Quota entry and persistence: how ritual status continues to shape public policy outcomes in rural India

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ABSTRACT

This study investigates the heterogeneity of outcomes under the National Rural Employment Guarantee Scheme (NREGS), a large-scale public policy implemented by village councils (Gram Panchayats or GPs) in rural India. It specifically considers the interaction between NREGS and quotas of descriptive representation in the state of Uttar Pradesh, India's most populated and one of its poorest states. In the paper, I argue that ritual status, rather than the reservation status per se, should be expected to shape policy outcomes. Using an event study design, I test for two mechanisms – quota entry and quota persistence, and find that overall while reserved GPs have lower outcomes than non–reserved GPs, this effect is largely driven by quotas for members of the Scheduled Castes or SCs. There is also a negative effect of quota persistence on outcomes in GPs that remain reserved for members of the Scheduled Castes. By contrast, there is practically no effect of quota entry or persistence for women and members of the Other Backward Classes or OBC. These results are robust to alternative specifications and to a test for quota rotation, under which a move to SC–reserved status also results in lower outcomes. These findings are at odds with scholarship pointing to the positive effect of quotas of descriptive representation and suggest that ritual status continues to significantly impact the implementation of poverty alleviation policies such as NREGS.

1. Introduction

India has over the last two decades significantly reformed its poverty alleviation strategy, with a growing emphasis on local democratic participation and citizen claim–making. The implementation of two important constitutional amendments (passed in 1992–1993) has not only empowered local government agencies which are now directly elected, but also resulted in the implementation of quotas of descriptive representation for women and members of traditionally marginalized groups such as the Scheduled Castes (SC), Scheduled Tribes (ST) and members of a larger, more heterogenous group, the Other Backward Classes or OBCs. This move has been consistent with a broader push in the post–colonial world to decentralize authority and empower local government agencies with a view to enhance public goods provision, among other things (Manor, 1999).

In India, this expansion of democratic participation and competition has served as the backdrop for another important development – the introduction of a large scale public works program called the National Rural Employment Guarantee Scheme or NREGS. Primarily designed to keep all rural households economically afloat, NREGS – until it was terminated in July of 2026, created an entitlement to 100 days of work at a statutory wage rate available to all rural households. While this policy similarly reflected a move to promote universal entitlements in other countries with a record of poor welfare targeting (Pribble, 2013), there were few other – if any – examples of an interaction between quotas of descriptive representation and the implementation of rights–based policy, especially on such a large scale. In India, more than 250,000 village councils – hereafter referred to as *Gram Panchayats* – are impacted by the enforcement of quotas of descriptive representation, and as of 2024, a policy such as NREGS generated almost 5 billion person–days of work benefitting upwards of 50 million households.[1]

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[1]Source: Ministry of Rural Development, Government of India.

This study takes up the puzzle of the heterogeneity of outcomes under NREGS across village councils or *Gram Panchayats* (GPs) of the state of Uttar Pradesh, one of India's poorest state, and one of major political significance in the country.[2] To the extent that *Gram Panchayats* presidents – known as *Gram Pradhans* in the state of Uttar Pradesh – play an important role in the implementation of the policy, how do quotas of descriptive representation shape the implementation of NREGS? I focus specifically on how reservations – considered as a form of "treatment" – are maintained as opposed to lapsing or rotating among GPs. To evaluate the impact of quotas, I test for two specific mechanisms – quota entry and quota persistence, and consider the overall impact on outcomes of a GP being reserved rather than not, but also the impact by reservation type - women, members of the Scheduled Castes and members of the Other Backward Classes.

To support these claims, I use an original dataset that combines implementation data from the NREGS covering 8 fiscal years with data on the reservation status of approximately 25,000 *Gram Panchayats* in the rural Indian state of Uttar Pradesh over two electoral cycles (2010 and 2015).[3] In order to investigate the impact of quotas on NREGS outcomes conditional on the maintenance of the reservation status, I rely on an event study design that uses the award of a quota of descriptive representation as a "treatment" to compute differences among groups.

I find that while quota entry is detrimental to the implementation of NREGS, this effect is largely driven by the effect of the Scheduled Castes quota. Likewise, quota persistence is especially detrimental to GPs reserved for members of the Scheduled Castes, while having a practically null effect on GPs reserved for members of the Other Backward Classes or OBCs. These results are robust to alternative specification, and to a test for quota rotation, which shows that already reserved GPs are worse off when their reservation status switches to SC from either women or OBC. I discuss these findings against the existing body scholarship on quotas and public policy outcomes but also against the unique political trajectory of the state of Uttar Pradesh in India – a state that has seen the the political assertion of marginalized groups such as the Scheduled Castes, but with limited redistribution in favor of marginalized groups, and where local democratic institutions are of uneven quality. Beyond India, this study provides a cautionary tale for the implementation of quotas of descriptive representation where status–based inequality and low levels of state capacity continue to hold back development.

The paper makes several contributions. It first engages scholarship that has considered the ways in which policy reform can enhance the quality of public goods provision and service delivery more generally (Joshi, 2010; Khera, 2011; Ray, 2016; Veeraraghavan, 2022). The study specifically contributes to a vast literature that has examined the impact of quotas of descriptive representation on the delivery of public goods (Chattopadhyay and Dufflo, 2004; Jensenius and Chhibber, 2023). Secondly, the paper makes a broader contribution to research on the impact of local–level democratization in India as a way to improve governance and accountability (Bohlken, 2016; Sadanandan, 2012, 2017).

The study proceeds in several steps. After reviewing the scope of local level democratization in India and the implementation of the National Rural Employment Guarantee Scheme or NREGS, I discuss the impact of policies that promote descriptive representation on the implementation of public policies. I contrast the impact of quota entry – the subject of a large body of scholarship – with quota persistence to examine the extent to which descriptive representation can empower minority groups and enhance the quality of public service delivery. I then present the empirical methodology, hypotheses and data used to test them. The paper concludes by putting the findings in comparative perspective.

2. Policy reform through democratic participation

Many countries, particularly in the post–colonial world, have sought to empower local government agencies through direct elections. In India, this was initiated by two important constitutional amendments passed and enacted in 1992–1993. This move to pursue accountability was not limited to local elections, however. It also involved a profound

[2] With a population of over 200 million, the state sends 80 representatives (out of 545) to the Lok Sabha, India's Lower House of Parliament.

[3] Data on the reservation status of *Gram Panchayats* was provided by the State Election Commission of Uttar Pradesh, and the reservation status of each *Gram Panchayat* was manually coded.

transformation of state interventions in the field of poverty alleviation, one that has chiefly involved an emphasis of citizenship and claim–making. I briefly discuss each development in turn.

2.1. Local level democratization and quotas of descriptive representation

Democratization is often associated with regime change and the transition from authoritarianism to multiparty democracy. Just as remarkable however is the extent to which countries have pursued local level democratization at the subnational level, in places as diverse as Latin America (Falleti, 2010; Willis and Haggard, 1999) or Africa (Dickovick and Wunsch, 2014). Democratization has often been combined with forms of devolution, allowing citizens to hold local elected officials for an increasing number of state interventions and policies (Faguet, 2014; Manor, 1999). In India, the push to democratize at the local level came with two important amendments to the Constitution in 1992–1993 (Bohlken, 2016).[4] Specifically, the 73rd and 74th Amendments to the Constitution constitutionalized local government in India through the creation of a uniform structure of local elected institutions, along a three-tiered administrative structure that has come to be known as the *Panchayati Raj*.[5] [6] Under the current legislation, each governance level has a council headed by an elected chair. At the village level for instance, the village council or *Gram Panchayat* includes a village assembly or *Gram Sabha* which elects a *Gram Panchayat* president known under different names across India.[7]

Importantly, not only did these amendments mandate local elections, but they also required the enforcement of quotas of descriptive representation, with a view to make local government agencies more inclusive and ultimately more responsive to the needs of traditionally marginalized communities. Policies of affirmative action were not new in India, since the constitutional amendments extended quotas of descriptive representation – already implemented for state and national elections since 1951 – to the local institution of the *Panchayati Raj*. Of particular importance to this study are the provisions for descriptive representation that allowed the assignment of quotas for women and members of traditionally marginalized groups such as the Scheduled Castes or SC and Scheduled Tribes or ST. While women have generally been assigned a third of the seats,[8] the proportion of seats reserved for other groups has tracked the proportion of the population belonging to these groups.[9] Some states have gone further by assigning seats to additional groups, such as the Other Backward Classes or OBC, a large group of economically heterogeneous castes, bringing the total percentage of seats reserved to well over 50%. This has notably been the case in the state of Uttar Pradesh, which has since the 1980s been one of the states most affected by the political assertion of previously marginalized groups.[10] Again, other countries have pursued policies of affirmative action to enhance the political representation of historically marginalized communities (Krook, 2014). Gender quotas have thus become popular in Latin America (Baldez, 2004), Africa and the Middle East (Noh and Shalaby, 2024), at times reserving elected positions or sometimes encouraging parties to nominate a higher share of female candidates (Htun, 2016).

