

# Unheard Voices

## The Challenge of Inducing Women's Civic Speech

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June 2017

## Abstract

Deliberative institutions have gained popularity in the developing world as a means by which to make governance more inclusive and responsive to local needs. However, a growing body of evidence suggests that persistent gender inequality may limit women's ability to participate actively and influence outcomes in these forums. In response, policy makers have tried to induce women's participation by leveraging the group-based format of self-help groups, which can build women's social capital and develop their sense of political efficacy and identity. This paper evaluates the impact of one such intervention, known as the Pudhu Vaazhvu Project,

on women's civic participation in rural Tamil Nadu. Using *text-as-data* methods on a matched sample of transcripts from village assembly meetings, the analysis finds that the Pudhu Vaazhvu Project significantly increases women's participation in the *gram sabha* along several dimensions—meeting attendance, propensity to speak, and the length of floor time they enjoy. Although women in the Pudhu Vaazhvu Project villages enjoy greater voice, the study finds no evidence that they are more likely than women in control villages to drive the broader conversational agenda or elicit a relevant response from government officials.

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# Unheard Voices: *The Challenge of Inducing Women's Civic Speech\**

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## **JEL Codes**

O12, C49, D02, D70, J16

## **Key Words**

gender, deliberation, village democracy, India, text-as-data, participation

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\*This paper is a product of the World Bank's Social Observatory. Financial support from the contributions of (1) UK Aid from the UK government, (2) the Australian Department's of Foreign Affairs and Trade, and (3) the European Commission (EC) through the South Asia Food and Nutrition Security Initiative (SAFANSI), which is administered by the World Bank, is gratefully acknowledged. The authors are indebted to R.V. Shajeevana, the former Additional Project Director of the Pudhu Vaazhu Project, for her advice and assistance; Kevin Crockford and Samik Sundar Das for their support; as well as Madhulika Khanna, Nishtha Kochhar, Smriti Sakhamuri, G. Manivannan, and GFK-Mode for their help with the fieldwork. The authors also thank Avidit Acharya, Lisa Blaydes, Nick Eubank, Adriane Fresh, Justin Grimmer, David Laitin, Jeremy Weinstein, and participants of the Indian Political Economy working group in Washington, D.C. for comments and suggestions. The views expressed here do not necessarily reflect the UK, EC, or Australian government's official policies or the policies of the World Bank and its Board of Executive Directors.

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## 1 INTRODUCTION

Despite formal guarantees of political equality, women across the globe are systematically under-represented in politics — whether that be elected office, bureaucratic posts, or everyday political participation. Women still constitute only 23.3 percent of parliamentarians (Inter-Parliamentary Union, 2017), even with the growing use of gender quotas (Krook, 2010). While women’s voter turnout rates have improved substantially across richer democracies, women are still less likely to make demands of government officials (Karpowitz and Mendelberg, 2014) or to participate in costlier forms of political activity, like rallies, campaigns, and protests (Paxton et al., 2007). That women lack a voice in their governance is normatively problematic in its own right (Mansbridge, 1999; Sen, 2001); just as troubling, women’s absence from political life may have substantive consequences for policy and development outcomes, given their differing policy preferences (Edlund and Pande, 2002; Inglehart and Norris, 2003; Miller, 2008).

The dearth of women’s participation has been especially acute in developing nations like India, where the recent resurgence of deliberative democratic institutions has made the exercise of political voice that much more important (Mansuri and Rao, 2012). These deliberative institutions, largely formed via decentralization efforts and community-driven development programs, are premised on the idea that development can be made more inclusive and better tailored to local needs by moving decision-making from government offices to the village itself. These calls for participation, however, can be especially problematic for women, who often face social costs for speaking in public, are usually less informed, and lack a sense of political efficacy (Dreze and Sen, 2002). Indeed, the extant evidence from Indian local government, or *panchayati raj*, shows that women are less likely to attend local village meetings, or *gram sabhas* (Ban and Rao, 2008b; Chattopadhyay and Duflo, 2004), to participate in community resource management (Agarwal, 2001), and to run for local office.

Recognition of these deep gendered inequalities has prompted Indian policy makers to actively design deliberative institutions with social inequalities in mind (Parthasarathy and Rao,

2017), most notably through the use of quotas for women on village councils. Reservations, as they are known in the Indian context, have had promising results for a number of outcomes, including the delivery of women-preferred public goods (Chattopadhyay and Duflo, 2004), the aspirations of young girls (Beaman et al., 2012), and gender bias among voters (Beaman et al., 2009). However, evidence that the mere presence of a female incumbent is sufficient to achieve parity in participation, let alone deliberation, between citizens of both sexes is much weaker (Ban and Rao, 2008b; Chattopadhyay and Duflo, 2004; Beaman et al., 2010; Parthasarathy et al., 2017).<sup>1</sup> Indeed, Parthasarathy et al. (2017), examining deliberation in the control villages of this study, document that while female incumbents may be more likely to respond to women constituents, their presence has no discernible effect on women’s attendance, frequency of speech, or length of floor time.

As an alternative approach, the Government of India and various states have instead tried to induce women’s participation from the “bottom-up” – by building women’s organizations via a system of self-help groups (SHGs). Though the central aim of these groups has been to provide rural women with greater access to credit and livelihoods, it is also hoped that the group-based format of SHGs builds social capital, with implications for women’s sense of political efficacy and identity (Sanyal et al., 2015; Sanyal, 2014; Prillaman, 2016). This paper evaluates the effect of one such bottom-up intervention, known as the Pudhu Vaazhvu Project (PVP), on women’s civic participation in rural Tamil Nadu. PVP is a participatory, community-driven development project implemented by the Government of Tamil Nadu that works in the poorest regions of the state. Like other SHG programs, the core economic interventions of PVP are centered on credit and livelihoods support for women that belong to project-facilitated self-help groups. In addition, however, PVP creates explicit linkages among SHGs within the village and by partnering with local government to implement credit access and job-training activities in an effort to create social capital and improve women’s capacity to address public expenditures.

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<sup>1</sup>(Beaman et al., 2010) provides evidence for the effect of reservation on women’s attendance and participation in *gram sabhas* from five states. They find that women’s attendance is unaffected by reservations, but do find a positive effect on whether women speak. While the latter results are encouraging, they are focused on the incidence of women’s speech, rather than the volume of speech or even parity in floor time with men.

This paper examines whether Tamil Nadu’s PVP program induces women’s participation within the *gram sabha*. We use *text-as-data* methods on a matched sample of transcripts from village assembly meetings to examine the effects of the program on political speech at these meetings. We find that PVP significantly increases women’s participation in the *gram sabha* along numerous dimensions — meeting attendance, propensity to speak, and the length of floor time they enjoy. Our estimates show that the PVP program nearly doubles the number women who come to the *gram sabha*, and boosts their frequency of speech by nearly 45 percent. This is not to say the results are all positive; we find that women in PVP villages are no more likely than women in control villages to drive the broader conversational agenda or elicit a relevant response from government officials. Nevertheless, these substantively significant gains suggest that policy interventions can have a positive impact on what has often been thought of as something beyond the reach of small-scale interventions: shaping social norms around gender.

This analysis represents one of the first quantitative analyses of self-help groups that measures objective outcomes rather than self-reports. In doing so, it not only contributes to the small but growing body of work on the political impact of self-help groups, which has qualitatively shown largely positive results (Sanyal et al., 2015; Sanyal, 2014; Desai and Joshi, 2014), but also provides a more rigorous foundation for conclusions drawn from studies based on self-reports of empowerment like Prillaman (2016) in Madhya Pradesh. In Tamil Nadu, Khanna et al. (2015) use household survey data from the same villages as this paper and find very similar results: women’s participation in SHGs enhances their intra-household bargaining power and their capacity to participate in the public sphere; but, just as in Prillaman (2016), these results are based not on direct field observations, but on outcomes reported by respondents. As such, we might be concerned that responses are biased by project rhetoric that have imbibed, rather than actual political behavior. To overcome this challenge, we *directly* examine the effect of PVP on women’s participation using our village assembly rosters and transcripts. Indeed, in Khanna et al. (2015), which uses survey evidence from the same villages studied here, women’s self-reported attendance at the *gram sabha* is higher than the direct measures collected here, both in control and

treatment villages. Our direct measurement approach not only saves us from overreliance on these self reports, but also allows us to measure whether their political speech has deliberative influence on fellow citizens and state officials.

