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# How to Make Decentralization Work? Evidence from a capacity-building intervention in local governance

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# How to Make Decentralization Work?

## Evidence from a capacity-building intervention in local governance\*

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### Abstract

In recent decades many countries have sought to decentralize the provision of public goods and services, and to some extent also the collection of government revenues. While local governments usually have more information on local needs, they typically have less capacity than higher-level governments and may be prone to elite capture. In this paper we evaluate the impact of a capacity-building training for Panchayat (village) staff in rural India to build skills for the Gram Panchayat Development Plan, a formal planning document drawn up on an annual basis. We do not find that the intervention affected the amount of funds requested in these plans; however, we find some evidence of a shift in focus towards social sector expenditure.

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\*The intervention studied here was carried out through a partnership between the NGO A Society for Promotion of Inclusive and Relevant Education (ASPIRE), as implementing agency, and Tata Steel Foundation, as funding agency. The authors would like to thank the program staff at ASPIRE, who led the intervention, for their advice, facilitating field interviews, and help with conducting this evaluation. We thank Himangshu Kumar, Manisha Jha, and Rojaline Mohanty for their excellent research assistance. Comments from Anne Brockmeyer and Jeffrey Hughes have considerably improved the paper. Special thanks to Dayaram, Executive Director at ASPIRE, for giving space to our research at ASPIRE and enhancing our understanding of the Panchayati Raj system. This research was made possible thanks to funding from the Scottish Funding Council, through the University of St Andrews Restarting Research Funding Scheme (grant number: SEF0-XRR031). Ethical approval has been granted by the University of St Andrews School of Economics & Finance Ethics Committee (approval code: EC15426). All views and errors are solely ours and this paper does not represent the view of ASPIRE or University of St Andrews, Scotland.

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# 1 Introduction

Decentralization is often promoted as a strategy to improve the efficiency of provision of local public goods. Despite such improvements being particularly needed in developing countries, these countries in general have more centralized governments than today's rich countries - even when they were at an earlier stage of development (Gadenne and Singhal (2014)). Over the past three decades, the Indian government has promoted decentralization as a means of supporting local democracy and development: by allowing fiscal decisions to be made by the people who will be most affected by them, it is expected that funds will flow to the sectors of greatest need. Yet while decentralization is defined by law and encoded in an array of policies, it is unclear to what extent this has translated into localized decision-making in practice.

In this paper we evaluate a capacity-building intervention that sought to improve Gram Panchayat (henceforth the Panchayat)<sup>1</sup> fiscal and financial planning by providing training to local elected leaders and administrative staff of the Panchayati Raj system.<sup>2</sup> The training was focused on the Gram Panchayat Development Plan (GPDP), an annual financial plan prepared by Panchayats to fund development gaps in their area. The training, implemented by the Indian education NGO *A Society for the Promotion of Inclusive and Relevant Education* (ASPIRE), was attended by 4558 participants across 253 Panchayats in the state of Odisha in late 2020. In addition to reviewing the roles and responsibilities of Panchayats, the training showed short videos outlining the GPDP process, before engaging participants in a 3-hour, detailed discussion of the practicalities of the planning process. Each training session lasted half a day to a full day. In 30% of Panchayats the training was held in-person and for the remainder it was held over Zoom.

Our research asks whether this intervention had any impact on the GPDPs which were submitted at the end of the 2020 planning cycle.<sup>3</sup> We are interested both in the impact of the intervention on the total budget requested by Panchayats, as well as any changes in the sector or fund source of planned spending. Our estimation strategy relies on a difference-in-

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<sup>1</sup>A Gram Panchayat is the smallest administrative unit with an elected government in India. They tend to comprise of more than one village or hamlet. The average population of a Panchayat varies from 1500 to more than 10,000. In Odisha, the state where the intervention was rolled out, the average Gram Panchayat population is between 5000-10000.

<sup>2</sup>The Panchayati Raj is a three-tier system of local self-governance in rural India. The three levels are (a) Gram Panchayats at the village level, (b) Block Panchayats at the Block or intermediate level, and (c) Zilla Panchayats at the District level. In this paper, we focus only on the fiscal and financial planning process of the Gram Panchayats.

<sup>3</sup>Plans submitted at the end of 2020 cover the 2021-22 Fiscal Year, which runs from April-March.

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difference analysis of administrative GPDP data. We define a sample frame from neighboring districts, and select a control group of similar Panchayats using propensity score matching.

We do not find any effect of the training on the total annual expenditure requested by the Panchayats. We do, however, find that treated Panchayats requested approximately 20% more funds for social sector activities. Most Panchayats rely on only two main funding sources for their development spending (the central and state grants); the treatment does not overturn this, although there is some evidence to suggest that Panchayats who received the training use more funds from alternate sources, such as generating own funds through taxation.

This paper is related to the literature on decentralization in India, and to the study of fiscal decision-making within Panchayats in particular. Within economics, much of this literature has focused on the elected leader of the Panchayat, known as Sarpanch or Pradhan (see, for example, [Pande \(2003\)](#); [Chattopadhyay and Duflo \(2004\)](#); [Besley et al. \(2004\)](#); [Ban and Rao \(2008\)](#)). This post is reserved on a rotating basis for female candidates, or for candidates from certain minority groups (scheduled tribes or scheduled castes, ST/SC), a feature which has facilitated rigorous analysis of the impact of leader identity on resource allocation. While the Sarpanch would normally be a key player in the GPDP process, our study abstracts from the identity issues which have been the focus of the papers cited above, to focus on a training program for which Panchayat leaders and staff were eligible regardless of gender or ethnicity.

Several recent papers have looked at the role of specific institutional features in directing the flow of funds to Panchayats. [Kochar et al. \(2009\)](#) study the role of central mandates in Panchayat spending; they find that mandates which require resources to be spent primarily in historically marginalized scheduled caste areas do affect spending patterns in favor of these groups. In contrast, unrestricted Panchayat funds in their study area are primarily spent in upper caste habitations. [Banerjee et al. \(2020\)](#) evaluate the impact of an e-governance reform which made it easier to detect misreporting of workfare payments. They find the intervention reduced leakages in the program, resulting in considerable cost savings even while employment increased slightly, although it did also result in payment delays.

One particularly innovative study sought to improve participation in Panchayat fiscal planning through a citizenship engagement campaign ([Rao et al. \(2017\)](#)). The intervention encouraged, educated, and supported citizens in understanding their rights and in creating

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Village Action Plans.<sup>4</sup> Rao et al. do not find any impact of the intervention across a range of quantitative indicators, although in-depth qualitative work suggests that this masks considerable heterogeneity across Panchayats. Similar to Rao et al. (2017), the intervention we study intended to improve the quality of Panchayat fiscal and financial planning; in contrast to their study, it targeted Panchayat elected leaders and administrative staff rather than citizenry.

Finally, this work is related to the broader literature on community-driven development (see Baird et al. (2013)). While there is an envelope of resources reserved for each Panchayat from central and state funds, these funds are only released following the annual submission of the development plan. GPDP spending is therefore subject to similar concerns to those raised regarding elite capture in decentralized spending more generally (Bardhan and Mookherjee (2005)). Our contribution here is not a comparison of spending by different government levels, but rather how a capacity-building intervention can influence spending priorities. Our results suggest that spending patterns are somewhat malleable to intervention, and therefore not rigidly imposed by existing interests or influences.

To our knowledge, this is the first paper which evaluates the impact of an intervention to improve the implementation of the GPDP process by directly training local government members. The intervention we evaluate has the potential to be replicated in other settings, making it of particular interest to policy makers or civil society organizations who work with Panchayats. Given the relatively modest scope of the intervention, the impacts we find are surprisingly large. This suggests that, as ASPIRE anticipated, significant information or knowledge gaps exist in Panchayats, specifically around the GPDP process.

The remainder of the paper proceeds as follows. Section 2 describes the context in which the Gram Panchayat Development Planning process sits. Section 3 presents the intervention. The empirical framework is described in Section 4; an overview of the data and description of the matching process follows in Section 5. Sections 6 and 7 present and discuss the results. Section 8 concludes.

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<sup>4</sup>Village Action Plans are a precursor to the Gram Panchayat Development Plans. Rao et al. (2017)'s intervention, which began in 2007, took place before the Ministry of Finance mandated the preparation of GPDPs in 2014. The GPDPs are annually uploaded online from FY2015-16. Our study benefited from this considerably increased availability of administrative data, however the range of outcomes we explore is narrow compared to that in Rao et al. (2017).

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## 2 Context

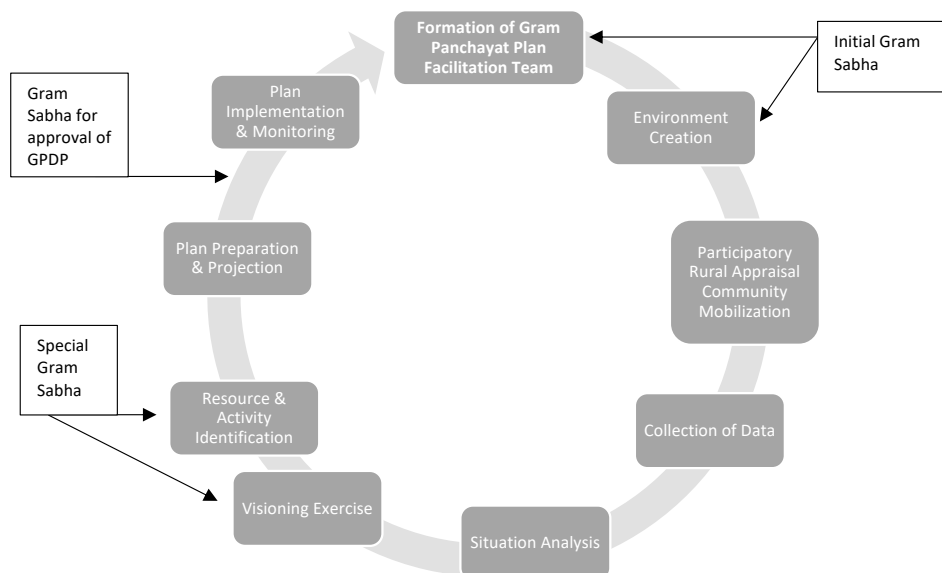
The 73rd amendment of the Indian constitution, passed in 1992, endows Panchayats with the powers and authority to function as local self-governance institutions. The constitutional amendment emphasizes functional and financial decentralization of powers to the Panchayats to enable people's participation in local decision-making. It sets up the *Gram Sabha*, an assembly consisting of all persons registered in the village electoral rolls, that meets at least four times a year to deliberate on all development activities and ratify budgetary allocations. The powers, authority, and responsibilities of the Panchayats are laid out in article 243G of the Indian constitution, where it is mandated that every Panchayat prepares an annual plan for economic development and social justice. This annual fiscal plan is called a Gram Panchayat Development Plan or GPDP.

