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LOCAL PARTISAN BIASES IN ALLOCATIONS OF FOREIGN AID

A Study of Agricultural Assistance in India

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ABSTRACT

In principle, aid from donor organizations to developing countries should be based on need and the likelihood of positive impact, but political biases may intrude into decisions about aid allocations. This article elaborates a theory about why a particular form of bias, one based on partisan affiliations, can affect where aid goes and whether the goals of aid are met. Party networks can facilitate coordination of decisions and leverage bureaucratic capacity, but they can also ensure that resources, such as aid, stay in the control of copartisans to boost reelection goals. The empirical analysis evaluates whether partisan bias is evident in the locations and impact of World Bank agricultural aid to India. The authors analyze georeferenced data on aid projects, election results, and cropland coverage at the levels of state parliamentary electoral constituencies and administrative districts from 1995 to 2008. They find that alignment between local legislators and the political parties that govern state and national governments is associated with a greater number of new aid projects and with anomalous changes in cropland coverage. The evidence is consistent with arguments that partisan bias works primarily through patronage to achieve strategic party goals.

INTRODUCTION

FOREIGN development aid represents a large transfer of resources from more-developed to less-developed countries. For example, the World Bank provided aid commitments to India that totaled more than US \$28 billion between 2010 and 2015—an amount that exceeded the annual gross domestic product (GDP) of each of India's ten poorest states during the same period.¹ This aid can have significant economic effects and distributional implications. The targeting of aid influences which areas and people benefit from it. Thus, learning why

¹ "MOSPI Gross State Domestic Product." At <https://data.worldbank.org/country/india>, Ministry of Statistics and Programme Implementation, Government of India, accessed March 21, 2021.

aid goes to some locations and not others is vital for understanding its impact and for evaluating its effectiveness. In principle, aid ought to prioritize places with the greatest need and potential for improvements consistent with the goals of both the aid providers and the recipients. But an ongoing concern of scholars and practitioners is that biases distort allocations of aid, undermining intended purposes and potentially resulting in perverse consequences.

In this article, we analyze the effects of partisan bias on the allocations of foreign aid within a country. In democracies, partisan bias can occur due to the electoral incentives of politicians who influence aid allocation decisions. When such bias occurs, overall efficiency and effectiveness in the allocation of aid can be compromised in service of the electoral goals of those in power. Our theoretical arguments center on the incentives of politicians in positions of authority at higher levels of the political system to advantage copartisan allies in local areas by shifting aid projects their way. Several complementary reasons can lead to allocating aid to copartisans, including patronage rewards for partisan loyalty; shared policy goals and values; efficiencies in using common, partisan-based bureaucracies; and pooled credit claiming to boost electoral prospects.

India offers a compelling case for testing partisan bias. The country has been the recipient of extensive aid, allowing ample opportunity to examine the drivers of allocation decisions and the consequences of those decisions. India's political system includes national and subnational elections, providing variation over space and time in terms of the parties in power in the central and state governments and at local levels. Working with potential donors, the central and state governments of India can help to shape allocation decisions directly (by specifying the targets of aid) and indirectly (by helping to set the priorities and parameters used for allocation decisions).

Our systematic empirical analysis of World Bank agricultural assistance projects to India supports the main theoretical claims. Specifically, we find evidence of aid allocations favoring geographic constituencies where state legislators align with the governing party of state and national governments, and that electoral considerations for ruling parties are especially acute at the state level. We evaluate several mechanisms that could lead to partisan bias, with the weight of evidence favoring patronage directed toward electoral constituencies within which governing parties are in close competition with their opponents (that is, swing constituencies, as we describe below). Our results further indicate that aid and partisan affiliations are associated with anomalous and

conflicting changes in cropland coverage. In combination, the findings bolster our claims that political affiliations matter for where aid goes and the impact of the aid.

Recent studies of various forms of political bias in subnational allocations of aid, capitalizing on improving sources of data at relatively fine-grained geographic resolutions, show mixed results (discussed below), including research specifically on India. The design of our study contributes to the literature in multiple respects. We analyze agricultural aid, which has received little attention in past studies. The agricultural sector is an important segment of the Indian economy, employing 55 to 60 percent of Indian citizens and accounting for 17 to 25 percent of the country's GDP during the period under study. Decisions regarding agricultural allocations within federated democracies like India are made at the national and state levels, calling for theory, empirical data, and methodology that incorporate the motives and behavior of elected politicians and their constituencies at multiple levels of observation.

Our analysis capitalizes on three types of fine-grained, observational data available for India. The first details the comprehensive results of state-level assembly elections and the partisanship of state and national governments together with geocoded electoral constituency boundaries. We build on research that uses subnational data to examine central transfers to Indian states and aid to administrative districts within India.² The second type of data captures World Bank aid projects intended to support agricultural improvements in India between 1995 and 2008. Our source is AidData, which has indexed the sectors and georeferenced the locations of the International Bank for Reconstruction and Development and International Development Association projects around the world for the indicated period.³ The World Bank is a major source of development assistance globally, including in India. The third type of data is derived from satellite remote sensing and measures fine-grained, spatiotemporal variations in cropland coverage.

Georeferencing the data is integral to our analysis. These data are at different levels—election results correspond to state legislative assembly constituencies, official government data correspond to administrative districts, and agricultural land holdings cut across political and administrative boundaries. We use georeferencing techniques to produce an integrated data set at multiple levels, including for the more

² For central transfers, see Arulampalam et al. 2009, and for aid to administrative districts, see Nunnenkamp, Öhler, and Sosa Andrés 2017.

³ "WorldBank_GeocodedResearchRelease_Level1_v1.4.1." At <http://www.aiddata.org>, accessed October 21, 2016.

than 4,200 state legislative assembly constituencies. With this novel data set, we can analyze variables for the disaggregate units in which the political mechanisms of aid allocations are expected to take place and should be observable. Our approach increases the number of units by sevenfold relative to the most geographically granular relevant study to date, by Tianyang Song and colleagues, which examines patterns at the level of third-order administrative divisions, covering 593 districts across India's states and union territories.⁴

India is a valuable case for more reasons than just its sheer size and status as a major aid recipient. With a large number of units spanning the vast area of the country, our analysis can capitalize on considerable variation.⁵ Of particular value is the significant subnational diversity with respect to electoral politics, allocations of aid, and agricultural outcomes, not to mention characteristics of populations, physical geography, and other dimensions. The spatiotemporal scope of the data captures different combinations of and shifts in partisan control of the national government and the numerous state governments, as well as abrupt fluctuations and important secular changes in agricultural production.

Discovering partisan bias in aid allocation is not straightforward, at least in part because of the incentives of funders and recipient governments to appear fair, impartial, and above partisan politics, particularly in democracies with a free press. Direct evidence from any single example is difficult to detect, and even if possible, may be unrepresentative. Yet the plausibility of political or partisan influence can be seen in media coverage and project reports. For example, the World Bank committed almost \$3 billion in development projects over three years to Andhra Pradesh—more than to any other Indian state—after the state's chief minister wowed the World Bank president at a personal meeting in 1996.⁶ Having used his influence to garner his state the most aid, the chief minister, N. Chandrababu Naidu, directed his acumen to “gain wide political support for [a suite of irrigation] projects,” according to a subsequent World Bank report.⁷ The same report identified Naidu's political motivations in using aid projects to mobilize “new farmers' organizations as vote banks in elections.”⁸ Thus, electoral considerations of politicians are understood to play a role in project

⁴ Song, Brazys, and Vadlamannati 2020.

⁵ Nunnenkamp, Öhler, and Sosa Andrés 2017; Song, Brazys, and Vadlamannati 2020.

⁶ Dugger 1999.

⁷ Vedeld 2001, 27.

⁸ Vedeld 2001, 28.

planning and implementation, supporting the conclusion that aid flows to areas for reasons other than where it is most needed based on socio-economic development considerations.

In the next section, we elaborate our theory of partisan bias with special attention to the Indian context. We then provide motivating cases from India that illustrate the phenomenon of interest. After describing our data, we present results obtained from using multiple analytical methods. The findings support our arguments about the relationship between vertical partisan connections and aid allocations and are robust after controlling for other factors, including the need for aid in local areas. We also explore several competing mechanisms and show support for the argument that partisan alignment of aid distribution helps to achieve strategic party goals via patronage. We conclude by reflecting on the implications of the findings for broader contexts.

POTENTIAL FOR PARTISAN BIAS IN INDIA

Our theory of partisan bias builds on previous research on aid allocation and focuses attention on the specific context of federalism in India. While describing our theoretical claims, we highlight the nature of Indian political parties and how they are integrated within multiple levels of government bureaucracy.

We know from previous research findings, interactions with practitioners, and common-sense intuition that objective need is just one consideration that determines where development aid goes within recipient countries. Among other considerations, political factors in these countries, from the national level to the local level, also enter into decisions about allocations. This observation does not mean that political factors necessarily take precedence or that aid allocations are inherently corrupt. Donor organizations may exercise considerable discretion in choosing what to fund and are often directly involved in operational decisions, including the design of specific project activities and choice of locations. Donors may, for instance, try to steer clear of corrupt governments, with mixed degrees of success.⁹ At the same time, recipient governments have clear incentives to try to shape aid programs, helping to set funding priorities and influencing where aid goes within countries. The preferences of recipient governments could derive from their objective determination of relative need, but may also reflect politically

⁹ Riddell 2007; Wright and Winters 2010; Winters and Martinez 2014; Bermeo 2011; Bueno de Mesquita and Smith 2007; Bueno de Mesquita and Smith 2009.

driven decision-making that shapes aid distribution at the national and subnational levels. Among the potential influences are efforts to target aid in ways that yield the most political benefit for officials in power.

What drives political bias in the allocation of aid in recipient countries? Instances of leaders steering aid for their own benefit have been catalogued in the literature on aid. For example, multiple studies of Chinese aid allocations to parts of Africa detect bias toward the political and personal interests of national and local leaders in recipient countries.¹⁰ Similarly, US foreign aid to assist with natural disasters is found to be biased toward the home regions of recipient country leaders.¹¹ A number of studies have analyzed whether aid in various countries is allocated based on need or biased by political pressures, with most studies finding evidence of favoritism toward incumbent governments.¹² Studies specifically on India have yielded mixed results. Song and associates discover bias in patterns of educational aid toward satisfying select constituencies of voters who are represented and active in local governments. While Peter Nunnenkamp and colleagues detect indications of biases toward donor interests and leaders' home regions and toward the clustering of aid by geography, they find scant evidence of incumbent government bias.

Building on this existing literature on biased aid distribution, our attention to partisan ties and biases marks a new contribution. Existing studies commonly focus on select officials and either assume or infer that these officials exert influence over decisions about where aid is allocated, often bringing into play electoral and party dimensions. We add to this research tradition and focus on how politicians are situated within a multilevel federal system that is a source of varying partisan alignments, incentives, and loyalties.

In making decisions about aid allocation, donor organizations, such as the World Bank, must work together with leaders of relevant levels of government within a recipient country who exert influence over where aid goes, for what purposes, and in what amounts. From the World Bank's perspective, obtaining buy-in from government leaders in recipient countries can be crucial to the deployment and success of aid. Recipient country governments typically must approve projects and ensure an enabling context (for example, zoning and coordination).

¹⁰ Dreher et al. 2018; Dreher et al. 2019.

¹¹ Bommer, Dreher, and Perez-Alvarez. 2019.

¹² Nunnenkamp, Öhler, and Sosa Andrés 2017; Jablonski 2014; Briggs 2012; Briggs 2014; Masaki 2018. Another study found no discernable political bias in World Bank aid distributions to sub-Saharan Africa in the 2000s; Anaxagorou, Efthyvoulou, and Sarantides 2020.

Aid is often disbursed directly to governments, the bureaucracies of which are then responsible for implementing programs and projects. Many projects also involve cost sharing or government involvement to establish and manage public-private partnerships.