In focusing explicitly on the speech patterns of citizens, we also contribute to a growing literature on the empirical study of deliberation (Bächtiger et al., 2005; Karpowitz and Mendelberg, 2014; Heller and Rao, 2015). While deliberative democracy has traditionally been the domain of normative political theorists (Habermas, 1990; Elster, 1998; Mansbridge, 1980; Guttman and Thompson, 2004; Fung, 2004), scholars have increasingly tried to examine whether deliberative institutions deliver on the hopes of normative theorists. To that end, our study draws on normatively grounded measures of good deliberation (Mansbridge, 2015) to unpack not only the ways in which gender may affect citizen participation, but also the types of policies that may be able to ameliorate such inequality. More specifically, we use the methods and measures developed in (Parthasarathy et al., 2017) and focus on the political and ethical functions of deliberation. Under this conception, deliberation allows all participants to have an equal opportunity to influence the outcome; embodies the ideal of mutual respect, whereby citizens listen attentively to one another; and allows citizens to be agents who participate in the governance of their society. While Parthasarathy et al. (2017) validates these measures to describe deliberative inequality in Tamil Nadu, here, we use these measures to evaluate the impact of a policy intervention on both sides of the deliberative coin — that is, not only whether citizens are able to speak, but the extent to which they are heard.

Finally, this study speaks to policy makers keen on understanding the unintended consequences of external interventions on local governance. With the prolific growth of aid institutions and non-governmental institutions in the developing world, practitioners and policy makers alike have grown acutely aware of the ways in which external interventions may alter local community dynamics in unforeseeable ways (Gugerty and Kremer, 2008; Mansuri and Rao, 2012; Bano, 2012). In this paper, we document the ways in which inducing participation may help to amplify the voices of women in rural governance, but also shifts discourse away from the organic topics

raised by citizens and towards project-specific activities. Given the finite amount of time to conduct local assemblies, this may have the perverse effect of crowding out discussion of issues that are broadly relevant to the community.

The remainder of this paper is organized as follows: In Section 2, we describe the institutional and cultural context in which we study women’s deliberation, as well as the intervention aimed at inducing their participation. In Section 3, we describe our research design, data, and measures. In Section 4, we present our results for how PVP affects women’s deliberation; Section 5 discusses the implications of these findings, and Section 6 concludes.

## 2 INSTITUTIONAL AND CULTURAL CONTEXT

### 2.1 *Local Governance and Deliberation*

The institutional context in which we study deliberation is the *gram sabha*, or village assembly, which serves as the primary forum for citizens in rural India to demand accountability and access to public goods from local government officials. It was created by the 73rd Amendment, which transferred responsibility for the delivery of local public goods and services to a three-tier local government. Under the constitutional mandate, all Indian villages are to be governed by an elected council, composed of ward members (representing roughly 500 people each), and a president. In recognition of historical disadvantage for women and low castes, the amendment also mandated that 33 percent of seats in village councils would be reserved for women, and a number proportionate to their population in the village reserved for disadvantaged castes. Lastly, the amendment mandated that all citizens would have the opportunity to deliberate and advise the elected council on relevant development decisions at least two times a year via a village-wide assembly, or *gram sabha*.

These two features — reservations for historically disadvantaged castes and women, as well as the *gram sabha* — aim to provide an institutional check on elite domination by ensuring that all citizens have the ability to influence development decisions. Reservations do so by explicitly



mandating that citizens from these underrepresented groups occupy elected office, and the *gram sabha* opens up governing decisions to public scrutiny via a deliberative forum for all citizens to attend. While there has been considerable scholarship on the distributive consequences of reservations, relatively little work has examined the impact of these policies on political voice within the *gram sabha* itself. The evidence we do have suggests that men tend to dominate in terms of participation, and that the issue priorities of large landowners tend to take up more time within the assembly (Ban and Rao, 2008a). Despite these inequalities in participation, evidence suggests that *gram sabhas* tend to be democratically efficient, in the sense of reflecting the preferences of the median household (Ban et al., 2012); however, there can be a large degree of inequality of voice *within* households, so household preferences may simply reflect the preference of males. Indeed, women are much less likely to be aware of *gram sabhas* and less likely to attend (Chhibber, 1999; Besley et al., 2005). Since the *gram sabha* is an important site for citizens to demand accountability in public service delivery, these inequalities in participation may have profound consequences for citizen welfare and access to basic goods.

## 2.2 *Women's Status in Tamil Nadu*

That women are less likely to be aware of, present for, or active in the *gram sabha* is not surprising in the larger global context. Indeed, the realm of politics has been a particularly “sticky domain” for the gender gap (World Bank, 2011). The dearth of women’s political activity reflects the complex and inter-related set of constraints that have limited women’s agency — from social norms about women’s roles and abilities to their limited social networks and paucity of resources both inside and outside the household. These barriers have been well documented in the Indian context (Duflo, 2012; Chhibber, 1999), where women have been largely absent from high tiers of elected office (they constitute only 7.8 percent of parliamentary candidates and 11.23 percent elected Members of Parliament, for example) to local, participatory institutions for ordinary citizens (Chattopadhyay and Duflo, 2004; Beaman et al., 2010; Ban and Rao, 2008b).

In Tamil Nadu, where this study is located, women have been shown to have relatively more

autonomy than women in other parts of rural India (Dyson and Moore, 1983; Kishor and Gupta, 2009); yet even in Tamil Nadu, women's standing is far more complex than this optimistic account would suggest.<sup>2</sup> It is not that patriarchy is less acute than elsewhere, but it is differently expressed and reinforced. For example, Mines's (1994) ethnography of private and public identity in Tamil Nadu shows that, while men in this state value and nurture a distinct civic individuality, this is not observed among women, whose sense of self derives from their role as wives, mothers, and daughters-in-law. Similarly, Kapadia et al. (1995), in her classic ethnography of Tamil women, demonstrates that among low-caste women (who are the vast majority of the female participants in the meetings we study), the seemingly high degree of female autonomy is deceptive, as it is confined to extended family, rather than in interactions outside the family. Kapadia attributes this to practices of marital endogamy (the practice of marrying close-kin), which create an on-going relationship between women and their birth kin after marriage for two reasons: (a) their physical proximity, and (b) because extended families tend to have marriage ties over several generations and thus have very strong bonds. Moreover, recent improvements in education and labor market opportunities have benefited men much more than women; this change in class has caused kinship ties to break and women to be even more restricted within the home.

Though these ethnographic accounts were written two decades ago, recent data reinforces the distinct delineation between genders across the public and domestic spheres. Labor force participation rates for rural men in Tamil Nadu are 59.3 percent for men and 31.8 percent for women.<sup>3</sup> An analysis of survey data from the same sample as the villages we study in this paper, Khanna et al. (2015) shows that 47 percent of married women reported that they were the primary decision makers in household decisions on durable good purchases, but only 12.5 percent reported that they attended the last village assembly, or *gram sabha*.

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<sup>2</sup><http://rchiips.org/nfhs/a.subject.report.gender.for.website.pdf>

<sup>3</sup>Directorate of Census Operations, Government of Tamil Nadu, <http://www.tn.gov.in/dear/Employment.pdf>

### 2.3 *Inducing Participation through the Pudhu Vaazhvu Project*

That the *gram sabha* specifically is viewed as domain of men is not at all unique to the Tamilian context, but reflects the broad pattern of gender norms that limit women's agency in India. In response to this bias, the Government of Tamil Nadu has tried to empower women in part via the creation of Self-Help Groups (SHGs). The SHG movement in Tamil Nadu, which initially focused on reducing the economic vulnerability of women through credit, livelihoods linked economic resources, and training, began in the 1990s and was consolidated by the state under the Mahalir Thittam initiative in 1997-1998. The focus on women's economic standing reflected global trends in women's empowerment at the time, which saw access to economic development as a key lever to improve women's agency first within the home, and then within the community writ large.

Despite the success in scaling up this initiative, however, the SHG movement continued to exclude the truly poor in Tamil Nadu; moreover, there remained an open question as to whether these institutions could support women's civic action in the absence of explicit linkages both among various SHGs and between the SHGs and local government (Khanna et al., 2015). That is, while SHGs provided women with hyper local networks within their neighborhood, they provided few opportunities for broader collective action, let alone the types of civic "training" that might help women gain the self-confidence and sense political efficacy necessary to participate in the *gram sabha*.

Given these challenges, the Pudhu Vaazhvu Project (PVP) was explicitly designed to (a) make SHGs more inclusive, (b) support the institutional development of a village organization that would link them to credit and other sources, and (c) work closely with elected village-level government. The core institution through which PVP achieves these ends is through the formation of a Village Poverty Reduction Committee (VPRC), which is composed of a federation of SHGs within the village. The VPRC's central mandate includes credit and livelihoods, but it places significant emphasis on several other activities, including: helping the poor to access various safety nets and social services provided by the state and central governments (e.g. India's National Rural Employment Guarantee scheme, old age and widow's pensions, and housing schemes); assisting

with the targeting of grants to the poor and disabled; and facilitating access to skilled employment through youth training and job fairs. The membership of the VPRC typically contains 10 - 15 members, who are chosen to represent SHGs from each habitation, or neighborhood, within the village.