A GPDP sets out activities and projects to be undertaken in 34 areas such as education, women and child development, infrastructure, social services, agriculture, livelihoods, social welfare, etc. A good GPDP is comprehensive, participatory, and inclusive, and ensures that resources are matched to the needs of the people. It involves a local participatory planning process, where needs are assessed from the 'bottom up' through the involvement of a wide range of local citizens and functionaries. Gram Sabha is a key institution in the GPDP process; it is convened at each of the three stages of the planning cycle - the initial community mobilization, the needs assessment, and the final approval of the plan.

GPDPs should be long-term in nature (a perspective plan, ideally for five years), implementable on an annual basis as an operational plan (annual action plan), based on priorities agreed at Gram Sabha. Once the annual plan is submitted, it is integrated into the development plans of higher administrative divisions, i.e. block and district development plans. After the implementation of each annual plan, the perspective plan is reviewed by taking the performance, feedback and impact of the annual plan implementation into account. The GPDP is then adjusted, with activities and projects re-prioritized for the coming financial year.

Figure 1 details the steps involved in conducting a participatory GPDP. The process begins with the formation of a Gram Panchayat Planning Facilitation Team (GPPFT) headed by the Sarpanch (village elected head), and including senior Panchayat members, local elected representatives, employees of line departments, members of Self-help Groups (SHGs), NGOs, and local citizens. The facilitation team should reflect the diversity of

Figure 1: Schematic diagram of the GPDP process



Source: Authors' illustration, based on [Government of India \(2018\)](#), page 23.

the village, especially ensuring adequate representation from marginalized communities and women. The Panchayats already have standing committees for various thematic areas - human development, women and child development, livelihood, infrastructure, social welfare and social justice. These standing committees together with GPPFT lead the process of collecting data by undertaking community-wide consultations and focus group discussions to assess the development needs of the Panchayat. Existing local self-governance institutions conduct their own needs assessment and submit these to the GPPFT. For example, School Management Committees draw up plans for assessing the current status and gaps in their respective schools.<sup>5</sup> Anganwadi development plans are prepared by Mothers Committees and Monitoring Committees composed of women who utilize Anganwadi services.<sup>6</sup> The plans for various line departments - water, education, health, etc., should also emanate from

<sup>5</sup>A School Management Committee is constituted in every public school under the Right to Education Act 2009. They are mandated to prepare a three year School Development Plan and annual work plans for their school.

<sup>6</sup>Anganwadi is a rural child and maternal care center that provides pre-school education, supplementary nutrition, health check ups, immunization, and referral services.

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this process.<sup>7</sup>

On completion of the situation analysis, the GPPFT prepares a Development Status Report of the Panchayat and places it before the Gram Sabha for deliberation. The Gram Sabha discusses and prioritizes the activities based on the needs of the area. At this stage, the Panchayat makes a note of the resources available to them to fund development activities. The Panchayat then drafts a GPDP, essentially a list of ‘feasible and executable’ priority projects from all the projects identified in the Development Status Report, specifying the area, duration, funding source, and amount requested. A final Gram Sabha is convened where the GPDP is put up for approval. The final plan for the upcoming financial year must be approved in the Gram Sabha by 31st December of the previous year. Plans are then uploaded onto the Government of India PlanPlus software application and are publicly accessible. These are then reviewed by the Block and District administration for appraisal and approval.

## 2.1 Resource Envelope for GPDP

All Panchayats receive grants-in-aid as per the recommendations of the Central Finance Commissions (CFCs) and the State Finance Commissions (SFCs).<sup>8</sup> Apart from the CFC and SFC grants, Panchayats also receive funds from sources such as Centrally Sponsored Schemes, State Sponsored Schemes, State Plan Funds, Member of Parliament Local Area Development Funds, Member of Legislative Assembly Local Area Development Funds, own source revenues, and borrowing. Funding for activities can be shared by multiple sources.

Funds tied to particular schemes may have conditions regarding usage and approval. All the other financial resources available can be tied or untied. Tied funds can only be used for a designated purpose while untied funds can be used at the discretion of Panchayats. For example, the 14th Central Finance Commission (FY 2015-20) recommended 90% of grants to be untied and used for location-specific felt needs and tied 10% of grants to the performance of Panchayats. The 15th CFC (FY 2020-25) has recommended that 40% of the total grant to a Panchayat will be untied and 60% will be tied to sanitation and drinking water projects.

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<sup>7</sup>Line departments are thematic government units mandated to work on specific sectors.

<sup>8</sup>The Central Finance Commission (CFC) was set up in 1951 to define the financial relations between the central government of India and the individual state governments. It is constituted once every five years to recommend on sharing of finance resources between the center and the states. The State Finance Commission (SFC) is a body created every five years by each state to rationalize and recommend state and sub-state level finance relations.



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If the Panchayat has fully saturated the needs in the tied category, it can use the tied funds for other things. The CFC and SFC funds are distributed by the state governments among their Panchayats on the basis of size of population, density of population, and percentage of scheduled tribe and scheduled caste population. During our study period (FY2015-16 to FY 2021-22), the majority of GPDP funds came from the 14th CFC, 15th CFC, and 5th SFC.

### 3 Intervention

Despite the constitution bestowing legal powers and authority to Panchayats to work as full-fledged local governments, they are yet to become truly autonomous. They depend heavily on blocks and district officials for approval of development projects and on line departments for technical consultations. In addition, they lack awareness of all the steps involved in the GPDP process and the full gamut of financial resources available to them.

In light of these issues, ASPIRE, an education NGO in India, crafted a GPDP capacity building training for Panchayats. ASPIRE works to strengthen the public school system in rural tribal areas of India by implementing a locally demand-driven, large-scale, immersive education program (henceforth the Program). For decades, the Indian government's main focus has been on the supply side - increasing number of teachers, improving school infrastructure, providing textbooks, teacher training etc. While this has certainly led to improvement in enrollment rates, learning levels have remained low, especially among first-generation learners. ASPIRE largely focuses on the demand side interventions - mobilising communities, strengthening school management committees (SMCs), Parent Teacher Associations (PTA), youth groups, and Panchayati Raj Institutions (PRIs) and ensuring that these groups participate in the delivery of education services. In addition, the NGO makes multiple simultaneous interventions ensuring universal school access (bringing dropout children to schools, eradicating child labor and child marriages) and quality learning (remedial classes, school libraries, use of local knowledge in pedagogy, imparting transversal skills) for all children in their project blocks. A particular feature of ASPIRE's work is that they roll out the Program to complete administrative units, usually a block or a district and run the Program for no less than seven years.

In October 2019, ASPIRE expanded to 11 complete blocks of Keonjhar district in Odisha

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state, with funding from Tata Steel Foundation (TSF).<sup>9</sup> This Program expansion is budgeted at \$1.46mn per annum for 7 years and has the ambition to cover all 405,168 children (0-17 years) from 322,978 households spread over 4002 villages in 253 Panchayats and 3 Urban Municipalities.<sup>10</sup> As Covid-19 hit and lockdown was declared in India from 24 March 2020, all schools were shut down, thereby disruption the NGOs plan to launch education interventions. ASPIRE realigned its objectives to mitigate the anticipated negative impact of the lockdown and became an official partner of the Panchayats to implement Covid-relief work.<sup>11</sup>

To take advantage of this newly-strengthened relationship with Panchayats, the NGO decided to launch a GPDP training workshop for all 253 Panchayats in the Keonjhar expansion blocks. The GPDP training module was designed in partnership with the governance-focused NGO Unnati, which has extensive experience empowering Panchayats in Gujarat and Rajasthan states. The training was first imparted to 30 Keonjhar Program staff, who further cascaded the training to 253 Panchayats. Between Oct-Dec 2020, training workshops were delivered to 4558 Panchayat staff (2107 females and 2451 males). The Panchayat staff included the Sarpanch, one member of the Block Panchayat, all Ward members,<sup>12</sup> and other administrative Panchayat staff. The workshop started with a one hour session on the role of Panchayats, their powers and their responsibilities, followed by eight videos on how to conduct a GPDP process. This was followed by a 3-hour detailed discussion on the GPDP steps, budget allocation, and challenges faced during implementation. The workshop closed with a Q&A session. ASPIRE also briefed the Panchayats about its role as a child rights NGO and how it plans to work with the local community, schools, and Panchayats to improve the lives of children in the area. The training lasted for half a day to one full day and was held over zoom in 70% of the Panchayats and in-person in the remaining 30%.

The intervention was designed to familiarize Panchayats with the participatory nature of the GPDP process, highlight the opportunities the GPDP presents for local development, discuss the sources of revenue available to a Panchayat, and teach basic skills needed to

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<sup>9</sup>Previously, ASPIRE and TSF have been working in six neighboring blocks in Odisha since 2015 and two blocks in Jharkhand state since 2017.

<sup>10</sup>The child and household population numbers are from a household census conducted by ASPIRE in 2020-21.

<sup>11</sup>The Covid-relief activities included supporting Panchayats in spreading awareness about Covid, distributing masks and sanitizers, helping Panchayats distribute dry ration and meals to food-insecure households, setting up temporary quarantine centres for the incoming migrants, helping migrants avail government benefits, and distributing textbooks to children as schools were closed.

<sup>12</sup>A Panchayat is divided into several wards. All voters in the ward elect their representative, called a ward member.

