentive for discrimination is removed under reserved elections, the minority chooses to uniformly abate, lowering HWC incidence in reserved constituencies.

Results and Robustness Table 2 presents our estimates of Equation 8. The outcome in column 1 is log of total conflicts. We find $\delta < 0$ and is statistically significant, implying that political reservation for tribal leaders leads to fewer HWC incidents, consistent with Proposition 1 of the model. The point estimate suggests that villages in reserved constituencies experience 6.2% fewer HWC incidents compared to villages in matched general election constituencies in the same forest division.

Table 2: Political Reservation and Incidence of Human-Wildlife Conflict

	(1) All	(2) Leopard	(3) Bear
ST Reserved	-0.062***	0.154***	-0.249***
	(0.013)	(0.031)	(0.025)
Geography Controls	Yes	Yes	Yes
Village ST Share	Yes	Yes	Yes
Forest Division × Year FEs	✓	✓	✓
Observations	232	232	232
R^2	0.123	0.234	0.211

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the village-year level. The outcome is log number of conflicts reported. Column 1 pools over all claims and remaining columns subset the sample by predator animal. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the village tribal population share. All specifications include forest division-by-year fixed effects as well as village-level controls for: distance to forest, distance to nearest PA, distance to nearest water body, and nightlights. Standard errors clustered by forest division.

The remaining columns decompose the estimates by predator animal[15]. The lower aggregate incidence of HWC is driven by fewer conflicts with bears in reserved constituencies (column 3). In contrast, villages in these constituencies experience greater leopard attacks (Column 2). A possible, but untestable, explanation is that since bear conflict commands the highest payouts (Table A2) and is most associated with human injury and death, reserved constituencies shift abatement resources away from leopards and towards bears, leading to more leopard conflict.

Table A5 explores sensitivity of the main estimates. Column 1 tests robustness to a matched sample with five constituencies (instead of three) just below the cutoff as the comparison group. Since the outcome is a count variable, column 2 presents estimates using a Poisson pseudo maximum likelihood estimator. Column 3 measures the outcome in levels. Column 4 tests robustness to using the full set of unreserved constituencies as the control group. The coefficient remains robust across all specifications.

[15] We cannot decompose by case type since there are only 47 human cases in the matched sample.

5.3 Results: HWC Payouts in Reserved Constituencies

Estimation Framework Proposition 2 from the model states that average payouts are higher in reserved constituencies. We test this with the following specification:

$$Log(Payout_{iasvcft}) = \phi \cdot R_{cf} + \mathbf{X}'_{vcft}\Omega + \theta_{ft} + \eta_{ia} + \mu_{is} + \epsilon_{iasvcft} \quad (9)$$

where *Payout* is compensation paid (in ₹) for incident i, with predator animal a, leading to HWC case type s (human or livestock loss), in village v, of constituency c, in forest division f, at time t. R_{cf} indicates whether constituency seat c is reserved for tribes. As before, $\mathbf{X}'_{vcft}$ is a vector of village covariates and θ_{ft} are division-by-year fixed effects, which account for forest officer rotations. We also include predator fixed effects, η_{ia}, and case fixed effects, μ_{is}, to ensure comparisons are made between reserved and unreserved constituencies for the same type of animal attack, and the same type of case.

ϕ is the empirical analog of $\delta\alpha_s X^*$ from the model, and $\phi > 0$ is the empirical verification of Proposition 2. Note that $\phi > 0$ means that tribal representation increases *average* compensation in reserved constituencies, not that benefits are directed *towards* the leader's co-ethnic group. We investigate the latter in Section 5.4.

Results and Robustness Estimates of Equation 9 are presented in Table 3. The outcome in column 1 is log of compensation (in ₹). We find $\phi > 0$, consistent with Proposition 2 from the model. This suggests that tribal representation in local politics increases average payouts relative to average payouts in matched unreserved constituencies. The point estimate implies that victims in reserved constituencies are compensated 57% more than victims of the same type of animal attack in unreserved constituencies.

Remaining columns present estimates by predator animal. The main result appears to be driven by higher payouts for leopard attacks (column 2). In contrast, the coefficient for bears (column 3) is negative and statistically insignificant[16]. At the incident level, we are unable to test heterogeneity by case type as there are insufficient cases of human injury/death between matched constituencies.

Table A6 explores sensitivity to the same robustness checks as the previous section. The coefficient remains similar when the control group consists of five constituencies just below the cutoff instead of three (column 1). The coefficient also remains positive and significant when the outcome is in levels (column 2), and when all unreserved constituencies serve as the comparison group (column 3).

Having established that mean payouts in reserved constituencies are higher, we next turn to the main question of the paper: whether higher payments reflect tribal leaders

[16]Few bear attack incidents in this subsample (N=85) may be a reason for estimate imprecision.

Table 3: Political Reservation and Compensation for HWC

	(1) All Animals	(2) Leopard	(3) Bear
ST Reserved	0.571***	0.893***	-0.618
	(0.037)	(0.067)	(0.277)
Village ST Share	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes
Forest Division × Year FEs	✓	✓	✓
Predator FEs	✓		
Case FEs	✓	✓	✓
Observations	288	191	85
R^2	0.525	0.498	0.734

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the victim-year level. The outcome is log compensation. Column 1 pools all reports and other columns are subsamples by animal. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the village tribal population share. All specifications include animal, case, and division-year fixed effects as well village controls for: distance to forest, distance to nearest PA, distance to nearest water body, and nightlights. Standard errors clustered by forest division.

directing transfers toward their own communities. This requires looking *within* reserved and unreserved constituencies and comparing the payout distribution *across* villages.

