

Fiscal Federalism at Work? Central Responses to Internal Migration in India¹

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Highlights:

- For efficiency and equity reasons, internal migration should prompt central governments to reallocate revenue across jurisdictions.
- Using data from India, we show that natural disaster-induced longterm migration increases transfers from the central government to migrant-receiving areas.
- The revenue increases caused by disaster-induced migration are at least 50% larger if the state government is drawn from the Prime Minister's political party. This result is driven by the politicized distribution of discretionary funds.
- Partisan distortion in the central government's fiscal response to internal migration may prompt states to resist internal immigration.

Internal migration is thought to have substantial benefits for migrants and for the development of migrant-sending and migrant-receiving areas. In order to facilitate such migration, central governments may need to use fiscal transfers to ensure services to migrants, address infrastructure shortfalls, and ameliorate labor market displacement of natives. In fact, an extensive, mostly normative “fiscal federalism” literature has argued that central governments ought to use transfers to reduce interjurisdictional externalities such as those due to population displacements. We extend this literature empirically by examining the degree to which exogenous, longterm migration prompts

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the redirection of central fiscal resources in India. Following the literature on distributive politics, we argue that transfers in decentralized systems addressing the costs of population movements are influenced by partisan politics. Using monsoon shocks to migration, we show that increases in migration are met with greater central transfers but that these flows are at least 50% greater if the state-level executive is in the Prime Minister's political party. Consistent with the theory, the influence of politics is greatest on parts of the budget subject to greater executive control. This politicization may explain why Indian states maintain barriers to internal migration despite the development costs of doing so.

The free movement of citizens within their countries is fundamental to democracy and to notions of equal citizenship. Migration has the potential to reduce poverty among migrants and in migrant-sending areas as well (Housen et al. 2013; Lokshin et al. 2010; Mendola 2008; Zhu et al. 2013). Economic development in both migrant-sending and migrant-receiving communities may be enhanced by more efficient allocation of labor (Lewis 1954) and improved governance as regions compete for people (Tiebout 1956). In other words, internal migration is both a right and has potential development benefits for migrants themselves, their home communities, and their adopted communities.

Internal migration produces stresses as well. Migration to urban areas can strain resources and can lead to the concentration of people in a few megacities, “raising commuting, congestion and living costs to excessive levels, raising costs of production of goods and lowering the quality of urban service provision” (Davis and Henderson 2003, 101). An increasingly integrated labor market may displace some workers, potentially causing nativist backlash (Weiner 1978), particularly when natives are politically weak (Bhavnani and Lacina 2015). Migration can also be politically destabilizing (Horowitz 1985; Peluso and Vandergeest 1987; Wallace 2013).

A key to reaping the benefits of migration is to minimize its costs. One way in which this can occur is through the channeling of resources to migrant-recipient areas. Such a directed use of resources could provide migrants with services in their new homes and compensate natives for losses due to migration (Angrist and Kugler 2003). Central governments have a particularly important role to play in channeling resources in response to migration. A unitary political system should, in theory, accomplish this fairly seamlessly. However, in more decentralized systems, it is unclear if migration-induced redistribution occurs. That said, the fiscal federalism literature argues that central or federal governments ought to use the power of the purse to address spillovers, such as those caused by inter-jurisdictional migration (Oates 1972; Riker 1964; Rodden 2006; Weingast 1995). Fiscal transfers ought to “follow” people.

In this study, we consider whether and how the Indian central government responds to migration with changes in fiscal transfers. In order to do so, we apply the insights of the distribu-

tive politics literature to argue that politics intervenes in the management of inter-jurisdictional externalities. We hypothesize that helping a subnational government to mitigate the negative externalities of migration is an important political boon that the center is likely to target toward its co-partisans. Consistent with our hypothesis, we find evidence that the central government spends disproportionate resources on states where the chief executive is from the Prime Minister's party.

To address the potential endogeneity between fiscal policy and migrant flows, we instrument for an Indian state's migrant inflows by looking at exogenous shocks to the supply of migrants due to weather disasters in other regions of the country. We find that central transfers do indeed increase in response to longterm migration, with a 10% increase in internal migration causing a 2% increase in transfers. This suggests an attempt to address interjurisdictional spillovers. However, we also find that states that are politically aligned with the central government receive even larger transfers per migrant than unaligned states. In other words, the central government funds co-partisans' expansion of public spending in the wake of migration but does not extend commensurate resources to unaligned subnational governments. We find that the partisan alignment of state and central chief executives is associated with 56% more transfers per migrant. This result qualifies our finding that transfers respond to interjurisdictional spillovers, by showing that they particularly do so in states allied with the Prime Minister. The differential between copartisan and other states is even larger when we look at more discretionary subcategories of central transfers.

Assessing government responses to migration in India is important for several reasons. Empirically, internal migration across the developing world is increasing, particularly in Asia (Montgomery 2008). The 2001 Indian census reported that 14% of people lived outside the state of their birth. Despite an increase in welfare spending in the 2000s—which has ameliorated some of the economic reasons for migration—it is likely that internal migration has increased over time.¹ Approximately 40% of Indian migrants move for economic reasons (for employment, “business” or education), while an equal proportion (mostly women) move for marriage. The balance move

¹This is the case for at least two reasons. First, migration is unusually low (in cross-national perspective) in India (Munshi and Rosenzweig 2016). Second, migration generally increases with levels of development, and the Indian economy has expanded since 2001.

for miscellaneous reasons, including natural disasters (estimated at less than 1% of the total) and conflict.²

The political science literature on the consequences of migration has concentrated primarily on popular, nativist movements (Bhavnani and Lacina 2015; Fearon and Laitin 2011; Weiner 1978), and, more recently, on discrimination and identity change (Adida et al. 2016). Studies of other policy responses to internal migration are frequently prescriptive and focused on improving outcomes for migrants (E.g., Deshingkar and Farrington 2009; Landau et al. 2013; Suykens 2011). We take a more empirical perspective, hoping to explain variation in government responses to migration. We also examine the fiscal response to migration rather than more well-known, anti-migrant phenomenon like legal restrictions on mobility. Development experts endorse fiscal responses to migration, unlike migration bans. Yet we know little about to what degree governments use fiscal tools to address negative externalities of migration or why a government might underspend in this respect.

We further the fiscal federalism literature (Oates 1972; Weingast 1995, 2009), which examines the ways in which federations can be structured to remedy vertical and horizontal imbalances (the focus of the first generation literature) and promote economic development (the focus of the second generation literature). We move beyond the normative focus of these works to examine how, in fact, a prominent federation operates in response to migration, which is a classic example of a spillover that might motivate separate units to federate. Existing empirical literature examines variation in the degree to which federalism and decentralization generate externalities in sectors like the environment (as reviewed by Millimet 2014) and infrastructure spending (e.g., Gramlich 1994). However, there is almost no empirical research on the extent to which central governments actually use fiscal policy to address these interjurisdictional (horizontal) externalities.³

The vast theoretical literature on fiscal federalism also ignores any role for electoral politics in

²This breakdown by cause of migration is calculated using data from the 1991 census. The 2001 census does not provide information on whether migrants moved due to “natural calamities,” although the proportions in the other categories are similar.

³A partial exception is the literature on whether central governments are investing in public infrastructure at the efficient level (Gramlich 1994).

central government responsiveness to externalities.⁴ We make the argument that partisan ties between central and subnational governments influence responses to migration externalities, linking the study of federalism and jurisdictional spillovers to the substantial literature on the politicized distribution of public spending.

Our findings also extend to the question of how decentralization interacts with economic development (Treisman 2007). We show that the political alignment of subnational with national governments boosts transfers in response to migration. This result raises the question of whether decentralized systems respond appropriately to migration-related externalities when the central and subnational governments are not controlled by copartisans. Politicized aid to migrant-receiving states may explain why subnational governments are often hostile to migrants rather than competing for them (de Brauw et al. 2014; King and Skeldon 2010), as research on inter-jurisdictional competition would predict. In India, for example, de facto barriers to internal migration have kept the labor market segmented (Kundu and Saraswati 2012).

1 Internal migration and public spending

In this section, we develop our theoretical expectations for state responses to migration, drawing on the literatures on migration, fiscal federalism and the partisan distribution of resources.

Economic migration serves multiple functions for individuals and families:

household members act collectively not only to maximise income, but also to minimise risks, diversify income earnings and loosen financial constraints through remittances (Mendola 2012, 105).