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successfully implement a GPDP. Note that the goal of the workshop was not for ASPIRE staff to prepare a GPDP on behalf of the Panchayat; rather, the purpose was to support the Panchayat office to take the lead on the consultative process as it was intended to play out.

The training also reminded the Panchayats of the deadlines for submitting a GPDP plan for the upcoming FY2021-22. In light of the Covid-19 lockdown and difficulties in conducting group meetings, the Keonjhar district administration sent out a special circular directing all Panchayats to conduct two special extra Gram Sabhas on 13th October and 12th November 2020 (in addition to the usual GPDP Gram Sabha on 2nd October) for drafting the FY21-22 GPDP. The final submission of the FY21-22 plan was on or before 31st December 2020. Out of the 253 Panchayats, 158 or 62% received the ASPIRE intervention before the second special Gram Sabha on 12th November and the rest received the training in the last two weeks of November 2020.<sup>13</sup> This implies that some of the treatment Panchayats had more time to incorporate learning from the intervention, if they wanted, in the FY21-22 GPDP plan.

In addition to the GPDP intervention, during the month of September 2020, ASPIRE Keonjhar Program staff facilitated preparations of Anganwadi Development Plans (ADPs) in 490 anganwadi centres (roughly 2 centers per Panchayat). The ADP plans highlighted the gaps in infrastructure, staff, pedagogy, and materials at the anganwadi centers and demanded resources and actions to fill these deficits. The ADP process took one week and involved orientation and training of 7274 members. The final ADPs were submitted by the anganwadi staff to the Panchayats in Oct-Nov 2020 to be considered for the FY21-22 GPDP.

It is worth noting that all 253 Panchayats received a second phase of GPDP intervention between April-October 2021 for the preparation of FY22-23 GPDP. We do not include GPDP data for FY22-23 in our study as ASPIRE had started several additional Program activities in 2021. Examples of the activities are: training of School Management Committee members in preparing School Development Plans, orienting Panchayat members in their roles and responsibilities towards schooling and education, community mobilizing activities around child rights, all of which can potentially impact the GPDP. For the FY22-23 GPDP, it is not possible to isolate the impact of GPDP training from ASPIRE's other governance-oriented activities.

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<sup>13</sup>It is worth noting that most Panchayats were unaware of the additional Gram Sabha dates till late October 2020, as the circular was not universally communicated by Block offices. ASPIRE Keonjhar Program staff had planned the dates for the training sessions before the circular was out and due to limited capacity and logistic issues, they could not bring forward the training for the remaining 38% Panchayats.

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## 4 Empirical Framework

### 4.1 Overview

Our empirical framework has two steps: first, we identify a plausible set of untreated Panchayats to serve as a counterfactual for our treatment group, and second we estimate the treatment effect of the intervention. These two steps are detailed below.

### 4.2 Defining the Control Group

Since the program, and hence the intervention, was not randomly assigned, our empirical strategy relies on defining a control group which is an accurate counterfactual for our treatment group. Specifically, the control group's FY2021-22 GPDP should be a valid counterfactual for the treatment group's FY2021-22 GPDP, absent treatment.

The non-random assignment of the treatment raises challenges for identification. First, we are concerned about selection: the Panchayats in which ASPIRE has chosen to work are selected in a particular way. We would expect treated Panchayats to look different from non-treated ones due to this. Second, even if we can model ASPIRE's selection process, we may not have balance across treatment and control Panchayats due to the finite number of Panchayats available.

We address these two challenges in sequence. We first consider the potential selection bias coming from treatment assignment by ASPIRE. To ensure that our pool of potential controls is not too dissimilar to the treatment group on their probability of being selected for treatment, we restrict our sample to districts adjacent to the treatment area, which currently have or are under consideration by ASPIRE and TSF for future setting up of the Program.

Next, we use propensity score matching to select from this pool a set of control Panchayats which are a plausible counterfactual to our treated Panchayats with respect to their GPDPs. Although we have a rich set of covariates to describe Panchayats, these have only modest power in predicting GPDP outcome variables. We therefore follow [Ryan et al. \(2019\)](#) and match our treatment Panchayats to control Panchayats with similar pre-treatment levels of our primary outcome variable: log total annual expenditure. This helps ensure that our treatment and control groups have similar GPDP pre-trends. The procedure and the resulting samples are described in [Section 5.3](#) below.

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### 4.3 Estimation of Treatment Effect

We estimate the treatment effect of the intervention using difference-in-differences. Our primary estimating equation is as follows:

$$y_{i,t} = \alpha_0 + \alpha_1 \text{PostTreat}_i + \alpha_2 \text{Post}_i + \alpha_3 \text{Treat}_i + \Gamma X_i + \epsilon_{i,t}, \quad (1)$$

where  $y_{it}$  is a GDP expenditure variable in year  $t$ ,  $Post = 1$  indicates the post-treatment period ( $t = 2021$ ),  $Treat = 1$  for treated Panchayats,  $PostTreat$  is the interaction of  $Post$  and  $Treat$ ,  $X_i$  is a set of predetermined Panchayat characteristics and time controls, and  $\epsilon_{i,t}$  is the Panchayat-time error term. The coefficient of interest when estimating Equation 1 is  $\hat{\alpha}_1$ , the estimated effect of treatment on GDP expenditure.

Given that our control group,  $Treat = 0$ , was defined using propensity score matching, when estimating Equation 1 we weight control group observations by their propensity score weights (unweighted results are presented as a robustness check).

## 5 Data

### 5.1 Data Overview

Our analysis is based on two main data sources: submitted GDPs and the 2011 Indian census. Annual GDPs must be uploaded by Panchayats to the eGramSwaraj website for approval. To promote accountability, plans remain on the website, and in the public domain, in perpetuity. Individual Panchayat-years can be found using drop-down menus for geographic sub-divisions and years. The website does not, however, facilitate batch download of these data. To build our data set we therefore implement a web-scraping script to collect submitted plans. We collected this data for financial years 2015-2021, for all Panchayats in our treatment and control sample frame. This frame, defined as all Panchayats in districts of Odisha which would be eligible (or have been included) for ASPIRE programming, covers the districts of Angul, Dehnakanal, Jajpur, Jharsuguda, Keonjhar, Sambalpur, and Sundargarh.

The Indian census is publicly available for download. We aggregate village-level characteristics to the Panchayat level in order to match this to the GDP data. Annual GDP data is merged with the census to create a panel data set at the Panchayat level. Matching

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of Panchayat observations in the census and GPDP data is not straightforward, as Panchayats are not assigned unique IDs, and Panchayat boundaries are occasionally re-drawn. We match GPDP and census data using string matching, with manual checks to ensure block and district identifiers correspond. Unmatched Panchayats are dropped from the sample. Where we are able to obtain updated village lists for each Panchayat, we use these to aggregate the census data (which is at the village level) for the most up-to-date mapping.<sup>14</sup> For the remaining districts, the best available list of Panchayats came from the official website of the Department of Panchayati Raj. Finally, we merge into this some additional data on mines from the Government of Odisha Department of Steel and Mines.

Our GPDP dataset includes 9,657 Panchayat-year observations. The panel is quite well balanced, but there are some Panchayats with missing GPDP data in some years. We drop Panchayats with missing plan data, retaining 8,911 Panchayat-year observations, or 1,273 Panchayats observed in each of 7 years.

While our focus in this paper is on the 2020 GPDP intervention, ASPIRE has been implementing its Education Program in neighboring blocks in Odisha since 2015. So as not to confound the treatment effect of the GPDP training with ASPIRE’s long-term Education Program, we drop blocks which had any ASPIRE interventions prior to 2020. This removes 115 Panchayats from the sample. Our sample frame therefore includes 1,158 Panchayats, each observed over 7 years.

## 5.2 Variables of interest

### 5.2.1 Outcome variables

Our outcome of interest is planned expenditure submitted by Panchayats in their annual GPDPs. The raw values of this variable are heavily skewed to the left; we therefore use the log of expenditure variables in our analysis. In addition to our primary variable of interest (total expenditure), we also explore the impact of the intervention on expenditure by category of spending, and by source of funds.<sup>15</sup>

When submitting the plan, GPDP expenses must be attributed to one of 34 spending categories. We hand-code these expenditures into four mutually exclusive categories: infras-

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<sup>14</sup>These lists were obtained from the relevant <district>.nic.in websites for 4 out of our 8 study districts: Angul, Jajpur, Jharsuguda and Keonjhar.

<sup>15</sup>The analysis in this paper is focused exclusively on submitted plans: expenditure, in this case, is planned expenditure.

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tructure expenditure, income-generating expenditure, social sector expenditure, and other (which includes all remaining unclassified categories).<sup>16</sup> The full list of categories, along with their coding into aggregated sectors, can be found in Table 7 in the Appendix.

Expenditure must also be requested from one or more specific funds. As described in Section 2.1, the two primary funding sources are the Central Finance Commission and the State Finance Commission. We explore the impact of the intervention on requests from these two major funding sources (each of which has a pre-defined resource envelope for every Panchayat), as well as on the aggregate of all other funds. This residual category includes own funds generated by the Panchayat, as well as smaller funds which may have particular conditions attached to them.

Table 1 provides an overview of our expenditure variables over time for all Panchayat-year observations in our sample frame. All but the first column are given in log values: the averages are therefore conditional on having a positive value for that year. (Table 8 in the Appendix provides counts of positive values for each cell.) There is considerable annual variation in spending, with annual averages ranging from 3.2-5.1 million Indian rupees (\$40,000 to \$64,000). Spending is concentrated in the Infrastructure and Social Sector categories, although in some years Other category spending is also substantial. Income Generating spending is a relatively minor category; it is also relatively sparse with only 9%-21% of Panchayats spending in this category in any year (Table 8).

Turning to source of funds, the Central Finance Commission is considerably more substantial than the State Finance Commission. Mean values from Other Funds are high, however these averages come from very few Panchayats with positive spending from these funds. With the exception of FY2020-21 plans (in that year 96% of Panchayats had a positive expenditure from Other Funds), only 1%-3% of Panchayats include Other Funds in their plans.