PVP was initially launched in 2005, in 2,300 village *panchayats* (VPs) drawn from 70 blocks (a sub-district administrative unit that is made up of a cluster of VPs) in 16 selected districts of Tamil Nadu.<sup>4</sup> The districts were chosen using a combination of objective poverty criteria, as well as other factors that captured the relative development of the district (e.g. infrastructure). Within each district, blocks were chosen on the basis of a poverty (or “backwardness”) score that included the number of households below the poverty line and the population of socially disadvantaged groups, the Scheduled Castes and Tribes (SC/STs). All villages within selected blocks were eligible to receive the program, and take-up was universal. Within each village, a set of households identified through the participatory identification process formed the core target population for the project, and were eligible to receive the targeted credit, livelihoods, and training services. For the purposes of this evaluation, however, our focus is on the *village-level* impact – that is, whether and how PVP’s focus on public action and inclusion affects the quality and character of participation in *gram sabhas*.

### 3 RESEARCH DESIGN

#### 3.1 Village Selection

In order to evaluate the effect of PVP on the character and quality of deliberation, ideally, we should have randomized villages to receive the program. Since randomized assignment was not possible, we leverage our knowledge of program implementation to reconstruct the PVP selection process, thereby creating a matched sample of comparable treatment and control villages.<sup>5</sup> More

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<sup>4</sup>Coimbatore, Cuddalore, Kancheepuram, Nagapattinam, Namakkal, Ramanathapuram, Salem, Theni, Thiruvannamalai, Thiruvallur, Thiruvannamalai, Thoothukudi, Tirrupur, Tirunelveli, Vellore and Villupuram.

<sup>5</sup>The original evaluation design was based on a regression discontinuity design, in which five or six blocks within each district would be chosen on the basis of a population score that reflected the level of backwardness of the block.

specifically, within the set of eligible districts, blocks were selected for assignment based on two sets of criteria: (1) a population criterion that equally weighted the SC and the ST population proportions and the number of below poverty line (BPL) households from census data; (2) a set of block level infrastructural variables that measure the quality of infrastructure, public services and industrial backwardness.

We generate our matched sample by matching project and non-project blocks within 9 active project districts<sup>6</sup> on the two factors that determined assignment to treatment. Infrastructural variables included all available census data (from 2001, before the project started) that could measure disadvantage — the number of villages in the block, average distance of the village to the nearest town, total population, percentage of villages in the block which had primary and middle schools, commercial banks, cooperatives, agricultural and non-agricultural societies, medical facilities and drinking water facilities. This process allowed us to nearly replicate the original assignment process for PVP.

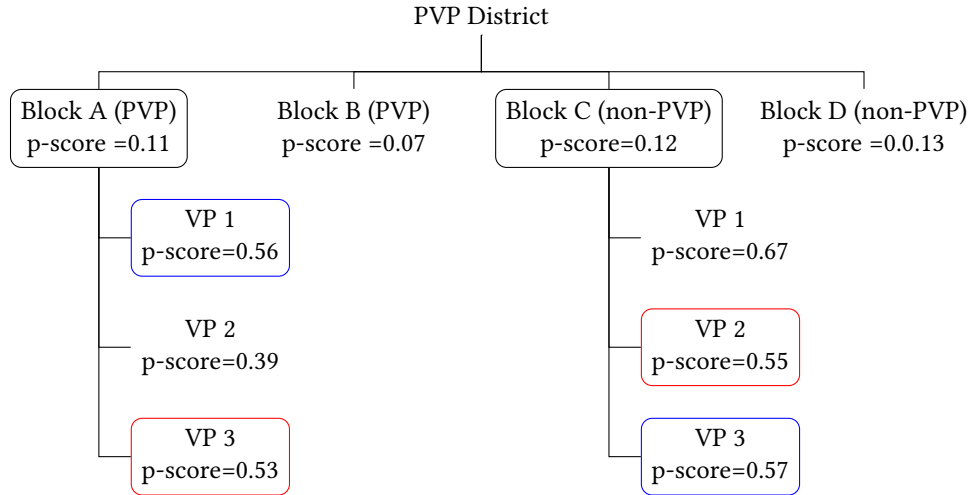
We use a two-step matching procedure, summarized in Figure 1. First, we generate propensity-score matched blocks using a standard probit model that uses the variables listed above. Within each district, a PVP block was matched to the non-PVP block with the closest propensity score. This ensured that the chosen non-PVP block was as likely to receive the intervention as the existing matched PVP block. Second, since the unit of analysis for this study is the village, we follow a similar process to identify specific village *panchayats* (VP) within each matched pair of blocks. The variables used for this village-level matching are the same as those used for the block matching. Thus, the finally selected VPs from PVP and non-PVP blocks were ex-ante equally likely to receive the program. This two-step sampling strategy ensures pre-treatment similarity on observable covariates of treatment across treatment and control areas.

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However, in discussion with the implementing partners, it emerged that deviations from the rule occurred when the population score did not identify the most disadvantaged blocks that the project intended to target. In particular, the population criterion seemed, at times, to be leading to the selection of more developed and therefore arguably less poor blocks. While these changes ruled out using a discontinuity design, we combined the population criterion with other information capturing the reasons for deviation — namely, village-level infrastructure — to approximate the final block selection criterion.

<sup>6</sup>The sample districts were chosen to ensure representation from different geographic regions of PVP's implementation.

Figure 1: Illustration of Two-Stage Sampling Strategy



*Note:* The figure above summarizes the two stage sampling construction. In the first stage, within a selected project district, the existing PVP block (Block A) is paired with the closest non-PVP block (Block C). Then, within each of these blocks, we identify matched pairs of villages, highlighted in blue (VP1 from Block A and VP3 from Block C) and red (VP3 from Block A and VP2 from Block C). The final sample for this district will thus include four VPs from two blocks.

A key assumption of propensity score matching (PSM) is that of conditional independence, which implies that program outcomes must be independent of treatment status prior to treatment, given a vector of observable covariates. While we cannot directly test for conditional independence, two facts provide confidence that we have met this bar. First, the covariates chosen for the matching procedure accurately reflect the true selection process for assignment to treatment. And second, we have a high degree of post-match balance on all observable covariates; Table 1 shows that, in 2001, the sample VPs were indeed similar on all relevant observables that possibly determined selection into the program. Given this, we can reasonably infer that the average difference between the matched comparison units from treatment and control groups will yield a consistent estimate of the Average Treatment Effect on the Treated (ATT) (Rosenbaum and Rubin, 1983).

A second key requirement for PSM is the existence of a region of common support, that is, for each value of a vector of observables  $X$  (or propensity score generated using  $X$ ), there is a positive probability of finding a comparison unit in both treatment and control groups. That is,

$$0 < P(D = 1 | X) < 1 \tag{1}$$

Table 1: Balance on Pre-Treatment Covariates

Variable	Non-PVP	PVP	Diff.	Norm. Diff	P-value
No. of HH	657.871	736.042	-78.171	-0.143	0.443
Percent SC	0.378	0.343	0.034	0.173	0.569
Percent ST	0.012	0.010	0.002	0.063	0.525
Female Literacy Rate	0.592	0.573	0.019	0.229	0.591
I(Primary School)	0.980	1.000	-0.020	-0.200	0.421
I(Secondary School)	0.360	0.200	0.160	0.359	0.640
I(Health Center)	0.240	0.280	-0.040	-0.090	0.464
I(Hospital)	0.040	0.040	0.000	0.000	0.500
I(Clinic)	0.040	0.060	-0.020	-0.091	0.464
I(Medical Shop)	0.220	0.220	0.000	0.000	0.500
I(Big Gov't Hospital)	0.040	0.020	0.020	0.116	0.546
I(Bank)	0.900	0.960	-0.060	-0.169	0.433

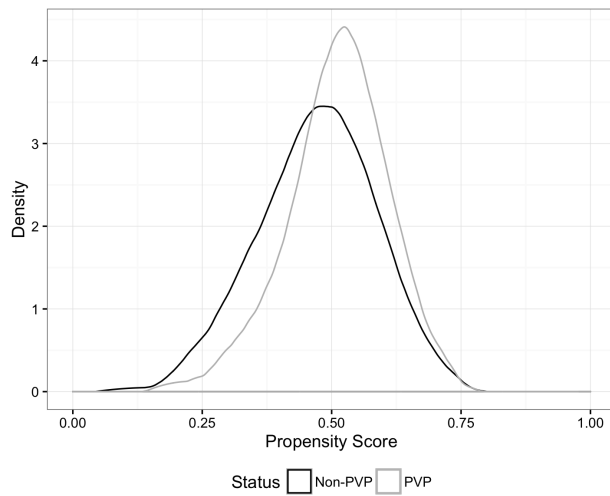
*Note:* The table presents differences in means on relevant pre-treatment covariates between PVP and Non-PVP Villages. Following Imbens and Wooldridge (2008), normalized differences and associated  $p$ -values are presented.