The indirect benefits of economic out-migration include increased wages in the community of origin, investment of remittances, and an expansion of the local economy due to consumption of remittances (Housen et al. 2013; Mendola 2012; Zhu et al. 2013). Migration may also be

⁴For example, Millimet's (2014) review of the literature on environmental federalism does not include partisan politics in the discussion of theories offered for inefficient behavior by central or local governments.

a necessity because of environmental degradation, natural disasters, or political conflict. Such circumstances underline why free migration is considered a human right.

Nonetheless, migrants frequently face shortfalls in public services in their new homes.⁵ This is the case for two related reasons: first, migrants lack the political power with which to access resources (Jha et al. 2007). For example, they may not vote in their new communities. And second, they might be actively discriminated against by politicians and bureaucrats when and if they do in fact attempt to access resources. Political disempowerment prevents the expanded public spending necessary to ensure migrants receive services to which they are entitled. When public services do not address migrant needs, migration may be deterred, foreclosing opportunities for individuals to move out of poverty.

As suggested in the introduction, migrant-receiving destinations both enjoy the benefits and incur costs of migration. The influx of human capital in migrant-receiving areas is both a consequence and cause of economic growth. Internal migration allows the application of labor where it will be used most efficiently, induces inter-jurisdictional competition that can improve public policies (Tiebout 1956), and allows for the reallocation of under-employed agricultural workers to industry (Lewis 1954). Migration may also create economic dislocation and negative externalities for non-migrant populations, particularly in the short-run. Migrants may compete with locals for resources, especially employment (Weiner 1978). Competition between migrants and locals for natural resources may cause conflict, as well (Barnett and Adger 2007; Faist and Schade 2013; Homer-Dixon 1999; Swain 1993). An influx of migrants can intensify demand for public services that are in scarce supply, at least in the short term:

The proliferation of filthy urban slums, pavement dwellings, extreme squalor with very poor living standards characterize metros because they have failed to provide to the migrants minimum shelter and minimum subsistence employment. Ultimately this causes the growth of urban poverty, unemployment, extreme housing shortages,

⁵There are also political and economic failures that may prevent migrant-sending areas from benefitting from migration (Housen et al. 2013; Mendola 2012) but these are beyond the scope of this study.

and frequent breakdowns of essential urban services (like water, electricity, sewerage, transport) . . . (Deshingkar and Farrington 2009, 13).

A global trend toward decentralisation shifts the burden for addressing these shortfalls to subnational jurisdictions, which may exacerbate the problems posed by in-migration (Landau et al. 2013; Montgomery 2008).

Because migration creates negative spillovers for pre-existing populations in the host region (e.g., greater traffic congestion or increased housing costs), migration may not be a Pareto improvement, that is, a process that maintains or improves upon the status quo for everyone. The negative spillovers can be characterized as externalities in two senses. Migrants and firms may not internalize the social cost of migration-for-work. Second, migrant-sending states may underinvest in policies that would discourage out-migration, such as securing land rights in rural areas or natural disaster mitigation. However, the gains from migration, which often accrue to private investors, could be used to expand services and infrastructure, limiting negative externalities for migrant-receiving areas. A mechanism for sharing the gains from migration with adversely affected populations could ensure migration is Pareto-improving. Also, redistribution of the private gains from migration—of both migrants and the economic agents benefiting from the migrant influx—may be necessary for maintaining political support for open borders and migrant-friendly public policies.

1.1 Central fiscal responses to migration

Note that both economic theory and the fiscal federalism literature make the case that expanded public spending is often needed in migrant-receiving communities to address the needs of both migrants and previous residents. We therefore test the following hypothesis:

H₁: Domestic migration increases central transfers to migrant-receiving states.

Unitary political systems are theoretically well-suited to using fiscal policy to enact this kind of welfare-enhancing redistribution. However, few countries are fully centralized and the trend in

developing countries is toward decentralization. Federal and decentralized systems of government are being adopted on the grounds of enhanced democratic responsiveness and development through competition between constituent units, although these benefits are disputed (Bardhan 2002; Treisman 2007). Yet, even advocates of decentralization recognize that the central government will usually need to address negative inter-jurisdictional spillovers, such as those caused by the movement of people across subnational boundaries. Whether a central government actually does respond to migration through fiscal transfers to migrant-receiving areas is an empirical question, one that we test here.⁶

In responding to natural disasters, India's federal government usually directs funds to states where these disasters occur, rather than to states where migrants go. That said, the central government retains the discretion to channel fiscal resources to destination areas. We focus on this response here. A prominent institutional mechanism through which such transfers occur is the National Disaster Management Authority. In addition, the central government may authorize emergency funding (depending on the amount, this might require parliamentary approval) for the states. Further, the central government funds, but does not implement, a number of poverty-relief programs in the states. Some of these, such as the National Rural Employment Guarantee Scheme, can be expanded quickly in response to disasters.

1.2 Who benefits? Partisan considerations

Migration could prompt an increase in transfers automatically—because the formula by which some resources are devolved implicitly or explicitly account for migration—or deliberately, as the central government allocates resources to deal with in-migration. The automatic response of central spending to migration—or, indeed, any changes to population—is limited by law in the case of India, as we will discuss further below. We therefore focus on the discretionary transfers that are typically under the control of the central executive. Since this is the case, the central executive's

⁶The center can also play a role in reducing migration through poverty-reduction programs targeting rural areas, such as India's National Rural Employment Guarantee Act in 2005.

political incentives are likely to intervene in these allocation decisions.

To better understand how governments are likely to respond to internal migration, we draw on the literature on the political economy of redistribution. This suggests that partisan considerations will influence the relationship between migration and transfers. In research on Spain (Solé-Ollé and Sorribas-Navarro 2008), Brazil (Brollo and Nannicini 2012), and the United States (Larcinese et al. 2006), scholars have shown that subnational governments that are politically aligned with central executives receive preferential access to resources. On the other hand, studies of Australia (Worthington and Dollery 1998), Sweden (Dahlberg and Johansson 2002), and Portugal (Veiga and Pinho 2007) report an ambiguous or null effect of national/sub-national political alignment on transfers. There is mixed evidence that Indian state governments receive more resources if they are affiliated with the Prime Minister or control a swing state (Arulampalam et al. 2009; Biswas et al. 2010; Khemani 2007; Rao and Singh 2005; Singh and Vasishtha 2004), in part due to disagreement over which financial flows to measure, an issue we discuss further below.

Khemani (2007) offers a cogent explanation for why the Prime Minister would be particularly concerned with the survival of copartisan state governments. The center's own spending is primarily on debt servicing, national defense, and agricultural programs routed through the states. All other categories of spending, including infrastructure, public health, and education, are conducted by state governments. This division of labor makes control of state executives a paramount political concern:

Thus, the politically influential fiscal instruments available to the center, subsidies, depend upon the states' political machinery for distribution. If a party loses control of a state government, it loses control over public instruments to buy political support through targeted provision of benefits (471).

The Prime Minister therefore has an incentive to use fiscal transfers to ensure the survival of copartisan state governments.⁷ Although we have no systematic evidence on who benefits from

⁷Brollo et al. (2013) show that exogenous increases in transfers to municipal governments in Brazil increase the chances the incumbent will hold on to power.

migration-induced transfers within India's states, it is highly likely that state governments direct these resources to important constituencies, which will mostly be non-migrants. Evidence consistent with the expectation that natives rather than migrants are likely to be the main beneficiaries of incremental resources comes from city development plans and state budgets, which almost always fail to include specific line items to deal with the concerns of migrants. That said, migrants are undoubtedly the recipients of some state spending.

We are interested in the center's response to in-migration, which is a state-level stress. We expect that the Prime Minister is particularly concerned with helping copartisan state executives withstand such stressors. Thus, we argue that increased transfers in response to migration will be greater in states where the executive is controlled by the Prime Minister's political party:⁸

H₂: Domestic migration into states with governments that are copartisan with the central government increases transfers to a greater extent than domestic migration into states with governments that are not copartisan with the central government.

Note that since H_2 suggests the deliberate manipulation of resources by the center to partisan ends, the bonus associated with being the Prime Minister's copartisan will vary according to which revenue streams we examine. More specifically, we expect that the transfers under the greatest control of the Prime Minister are the most politicized.