### 5.2.2 Independent variables

The majority of our independent variables come directly from the census, aggregated from village to Panchayat-level. In this aggregation, variables which are counts or area are added (e.g. population, number of schools, total area). Variables which define access at the village

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<sup>16</sup>Besley et al. (2007) consider two categories of Panchayat spending, those with high spillovers (construction and maintenance of village public goods, and those with low spillovers, specifically selection of beneficiaries for government welfare schemes. Our infrastructure and income-generating categories would mostly fall into the first, while social sector expenditures could fall into either.

Table 1: Mean and SD outcome variables by year

FY	Total	Log total	Infra	IncGen	SocSec	OtherSec	CFC	SFC	OtherFund
2015	3183012.84	14.85	13.67	11.62	13.77	13.07	14.41	13.72	14.48
	2512371.48	0.46	0.99	1.47	0.82	1.04	0.43	0.67	0.88
2016	3735756.66	15.05	13.82	11.43	14.00	13.32	14.69	13.72	14.74
	1764834.29	0.38	0.87	1.41	0.72	1.00	0.37	0.62	0.88
2017	4342988.95	15.15	13.86	12.26	14.24	13.32	14.87	13.70	14.76
	2594212.41	0.55	1.03	1.42	0.65	1.00	0.42	0.74	1.46
2018	5141324.54	15.32	14.25	12.01	14.29	13.44	15.06	13.74	14.49
	3286121.67	0.49	0.91	1.25	0.70	0.94	0.46	0.69	1.59
2019	4565181.37	15.31	14.16	12.14	14.22	13.54	15.08	13.56	13.74
	1222124.98	0.22	0.85	1.02	0.70	0.83	0.16	0.55	1.75
2020	3658197.67	15.06	13.48	12.03	14.44	13.10	14.75	13.72	10.15
	1485203.66	0.29	0.88	1.01	0.40	1.15	0.29	0.33	1.45
2021	3387818.26	15.01	13.65	12.31	14.35	12.74	14.64	13.64	11.21
	758869.54	0.20	0.80	0.87	0.32	1.31	0.16	0.24	1.64

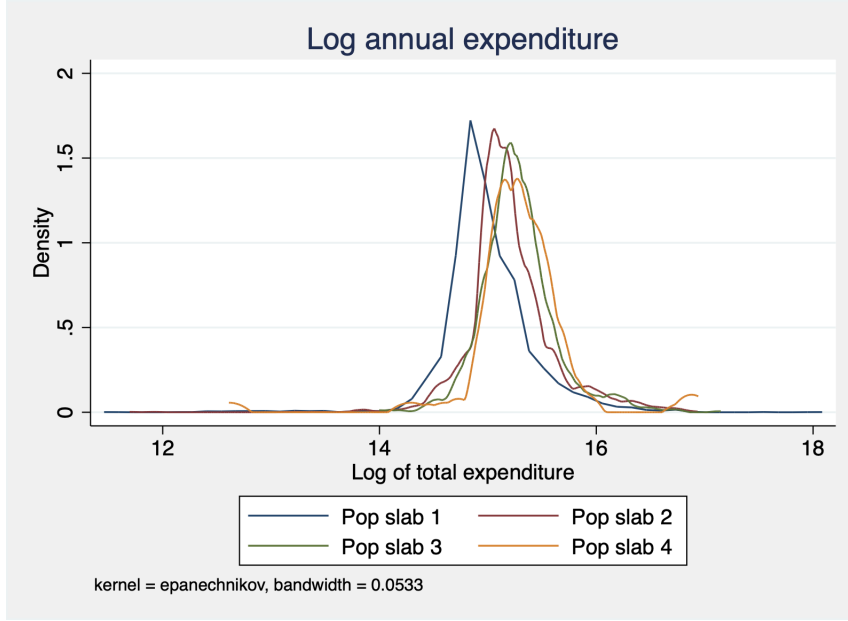
Note: table shows mean (first row) and standard deviation (second row) of the annual outcome variables for all observations in our sample frame. The first column (Total) is in rupees; all others are in log rupees. Note that observations with a 0 value are dropped in the log transform. Abbreviations: Infra = Infrastructure, IncGen = Income Generating, SocSec = Social Sector, OtherSec = Other Sector; CFC = Central Finance Commission, SFC = State Finance Commission, OtherFund = any other funding sources besides CFC and SFC. This table is discussed in Section 5.2.1.

level are averaged using village population as weights (e.g. presence of post office or road types, distance of village to nearest town).

We use total Panchayat population to define population cut-offs used by the Odisha government to determine funding envelopes for Finance Commission funds (see Appendix Figure 4, population cut-offs from [Centre for Budget and Policy Studies \(2018\)](#), p.19). These cut-offs create 4 population slabs: (1) Panchayats having population upto 5000, (2) population between 5001 to 7500, (3) population between 7501 to 10000, and (4) population above 10001. While our sample frame includes 9 Panchayats in the largest of these slabs, they are only in the control group, and are not selected into the sample. Of those Panchayats retained in the matched sample, 60% fall into the smallest slab, 27% into the second, and 13% into the third. Figure 2 plots the distribution of log total annual expenditure by population slab. The figure includes all Panchayat-year observations from the sample frame.



Figure 2: **Distribution of log annual GDP expenditure by population slabs**



Note: figure shows the distribution of total log annual expenditure by population slab. All Panchayat-year observation in the sample frame are included. This figure is discussed in Section 5.2.2.

### 5.3 Propensity Score Matching

We use propensity score matching to define a comparable set of treatment and control Panchayats. Our sample frame includes 219 treated Panchayats and 939 potential controls. To predict treatment we estimate a logit regression of the following form:

$$T_i = \beta_0 + \beta_1 \text{PreTreat}_i + \beta_2 X_i + \eta_i, \quad (2)$$

where  $T_i$  is a Panchayat's treatment status, PreTreat is a set of pre-treatment outcome variables,  $X_i$  are time-invariant Panchayat controls, and  $\eta_i$  is an error term.

Our primary specification includes 4 pre-treatment values of log total annual expenditure (from financial years 2015-2018), along with total population counts of males, females, scheduled tribes and scheduled castes, number of households, total Panchayat area, and dummy variables for population slabs used to calculate Panchayat-specific resource envelopes. We implement nearest-neighbor propensity score matching in Stata using PSMATCH2 (Leuven and Sianesi (2003)).

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Our matching strategy selects 138 Panchayats to form the control group (propensity scores can be found in the Appendix, Figure 5). The propensity score matching provides weights which balance the treatment and control samples: our control Panchayats receive an average weighting of 1.59, with a maximum of 6 and minimum of 1. Applying these weights, our panel includes 442 Panchayats, of which 357 are unique. Our primary specification applies the sample weights as this achieves the best balance across treatment and control characteristics. We check our results in the unweighted sample as well.

## 5.4 Balance Tests

Table 2 presents balance tests for a set of Panchayat-level covariates. The control observations in the table are weighted according to their propensity score matching weights, while the treatment observations each have a weight of one (a balance table without weights can be found in the Appendix: Table 9). While the treatment and control groups show a substantial and statistically significant difference on some characteristics (number of secondary schools, presence of post office, presence of mines in the block), on average the balance across covariates is quite good. This is particularly notable given that most of these covariates were not used in the propensity score matching. While we will use the variables shown in Table 2 as control variables in our primary specification, we explore the sensitivity of our results to alternate sets of controls as well.

# 6 Results

## 6.1 Preliminary results

What predicts GPDP expenditure? Table 3 shows the estimated coefficients from an OLS regression of our full covariate list on log annual GPDP expenditure. Despite the inclusion of variables that should mechanically determine expenditure (e.g. population slab and year indicators), the r-squared of the regression is modest at 0.343. This suggests considerable variation in GPDP expenditure which is not explained by observable Panchayat characteristics. Indeed, many coefficients which describe important Panchayat characteristics are not predictive of expenditure (e.g. amenities such as bus service and paved road, which proxy for connectivity; sex ratios and female literacy). Other characteristics are predictive: population slabs, as expected, as well as year and district, are all highly predictive. Having

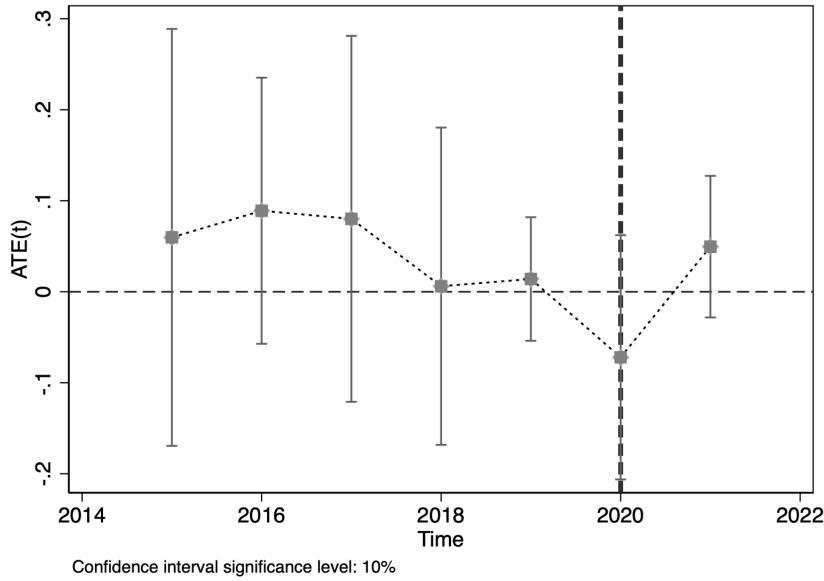
Table 2: Balance of characteristics across treatment and control