5.4 Results: Ethnic Favouritism in Reserved Constituencies

Estimation Framework Proposition 3 from the model states that tribal constituency leaders target transfers toward coethnic villages, which we have been referring to as ethnic favouritism. We test this behaviour with a difference-in-difference design using the matched sample. Our specification compares the difference in payouts between villages with high and low tribal population shares (first difference) in reserved constituencies to the same difference in general election constituencies (second difference).

In the standard difference-in-difference design, policy timing creates time variation and differences are compared across treatment and control groups before and after policy implementation. Our analog exploits tribal share around the discrete population cutoff as the measure of treatment intensity (Section 2.3). The resulting difference-in-difference estimator captures how payouts vary between less- and more-tribal villages across reserved and matched unreserved constituencies. The estimating equation is:

$$Log(Payout_{iasvcft}) = \xi \cdot (R_{cf} \times ST_{vcf}) + \beta \cdot R_{cf} + \delta \cdot ST_{vcf} + \mathbf{X}'_{vcft}\Omega + \gamma_c + \theta_{ft} + \eta_{ia} + \mu_{is} + \epsilon_{iasvcft} \quad (10)$$

As before, *Payout* is the compensation paid (in ₹) for incident i, with animal a, leading to HWC case type s (human or livestock), in village v, of constituency c, in forest division f, and at time t. $\mathbf{X}'_{vcft}$ are village covariates (Section 3.2). We include division-by-year fixed effects, θ_{ft}, predator fixed effects, η_{ia}, case fixed effects, μ_{is}, and constituency fixed effects, γ_c. Inclusion of γ_c distinguishes Equation 10 from the other specifications because it allows us to make within-constituency comparisons across villages with varying tribal population shares. R_{cf} is constituency reservation status, which enters interacted with village tribal population share, ST_{vcf}, so that the interaction coefficient, ξ, captures the difference-in-difference effect. Standard errors are clustered at the constituency level.

The coefficient of interest, ξ, is the empirical analog of $\delta\alpha_s\theta$ from the model. $\xi > 0$ is the empirical verification of Proposition 3—that average compensation rises faster with tribal population share under reservation than under general elections. As discussed in the model, the intuition is that since the incentive for rent-seeking is eliminated under reservation, the full increase in compensation in tribal-dominated villages (which experience more HWC) reaches the victims.

Results and Robustness Difference-in-difference estimates of Equation 10 are presented in Table 4. We find that $\xi > 0$, consistent with Prediction 3 from the model; tribal leaders exhibit coethnic preferences and direct transfers toward villages with larger tribal populations. The point estimate in column 1 is interpreted as follows: when the constituency leader is tribal, villages under their governance with 10 pp. larger tribal populations receive 4.6% more compensation *for the same type of animal attack* compared to when the leader is from the majority. In Section 6, we provide more concrete qualitative and quantitative evidence that this result is indeed driven by ethnic favouritism.

The remaining columns document heterogeneity by predator. Ethnic favouritism is particularly salient in compensation for leopard attacks (column 2), whereas we find no evidence of favouritism in compensation for bear attacks (column 3). Note the small number of observations for bear conflict, as identified earlier.

Table A7 explores sensitivity of the estimates to alternative samples and functional forms. Coefficient magnitude and precision are virtually unchanged when the matched control group consists of five constituencies just below the cutoff instead of three (column 1). The coefficient is also stable when the outcome is in levels, although precision declines

Table 4: Ethnic Favouritism in Environmental Disaster Payouts

	(1) All Animals	(2) Leopard	(3) Bear
ST Reserved × Village ST Share	0.460***	0.925**	-0.032
	(0.096)	(0.316)	(0.268)
Village ST Share	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes
Constituency FEs	✓	✓	✓
Forest Division × Year FEs	✓	✓	✓
Predator FEs	✓		
Case FEs	✓	✓	✓
Observations	288	191	84
R^2	0.530	0.513	0.750

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the victim-year level. The outcome is log compensation. Column 1 pools all reports and other columns are subsamples by animal. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the tribal population share. All specifications include constituency, division-year, animal, and case fixed effects, and village controls for: distance to forest, distance to nearest PA, distance to nearest water, and nightlights. Standard errors clustered by forest division.

(column 2). Lastly, the coefficient remains positive and statistically significant when using the full set of general election constituencies as the control group (column 3).

Table A8 shows the estimates adjusted for alternative standard error clustering. Column 1 replicates the baseline for comparison, where errors are clustered by constituency. However, given that the forest policy decision-making unit is the circle or forest division (see heirarchy in Figure B2), unobserved determinants of payout amounts may be correlated within these administrative units. Yet columns 2 and 3 show that estimate precision is very similar under division and circle clustering, respectively.

Another view is that the appropriate cluster is ecological, not administrative. Since compensation varies by livestock type, unobserved determinants of compensation may be correlated within livestock predator ranges, which do not adhere to administrative boundaries. In the absence of range maps, we instead investigate spatial correlation by implementing Conley (1999) standard errors for various choices of the kernel cutoff distance. Reassuringly, precision remains similar, even when allowing for longer distance spatial correlation up to 200km.