The probability of being treated, which in our case is the probability of being a PVP village, lies between zero and one. Figure 2 shows that there is a good overlap in the propensity score distribution across project and non-project VPs. To impose common support, we limit the comparison to a sub-sample of observations where the propensity score is more than the minimum value in the treatment group and is less than the maximum value in the control group. For our data, the region of common support is given by (.074, .86). The final village sample thus consists of 100 matched villages, 50 in control and 50 in treatment.

### 3.2 Data Collection

From this matched sample, we collected two forms of data: (1) full audio recordings of the *gram sabha*, and (2) a standardized questionnaire to collect information on the attendance of citizens and local officials, on the nature of issues raised by citizens, and demographic data on who raised these issues (gender and caste). This survey data also included a roster of state and local government officials in attendance, how information on the timing of the *gram sabha* was communicated, the physical location of the assembly, and attendance at regular intervals. The audio recordings

Figure 2: Common Support across Selected Treatment and Control VPs



Note: This graph plots the density of propensity scores for 268 villages across within the 18 matched blocks of the sample. The region of common support is given by (0.226, 0.688). After imposing common support, we choose a matched sample of 50 treated and 50 control villages with the closest propensity score matches.

of meetings were transcribed and translated into a corpus of textual data by an independent survey firm. Transcripts included verbatim transcriptions and translations of the assemblies, as well as identifiers on the gender and position of each speaker.<sup>7</sup>

Each “document” in the corpus consists of an uninterrupted speech by an administrator, elected official, or citizen. From the 100 village assemblies, we have 3,959 such documents, 2,223 in treatment and 1,736 in control, each of which is identified by the position and gender. Table 2 presents descriptive information about the number and character of documents within each village. Assemblies have relatively good attendance (with 163 people attending on average), and consist of roughly 40 speeches, of which one-third are made by women. Citizens deliver just over half (54 percent) of speeches, with the remainder distributed between administrators (29 percent) and politicians (16 percent).

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<sup>7</sup>The original data contain rich information on the position of each speaker, from school headmasters and ration shop owners, to elected officials and administrators. For the purpose of our analysis, we code the speaker into three types: (1) administrators, who include all persons employed by the state or local government (e.g. *panchayat* secretary, block development officer, school headmaster, village administrative officer, etc.); (2) elected officials, who include all persons who are in elected office (e.g. president, vice president, ward member); (3) citizens, all people who neither hold a formal government job or elected office. Within treatment in treatment areas, we also code for “activated” citizens, who were affiliated with PVP.



Table 2: Village-Level Summary Statistics

	Mean	Std. Dev.	Median	Min	Max.
Total Attendance	163.896	114.641	124.000	25.000	720.000
Number of Speeches	39.590	28.296	31.000	4.000	172.000
Speech Length	100.915	118.795	75.036	25.600	1090.750
Percent Female	0.351	0.179	0.344	0.000	0.920
Percent Citizen	0.542	0.138	0.539	0.190	0.879
Percent Admin	0.294	0.150	0.285	0.000	0.750
Percent Politician	0.164	0.163	0.121	0.000	0.537

### 3.3 A Text-as-Data Approach to Deliberation

While these descriptive statistics provide an initial picture as to who speaks within the *gram sabha*, we examine the nature of deliberative influence using a *text-as-data* approach to the document transcripts. More specifically, we use recent a computational tool known as unsupervised topic models to inductively “discover” a set of salient topics within the document collection, associate those topics with each document and speaker, and examine patterns of speech within each assembly. Though this approach will never fully capture the nuanced and complex nature of human conversation, it can help us to uncover underlying features of our data without imposing our own assumptions about the set of categories or issues that are discussed.

Prior to estimating the topic model, we pre-process the set of 3,959 documents such that infrequent words (those with fewer than 5 occurrences in the corpus) and certain proper nouns, as well as overly common “stopwords” are removed.<sup>8</sup> Infrequent and proper nouns are often names of beneficiaries, townships, or neighborhoods that are mentioned in meetings, but are not in common usage. The remaining terms are then “stemmed” such that various forms of the same word are counted together.<sup>9</sup> We also exclude numbers. From the original set of citizen speeches, 3,894 documents remain after processing.

Using this processed corpus, we adopt the approach of Roberts et al. (2016) to estimate a *Structural Topic Model* (STM), which allows us to inductively discover topics, or clusters of words

<sup>8</sup>Stopwords are overly common words which are filtered out before the use of natural language processing methods to improve the estimation process. They often include functional words, including articles, prepositions, basic verbs such as “is,” and pronouns.

<sup>9</sup>For example, “requesting,” “requested,” and “requests” will all be stemmed to their root word “request.”

that commonly co-occur within the data. The model outputs (1) a set of topics, which are defined as mixtures of words, where each word has a probability of belonging to each topic, and (2) for each document analyzed, the proportion of the document associated with each topic. As such, each document can be characterized by a vector of proportions, representing the share of the document associated with each topic. Using STM, we identify a set of 25 topics<sup>10</sup> discussed within the *gram sabhas*, and explore how these topics vary with the identifiable characteristics of speakers and villages — including the gender of the speaker, the position of the speaker, and the reservation status of the village council president (female and/or Scheduled Caste). The generated topics are presented in Appendix Table A.1, which lists the highest probability words in each topic, as well as the FREX words, which are both frequent and exclusive, thereby identifying the words that distinguish topics. We also validate these topics in Appendix 3A using two tests of predictive validity. Below, Figure 3 presents the distribution of these topics across the full corpus.

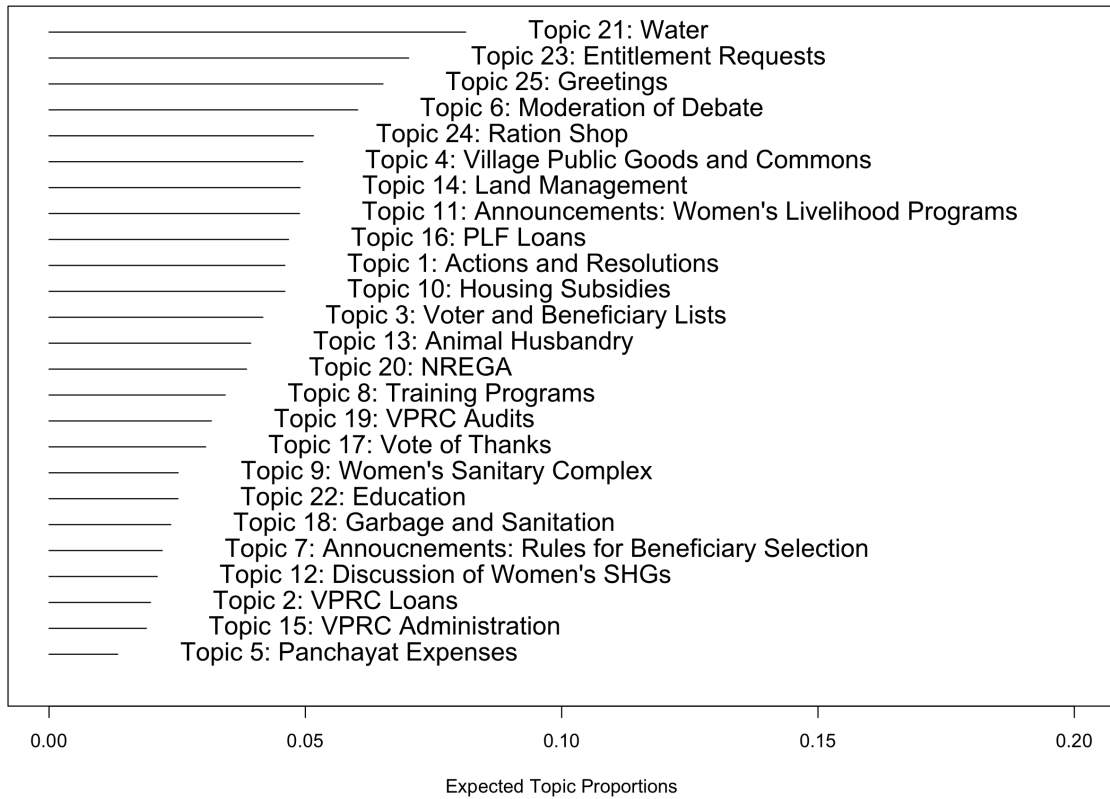
### 3.4 Measures

Having interpreted and validated the topic model output, we now turn to our measures of deliberative participation and influence — that is, whether women are able to speak and how well they are heard. As a measure of their participation, we estimate the effect of PVP both on women’s attendance (measured in raw numbers and as a percentage of female voters), as well as the frequency and volume of speech. For measures of frequency, we examine the share of all speech delivered by women, as well as the share of female speeches among only citizens (excluding politicians and administrators). As a measure of volume, we look at the length of speeches — in terms of the number of words — to capture the amount of floor time enjoyed by women versus men. Collectively, these measures capture the extent to which PVP encourages women to be present and active participants in the civic space.