Variable	(1) Control		(2) Treat		T-test Difference	Normalized difference
	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(2)
Number of primary schools	219	7.525 (0.242)	219	7.256 (0.188)	0.269	0.088
Number of middle schools	219	3.763 (0.152)	219	3.945 (0.144)	-0.183	-0.084
Number of secondary schools	219	1.854 (0.086)	219	2.635 (0.100)	-0.781***	-0.529
Number of Sr secondary schools	219	0.256 (0.038)	219	0.306 (0.041)	-0.050	-0.086
Pucca (black topped) road	219	0.739 (0.021)	219	0.807 (0.020)	-0.068**	-0.226
Kuchha (gravel) road	219	0.982 (0.004)	219	0.998 (0.001)	-0.016***	-0.494
Mean village distance from nearest town	219	30.854 (1.453)	219	32.788 (1.356)	-1.934	-0.092
Public bus	219	0.211 (0.019)	219	0.152 (0.019)	0.059**	0.206
Private bus	219	0.456 (0.023)	219	0.393 (0.022)	0.063**	0.191
Post office	219	0.296 (0.018)	219	0.497 (0.017)	-0.201***	-0.726
Num Primary Health Sub-Centres	219	1.123 (0.054)	219	1.100 (0.044)	0.023	0.032
Total population	219	4930.630 (114.337)	219	5079.183 (112.229)	-148.553	-0.091
Number households	219	1107.187 (23.110)	219	1145.795 (25.072)	-38.607	-0.109
Number females	219	2473.128 (58.113)	219	2544.356 (55.720)	-71.228	-0.087
Literate females	219	1353.566 (37.285)	219	1269.630 (36.999)	83.936	0.157
Sex ratio: females te 1000 males	219	1004.580 (3.641)	219	1007.474 (3.282)	-2.894	-0.056
Total area Panchayat	219	2004.863 (80.332)	219	2058.758 (98.511)	-53.895	-0.039
Binary indicator any mine in block	219	0.210 (0.028)	219	0.822 (0.026)	-0.612***	-1.240
Scheduled tribe population	219	2429.096 (135.301)	219	2406.662 (93.227)	22.434	0.014
Scheduled caste population	219	579.790 (30.415)	219	578.406 (38.860)	1.384	0.003
Population slabs	219	1.521 (0.049)	219	1.575 (0.050)	-0.055	-0.077

Note: The values displayed for t-tests are the differences in the means across the groups. Observations are weighted using propensity score weights. Statistical significance indicated by \*\*\*, \*\*, and \* for the 1, 5, and 10 percent critical levels. This table is discussed in Section 5.4.

controlled for population slabs and overall population, number of households and population of scheduled tribe and scheduled caste remain significant. In addition to matching on pre-treatment values of annual expenditure, our primary matching specification includes year and population slab fixed effects, Panchayat area, number of households, and population counts of males, females, scheduled tribe and scheduled caste.

Figure 3: **Trend in GPDP expenditure: treat vs control**



Note: figure displays the difference in log annual expenditure between treatment and control Panchayats. 2020 is the treatment year. This figure is discussed in Section 6.1.

Before estimating treatment effects, we next check whether our treatment and control Panchayats have similar pre-treatment trends in GPDP expenditure. Figure 3 plots the difference in log annual expenditure between treatment and control, generating using TFDIFF in Stata (Cerulli (2019)). The figure suggests that the parallel trend assumption holds in the pre-treatment period. The trend seems stable post-treatment as well, suggesting that the treatment did not affect annual expenditure: this will be explored in more detail below. Figures plotting the trend in log expenditure levels (as opposed to the difference) can be found in the Appendix (see Figures 6 and 7). Based on an examination of these trends, we feel confident proceeding with a difference-in-differences estimation.

Table 3: Predictors of log annual GDP expenditure

	(1)	
	Log annual expenditure	
Number of primary schools	0.00434**	(0.00221)
Number of middle schools	-0.00252	(0.00317)
Number of secondary schools	-0.0116***	(0.00439)
Number of Sr secondary schools	0.00633	(0.00627)
Pucca (black topped) road	0.00448	(0.0150)
Kuchha (gravel) road	-0.142*	(0.0746)
Mean village distance from nearest town	-0.000636***	(0.000225)
Public bus	0.00667	(0.0145)
Private bus	0.0128	(0.0129)
Post office	0.00390	(0.0155)
Num Primary Health Sub-Centres	0.0113*	(0.00633)
Total population	0.000104	(0.0000688)
Number households	-0.000125**	(0.0000495)
Number females	-0.000178	(0.000141)
Literate females	0.00000780	(0.0000273)
Sex ratio: females te 1000 males	-0.0000837	(0.000164)
Total area Panchayat	-0.00000629	(0.00000475)
Binary indicator any mine in block	0.0160	(0.0102)
Scheduled tribes population	0.0000189***	(0.00000649)
Scheduled castes population	-0.0000343***	(0.0000104)
Population slabs=1	0	(.)
Population slabs=2	0.168***	(0.0139)
Population slabs=3	0.261***	(0.0249)
Population slabs=4	0.313***	(0.0600)
Year=2015	0	(.)
Year=2016	0.199***	(0.0143)
Year=2017	0.292***	(0.0143)
Year=2018	0.470***	(0.0143)
Year=2019	0.455***	(0.0144)
Year=2020	0.209***	(0.0143)
Year=2021	0.161***	(0.0143)
Anugul	0	(.)
Dhenkanal	0.0986***	(0.0158)
Jajapur	0.483***	(0.0159)
Jharsuguda	-0.0109	(0.0209)
Kendujhar	0.0641***	(0.0189)
Sambalpur	0.118***	(0.0188)
Sundargarh	0.0636***	(0.0198)
Constant	14.90***	(0.149)
Observations	8016	
$R^2$	0.343	

Note: This table reports results from an OLS regression of log annual GDP expenditure on the full set of control variables. All control variables are shown. All Panchayats from our sample frame with complete data are included. Standard errors in parentheses, \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent critical level. This table is discussed in Section 6.1.

## 6.2 Main results

Our main results are presented in Table 4 estimating Equation 1. This table shows the difference-in-differences treatment effect of the intervention on log annual GDP expenditure. Each column shows parameter estimates for estimations with a different set of controls, increasing from left to right. The parameter estimate of interest, the interaction of treatment and the post-treatment period, is in the first row. Across all specifications, the size of the estimated treatment effect is very similar (between 0.020 and 0.022 log points), and it is never statistically significant. Our preferred specification is Column (5) which uses the maximal set of controls.

Table 4: **Main results: log total annual expenditure**

	(1)	(2)	(3)	(4)	(5)
Treat*Post	0.0201 (0.0556)	0.0201 (0.0556)	0.0201 (0.0557)	0.0222 (0.0567)	0.0218 (0.0567)
Treat	0.0295 (0.0633)	0.0295 (0.0634)	0.0295 (0.0634)	-0.0188 (0.0524)	-0.0145 (0.0575)
Post	-0.0113 (0.0396)	-0.0597 (0.0780)	0.216*** (0.0654)	0.216*** (0.0658)	0.216*** (0.0658)
CONTROLS					
Year and Year2		X			
Year FE			X	X	X
Full covariates				X	X
District FE					X
Observations	3066	3066	3066	3041	3041

Note: Each column reports results from a separate estimation of Equation 1 with log total annual expenditure as the outcome variable. The list of controls (not shown) varies across columns as indicated: "Full covariates" are all those included in Table 2, except with dummy variables for each population slab. Standard errors (in parentheses) are clustered at the block level. This table is discussed in Section 6.2.

## 6.3 Extended results

While our primary outcome of interest was total annual expenditure, we are also interested to see if the intervention resulted in changes in the type of activities Panchayats include in the GDP and the sources of funds used to finance the activities. Table 5 reports coefficient estimates from Equation 1, now with log total annual expenditure in different categories as the outcome variables. These categories, defined in Section 5.2 (also Table 7 in the Appendix), are mutually exclusive and sum to the total reported in our main results above.

Of the four categories of expenditure we consider, only one shows a statistically significant treatment effect. Treated Panchayats increased their Social Sector Expenditure by 0.198 log points, or approximately 20%. The treatment effect in two of the categories is small and statistically insignificant (Infrastructure Expenditure and Other Expenditure), while for the final category (Income Generating Expenditure) the effect is large and negative, although also statistically insignificant. It is worth noting that this last category is quite sparse: only 342 Panchayat-year observations had any expenditure in this category, while nearly all Panchayats had some expenditure across the other three in each year.

Table 5: **Log total annual expenditure: by category**

	(1)	(2)	(3)	(4)
	Log infrastructure exp	Log income generating exp	Log social sector exp	Log other exp
Treat*Post	0.00524 (0.134)	-0.463 (0.298)	0.198* (0.106)	0.0947 (0.289)
Treat	0.574*** (0.179)	-0.0941 (0.608)	-0.422* (0.236)	-0.276* (0.159)
Post	-0.0265 (0.145)	1.030** (0.446)	0.493*** (0.0879)	-0.195 (0.199)
Observations	2825	342	2987	2886

Note: Each column reports results from a separate estimation of Equation 1 with different categories of annual expenditure (in logs) as the outcome variable. All regressions include a full set of controls (all those shown in Table 2, except with dummy variables for each population slab), as well as district and year fixed effects. Standard errors (in parentheses) are clustered at the block level. This table is discussed in Section 6.3

Table 6 reports coefficient estimates from Equation 1, with the outcome variable log total annual expenditure by funding source. Across all three funding sources the estimated treatment effect is statistically insignificant. For the two major funds, the Central Finance Commission and the State Finance Commission, the coefficient is also very close to zero. For Other Fund sources, which aggregates own funds and all other funds, the effect is very large (point estimate of 1.096 log points) but imprecisely estimated and statistically insignificant. Note that there are relatively few Panchayat-year observations with positive values for Other Fund, in contrast to the main funds which are drawn on by most Panchayats in each year.

Given that some of the expenditure categories and funding sources were sparse, we also explore the extensive margin of expenditure using a binary specification with each category or fund coded as 0/1. Summary statistics for these variables can be found in Appendix Table 10. The results, shown in Appendix Tables 11 and 12, suggest that treatment increased the probability of having ANY expenditure in Infrastructure (10.8%) or Income Generating Activities (8.5%). They also suggest that the intervention decreased the probability of

Table 6: **Log total annual expenditure: by funding source**

	(1)	(2)	(3)
	Log CFC expenditure	Log SFC expenditure	Log Other expenditure
Treat*Post	0.0279 (0.0457)	0.0342 (0.0620)	1.096 (0.821)
Treat	0.104* (0.0579)	0.0859 (0.0606)	-0.931 (0.932)
Post	0.231*** (0.0598)	0.0213 (0.0797)	-3.010*** (0.483)
Observations	3020	3001	451

Note: Each column reports results from a separate estimation of Equation 1 with log total annual expenditure by funding source as the outcome variable. CFC stands for Central Finance Commission; SFC for State Finance Commission; Other is all other sources. All regressions include a full set of controls (all those shown in Table 2, except with dummy variables for each population slab), as well as district and year fixed effects. Standard errors (in parentheses) are clustered at the block level. This table is discussed in Section 6.3

requesting any funds from the Central Finance Commission by 2.4%.