5.4.1 Reporting Bias

The validity of our estimates crucially depend on the extent of reporting bias (Section 5.1). If reservation increases the likelihood that tribal individuals file claims, then this would increase the extensive margin (i.e., add more data points) and improve precision of ξ without biasing it. ξ is only biased if changes in the extensive margin are systematic. For example, if tribal claimants underreport minor damages in unreserved constituencies because systemic barriers are prohibitively costly, then compensation amounts in unreserved constituencies are right-censored. If political representation induces them to report these minor damages, then the addition of small compensation claims to the estimation sample will attenuate ξ. Yet, despite this potential downward reporting bias, we still find $\xi > 0$ (Table 4), implying that that either ethnic favouritism dominates reporting bias, or there is no reporting bias.

Below, we formally test for reporting bias by examining whether the distribution of compensation amounts changes in tribal-dominated villages under reservation. We first bin the number of claims in a village into three quantiles of compensation values and then estimate the following village-level difference-in-difference equation:

$$Claims_{vcft} = \varphi \cdot (R_{cf} \times ST_{vcf}) + \beta \cdot R_{cf} + \delta \cdot ST_{vcf} + \mathbf{X}'_{vcft}\Omega + \gamma_c + \theta_{ft} + \epsilon_{vcft}$$

where $Claims \in \{\text{low, medium, high}\}$ is the number of compensation claims of low, medium, or high value. All subscripts and terms are the same as Equation 10. φ is the test for reporting bias. When the outcome is number of low-value claims, $\varphi > 0$ implies that reservation prompts tribal claimants to report more minor damages, potentially downward biasing ξ in Equation 10. Lack of reporting bias is indicated by $\varphi = 0$.

Table A9 reports estimates from this test. We find no evidence of reporting bias in the matched sample. The interaction coefficient in columns 1-3 is statistically insignificant, suggesting that reservation does not induce victims in tribal-dominated villages to report more low-, medium-, or high-value claims. Since the outcome is a count, columns 4-6 report Poisson estimates. We use the pseudo-maximum likelihood estimator to adjust standard errors (Wooldridge, 1999). Again, there is no statistically discernible difference in the number of low, medium or high-value claims under reservation. These findings help build confidence in the credibility of our research design.

6 Mechanisms: What Drives Ethnic Favouritism?

What accounts for our central finding—that compensation per incident increases more steeply with tribal population share in reserved constituencies than in general ones? This pattern is puzzling given that compensation rates are formally *fixed* (Figure 1); how, then, do tribal claimants secure higher payouts under tribal political representation?

Recall from the model (Section 4) that eliminating rent-seeking incentives under reservation allowed the full increase in compensation to reach victims in tribal-dominated villages. Interpreted this way, $\xi > 0$ in Equation 10 reflects an "access channel", where removing perverse incentives by electing a tribal leader leads to improved access to relief among co-ethnics. While we cannot test for the removal of perverse incentives with our current data, we can at least investigate the access channel. Access is likely to manifest as increased influence of the tribal electorate on the Divisional Forest Officer (who is subordinate to the constituency leader) in ST-reserved constituencies. While this explanation is consistent with our findings, it still cannot explain the underlying source of higher payouts given that rates are fixed. Unpacking these deeper mechanisms requires better understanding the institutional context.

Through informal interviews with Himachal Pradesh forest officers, we learned that although compensation rates are officially fixed, the *classification* and *number* of livestock species killed may be informally negotiated to secure higher payouts. Herders may bargain to reclassify lost livestock as a higher-value breed. For example, Figure 1 illustrates that compensation varies by livestock age, species, and breed. If a leopard kills a local cow (₹6,000 in compensation), the herder might negotiate with the inspector to classify it as a Jersey cow, which commands over twice the compensation (₹15,000). Herders may also negotiate the reported number of livestock killed. Forest Officers noted that the success of such bargaining depends on the accessibility of, and ethnic ties to, local leaders—enabling tribal claimants to leverage ethnic favoritism to obtain higher compensation.

To empirically test whether bargaining on breed or numbers explains our findings, we sequentially add fixed effects for each dimension—first for livestock breed, then for the number of animals lost—to the main specification. This procedure successively removes variation attributable to each type of bargaining, allowing us to assess whether ethnic favouritism persists using the residual variation. If the estimated difference-in-difference effect disappears after accounting for a given dimension, we interpret that as evidence that the corresponding bargaining channel was driving the result.

To operationalize bargaining on species, we construct a binary variable equal to one if the lost livestock is a buffalo, cow, donkey, horse, any of their young, or a jersey breed. Zero indicates sheep, pig, or goat. Including this as a fixed effect lets victims bargain *within* broad species types (e.g., reclassifying a local cow to a jersey), but not *across* (a goat cannot be reclassified as an ox). To operationalize bargaining on numbers, we categorize the number of livestock lost into five bins: "1", "2", "3", "4", and "5+". Including these as fixed effects ensures comparisons are made between claims for the same number of

Table 5: Mechanisms: Negotiation Reported Livestock Breed and Numbers

	(1) Baseline	(2) Breed FEs	(3) Num FEs	(4) Breed + Num FEs
ST Reserved × Village ST Share	0.499***	0.514***	0.099	0.122
	(0.139)	(0.123)	(0.089)	(0.081)
Village ST Share	Yes	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes	Yes
Breed FEs		✓		✓
Num. Killed FEs			✓	✓
Constituency FEs	✓	✓	✓	✓
Forest Division × Year FEs	✓	✓	✓	✓
Predator FEs	✓	✓	✓	✓
Case FEs	✓	✓	✓	✓
Observations	3252	2947	2944	2944
R^2	0.596	0.643	0.671	0.780

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the victim-year level. The outcome is log compensation. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the tribal population share. All specifications include village controls for: distance to forest, distance to nearest PA, distance to nearest water, and nightlights. Standard errors clustered by forest division.

animals, in which case remaining variation must stem from bargaining over breed.