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<sup>10</sup>Since this method assumes a fixed, user-specified number of topics, we first assess the relative performance of models under a range of values ( $K \in 5, 50$ ), and choose  $K = 25$  for the preferred specification. This specification performs relatively well on a number of empirical tests (residuals fit, held-out likelihood, semantic coherence, and exclusivity of topics), and yields topic clusters consistent with our substantive understanding of village assembly discussions. We also re-ran the analysis for 15, 20, and 30 topics, and results remain largely robust to these alternative specifications.

Figure 3: Distribution of Topics Across Corpus



Second, as a measure of whether women are more likely to *be heard*, we use patterns in the topics discussed to identify who drives the topic of conversation, and which speakers are most likely to receive a response from the state. More specifically, we examine whether women who speak are as likely as men to steer the conversation towards the issues they raised (agenda-setting power). To operationalize this concept, we first identify the topic of each speech using the STM, and then examine whether the speeches that follow continue to address the same issue. Given that each speech is modeled as a mixture of topics, we focus on the primary and secondary topic associated with each document. We also examine the share of the following five speeches that continue to address the same topic, and the length that a topic persists.

Finally, we examine whether the state (i.e. administrators or elected officials) is more likely

to respond to certain speakers. Given that a key goal of the *gram sabha* is to provide ordinary citizens with an avenue to speak directly to their elected representatives — to ask questions, to demand accountability, to voice complaints — one measure of deliberative influence is whether state officials directly address citizen concerns. To measure this, we generate a series of indicator variables to capture (a) whether a citizen’s speech is followed by an official, either elected or administrative, and (b) whether that response addresses the topics raised by the citizen.

## 4 EFFECT OF PVP ON DELIBERATIVE EQUALITY

### 4.1 *Equality of Participation*

We first examine whether PVP boosts attendance and frequency of speech among women. While attendance levels among women are already quite high in Tamil Nadu, the presence of PVP still aims to foster collective action among women and explicitly link SHG activities to local government. Table 3 presents the results. Models (1) through (4) present the effect of PVP on women’s attendance, measured in raw numbers, while Models (5) through (8) present the effect of PVP on women’s attendance, measured as a percentage of female voters in the village. The baseline specifications suggest that PVP leads to roughly 70 more women in attendance, or an 8 percentage point increase (from a baseline of 8.5 percent). This represents a *doubling* of female attendance at the *gram sabha*. These results are robust to the inclusion of a variety of demographic and infrastructural controls, and are consistent with those of Khanna et al. (2015), in which women from the same villages are asked about their attendance at the the most recent asseembly. They find that PVP boosts women’s attendance by 65 percent, from a baseline of 11 percent in control villages to nearly 20 percent in treatment areas; our findings are substantively similar, though smaller in both level and magnitude — lending support to the concern that self-reported measures of women’s political activity may overestimate actual behavior.

Second, we look at whether this boost in attendance is accompanied by a greater frequency of women’s speech (Table 4). Here, the unit of analysis is the document, and we examine whether

Table 3: Effect of PVP on Women’s Attendance

	<i>Dependent variable:</i>							
	Female Attendance (Raw)				Female Attendance (% of Voters)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I(PVP)	68.63*** (24.34)	70.03*** (24.45)	79.61*** (24.12)	58.16*** (21.59)	0.08*** (0.03)	0.09*** (0.03)	0.10*** (0.04)	0.07*** (0.02)
Matched Pair FE	✓	✓	✓	✓	✓	✓	✓	✓
Demographic Controls		✓	✓			✓	✓	
Infrastructure Controls			✓				✓	
<i>p</i> -Score Control				✓				✓
Observations	96	96	96	96	95	95	95	95

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages. Demographic controls include: number of households, percentage Scheduled Caste, percentage Scheduled Tribe. Infrastructure controls include indicators for the presence of a primary school, secondary school, health center, hospital, clinic, medica shop, government hospital, and bank.

Table 4: Effect of PVP on Frequency of Women’s Speech

	<i>Dependent variable:</i>							
	P(Female), All Speeches				P(Female), Citizen Speeches			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I(PVP)	0.07** (0.03)	0.06*** (0.03)	0.05*** (0.02)	0.07** (0.03)	0.22*** (0.05)	0.21*** (0.04)	0.22*** (0.04)	0.22*** (0.05)
Matched Pair FE	✓	✓	✓	✓	✓	✓	✓	✓
Demographic Controls		✓	✓			✓	✓	
Infrastructure Controls			✓				✓	
<i>p</i> -Score Control				✓				✓
Observations	3,894	3,894	3,894	3,894	2,130	2,130	2,130	2,130

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages. Demographic controls include: number of households, percentage Scheduled Caste, percentage Scheduled Tribe. Infrastructure controls include indicators for the presence of a primary school, secondary school, health center, hospital, clinic, medica shop, government hospital, and bank.

the likelihood of having a female speaker is greater in treatment rather than control villages. Models (1) through (4) of Table 4 present results for all speakers (officials and citizens), while Models (5) through (8) focus on speeches only by citizens. Once again, we see that PVP has a substantial impact on the frequency of women’s speech. We see a roughly 6 to 7 percentage point increase in the incident of any women’s speech. Given a baseline frequency of 35 percent, this increase represents an 18 percent change. The effect is even more pronounced when looking at citizen speeches alone. From a baseline rate of 38 percent, PVP increases female speech by 17 percentage points, which represents a 57 percent increase. These results hold to a variety of specifications, including those that control for demographic and infrastructural characteristics.

Table 5: Effect of PVP on Length of Women’s Speech

	<i>Dependent variable:</i>							
	Speech Length (All Speakers)				Speech Length (Citizens Only)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I(Female)	-16.97* (8.83)	-13.38* (7.74)	-16.95* (9.13)	-17.32* (8.86)	-4.33 (2.68)	-3.72 (2.84)	-7.48** (3.49)	-4.54* (2.55)
I(PVP)	-10.02 (9.96)	-9.33 (7.98)	-7.63 (8.75)	-8.73 (9.07)	-5.46 (3.77)	-4.88 (3.33)	-5.74 (4.11)	-5.04 (3.70)
I(Female) x I(PVP)	21.91* (12.68)	19.02 (12.13)	23.82* (13.54)	22.43* (12.97)	51.92*** (9.36)	51.44*** (8.93)	56.04*** (10.25)	52.13*** (9.49)
Matched Pair FE	✓	✓	✓	✓	✓	✓	✓	✓
Demographic Controls		✓	✓			✓	✓	
Infrastructure Controls			✓				✓	
p-Score Control				✓				✓
Observations	3,894	3,894	3,894	3,894	2,130	2,130	2,130	2,130

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages. Demographic controls include: number of households, percentage Scheduled Caste, percentage Scheduled Tribe. Infrastructure controls include indicators for the presence of a primary school, secondary school, health center, hospital, clinic, medica shop, government hospital, and bank.

Third, we examine the effect of PVP on the *length* of floor time enjoyed by women (Table 5). Here, we proxy for floor time using the word count of each speech. Consistent with previous work, we find that women generally occupy less floor time than men, about 16 fewer words per speech (compared to an average of 78 words per speech for men in control villages); given that fewer women speak overall, this leads to a massive disparity in floor time. PVP, however, has a substantial impact on women’s length of speaking, increasing the average speech length by over 20 words for the full sample, and by over 50 words per speech among citizen speeches. This disparity not only closes the gender gap in floor time, but actually enables women to take up a majority of the conversation.

#### 4.2 Deliberative Influence

While women are speaking significantly more in our treatment villages, their voices may still go ignored. Previous empirical work has shown that women are significantly less likely than men to drive conversation or set the agenda (Karpowitz and Mendelberg, 2014; Parthasarathy et al., 2017). To examine whether PVP improves women’s ability to influence discussion, Table 6 regresses two measures of agenda-setting power – the likelihood that the following speech is on

the same topic (Models 1 - 4), and the length of subsequent speeches that are on the same topic (Models 5 - 8) – on an interaction between the speaker’s gender and the village treatment status.