Local level democratization in India truly stands out in the combination of decentralization and quotas of descriptive representation and a significant push by the state to use these institutional mechanisms to enhance service delivery at the local level. While local level democratization has been pursued in both urban and rural areas, it has been especially consequential in the latter, as over 60% of India's population continues to live in the countryside. But even more importantly, the push to democratize local government has come with a new emphasis on citizenship as a means to access social services, as has been the case with NREGS, the empirical focus of this study.

[4] The move was also seen as especially momentous given the reluctance at the time of Independence to empower local government (Khosla, 2020).

[5] The 73rd Amendment articulates decentralization in rural areas and the 74th Amendment replicates the decentralized structure of local government in urban areas (Bohlken, 2016).

[6] In rural areas, the *Panchayati Raj* includes the *Zilla* [district] *Panchayat*, *Block Panchayat* and *Gram* [village] *Panchayat*.

[7] In the state of Uttar Pradesh, the *Gram Panchayat* president is known as *Gram Pradhan*, *Sarpanch* in Rajasthan and *Mukhiya* in Bihar. In the rest of the study, I will refer to them as *Gram Pradhan*.

[8] See Brule (2020b,a) in particular.

[9] In practice, the share of seats awarded to women is well over 30%, to the extent that seats are also reserved for women who belong to minority groups.

[10] In the state of Uttar Pradesh, the quota for members of the Other Backward Classes includes Muslims belonging to this broader group of castes. At the national level, and in other states, Muslims are typically excluded from affirmative action policies, specifically policies that mandate quotas of descriptive representation.

2.2. The introduction of rights–based policies

The Indian state has since the early 2000s changed its approach to poverty alleviation, with the introduction of policies emphasizing citizen claim–making. One of the most spectacular illustrations of this policy shift has been the introduction of the National Rural Employment Guarantee Scheme or NREGS. NREGS follows the enactment by the Indian Parliament in 2005 of an entitlement to 100 days of work, available to all citizens, with a view to bolstering the safety net and enhancing accountability at the local level.[11] The emphasis on a demand for benefits and the self–enforcement of rights by citizens was seen as a critical step to prevent discretionary decision–making which too often resulted in inadequate targeting and leakages (Gupta, 2012).[12] This legislative milestone not only echoed similar policy shifts in other post–colonial polities,[13] but also paved the way for the creation of a Right to Education,[14] and a Right to Food Act, passed respectively in 2009 and 2013.

The Right to Work remains to this day the most emblematic of these rights–based policies. Initially launched in a limited number of districts in 2005, the implementation of NREGS was extended to all Indian states and territories by 2007. While recently terminated,[15] the policy in FY 2024–2025 delivered 3 billion person–days of work at a budget of just under US$9 billion.[16] NREGS was remarkable not just because of its scope, but also because of the specific incentives it provided to the rural Poor. For instance, in contrast with earlier attempts to alleviate rural poverty, NREGS critically relied on self–selection. Citizens were expected to make claims on representatives from the state in order to avail themselves of benefits. Critically, however, the realization of these claims not only depended on community deliberation for the selection of projects, but also on the mediation of local level elected officials - the *Gram Panchayat* presidents or *Gram Pradhans*, particularly as the bureaucracy remained responsible for the payment of wages (which was done electronically).

2.3. Variation in outcomes under NREGS

As should perhaps be expected in a “continent that masquerades as a country,"[17] the implementation of NREGS has been uneven since the scheme was launched. Theoretically at least, the variation in outcomes – such as the number of person–days of work – should reflect varying levels of deprivation across the different Indian states, and, to the extent that the implementation of the scheme is fully decentralized, varying levels of poverty where the demand for benefits is most likely to emerge – the *Gram Panchayat* level. All things being equal, self–selection should ensure that only the individuals who need wages derived from work performed will indeed come forward to claim work. Patterns of self–selection should track with the rural labor market, especially as the scheme was designed to provide temporary employment opportunities during slack agricultural periods.

While the absence of a demand for work could also, to some extent, reflect the lack of absorption capacity, i.e. the lack of needed infrastructure, there are reasons to believe that the variation in outcomes will likely not be entirely reducible to economic needs. Varying levels of literacy, access to information combine with the relative presence (and quality) of state institutions to create an “uneven welfare terrain" (Kruks-Wisner, 2018), which is likely to shape the implementation of the program.[18] This suggests that the variation in outcomes can also be expected to reflect different forms of political mediation, particularly at the local level, where countless fixers and brokers can potentially help citizens access state benefits (Manor, 2000; Krishna, 2002). There is in fact evidence in the context of NREGS that the

[11] See Jenkins and Manor (2017) for a detailed history of the Right to Work movement in India in the early 2000s.

[12] At the same time however, the legislation did not make the Right to Work enforceable in court, unlike similar legislation passed in several other countries in the global South, such as South Africa, or Colombia.

[13] See Holland (2016) in the Latin American context and Ray (2016) in South Africa.

[14] Known officially as the Right of Children to Free and Compulsory Education Act

[15] See https://frontline.thehindu.com/the-nation/mgnrega-repeal-vb-gramg-right-to-work-india/article70459731.ece

[16] See https://economictimes.indiatimes.com/news/india/nregs-may-get-extra-funds-to-meet-higher-work-demand/articleshow/118793078.cms

[17] *The Economist*, May 21st 2015 (https://www.economist.com/special-report/2015/05/21/how-to-run-a-continent).

[18] These state institutions may themselves have a relative ability to embrace, and respond to, citizen demands (Dasgupta and Kapur, 2020). While the implementation of NREGS is largely decentralized, bureaucrats remain responsible for key administrative decisions, such as the disbursement of wages. These administrative tasks form many nodes of discretionary authority that are likely to distort the emergence of a spontaneous demand for benefits (Veeraraghavan, 2022). Additionally, bureaucrats do not perform in a political vacuum and remain to some extent accountable to elected officials (Gulzar and Pasquale, 2017; Migdal, 1988), particularly when politicians control their transfers and promotion (Iyer and Mani, 2012).

implementation of the scheme is potentially shaped at the state level, either to reflect rationing (Gulzar and Pasquale, 2017; Jenkins and Manor, 2017), or to reflect a more pro–poor political agenda (Maiorano, 2014). Local elected officials – the *Gram Panchayat* presidents in particular – appear to play a unique role in articulating the emergence of the demand for benefits (Dunning and Nilekani, 2013; Marcesse, 2018).

3. Quotas and the political economy of poverty alleviation

The implementation of NREGS sits at the interaction of local level democratization and the transition to policies emphasizing citizenship and self–selection. Because the program specifically emphasizes the emergence of a demand for benefits, the emphasis on self–selection should prod the poorest citizens in rural areas to effectively step forward and "claim" their right to work. At the same time however, local elected officials are instrumental in facilitating deliberation at the local level and conveying citizen demands to the bureaucracy. What role can quotas of descriptive representation play in shaping outcomes?

3.1. How quotas shape livelihoods and public policies

The introduction of quotas of descriptive representation has spawned a rich literature in economics and political economy, touching on various aspects of their implementation and the way they have reshaped the relationship between the state and citizens, between parties and citizens and among citizens themselves (Besley, Pande, Rahman and Rao, 2004; Besley, Pande and Rao, 2007). An important research agenda has looked specifically at the alignment between reservations and preferences for public goods (Chattopadhyay and Dufflo, 2004). Additional studies have confirmed these findings for health and education, for instance (Bhalotra and Clots-Figueras, 2014; Clots-Figueras, 2012). But there is also evidence to suggest that the impact of quotas has been more mixed, if not outright negative (Bardhan, Torrado and Mookherjee, 2010). In the case of gender quotas, Brule (2020a) shows that the extent to which women have indeed been empowered at the local level is conditional on broader institutional changes, such as a change in inheritance laws. Anecdotes describing the *purdah ke picche panchayat* [panchayat behind the veil], whereby male relatives of an elected woman *Gram Panchayat* president effectively replace her as the local executive, abound (Pal, 2004).

Research on the impact of quotas for members of traditionally marginalized groups, such as the Scheduled Castes or the Scheduled Tribes echoes in large part the research on gender quotas. For instance, the quotas have contributed in no small way to changing perceptions of marginalized groups, though prejudice from traditionally privileged groups does not seem to have disappeared, even when no longer publicly expressed Chauchard (2017).

Existing evidence on the interaction between quotas and the implementation of NREGS is similarly mixed. For instance, while quotas appear to have generated interest among women for short term employment, there appears to have been little if any discernible impact on actual *outcomes* for women (Bose and Das, 2018). By contrast, other studies of NREGS show that the Scheduled Castes and Scheduled Tribes have largely benefited from the implementation of the program, at the expense of traditionally privileged groups (Gulzar, Haas and Pasquale, 2020). There are nevertheless important gaps in the study of quotas, particularly as they are likely to shape the implementation of NREGS. One that this study purports to fill is the extent to which quotas build the capacity of local elected officials tasked with mediating the claims of citizens at the local level and conveying the demands of citizens to the local bureaucracy which is still responsible for the delivery of policy benefits in the form of wages. Quotas that persist could indeed be expected to build the capacity of local elected officials, which over time gain experience dealing with the bureaucracy and other policy procedures. However, against the backdrop of high levels of economic and status based inequality, this learning process might still be limited.