Table 5 presents evidence that bargaining can explain our findings of ethnic favouritism using the full sample.[17] Column 1 replicates the baseline equation (column 3, Table A7). Column 2 adds breed fixed effects, effectively shutting down bargaining across broad species types while still allowing room to bargain within similar breeds and on quantity killed. The coefficient remains virtually unchanged, suggesting minimal strategic species reclassification. However, column 3 shows a sharp drop in magnitude and loss of statistical significance when adding fixed effects for the number of livestock lost. The null result persists in column 4 when breed and number fixed effects are included together. These estimates point to bargaining on quantity of livestock lost—not species—as the most plausible mechanism explaining ethnic favouritism in HWC compensation.

A counterargument is that that null effects with number fixed effects may not mean that shepherds bargain on numbers to obtain higher payouts—it may just mean that shep-

[17] We use the full sample for this analysis, as adding two more sets of fixed effects—on top of the four already included in Equation 10—leaves the matched sample underpowered.

herds in treatment villages have larger livestock herds and therefore face greater losses per HWC incident. For this to be true, herd size or livestock losses would need to rise faster with tribal population share (the treatment) in reserved constituencies compared to unreserved ones[18]. While this could happen as a byproduct of targeted income transfers to minorities in reserved constituencies (Pande, 2003; Chin and Prakash, 2011), we control for village-level wealth in all our regressions, helping rule out this explanation. A similar alternative explanation is that our findings may be explained by a shift in the *composition* of livestock toward higher-value animals in tribal-dominated villages of reserved constituencies. However, the baseline estimate remained highly stable with livestock breed fixed effects in Table 5 (column 2), helping rule out this alternative explanation.

Lastly, one may argue that tribal-dominated villages in reserved constituencies face more dangerous predators, leading to greater losses and higher claims. But all our regressions include predator fixed effects, ruling out this explanation. Given little leeway in human compensation cases, the lack of support for these three alternative explanations strengthens the case that ethnic favouritism—most plausibly through bargaining over livestock numbers—is the most compelling narrative underlying our findings.

It is important to acknowledge that ethnic favouritism through bargaining is a type of corruption. We wish to clarify that we are not arguing that corruption is beneficial; in fact our results do not imply that. Rather, our findings imply that political reservation may be addressing existing power imbalances and allow fairer outcomes for marginalized groups in a world where bargaining and corruption already exist.

7 Conclusion

This paper studies the role of ethnic favouritism in the allocation of environmental disaster relief. The global poor and marginalized are largely uninsured against disasters, leaving them reliant on government relief. Yet, systemic barriers for these groups to accessing government assistance raise concerns about the reach and effectiveness of disaster aid. While affirmative action policies around the world aim to remove these power imbalances, their success at improving access and equity in disaster relief is an important and understudied question.

Our setting concerns Human-Wildlife Conflict (HWC) in Himachal Pradesh, India, a largely overlooked type of disaster responsible for massive income loss and a death toll similar to floods. Using novel data on HWC compensation claims, we document that

[18] One may worry that budgetary constraints may influence how much improvement may happen through reservation. Discussions with Forest Officers revealed that budget constraints do not limit compensation, as budgets are allocated based on need, and no case is typically denied or unfunded.

India's tribal community are most vulnerable to wildlife attacks, yet are compensated less than non-tribals for the same type of damage. These empirical patterns hint at possible discrimination against one of India's most vulnerable and politically excluded groups.

Our political economy model explores whether political representation of tribal communities can undo discrimination in payouts. It showed that the gap in payouts between tribal and non-tribal areas narrows when political seats are reserved for tribal candidates, a phenomenon we call ethnic favouritism. While targeted public spending toward coethnics has been studied in the context of poverty alleviation and human capital formation, its relationship to disaster spending is relatively unexplored.

We empirically test the model using a quirk in India's system for reserving political seats for tribal candidates. Our difference-in-difference estimates confirm the model predictions. We find that villages with higher tribal population shares receive substantially larger payouts per incident when their constituency leader is also tribal. These results imply that political representation redirects disaster aid toward those who need it most.

Some caveats are in order. First, we attribute lower payouts to tribal communities as evidence of discrimination. We try to be careful in this attribution, by conditioning on the type of animal attack, case type, and other geographic determinants of HWC. However, we acknowledge that there there may be other factors unobserved in our model that explain this difference. Second, our estimates are only valid for constituencies around the cutoff. While this makes broader state-level policy extrapolations more challenging, we do find that our estimates are similar under the full sample. Lastly, we focus on "wide" ethnic alignment between constituency leaders and victims. To obtain access to compensation, the victim is unlikely to interact directly with the constituency leader. Instead the victim interacts with local elected officials, or representatives of the local forest office. The constituency leader meanwhile, does have authority over the local District Forest Officer, which can impact the victim's interactions. If we wanted to explore the impact of "narrower" ethnic alignment, we would need data on forest officer, and local representative identity, which we hope to do in future research.

The main policy insight from our paper is that ensuring political representation for marginalized groups has the potential to direct resources toward the most vulnerable, which is crucial for mitigating damages during environmental disasters. As climate change continues to exacerbate the frequency and extent of environmental disasters, integrating these lessons into policy design will be crucial for fostering environmental justice.