With these interactions in mind, we propose that partisan alignment of a particular kind matters in the Indian context. We define alignment as elected politicians belonging to the same party across levels of government or across geographic administrative units. In federal countries like India, the relevant levels include both national and state governments. Generally, the alignment of party leaders across levels of government can produce a convergence of political incentives and benefits. Circumstances in which partisan affiliations sway location decisions can be considered socially or economically inefficient, in as much as allocations are based on considerations other than the objective needs of development. Yet these circumstances may be fortuitous from the self-interested but pragmatic perspective of specific parties and even government bureaucracies that are infused with partisans.

At the heart of our theory lies the reelection goal of incumbent politicians tied to the goals of state and national parties to obtain and retain power. Partisan alignment provides key material, ideological, and bureaucratic mechanisms connecting reelection goals to the allocations of aid.

The first mechanism is *addressing material needs of party supporters* through the provision of rewards. Allocating aid can be a form of patronage. Especially where patronage reigns supreme and party support extends deep into bureaucracies that implement programs at the ground level, the partisan alignment between politicians across different levels of government may matter a great deal. Keeping project activities within aligned areas ensures that copartisans hold the purse strings at different levels, making the most out of scarce project funds within a network of known allies. Aid can be a way to build and maintain party-based patronage networks by rewarding supporters. Ruling parties may use aid funds as substitutes for other kinds of resources internal to the party (that is, from party coffers), and may do so to advance strategic party goals.

The second mechanism is *pursuing common policy goals*. Leaders from the same party are likely to represent similar interests and to share policy preferences about how aid should transform a local political economy, making it easier to reach consensus and agree on project priorities. For instance, promarket, liberal ideals will differ from socialist ideals. In the Indian setting, a Bharatiya Janata Party (BJP) leader may not

want to cooperate with or give aid to an area represented by a Communist Party leader for ideological reasons. Partisan alignment increases the likelihood that leaders will agree on policy priorities and objectives in the implementation of aid projects. Donors pay attention to party ideology as well. The World Bank traditionally has had more ideological affinities with the Indian parties sympathetic to capitalist markets and moderately statist solutions (the BJP and sometimes the Congress Party) than with ardently socialist parties (communists).

The third mechanism is achieving *efficient use of organizational resources*. Taking advantage of partisan links can be efficient in bureaucratic terms. Politicians from within the same party are likely to have better communication channels and denser social networks across different levels of government than politicians who are not. Operating within trusted networks of organizations can increase efficiency and accelerate implementation. Assuming parties are hierarchical (as in much of India), a single party leader at the top of a state or the country can call upon local leaders directly and order them to act, avoiding the need for coordination or negotiation with opposition party leaders at higher or lower levels. The partisan network is, therefore, a way to lower transaction costs. In this manner, a preference for partisan networks could have salutary effects, enabling copartisans and their implementing bureaucracies to capitalize on efficiencies and economies of scale. Such efficiency can also be beneficial to donors, who may prefer having the same party across levels of government for a given project, thus avoiding bureaucratic bottlenecks due to cross-party differences.

Each of these mechanisms should lead to empirical patterns consistent with our first, and broadest, hypothesis:

—Hypothesis 1 (H1). The greater the extent of partisan alignment between local politicians and the higher levels of government, the greater the likelihood that the areas represented by those local politicians will receive development aid projects.

In other words, we expect local partisan alignment with state and national governments to be associated with a higher rate of receiving aid projects, after controlling for other factors that can influence these decisions.

Evidence supporting hypothesis 1 does not, by itself, illuminate which mechanisms drive the result. Substantiating the mechanism(s) involved is important since each of the three has distinctive implications for the distribution and effectiveness of aid. If partisan alignment leads to patronage in service of electoral objectives, the disbursement

of aid is less likely to serve the stated objectives of aid. But if partisan alignment indicates shared policy priorities and leads to bureaucratic efficiency, such political bias can coexist with and even reinforce donor goals regarding aid. To test which mechanisms operate in this particular Indian context, we focus on margins of victory in constituencies and the specific parties connecting localities to state and national government leadership posts.

A rich literature in political science examines how electoral competitiveness shapes distributive politics (party patronage). Theories of how politicians decide which constituencies to prioritize in the distribution of goods and services exhibit two competing logics that rely on delineating between swing and core constituencies.¹³ Under the swing voter logic, regions of a country where elections are closely contested may receive resources such as aid or pork-barrel funding to sway undecided voters or politicians to back the incumbents responsible for allocation of the resources. Alternatively, the core voter logic leads to expectations that resources will flow to areas where parties or leaders can count on receiving electoral support as a reward for past support to keep supporters in the fold and to encourage them to turn out in elections.¹⁴

Research on India has yielded mixed results, although the prevailing evidence favors the swing voter logic. Some studies detect a greater flow of agricultural credit to districts with many swing constituencies, more discretionary transfers to swing states, and higher federal transfers to swing states that are politically aligned with the party ruling the national government.¹⁵ Others find support for targeting core regions. For example, Rongili Biswas and colleagues find that core constituencies receive more discretionary federal funds compared to noncore constituencies.¹⁶ Meanwhile, Jonathan Rodden and Steven Wilkinson find evidence that both swing and core strategies are used by politicians distributing funding.¹⁷

We test two competing hypotheses about the mechanism of party patronage, given that competition for reelection sits at the center of our theory. The first is that swing constituencies are targeted for aid:

¹³ Dixit and Londregan 1996; Lindbeck and Weibull 1987; Cox and McCubbins 1986; Cox 2009.

¹⁴ A related idea is that leaders in core regions are less vulnerable to electoral accountability, so they will tend to have fewer inhibitions against allocating resources to their own constituencies—even if doing so confers disproportionate benefits and is inefficient. On the margins, these leaders prioritize party goals over societal needs.

¹⁵ Cole 2009; Khemani 2003; Arulampalam et al. 2009.

¹⁶ Biswas, Marjit, and Marimoutou 2010.

¹⁷ Rodden and Wilkinson 2005.

—Hypothesis 2a (H2a). The smaller the margins of victory for local elected officials, the more projects those areas will receive.

In other words, we expect to see evidence that swing constituencies garner above-average aid, controlling for other factors. The second hypothesis is that core constituencies are targeted for aid:

—Hypothesis 2b (H2b). The larger the margins of victory for local elected officials, the more projects those areas will receive.

The null hypothesis is that margin of victory has no effect on the number of projects. We test these hypotheses with models that include both direct measures of margins of victory and interactions between margins of victory in parliamentary elections and the partisan alignments of the local parliamentarians with ruling parties at the state and national levels.

To address the two other mechanisms—shared party ideology and bureaucratic efficiency—we test for party-specific effects that could be expected to arise as a function of attributes of the party or parties in power. Parties differ in terms of their geographic strongholds and historical ties to certain regions of a country. They also differ in their policy priorities and bureaucratic capacity. Moreover, an important dimension of heterogeneity in the Indian party system is differences in the degree of nationalization. Several parties have a national scope, competing regularly for control of national and state offices, whereas other parties are regionally focused. As described below, we code whether an assembly constituency was won by the Congress Party, the BJP, the Communist Party and its offshoots, or other parties. The first three parties are national in scope. The rest fall in the “other” category, and almost all of them are regional or state-level in scope. Many participate in coalition governments at the state and national levels, but they rarely lead the governments. The major national parties have connections across states and in the national government apparatus and, therefore, can broker policies across geographic areas more easily than smaller, regionalized parties, and are better situated to capture the benefits from partisan coordination across levels of government. The nationalized parties will likely be better connected to international aid agencies for numerous reasons (for example, presence in New Delhi, donor outreach, or history of partnership). Regional parties tend to lack significant cross-state organizing capacity and may not have the kinds of organizational infrastructure or state and national connections to influence the government agencies that oversee administering aid.

When different regional parties control constituencies, they may have difficulty coordinating action across geographic space. Among the national parties, the BJP is the most free market-oriented, while Congress and the communists have historically been more statist. The communists, however, will likely be most suspicious of World Bank aid, and the World Bank will be suspicious of communist motives.

Taking these considerations into account, we test four hypotheses about specific parties or types of parties, all motivated by the notion that the impact of partisan alignment can be compounded or mitigated by which party controls an area. We start with ideology, focusing on the BJP and the Communist Party. First,

—Hypothesis 3a (H3a). BJP-controlled areas will receive more aid than average.

Based on the BJP's ideological affinity with the World Bank compared to the other parties, the BJP-controlled areas may receive disproportionate aid when the BJP controls governments. Second,

—Hypothesis 3b (H3b). Communist-controlled areas will receive less aid than the average.

Communist-controlled areas should receive the least amount of aid if ideology drives aid distribution decisions.

To test for the bureaucratic capacity mechanism, we focus hypotheses on the Congress Party and state-based parties. Our third party-specific hypothesis is:

—Hypothesis 3c (H3c). Congress Party-controlled areas will receive more aid than the average.

Based mostly on the degree of organizational capacity, among the national parties during the timeframe of our research, Congress may be the most able to steer aid toward their copartisans, the Communist Party the least able to do so, and the BJP in between. Congress is better positioned than other national parties because of its long history of statism and international connections, as well as its more extensive network of entrenched party agents adjacent to local and state bureaucracies during the period under study. Our fourth hypothesis is:

—Hypothesis 3d (H3d). Areas controlled by non-nationalized parties will also receive relatively less aid.

As mentioned above, this pattern would be due to the lack of bureaucratic reach across states for such parties. The pair of these hypotheses

(H2 and H3) provides party-specific tests of the bureaucratic capacity mechanism.

Last, the general null hypothesis is that none of these factors—partisan alignment, margin of victory, and specific party control—correlates with local allocation of aid.

MOTIVATING CASES

Consider the World Bank's decision to fund a \$104 million initiative to reclaim and rehabilitate thousands of acres in northern India that had become degraded due to high levels of soil salinity and alkalinity. Early World Bank reports note that the problems were especially severe in twenty-two districts.¹⁸ But when the Uttar Pradesh (UP) Sodic Lands Reclamation project launched in 1993, only ten districts—with a staggered rollout predetermined by government officials—were selected to benefit.

Complex donor-funded projects often require years of planning before a formal agreement is signed. Indeed, for three years prior to the signing of the agreement, World Bank officials worked with the government on the project, noting explicitly that members of the UP government and the Department of Agriculture “took the lead in project preparation.”¹⁹ These planning years coincided with a period of political turmoil in UP, with three changes in control of the state government. When World Bank officials arrived on their first mission in January 1990, UP's chief minister was Mulayam Singh Yadav of the Samajwadi Party (SP). In June 1991, the BJP, led by Kalyan Singh, swept to majority rule. But following the destruction of the Babri Masjid mosque by Hindu fundamentalists in 1992 and violence resulting in thousands of deaths, the BJP state government was dismissed by P.V. Narasimha Rao, the prime minister of India. The imposition of President's Rule resulted in the rule of UP by the Congress-led central government throughout 1993. Thus, from the World Bank's first site visit to the time the final project agreement was signed in June 1993, control of the government of UP had moved across three political parties.

Tracing precisely when siting decisions for the Sodic Lands project were made and by whom is impossible given public records. Yet that

¹⁸ World Bank Report P-6033-IN. May 13, 1993. At <https://documents1.worldbank.org/curated/en/252591468049155405/pdf/multi-page.pdf>, accessed August 28, 2022.

¹⁹ World Bank Implementation Completion Report, Report No. 22886. September 28, 2001. At <https://documents1.worldbank.org/curated/en/454061468050035750/pdf/multi0page.pdf>, accessed August 28, 2022.