3.2. How *quota entry and persistence* shape NREGS implementation

The implementation of NREGS hinges to a large extent on local government agencies such as the *Gram Panchayats* or GPs where citizens claim their entitlement to work days and where deliberation takes place to select projects. As such, the implementation of quotas of descriptive representation is likely to shape the implementation of NREGS in

two important ways. First, it creates leadership opportunities for individuals who belong to traditionally marginalized groups that may not always be in a position to compete electorally. Second, the persistence of quotas (as opposed to quotas lapsing) should be expected to help these elected officials gain experience implementing government programs. While I associate the former mechanism with *quota entry*, the second is associated with *quota persistence*. Both are particularly important in the context of NREGS and I discuss their potential impact in turn.

Quota entry creates opportunities for the representation of traditionally marginalized groups with a view not to just to enhance the psychological benefits of representation for members of traditionally marginalized groups, but also to enhance the quality of public policy implementation particularly as it benefits these groups. For instance, NREGS, with its focus on short term employment opportunities that require few skills is likely to benefit members of groups such as the Scheduled Castes, who are themselves the beneficiaries of quotas of descriptive representation. Thus, one should expect members of traditionally marginalized groups to pay particular attention to poverty alleviation policies that benefit themselves and their peers, and at a minimum to implement the policy with a view to maximize benefits to the community at large, and possibly to their own group members. This effect could be conditional on the *type* of reservation award: members of the Scheduled Castes are on the whole in many ways worse off economically than members of the Other Backward Classes. Given the endurance of patriarchal norms in India, gender could be expected to intersect with other forms of discrimination to magnify the effect of reservations.

By contrast, quota persistence should be expected to shape outcomes differently, by providing a form of institutional continuity and thus helping build the capacity of local elected officials. This could be particularly consequential when GPs are reserved to either women or members of traditionally marginalized. Indeed, there may be a learning curve for many government policies which require familiarity with government rules but also developing a relationship with the bureaucracy, who remains – in the case of NREGS and other policies, in charge of the delivery of policy benefits such as wages for work performed. It should be added that the institutional learning effect could be expected to work both in the case of quota entry not resulting in higher outcomes and in the case of quota entry generating higher outcomes. Additionally, much like with quota entry above, one could expect the effect of quota persistence to be ultimately conditional on the *type* of reservation award, as reservations are made for groups with varying levels of socio–economic development.

This theory generates two main hypotheses, which I proceed to test in the remained of the paper. The first hypothesis (H1) is that quota entry produces *higher* outcomes relative to GPs that remained non–reserved. This empirical expectation is consistent with the argument that quotas should enhance the quality of service delivery, and the implementation of public policies in general, by creating leadership opportunities for members of traditionally marginalized groups who stand to benefit from these policies. I test for a general effect of quota entry, before disaggregating the effect by quota type (women, Scheduled Castes and Other Backward Classes). The null hypothesis is that of no effect of reservations (regardless of their type) on program outcomes.

The second hypothesis (H2) is that quota persistence produces *higher* outcomes relative to GPs who reservation status lapsed to return to the non–reserved pool. Again, I begin the analysis by considering all reserved GPs and then disaggregate the analysis by type of reservation status. The null hypothesis is that of no effect of quota maintenance (regardless of their type) on NREGS outcomes. As a robustness check, I consider also the case of GPs whose reservation status changed, rather than returned to the non–reserved pool. Because the reservation system benefits members of traditionally marginalized communities, I still expect NREGS outcomes to be *higher* than outcomes in the non–reserved pool.

3.3. Data

I use an original dataset which combines implementation data from the NREGS over 8 fiscal years (2012–2020) with data from the 2011 Census of India and data on the reservation status of *Gram Panchayats* as provided by the State Election Commission of Uttar Pradesh.[19][20] In the state of Uttar Pradesh, the empirical focus of this study, 30%

[19]The data is available at `https://sec.up.nic.in/ElecLive/SearchReservationOnPost.aspx`.

[20]The state of Uttar Pradesh passed legislation to create and specify the boundaries of *Gram Panchayats* as early as 1947, legislation that was amended in 1961 ("United Provinces Panchayat Raj Act," 1947 and "*Uttar Pradesh Kshettra Samities and Zilla Parishads Adhinyam*," 1961

of the seats are by law reserved for women, while no more than 27% of the seats are reserved for members of the Other Backward Classes, and reservations for members of the Scheduled Castes are based on the proportion of the population belonging to the Scheduled Castes.[21] [22]

To the extent that the analysis relies on a number of control variables that are provided by the Census of India, and with a view to ensure unit homogeneity, I proceeded to match the data from NREGS and from the Election Commission of Uttar Pradesh with data from the Census of India, which unlike NREGS and the Election Commission, collects data at the revenue village level (a smaller administrative unit).[23] I did this through fuzzy matching using a directory of *Gram Panchayats* provided by the government of India, to ensure that each revenue village was matched to his "parent" *Gram Panchayat*.[24] [25] [26] Because of the smaller number of *Gram Panchayats*, there were originally fewer NREGS observations than census observations, but because there is generally more than one census village in any *Gram Panchayat*, NREGS observations were often matched more than once.

The final dataset thus contains 51,430 census villages, out of an original dataset of 109,000 census villages from the 75 districts of Uttar Pradesh.[27]. To these census villages I was able to successfully match 24,447 out of approximately 59,000 *Gram Panchayats* in that state. This means the attrition rate was around 50% for census villages and approximately 65% for *Gram Panchayats*, on average.[28] Table 1 provides a detail breakdown of the attrition rates according to the reservation status of *Gram Panchayats* (for both the 2010 and 2015 elections). The breakdown by district for the entire state is included in Appendix A.

I coded the GPs according to the reservation status, and created an aggregated category for reserved GPs (regardless of the type of reservation). Non–reserved GPs are thus coded as 0, while GPs reserved for women (regardless of caste), male members of the Scheduled Castes, male members of the Other Backward Classes, female members of the Scheduled Castes and female members of the Other Backward Classes are reserved as 1, 2, 3, 4 and 5, respectively. I also created two additional variables that capture whether a *Gram Panchayat* was reserved for the Scheduled Castes (men and women) and for the Other Backward Classes (men and women). Because I coded data from two electoral cycles, some *Gram Panchayats* see their reservation status change overtime. Of particular importance for the difference–in–differences analysis, some *Gram Panchayats* remain unreserved during the entire period under consideration (however, the dataset includes some *Gram Panchayats* not reserved in 2010 and or 2015 that were plausibly reserved before 2010).

(http://panchayatiraj.up.nic.in/pblc_pg/Docs/Acts-Rules.) to create block-level and district-level panchayats. This move followed the release of the 1957 Balwantrai Mehta report which recommended the establishment of a three-tiered democratic structure. Elections to *Gram Panchayats* were in fact held before the introduction of the 73rd and 74th constitutional amendments, albeit infrequently – they had been held six times between 1947 and 1996 (1949, 1955, 1961-1962, 1972-1973, 1982 and 1988). This legislation was modified in 1994 to take stock of the constitutional amendments and create reservations for women, members of the Scheduled Castes, and, following the implementation of the Mandal Commission report (formed by the central government to investigate the socio–economic conditions of a large group of castes situated above the Scheduled Castes but not belonging to the "Forward Castes") members of Other Backward Classes, which Uttar Pradesh has embraced, unlike other Indian states.

[21] The percentage is set at 20.7% in Uttar Pradesh, which corresponds to the share of the population belonging to the Scheduled Castes (Census of India 2011).

[22] The elections held since 1996 under the framework of the constitutional amendments have remained officially nonpartisan, though the opportunity of allowing party labels has been repeatedly discussed (but not implemented).

[23] While they occasionally overlap with one single revenue village, *Gram Panchayats* are generally formed of several revenue villages.

[24] The directory is available at the following https://lgdirectory.gov.in/.

[25] This involved first attaching the directory to the census file and then separately to the NREGS file, before matching both files using fuzzy matching. Fuzzy matching was done using a specification of the STATA matchit package called tokensoundex which yielded better matches than soundex or bigram specifications that are less sensitive to Indian names and Roman spelling.

[26] The soundex package provides a similscore (=< 1), but some observations were mismatches, even with a similscore of 1. I chose to manually eliminate imperfect matches (with a similscore between 0 and 1), and mismatches that had a score of 1. This required a review of all matches at the block level.

[27] The state of Uttar Pradesh has added a number of districts in recent years, which included *tehsils* or blocks that were part of older, existing districts. In most cases I was able to match observations at the block level, provided the blocks had not been subdivided. This was case for two of the districts, which I manually verified (at the block level) to ensure data quality

[28] Much of this attrition owes to the conditions in which the data are recorded, because the spelling of gram panchayats often differs between the Census of India and the NREGS database.

Table 1
Reservation status of *Gram Panchayats* for 2010 and 2015 (total number and data sample). Source: Election Commission of Uttar Pradesh.