The welfare implications of H_2 are likely to be substantial. We do not have the data to gauge the precisely optimal fiscal response to migration in terms of ensuring equal access to services, mitigating externalities, or promoting economic integration. As mentioned above, theory is even ambiguous as to whether natives or migrants should be the primary targets of additional resources directed to migrant-receiving states. We can, however, be confident that any normative criterion for benchmarking transfers—migrant well-being, economic efficiency, etc.—will not recommend that state receipts be conditioned by the coincidence of political parties between center and state

⁸We measure copartisanship based on the last elected Chief Minister in case a state is under central control, known in India as President's Rule.

governments. Evidence for H_2 indicates a political bottleneck preventing a welfare maximizing response to internal population movements.

2 Research design

In order to test our hypotheses, we examine the effects of exogenous increases in migration due to weather shocks in migrants' states of origin. In order to examine whether partisan alignment conditions the effect of migration on our dependent variables, we also interact (instrumented) migration with center/state copartisanship. We introduce our data, summarized in Table 1, in the following subsections.

2.1 Migration data

Our migration data are from Bhavnani and Lacina (2015), which draws on the 1991 and 2001 censuses of India. Unfortunately, the migration series from the 2011 census has not been released at the time of writing. The census data capture longterm rather than seasonal or circular migration (Deshingkar and Farrington 2009). The data also obfuscate what portion of longterm migration originated in involuntary displacement. Although the census tabulates reasons for migration, after 1991 natural disasters were merged into the category of "other" reasons for resettlement. Migration due to slow-moving environmental disasters, like desertification, and political or social conflict have never been broken out of the category of "other" (Bhagat 2008). Thus, the census population of economic migrants undoubtedly includes many cases that might be considered involuntary displacement. Economic motives are relevant even in cases of displacement (Suykens 2011) and the census asks specifically about economic motivations but not the most common causes of involuntary migration.

The census asks respondents whether they have been resident in a location for 1 year, 2-4 years, 5-9 years and so forth. These answer categories define a measure of the average number of

Table 1: Summary statistics^a

	Mean	Std. Dev.	Min.	Max.
Ln migrants ^b	10	1.7	5.3	13
Ln total transfers ^c	23	0.95	21	25
Ln total grants ^c	23	0.75	20	24
Ln centrally sponsored schemes ^c	21	1.1	18	23
Ln central taxes ^c	23	1.3	19	25
Abnormal monsoon instrument ^d	5.7	0.37	4.7	6.8
Center-state copartisanship ^e	0.29	0.40	0	1
Abnormal monsoon rainfall ^f	0.15	0.25	0	1
Ln % degraded land ^g	3.6	0.43	2.4	4.6
Ln domestic imports per capita ^h	0.82	0.58	0.00038	2.8
Ln state population ^b	16	1.8	13	19
Ln income per capita ⁱ	7.8	0.56	6.9	10
Ln unemployment (%), natives ^j	1.2	0.42	0.23	2.3
Ln ntl abnormal monsoon affected pop. ^f	19	0.64	18	19
Copartisanship with Finance Commission ^e	0.58	0.47	0	1
Copartisanship with Planning Commission ^e	0.24	0.35	0	1
Observations	139			

^a All variables are measured at the state level as annual averages, based on periods of unequal length. See main text for details on averaging. See Table 5 in the Supplementary Materials for a complete list of states and periods included in the data.

^b Directorate of Census Operations 1991, 2001.

^c Reserve Bank of India state-wise tables on “Details of Revenue Receipts.” *Total transfers* is line items B and D. *Total grants* is line item D. *Centrally sponsored schemes* is line item D3. *Central taxes* is line item B. All figures are in 2000 constant rupees.

^d See main text.

^e Besley and Burgess 2002.

^f Sontakke et al. 2008, archived by IITM 2012 and IWP 2012.

^g Department of Agriculture and Cooperation, Government of India, compiled by IndiaStat 2000.

^h Annual Government of India volumes on *Inter-State Movements/Flows of Goods by Rail and River*.

ⁱ At constant rupees. From the Reserve Bank of India, compiled by IndiaStat 2000.

^j NSS 1983, 1987, 1999, compiled by Minnesota Population Center 2011.

migrants that entered each state annually in 1982-86, 1987-89, 1990, 1992-96 1997-99 and 2000.⁹ We measure all of our other variables as averages over these same intervals. In the regression analysis below, we weighted the observations to account for the uneven length of our periods; in the Supplementary Materials we show that our results are similar with unweighted data (Table 7).

Between 1982-2000, the average state-year received 58,570 migrants. In the period under study, Uttar Pradesh and Bihar generated the most internal migrants—335,689 and 181,713—annually, while Sikkim and Arunachal Pradesh each generated under 2,000 migrants annually. Maharashtra and Haryana were the two highest recipients of migrants, with annual inflows of 293,449 and 127,707 migrants (equal to 0.35% and 0.72% of the native population) respectively. At the other end of the distribution, Manipur and Mizoram received 496 and 2,090 migrants annually (equal to 0.03% and 0.26% of the native population). Although internal migration in India certainly occurs for economic reasons, the correlation between migrant in-flows and host state income is low ($-.03$).¹⁰ This underlines the fact that migration has other drivers, including natural disasters.

For our main analysis, we use the log total number of migrants as our key explanatory variable, while controlling for the pre-migration population of the host state. In the Supplementary Materials, we transform this variable to migrants as a percentage of the host population, which is an alternate measure of the severity of the migration-induced problems in the host state (Table 8). We also examine only male migration, which is arguably more politically charged in India than female migration, and migration to urban areas, which is the particular focus of much of the policy work on domestic migration (Tables 9 and 10). We find support for H_1 and H_2 across these categories of migration.

2.2 Instrumenting for migration

Following Bhavnani and Lacina (2015), we instrument for each Indian state's in-migration with abnormal rainfall in other parts of India. Excess and deficient rainfall induce migration through

⁹Although we are able to calculate the number of migrants for 1991 using data from both censuses, we drop these observations since some of the imputed figures are negative.

¹⁰Logging both variables.

economic hardship. Cole et al. (2012) calculates the optimal rainfall in each of India's states and estimates that rainfall levels a standard deviation above or below these levels decreases agricultural output by 5.4%.¹¹ Jayachandran (2006) suggests that rainfall shocks lower agricultural wages and induce rural laborers to migrate.¹²

The monsoon season, which accounts for 75% of India's annual rainfall, also routinely displaces thousands of people due to flooding (Mall et al. 2006). The EM-DAT (2011) dataset reports that the annual average of flood-affected people in India is six million, while a 1991 study estimated up to 30 million Indians displaced annually by flooding.¹³

Inadequate and/or excess rainfall has been used as an instrument for income in India (Bohlken and Sergenti 2010) and elsewhere (Bergholt and Lujala 2012; Brückner and Ciccone 2011; Mehlum et al. 2006; Miguel et al. 2004). Recent critiques argue that rainfall has so many local effects that the exclusion restriction is rarely met (Sarsons 2015). Our empirical strategy sidesteps that problem as our instrument is not precipitation in the area of study but rather in migrant-sending areas. We measure rainfall outside the state for which we are predicting transfers and use these shocks to the supply of migrants to instrument for population inflows. We control, of course, for weather in the migrant-receiving area. We also account for environmental and economic spillovers between India states.

Our instrument is based on abnormal monsoon rainfall, defined by the Indian Ministry of Agriculture as 20% below or above average rainfall in the monsoon season. Both monsoon (Cole et al. 2012; Jacoby and Skoufias 1997; Kochar 1999) and annual (Jayachandran 2006; Rose 2001) rainfall have been linked to adverse economic outcomes in India but Bhavnani and Lacina (2015) find that adverse monsoons are a particularly powerful predictor of population movements. Inspired by the gravity model of trade (Frankel and Romer 1999), we code a dummy variable for states with excess or deficient monsoon rainfall in a year¹⁴ and multiply that term by the population of the