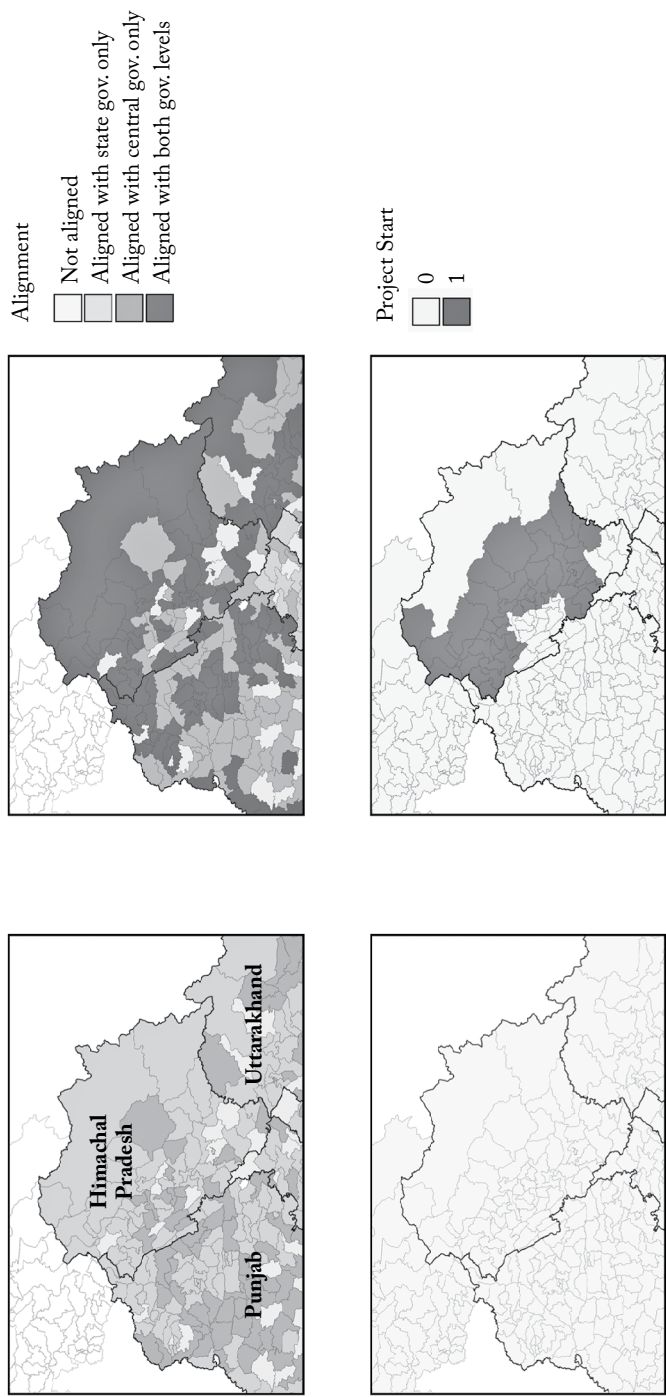
allocation decisions in this case occurred over three years, coinciding with multiple partisan changes, suggests that each of the relevant parties had opportunities to shape project plans during their time in power. A conspicuous fact is that the districts selected for the Sodic Lands project included the primary strongholds most closely associated with each of the three parties: Etawah district, the birthplace of the SP; Atrauli district, the seat of the BJP's state leader (Singh); and Rae Bareilly, the longtime Congress Party bastion and home to prime ministers and multiple descendants of the Nehru-Gandhi clan. The selection and sequencing of project activities across the ten districts does not seem to follow any technical ordering of districts by the amount or concentration of sodic land (see Table 1A in the supplementary material), but rather are consistent with the idea that each party was able to lay claim to a piece of the aid during their period of rule in the state.

Another illustrative case is the Himachal Pradesh Mid-Himalayan Watershed Development Project, funded by the World Bank in 2005 at approximately \$75 million to improve water infrastructure with the aim of increasing returns on agricultural production.²⁰ The project targeted ten administrative districts in the state of Himachal Pradesh (HP) over a decade. The start date of the project is noteworthy in terms of our theory and analysis. As the maps in Figure 1 show, most state legislative assembly seats in HP were aligned with Congress, the political party that ruled the state government in 2003, as opposed to the BJP, which ruled the national government at the time. In 2004, national elections brought Congress back to power at the center. As a result, members (MLAs) from forty-three constituencies of the state legislative assembly who had only been aligned with the state government now became aligned with both the state and national governments. In the months that followed, the terms of the watershed project were finalized. The ten administrative districts that the project targeted included twenty-seven state legislative assembly constituencies that were now aligned with the party in power at both the state and national levels (see Figure 1).

Which locations receive aid is of course shaped by many factors.²¹ In these two examples, multiple reasons exist, independent of partisan bias, for aid to flow to the selected areas of UP and HP, including the need for such aid, the preparedness of local bureaucracies and farming communities to implement the aid, and decisions internal to the World Bank. Nonetheless, these examples suggest the plausibility of

²⁰ See <https://projects.worldbank.org/en/projects-operations/project-detail/P093720?lang=en&tab=overview>, accessed July 11, 2020.

²¹ Briggs 2018; Marineau and Findley 2020.



Before 2004 National Election

After 2004 National Election

FIGURE 1

PARTISAN ALIGNMENT AND AID IN HIMACHAL PRADESH, BEFORE AND AFTER THE 2004 INDIAN ELECTION

Source: Maps developed using data obtained from AidData 2017 and the Electoral Commission of India.

partisan motivations in location decisions, and they motivate our systematic analyses.

BIVARIATE RESULTS

We initially consider state legislative assembly constituencies in India that were targeted with new agricultural aid projects. From 1995 to 2008, nearly thirteen hundred such constituencies—about one-quarter of those in the country—benefited from agricultural aid project activity in at least one year. As Table 1 shows, three-quarters of the beneficiary constituencies were aligned with the ruling party of the state or national governments, with the majority being aligned at both levels. At first glance, this evidence is consistent with partisan alignment affecting allocations.

TABLE 1
PARTISAN ALIGNMENT WITH RULING PARTIES AT STATE OR
NATIONAL LEVEL OF CONSTITUENCIES RECEIVING WORLD BANK
AGRICULTURAL AID IN INDIA, 1995–2008^a

Year	<i>Project Starts</i>				
	<i>Constituencies Aligned with Both State and National Levels</i>	<i>Constituencies Aligned with National Level Only</i>	<i>Constituencies Aligned with State Level Only</i>	<i>Constituencies Not Aligned with Either Level</i>	<i>Total Constituencies Receiving Aid</i>
1995	19 (54%)	0 (0%)	8 (23%)	8 (23%)	35
1996	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
1997	89 (76%)	10 (9%)	0 (0%)	18 (15%)	117
1998	41 (27%)	1 (1%)	38 (25%)	71 (47%)	151
1999	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
2000	0 (0%)	38 (37%)	55 (53%)	11 (11%)	104
2001	0 (0%)	8 (18%)	21 (47%)	16 (36%)	45
2002	117 (68%)	0 (0%)	3 (2%)	53 (31%)	173
2003	26 (72%)	0 (0%)	0 (0%)	10 (28%)	36
2004	2 (25%)	3 (38%)	0 (0%)	3 (38%)	8
2005	39 (28%)	6 (4%)	77 (55%)	19 (13%)	141
2006	12 (48%)	3 (12%)	8 (32%)	2 (8%)	25
2007	253 (59%)	18 (4%)	45 (10%)	113 (26%)	429
2008	0 (0%)	7 (24%)	21 (72%)	1 (3%)	29
Total	598 (46%)	94 (7%)	276 (21%)	325 (25%)	1293

^a Distributions derived using data obtained from AidData 2017. Percentage of cases in each row in parentheses.

But examining only constituencies that received aid is insufficient. To determine whether aid correlates with partisan alignment, the constituencies that received aid need to be compared with those that did not. Thus, we calculate the conditional probability of receiving aid based on the level of alignment with the national and state governments. Our unit of analysis is the constituency-year. Across our full sample of 57,000 constituency-years, cases exhibiting partisan alignment with both state and national governments were substantially more likely to receive aid (4.8 percent of constituency-years) than those that were aligned with just state (1.4 percent) or just national (1.3 percent) governments, or than those that were unaligned (2.3 percent).²² Figure 2 plots the corresponding patterns by level of alignment for each year in our sample. The patterns remain largely consistent, although some variation is observed, reflecting the complexity of India's political landscape and the staggered schedules (and resulting outcomes) of competitive national- and state-level elections.

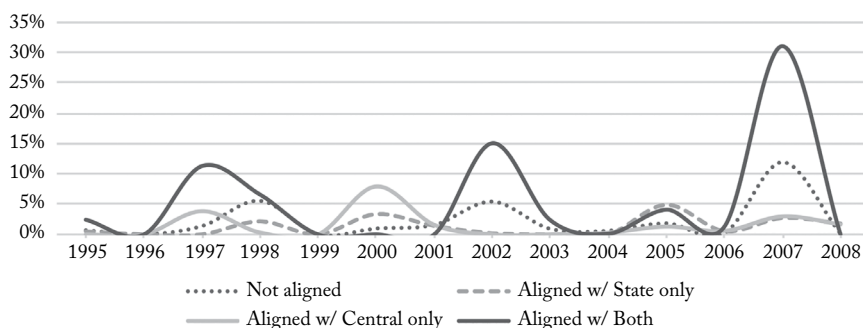


FIGURE 2

TRENDS OF STATE LEGISLATIVE ASSEMBLY CONSTITUENCIES ALLOCATED NEW AGRICULTURAL AID PROJECTS IN INDIA, BY NATURE OF PARTISAN ALIGNMENT (PERCENT SHARE OF CONSTITUENCIES)

SOURCE: Shares derived using data obtained from AidData 2017.

²² This last group, the unaligned, deserves attention as constituencies in the group are more likely to receive aid than those aligned with either just the state or just the national government. Multivariate analyses (summarized below) provide information on what may be driving aid to those areas. We speculate that this initial pattern is consistent with the notion that semi-aligned constituencies foster tension between state and national levels, which results in these constituencies being penalized: the national ruling party could be prone to steer projects away from constituencies aligned only at the state level, while the state ruling party could be prone to steer projects away from constituencies only aligned at the national level. Meanwhile, the unaligned constituencies may stay outside this political fray, managing to be less susceptible to the competition between the national and state ruling parties.

The results from the bivariate analysis suggest that partisan alignment correlates with the allocation of aid on a geographic basis. Next, we turn to in-depth, multivariate analyses that incorporate a wider variety of possible influences on aid to investigate further the relationship. In addition, we probe whether aid and partisan alignment ultimately affect the impact of the aid.

DATA FOR MULTIVARIATE ANALYSES

A centerpiece of our approach is to harness—and make important extensions to—the growing range of geocoded subnational data. We link spatial data from several sources as summarized in the descriptive statistics in Table 2. Variables from these sources, originally measured across different units and spatial resolutions, were merged into a common data file at the level of state legislative assembly constituencies (and then administrative districts), enabled by spatial joins. Our main data set comprises about forty-two hundred constituencies observed each year from 1995 to 2008.

SOURCES

AGRICULTURAL AID

AidData provides access to detailed information, including the source, type, amount, and timing, for more than one million development aid projects of more than ninety donor agencies worldwide, from the 1940s to the present. An innovation is the georeferencing of aid projects—and where possible, their component activities—down to the subnational level. Assigning geographic location and precision data to specific projects makes it possible to analyze where aid is targeted within countries.²³ We rely on AidData's World Bank Geocoded Research Release v.1.4.1, which covers all aid projects in the World Bank's International Bank for Reconstruction and Development/International Development Association lending lines from 1995 to 2014.²⁴ For this research, we restrict the sample to projects in India that included agricultural development as part of their focus. Since our interest is how projects are geographically targeted to local areas, we also exclude projects that were

²³ The georeferencing methodology was developed in 2010 in partnership with the Uppsala Conflict Data Program (UCDP); Strandow et al. 2010, and first applied to study the relationship between aid and violent conflict; Findley et al. 2011.

²⁴ AidData 2017.