Reservation status (*Gram Panchayat*)	2010	2010 (sample)	% total	2015	2015 (sample)	% total
Unreserved	18,080	8,959	49.55	19,718	9,073	46.01
Reserved for women	8,293	4,453	53.69	9,562	5,497	57.48
Reserved for members of the SC	7,090	3,928	55.40	7,661	3,809	49.71
Reserved for members of the OBC	9,413	5,108	54.26	9,997	4,761	47.62
Reserved for female members of the SC	3,800	2,167	57.02	4,222	1,966	46.56
Reserved for female members of the OBC	4,881	2,713	55.58	5,487	2,483	45.25

3.4. Empirical strategy

Measuring the impact of policies of descriptive representation on social outcomes or program outcomes in the case of NREGS is fraught with challenges. Since local democracy is a prerogative of the states in India, rather than the central government, the former have retained a lot of latitude with respect to local elections, and specifically elections to the *Panchayati Raj* institution. Not only do they organize elections according to their own chosen schedule, but they also have embraced different approaches with respect to the assignment of quotas of descriptive represent. While some states make that assignment randomly or quasi randomly, others consider the distribution of caste groups to make the reservation assignments.[29]. This is precisely the case in the state of Uttar Pradesh – the main source of data for this project – where the decision to award a reservation is usually based on a rapid demographic survey (and is attuned to redistricting at the local level).[30] Among other things, this means that GPs reserved for the Scheduled Castes for instance tend to have a higher share of Scheduled Castes, all things being equal.

To test both H1 and H2, I employ a difference-in-differences or DiD design that exploits the 2015 local elections as a source of exogenous variation in quota status. Importantly, and because of the absence of random assignments, I verify the parallel trends assumption using an event study specification, replacing the post-period indicator with year-specific treatment interactions and testing whether pre-treatment coefficients are jointly insignificant.[31] A successful test fo the parallel trends as a key identifying assumption would suggest that in the absence of quota persistence/lapse, treatment and control groups would follow the same trajectory.

To carefully test for a difference between “treated" and “untreated" group, I choose to use an entirely “untreated" baseline. And because the “treatment" is different for both H1 and H2, that “untreated" baseline for each hypothesis. In the case of H1, the data should reflect an entirely untreated baseline of GPs that were not reserved in 2010, but were either reserved or remained non–reserved after the 2015 local elections. For H2 however, the analysis requires an untreated baseline of GPs that were *all* reserved in 2010. I thus use different samples of the dataset for each of the hypotheses.

The difference–in–differences regression is specified below:

$$Y_i = \beta_0 + \beta_1 * Time_i + \beta_2 * Treatment_i + \beta_3 * Time_i * Treatment_i + \beta X_i + \epsilon_i, \quad (1)$$

Where Y are the dependent variables (log person–days of work and log total spending under NREGS from 2012–2020), $\beta_1 * Time_i$ captures the change in the outcome variable over time that is common to both treatment and

[29]For instance, states such as Rajasthan and Karnataka enforce a quota system, in which the rotation of reserved gram panchayats is done randomly. Some *Gram Panchayats* may be reserved during an election cycle and returned to the main unreserved pool during the next election cycle. See Bhavnani (2009); Chauchard (2014) and Dunning and Nilekani (2013) for a detailed overview of these procedures.

[30]Some *Gram Panchayat* boundaries are redrawn ahead of an election, to account for population growth, among other things. This dataset only includes *Gram Panchayats* whose boundaries did not change in 2015.

[31]For a discussion of the merits of the differences–in–differences approach, particularly with observational data, see Gulzar, Lal and Pasquale (2023).

control group, $\beta_2 * Treatment_i$ captures the baseline difference between treatment and control group even before the experiment and $\beta_3 * Time_i * Treatment_i$ the difference–in–differences estimator, and βX_i coefficients for a vector of covariates that could have a confounding effect on outcomes, such as data on annual rainfall, and annual deviations in rainfall from 10–year averages and ϵ_i an error term.

The DiD employs a two–way fixed effects methodology, where the regression includes fixed effects for time and for the treatment groups. This methodology has been criticized de Chaisemartin and D'Haultfœuille (2020); Goodman-Bacon (2021) for providing an average of treatment effects across different comparisons – between treated group and never treated, between treated group and not yet treated, and between treated group and newly treated – making any causal interpretation of the causal parameter of interest challenging especially if there are more than two events or treatments. As a robustness check, I offer a test of both hypotheses using an alternative specification – heterogeneous treatment effects using doubly-robust reweighing to address compositional differences between treated and control villages. For H2 specifically, I use two–way clustering (at the GP and year level).

Another concern has to do with the potential heterogeneity of GPs that constitute the 2010 baseline. In the state of Uttar Pradesh, not only is assignment of reservation status not done at random, but the rotation is done with a view to avoid repetition across electoral cycles, meaning that GPs that was were reserved in 2005 were systematically less likely to be reserved in 2010. The control group of unreserved GPs in 2010 thus includes GPs that were "exposed" to a reservation "treatment" in prior years, a potential source of bias for my estimates, especially if prior "treatment" were to have shaped the implementation of NREGS before 2010. While we can't completely rule out the lasting effects of a prior reservation assignment (from 2005 and before) - in that some GPs unreserved in 2010 would have retained some "institutional memory" of a prior reservation status, this is likely to be less of a problem for NREGS outcomes specifically. While the policy was officially launched in 2005, it was only implemented in a limited number of districts across India starting in 2006–2007 before being rolled out in the rest of the country in 2007–2008, meaning GPs reserved in 2005 would have implemented the policy for about two years before reverting to an open seat status in 2010.

In order to determine whether GPs reserved in 2005 are systematically different from those unreserved in 2005 and still unreserved in 2010, I offer an empirical test that leverages the fact that SC population share is the primary determinant of SC quota assignment under the Uttar Pradesh rotation formula. Indeed, GPs with above–median Scheduled Castes population share that are unreserved in 2010 are the most likely to be have been reserved for the Scheduled Castes in 2005; conversely, those with below–median Scheduled Castes share are unlikely to have been reserved for the Scheduled Castes in prior cycles (2005 and 2010). I thus estimate the Scheduled Castes adoption effect separately for these two groups and test whether the effect is systematically larger among likely–prior–exposed GPs. Should the Scheduled Castes interaction be statistically indistinguishable from zero, this would mean that prior exposure to the treatment in 2005 would not suggest any bias in my estimates; conversely, a larger effect for GPs with a prior exposure to the Scheduled Castes reservation "treatment" would not bias my estimates, but at a minimum amplify whatever effect was detected in the analysis. I include the Scheduled Castes bias analysis as a robustness test below.

To reiterate, H1 tests for a difference in outcomes between GPs that were reserved and GPs that were not (starting with a pooled reservation status, and then disaggregated by type of reservation) using an entirely *2010 unreserved baseline*. Second, H2 looks for evidence of a difference in outcomes between GPs that were reserved and GPs whose reservation status lapsed (starting with a pooled reservation status, and then disaggregated by type of reservation) using an entirely *2010 reserved baseline*.

4. Balance and parallel trends tests

Before carrying out the DiD analysis, I performed balance tests and also tested for parallel trends, for both H1 and H2. The data for balance tests is included in the Appendix (Tables 2 to 5 for H1 and 6 to 9 for H2), and I present only the figures representing the tests of the parallel trends assumption for each hypothesis.

4.1. H1: effect of quota adoption on outcomes (non reserved baseline)

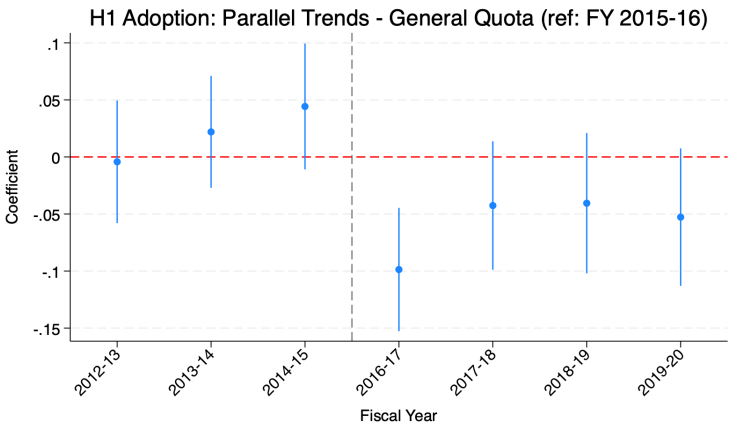


Figure 1: Parallel trends, pooled reservation status, untreated baseline (2012–2020)