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Online Appendix

A Appendix Tables

Table A1: Policy Changes Summary for Wildlife-Related Compensation in Himachal Pradesh

Aspect / Year	1986	1988	1996	2001	2002	2006	2014	2018	2021
Compensation Rates	First year of data	No change	Detailed injury tiers, increase in rates.	Minor injury removed, increase in compensation rates.	Minor injury restored.	Only simple injury increases in rate.	Increase in compensation rates.	Increase in compensation rates.	Increase in compensation rates.
Category Structure	Shed/jungle & breed splits.	Introduced additional livestock categories.	No change	No change	No change	No change	Merged shed/jungle & breed distinctions.	No change.	No change.
Verification Authorities	RFO + local officials.	Adds Panchayat Pradhan & Guard.	Adds Revenue Lambardar.	Interim relief (25%) process established.	No change	No change.	Includes Patwari & Veterinary Pharmacist.	Adds Mayor & corpus fund trigger.	No change.
Filing Time Windows	Report 3 d / Claim 1 m.	Report 5 d / Claim 1 m.	Report 5 d / Claim 1 m.	Report 5 d / Claim 1 m.	Report 5 d / Claim 1 m.	Report 5 d / Claim 1 m.	Report 30 d / Claim 3 m.	Report 7 d / Claim 1 m.	Report 7 d / Claim 1 m.

Table A2: Summary Statistics of HWC Compensation

	Number of Incidents	Mean Compensation (Thousand ₹)	Std. Dev. (Thousand ₹)
Panel A: Animal Type			
Bear	348	29.70	37.59
Boar	4	24.34	34.30
Fox	8	5.00	0.00
Jackal	1	2.44	.
Leopard	3001	9.82	15.95
Macaque	831	4.74	15.28
Sambhar	1	6.61	.
Wolf	8	3.67	1.19
Total	4202	10.45	19.57
Panel B: Case Type			
HumanDeath	20	147.50	89.55
HumanMajorInjury	127	50.26	21.38
HumanNA	1009	6.37	21.76
LivestockLoss	3048	9.24	10.31
Total	4204	10.44	19.57

Note: Panel A summarizes compensation by animal type. Panel B shows the same for case type. "Human NA" denotes human-related cases where death or injury type is unknown.

Table A3: Summary Statistics: Compensation by Reservation Status

	Reserved			Non Reserved		
	Obs.	Mean (Thousand ₹)	SD	Obs.	Mean (Thousand ₹)	SD
Panel A: Animal Type						
Bear	60	17.20	18.64	287	32.35	40.03
Leopard	137	19.48	24.70	2828	9.41	15.33
Total	197	18.79	23.00	3666	10.37	19.92
Macaque				551	3.86	17.42
Panel B: Case Type						
HumanDeath	3	150.00	0.00	16	150.00	100.00
HumanMajorInjury	4	64.50	21.00	106	52.09	21.76
HumanNA	8	15.73	24.14	734	7.00	25.34
LivestockLoss	190	15.24	14.11	2826	8.88	9.91
Total	205	18.20	22.73	3682	10.37	19.91

Note: Panel A summarizes compensation by animal type. Panel B shows the same for case type. "Human NA" denotes human-related cases where death or injury type is unknown.

Table A4: Covariate Balance

	(1) Treatment	(2) Control	(3) Matched Control	(4) Difference	(5) Matched Difference
Village ST Share	0.76	0.03	0.30	0.73^{***}	0.46^{***}
Dist. to Forest	1.74	0.92	0.33	0.82^{*}	1.42^{***}
Dist. to Protected Area (km)	8.38	10.34	8.63	-1.96^{***}	-0.24
Dist. to Water (km)	105.09	35.09	32.14	70.00^{***}	72.95^{***}

Note: Columns 1 reports sample means in ST reserved constituencies. Columns 2 and 3 report sample means in *all* non-reserved constituencies, and non-reserved constituencies in the matched control group, respectively. Column 4 is a t-test for the difference in means between columns 1 and 2. Column 5 is the same for columns 1 and 3. * $p < .1$, ** $p < .05$, *** $p < .01$

Table A5: Robustness: Political Reservation and HWC Incidence

	(1)	(2)	(3)	(4)
ST Reserved	-0.054***	-0.141***	-0.154***	-0.052*
	(0.010)	(0.027)	(0.033)	(0.030)
Village ST Share	Yes	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes	Yes
Sample	Matched	Matched	Matched	Full
Matched Controls	5	3	3	
Specification	log-lin	Poisson	lin-lin	log-lin
Forest Division × Year FEs	✓	✓	✓	✓
Observations	241	232	232	2426
R^2	0.121		0.113	0.159

* $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the village-year level. The outcome is number of of conflicts reported. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the village tribal population share. Column 1 is a log-linear specification which uses five constituencies below the cutoff as the matched control group. Column 2 uses a Poisson estimator. In column 3 the outcome is in levels. In column 4, the full set of unreserved constituencies is the control group. All specifications include forest division-by-year fixed effects as well as village-level controls for: distance to forest, distance to nearest PA, distance to nearest water body, and nightlights. Standard errors clustered by forest division.

Table A6: Robustness: Reservation and HWC Payouts

	(1)	(2)	(3)
ST Reserved	0.434***	7.465***	0.462***
	(0.009)	(1.028)	(0.100)
Village ST Share	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes
Sample	Matched	Matched	Full
Matched Controls	5	3	3
Specification	log-lin	lin-lin	log-lin
Forest Division × Year FEs	✓	✓	✓
Predator FEs	✓	✓	✓
Case FEs	✓	✓	✓
Observations	300	288	3256
R^2	0.529	0.627	0.587

* $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the individual level. The outcome is compensation amount. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the village tribal population share. Column 1 is a log-linear specification which uses five constituencies below the cutoff as the matched control group. In column 2 the outcome is in levels. In column 3, the full set of unreserved constituencies is the control group. All specifications include forest division-by-year fixed effects as well as village-level controls for: distance to forest, distance to nearest PA, distance to nearest water body, and nightlights. Standard errors clustered by forest division.