TABLE 2
DESCRIPTIVE STATISTICS^a

<i>All Indian State Legislative Assembly Constituencies, 1995–2008</i>					
<i>Category/Indicator</i>	<i>Count</i>	<i>Mean</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>
<i>Dependent Variables</i>					
Aid project started in year ^b	57344	0.02	0.15	0	1
Aid project ongoing in year ^c	57344	0.11	0.31	0	1
C3 cropland coverage (km ²)	57344	312.12	283.79	0	2287.92
C4 cropland coverage (km ²)	57344	90.83	131.84	0	1138.72
C3 cropland coverage (%)	57344	0.41	0.22	0	0.83
C4 cropland coverage (%)	57344	0.10	0.10	0	0.60
<i>Independent Variables</i>					
Aligned with both gov. levels ^d	53480	0.24	0.42	0	1
Aligned with national gov. only ^e	53480	0.13	0.34	0	1
Aligned with state gov. only ^f	53480	0.37	0.48	0	1
Not aligned with either level	53480	0.26	0.44	0	1
Election year	55260	0.20	0.40	0	1
Turnout	53540	0.67	0.12	0	1
Margin of victory	53540	12.69	11.36	0	96.32
Bharatiya Janata Party seat	53540	0.19	0.39	0	1
Communist Party seat	53540	0.08	0.28	0	1
Indian National Congress seat	53540	0.28	0.45	0	1
Other party seat	53540	0.44	0.50	0	1
<i>Control Variables</i>					
Area of seat (km ²)	57344	967.99	2939.65	0.69	121484.40
Precipitation index ^g	57344	0.02	0.93	–3.09	2.57
Elevation, average	57344	367.13	514.45	1.55	5055.91
Slope, average	57344	4.27	8.40	0.04	51.81
River length (km)	57344	142.69	362.60	0	14187.20
Paved road length	55664	172.31	186.65	3.15	6640.59

^a Each observation is a state constituency-year.

^b Aid project start: World Bank agricultural project started in that year; AidData 2017.

^c Aid project ongoing: World Bank agricultural project is ongoing in that year; AidData 2017.

^d Aligned with both government levels: MLA is member of party both ruling state and national governments or within ruling coalitions.

^e Aligned with national government: MLA is member of party ruling national government or within ruling coalition.

^f Aligned with state government: MLA is member of party ruling state government or within ruling coalition.

^g Precipitation index: Standardized Precipitation Index (SPI) is a normalized index that identifies deviations in accumulated rainfall from the long-term mean. Since rainfall in India is unimodal and concentrates within the calendar year (monsoon is from July to September) the twelve-month SPI CAMS-OPI for December of each year is used.

implemented statewide or nationwide.²⁵ As a final restriction on the sample, we opted to end the period under study in 2008, after which the state legislative assembly constituency boundaries were redrawn, complicating comparisons of units over time. Figure 3 presents a map of the constituencies targeted with agricultural aid during our study period.

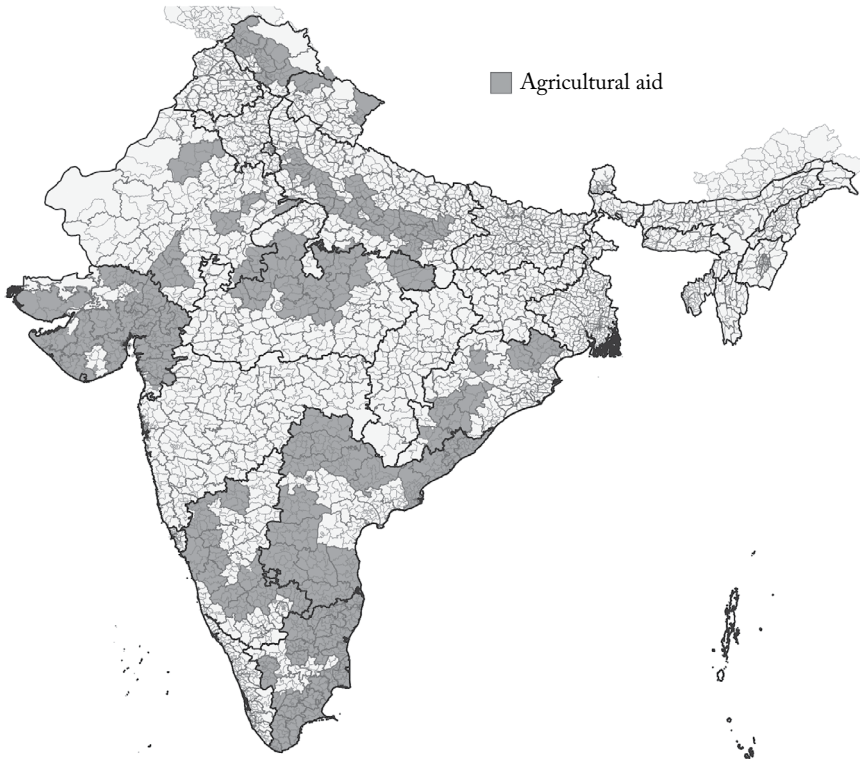


FIGURE 3
STATE LEGISLATIVE ASSEMBLY CONSTITUENCIES TARGETED BY
WORLD BANK AGRICULTURAL AID PROJECTS IN INDIA, 1995–2008

SOURCE: Map developed using data obtained from AidData 2017.

²⁵ In principle, a complementary—but more limited—analysis could be conducted to evaluate whether partisan bias is evident in the allocation of statewide projects based on alignment between state and national governments.

ELECTION RESULTS

We obtained constituency-level data on elections to the state legislative assembly from 1995 to 2008 from the Electoral Commission of India. The available data include constituency names, party names, candidate and party vote shares, margins of victory, the number of eligible voters, and turnout. At the state and national levels in India, all legislative representatives are elected in single-member districts, using first-past-the-post, simple-plurality electoral systems. Therefore, each constituency at a given point in time has an elected representative whose party identification is straightforward to compare directly to the party or parties ruling the corresponding state government, as well as to the party or parties ruling the national government. We code the party of the representative of each constituency in each year, the partisan alignment of each constituency at both the state and national levels in each year, and electoral competitiveness as measured by the winning margin for the largest party in the most recent election for the constituency.²⁶

CLIMATE AND GEOPHYSICAL DATA

To measure the agricultural context and geophysical attributes of local areas in India, we draw on the History Database of the Global Environment (HYDE).²⁷ This source provides annual estimates of cropland coverage for spatial units at a resolution of five arcminutes (approximately eighty-five km² at the equator). We also code data on the elevation of terrain and the length of the river and road network for each constituency. Raster data were aggregated to each georeferenced assembly constituency using zonal statistics operations.²⁸ Vector data were matched to constituencies using spatial intersection operations.

KEY VARIABLES

Our main measure of *aid targeting* is whether a particular state legislative assembly constituency included areas designated for agricultural aid project activities in World Bank project documents. We code a constituency as having received targeted aid if any portion of the specific geographic locations listed in project documents lies within the constituency boundaries. In our data set, 23 percent of the constituencies

²⁶ The data on Indian state legislative assembly election results, party representation, and partisan alignment come from Baskaran, Min, and Uppal 2015, derived from data from the Electoral Commission of India's annual election reports. Constituency boundaries are derived from shapefiles produced by ML Infomap 2012.

²⁷ Klein et al. 2011.

²⁸ Burrough, McDonnell, and Lloyd 1998.

are coded as being the location of an agricultural aid-funded project activity at some point during 1995–2008.

We measure *partisan alignment* by coding whether the MLA belongs to a party that matches a party ruling the government at the state or national level. In any given year, four scenarios are possible: (1) unaligned with both the state and national governments, (2) aligned with the state but not the national government, (3) aligned with the national but not the state government, and (4) aligned with both the state and national governments. The nature of partisan alignment varies widely because of elections, resulting turnover in MLAs, and shifting control and changing coalitions at the state and national levels. Substantial variation exists across constituencies in any given year (see Figure 1A in the supplementary material). For example, 57 percent of the constituencies were represented by legislators aligned with their state governments in 1995. Of these constituencies, about one-third (18 percent of all constituencies) were aligned at both state and national levels.

In addition, we include other political variables at the constituency level. *Competitiveness* is measured as the margin of victory for the winning candidate in each state constituency relative to the runner-up. *Party identity* captures the party of the winner in each constituency. Among all the constituencies in our data set, 62 percent had Congress representation, 39 percent had BJP representation, 13 percent had Communist Party representation, and 73 percent had representation by a party other than these three national parties at some point during the period covered by our analysis. We also include a control for voter *turnout* in each constituency.

We control for the effects of physical geographic and development factors that we expect to affect demand for agricultural aid, aid effectiveness, and cropland coverage. An important factor is variation in *precipitation* levels, which we measure using the Standardized Precipitation Index (SPI).²⁹ The SPI is a normalized monthly index that identifies deviations in accumulated rainfall from the long-term mean. Since rainfall in India is unimodal and concentrated within the calendar year (monsoon is from July to September), we used the December SPI value of each year. We also integrated data on the following geographic controls: *total constituency area*, *average elevation*, *average slope of the terrain*, *length of paved roads*, and *length of rivers*. Data on elevation and derived slope are obtained from the Shuttle Radar Topography Mission, data on roads from the Global Roads Open Access Dataset version 1, and data on

²⁹ Svoboda and Wood 2012.

rivers from Hydrosheds version 1.³⁰ To control for further, unmeasured factors that are time-invariant or simultaneously affect all units over time, we include both state constituency and year fixed effects.

In an extension of the main analysis about aid allocation, we seek to gauge the impact of aid on agricultural outcomes, taking into account the effect of partisan bias on those allocations. Our measure of agricultural outcomes is *cropland coverage*, a proxy for agricultural production and food security. We draw on data from HYDE for each constituency between 1995 and 2008. The HYDE cropland data aggregate crops into two groups, c3 and c4, based on the plants' photosynthetic mechanism. c3 includes many food crops, such as beans, rice, soybeans, wheat, barley, and potatoes. c4 includes corn, millet, sorghum, and sugarcane. The average change in both measures of cropland coverage in our data set is near zero—in other words, no net change in c3 or c4 cropland coverage was observed between 1995 and 2008. Yet meaningful and consequential variation is evident across the constituencies, from -6 percent to +4 percent change in c3 crop coverage, and from -2 percent to +2 percent in c4 crop coverage (see Figure 2A in the supplementary material). Standard deviations are 1 percent for c3 and 0.4 percent for c4.

Some aid may have the intention of enhancing productivity while decreasing cropland coverage, based on the idea that increasing yield allows farmers to shift production away from less productive land or farms.³¹ Alternatively, aid could increase cropland coverage, if farmers respond to gains in productivity resulting from aid by seeking to expand production. Figure 4 shows how India increased its total amount of land devoted to agriculture during the Green Revolution of the 1960s and 1970s, peaking in the early 1980s, with one hundred thirty million hectares under the plow. Since then, agricultural land has decreased slightly, to about one hundred twenty million hectares. This decrease was intentional—an outgrowth of India's reforestation program and emphasis on increasing agricultural productivity.³² Meanwhile, agricultural output in India has increased fivefold since 1950, led by increases in the production of rice, wheat, pulses, cotton, and sugarcane.³³ This growth in output reflects ongoing improvements in crop yields through

³⁰ Farr 2007; CIESIN and ITOS 2013; Lehner, Verdin, and Jarvis 2008.

³¹ García et al. 2020. Decreasing croplands and increasing wetlands devoted to wildlife or natural plants (including planting new forests) may benefit the well-being of producers and consumers of agricultural products. For instance, reduced cropland coverage may lead to more sustainable prices for farmers, as well as to more land for livestock, while reducing waste.

³² OECD/ICRIER 2018.

³³ ICRISAT 2015.