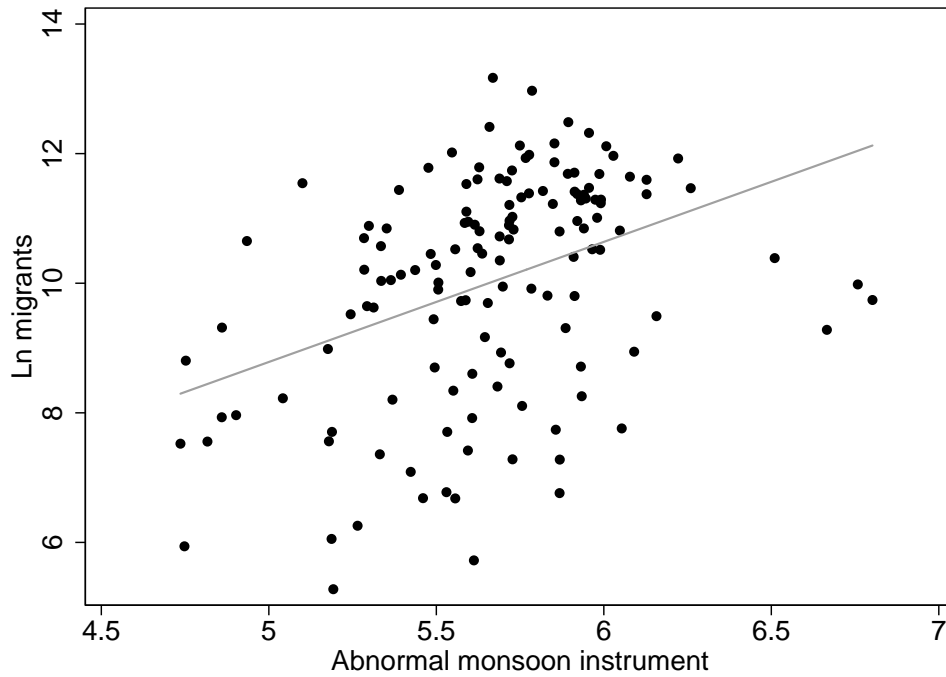
¹¹See also Jacoby and Skoufias (1997), Kumar (2011) and Mendelsohn et al. (2001).

¹²See also Kochar (1999) and Rose (2001).

¹³Cited by Lama (2000, 25).

¹⁴Using data from Parthasarathy (2001); Parthasarathy et al. (1994, 1995), compiled by IndiaStat (2000).

Figure 1: Scatterplot of annual migration into India’s states and abnormal monsoon instrument, 1982–2000, along with the line of best fit



affected state,¹⁵ then divide by the distance between the affected state and the potential host state. The instrument for an individual state is the sum of these terms across all other Indian states. For states numbered 1 to n , the instrument for state i is:

$$\text{Ln}\left[\sum_{j \neq i} \frac{\text{Abnormal rainfall}_j * \text{Population}_j}{\text{Distance}_{ij}}\right]$$

Figure 1 is a scatterplot of the instrument and our migration data, with a line of best fit. The monsoon instrument is positively correlated ($\rho = 0.4$) with average annual in-migration.

Migrants select destinations with more criteria than distance in mind. A more exhaustive predictor of migration would include the “pull” factors, other than physical proximity, that might bring

¹⁵Our analysis includes New Delhi, which is a “union territory” rather than a state but has a locally elected legislature and chief minister since 1994. The union territory of Puducherry also has an elected local legislature. However, transfers data for Puducherry is unavailable. All other union territories lack self-rule and are excluded from our analysis. Throughout this study, references to states should be taken to include New Delhi.

people to one Indian state over another. For our purposes, however, we need to predict migration to a particular state with an instrument that does not have effects on central transfers via channels other than migration. The obvious factors that would attract migrants to some states—size of the host state, economic dynamism, infrastructure for absorbing new populations—are also explicitly taken into account when the central government sets transfers to the states. Migrants may also favor destinations that have had high previous levels of migration or choose destinations that are culturally similar to their place of origin. In India, language differences are likely to shape migration. Again, the problem with incorporating historical migration or language affinities into our predictor of migration is that both are also related to our dependent variable, government transfers. Past migration is both an indicator of an earlier economic boom and a direct cause of prosperity.

2.3 The exclusion restriction

We have taken care to select an instrument for migration that does not include host state characteristics. However, there is still a possibility that the weather disasters we chart could influence central transfers to host states via other pathways. First, as noted above, we obviously need to control for receiving states' own monsoon conditions. Second, adverse monsoons in other states may have environmental spillovers. Heavy monsoons may cause flooding or water erosion in neighboring states while drought may lead to downstream wind erosion. In the regressions below we control for land degradation, including flooding and wind erosion, in the host state. Third, an adverse monsoon in one state may have economic spillovers for neighbors. In order to control for this possibility, we include as regressors host state per capita income and native (i.e., pre-treatment) unemployment. We also explicitly control for the flows of goods into a state by rail, waterways and air.¹⁶

Weather disasters may have national economic implications as well and, by extension, reduce the revenues collected by the central government, although the central government always has the

¹⁶This series is based on the Indian Government's annual accounts of the "Inter-State Movements/Flows of Goods by Rail and River." See Bhavnani and Lacina (2015) for additional details.

Table 2: Categories of transfers from the Indian central government to the states

Category	Agency	Timing
1 Shared taxes	Finance Commission	5 years
2 Non-plan grants	Finance Commission	5 years
3 Grants for state plan schemes	Planning Commission	5 years
4 Grants for central plan schemes	Planning Commission	5 years
5 Centrally-sponsored schemes	Other executive ministries	Annual

Adapted from Rao and Singh (2005, 260–261).

power to increase receipts via legislation. A large number of disaster-affected areas also represent increased demands on national government spending. A direct negative effect of weather disasters on revenue available to the central government mitigates against finding evidence that weather-related migration increases transfers. The resources available to the central government shrink, making it less likely that transfers will appear to increase in high migration periods. Nonetheless, to address the national economic implications of weather disasters, we control for the log size of the countrywide population affected by an adverse monsoon.

2.4 The dependent variable: Which financial flows?

We are interested in the degree to which the Indian federal government directs resources to the states in response to migration. This section briefly describes the channels through which the central government sends money to the states; these are summarized in Table 2.

The Indian Constitution mandates that the central government, via the President, create a Finance Commission to oversee devolution of tax revenue to the states and grants-in-aid from the center to the states. Additionally, parliament “may by law determine the qualifications which shall be requisite for appointment as members of the Commission and the manner in which they shall be selected” (Article 280). Once empaneled, the Commission researches economic conditions, and devises a formula for sharing centrally-collected taxes with the states (Khemani 2007). The main inputs to the formula are state population and income. The formula is intended to redistribute income to poorer states, but the details of its methodology have regressive biases (Rao and Singh

2005, 200–203). The Finance Commission’s scope, which is set by the President, minimizes its role in grants-in-aid, most of which flow through other agencies. Also, “political considerations [have] tended to intrude into its composition as well as the Central government’s response to its recommendations, which formally have only advisory status” (Rao and Singh 2005, 259).

Interestingly, the inclusion of population in the Finance Commission’s tax-sharing formulas does not create a mechanical relationship between migration and tax transfers. The Finance Commission is required to use population figures from 1971, a provision intended to promote family planning (Bhavnani forthcoming). This penalizes “states with higher population growth due to immigration” (Rao and Singh 2005, 200). On the other hand, the Finance Commission’s formula puts some weight on states’ infrastructure needs, which might allow it to respond to the costs of migration, and to states’ tax effort, which might also change with migration.

Until 2014, the Finance Commission’s role in grants was largely usurped by a Planning Commission. The Planning Commission was an executive rather than an independent government agency. Planning Commission members were chosen by the Prime Minister, who was also the *ex officio* chair.¹⁷ Planning Commission grants could originate in state government proposals approved by the center (“state plan schemes”) or in central proposals (“central plan schemes”). Until 1969, these grants were entirely discretionary. In 1969 the Planning Commission began publishing a formula for grants, based, like that of the Finance Commission, primarily on income and population. Also like the Finance Commission, the Planning Commission was required to use 1971 population figures in its calculations, preventing an automatic response to migration. Over time, formula-based plan transfers became less important relative to discretionary plan transfers (Rao and Singh 2005, 259).

Other central grants are distributed through the executive ministries, using tax revenue retained by the center, as well as central debt. In Indian budget data, these funds are labeled “centrally sponsored schemes.” They are entirely discretionary and, unlike the Finance and Planning Commissions, are determined on a year-to-year basis rather than a 5-year commission cycle.

¹⁷The Deputy Chairman was a cabinet minister and other relevant members of the cabinet might also be at least nominally on the Planning Commission.

The Finance Commission is ostensibly less politicized than the Planning Commission and central ministries. Khemani (2007) finds that transfers to Indian states through discretionary channels (i.e., not the Finance Commission) are positively correlated with political alignment. Khemani further reports that Finance Commission transfers are negatively correlated with alignment and total transfers to Indian states are uncorrelated. Khemani concludes that the Finance Commission can and does offset the more politicized revenue streams. Khemani's findings were reversed in Rao and Singh (2005), who took into account the long budgeting cycles of the Finance and Planning Commission. Looking at lagged political alignment, they found that *only* Finance Commission and total transfers were positively and statistically significantly correlated with political alignment (Tables 11.4–11.6), while discretionary transfers had less certain correlations. Biswas et al. (2010) found a positive but miniscule correlation between alignment and discretionary transfers.