## 6.4 Robustness checks

We carry out a number of robustness checks, on both the estimation itself (holding constant the sample selection by propensity score matching), and on the matching specification. Specifically, we re-estimate the main specification with no weights but using the same sample (R1); re-estimate the main specification with Panchayat fixed effects (R2). Holding fixed the estimating equation, we vary the propensity score matching as follows: no replacement (R3); additional year of lagged outcome variable (adding 2019; R4); one fewer years of lagged outcome variable (removing 2018; R5); matching only on lagged outcome variables with no other covariates (R6); matching only on the other covariates, with no lagged outcome variables (R7).

The results from these robustness checks are summarized in Appendix Table 13. The effect of the intervention on total annual expenditure remains small and insignificant except in R7. Our finding of an increase in social sector expenditure remains statistically significant throughout, with an effect size ranging from 0.19-0.29. In some specifications, expenditure from funding source Other Funds shows a statistically significant increase, and the coefficient is always substantial. Other coefficients are occasionally significant but without displaying much of a trend.



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While these robustness check suggest that our results are not overly sensitive to specification, it is important to note that some are more credible than others. The reason that we included lagged values of total expenditure in the matching algorithm was to ensure a similar pre-trend in this variable. The treatment-control total expenditure trends for the alternate matching strategies (R3-7) are shown in Figure 8. Those specifications which do not include pre-treatment outcome variables in the matching algorithm fail to produce a convincingly parallel trend. In contrast, the exact number of lags does not seem especially critical.

## 7 Discussion

Our main results show that the capacity-building training given to elected leaders and administrative staff of Panchayats did not have an impact on the total annual expenditure submitted in their GPDPs. As discussed in Section 2.1, the two big funding sources for the GPDPs are funds allotted by the Central Finance Commission (CFC) and the State Finance Commission (SFC). Both CFC and SFC are constituted for five years and the annual funds allocated to each state is fixed in advance for each of the five years based on the state's total population and geographical area.<sup>17</sup> Odisha distributed CFC and SFC across its 6794 Gram Panchayats on the basis of total population, density of population, and percentage of scheduled tribe and scheduled caste population. Anecdotal evidence from the field suggests that it was a common practice that every year, at the beginning of the GPDP planning cycle, the Sarpanch and the Panchayat secretary were communicated the total allocated amount from the CFC and SFC grants for their Panchayat for the upcoming financial year. They were expected to plan the GPDP activities to match the sum of the two allocations: plans which fell short of the maximum allocation might be returned to the Panchayat for revision.

This suggests that the training can only have limited or no impact on the total annual

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<sup>17</sup>Within each state, all three tiers of Panchayats - Gram, Block, and Zilla (district) - receive the grant as follows: (a) not less than 70 per cent and not more than 85 per cent for Gram Panchayats, (b) not less than 10 per cent and not more than 25 per cent for Block Panchayats and, (c) not less than 5 per cent and not more than 15 per cent for Zilla Panchayats, subject to the shares adding up to 100 per cent. For example, under the XV CFC (2020-25), in the FY 2020-21, state of Odisha received 22.5 billion Indian rupees (or \$280 mn) from the Central government and disbursed it among its 6794 Gram Panchayats, 314 Block Panchayats, and 30 Zilla Panchayats in the ratio of 70:20:10 respectively. The Odisha V SFC (2020-25) also laid out in advance the recommended amount of funds to be transferred to the Panchayati Raj system for each of the five years in the ratio of 70:20:10. In this paper, we only look at the Gram Panchayat level as the intervention was designed especially to make them more aware and responsive to the GPDP process.

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expenditure planned as most Panchayats asked for the maximum amount from the two major funds. This leaves Other Funds as the only flexible funding source. These consists of own sources of revenues, MGNREGS allocation, donations, borrowing, etc. In recent years, Panchayats are being encouraged to increase their own revenue income through local taxation, tourism and rent; however, during the study period, these sources constituted a very small percentage of the total GPDP expenditure.

The change in sector of planned spending is the most substantial of our results. There are two possible drivers for this. First, the training was delivered by ASPIRE, a NGO heavily focused towards demand-side interventions, especially mobilizing the community and local self-government institutions to create a social demand for education and child rights. ASPIRE started working in the treatment Panchayats in October 2019 and was an official Covid-relief partner of the Panchayats during the lockdown, supporting the Sarpanch and the Panchayat staff on health, nutrition, livelihood, and schooling issues during the lockdown. In the GPDP training, ASPIRE staff emphasized the importance of education, health, nutrition, and safety as fundamental rights of children and motivated the Panchayats to fill in the gaps in these sectors in their next GPDPs. This emphasis during training coupled with the goodwill generated during their covid-relief work, could have swayed Panchayat staff to give more weight to social sector components in the GPDPs. The second is the work ASPIRE did prior to the GPDP training session to support 490 Anganwadi centers (almost 2 per Panchayat) in identifying their needs and preparing development plans. These Anganwadi Development Plans were submitted to the Panchayats for consideration in the FY21-22 GPDP. This demand-side intervention may have created a positive pressure on the Panchayats, especially the elected representatives (Sarpanch and Ward members), to listen to their constituents and include women and early child development activities in the GPDP.

## 8 Conclusion

This paper set out to evaluate the impact of a capacity-building intervention on the Gram Panchayat Development Plans submitted by Panchayat staff in Keonjhar, Odisha, a mining and tribal focused district in Eastern India. While we do not find an effect of the intervention on total planned expenditure, we do see a difference in spending priorities, with treated

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Panchayats increasing their spending on social sector activities by around 20%.

There are a number of limitations to this research. The data we had available at the time of the study were limited to submitted plans: however, it remains to be seen how much of the fund was utilized. A study published by [Centre for Budget and Policy Studies \(2018\)](#) on the utilisation of 14th CFC and 4th SFC grants by Odisha found the utilisation rate to be below 50 percent during the first two years (2015-16 and 2016-17). Given the many constraints - both official and unofficial - in the GPDP process, it is also not clear how much independence Panchayats have in practice to influence the amount of funding requested, and the ultimate destination of those funds. Finally, it must be highlighted that the intervention was not randomized, which places a particular burden on our empirical strategy to demonstrate causality. While we feel that our robustness checks show the stability of our findings across a range of reasonable permutations, our results nevertheless rely on the plausibility of our constructed control group.

The findings reported in this paper have a number of implications for policy. First, we can report that GPDP spending priorities are more malleable to intervention than total GPDP planning amounts. While the latter is perhaps not a surprising finding, the shift in spending patterns suggests that some relatively light-touch capacity building can lead to substantial changes in local fiscal planning.

Second, our results suggest that gaps in practical understanding of the GPDP process exist among the key staff members who are meant to implement the planning process. The Panchayats do not function as local self-governments; rather working as bureaucratic arms of the Block and District offices. The intervention itself delivered only that information which was already available - and expected to be known - to the staff who participated. The changes measured following the training suggest that significant knowledge gaps exist.

Finally, future programming can be iterated in light of these findings. Future training programs can focus on aligning the spending categories with local needs, knowing that Panchayats are not generally leaving funding from the main sources un-budgeted. The suggestive results we found on funding from other sources could also be explored, for example by increasing the time spent discussing alternate funding sources.

The research presented here raises a number of questions we have not been able to answer. First, as mentioned earlier, the question remains on fund utilisation or the share of budgeted activities that were in fact carried out. Not all of the projects and activities set

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out in GPDPs get completed, which leaves development resources ultimately unclaimed by those who need them. [Khan, J.A. \(2020\)](#) studies the utilisation of CFC and SFC grants for the water and sanitation sector in rural Odisha and Bihar. The utilisation rate in Odisha was on average 36 percent for CFC grants and 40 percent for SFC grants for the FY 2016-17, FY 2017-18, and FY 2018-19. The author cites delays in fund flow from the state to Panchayats, shortage of technical staff, and lack of flexibility around the use of funds as key reasons for the low fund utilization by Panchayats. The modest success of this training program suggests that future work might focus on equipping Panchayat staff with the skills needed to deliver on the projects for which they have received funds.

Second, the issue of other funding sources deserves further investigation. Few Panchayats are including such funding sources in their plans, despite the fact that other funds, including own funds, are in many cases available. A typical Panchayat in the state of Kerala generates between 20-26 percent of funds through own income (levy of taxes, fees). A large jump in the use of own funds across Panchayats in Odisha in 2021 merits further investigation.

Finally, a good GPDP plan requires a close alignment between the priorities of local people and ultimate spending: something that has been difficult to change in practice (see, for example, [Rao et al. \(2017\)](#)). The availability of administrative GPDP data makes large-sample analysis of these plans possible; however, without a measure of local priorities, it is difficult to assess the quality of a plan on this criteria. Future research should seek to bridge this gap, and assess the factors that are associated with genuine democratic participatory planning processes.

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## A Appendix

### A.1 Tables

Table 7: Mapping of detailed sectors into aggregated sectors

Aggregated sectors	Detailed sectors
Infrastructure	Maintenance of community system Non-conventional energy sources Roads Rural electrification Rural housing Water Conservation
Income-generating activities	Agriculture Animal husbandry Fisheries Fuel and fodder Land improvement Minor forest produce Small-scale industries Social forestry and farm forestry Technical training and vocational ed
Social sector	Adult and non-formal education Drinking water Education Family welfare Health Health & Sanitation Libraries Poverty alleviation program Public distribution system Sanitation Social welfare Tribal Welfare Welfare of the weaker sections Women and child development
Other	Administrative & Technical Support Cultural activities Panchayat Office Infrastructure Markets and fairs Others

Note: manual mapping of detailed sectors into aggregate sectors. Mapping is generated by the authors. This table is discussed in Section 5.2.1 and Section 6.3.