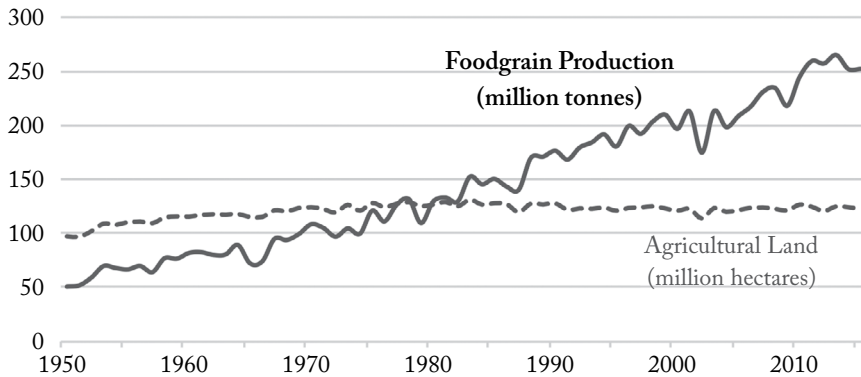


FIGURE 4

AGRICULTURAL CROPLAND COVERAGE AND PRODUCTION IN INDIA, 1950–2015

SOURCE: *Agricultural Statistics at a Glance 2016*, New Delhi, India: Government of India.

better seeds and fertilizers, farming techniques, and worker productivity (since 1990, value added per agricultural worker has doubled in India). Most of the World Bank aid programs examined in our study appear to be aimed mostly at enhancing the efficiency and sustainability of India's agricultural sector, thus, generally decreasing coverage, rather than increasing the share of land resources directed toward production.

THE RELATIONSHIP BETWEEN PARTISAN BIAS AND AID ALLOCATION

Our primary multivariate analysis of the relationship between partisan bias and aid allocation uses time-series fixed-effects logit models in which the dependent variable takes a value of one in constituency-years associated with the initiation of an agricultural aid project activity and a value of zero otherwise. Fixed-effects models estimate an independent variable's effect using only within-unit variation, reducing confounding by time-invariant factors.³⁴ Thus, the inclusion of unit fixed effects at the constituency or district levels helps to account for factors that influence the receipt of aid, but are unlikely to vary widely over the period under study, such as overall levels of economic development and the physical geography of soil fertility and water access. Since maximum likelihood estimation of fixed effects can only be computed for units in which a change in the outcome occurs, our fixed-effects logit models

³⁴ Wooldridge 2010.

include only constituencies that ever received aid.³⁵ If allocations are influenced by partisan bias, cases characterized by alignment with the state or national government should exhibit a greater likelihood of receiving projects than cases with no alignment across government levels.

Table 3 presents the results for the models of state legislative assembly constituencies, which show strong support for the main hypothesis (H1) that agricultural aid is more likely to be targeted to aligned constituencies. The magnitudes of the effects of alignment are substantively significant. In model 3, for example, the average predicted probability of being targeted for aid is 21.5 percent higher for a constituency aligned with both state and national governments and 17.6 percent higher for a constituency aligned with the national government, compared to an unaligned constituency. Meanwhile, a constituency aligned with only the state government is not meaningfully different from an unaligned constituency in terms of the likelihood of being allocated new aid projects.

Many source documents about aid projects describe locations at the level of administrative districts, which are larger than state electoral constituencies. To ensure that our results are not simply a consequence of disaggregation of aid to the level of constituencies, we also conducted a separate analysis at the level of administrative districts. Here, alignment represents the proportion of constituency seats within an administrative district that is aligned (the typical district comprises six or seven constituencies). Table 4 shows that alignment at the administrative district level with both national and state governments is a positive predictor of receiving aid. In addition, being aligned with either the national or state level has a strong effect on the likelihood of receiving aid. A district in which all seats are fully aligned with both the state and national levels has a 2.7 times higher likelihood of receiving a project than a completely unaligned district. Full alignment at the national level only is associated with a similar 2.8 times higher likelihood of receiving aid. Meanwhile, full alignment at the state level only is now significant, with a 1.7 times higher likelihood of being selected for a project.

Overall, the results indicate that when local legislators are aligned with parties ruling the national and state governments, the likelihood of aid flowing to their constituencies significantly and substantively increases.

³⁵ We also ran linear fixed effects models, which do not drop units without variation in the dependent variable. The results are substantively similar with no change in significance for any key variables (results available upon request).

TABLE 3
EXPLAINING THE ALLOCATION OF AGRICULTURAL AID
(CONSTITUENCY LEVEL)^a

<i>Variables</i>	<i>DV: Whether New World Bank-Funded Project Started in a Given Constituency-Year</i>		
	<i>Fixed Effects Logit Models</i>		
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>
C3 cropland coverage	7.2088 (15.225)	9.5532 (15.563)	10.1115 (15.719)
C4 cropland coverage	-47.8258 (48.379)	-176.4304 (48.711)	-78.8313 (49.799)
Precipitation index	0.0336 (0.042)	-0.0812 ⁺ (0.045)	-0.0679 (0.045)
Aligned with both gov. levels		0.4627** (0.103)	0.5118** (0.105)
Aligned with national gov. only		0.4855** (0.131)	0.4329** (0.133)
Aligned with state gov. only		-0.1152 (0.113)	-0.0921 (0.114)
Election year		-1.1064** (0.102)	-1.1097** (0.102)
Turnout		-1.3680 (0.890)	-1.3074 (0.893)
Margin of victory		-0.0205** (0.004)	-0.0197** (0.004)
BJP seat			-0.3306* (0.129)
CP seat			0.5018 ⁺ (0.295)
Other party seat			-0.2108 ⁺ (0.111)
Year FE	yes	yes	yes
Constituency FE	yes	yes	yes
Observations	13600	13600	13600
Number of state assembly constituencies	976	976	976

** $p < 0.01$, * $p < 0.05$, ⁺ $p < 0.1$; standard errors in parentheses

^a All independent variables lagged by one year. Omitted reference alignment category is unaligned with either national or state government. Omitted reference party is Indian National Congress.

TABLE 4
EXPLAINING THE ALLOCATION OF AGRICULTURAL AID
(ADMINISTRATIVE DISTRICT LEVEL)^a

<i>Variables</i>	<i>DV: Whether New World Bank-Funded Project Started in a Given District-Year</i>		
	<i>Fixed-Effects Logit Models</i>		
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>
C3 cropland coverage	-18.3462 (53.286)	6.8807 (56.214)	16.0797 (58.247)
C4 cropland coverage	-102.1973 (163.851)	-144.8724 (162.782)	-169.8545 (174.880)
Precipitation index	0.0488 (0.121)	-0.1250 (0.137)	-0.0883 (0.138)
Aligned with both gov. levels		2.2007** (0.634)	2.2715** (0.643)
Aligned with national gov. only		2.5139** (0.631)	2.4184** (0.641)
Aligned with state gov. only		1.0903* (0.564)	1.0799* (0.569)
Election year		-1.1359** (0.299)	-1.1329** (0.301)
Turnout		-2.8173 (2.801)	-2.5303 (2.934)
Margin of victory		-0.0779** (0.021)	-0.0738** (0.022)
BJP seat			-0.7329 (0.546)
CP seat			3.4106 (2.192)
Other party seat			-0.3951 (0.609)
Year FE	yes	yes	yes
Constituency FE	yes	yes	yes
Observations	1820	1790	1790
Number of districts	130	129	129

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$; standard errors in parentheses

^a All independent variables lagged by one year. Omitted reference alignment category is unaligned with either national or state government. Omitted reference party is Indian National Congress.

TESTING COMPETING MECHANISMS

In both sets of models, the relationship between the margin of victory and the probability of receiving aid is consistently negative, controlling

for other factors. These results support the hypothesis that aid decisions target swing constituencies (H2a), rather than core areas where the parties already enjoy strong support (H2b). The results for specific party labels (that is, BJP or Communist; Congress is the omitted category) are inconsistent across models and sometimes lean in unexpected directions, with marginally significant effects for the constituency model (in the unexpected direction if capitalist ideology is what matters), but no significant effect for the models with administrative districts (H3a, H3b, H3c). We find no consistent effects for differences by degrees of party nationalization (that is, relative coefficients for other parties, controlling for other factors; H3d).³⁶

Further analysis supports that electoral incentives are consequential, especially at the state level. Table 5 presents results from models with interaction terms, showing that the effects of margin of victory are especially pronounced when the winning parliamentarian is from the ruling party at the state level. (We found no support for interaction effects between margin of victory and alignment with the national-level government.) A fuller interpretation of the differences in these interaction effects is beyond the scope of this article. Nonetheless, the results indicate that aid targets swing constituencies where the fate of the ruling party at the state level is at stake. This finding offers valuable insights into the mechanisms at work in aid allocations. Aid generally flows to areas aligned with the national government and state governments, with swing districts linked to state governments appearing to be prioritized at above-average levels. The national government helps to steer aid and helps state governments aligned with the same party to maintain their electoral strength. In sum, the results are consistent with the mechanism of party patronage rather than the mechanisms of shared policy goals or bureaucratic capacity.

ROBUSTNESS CHECKS

The inclusion of unit fixed effects should account for confounders that could make a constituency or district more likely to receive aid. Nevertheless, to explore robustness, we also run models controlling for district-level measures of literacy and nighttime luminosity (as measures of socioeconomic development), irrigated share of cropped area (as a measure of agricultural intensity), and formal designation as a

³⁶ That said, being aligned with the national government almost by definition means being represented by a legislator from a nationalized party. Our findings can be partially interpreted as a locality being advantaged if the legislator is a member of a major national party, conditional on its aligning with the specific party holding the national government.

TABLE 5
TESTING MECHANISMS OF ALIGNMENT ON AGRICULTURAL
AID ALLOCATION (CONSTITUENCY LEVEL)

<i>DV: New World Bank-Funded Project Starting in a Given Constituency-Year</i>					
<i>Variables</i>	<i>Close Election (MoV < 3 Percent) (1)</i>	<i>Close Election (MoV < 3 Percent) w/Parties (2)</i>	<i>Margin of Victory (3)</i>	<i>Margin of Victory, w/Parties (4)</i>	<i>Party Interactions (5)</i>
C3 cropland coverage	-5.2566 (16.735)	-5.0334 (16.870)	-1.3458 (16.683)	-0.8887 (16.797)	-9.5112 (17.878)
C4 cropland coverage	-52.8387 (51.347)	-52.6322 (52.364)	-52.5845 (51.115)	-53.6486 (51.938)	14.5031 (58.089)
Precipitation index	-0.0867* (0.045)	-0.0723 (0.045)	-0.0854* (0.045)	-0.0730 (0.045)	-0.0444 (0.047)
Aligned with both gov. levels	0.3577** (0.112)	0.4136** (0.114)	0.4736** (0.147)	0.5169** (0.148)	-0.0657 (0.208)
Aligned with national gov. only	0.6049** (0.147)	0.5441** (0.150)	0.4231* (0.188)	0.3876* (0.191)	-1.7904** (0.275)
Aligned with state gov. only	-0.3119* (0.124)	-0.2857* (0.125)	0.3474* (0.168)	0.3424* (0.168)	0.5042* (0.212)
Election year	-1.0425** (0.100)	-1.0470** (0.100)	-1.1254** (0.102)	-1.1258** (0.102)	-1.2194** (0.107)
Turnout	-1.5076+ (0.894)	-1.4283 (0.897)	-1.0700 (0.895)	-1.0358 (0.898)	-2.6479** (0.929)
Close election (MoV < 3)	-0.1223 (0.187)	-0.1393 (0.187)			
Close × Align both	-0.0537 (0.265)	-0.0560 (0.266)			
Close × Align national	-0.4591 (0.311)	-0.4462 (0.316)			
Close × Align state	0.6039* (0.281)	0.6053* (0.281)			
Bharatiya Janata Party seat		-0.3662** (0.130)		-0.2989* (0.130)	-3.3131** (0.624)
Communist Party seat		0.5485+ (0.297)		0.4588 (0.295)	0.1644 (0.425)
Other party seat		-0.2215* (0.112)		-0.1926+ (0.111)	-0.3745+ (0.204)