Table 6: Effect of PVP on Deliberative Influence

	<i>Dependent variable:</i>							
	Next Same				Length Same			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I(PVP)	-0.05* (0.03)	-0.05** (0.03)	-0.05 (0.03)	-0.06* (0.03)	-0.09 (0.10)	-0.15 (0.11)	-0.15 (0.10)	-0.16 (0.11)
I(Female Speaker)	-0.01 (0.03)	-0.01 (0.03)	-0.0001 (0.03)	-0.004 (0.03)	0.02 (0.11)	-0.02 (0.11)	0.02 (0.12)	-0.01 (0.11)
I(PVP) $\times$ I(Female Speaker)	0.003 (0.05)	-0.001 (0.05)	-0.01 (0.05)	-0.001 (0.05)	0.03 (0.17)	0.04 (0.17)	0.003 (0.18)	0.04 (0.17)
Matched Pair FE	✓	✓	✓	✓	✓	✓	✓	✓
Topic FE	✓	✓	✓	✓	✓	✓	✓	✓
Demographic Controls		✓	✓			✓	✓	
Infrastructure Controls			✓				✓	
<i>p</i> -Score Control				✓				✓
Observations	2,099	2,099	2,099	2,099	2,061	2,061	2,061	2,061

*Note:* \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages, but include only citizen speakers. Demographic controls include: number of households, percentage Scheduled Caste, percentage Scheduled Tribe. Infrastructure controls include indicators for the presence of a primary school, secondary school, health center, hospital, clinic, medical shop, government hospital, and bank.

Across all specifications, we find no evidence that PVP improves the agenda-setting power of women; point estimates are small and statistically insignificant – suggesting that the presence of this intervention does not increase the likelihood that women are able to drive conversation. Moreover, we find no evidence that PVP improves women’s ability to elicit a response from the state (Table 7), let alone from elected officials (Table 8). To ensure that these results are robust to alternative specifications of the topic model itself, we re-run the analysis with 30 topics and find largely consistent results (presented in Appendix 3B). Given that one key function of the *gram sabha* is to provide a forum for citizens to make requests of and demand accountability from politicians, elected officials’ failure to respond to women suggests that they remain unheard within the *gram sabha*.

Interestingly, despite women’s lack of substantive influence, Khanna et al.’s (2015) survey-based evaluation of PVP suggests that women *feel* more efficacious after program implementation. More specifically, when presented with hypothetical vignettes about various village and

Table 7: Effect of PVP on Responsiveness of the State

	<i>Dependent variable:</i>			
	On Topic Official Response			
	(1)	(2)	(3)	(4)
I(PVP)	-0.05 (0.03)	-0.05 (0.03)	-0.06* (0.03)	-0.06* (0.03)
I(Female Speaker)	0.005 (0.05)	0.002 (0.05)	0.005 (0.05)	0.004 (0.05)
I(PVP)xI(Female Speaker)	0.02 (0.07)	0.02 (0.07)	0.02 (0.08)	0.02 (0.07)
Matched Pair FE	✓	✓	✓	✓
Demographic Controls		✓	✓	
Infrastructure Controls			✓	
<i>p</i> -Score Control				✓
Observations	1,141	1,141	1,141	1,141

Note: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages, but include only citizen speakers.

Table 8: Effect of PVP on Politician Responsiveness

	<i>Dependent variable:</i>			
	On Topic Politician Response			
	(1)	(2)	(3)	(4)
I(PVP)	-0.06 (0.05)	-0.06 (0.05)	-0.10 (0.07)	-0.06 (0.05)
I(Female Speaker)	-0.06 (0.05)	-0.05 (0.06)	-0.03 (0.06)	-0.06 (0.06)
I(PVP)xI(Female Speaker)	0.001 (0.10)	-0.02 (0.09)	-0.03 (0.10)	0.001 (0.10)
Matched Pair FE	✓	✓	✓	✓
Demographic Controls		✓	✓	
Infrastructure Controls			✓	
<i>p</i> -Score Control				✓
Observations	485	485	485	485

Note: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages, but include only citizen speakers.

household level issues (including public service delivery, infrastructure, local law and order, and family disputes), women in the same treatment villages as those studied here were nearly 25 percent more likely than women in control villages to state they would take some form of action – be it speaking to a village official or raising the issue at a *gram sabha*. Of course, such hypotheticals do not capture whether their promised action will yield results, but the boost in women’s sense of self-efficacy is a positive step towards their public and political action.



## 5 DISCUSSION

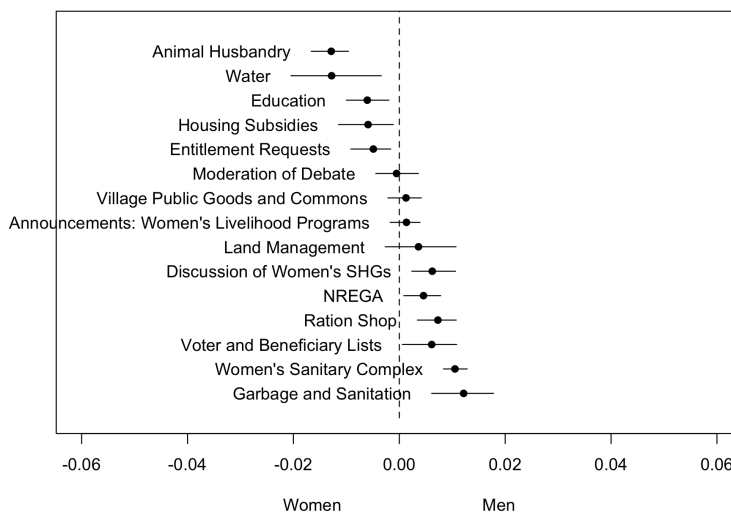
Taken together, these patterns highlight the opportunities and challenges to improving equitable deliberation. Against a backdrop in which women are less likely to attend and participate in local governance, we show that a bottom-up intervention can significantly increase women's engagement in the *gram sabha*. We do so using multiple measures of voice — their presence, the share of speeches made by women, and the floor time that they use. However, we find little evidence that this newfound voice is able to improve women's deliberative influence. Across multiple measures of agenda setting power and state responsiveness, we find that women in PVP villages are no more likely to get a relevant response from peers or from the state. That we see little shift on these latter indicators underscores some of the challenges in trying to improve deliberative equality; it is not enough to induce women to speak, but we must also encourage others to listen.

Another possible explanation for women's lack of agenda-setting power may be that women in treatment areas are bringing up a set of *new* topics, related to Pudhu Vaazhvu itself, that do not elicit responses from their fellow villagers or elected officials. Indeed, PVP villages discuss 2.66 more topics on average than non-PVP villages — a difference that is significant at the 0.001 level. To address this, we examine the variation in topics raised by gender; more specifically, we estimate the difference in expected topic proportion between men and women across treatment and control villages (Figure 4a). In control villages, we find that men and women are generally likely to discuss the majority of topics with the same frequency, with a few notable exceptions that reflect the gendered nature of social life in rural Tamil Nadu. More specifically, men are significantly more likely to discuss employment and expenditure-related topics (like NREGA, the rural employment guarantee, and the ration shop), while women are more likely to raise water and housing concerns, as well as education.

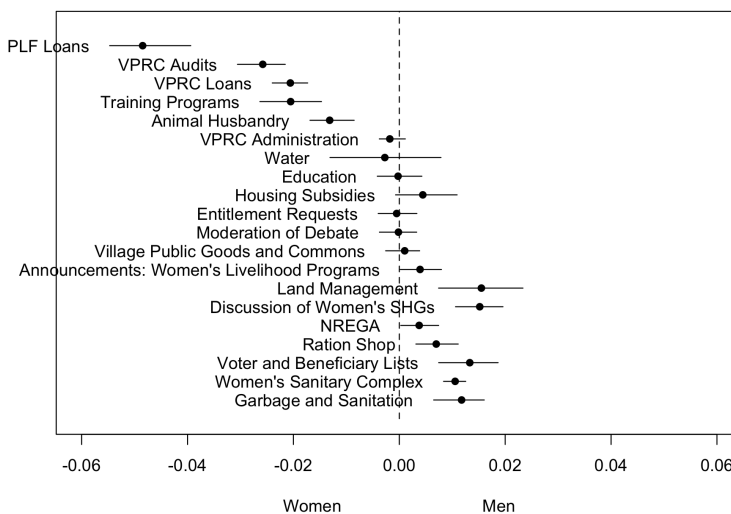
By contrast, in treatment villages, women speak much more than men about project activities, like loans, spending audits, and job training, and do not speak significantly more than men about

Figure 4: Distribution of Topics by Gender

(a) Control Villages



(b) Treatment Villages



*Note:* The Figures above plot the expected topic proportion and 95% confidence interval for each topic among female speakers, by treatment status. Coefficients less than zero indicate topics that are more frequently raised by women, while those greater than zero indicate topics that are more frequently raised by men in non-PVP villages

those issues that they had spoken more about in control villages. In other words, it may be that PVP is fundamentally shifting the *content* of conversation that women engage in – moving them from discussing primarily domestic matters (water collection, education) to issues related to the administration of the program. Table 9 presents the average number of speeches within a village devoted to specific issues. When we look at canonically “women’s” issues, such as water, housing, education, etc., we see a marked decline in the frequency that these issues are discussed. The two notable exceptions are entitlement requests and animal husbandry, both of which are emphasized by PVP’s livelihoods and social safety net programs. By contrast, for the canonically “male” issues, such as employment, ration, and garbage, we see no discernible difference. This suggests that even though women are speaking *more* often in treatment villages, they are speaking specifically about the project activities, whereas the men continue to raise their usual governance concerns.