In light of these mixed findings, and the fungibility of resources, we gauge the center's fiscal response to migration primarily by looking at total receipts. *Total transfers* includes Finance and Planning Commission receipts, as well as central ministry grants—in other words, categories 1 to 5 in Table 2. The data is from the Reserve Bank of India (RBI) *Bulletins* for 1982-90 and the 2010 version of the RBI *Handbook of State Government Finances* for the remaining years. Transfers are measured in Indian rupees, adjusted to year 2000 prices, and logged. In later sections we focus on specific revenue streams within *Total transfers* to underline the politicization of the center's response to migration. However, given that money distributed via different central agencies and line items is fungible once it arrives in state coffers, total transfers are the most materially important indicator of how Indian federalism handles population flows.

3 Migration and central transfers

Table 3 examines the relationship between migration and total central transfers to the Indian states. We start with using OLS to examine the relationship between migration and transfers, controlling for abnormal monsoon rainfall and land degradation, domestic imports per capita, state na-

tive (pre-migration) population, income per capita, the native unemployment rate, the national disaster-affected population and state fixed effects (column 1). Contrary to expectations, migration is marginally negatively associated with total transfers, and its coefficient is statistically and substantively insignificant. The negative correlation may be explained by migrants going to more economically dynamic states in combination with central transfers designed to redistribute funds to poorer states.

In order to estimate the *causal* relationship between migration and total transfers, we turn to two-stage least squares (2SLS) regression, instrumenting migration with the abnormal rainfall instrument described previously. Column 2 of the table presents the first stage results, and suggests that a 10% increase in the instrument causes a statistically significant 7% increase in total migration. The first stage F -statistic is 28, well-above the conventional threshold of 10 for a strong instrument. The second stage results are presented in the next column, and suggest that a 10% increase in migration (on average, that would be 6,000 additional migrants) causes a 1.7% increase in transfers. For the average state budget, a 1.7% increase in transfers is equivalent to Rs. 400 million or \$9 million. This result is statistically significant at the 1% level. This is strong evidence for H_1 . Exogenous, natural-disaster induced migration into a state causes substantial increases in transfers. It is perhaps worth noting that the coefficient on migration is much smaller than the coefficient on native population, suggesting that the federal government privileges natives over migrants at the margin. However, the comparison is problematic as we have no instrument for change in native population.

4 Politics of migration-induced transfers

In order to test H_2 , we use 2SLS to estimate the interactive effect of migration and political alignment on transfers. We code a dummy variable for *Center-state copartisanship* that is a 1 if the Prime Minister and a state's Chief Minister are from the same political party. The interaction of migration with copartisanship is estimated in the first stage with the interaction of our instrument

Table 3: Migration and total central transfers to the states

	OLS		2SLS	
	Ln total transfers 1	1st stage		2nd stage
		Migration 2	Ln total transfers 3	
Ln migrants	-0.015 (0.024)		0.17*** (0.066)	
Abnormal monsoon instrument		0.73*** (0.14)		
Abnormal monsoon rainfall	0.038 (0.057)	-0.15 (0.22)	0.076 (0.055)	
Ln % degraded land	-0.095 (0.060)	-0.44*** (0.14)	-0.033 (0.058)	
Ln domestic imports per capita	0.026 (0.045)	0.0015 (0.12)	0.057 (0.045)	
Ln state population, natives	1.4*** (0.20)	-0.36 (0.40)	1.3*** (0.21)	
Ln income per capita	0.16* (0.090)	0.45*** (0.16)	0.094 (0.088)	
Ln unemployment rate, natives	-0.16 (0.11)	-0.022 (0.25)	-0.16 (0.11)	
Ln ntnl abnormal monsoon affected pop.	0.036 (0.024)	0.35*** (0.072)	-0.036 (0.031)	
Observations	139	139	139	
State fixed effects?	Yes	Yes	Yes	
Tests of statistical significance of migration:				
Wald F-test	0.37		7.1***	
Anderson-Rubin χ^2			9.1***	
Tests of instrument strength:				
Angrist-Pischke F-statistic		28***		

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

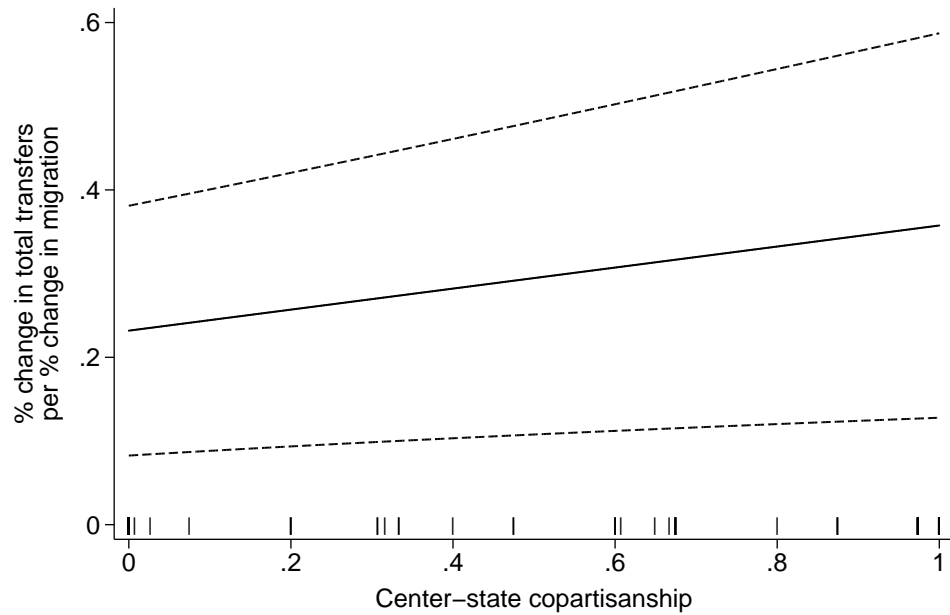
with copartisanship. Table 4 presents the results of this analysis. Columns 1 and 2 report the results of the first stage regressions for migration and its interaction with partisan alignment, showing that the instruments are positively and statistically significantly related to the endogenous variables and yield strong F -statistics. Note that this strategy allows us to examine whether the effect of migration varies according to center-state copartisanship. It does not, however, allow us to examine the

causal effect of the copartisanship measure itself, either alone or in interaction with migration.¹⁸ In addition to measuring current copartisanship, we control for a coincidence in party control between the center and the states at the time the most recent Finance Commission was chosen and when the last Planning Commission was empaneled. Interestingly, we find, like Rao and Singh (2005), that party alignment and transfers are negatively correlated in some specifications. However, we do not have an identification strategy that justifies interpreting that negative coefficient in terms of a causal relationship. Also, we are simultaneously including current copartisanship and copartisanship at two prior points in time. These variables are highly collinear, so the coefficient on current partisan alignment should not be given too much weight.

The second stage results, in column 3 of Table 4, suggests that the elasticity of transfers with respect to migration is greater in states that are controlled by the Prime Minister's copartisans. Specifically, a 10% increase in migration into a state that is not controlled by the central ruling party causes a 2.3% increase in transfers. States controlled by the Prime Minister's copartisans receive 3.6% more in transfers in response to a 10% increase in migration. In other words, transfers to copartisan state governments are more than 50% higher, a difference that is statistically significant. Thus, partisanship helps determine which states will best be able to cope with migration. Figure 2 illustrates this difference across all values of the center-state copartisanship variable. Recall that our data are for state-periods, with independent variables averaged over those periods. Center-state copartisanship therefore becomes a continuous measure between 0 and 1, representing the fraction of the period when the state Chief Minister and the Prime Minister were copartisans. Figure 2 plots the predicted percentage increase in transfers per percentage increase in migration as political alignment varies. The positive slope reflects the increasing generosity of federal transfers per migrant when a state's government was copartisan with the center for a greater length of time.

¹⁸Angrist and Kugler (2003) used a similar procedure to estimate whether the effect of international migration on unemployment in Europe was conditioned by the rigidity of labor and product markets in the host country. They instrumented for international migration but not the market institutions of host countries.