TABLE 5 *cont.*

<i>DV: New World Bank-Funded Project Starting in a Given Constituency-Year</i>					
<i>Variables</i>	<i>Close Election (MoV < 3 Percent) (1)</i>	<i>Close Election (MoV < 3 Percent) w/Parties (2)</i>	<i>Margin of Victory (3)</i>	<i>Margin of Victory, w/Parties (4)</i>	<i>Party Interactions (5)</i>
Margin of victory (MoV)			-0.0115 (0.007)	-0.0111 (0.007)	
MoV × Align both			-0.0043 (0.009)	-0.0042 (0.009)	
MoV × Align national			0.0083 (0.014)	0.0067 (0.014)	
MoV × Align state			-0.0357** (0.010)	-0.0338** (0.010)	
BJP × Align both					3.4963** (0.660)
BJP × Align national					6.1693** (0.682)
BJP × Align state					1.4469* (0.645)
CP × Align both					—
CP × Align national					1.9905** (0.592)
CP × Align state					-0.7173 (0.519)
Other party × Align both					0.2506 (0.255)
Other party × Align national					2.9684** (0.356)
Other party × Align state					-1.2276** (0.273)
Year FE	yes	yes	yes	yes	yes
Observations	13600	13600	13600	13600	13600
No. of state assembly constituencies	976	976	976	976	976

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$; standard errors in parentheses

^a All independent variables lagged by one year. Omitted reference alignment category is unaligned with either national or state government. Omitted reference party is Indian National Congress.

drought-prone district (to account for path dependence due to previous government programs).³⁷ The results are presented in Table 2A in the supplementary material.³⁸ We specify random effects models at the administrative-district level to allow for the inclusion of time-invariant controls, clustering our standard errors on district to account for nonindependence of observations. In all cases, the effects of alignment are largely unchanged. Alignment with both government levels remains statistically and substantively significant across all models. The models also show that districts designated as drought prone are more likely to receive agricultural aid, but literacy levels and the irrigated share of cropped areas have no association with aid. Of note, districts with a brighter extent of nighttime lights, which presumably qualify as more economically developed, are more likely to receive agricultural aid. This particular result supports the finding by Nunnenkamp and colleagues that aid in India is less likely to flow to the neediest areas.³⁹

An additional concern about the multilevel regressions presented thus far is that they ignore potential between-unit correlations due to underlying spatial processes. For example, given the geographic scope of many agricultural projects, a district may be more likely to receive aid primarily due to its geographic proximity to a district that was targeted for reasons unrelated to political factors. If partisan alignment is geographically clustered, ignoring spatial correlations could then make it appear that political factors drive the distribution of aid. To account for this possibility, spatial models can be specified to account for a range of possible spatial autocorrelation effects among units. In several demanding tests, we fit spatial autoregressive models that allow outcomes in one unit to be affected by outcomes in nearby units (spatial lags of the outcome variable), covariates from nearby units (spatial lags of covariates), and errors from nearby units (spatially autoregressive errors).

³⁷ Literacy rates have been widely used as a measure of social development, though there are important exceptions, such as Kerala, which famously has high literacy rates despite low average incomes; Drèze and Sen 2002. Overall, at the state level, the correlation between literacy rates and GDP is 0.93; Desai 2012. Nighttime luminosity, which we measure as the logged sum of all lights from within a district in each year, has been shown to be a reliable measure of economic activity and electricity consumption in India; Baskaran, Min, and Uppal 2015. Nighttime lights data come from version 4 of the DMSP-OLS Stable Lights Annual Composite Time Series; Elvidge et al. 1997.

³⁸ The designation of a district as drought-prone dates back to the 1972 Irrigation Commission. By 2006, the Drought Prone Areas Programme (DPAP) was under implementation in 972 blocks of 185 districts in 16 states; Annual Report of the Ministry of Rural Development, 2006–2007. The program provides resources to minimize the adverse effects of drought on crop production and agricultural productivity, and thus could be associated with a higher likelihood of receiving agricultural aid. Indeed, DPAP districts are twice as likely to receive an aid project (3.2 percent) as non-DPAP districts (1.6 percent) in any given year.

³⁹ Nunnenkamp, Öhler, and Sosa Andrés 2017.

Spatial lags are defined by a spatial weights contiguity matrix, W , with elements $w_{ij} = 1$ if two units share a common border, and zero otherwise. For robustness, we run both spatial error models (SEM) and general nesting spatial models (GNS). The SEM include a spatially lagged error term, which yields more efficient estimators if error values of an area are correlated with errors in neighboring areas.⁴⁰ The GNS model adds a spatial lag of the dependent variable and of the covariates, in addition to the spatially lagged error term.⁴¹ If the true data-generating process is the SEM, then GNS and nonspatial models are unbiased but inefficient. If the true model is GNS, then nonspatial models and SEM are biased.⁴² Spatial factors are certainly important in shaping the distribution of aid, since the agricultural challenges targeted by aid are directly related to geography. Thus, detecting an impact of partisan alignment after controlling for spatial autocorrelation represents a hard test of the theory. As before, we include fixed effects at the constituency or district levels and for each year.

The set-up of these models differs in several important ways from the preferred logit model specifications in Tables 3 and 4. Spatial autoregressive models with binary outcomes are computationally difficult to estimate. For tractability, we estimate linear probability models that yield coefficient estimates that are not directly comparable with the logit coefficient estimates above. Unlike fixed-effects logit models, which study within-unit variation and thus drop units that never receive aid, spatial autoregressive models include all units represented in the spatial weights matrix, resulting in larger sample sizes. In addition, spatial autoregressive models can be run only on a fully balanced panel, meaning that unbalanced units (for example, constituencies affected by the division and formation of new states during the period of this study) are excluded. To facilitate comparison, we also report nonspatial results using the same specifications and data sample, but excluding the spatial parameters (models 7–9).

Table 6 presents the results of the estimations of the spatial autocorrelation models at the constituency level, and Table 7 presents the corresponding results for models at the district level. The substantive findings provide more modest support of our theoretical expectations compared to the nonspatial analysis. Yet alignment with both the state and national levels of government remains an important predictor of receiving aid in some of the spatial models. The effect of alignment is

⁴⁰ LeSage and Pace 2009.

⁴¹ Halleck Vega and Elhorst 2015.

⁴² LeSage and Pace 2009.

TABLE 6
SPATIAL MODELS OF AGRICULTURAL AID ALLOCATION (CONSTITUENCY LEVEL)^a

<i>Variables</i>	<i>DV: Whether New World Bank-Funded Project Started in a Given Constituency-Year</i>								
	<i>SEM^b</i> (1)	<i>SEM</i> (2)	<i>SEM</i> (3)	<i>GNS^c</i> (4)	<i>GNS</i> (5)	<i>GNS</i> (6)	<i>Nonspatial</i> (7)	<i>Nonspatial</i> (8)	<i>Nonspatial</i> (9)
C3 cropland coverage	0.3961 (0.270)	0.3824 (0.269)	0.3825 (0.270)	0.4690 ⁺ (0.277)	0.4597 ⁺ (0.277)	0.4705 ⁺ (0.277)	0.5077 ⁺ (0.278)	0.4980 ⁺ (0.277)	0.5092 ⁺ (0.278)
C4 cropland coverage	-0.5976 (0.934)	-0.6439 (0.934)	-0.6448 (0.934)	-0.5036 (0.949)	-0.5567 (0.949)	-0.5783 (0.949)	-1.5880 ⁺ (0.852)	-1.6171 ⁺ (0.853)	-1.5184 ⁺ (0.854)
Precipitation index	0.0036** (0.001)	0.0032* (0.001)	0.0032* (0.001)	0.0037** (0.001)	0.0032* (0.001)	0.0032* (0.001)	0.0020* (0.001)	0.0013 (0.001)	0.0014 (0.001)
Aligned with both gov. levels		0.0016 (0.001)	0.0016 (0.001)		0.0034* (0.002)	0.0036* (0.002)		0.0163** (0.002)	0.0156** (0.002)
Aligned with national gov. only		-0.0011 (0.001)	-0.0011 (0.001)		-0.0012 (0.002)	-0.0010 (0.002)		0.0106** (0.003)	0.0104** (0.003)
Aligned with state gov. only		-0.0028* (0.001)	-0.0028* (0.001)		-0.0035* (0.001)	-0.0035* (0.001)		-0.0014 (0.002)	-0.0022 (0.002)
Election year		-0.0096** (0.002)	-0.0096** (0.002)		-0.0096** (0.002)	-0.0096** (0.002)		-0.0126** (0.002)	-0.0125** (0.002)
Turnout		0.0142 (0.009)	0.0142 (0.009)		0.0170+ (0.010)	0.0172+ (0.010)		0.0145 (0.011)	0.0176 (0.011)
Margin of victory		-0.0001** (0.000)	-0.0001** (0.000)		-0.0002** (0.000)	-0.0002** (0.000)		-0.0005** (0.000)	-0.0005** (0.000)
BJP seat			0.0000 (0.001)			-0.0013 (0.002)			-0.0103** (0.003)

TABLE 6 cont.

DV: Whether New World Bank-Funded Project Started in a Given Constituency-Year									
Variables	SEM ^b (1)	SEM (2)	SEM (3)	GNS ^c (4)	GNS (5)	GNS (6)	Nonspatial (7)	Nonspatial (8)	Nonspatial (9)
CP seat			-0.0006 (0.003)			0.0009 (0.003)			0.0075 (0.005)
Other party seat			0.0002 (0.001)			0.0009 (0.002)			-0.0059* (0.002)
W × u	0.9742** (0.002)	0.9740** (0.002)	0.9740** (0.002)	0.9765** (0.003)	0.9763** (0.003)	0.9763** (0.003)			
W × Project start				-0.0137 (0.012)	-0.0146 (0.012)	-0.0145 (0.012)			
W × C3 cropland coverage				-0.7690 (0.749)	-0.7310 (0.749)	-0.7081 (0.749)			
W × C4 cropland coverage				-1.1970 (2.515)	-1.2141 (2.515)	-1.2708 (2.515)			
W × Precipitation index				-0.0008 (0.003)	-0.0011 (0.003)	-0.0011 (0.003)			
W × Aligned with both gov. levels				0.0111* (0.005)	0.0111* (0.005)	0.0124* (0.005)			
W × Aligned with national gov. only					-0.0016 (0.006)	-0.0004 (0.006)			
W × Aligned with state gov. only					-0.0054 (0.005)	-0.0055 (0.005)			
W × Election year					-0.0019 (0.006)	-0.0019 (0.006)			

TABLE 6 *cont.*

DV: Whether New World Bank–Funded Project Started in a Given Constituency–Year									
Variables	SEM ^b (1)	SEM (2)	SEM (3)	GNS ^c (4)	GNS (5)	GNS (6)	Nonspatial (7)	Nonspatial (8)	Nonspatial (9)
W × Turnout					0.0319 (0.030)	0.0338 (0.030)			
W × Margin of victory					−0.0005** (0.000)	−0.0005** (0.000)			
W × BJP seat						−0.0072 (0.006)			
W × CP seat						0.0081 (0.011)			
W × Other party seat						0.0037 (0.005)			
Year FE	yes	yes	yes	yes	yes	Yes	yes	yes	yes
Constituency FE	yes	yes	yes	yes	yes	Yes	yes	yes	yes
Constant	0.0770** (0.000)	0.0770** (0.000)	0.0770** (0.000)	0.0769** (0.000)	0.0769** (0.000)	0.0769** (0.000)	−0.0400 (0.096)	−0.0356 (0.096)	−0.0488 (0.096)
Observations	51814	51814	51814	51814	51814	51814	51814	51814	51814
Number of state assembly constituencies	3701	3701	3701	3701	3701	3701	3701	3701	3701

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$; standard errors in parentheses
^a All independent variables lagged by one year. Omitted reference alignment category is unaligned with either national or state government. Omitted reference party is Indian National Congress.
^b SEM: spatial error model includes spatially lagged error term (u), with constituency and year fixed effects.
^c GNS: general nested spatial model, includes spatial lag of y, spatially lagged error term (u), and spatially lagged covariates, with constituency and year fixed effects.