Table 8: Mean and SD of binary outcome variables by year

Year by expense	Infra	IncGen	SocSec	OtherSec	FC	SFC	OtherFund
2015	0.95	0.17	0.97	0.93	0.99	0.99	0.01
	0.21	0.38	0.16	0.26	0.11	0.12	0.11
2016	0.98	0.21	0.99	0.94	1.00	0.98	0.03
	0.15	0.41	0.12	0.25	0.03	0.12	0.16
2017	0.94	0.14	0.97	0.94	0.98	1.00	0.01
	0.23	0.35	0.16	0.24	0.13	0.07	0.11
2018	0.93	0.10	1.00	0.96	1.00	0.99	0.02
	0.25	0.30	0.07	0.18	0.03	0.11	0.13
2019	0.94	0.08	0.99	0.97	1.00	0.98	0.02
	0.24	0.28	0.12	0.16	0.00	0.14	0.15
2020	0.91	0.10	1.00	0.89	1.00	1.00	0.01
	0.29	0.30	0.00	0.32	0.00	0.04	0.12
2021	0.89	0.09	1.00	0.97	1.00	0.99	0.96
	0.31	0.28	0.00	0.17	0.04	0.07	0.20

Note: table shows mean (first row) and standard deviation (second row) of a binary variable for positive values of expenditure in each category in that year. Abbreviations: Infra = Infrastructure, IncGen = Income Generating, SocSec = Social Sector, OtherSec = Other Sector; CFC = Central Finance Commission, SFC = State Finance Commission, OtherFund = any other funding sources besides CFC and SFC. This table is discussed in Section 5.2.1.



Table 9: Balance of characteristics across treatment and control: no weights

Variable	(1) Control		(2) Treat		T-test Difference	Normalized difference
	N	Mean/SE	N	Mean/SE	(1)-(2)	(1)-(2)
Number of primary schools	138	7.210 (0.295)	219	7.256 (0.188)	-0.046	-0.015
Number of middle schools	138	3.703 (0.191)	219	3.945 (0.144)	-0.242	-0.111
Number of secondary schools	138	1.841 (0.115)	219	2.635 (0.100)	-0.794***	-0.538
Number of Sr Secondary schools	138	0.246 (0.047)	219	0.306 (0.041)	-0.060	-0.102
Pucca (black topped) road	138	0.750 (0.026)	219	0.807 (0.020)	-0.057*	-0.189
Kuchha (gravel) road	138	0.989 (0.004)	219	0.998 (0.001)	-0.009***	-0.286
Mean village distance from nearest town	138	31.713 (1.898)	219	32.788 (1.356)	-1.076	-0.051
Public bus	138	0.227 (0.024)	219	0.152 (0.019)	0.075**	0.261
Private bus	138	0.436 (0.029)	219	0.393 (0.022)	0.043	0.131
Post office	138	0.292 (0.023)	219	0.497 (0.017)	-0.206***	-0.742
Num Primary Health Sub-Centres	138	1.051 (0.069)	219	1.100 (0.044)	-0.050	-0.069
Total population	138	4809.674 (133.162)	219	5079.183 (112.229)	-269.509	-0.166
Number households	138	1089.333 (27.887)	219	1145.795 (25.072)	-56.461	-0.159
Number females	138	2409.138 (67.683)	219	2544.356 (55.720)	-135.218	-0.166
Literate females	138	1330.065 (44.012)	219	1269.630 (36.999)	60.435	0.113
Sex ratio: females te 1000 males	138	1002.201 (4.801)	219	1007.474 (3.282)	-5.273	-0.102
Total area of GP	138	2021.210 (103.045)	219	2058.758 (98.511)	-37.548	-0.027
Binary indicator any mine in block	138	0.210 (0.035)	219	0.822 (0.026)	-0.612***	-1.240
Scheduled tribes population	138	2240.681 (157.113)	219	2406.662 (93.227)	-165.981	-0.105
Scheduled castes population	138	593.739 (41.032)	219	578.406 (38.860)	15.333	0.028
Population slabs	138	1.464 (0.056)	219	1.575 (0.050)	-0.112	-0.157

Note: The values displayed for t-tests are the differences in the means across the groups, without weights (see Table 2 for the equivalent with weights). Statistical significance indicated by \*\*\*, \*\*, and \* for the 1, 5, and 10 percent critical levels. This table is discussed in Section 5.4.

Table 10: **Summary statistics: any expenditure**

Variable	Mean	Std. Dev.	N
Any infrastructure exp dummy	0.935	0.247	8106
Any income generating exp dummy	0.126	0.332	8106
Any income social sector dummy	0.988	0.108	8106
Any other exp dummy	0.942	0.234	8106
Any FC fund exp	0.995	0.068	8106
Any SFC fund exp	0.989	0.102	8106
Any other fund exp	0.151	0.358	8104

Note: this table shows mean values for a dummy variable equal to 1 when there is positive expenditure in this category. Observations are pooled across years; all Panchayat-years in the sample frame are included. This table is discussed in Section 6.3.

Table 11: **Extensive margin: any expenditure by category**

	(1)	(2)	(3)	(4)
	Any infrastructure exp	Any income generating exp	Any income social sector	Any other exp
Treat*Post	0.108** (0.0499)	0.0850* (0.0477)	0.00881 (0.0169)	-0.00606 (0.0209)
Treat	0.0601 (0.0656)	-0.137** (0.0635)	-0.0301** (0.0128)	-0.00635 (0.0275)
Observations	3041	3041	3041	3041

Note: Each column reports results from a separate estimation of Equation 1 with a binary variable for positive expenditure in each category. All regressions include a full set of controls (all those shown in Table 2, except with dummy variables for each population slab), as well as district and year fixed effects. Standard errors (in parentheses) are clustered at the block level. This table is discussed in Section 6.3.

Table 12: **Extensive margin: any expenditure by fund**

	(1)	(2)	(3)
	Any CFC fund exp	Any SFC fund exp	Any other fund exp
Treat*Post	-0.0241* (0.0143)	0.00307 (0.0169)	0.0324 (0.0300)
Treat	0.00333 (0.00604)	0.0461 (0.0344)	-0.0149 (0.0146)
Observations	3041	3041	3039

Note: Each column reports results from a separate estimation of Equation 1 with a binary variable for positive expenditure in each fund. CFC stands for Central Finance Commission; SFC for State Finance Commission; Other is all other sources including Own funds generated by Panchayats. All regressions include a full set of controls (all those shown in Table 2, except with dummy variables for each population slab), as well as district and year fixed effects. Standard errors (in parentheses) are clustered at the block level. This table is discussed in Section 6.3.

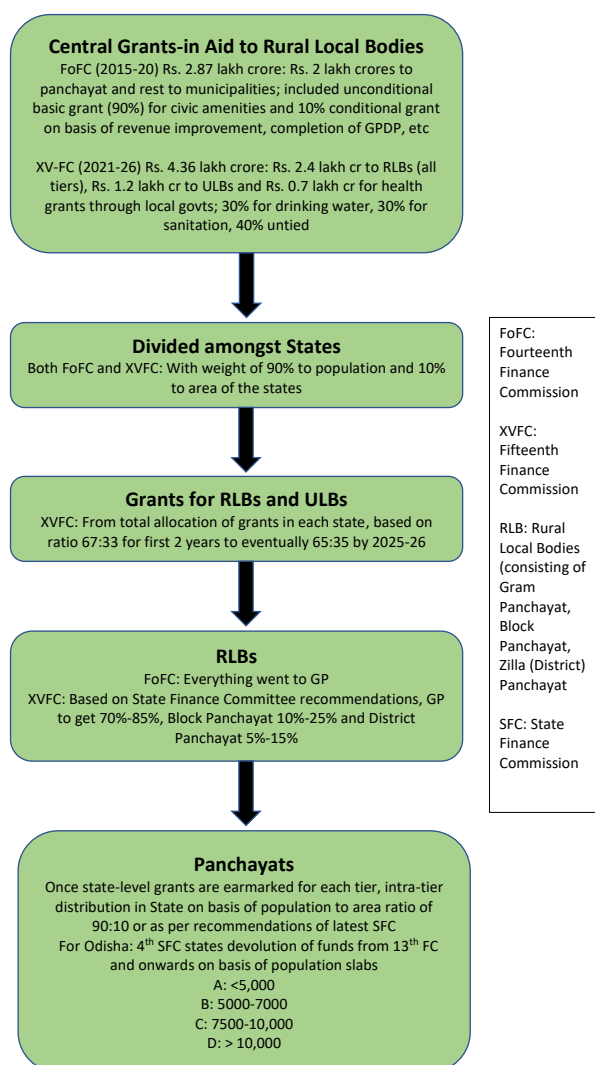
Table 13: Robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total	Infrastructure	Income generating	Social sector	Other sector	FC fund	SFC fund	Other fund
R1	0.0453 (0.0550)	0.0417 (0.134)	-0.394 (0.313)	0.189* (0.106)	0.103 (0.284)	0.0426 (0.0423)	0.0797 (0.0678)	1.274* (0.638)
Observations	2480	2333	262	2434	2351	2469	2451	359
R2	0.0207 (0.0566)	0.0349 (0.137)	0.0808 (0.771)	0.199* (0.108)	0.0964 (0.291)	0.0270 (0.0454)	0.0375 (0.0620)	1.763** (0.854)
Observations	3041	2825	342	2987	2886	3020	3001	451
R3	0.0259 (0.0509)	-0.0155 (0.121)	-0.587** (0.286)	0.194* (0.101)	0.0491 (0.274)	0.0310 (0.0396)	0.0521 (0.0653)	0.723 (0.638)
Observations	3043	2812	315	2991	2892	3028	3007	441
R4	0.0421 (0.0558)	-0.0706 (0.142)	-0.451 (0.502)	0.238** (0.104)	0.146 (0.317)	0.0267 (0.0417)	0.111 (0.101)	0.415 (0.829)
Observations	3042	2852	301	2991	2866	3026	3003	449
R5	0.0883 (0.0528)	0.0216 (0.149)	-0.295 (0.375)	0.206* (0.104)	0.155 (0.278)	0.0769* (0.0437)	0.138* (0.0818)	0.864 (0.579)
Observations	3033	2889	313	2984	2890	3016	3009	436
R6	0.0331 (0.0572)	-0.270* (0.146)	-0.135 (0.389)	0.191* (0.104)	0.414 (0.270)	0.0405 (0.0422)	0.115* (0.0631)	0.473 (0.671)
Observations	3048	2816	315	2995	2884	3030	3018	443
R7	0.139** (0.0537)	0.00969 (0.147)	0.0626 (0.528)	0.286*** (0.100)	0.188 (0.273)	0.0826* (0.0472)	0.220** (0.101)	1.422** (0.624)
Observations	3033	2864	325	2996	2896	3029	3004	446