Figure 2: The effect of migration on total transfers as copartisanship between the center and states varies



Note: The solid line is the predicted effect of migration on transfers as center-state copartisanship varies, calculated using the coefficients in model 3, Table 4. Dashed lines are for the 90% confidence intervals. The rug plot depicts the distribution of center-state copartisanship.

Table 4: The interactive effect of migration and political alignment on central transfers

	1st stage		2nd stage	2nd stage	2nd stage	2nd stage
	Ln migration 1	Interaction 2	Ln total transfers 3	Ln grants 4	Ln central scheme funds 5	Ln central taxes 6
Ln migrants			0.23** (0.091)	0.21 (0.14)	0.32* (0.19)	0.45*** (0.13)
Abnormal monsoon instrument	0.86*** (0.16)	-0.92*** (0.29)				
Abnormal monsoon instrument x copartisanship	-0.42 (0.27)	2.0*** (0.56)				
Ln migrants x copartisanship			0.13** (0.062)	0.15* (0.085)	0.21 (0.15)	0.057 (0.072)
Center-state copartisanship	2.1 (1.5)	-1.2 (3.2)	-1.2** (0.59)	-1.3* (0.80)	-1.9 (1.5)	-0.43 (0.71)
Abnormal monsoon rainfall	-0.050 (0.24)	-0.63* (0.34)	0.13 (0.087)	0.18 (0.11)	0.045 (0.16)	0.026 (0.12)
Ln % degraded land	-0.42*** (0.13)	0.54* (0.31)	-0.089 (0.081)	-0.14 (0.10)	0.23 (0.15)	0.37*** (0.096)
Ln domestic imports per capita	0.034 (0.13)	0.023 (0.22)	0.037 (0.054)	0.056 (0.072)	-0.15 (0.094)	-0.021 (0.071)
Ln state population, natives	-0.14 (0.47)	1.4 (0.97)	1.1*** (0.26)	0.52 (0.32)	0.82 (0.61)	2.5*** (0.35)
Ln income per capita	0.46*** (0.14)	-0.17 (0.29)	0.11 (0.091)	0.097 (0.13)	0.40 (0.25)	0.093 (0.13)
Ln unemployment rate, natives	0.036 (0.25)	-0.092 (0.40)	-0.16 (0.13)	-0.15 (0.17)	0.084 (0.20)	-0.13 (0.16)
Ln ntnl abnormal monsoon affected pop.	0.28*** (0.083)	0.22* (0.12)	-0.074 (0.046)	-0.062 (0.064)	-0.035 (0.099)	-0.089 (0.065)
Copartisanship with Finance Commission	-0.094 (0.12)	-0.049 (0.18)	-0.023 (0.061)	0.032 (0.081)	0.17 (0.13)	0.020 (0.064)
Copartisanship with Planning Commission	0.42*** (0.15)	0.013 (0.24)	-0.12 (0.085)	-0.13 (0.11)	-0.20 (0.17)	-0.20** (0.097)
Observations	139	139	139	139	130	139
State fixed effects?	Yes	Yes	Yes	Yes	Yes	Yes
Tests of instrument strength:						
Angrist-Pischke F-statistic	22***	9.7***				
Kleibergen-Paap F-statistic	3.4**					
Tests of joint statistical significance of endogeneous regressors:						
Wald F-test			6.7**	3.2	3.1	14***
Anderson-Rubin χ^2			11***	4.6	5.5*	15***

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.1 Is politics the mechanism?

Our analysis thus far has provided robust evidence that is supportive of both hypotheses that we advanced in the theory section above. Exogenous increases in migration are met with increases in transfers (H_1), particularly in states whose governments are aligned with the central government (H_2). That said, what are the mechanisms that explain this result? Is the increase in transfers driven

by the formulaic devolution of resources that is somehow sensitive to inflows of migrants or is it the result of deliberate decisions by the central government to increase transfers in response to migration? Certainly, H_2 suggests the latter interpretation is more likely, but H_1 leaves open both possibilities.

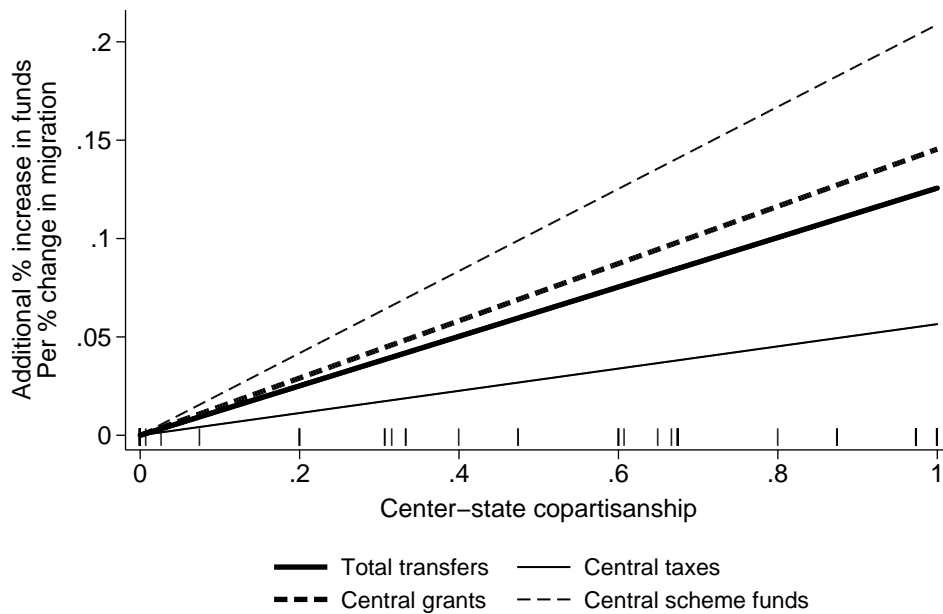
In order to ascertain whether the migration-induced increase in transfers is deliberate, we disaggregate total transfers and look at three new dependent variables, which differ according to the amount of discretion the executive has to direct this funding, particularly in the short term:

- *Total grants* is the sum of funds that are not determined through the constitutionally-mandated tax sharing process. This is the sum of lines 2 through 5 in Table 2. The Planning Commission and central ministries, thought to be more politicized than the Finance Commission, determine the distribution of most of these funds.
- *Centrally sponsored schemes* (line 5 in Table 2) are transfers to the states directly from central ministries' budgets. These funds are under the complete discretion of the executive branch and budgeted on an annual basis rather than a five-year cycle. Here, the center can respond to migration in a flexible manner. This is thought to be the most politicized portion of the budget.
- *Central taxes* which are, in principle, determined by an apolitical process. If there is a bonus associated with copartisanship in discretionary spending but not in the tax process, that result provides additional confidence that the former reflects political machinations and not a mechanical response to migration built into the budgeting process. An additional reason to examine taxes is that increases in discretionary spending—grants and central scheme funds—could, in principle, be offset by reductions in other transfers (Khemani 2007).

All of these flows are measured in Indian rupees, adjusted to year 2000 prices, and logged.

Column 4 in Table 4 predicts central grants to the states based on migration. The first stage equations, which predict migration and the interaction of migration and center-state copartisan-

Figure 3: Comparing the role of political alignment in determining response to migration of more and less discretionary transfers



Note: The lines depict the predicted effects of migration on various categories of transfers as center-state copartisanship varies, calculated using the coefficients in models 3–6, Table 4. The rug plot depicts the distribution of center-state copartisanship.

ship, are unchanged from the analysis of total grants in columns 1 and 2.¹⁹ We estimate that the relationship between migration and central grants is virtually the same as that between migration and total transfers, perhaps slightly more politicized. The difference in politicization is represented graphically in Figure 3. Here, the vertical axis is the additional transfers per increment of migration that states receive as center-state copartisanship increases. A 10% increase in migration results in 2.1% higher central grant receipts if the state government is not politically affiliated with the Prime Minister compared to a 3.6% increase in copartisan states. We can reject the hypothesis that the effect of migration on central grants is the same in politically aligned and unaligned states at the 10% level.

We next examine the effects of migration on spending on centrally sponsored schemes, which

¹⁹There are a few missing observations when the dependent variable is central scheme funds, resulting in changed first stage results. See Table 11 in the Supplementary Materials for the complete estimation results using central scheme funds as the dependent variable.

is thought to be even more discretionary. Table 4 suggests that the increase in transfers in response to migration is particularly pronounced in this part of the budget. A 10% increase in migration is predicted to lead to a 3% increase in central scheme funds. The partisan bonus in centrally sponsored schemes in response to migration is larger than the bonus for other transfers. Copartisan state governments are predicted to receive a 5% boost in central scheme money, 66% more than states not controlled by the Prime Minister’s party (Figure 3). This large partisan bonus is consistent with our expectation that centrally sponsored schemes are especially politicized. However, the coefficient on the interaction term of migration and center-state copartisanship is not statistically significant at conventional levels ($p = 0.16$).