TABLE 7
SPATIAL MODELS OF AGRICULTURAL AID ALLOCATION (ADMINISTRATIVE DISTRICT LEVEL)^a

DV: Whether New World Bank-Funded Project Started in a Given District-Year									
Variables	SEM ^b (1)	SEM (2)	SEM (3)	GNS ^c (4)	GNS (5)	GNS (6)	Nonspatial (7)	Nonspatial (8)	Nonspatial (9)
C3 cropland coverage	1.2245 (1.048)	1.2047 (1.046)	1.2827 (1.046)	0.8724 (1.048)	0.7608 (1.047)	0.7895 (1.049)	1.1744 (1.152)	1.0294 (1.153)	1.1642 (1.157)
C4 cropland coverage	-5.5118 (4.266)	-5.4939 (4.257)	-5.8661 (4.258)	-4.2562 (4.269)	-3.9995 (4.267)	-4.3049 (4.276)	-4.8067 (4.724)	-3.7787 (4.742)	-4.4236 (4.757)
Precipitation index	0.0015 (0.004)	0.0004 (0.004)	0.0003 (0.004)	0.0034 (0.005)	0.0020 (0.005)	0.0019 (0.005)	-0.0011 (0.003)	-0.0014 (0.003)	-0.0018 (0.003)
Aligned with both gov. levels		0.0090 (0.009)	0.0141 (0.010)		0.0114 (0.010)	0.0156 (0.011)		0.0336** (0.011)	0.0345** (0.011)
Aligned with national gov. only		-0.0186 (0.011)	-0.0162 (0.011)		-0.0131 (0.012)	-0.0118 (0.012)		0.0178 (0.013)	0.0194 (0.013)
Aligned with state gov. only		-0.0127 (0.008)	-0.0127 (0.008)		-0.0123 (0.009)	-0.0124 (0.009)		0.0029 (0.010)	0.0026 (0.010)
Election year		-0.0073 (0.007)	-0.0074 (0.007)		-0.0047 (0.008)	-0.0047 (0.008)		-0.0068 (0.005)	-0.0069 (0.005)
Turnout		-0.0405 (0.042)	-0.0402 (0.043)		-0.0503 (0.043)	-0.0495 (0.043)		0.0038 (0.033)	0.0034 (0.033)
Margin of victory		-0.0013** (0.000)	-0.0014** (0.000)		-0.0012** (0.000)	-0.0012** (0.000)		-0.0016** (0.000)	-0.0017** (0.000)
BJP seat			-0.0171 (0.013)			-0.0172 (0.014)			-0.0166 (0.015)
CP seat			0.0136 (0.029)			0.0185 (0.031)			0.0689* (0.034)

TABLE 7 *cont.*

DV: Whether New World Bank-Funded Project Started in a Given District-Year									
Variables	SEM ^b (1)	SEM (2)	SEM (3)	GNS ^c (4)	GNS (5)	GNS (6)	Nonspatial (7)	Nonspatial (8)	Nonspatial (9)
Other party seat			0.0151 (0.010)			0.0092 (0.011)			-0.0017 (0.011)
W × u	0.7832** (0.013)	0.7830** (0.013)	0.7837** (0.013)	0.9069** (0.014)	0.9074** (0.014)	0.9066** (0.014)			
W × Project start				-0.3501** (0.043)	-0.3540** (0.043)	-0.3509** (0.043)			
W × C3 cropland coverage				-3.2201 (3.311)	-3.8242 (3.314)	-3.9307 (3.323)			
W × C4 cropland coverage				10.6876 (13.404)	12.4755 (13.411)	13.1278 (13.443)			
W × Precipitation index				-0.0053 (0.009)	-0.0057 (0.009)	-0.0060 (0.009)			
W × Aligned with both gov. levels					0.0381 (0.033)	0.0303 (0.034)			
W × Aligned with national gov. only					0.0402 (0.037)	0.0372 (0.037)			
W × Aligned with state gov. only					-0.0064 (0.031)	-0.0065 (0.031)			
W × Election year					-0.0261 (0.018)	-0.0257 (0.018)			
W × Turnout					0.0046 (0.112)	-0.0019 (0.112)			

TABLE 7 *cont.*

DV: Whether New World Bank-Funded Project Started in a Given District-Year									
Variables	SEM ^b (1)	SEM (2)	SEM (3)	GNS ^c (4)	GNS (5)	GNS (6)	Nonspatial (7)	Nonspatial (8)	Nonspatial (9)
W x Margin of victory					0.0003 (0.001)	0.0004 (0.001)			
W x BJP seat						-0.0002 (0.046)			
W x CP seat						0.0542 (0.101)			
W x Other party seat						-0.0350 (0.034)			
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constituency FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Constant	0.1115** (0.001)	0.1112** (0.001)	0.1111** (0.001)	0.1071** (0.001)	0.1067** (0.001)	0.1066** (0.001)	-0.0453 (0.354)	-0.0654 (0.354)	-0.0649 (0.355)
Observations	5530	5530	5530	5530	5530	5530	5530	5530	5530
Number of groups	395	395	395	395	395	395	395	395	395

** $p < 0.01$, * $p < 0.05$; standard errors in parentheses
^a All independent variables lagged by one year. Omitted reference party is Indian National Congress. Omitted reference alignment category is unaligned with either national or state government.
^b SEM: spatial error model includes spatially lagged error term (u), with district and year fixed effects.
^c GNS: general nested spatial model, includes spatial lag of y, spatially lagged error term (u), and spatially lagged covariates, with district and year fixed effects.

strongest in the constituency-level analysis, with stronger results for the GNS models (models 5 and 6) in which the direct, indirect, and combined total effects of alignment with both government levels are significant. In comparison with the nonspatial results (models 7–9), the effect of alignment with both government levels is reduced, but persists. The patterns do not hold at the administrative-district level (a smaller sample), with all coefficients on the alignment variables falling short of statistical significance. At the district level, being proximate to another district receiving aid is a more important predictor of aid than how many legislators are aligned with ruling governments within the district. The inconsistency with the constituency-level results could stem from nonlinearities in the relationship between the variables, or measurement errors due to aggregation of alignment and electoral conditions from multiple constituencies to derive district-level measures. These differences also highlight the importance of correctly specifying the relevant units of (spatial) analysis. Partisan alignment is a process that links elected officials at the constituency level to ruling governments. Consequently, we should expect the analysis to reveal effects at that level. Overall, the spatial models on balance support our main results on alignment at both government levels, but do so inconsistently. The results affirm the important role of geography and spatial factors in shaping agricultural project siting decisions.

Another way to assess the influence of partisan alignment is to examine rates of project starts in constituencies, conditional on a change in alignment status from one year to the next. If partisan alignment is a key factor in the award of aid-funded projects, we would expect to see different rates of project starts following a change in alignment status induced by elections at the state and national levels. Although the optimal expected lag between a change in alignment and project starts is theoretically ambiguous, we look at changes over one year in Table 8. Of the 13,538 cases in which a change in alignment occurred within a constituency in the prior year, 2.16 percent experienced the start of an aid-funded agricultural project. Among the 553 cases in which an unaligned constituency became aligned with the ruling party at both levels of government, project starts occurred 7.4 percent of the time, far higher than the average overall. By comparison, the rate of project starts was very low in seats that went from unaligned to aligned at only the state (0.6 percent) or the national (0.1 percent) level. Perhaps surprisingly, seats that were once aligned but lost that status due to an election result continued to be the site of many project initiations. For

TABLE 8
NEW STARTS OF WORLD BANK–FUNDED AGRICULTURE PROJECTS FOLLOWING
CHANGES IN THE PARTISAN ALIGNMENT OF STATE LEGISLATIVE ASSEMBLY
CONSTITUENCIES IN INDIA, 1995–2008^a

TO		<i>Not Aligned</i>	<i>Aligned with State Government</i>	<i>Aligned with National Government</i>	<i>Aligned with Both Levels of Government</i>	Subtotal
FROM	Not aligned	—	0.56 (1774)	0.09 (1119)	7.41 (553)	1.51 (3446)
	Aligned with state government	1.84 (1247)	—	0.0 (555)	2.10 (2671)	1.77 (4473)
	Aligned with national government	4.08 (1422)	0.37 (271)	—	0.65 (306)	3.05 (1999)
	Aligned with both levels of government	6.52 (399)	3.15 (2575)	0.0 (646)	—	2.96 (3620)
	Subtotal	3.49 (3068)	1.99 (4620)	.04 (2320)	2.8 (3530)	2.16 (13538)

^a Percentage of cases per cell indicates cases in which a new project begins in a constituency year following a transition in alignment status. Darker shaded cells have more project starts. Number of observations per cell (in parentheses) represent state-constituency years in which a transition in alignment status occurred. Distributions derived using data obtained from AidData 2017 and the Electoral Commission of India.

example, seats that were aligned with both levels of government and then became unaligned still saw project starts in 6.5 percent of cases. This result likely reflects the lingering impact of project siting decisions made before elections. Indeed, if we examine project start rates over a longer two-year window (see Table 3A in the supplementary material), the rate of project starts in newly unaligned areas is now lower (2.6 percent of cases going from aligned at both levels to unaligned) compared to areas that are now aligned at both levels (4.0 percent of cases going from unaligned to aligned at both levels). Of course, these patterns capture only a portion of projects in our sample: one-quarter of project starts occur in the year following an alignment change, with slightly more projects initiated in the second year after a change in alignment. These rates do not control for covariates or for unit or year fixed effects,

but they do demonstrate that the distribution of aid projects is correlated with alignment status in systematic ways.

Taken together, the results provide consistent support for our main hypothesis: local partisan alignment with state and national governments is associated with increased allocations of new World Bank agricultural aid projects in India. We also find evidence that electoral considerations are a key underlying mechanism driving these patterns. In general, aid tends to flow to swing electoral areas, but is not biased specifically toward areas of Congress or BJP control, nor toward or away from the Communist Party or regional/local parties.

IMPACT OF PARTISAN ALIGNMENT AND AGRICULTURAL AID ON CROPLAND COVERAGE

An extension of our analysis tackles the further question of whether partisan alignment influences the outcomes of those projects, specifically in terms of cropland coverage. Historically, land has been the most important factor of production in the agricultural sector. In recent decades, adoption of high-yield seeds, fertilizers, pesticides, and improved irrigation have enabled India to increase dramatically the crop output of its fields (see Figure 4).⁴³ As a result, no overall increase has occurred in the extent of cropland coverage in India since the 1970s. Consistent with this overall pattern, most World Bank-funded agricultural projects in our study period aimed to increase productivity and enhance efficiency in the agricultural sector rather than to increase production by increasing cropland coverage.⁴⁴ Thus, if agricultural aid has its intended effects, we expect aid-funded projects to be associated with either stable or diminishing levels of cropland coverage.

At the same time, the portion of land devoted to cash crops provides a direct measure of the interests of landowners and farmers—a crucial voting bloc in India.⁴⁵ If political factors like partisan alignment are irrelevant for agricultural outcomes, the null hypothesis is that alignment should not correlate with measured outcomes. If the results reveal that the effects of aid are conditional on party alignment, this finding would indicate that political affiliations matter not only for where aid projects

⁴³ At <https://data.worldbank.org/indicator/AG.LND.AGRI.ZS?end=2008&locations=IN&start=1980>, accessed February 10, 2021.

⁴⁴ The Sodic Lands Reclamation Project discussed above, which aimed to restore fallow lands to agricultural use, is an exception.

⁴⁵ Varshney 1998; Lal 2006.

are allocated as shown above, but also for how projects are implemented and shaped by political interests on the ground.

In this analysis, we spotlight changes in the level of c3 and c4 cropland coverage within constituencies receiving aid (again, see Figure 2A in the supplementary material). The model specifications consider both whether aid was ongoing and whether a new project started in a given year. We include the same partisan alignment variables and control variables as in the previous analysis. Among the key variables of interest are a set of interaction effects between aid and partisan alignment. The estimations rely on time-series models with unit fixed effects to control for initial agricultural conditions and other fixed factors that are time invariant, as well as year dummies to account for temporal trends. All independent variables are lagged by one year.

As Table 9 shows, we observe measurable associations between ongoing agricultural projects and cropland coverage, as well as evidence that effects are conditional on the partisan alignment of areas. The base specifications indicate that ongoing aid is associated with a small decline of about 0.022 percent in c3 cropland coverage (model 1) and 0.007 percent for c4 cropland coverage (model 2) per year. These results translate to a decline of about fourteen hectares per year in combined cropland for a medium-sized constituency of five hundred kilometers.² Over a decade, the total decline would be equivalent to the typical landholdings of about one hundred thirty farmers.⁴⁶ The effects associated with new aid projects are typically smaller in extent, as would be expected, though not statistically significant.