Note: Each cell reports the treatment effect from a separate estimation of Equation 1. Each column displays estimates from regressions with one of the outcome variables of interest. Each row represents a separate specification. R1 main specification sample with no weights; R2 main specification sample fixed effects regression (GP-level); R3 PSM with no replacement; R4 PSM with additional lag (2019); R5 PSM with one fewer lag (dropped 2018); R6 PSM with only lags and no other controls; R7 PSM with no lags, including other standard controls. All regressions include a full set of controls (all those shown in Table 2, except with dummy variables for each population slab), as well as district and year fixed effects. Standard errors (in parentheses) are clustered at the block level. This table is discussed in Section 6.4

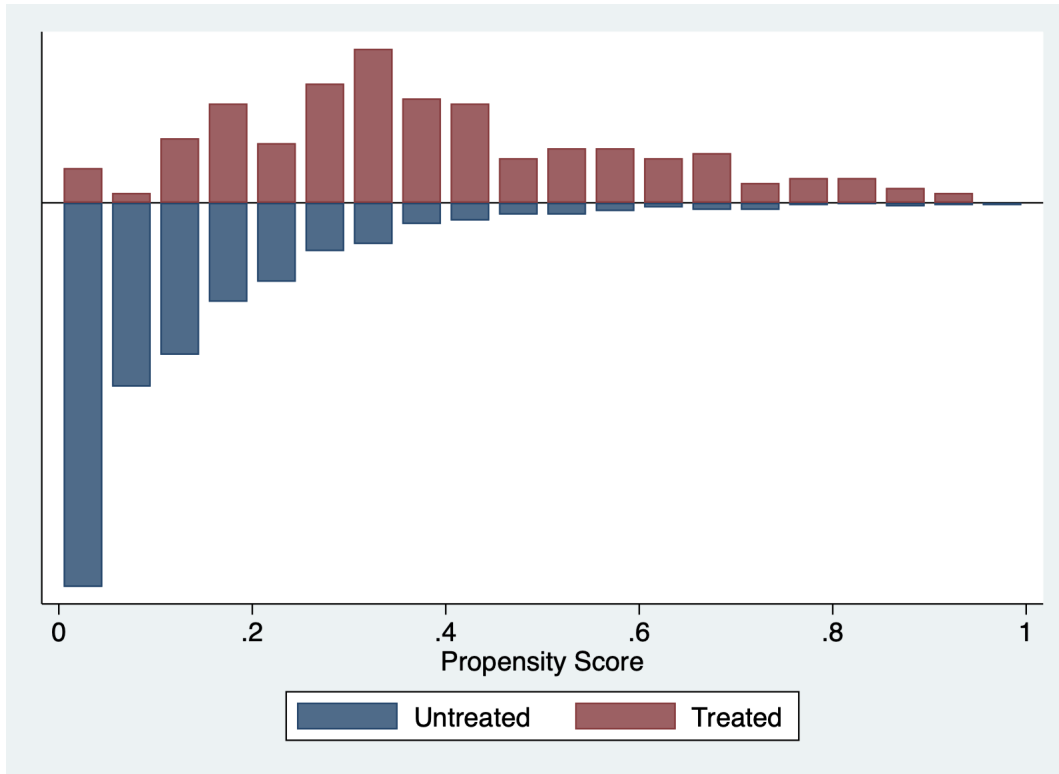
## A.2 Figures

Figure 4: Flow chart of grants



Note: flow of funds from centre to Panchayats. This figure is discussed in Section 5.2.2.

Figure 5: Distribution of propensity scores: treatment and control



Note: propensity scores for analytical sample. This figure is discussed in Section 5.3.

Figure 6: GDP expenditure

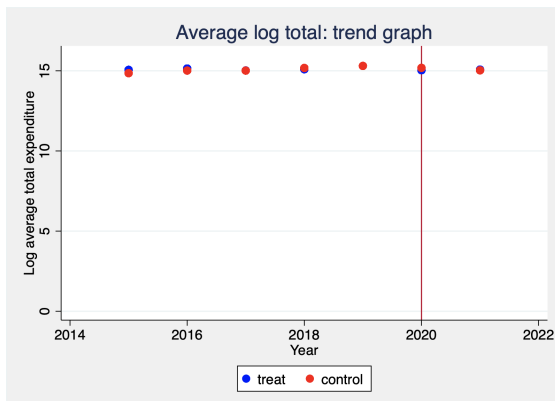
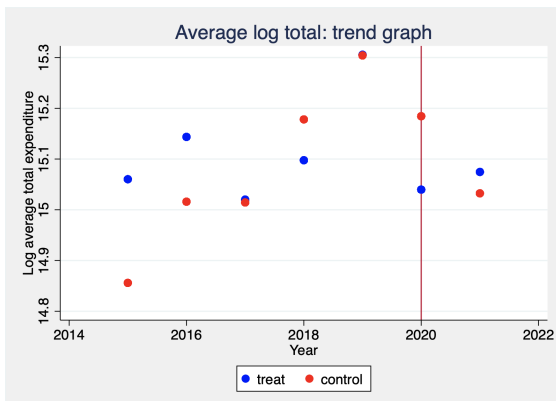
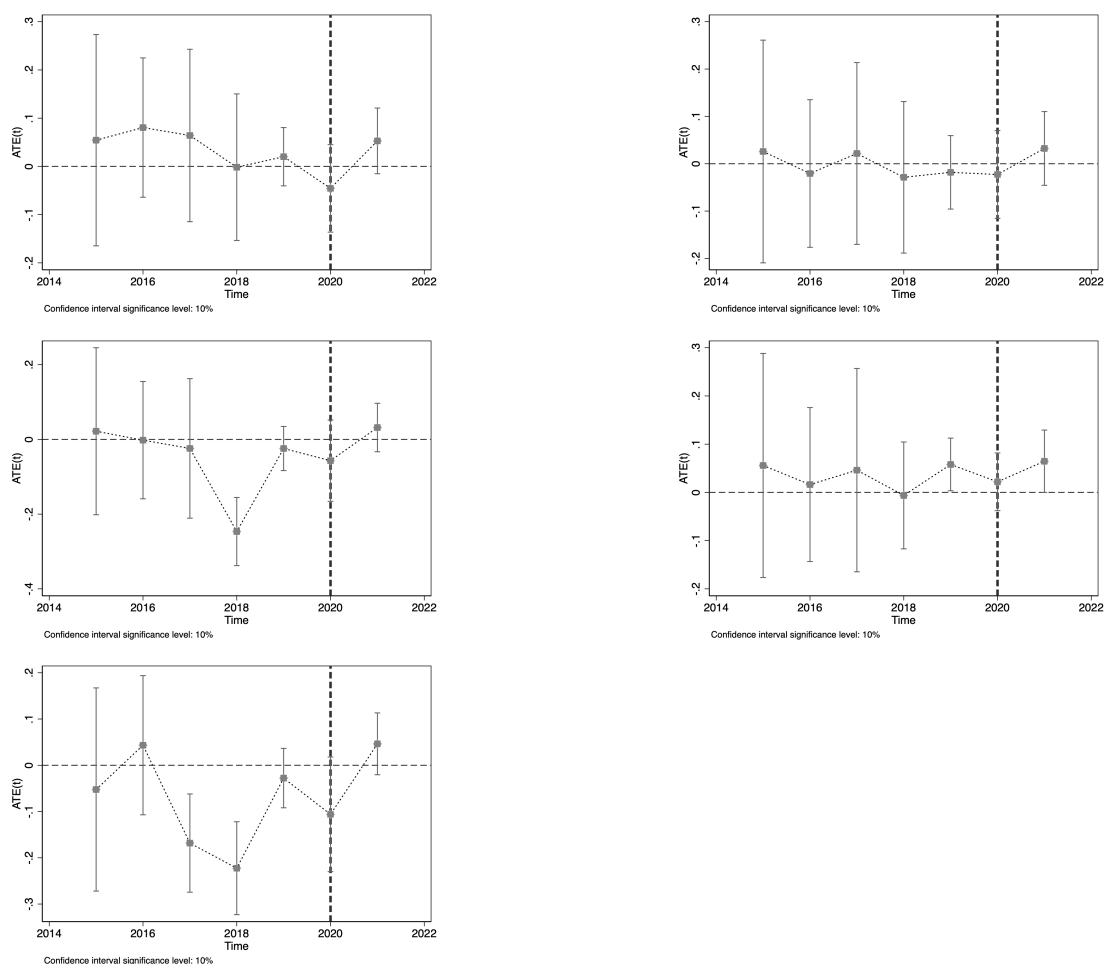


Figure 7: Detail of GDP expenditure



Note: trend graph of annual GDP expenditure. Right-hand-side figure shows the data with 0 at the origin for perspective, left-hand-side figure provides a zoom in. The figures are discussed in Section 6.1.

Figure 8: Trend graphs for specifications R3-R7



Note: trend graphs for robustness checks in which, holding fixed the estimating equation, we vary the propensity score matching as follows. From left to right, top to bottom: no replacement (R3); additional year of lagged outcome variable (adding 2019; R4); one fewer years of lagged outcome variable (removing 2018; R5); matching only on lagged outcome variables with no other covariates (R6); matching only on the other covariates, with no lagged outcome variables (R7). The figures are discussed in Section 6.4.