We lastly examine whether the increase in migration-induced transfers is driven by the formulaic devolution of central taxes. Table 4 suggests that central taxes increase with migration. Recall that the tax-sharing formula uses population data from 1971, so that the effect of migrants is not the simple result of an increase in per capita disbursements. Instead, the causal effect of migrants on tax receipts suggests migration is causing economic expansion in the host state. (Economic expansion can lead to increased tax sharing because the Finance Commission formulae for transfers give some weight to states’ own tax effort.) In the equation for central taxes, the migration/copartisanship interaction term has a small and statistically insignificant coefficient ($p = 0.43$, see also Figure 3). As other scholars have reported, central government tax-sharing appears to be depoliticized. However, that depoliticization does not offset the partisan biases in other categories of spending—total transfers respond to migration, and do so in a politicized manner.

5 Conclusions

In this study, we examined the Indian state’s fiscal response to migration. We found that the country’s federal or central government responds to plausibly exogenous, natural disaster-induced migration with increased fiscal transfers from the center to the states, and that the center particularly does so when state governments are controlled by the Prime Minister’s party. The partisan increase

in discretionary transfers (grants and centrally sponsored schemes) under the control of the central government is not offset by a reduction in central taxes. Devolution of central taxes to the states increases in response to migration, possibly due to migrants' contribution to the economy, but the non-politicization of tax sharing does not negate the partisan bonus in total transfers.

These findings help us assess the functioning of the Indian federation, and further the literatures on the effects of migration, federalism and decentralization, and the politicized distribution of resources. We advance the literature on the effects of internal migration by examining the government's fiscal response to the movement of people. We further the mostly normative literature on fiscal federalism by testing its recommendation that central governments respond to inter-jurisdictional externalities such as those induced by migration. We also show the critical role of partisan politics in the operation of a multi-tiered government, bringing to bear the insights of the literature on the politicized distribution of resources. We also expand the latter literature by showing that resource distribution in response to an exogenous stimulus (natural disaster-induced migration) is politicized.²⁰

Having theorized about and documented the politicized nature of the central government's fiscal response to natural disaster-induced migration, it is perhaps worth considering fixes for the problem. Two possibilities suggest themselves. First, both our analysis and Khemani (2007) show that while central government transfers from the Planning Commission are politicized, transfers from the Finance Commission—which, unlike the Planning Commission, is a constitutional body—are less politicized. This suggests that delegating transfers in response to migration to a constitutional body might depoliticize their distribution. A second possible solution to the politicized distribution of resources is greater transparency, which, as Besley and Burgess (2002) have shown, spurs government responsiveness in India. In particular, timely and comparable data releases on natural disaster-induced disbursements from the central government to India's states might attenuate the impact of partisanship on such fiscal transfers.

²⁰The extant literature on the politicized distribution of resources estimates the causal effect of alignment through the use of close elections. In contrast, our strategy is to examine heterogeneity due to political alignment in the fiscal response to exogenous migration shocks.

Our work raises a number of questions for future research. One such question is whether the fiscal transfers that we track facilitate migration and thereby spur efficiency. To what degree does the politicized distribution of resources that we have uncovered here explain patterns of migration? A related set of questions is whether fiscal transfers affect the degree of nativism in the host state. Bhavnani and Lacina (2015) show that migration increases riots, but only if the state executive and the national executive are from different political coalitions. A possible explanation for that pattern is Indian states that are not politically aligned with Delhi receive fewer resources from the center with which to reduce natives' grievances. Variation in transfers to natives could also explain variation in anti-migrant discrimination by natives. Research on such aspects of the political economy of internal migration is critical given the unprecedented increase in internal migration worldwide.

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Supplementary Materials for “Fiscal Federalism at Work? Central Responses to Internal Migration in India”

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Table 5: States and union territories included in analysis reported in main text and supplementary materials

State or Union Territory	Period					
	1982–86	1987–89	1990	1992–96	1997–99	2000
Andhra Pradesh	Y	Y	Y	Y	Y	Y
Arunachal Pradesh ^a			Y	Y	Y	Y
Assam	Y	Y	Y	Y	Y	Y
Bihar	Y	Y	Y	Y	Y	Y
Delhi ^b					Y	Y
Goa ^c		Y	Y	Y	Y	Y
Gujarat	Y	Y	Y	Y	Y	Y
Haryana	Y	Y	Y	Y	Y	Y
Himachal Pradesh	Y	Y	Y	Y	Y	Y
Karnataka	Y	Y	Y	Y	Y	Y
Kerala	Y	Y	Y	Y	Y	Y
Madhya Pradesh	Y	Y	Y	Y	Y	Y
Maharashtra	Y	Y	Y	Y	Y	Y
Manipur	Y	Y	Y	Y	Y	Y
Meghalaya	Y	Y	Y	Y	Y	Y
Mizoram ^a			Y	Y	Y	Y
Nagaland	Y	Y	Y	Y	Y	Y
Orissa	Y	Y	Y	Y	Y	Y
Punjab	Y	Y	Y	Y	Y	Y
Rajasthan	Y	Y	Y	Y	Y	Y
Sikkim	Y	Y	Y	Y	Y	Y
Tamil Nadu	Y	Y	Y	Y	Y	Y
Tripura	Y	Y	Y	Y	Y	Y
Uttar Pradesh	Y	Y	Y	Y	Y	Y
West Bengal	Y	Y	Y	Y	Y	Y

^a Gained statehood in 1987.

^b Union territory. Gained an elected legislative assembly in 1993.

^c In May 1987, the union territory of Goa, Daman and Diu was reorganized. Goa became a state while Daman and Diu became a new, smaller union territory. Goa maintained its existing elected assembly, which had its first elections in 1967.

Table 6: Summary statistics for new variables used in supplementary materials^a

	Mean	Std. Dev.	Min.	Max.
Migrants as percent ^b	0.27	0.32	0.011	1.7
Ln male migrants ^b	9.3	1.7	4.9	13
Ln urban migrants ^b	9.2	1.9	4.4	13
Observations	139			

^a All variables are measured at the state-level as annual averages, based on periods of unequal length. See main text for details.

^b Directorate of Census Operations 1991, 2001.

Table 7: Re-estimation of 2SLS models using unweighted data

	1st stage	2nd stage	1st stage		2nd stage
	Ln migration 1	Ln total transfers 2	Ln migration 3	Interaction 4	Ln total transfers 5
Ln migrants		0.077 (0.049)			0.16** (0.079)
Abnormal monsoon instrument	0.78*** (0.14)		0.83*** (0.15)	-0.80*** (0.27)	
Abnormal monsoon instrument x copartisanship			-0.35 (0.27)	1.6** (0.69)	
Ln migrants x copartisanship					0.13* (0.069)
Center-state copartisanship			1.8 (1.6)	0.70 (4.0)	-1.3* (0.67)
Abnormal monsoon rainfall	0.12 (0.17)	0.071* (0.042)	0.17 (0.18)	-0.36 (0.28)	0.096* (0.058)
Ln % degraded land	-0.49*** (0.15)	-0.10 (0.063)	-0.48*** (0.15)	0.67* (0.37)	-0.17** (0.084)
Ln domestic imports per capita	-0.027 (0.11)	0.070** (0.034)	-0.075 (0.12)	-0.029 (0.21)	0.075 (0.046)
Ln state population, natives	-0.015 (0.43)	1.3*** (0.18)	0.17 (0.49)	2.0* (1.0)	0.93*** (0.25)
Ln income per capita	0.53*** (0.13)	0.083 (0.059)	0.56*** (0.13)	-0.24 (0.20)	0.066 (0.065)
Ln unemployment rate, natives	0.083 (0.27)	-0.20* (0.11)	0.083 (0.26)	-0.20 (0.37)	-0.18 (0.12)
Ln ntnl abnormal monsoon affected pop.	0.13** (0.063)	0.0023 (0.019)	0.12* (0.068)	0.16 (0.11)	-0.026 (0.029)
Copartisanship with Finance Commission			-0.16 (0.11)	-0.054 (0.15)	0.031 (0.049)
Copartisanship with Planning Commission			0.52*** (0.15)	0.022 (0.28)	-0.15* (0.082)
Observations	139	139	139	139	139
State fixed effects?	Yes	Yes	Yes	Yes	Yes
Tests of instrument strength:					
Angrist-Pischke F-statistic	31***		15**	4.6**	
Tests of joint statistical significance of endogenous regressors:					
Wald F-test		2.5			4.8*
Anderson-Rubin χ^2		2.3			5.9*