Table A7: Robustness: Ethnic Favouritism in HWC Payouts

	(1)	(2)	(3)
ST Reserved × Village ST Share	0.420***	10.165	0.499***
	(0.095)	(5.266)	(0.139)
Village ST Share	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes
Sample	Matched	Matched	Full
Matched Controls	5	3	3
Specification	log-lin	lin-lin	log-lin
Constituency FEs	✓	✓	✓
Forest Division × Year FEs	✓	✓	✓
Predator FEs	✓	✓	✓
Case FEs	✓	✓	✓
Observations	300	288	3252
R^2	0.539	0.631	0.596

* $p < .1$, ** $p < .05$, *** $p < .01$. Data are at the individual level. The outcome is compensation amount. "ST Reserved" indicates whether the constituency is reserved. "Village ST Share" is the village tribal population share. Column 1 is a log-linear specification which uses five constituencies below the cutoff as the matched control group. In column 2 the outcome is in levels. In column 3, the full set of unreserved constituencies is the control group. All specifications include forest division-by-year fixed effects as well as village-level controls for: distance to forest, distance to nearest PA, distance to nearest water body, and nightlights. Standard errors clustered by forest division.

Table A8: Matched Sample: Robustness—Alternative Standard Errors

	Standard Error Boundary			Conley Spatial Error Cutoff			
	Constituency	District	Circle	20km	50km	100km	200km
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ST Reserved × ST Share	0.460*	0.460*	0.460*	0.460**	0.460***	0.460***	0.460***
	(0.201)	(0.107)	(0.107)	(0.225)	(0.091)	(0.133)	(0.049)
Constituency FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Division × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Case FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Predator FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	288	288	288	288	288	288	288
R^2	0.530	0.530	0.530	0.530	0.530	0.530	0.530

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Coefficient estimates and standard errors from baseline specification with alternative clustering. Column 1 replicates the main estimate with clustering at the constituency level. In columns 2-3, standard errors are clustered by forest division and forest circle, respectively. Columns 4-7 implement Conley (1999) standard errors for four different values of the kernel cut off distance (in km).

Table A9: Matched Sample: Reporting Bias

	OLS Estimates			Poisson Estimates		
	(1) Low	(2) Med	(3) High	(4) Low	(5) Med	(6) High
ST Reserved × Village ST Share	-0.149	0.253	0.040	-0.704*	0.921	-0.063
	(0.081)	(0.276)	(0.072)	(0.404)	(0.628)	(0.093)
Village ST Share	Yes	Yes	Yes	Yes	Yes	Yes
Geography Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constituency FEs	✓	✓	✓	✓	✓	✓
Forest Division × Year FEs	✓	✓	✓	✓	✓	✓
Observations	232	232	232	156	221	207
R^2	0.236	0.256	0.324			

Note: * $p < .1$, ** $p < .05$, *** $p < .01$. Data comprise the matched sample. The unit of observation is a village-year. The outcomes are the number of compensation reports in a village of low (first quantile), medium (second quantile) and high (third qantil) value. "ST Reserved" indicates whether the incident occurred in a reserved constituency. "Village ST Share" is village tribal population share. All regressions include constituency and forest division-by-year fixed effects as well as controls for distance to forest, distance to nearest PA, distance to nearest water body, and nightlights. Standard errors clustered by forest division.

B Appendix Figures

The following guidelines will be followed for grant of relief:-

i) Production of postmortem report in case of loss of human life, certificate in case of grievous injury, partial & permanent disability and prescription slip as well as verification of actual cost of Medical treatment in case of simple injury (including Monkey bites) from the Medical officer of a Government Institution/Govt. recognized Medical Institution, as the case may be.

ii) The verification of loss of cattle that was actually caused by wild animal can be done by the Pradhan/Up Pradhan of Panchayat/Patwari/President Notified Area Committee/ Chairman, Municipal Committee, Commissioner/ Mayor/Deputy Mayor, Municipal Corporation of the area/Elected Member of the Cantonment Board area/Councilor of the area, Range Officer/Deputy Ranger/Forest Guard or any other forest officer higher in rank than a Range Officer, Veterinary Officer or Veterinary Pharmacist or officer authorized by Veterinary officer of the area.

iii) All DFOs in HP shall be the final authority to sanction all cases of relief claims on account of losses caused by the wild animals to humans and domestic livestock.

iv) The DFOs shall release 25% of the amount of relief prescribed for human loss/permanent & partial disability/grievous injury on receipt of report as interim relief immediately to the family of the deceased/affected person after due

Figure B1: Excerpt from HP Forest Department Notification on HWC Compensation

Full document available here.