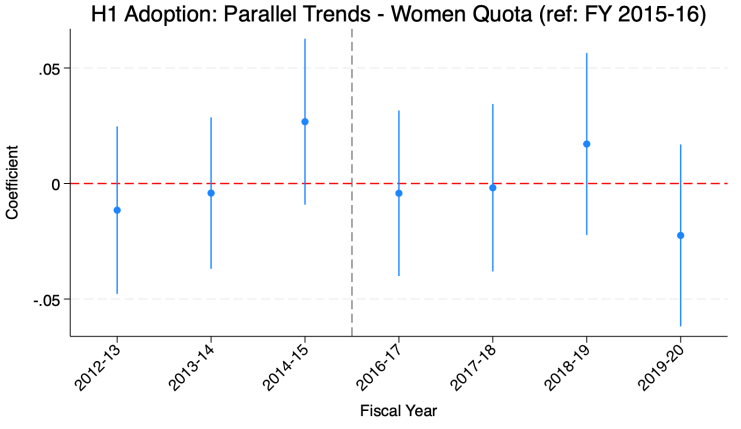


Figure 2: Parallel trends, GPs reserved for women (all castes), untreated baseline (2012–2020)

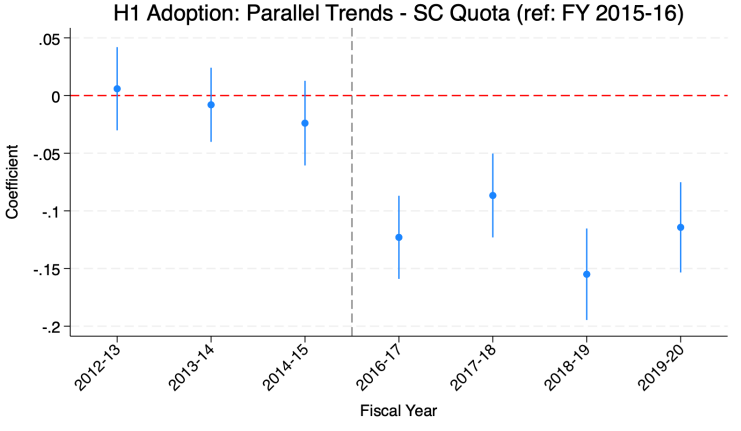


Figure 3: Parallel trends, GPs reserved for Scheduled Castes, untreated baseline (2012–2020)

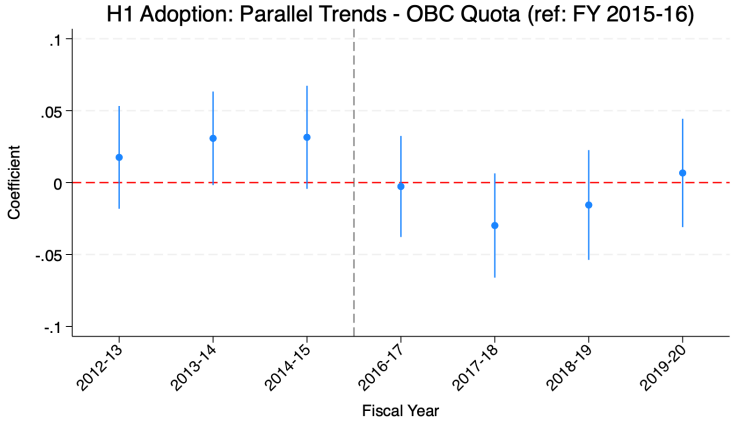


Figure 4: Parallel trends, GPs reserved for Other Backward Classes, untreated baseline (2012–2020)

While the balance tests point to differences between groups, all comparisons pass the parallel trends test, suggesting that both groups of GPs showed no diverging trends prior to treatment assignment, despite the absence of the random assignment to a reservation status.

4.2. H2: effect of quota persistence on outcomes (reserved baseline)

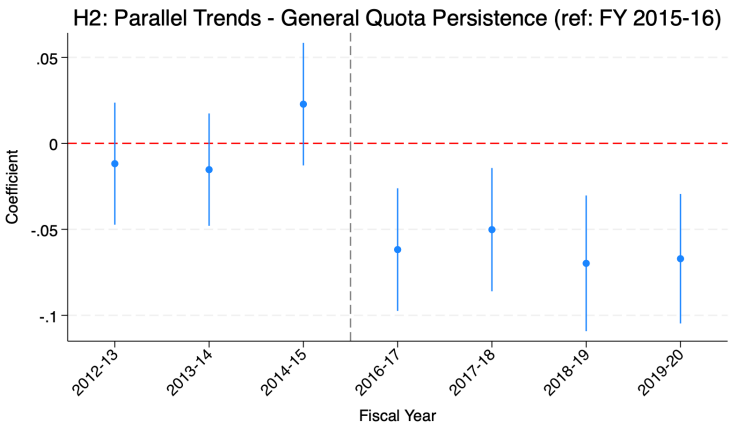


Figure 5: Parallel trends, pooled reservation status, treated baseline (2012–2020)

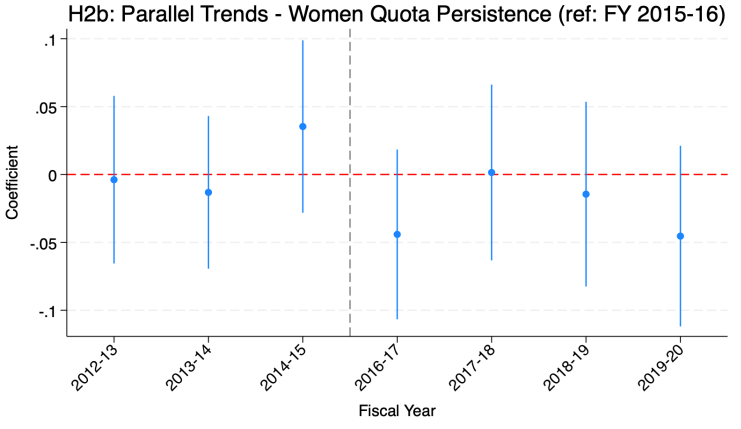


Figure 6: Parallel trends, GPs reserved for women (all castes), treated baseline (2012–2020)

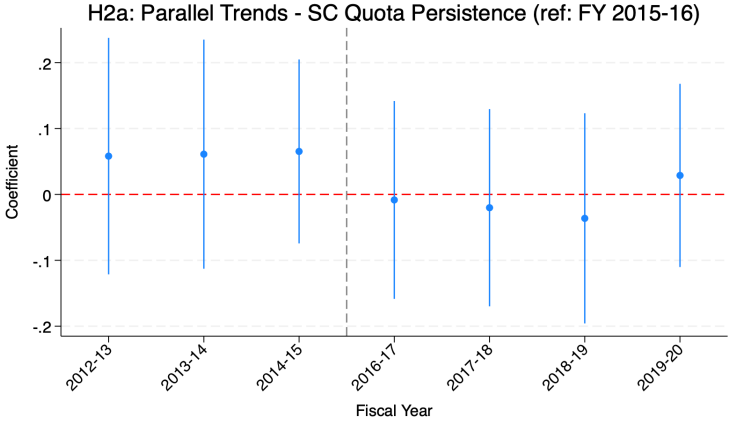


Figure 7: Parallel trends, GPs reserved for Scheduled Castes, treated baseline (2012–2020)

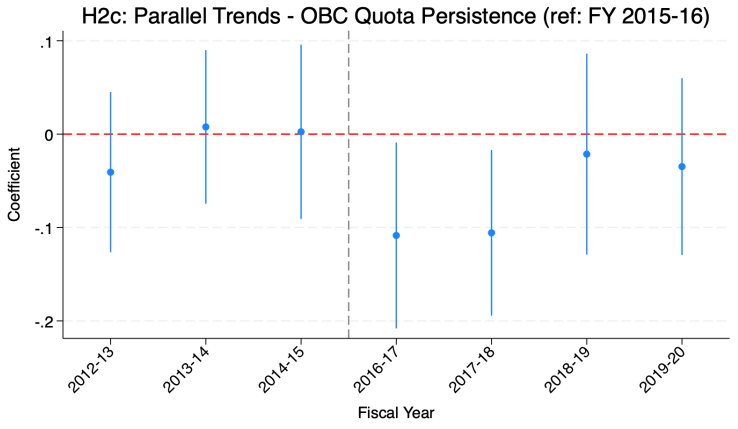


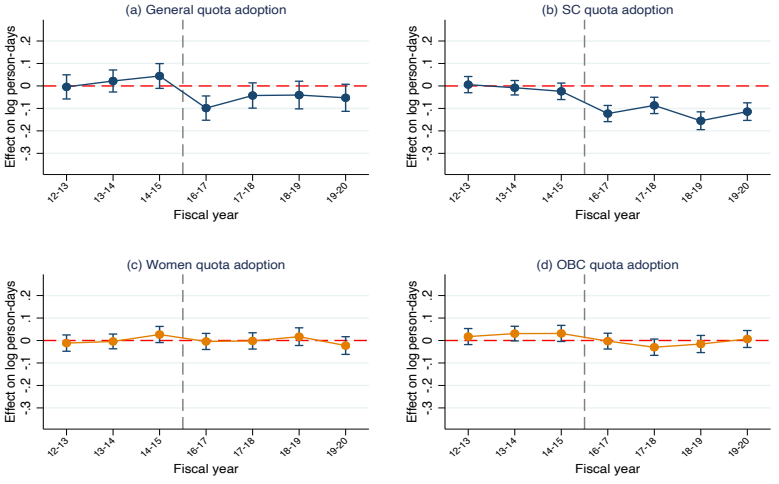
Figure 8: Parallel trends, GPs reserved for Other Backward Classes, treated baseline (2012–2020)

All three quota types pass the parallel trends test, validating the DiD design, again despite the absence of random assignment to a reservation status.