The specifications (models 2 and 5) that account for partisan alignment, party affiliations, and election outcomes yield coefficient estimates for the aid variables that are consistent with the base specifications, but partisan alignment also matters sometimes in pushing cropland coverage in the opposite direction. In areas that do not receive aid, cropland coverage is higher when legislators are aligned with both state and national levels, relative to cases without either form of alignment.

⁴⁶ As robustness checks, we also examine changes at the district level (see Table 4A in the supplementary material), as well as the total output of crops that are reported at the district level: cereals (e.g., rice, wheat, barley, sorghum, millet) and pulses (e.g., chickpeas, lentils, beans) from 1995 to 2008. Aid is associated with a reduction in cropland coverage for C3, but not for C4 in the district data. Aid has no clear effect on crop yields. These findings are consistent across models, with or without control variables. One possible explanation for the instability of observed impact for C4 coverage and total crop output is that the one-year lag observed here is too short to expect significant effects on agricultural outcomes. We examined a longer five-year lag, but still found no clear effects on C4 outcomes at the district level (see Table 5A in the supplementary material).

TABLE 9
EFFECTS OF AGRICULTURAL AID PROJECTS ON CROPLAND COVERAGE IN INDIA
CONSTITUENCY-LEVEL ANALYSIS WITH ONE-YEAR LAGS

<i>Variables</i>	<i>DV is Percent Cropland Coverage in Each Year</i>					
	<i>C3 Cropland (1)</i>	<i>C3 Cropland (2)</i>	<i>C3 Cropland (3)</i>	<i>C4 Cropland (4)</i>	<i>C4 Cropland (5)</i>	<i>C4 Cropland (6)</i>
Aid project ongoing in year	-0.0221** (0.007)	-0.0179** (0.007)	-0.0031 (0.011)	-0.0069** (0.002)	-0.0074** (0.002)	-0.0002 (0.004)
Aid project started in year	-0.0104 (0.009)	-0.0157+ (0.009)	0.0114 (0.018)	-0.0023 (0.003)	-0.0037 (0.003)	-0.0014 (0.006)
Precipitation index	-0.0044** (0.002)	-0.0065** (0.002)	-0.0066** (0.002)	-0.0036** (0.001)	-0.0045** (0.001)	-0.0045** (0.001)
Aligned with state gov.		-0.0036 (0.004)	0.0017 (0.004)		0.0000 (0.001)	0.0016 (0.001)
Aligned with national gov.		-0.0308** (0.005)	-0.0365** (0.005)		-0.0041* (0.002)	-0.0062** (0.002)
Aligned with both levels of gov.		0.0211** (0.004)	0.0273** (0.005)		0.0106** (0.001)	0.0135** (0.002)
Election year		-0.0029 (0.003)	-0.0026 (0.003)		-0.0028** (0.001)	-0.0026* (0.001)
Turnout		0.1689** (0.022)	0.1712** (0.022)		0.1280** (0.007)	0.1293** (0.007)
Margin of victory		0.0010** (0.000)	0.0010** (0.000)		0.0003** (0.000)	0.0003** (0.000)

TABLE 9 *cont.*

<i>Variables</i>	<i>DV is Percent Cropland Coverage in Each Year</i>					
	<i>C3 Cropland (1)</i>	<i>C3 Cropland (2)</i>	<i>C3 Cropland (3)</i>	<i>C4 Cropland (4)</i>	<i>C4 Cropland (5)</i>	<i>C4 Cropland (6)</i>
Bharatiya Janata Party		0.0561** (0.005)	0.0607** (0.005)		0.0223** (0.002)	0.0241** (0.002)
Communist Party		0.0197* (0.010)	0.0171* (0.010)		0.0196** (0.003)	0.0187** (0.003)
Other party		-0.0125** (0.005)	-0.0106* (0.005)		0.0103** (0.001)	0.0110** (0.001)
Ongoing project × Align state only			-0.0444** (0.013)			-0.0142** (0.004)
Ongoing project × Align national only			0.0863** (0.018)			0.0284** (0.006)
Ongoing project × Align both levels			-0.0366** (0.014)			-0.0200** (0.005)
New project start × Align state only			-0.0062 (0.027)			0.0089 (0.009)
New project start × Align national only			-0.0798* (0.038)			-0.0133 (0.013)
New project start × Align both levels			-0.0349 (0.023)			-0.0021 (0.008)
Constant	40.6044** (0.004)	41.3905** (0.016)	41.3847** (0.016)	9.8835** (0.001)	10.0430** (0.005)	10.0406** (0.005)

TABLE 9 *cont.*

<i>Variables</i>	<i>DV is Percent Cropland Coverage in Each Year</i>					
	<i>C3 Cropland (1)</i>	<i>C3 Cropland (2)</i>	<i>C3 Cropland (3)</i>	<i>C4 Cropland (4)</i>	<i>C4 Cropland (5)</i>	<i>C4 Cropland (6)</i>
Year FE	yes	yes	yes	yes	yes	yes
Constituency FE	yes	yes	yes	yes	yes	yes
Observations	53248	50372	50372	53248	50372	50372
R-squared	0.021	0.037	0.039	0.003	0.016	0.018
Number of state assembly constituencies	4096	4002	4002	4096	4002	4002

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$; standard errors in parentheses

^a All independent variables lagged by one year. Omitted reference alignment category is unaligned with either national or state government. Omitted reference party is Indian National Congress.

In the specifications that include the interaction terms (models 3 and 6), when constituencies receive aid and are aligned with the central government, they experience a 0.048 percent increase in c3 crop coverage as well as a 0.022 percent increase in c4, compared to areas receiving aid but that are unaligned. Meanwhile, when aid-receiving areas are also aligned with both government levels, they see a 0.01 percent increase in c3, offset by a 0.007 percent decrease in c4. Notably, the interaction effects between aid and alignment (with the central level and with both levels) are comparable in magnitude to the unadjusted effects of aid and typically are in the opposite direction of the decline in cropland coverage associated with aid.

Overall, the observed effects of alignment on cropland coverage, though modest, are consistent with our broader argument about the potential for party politics to distort the effects of aid over and above the allocations of aid. The results show that aid-receiving areas in which local politicians share partisan links with the national government or with both national and state government levels experience a slight increase in overall cropland coverage. A plausible explanation is that local politicians will be responsive to the preferences of farmers, including increasing cropland coverage if that is desired. The reason could be straightforward: politicians want the votes of those farmers in elections. Thus, even though aid generally leads to decreases in cropland coverage, partisan ties can distort those goals and even lead to outcomes in the opposite direction.⁴⁷

Other political factors also appear to bear on cropland coverage. Constituencies in which incumbents win by larger margins exhibit higher c3 and c4 cropland coverage. Similar results are observed for turnout: higher turnout, controlling for other factors, correlates with higher cropland coverage. Areas controlled by the BJP or the Communist Party are associated with higher c3 and c4 cropland coverage, while c3 coverage is lower but c4 coverage is higher in areas controlled by non-national other parties. As Congress controlled is the omitted category in these regressions, the results for the BJP and the Communist Party, and for non-national other parties, should be interpreted relative to the constituencies that the Congress Party controls.⁴⁸

⁴⁷ This is consistent with a collective action problem. Each farmer may wish to expand croplands, but collectively, it is bad for prices and for efficient use of water and land.

⁴⁸ Preliminary results from analyses of interaction models of cropland coverage show limited evidence that areas that receive aid, are affiliated with state governments, *and* are swing areas electorally reduce their cropland coverage significantly. A full exploration of the relationships is beyond the scope of this article.

CONCLUSION

This study shows evidence that partisan alignment across vertical levels within India's federal system of government influenced the geographic distribution and effects of World Bank agricultural aid projects over the period 1995–2008. Links between local elected representatives and political parties in power at the state and national levels mattered significantly in determining who and where received international assistance and the associated patterns of agricultural practices by farmers across the vast country. Areas of India that were politically connected to ruling parties were more likely to receive aid, on average. Moreover, in detailed analyses, we find that the mechanism of party patronage, in the form of aid directed to electorally competitive swing constituencies with close margins of victory or loss for the ruling party, is the most consistently supported in the data. Also, areas connected to ruling parties at the national level were more likely to exhibit increases in cropland coverage, even if such increases may have flouted the objectives of aid. These findings lend support to our arguments that partisan alignment influences the allocation and impact of aid projects because party networks facilitate coordination while enabling electorally valuable funds and resources to stay within the control of copartisans. The goals of parties can be achieved partially through aid directed strategically; local politicians and government leaders at the state and national levels can jointly claim credit to boost reelection prospects.

Our theoretical arguments and analytical results build on the research of Ryan Jablonski and Ryan Briggs in Africa, and studies specifically focused on India by Nunnenkamp and Song and their respective associates.⁴⁹ Unlike such previous work, we analyze local parliamentary representation at constituency levels in a fully federated system, considered in connection with state and national government partisanship. We enrich the literature by examining how the local parliamentary representatives appear to be able to help draw aid their way, just by virtue of being copartisans of leaders in state and national governments. Our results side with those establishing political links (for example, Jablonski), as opposed to those finding a lack of clear links (for example, Nunnenkamp and colleagues). We simultaneously consider the effects of aid and partisan alignment on cropland coverage in novel ways. Political factors feature in other studies on the effectiveness of aid.⁵⁰ Relatively

⁴⁹ Jablonski 2014; Briggs 2012; Brigg 2014; Nunnenkamp, Öhler, and Sosa Andrés 2017; Song, Brazys, and Vadlamannati 2021.

⁵⁰ E.g., Wright and Winters 2010; Lührmann et al. 2017; Shehaj 2020.

less attention has been dedicated to specific political actors in recipient countries, especially beyond the consideration of national political leaders and their personal priorities. Broader partisan biases can cut against the goals of aid. Our results about the effects of aid on cropland coverage (negatively correlated) and the effects of partisan alignment on cropland coverage (positively correlated) comprise new findings that deserve additional study in future research. The combination of insights about aid allocation and the impact of aid from our empirical analyses are consistent with the argument that areas represented by politicians allied with the state and national governments are able to garner aid, but are also able to shape the effects of aid in politically favorable ways. In short, while aid matters, politics also matters and can cut against the goals of aid.

We view our study as a complementary contribution to the literature and hope future research can weigh in on the theory and subject the empirical conclusions to further validation and testing of mechanisms. In particular, expanding analyses to more recipients, donors, and types of aid would be worthwhile. India, as a middle-income country with a robust federal system of government, may be unusual. Comparative research can help us to understand whether these results generalize to other countries, including those that are more and less developed, as well as those that differ in terms of other attributes (for example, size, political institutions, party system, economy, demography). Although India is challenging to study given its geographic scope and diversity, the integration of relevant, granular georeferenced data provides exceptional opportunities to examine the relationship between partisan alignment and aid flows to local areas and their effect on agricultural outcomes while accounting for other factors and spatial autocorrelation.

Collecting and analyzing data from additional countries seems warranted and is realistic given the increasing availability of data. Meanwhile, the World Bank is an important donor, but far from the only one. Aid from other donors may be more or less immune to the influence of partisan alignment. Another step is to analyze additional sectors and outcomes. Our attention is confined to agricultural aid. Similar georeferenced data on other sectors are available. For example, studying the effects of aid projects focused on moderating intergroup tensions and reducing interethnic violence, given differences in political representation and climate conditions, should be possible. Another prospect is to examine the contextual influences of social unrest and climate change on the impact of aid on health outcomes. This suggested research can help to illuminate the role of contextual factors in shaping the capacity

and incentives of communities and governments at multiple levels to allocate aid according to need and to use the aid effectively.

SUPPLEMENTARY MATERIAL

Supplementary material for this article can be found at <http://muse.jhu.edu/resolve/172>

DATA

Replication files for this article can be found at <https://doi.org/10.7910/DVN/D4KGSG>.

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