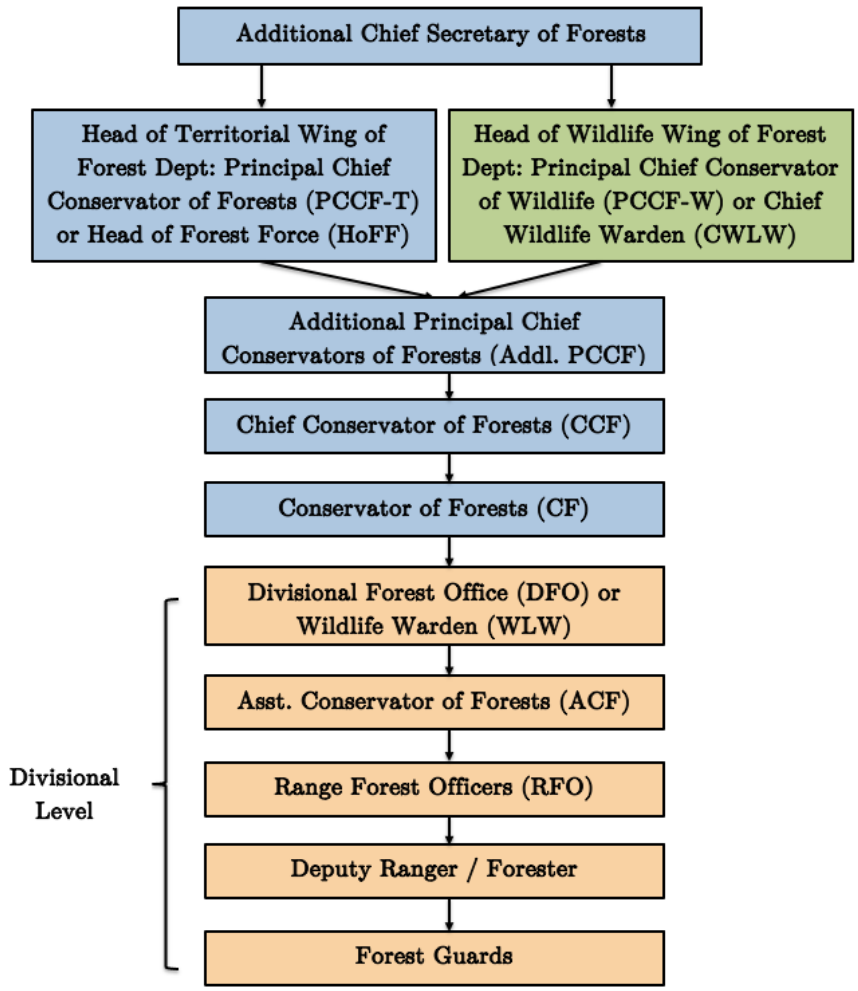

Figure B2: Himachal Pradesh Forest Department Chain of Command

C The Forest Bureaucracy in Himachal Pradesh

The State Forest Department of Himachal Pradesh comprises two independent wings: Territorial and Wildlife (Figure B2). The Territorial Wing is headed by the Principal Chief Conservator of Forests (PCCF), also known as the Head of Forest Force (HoFF), while the Wildlife Wing is led by the PCCF (Wildlife), who also serves as the Chief Wildlife Warden (CWLW). Both report to the Additional Chief Secretary (Forest)[19]. The Territorial Wing consists of 8 circles and 37 forest divisions, each managed by a Divisional Forest Officer–Territorial (DFO-T). The Wildlife Wing consists of 3 circles, and 7 wildlife divisions, each managed by a Divisional Forest Officer–Wildlife (DFO-W). If the conflict occurs in a territorial division, the DFO-T is authorized to handle wildlife matters including compensation. While DFO-Ts primarily report to the HoFF, the CWLW may coordinate with them on wildlife-specific activities such as censuses and awareness programs. DFO-W's are also authorised to handle wildlife matters and forest matters in their divisions. All divisions are further divided into forest ranges, managed by the Range Forest Officer (RFO), who oversee daily operations.

[19]Secretaries and forest officials serve at the discretion of the elected State Cabinet. Their appointments, roles, and continuance in office are thus subject to decisions of the democratically elected government.

D Theory Appendix

D.1 Social Planner Maximization (Equation 4.2)

The Social Planner problem is:

$$\arg\max_{\delta,X} \{-(CC + AC + PC)\} \tag{11}$$

FOC δ: We present the possibility of a corner solution as it is relevant in this case. A full FOC for a constrained maximization has three components, the partial derivative of the social planner problem w.r.t. δ, the constraint that δ is non-negative, and the product of the choice variable, and its partial derivative which equals zero. This gives:

$$-\delta\pi \leq 0; \delta \geq 0; \text{ and } \delta(-\delta\pi) = 0. \tag{12}$$

As $\pi > 0$, Equation 12 is satisfied iff $\delta^* = 0$. In other words, the benevolent government chooses not to discriminate against the minority. This is because discrimination has no aggregate benefit, only adding to political costs.

FOC X: For its choice of HWC, a corner solution is not relevant, so we only present the partial derivative of the planner problem w.r.t. X and equate it to zero.

$$-\pi(\alpha_s - \alpha_n + \alpha n) + \beta(\bar{X} - X) = 0. \tag{13}$$

Equation 13 can be rewritten as,

$$X^* = \bar{X} - \frac{1}{\beta}\left(\pi\left(\alpha_s - \alpha_n\right) + \alpha_n\right), \tag{14}$$

implying that the optimal allocation of X is the natural level less the linear population weighted (by population weight) sum of the marginal damages for each group divided by the marginal cost of reduction. We assume that the parameters in our model satisfy the conditions necessary for $X^* > 0$, in other words, we assume that $\bar{X} > \frac{1}{\beta}\left(\pi\alpha_s + (1-\pi)\,\alpha_n\right)$.