5. Results

I now turn to the results for each Hypothesis. In the case of H2, I also include results for quota rotation, i.e. for GPs originally reserved in 2010 and whose reservation status rotated without lapsing. While figures 9 and 10 below plot the different coefficients by hypothesis, and by assignment status (General, women, Scheduled Castes and Other Backward Classes), figure 11 provides a coefficient “ladder" which summarizes the effect of rotation as opposed to reservation status lapsing. Tables 10 to 13 in Appendix report coefficients for H1, while tables 14 through 18 report coefficients for H2 (general persistence, then persistence disaggregated by reservation status, and rotation analysis for women, SC and OBC).

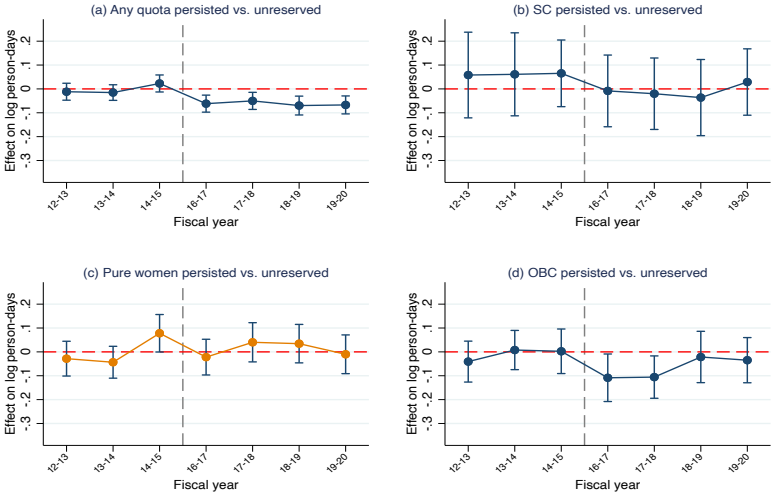
Figure 1: Quota Adoption and NREGS Person-Days



TWFE with village and year FE. SE clustered at GP level. 95% CI. Reference: FY 2015-16.
Blue: caste quotas (SC, general). Orange: women/OBC quotas.

Figure 9:

Figure 2: Quota Persistence and NREGS Person-Days



Control: became fully unreserved. Rotated villages dropped. SE clustered at GP level. 95% CI. Referer

Figure 10:

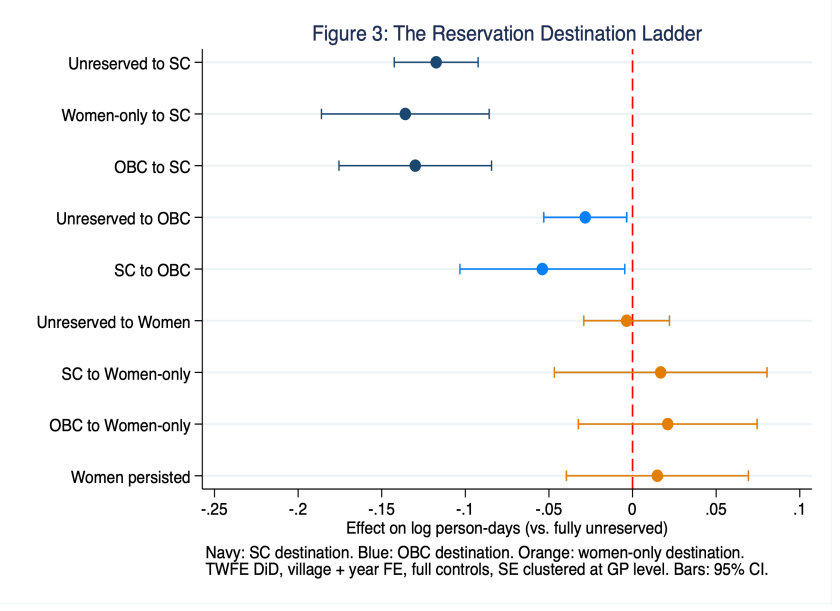


Figure 3: The Reservation Destination Ladder
Unreserved to SC
Women-only to SC
OBC to SC
Unreserved to OBC
SC to OBC
Unreserved to Women
SC to Women-only
OBC to Women-only
Women persisted
-.25
-.2
-.15
-.1
-.05
0
.05
.1
Effect on log person-days (vs. fully unreserved)
Navy: SC destination. Blue: OBC destination. Orange: women-only destination.
TWFE DiD, village + year FE, full controls, SE clustered at GP level. Bars: 95% CI.

Figure 11:

As a robustness check, I rely on two alternative approaches: two–way clustering (GP x year) and the doubly robust estimator CSDID from Callaway and Sant'Anna (2021) to account for heterogenous treatment effects.[32] Table 21 reports the coefficients for double clustering (in the case of H2). Tables 19 and 22 report the coefficients for CSDID (for each of H1 and H2, respectively). In the case of H2, the results are robust to two-way clustering (GP × Year) with standard errors changing minimally (1-13%), and statistical significance remains preserved. Overall, CSDID confirms the null findings from TWFE, with slightly smaller point estimates for SC and Women, and larger negative estimates for OBC.[33]

I also consider the extent to which pre–treatment exposure could bias estimates. In other words, I test for systematic differences among GPs that are part of the 2010 untreated baseline. As explained above, the absence of random reservation assignment creates the possibility that GPs assigned a treatment in 2015 might have been "treated" before 2010. I use the share of the population of a GP that belongs to the Scheduled Castes as a potential (and likely) proxy for a 2005 reservation assignment. I divide the GPs in two groups: one group with an above median share of Scheduled Castes and another with a below median share. Because above median GPs *not reserved in 2010* were likely to have been reserved before (in 2005), I test for a difference in outcomes under the 2015 reservation treatment between them GPs with a below median share of Scheduled Castes. I report results in Table 20. In both cases, outcomes are worse under the 2015 reservation assignment, though the penalty is marginally higher in above median GPs (11% vs. 8%).

6. Discussion

Taken together, these result suggest that the implementation of reservations is consequential conditional on the type of reservation category. There is in both the case of quota adoption and quota persistence a "penalty" associated with the assignment of GP to the Scheduled Castes. While general adoption is associated an 11% reduction of outcomes under NREGS, this result is almost entirely driven by the Scheduled Castes category, since the quota adoption does not have an effect on GPs reserved for women and members of the Other Backward Classes.

To some extent, the analysis of quota persistence produces results that are consistent with the results of quota adoption. GPs whose reservation status was maintained after 2015 had outcomes that were on average 6.5% lower than GPs that returned to open status. Unlike the case of quota adoption, this was more likely to be the case for GPs reserved for the Other Backwards Classes, though the effect appeared to be more pronounced immediately after the continuation of the quota assignment. While results for the Scheduled Castes suggest a decrease in outcomes relative to GPs that have reverted to open status, that result is largely underpowered, given the small number of GPs who remained reserved for the Scheduled Castes (742) relative to the control group of initially reserved GPs that have returned to open status. Results for women show no impact of a continuation of reservation status relative to GPs that were not reserved after 2015.

As a variant of H2, I also considered the case of GPs initially reserved in 2015 whose reservation assignment *rotated* and compared them to GPs whose reservation status lapsed. In other words, I considered the case of GPs that continued to be reserved, but whose *reservation* type changed. Results from this analysis of quota rotation is largely consistent with the specific "penalty" associated with the Scheduled Castes. For example, GPs that saw their reservation status change to Scheduled Castes (from either women or OBC) had lower outcomes than GPs returned to the non reserved pool (-13.6% for GPs changing from women to SC and -13% for GPs changing from OBC to SC, respectively). By contrast, there was no virtually no impact of rotation relative to status maintenance (such as when GPs whose reservation status rotates are compared to GPs whose reservation status was maintained), except in the case of GPs reserved for women (i.e. GPs continuously reserved for women vs GPs that were subsequently reserved for SC or OBC), in which case GPs that rotated had on average outcomes 5% lower than GPs continuously reserved for women.

Overall, these results contrast with a large body of scholarship that has studied the impact of quotas of descriptive representation on the provision of public goods for instance Chattopadhyay and Dufflo (2004) or intergroup relations Chauchard (2014). Importantly, they emphasize the unique role played by caste in shaping outcomes more than the reservation itself. Indeed, both hypotheses emphasize the "penalty" associated with a Scheduled Castes reservation

[32] I only ran two–way clustering for H2.