Table 9: Topic Counts, by Treatment Status

	Avg. Speeches, Control	Avg. Speeches, PVP	t-statistic	p value
Water	9.3200	6.5000	2.1102	0.0376
Housing	5.1400	3.1200	2.5822	0.0115
Entitlement Requests	7.1200	9.5000	-1.5262	0.1305
Education	1.8000	1.6400	0.3752	0.7083
Public Infrastructure	2.2400	2.6800	-0.8833	0.3795
NREGA	2.7200	1.8000	1.6389	0.1048
Ration Shop	3.6200	3.1000	0.5158	0.6073
Garbage	1.4200	1.3600	0.1887	0.8507
Voter Lists	2.7600	4.4000	-2.2051	0.0299
Sanitary Complex	0.8800	0.6800	0.7922	0.4303
SHGs	1.4400	1.2200	0.6521	0.5159

Whether this is normatively problematic or not remains to be seen. On the one hand, if PVP encourages its members to raise issues that are important and consequential for previously disempowered groups, it may not be worrisome that other citizens have less time to discuss matters relevant to them. On the other hand, if the newly vocal constituency of women created by PVP crowds out discussion that is broadly relevant to other marginalized groups, we may have reason to worry that the *gram sabha* is no longer dominated by men, but by the project’s participants. That is, we should be cautious about programs that so alter the organic processes of

the *gram sabha*, which has been a broadly effective forum for local governance.

The notion that outside intervention might have unintended consequences on local dynamics of citizen participation is not new. For example, Bano (2012) studies the consequences of externally funded NGOs in Pakistan, and finds that these organizations often displace organic community-based groups and upset informal processes by which they could monitor one another. In Kenya, Gugerty and Kremer (2008) evaluate the impact of a funding program to strengthening women's associations and find that the introduction of external funds has little impact on the groups' activities, but leads to a substantial change in the membership of groups, encouraging the entry of younger, more educated women. In our study, the consequences of external intervention have less to do with membership, but we do see that the introduction of this external program may meaningfully shift conversation about relevant governance issues.

Of course, the growth of project-specific conversation may be a consequence of PVP's unique design, which specifically encourages women to publicly administer the program's activities within the village. This feature of PVP is just one of the many channels by which this intervention may boost women's civic engagement; other channels include the provision of credit access, livelihoods training, and social networks fostered by the group-based format of the program. Evidence from an earlier economic evaluation of PVP by Khanna et al. (2015) suggests that all of these mechanisms may be at play; in their household survey, they find that PVP reduces the high cost debt burden of target households, improves women's intrahousehold decision-making power, and boosts their willingness to engage with public officials. Theoretically, each of these components may *individually* raise women's ability to participate in the public sphere: With greater access to credit and livelihoods, women may have more decision-making power and autonomy within the home — power which earns them more public freedoms. The social networks developed by the group-based format of the program may facilitate collective action (Sanyal, 2014). And the particular focus on women-led administration of PVP may “mechanically” boost the participation of women in the *gram sabha*, as they use this public space to announce programs and publicize PVP's activities. Unfortunately, while the bundled nature of this intervention precludes us from

unpacking the effects of any given channel, parsing these mechanisms and understanding their interactions is a ripe area for future research, particularly for policy makers.

Additionally, future scholarship is needed to understand the heterogenous impacts that such programs can have on women from different caste, religious, and class backgrounds, which have been shown to mediate the impact that self-help groups and livelihoods training can have on women's empowerment (Field et al., 2010). This study's focus on the speech acts of women in the *gram sabhas* limited data collection of those individual characteristics which could not be immediately visually ascertained. Collecting such information would have interfered with the natural functioning of the meeting. As a result, we cannot identify the extent to which PVP's focus on including Scheduled Caste and Tribe households from the poorest of the poor may be relevant to understanding the null results on deliberative influence.

## 6 CONCLUSION

Motivated by the concern that inequalities among citizens may limit the ability of deliberative democratic institutions to produce more inclusive development outcomes, this paper opens the "black box" of the *gram sabhas* at the core of India's decentralization effort. We use *text-as-data* methods on an original corpus of village assembly transcripts from rural Tamil Nadu to show that bottom-up efforts to empower and induce women's participation can be useful in mitigating the gaping gender gap in political participation. More specifically, we evaluate the impact of the a woman-centered poverty alleviation program, which explicitly aims to bring women into greater contact with village government and to provide them with greater agency in the administration of a government program. We find that PVP is able to significantly improve *gram sabha* participation by women in terms of their attendance, their propensity to speak, and the floor time they enjoy. However, we also show that greater voice for women does not lead to greater agenda setting power or responsiveness from the state. This may result from the fact that project-facilitated participation encourages women to speak up primarily about activities related to PVP itself, in ways that potentially fail to engage the broader village community. Or it may simply reflect the

deeper difficulty in improving deliberative equality, which requires not only that citizens have an equal ability to speak, but also to be heard.

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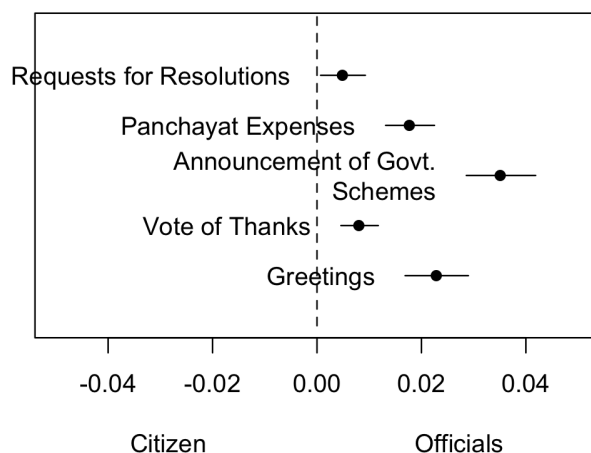
## APPENDICES

### A TOPIC INTERPRETATION AND VALIDATION

A key challenge in the *text as data* literature, particularly with unsupervised methods, lies in how to interpret the topics that are produced. We label topics based on both a careful examination of the highest probability and FREX words presented in Table A.1, as well as a reading of the documents most associated with a given topic. While the topics identified by this method are largely consistent with what we would expect in a *gram sabha* meeting, we further validate the topics generated in two ways.

First, we employ two tests of predictive validity – that is, we test whether certain topics are more prevalent based on the characteristics of the speaker and village. First, we examine whether the “proforma” topics generated by the topic model are more likely to be discussed by officials, rather than citizens. Since the topic model identifies a set of standard, routine remarks – in particular, the reading of resolutions, the formal greetings and votes of thanks, and discussion of government funding allocation – as distinct topics; if these topics capture the rote features of assemblies as they are conducted, these should be primarily spoken by officials, who are responsible for convening and adjourning the meeting, as well as sharing information about recent public expenditures. Figure A.1 plots the difference between the expected proportion of these proforma topics between citizens and officials (both elected and administrative) for the documents in the corpus. As expected, these proforma speeches are all *significantly* more likely to be raised by officials, suggesting that the topics reflect our substantive interpretation of their content.

Figure A.1: Topical Prevalence of Proforma Topics, by Position of Speaker

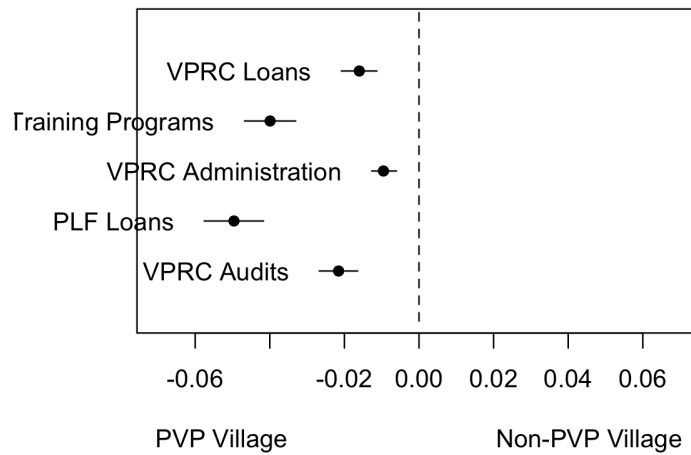


*Note:* The figure above plots the expected topic proportion and 95% confidence interval for each proforma topic, by the speaker’s position. Coefficients greater than zero indicate topics that are more frequently raised by officials, while those less than zero indicate topics that are more frequently raised by citizens.