D.2 Majority Politician Maximization

The majority group, n, always wins under general elections. After substituting their utility into Equation 4.3, the maximization problem is:

$$\arg\max_{\delta,X}\left\{-(CC+AC+PC)+\gamma\left(y_n+\frac{\pi}{(1-\pi)}(1-\theta)\delta\alpha_s X\right)\right\}.$$

FOC δ For its choice of discrimination, δ^g, a corner solution is not relevant, and thus we set the partial derivative w.r.t. δ equal to zero, which gives:

$$-\delta\pi+\gamma(1-\theta)\frac{\pi}{(1-\pi)}\alpha_s X^g=0. \tag{15}$$

FOC X**:** For its choice of X, a corner solution is also not relevant, so we only present the partial derivative with respect to X and equate it to zero, which gives:

$$-\left(\pi\left(\alpha_{ST}-\alpha_{NT}\right)+\alpha_{NT}\right)+\beta(\bar{X}-X)+\gamma(1-\theta)\frac{\pi}{(1-\pi)}\delta\alpha_{ST}=0 \tag{16}$$

The above first order conditions give us:

$$\delta^g=\frac{\gamma(1-\theta)}{(1-\pi)}\alpha_{ST}X^g, \tag{17}$$

and

$$X^g=\bar{X}-\frac{1}{\beta}\left(\pi\left(\alpha_s-\alpha_n\right)+\alpha_n-\frac{\gamma(1-\theta)\pi}{(1-\pi)}\delta^g\alpha_s\right), \tag{18}$$

which implies a positive amount of discrimination against the minority when the incumbent majority is in power. Note that if $X^*>0$, then $X^g>0$ also.

D.3 Minority Politician Maximization

Under reserved elections, only the minority, s, can run for office. After substituting their utility into Equation 4.3, the maximization problem is:

$$\arg\max_{\delta,X} \{-(CC + AC + PC) + \gamma\,(y_s - \delta\alpha_s X)\}$$

FOC δ For its choice of discrimination δ, a corner solution in the FOC is relevant. A full FOC for a constrained maximization has three components, the partial derivative of the maximization problem w.r.t. δ, the constraint that δ is non-negative, and the product of the choice variable and its partial derivative, which equals zero. This gives:

$$-\delta\pi - \gamma\alpha_{ST}X^r \leq 0; \delta \geq 0; \text{ and } \delta(-\delta\pi - \gamma\alpha_s X^r) = 0. \tag{19}$$

FOC X For its choice of X, a corner solution is not relevant, so we only present the partial derivative of the maximization problem and equate it to zero:

$$-\left(\pi\left(\alpha_s - \alpha_n\right) + \alpha_n\right) + \beta(\bar{X} - X) - \gamma\delta\alpha_s = 0 \tag{20}$$

Since $\{\pi, \gamma, \alpha_s\} > 0$, Equation 19 is satisfied iff

$$\delta^r = 0$$

which implies that

$$X^r = X^* = \bar{X} - \frac{1}{\beta}\left(\pi\left(\alpha_s - \alpha_n\right) + \alpha_n\right) \tag{21}$$

Despite a political preference, discrimination and the choice of conflict under minority reservation are the same as those from the benevolent government.

D.4 Proof of Proposition 2

Proposition 4 (Compensation paid to s under reservation)**.** *Under reserved elections, s receives higher compensation relative to general elections.*

Proof. In reserved elections, tribal compensation is $\alpha_s X^*$, and in general elections tribal compensation is $(1-\delta^g)\,\alpha_s X^g$. When discrimination is removed, however, HWC is also lower. To be able to determine the overall effect, we need to evaluate the difference between them,

$$
\begin{aligned}
&\alpha_s X^* - (1-\delta^g)\,\alpha_s X^g \\
=&\alpha_s\left(X^* - X^g\right) + \delta\alpha_s X^g \\
=&\alpha_s \frac{1}{\beta}\gamma(1-\theta)\frac{\pi}{(1-\pi)}\delta^g\alpha_s - \alpha_s\frac{1}{\beta}\gamma(1-\theta)\frac{\pi}{(1-\pi)}\delta^g\alpha_s + \delta\alpha_s X^* \\
=&\delta\alpha_s X^* > 0
\end{aligned}
$$

□

D.5 Proof of Proposition 3

Proof. We can write the average compensation under reservation as: $\frac{CC^r}{X^r} = [(\alpha_s - \alpha_n)\pi + \alpha_n]$ and average compensation under general elections is: $\frac{CC^g}{X^g} = [(\alpha_s - \alpha_n)\pi + \alpha_n - \delta\pi\alpha_s\theta]$. Next we take the partial derivative of these two terms.

$$
\begin{aligned}
&\frac{\partial}{\partial\pi}\left[\frac{CC^r}{X^r}\right] = \frac{\partial}{\partial\pi}\left[(\alpha_s - \alpha_n)\pi + \alpha_n\right] = \left[\alpha_s - \alpha_n\right]. \\
&\frac{\partial}{\partial\pi}\left[\frac{CC^g}{X^g}\right] = \frac{\partial}{\partial\pi}\left[(\alpha_s - \alpha_n)\pi + \alpha_n - -\delta\pi\alpha_s\theta\right] = \left[\alpha_s - \alpha_n - \delta\alpha_s\theta\right]. \\
&\frac{\partial}{\partial\pi}\left[\frac{CC^r}{X^r}\right] - \frac{\partial}{\partial\pi}\left[\frac{CC^g}{X^g}\right] = \delta\alpha_s\theta.
\end{aligned}
$$

Given our assumptions we know that:

$$\delta\alpha_s\theta > 0.$$

Thus average compensation rises faster when the proportion of tribal constituents rise under reservation than under general elections. This is mostly because there is no rent seeking in tribal elections, which allows the full increase in compensation to increase as tribal populations (that have higher damage) increase. □