[33] Parallel trends are strongly supported for both H1 and H2 using CSDID, though there is some evidence of pre–trend divergence in 2012–13 when considering the case of OBC reservations ($p = 0.022$).

more than a women or OBC reservation. Despite decades of affirmative action policies, and the implementation of quotas of descriptive representation to the benefit of the Scheduled Castes in the local government agencies of the Panchayati Raj, members of the Scheduled Castes continue to face significant discrimination and marginalization. This study suggests that Scheduled caste reservations do not ultimately seem to have an impact on the implementation of NREGS, a policy that in the main benefits a community more likely to be affected by unemployment and poverty more generally.

The case of reservation for women is particularly interesting, since there is no effect of quota adoption or maintenance: GPs reserved for women “behave" much the same way as non reserved GPs, suggesting that caste, rather than gender strictly speaking, is likely to play an important role here as well. In other words, GPs reserved for women which include a disproportionate share of high caste women are likely to be run much the same way as GPs that have an open status. The prevalence of strict patriarchal norms then makes it likely that the GPs are run by male relatives of the elected women, blunting whatever gender effect the specific status was intended to have.

Caste has a much more mixed impact in the case of the Other Backwards Classes or OBC. In the case of quota adoption, there is a modest negative effect, but one that is not robust to an alternative specification (CSDID). Quotas persistence also carries a “penalty" as significant as the SC “penalty" (around 10%), but one that is one sustained over time and that disappears within three years of quota assignment. GPs that rotate to women away from OBC get a similar boost - suggesting that OBC Gram Pradhans are able to reverse the impact of reservations over time – presumably through the building of better relationships with the bureaucracy. Overall then, the OBC group sits between the Scheduled Castes and women in terms of reservation impact.

While the study cannot probe the actual mechanism that produces the heterogeneity in outcomes, there are reasons to believe that caste specifically shapes the relationship between the Gram Pradhan and the bureaucracy responsible for the delivery of benefits under NREGS in a way that affects outcomes. Indeed, while the NREGS blueprint emphasizes the emergence of a demand for work as a key driver of policy implementation, the bureaucracy at the local level remains chiefly responsible for the payment of wages. Officials elected under a policy of descriptive representation will have a varying ability to engage with the local bureaucracy – especially when it is predominantly staffed by members of the high castes. For instance, a Gram Pradhan from the Scheduled Castes is likely to have much less experience dealing with state agencies, or at a minimum an experience marked by discrimination and marginalization, relative to a Gram Pradhan from a higher caste. Caste should not be seen as entirely deterministic, especially given the complex and varied distribution of caste groups at the local level, the individual standing and intrinsic qualities of candidates for office at the local level, not to mention the fact that some bureaucrats may be committed to an agenda of empowerment. But the heterogeneity of outcomes of NREGS which continues to track the relative position of status groups in the caste hierarchy (with members of the Scheduled Castes faring worse than members of the Other Backward Classes, for instance) suggests that caste continues to have an important aggregate impact on the implementation of public policies in rural India.

Conclusion

The introduction of local elections with quotas of descriptive representation and the implementation of the NREGS together represent one of the most momentous developments in contemporary Indian politics. Local elections are now regularly held across India’s 250,000 *Gram Panchayats*, and the quotas guarantee representation to traditionally marginalized groups in a majority of these *Gram Panchayats* at any point in time. The implementation of NREGS was intended to build on local level democratization to ensure that India’s poorest citizens would be in a better position to make claims on the state, and accordingly enjoy greater access to social services and benefits. Using a dataset combining 8 years of NREGS implementation data along with data on the reservation status of GPs over two electoral cycles (2010 and 2015), this study considered both the impact of quota adoption and quota persistence on outcomes under NREGS, such as person–days of work and spending.

While the existing scholarship has often pointed to the benefits of quotas of descriptive representation on the provision of public goods or intergroup relations, which empower groups that have long suffered from discrimination

and marginalization, this study shows that the impact of the policy is more nuanced. In fact quota adoption is associated with a drop in person–days of work (and spending), a drop almost entirely driven by the quotas for members of the Scheduled Castes, one of the groups the most likely to suffer from discrimination in rural India. While quota persistence might be associated with a form of institutional learning and capacity building, it did not result in higher outcomes relative to GPs which had reverted to an open seat, quite the opposite. Interestingly, and consistent with the narrative of a penalty associated with quota adoption, quota rotation (a variant of quota persistence) was also associated with a penalty, particularly for the Scheduled Castes.

Together, these findings suggest that that the impact of local level democratization on the delivery of social benefits remains more nuanced than one would expect, especially in a context of high income and status inequality. There are obviously normative reasons for embracing local level democratization – more voting, especially at the local level, is always preferable to bureaucratic rule, which was the norm at the local level in India before the enactment of the 73rd and 74th amendments to the Constitution in 1992–1993. And while this study shall not be read as an indictment of a major policy plank of the Indian state, these are sobering results, if only because they show that institutional reform may not on its own be enough to fundamentally change the conditions in which rural citizens avail themselves of services. With that said, the findings presented above reflect the implementation of NREGS in one Indian state – Uttar Pradesh, which is not just India's most populated state, but also one of the poorest in the country. They are not necessarily representative of the implementation of NREGS across India, which has been not just uneven but has shown diverse patterns (Jenkins and Manor, 2017; Khera, 2011) and should thus be put in perspective more broadly, given the variation in levels of employment and economic development across the country.

Findings from this study also suggest that the political empowerment of subaltern groups at the national and state levels may not be enough on its own to produce outcomes at the local level that reflect national level or state level political changes. Uttar Pradesh has witnessed in recent decades momentous political changes, with the ascendancy of the *Bahujan Samaj Party* – a party claiming to represent all non–elite groups, but one which in practice has come to be associated with the Scheduled Castes (and a specific *jati* within the Scheduled Castes – the *jatavs*), followed by the political assertion of the *yadavs* (an important group within the Other Backward Classes) after 2012. These political developments do not appear to have translated at the local level in the same level of political assertion - at least not from the analysis of NREGS outcomes in Uttar Pradesh over a period of 8 years. It remains to be seen how the *Bhaaratiya Janta Party* or BJP – in power since 2017 in the state – will shape outcomes, especially as it relies on different groups within the larger *Other Backward Class* category (other than the *yadavs*, that is), in addition to the high castes, which form its traditional base.

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Table 2
Balance Test - H1: Newly Reserved vs Never Reserved (General)

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	44.08	11.76	44.90	11.53	-0.82***	(-6.90)
Proportion population belonging to SC/ST	21.04	18.56	22.80	21.80	-1.76***	(-8.87)
Proportion agricultural wage laborers	11.96	10.10	12.34	10.29	-0.38***	(-3.66)
Proportion population less than 6 years old	15.76	3.66	15.95	3.50	-0.19***	(-5.08)
prop_regwork	4.19	1.84	4.19	1.83	-0.00	(-0.14)
Land to labor ratio	1.31	11.08	1.48	21.59	-0.17	(-1.11)
Gini	0.56	0.07	0.56	0.07	0.00**	(2.96)
Proportion irrigated land	77.57	16.28	77.77	15.94	-0.20	(-1.28)
Observations	14124		38889		53013	

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3
Balance Test - H1: Newly Reserved vs Never Reserved (Women)

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	43.97	11.05	44.61	11.70	-0.64***	(-8.27)
Proportion population belonging to SC/ST	24.78	19.36	23.39	22.17	1.39***	(9.78)
Proportion agricultural wage laborers	12.50	10.14	12.42	10.19	0.09	(1.25)
Proportion population less than 6 years old	15.72	3.46	15.90	3.52	-0.18***	(-7.77)
prop_regwork	4.22	1.87	4.22	1.89	-0.00	(-0.05)
Land to labor ratio	1.39	17.89	1.43	9.95	-0.04	(-0.46)
Gini	0.56	0.07	0.56	0.07	-0.00	(-1.94)
Proportion irrigated land	77.53	15.97	77.25	16.24	0.29**	(2.74)
Observations	65445		37758		103203	

Note: *** p<0.01, ** p<0.05, * p<0.1

7. Appendix

7.1. Balance tests

7.1.1. Hypothesis 1

Table 4
Balance Test - H1: Newly Reserved vs Never Reserved (SC)

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	44.43	11.62	44.07	10.45	0.36***	(4.83)
Proportion population belonging to SC/ST	19.27	17.33	41.79	22.22	-22.52***	(-155.02)
Proportion agricultural wage laborers	12.01	9.99	13.95	10.54	-1.94***	(-27.02)
Proportion population less than 6 years old	15.80	3.52	15.87	3.32	-0.07**	(-2.92)
prop_regwork	4.19	1.83	4.19	1.87	0.00	(0.20)
Land to labor ratio	1.43	16.66	1.26	8.77	0.17*	(2.17)
Gini	0.56	0.07	0.56	0.07	0.00***	(4.21)
Proportion irrigated land	77.51	16.12	77.25	15.94	0.27*	(2.51)
Observations	91242		30024		121266	

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 5
Balance Test - H1: Newly Reserved vs Never Reserved (OBC)