As a second test of predictive validity, we examine whether topics explicitly related to the

intervention, PVP, are more likely to be raised in treatment villages. Since these topics are explicitly related to the treatment, they should be largely absent from our control areas. Figure A.2 plots the difference between the expected proportion of these proforma topics between treatment and control villages for the documents in the corpus. As expected, these PVP topics are all *significantly* more likely to be raised in treatment areas, suggesting that the topics reflect our substantive interpretation of their content.

Figure A.2: Topical Prevalence of PVP Topics, by Treatment Status



Note: The figure above plots the expected topic proportion and 95% confidence interval for each PVP-related topic, by the village's treatment status. Coefficients greater than zero indicate topics that are more frequently raised in control villages, while those less than zero indicate topics that are more frequently raised in treatment villages.

Table A.1: Top Word Stems by Topic

Topic	Top Word Stems
Water	Highest Prob: water, facil, tank, problem, drink, well, come FREX: water, pipe, drink, tank, fix, tap, motor
Entitlement Requests	Highest Prob: get, give, card, year, petit, dont, even FREX: give, get, petit, said, card, even, dont
Greetings	Highest Prob: come, panchayat, presid, member, request, inform, ward FREX: thank, behalf, ward, grievanc, presid, today, come
Moderation of Debate	Highest Prob: ask, one, want, say, commot, talk, keep FREX: ask, say, want, anyth, commot, talk, question
Ration Shop	Highest Prob: tell, told, ration, shop, good, month, much FREX: told, tell, ration, much, readi, good, answer
Infrastructure Requests	Highest Prob: villag, need, time, also, arrang, mani, pleas FREX: pleas, need, demand, time, requir, sit, speak
Land Management	Highest Prob: road, street, canal, land, light, pond, lake FREX: canal, pond, lake, road, tree, coloni, street
Women's Livelihood Programs	Highest Prob: peopl, scheme, person, famili, benefit, start, mani FREX: peopl, may, poverti, famili, benefit, scheme, start
PLF Loans	Highest Prob: group, loan, plf, got, member, function, repay FREX: loan, repay, group, outstand, plf, repaid, got
Actions and Resolutions	Highest Prob: take, write, chang, resolut, problem, pass, action FREX: write, find, week, bdo, take, see, solut
Housing Subsidies	Highest Prob: hous, build, toilet, construct, allot, built, place FREX: hous, construct, build, built, toilet, patta, allot
Voter and Beneficiary Lists	Highest Prob: gram, sabha, list, name, place, read, resolut FREX: gram, sabha, name, includ, list, voter, read
Animal Husbandry	Highest Prob: given, money, know, cow, pay, insur, thing FREX: money, know, cow, buy, die, thing, yet
NREGA	Highest Prob: work, day, done, panchayat, complet, job, number FREX: work, done, day, wage, yes, complet, agricultur
Youth Job Training	Highest Prob: train, vprc, person, youth, abl, differ, target FREX: train, youth, mental, abl, comput, differ, vprc
VPRC Audits	Highest Prob: fund, bank, receiv, amount, expans, account, incom FREX: fund, interest, receiv, incom, balanc, expans, account
Vote of Thanks	Highest Prob: meet, offic, conduct, particip, district, also, first FREX: particip, offic, collector, meet, conduct, attend, first
Women's Sanitary Complex	Highest Prob: govern, women, given, per, complex, sanitari, use FREX: govern, marriag, complex, per, sanitari, alloc, maintain
Education	Highest Prob: school, children, bus, educ, child, hospit, studi FREX: children, bus, studi, hospit, school, child, std
Garbage and Sanitation	Highest Prob: use, panchayat, plastic, remov, prevent, avoid, improv FREX: plastic, garbag, prevent, remov, avoid, vaccin, cattl
Rules for Beneficiary Selection	Highest Prob: scheme, panchayat, toilet, year, employ, beneficiari, discuss FREX: guarante, gandhi, employ, memori, price, beneficiari, propos
Discussion of Women's SHGs	Highest Prob: panchayat, group, women, help, self, peopl, award FREX: award, elig, self, support, survey, mission, help
VPRC Loans	Highest Prob: rupe, lac, drive, instal, fund, given, panchayat FREX: rupe, drive, lac, driver, instal, licens, total
VPRC Administration	Highest Prob: provid, detail, inform, regard, appoint, certif, centr FREX: centr, certif, appoint, provid, detail, communiti, util
Panchayat Expenses	Highest Prob: panchayat, sabha, approv, report, inform, regard, scheme FREX: report, approv, releas, financ, commiss, mainten, usag

## B RESULTS WITH ALTERNATIVE TOPIC MODEL SPECIFICATION

To ensure that the main results for agenda setting power and state responsiveness are not sensitive to a particular topic model specification, we re-run our topic model with  $K = 30$  topics, generate new measures of deliberative influence, and present results below. We first re-examine how agenda-setting power varies with the gender of the speaker and village treatment status. Consistent with the main results presented (for  $K = 25$  topics in Table 6), we see that even under this alternative model specification, we find no evidence that PVP improves the agenda-setting power of women; point estimates are small and statistically insignificant – suggesting that the presence of this intervention does not increase the likelihood that women are able to drive conversation.

Table B.1: Effect of PVP on Deliberative Influence ( $K = 30$ )

	<i>Dependent variable:</i>							
	Next Same				Length Same			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I(PVP)	−0.04 (0.03)	−0.04 (0.03)	−0.05 (0.04)	−0.04 (0.03)	−0.07 (0.09)	−0.11 (0.09)	−0.12 (0.09)	−0.10 (0.08)
I(Female Speaker)	−0.03 (0.02)	−0.03 (0.02)	−0.04 (0.02)	−0.03 (0.02)	0.04 (0.08)	0.001 (0.09)	−0.01 (0.09)	−0.01 (0.09)
I(PVP)×I(Female Speaker)	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)	−0.001 (0.11)	−0.02 (0.10)	−0.01 (0.10)	0.01 (0.10)
Matched Pair FE	✓	✓	✓	✓	✓	✓	✓	✓
Topic FE	✓	✓	✓	✓	✓	✓	✓	✓
Demographic Controls		✓	✓			✓	✓	
Infrastructure Controls			✓				✓	
<i>p</i> -Score Control				✓				✓
Observations	2,099	2,099	2,099	2,099	2,061	2,061	2,061	2,061

Note: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages, but include only citizen speakers. Demographic controls include: number of households, percentage Scheduled Caste, percentage Scheduled Tribe. Infrastructure controls include indicators for the presence of a primary school, secondary school, health center, hospital, clinic, medica shop, government hospital, and bank.

When we look at the response of state officials, we find evidence that under the alternative specification, PVP actually has a positive and significant effect on the likelihood of women receiving a relevant response (Table B.2); however, this effect is largely driven by administrators. When we look specifically at politician responsiveness (Table B.3), we find that PVP has no positive effect on whether women are heard or addressed by the state.

Table B.2: Effect of PVP on Responsiveness of the State ( $K = 30$ )

	<i>Dependent variable:</i>			
	On Topic Official Response ( $K = 30$ )			
	(1)	(2)	(3)	(4)
I(PVP)	-0.12*** (0.03)	-0.12*** (0.04)	-0.13*** (0.04)	-0.12*** (0.04)
I(Female Speaker)	-0.06** (0.03)	-0.06** (0.03)	-0.07*** (0.03)	-0.06** (0.03)
I(PVP)xI(Female Speaker)	0.12*** (0.03)	0.11*** (0.04)	0.13*** (0.04)	0.12*** (0.03)
Matched Pair FE	✓	✓	✓	✓
Demographic Controls		✓	✓	
Infrastructure Controls			✓	
<i>p</i> -Score Control				✓
Observations	1,141	1,141	1,141	1,141

Note: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages, but include only citizen speakers.

Table B.3: Effect of PVP on Responsiveness by Elected Officials ( $K = 30$ )

	<i>Dependent variable:</i>			
	On Topic Politician Response ( $K = 30$ )			
	(1)	(2)	(3)	(4)
I(PVP)	-0.15* (0.08)	-0.16** (0.08)	-0.16*** (0.07)	-0.15* (0.08)
I(Female Speaker)	-0.10* (0.06)	-0.08 (0.06)	-0.08 (0.06)	-0.10* (0.06)
I(PVP)xI(Female Speaker)	0.06 (0.09)	0.04 (0.09)	0.03 (0.09)	0.06 (0.09)
Matched Pair FE	✓	✓	✓	✓
Demographic Controls		✓	✓	
Infrastructure Controls			✓	
<i>p</i> -Score Control				✓
Observations	485	485	485	485

Note: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Robust Standard Errors, clustered at the block-pair, in parenthesis. Data are taken from the full sample of villages, but include only citizen speakers.