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	43.96	11.30	45.13	11.34	-1.18***	(-15.42)
Proportion population belonging to SC/ST	26.87	21.07	15.99	15.14	10.88***	(93.88)
Proportion agricultural wage laborers	12.58	10.01	12.06	10.35	0.51***	(7.45)
Proportion population less than 6 years old	15.77	3.44	15.88	3.46	-0.10***	(-4.37)
prop_regwork	4.19	1.85	4.20	1.85	-0.01	(-0.69)
Land to labor ratio	1.30	10.60	1.39	22.44	-0.09	(-0.68)
Gini	0.56	0.07	0.56	0.07	0.00*	(2.12)
Proportion irrigated land	77.43	16.10	77.44	16.13	-0.01	(-0.07)
Observations	76446		34431		110877	

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 6
Balance Test - H2: Maintained Any Quota vs Lost All

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	43.59	11.02	44.23	11.05	-0.65***	(-8.81)
Proportion population belonging to SC/ST	24.16	17.62	27.16	21.11	-2.99***	(-23.57)
Proportion agricultural wage laborers	12.52	10.06	12.76	10.02	-0.24***	(-3.66)
Proportion population less than 6 years old	15.62	3.36	15.79	3.40	-0.16***	(-7.24)
prop_regwork	4.20	1.84	4.21	1.89	-0.01	(-0.51)
Land to labor ratio	1.25	8.13	1.34	10.87	-0.10	(-1.53)
Gini	0.56	0.07	0.56	0.07	0.00*	(2.22)
Proportion irrigated land	77.34	16.15	77.04	16.11	0.30**	(2.94)
Observations	40806		60459		101265	

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 7
Balance Test - H2b: Women Quota Persistence

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	43.88	11.28	44.40	11.30	-0.52***	(-4.07)
Proportion population belonging to SC/ST	23.76	17.76	24.99	21.86	-1.23***	(-5.33)
Proportion agricultural wage laborers	12.37	10.01	12.27	9.48	0.10	(0.92)
Proportion population less than 6 years old	15.69	3.37	15.92	3.35	-0.23***	(-5.95)
prop_regwork	4.16	1.79	4.19	1.84	-0.04	(-1.91)
Land to labor ratio	1.24	9.24	1.35	13.47	-0.11	(-0.82)
Gini	0.57	0.07	0.56	0.07	0.00***	(3.86)
Proportion irrigated land	77.50	16.04	77.65	15.80	-0.14	(-0.83)
Observations	21096		13827		34923	

Note: *** p<0.01, ** p<0.05, * p<0.1

7.1.2. Hypothesis 2

Table 8
Balance Test - H2a: SC Quota Persistence

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	43.27	10.60	44.30	10.68	-1.03***	(-4.06)
Proportion population belonging to SC/ST	24.48	16.77	37.79	22.11	-13.31***	(-25.98)
Proportion agricultural wage laborers	12.42	9.89	13.90	10.30	-1.48***	(-6.07)
Proportion population less than 6 years old	15.59	3.26	15.73	3.40	-0.14	(-1.72)
prop_regwork	4.21	1.86	4.26	2.13	-0.05	(-1.07)
Land to labor ratio	1.15	6.27	1.15	4.48	0.00	(0.01)
Gini	0.56	0.07	0.56	0.07	-0.00	(-1.74)
Proportion irrigated land	77.97	15.27	75.83	15.78	2.15***	(6.03)
Observations	15306		2226		17532	

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 9
Balance Test - H2c: OBC Quota Persistence

	(1)		(2)		(3)	
	mean	sd	mean	sd	b	t
prop_ill	43.55	11.05	45.78	11.69	-2.23***	(-11.20)
Proportion population belonging to SC/ST	25.08	18.33	18.03	16.53	7.05***	(24.19)
Proportion agricultural wage laborers	12.67	10.07	12.50	10.40	0.17	(0.97)
Proportion population less than 6 years old	15.59	3.41	15.97	3.59	-0.38***	(-6.17)
prop_regwork	4.22	1.84	4.31	2.01	-0.09**	(-2.87)
Land to labor ratio	1.34	6.00	1.17	4.50	0.17*	(1.99)
Gini	0.56	0.07	0.56	0.07	-0.00	(-0.46)
Proportion irrigated land	76.79	16.76	76.41	15.91	0.38	(1.43)
Observations	16782		4680		21462	

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 10
H1 Quota Adoption: General Effect

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalspending
did_adoption_general	-0.0673***	-0.0667***	-0.0732***
	(0.0202)	(0.0206)	(0.0217)
N	154109	127026	126405

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 11
H1 Quota Adoption: Women

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalspending
did_adoption_wm	-0.0102	-0.00355	0.0146
	(0.0134)	(0.0131)	(0.0140)
N	300315	247933	246810

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 12
H1 Quota Adoption: SC

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalspending
did_adoption_sc	-0.0973***	-0.117***	-0.127***
	(0.0129)	(0.0128)	(0.0138)
N	353305	291599	290336

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 13
H1 Quota Adoption: OBC

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalspending
did_adoption_obc	-0.0262**	-0.0283**	-0.0474***
	(0.0126)	(0.0127)	(0.0135)
N	322565	266318	265264

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

7.2. DiD results

7.2.1. Hypothesis 1

Table 14
H2: General Quota Persistence Effect

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalspending	(4) logtotalspending	(5) loglabour	(6) logmaterial
did_general	-0.0564***	-0.0626***	-0.0598***	-0.0617***	-0.0505***	-0.126***
	(0.0130)	(0.0130)	(0.0139)	(0.0137)	(0.0130)	(0.0248)
N	295132	243784	293712	242916	242554	159572

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 15
H2: Disaggregated Effects by Reservation Type

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalpersondays	(4) logtotalspending	(5) logtotalspending	(6) logtotalspendir
did_sc	-0.0834			-0.157**		
	(0.0620)			(0.0648)		
did_wm		-0.0278			-0.0482**	
		(0.0220)			(0.0237)	
did_obc			-0.0363			-0.0321
			(0.0322)			(0.0351)
N	42514	84232	51552	42410	83967	51287

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 16
H2 Rotation: Women Origin (controls: became fully unreserved / persisted)

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalpersondays
did_rot_wm_sc	-0.136***		
	(0.0256)		
did_rot_wm_obc		-0.0329	
		(0.0246)	
did_rot_wm_vs_pers			-0.0567**
			(0.0226)
N	70212	70285	71951

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

7.2.2. Hypothesis 2

Table 17
H2 Rotation: SC Origin (controls: became fully unreserved / persisted)

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalpersondays
did_rot_sc_obc	-0.0539**		
	(0.0252)		
did_rot_sc_wm		0.0168	
		(0.0324)	
did_rot_sc_vs_pers			0.0523
			(0.0623)
N	61760	49641	41859

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 18
H2 Rotation: OBC Origin (controls: became fully unreserved / persisted)

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalpersondays
did_rot_obc_sc	-0.130***		
	(0.0233)		
did_rot_obc_wm		0.0210	
		(0.0273)	
did_rot_obc_vs_pers			-0.0346
			(0.0312)
N	72402	61234	64144

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 19
H1 Quota Adoption: TWFE vs CSDID Aggregated ATT

Quota type	TWFE	(SE)	CSDID ATT	(SE)
General	-0.0667	(0.0206)	-0.0575	(0.0164)
SC	-0.1174	(0.0128)	-0.1181	(0.0104)
Women	-0.0035	(0.0131)	-0.0026	(0.0103)
OBC	-0.0283	(0.0127)	-0.0085	(0.0104)

TWFE: village and year FE, full controls, SE clustered at GP level.
CSDID: Callaway & Sant'Anna (2021) doubly-robust estimator, aggregated ATT.

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 20
H1 SC Adoption: Prior Cycle Exposure Heterogeneity Check

	(1) High SC Share (likely 2005 reserved)	(2) Low SC Share (unlikely 2005 reserved)
did_adoption_sc	-0.118***	-0.0894***
	(0.0139)	(0.0243)
N	145839	145760

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 21
H2: Robustness - Alternative Clustering

	(1) logtotalpersondays	(2) logtotalpersondays	(3) logtotalpersondays
did_sc	-0.0834		
	(0.0593)		
did_wm		-0.0278	
		(0.0233)	
did_obc			-0.0363
			(0.0344)
N	42514	84232	51552

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: *** p<0.01, ** p<0.05, * p<0.1

7.3. Robustness checks

7.3.1. Hypothesis 1: TWFE vs CSDID

7.3.2. Hypothesis 1: Test for pre–treatment heterogeneity (below vs. median SC population)

7.3.3. Hypothesis 2: Double clustering (GP x year)

7.3.4. Hypothesis 2: TWFE vs CSDID

Table 22
H2 Quota Persistence: TWFE vs CSDID Aggregated ATT

Quota type	TWFE	(SE)	CSDID ATT	(SE)
SC	-0.0834	(0.0620)	-0.0323	(0.0391)
Women	-0.0278	(0.0220)	-0.0233	(0.0176)
OBC	-0.0363	(0.0322)	-0.0794	(0.0256)

TWFE: village and year FE, full controls, SE clustered at GP level.
Control: became fully unreserved. CSDID: Callaway & Sant'Anna (2021), aggregated ATT.

Note: *** p<0.01, ** p<0.05, * p<0.1