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Re-estimation of 2SLS models using migrants as a percent of the population as an independent variable

	1st stage		2nd stage		1st stage		2nd stage	
	Ln migration 1	Ln total transfers 2	Ln migration 3	Interaction 4	Ln total transfers 5			
Migrants as percent		0.86** (0.38)			0.24 (0.19)			
Abnormal monsoon instrument	0.15*** (0.049)		0.20*** (0.059)	0.044 (0.043)				
Abnormal monsoon instrument x copartisanship			-0.16 (0.10)	0.23** (0.097)				
Migrants as % x copartisanship					0.82*** (0.30)			
Center-state copartisanship			0.77 (0.59)	-1.1* (0.55)	-0.15* (0.087)			
Abnormal monsoon rainfall	-0.048 (0.064)	0.091 (0.066)	-0.010 (0.064)	0.074 (0.064)	-0.017 (0.050)			
Ln % degraded land	-0.14*** (0.052)	0.015 (0.075)	-0.13** (0.056)	-0.046 (0.031)	-0.048 (0.056)			
Ln domestic imports per capita	-0.042 (0.041)	0.093 (0.062)	-0.024 (0.041)	0.049 (0.033)	0.013 (0.045)			
Ln state population, natives	-0.43** (0.17)	1.7*** (0.27)	-0.39** (0.16)	0.081 (0.12)	1.3*** (0.21)			
Ln income per capita	0.18*** (0.067)	0.018 (0.13)	0.19*** (0.063)	-0.092 (0.082)	0.22* (0.12)			
Ln unemployment rate, natives	0.015 (0.079)	-0.17 (0.13)	0.033 (0.080)	-0.077 (0.078)	-0.11 (0.10)			
Ln ntnl abnormal monsoon affected pop.	0.096*** (0.029)	-0.057 (0.043)	0.066*** (0.023)	0.0042 (0.018)	-0.00041 (0.023)			
Copartisanship with Finance Commission			-0.022 (0.043)	-0.0061 (0.026)	-0.040 (0.042)			
Copartisanship with Planning Commission			0.13** (0.066)	-0.0087 (0.040)	-0.045 (0.055)			
Observations	139	139	139	139	139			
State fixed effects?	Yes	Yes	Yes	Yes	Yes			
Tests of instrument strength: Angrist-Pischke F-statistic	9.2***		11***	7.6***				
Tests of joint statistical significance of endogeneous regressors: Wald F-test		5.1**			10***			
Anderson-Rubin χ^2		9.1***			11***			

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Re-estimation of 2SLS models using male migration as an independent variable

	1st stage	2nd stage	1st stage		2nd stage
	Ln migration 1	Ln total transfers 2	Ln migration 3	Interaction 4	Ln total transfers 5
Ln male migrants		0.17*** (0.065)			0.21** (0.083)
Abnormal monsoon instrument	0.75*** (0.15)		0.87*** (0.17)	-0.78*** (0.26)	
Abnormal monsoon instrument x copartisanship			-0.44 (0.28)	1.9*** (0.51)	
Ln male migrants x copartisanship					0.13** (0.061)
Center-state copartisanship			2.3 (1.6)	-1.7 (2.9)	-1.1** (0.54)
Abnormal monsoon rainfall	-0.12 (0.23)	0.070 (0.054)	-0.051 (0.25)	-0.52 (0.34)	0.12 (0.079)
Ln % degraded land	-0.58*** (0.15)	-0.012 (0.060)	-0.56*** (0.14)	0.44 (0.29)	-0.057 (0.077)
Ln domestic imports per capita	0.030 (0.13)	0.052 (0.045)	0.055 (0.14)	0.054 (0.21)	0.029 (0.052)
Ln state population, natives	-0.69 (0.43)	1.4*** (0.21)	-0.42 (0.49)	1.5 (0.92)	1.1*** (0.25)
Ln income per capita	0.55*** (0.17)	0.079 (0.090)	0.55*** (0.16)	-0.24 (0.25)	0.11 (0.091)
Ln unemployment rate, natives	-0.10 (0.26)	-0.14 (0.11)	-0.051 (0.26)	-0.13 (0.36)	-0.13 (0.14)
Ln ntnl abnormal monsoon affected pop.	0.49*** (0.077)	-0.058 (0.038)	0.44*** (0.090)	0.22* (0.11)	-0.10* (0.055)
Copartisanship with Finance Commission			-0.12 (0.13)	-0.12 (0.16)	-0.0097 (0.060)
Copartisanship with Planning Commission			0.37** (0.16)	-0.054 (0.22)	-0.092 (0.076)
Observations	139	139	139	139	139
State fixed effects?	Yes	Yes	Yes	Yes	Yes
Tests of instrument strength:					
Angrist-Pischke F-statistic	26***		22***	11***	
Tests of joint statistical significance of endogenous regressors:					
Wald F-test		6.8***			6.8**
Anderson-Rubin χ^2		9.1***			11***

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Re-estimation of 2SLS models using urban migration as an independent variable

	1st stage	2nd stage	1st stage		2nd stage
	Ln migration 1	Ln total transfers 2	Ln migration 3	Interaction 4	Ln total transfers 5
Ln urban migrants		0.15*** (0.055)			0.17*** (0.065)
Abnormal monsoon instrument	0.86*** (0.14)		0.95*** (0.17)	-0.82*** (0.31)	
Abnormal monsoon instrument x copartisanship			-0.29 (0.30)	2.0*** (0.62)	
Ln urban migrants x copartisanship					0.12** (0.051)
Center-state copartisanship			1.4 (1.7)	-2.1 (3.5)	-0.99** (0.44)
Abnormal monsoon rainfall	-0.15 (0.23)	0.067 (0.052)	0.028 (0.24)	-0.65* (0.36)	0.093 (0.072)
Ln % degraded land	-0.59*** (0.13)	-0.011 (0.058)	-0.58*** (0.13)	0.52 (0.34)	-0.075 (0.077)
Ln domestic imports per capita	-0.17 (0.14)	0.080 (0.049)	-0.15 (0.15)	0.088 (0.25)	0.050 (0.053)
Ln state population, natives	-1.1** (0.46)	1.3*** (0.21)	-1.1** (0.50)	1.9* (1.1)	1.2*** (0.22)
Ln income per capita	0.54*** (0.18)	0.13 (0.097)	0.60*** (0.18)	-0.34 (0.26)	0.14 (0.093)
Ln unemployment rate, natives	0.23 (0.24)	-0.20* (0.11)	0.31 (0.22)	-0.071 (0.39)	-0.22* (0.12)
Ln ntnl abnormal monsoon affected pop.	0.22*** (0.073)	-0.00038 (0.023)	0.13 (0.087)	0.13 (0.13)	-0.000095 (0.030)
Copartisanship with Finance Commission			0.081 (0.15)	-0.16 (0.20)	-0.055 (0.066)
Copartisanship with Planning Commission			0.40** (0.16)	0.0099 (0.26)	-0.087 (0.077)
Observations	130	130	130	130	130
State fixed effects?	Yes	Yes	Yes	Yes	Yes
Tests of instrument strength:					
Angrist-Pischke F-statistic	35***		30***	9.4***	
Tests of joint statistical significance of endogenous regressors:					
Wald F-test		7.7***			7.8**
Anderson-Rubin χ^2		9.6***			11***

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Full results for 2SLS model with central scheme funds as the dependent variable

	2SLS		
	1st stage		2nd stage
	Migration 1	Interaction 2	Ln central scheme funds 3
Ln migrants			0.32* (0.19)
Abnormal monsoon instrument	0.83*** (0.18)	-0.89*** (0.33)	
Abnormal monsoon instrument x copartisanship	-0.38 (0.30)	1.7*** (0.57)	
Ln migrants x copartisanship			0.21 (0.15)
Center-state copartisanship	1.9 (1.7)	0.086 (3.3)	-1.9 (1.5)
Abnormal monsoon rainfall	-0.045 (0.25)	-0.59* (0.34)	0.045 (0.16)
Ln % degraded land	-0.53*** (0.16)	0.33 (0.37)	0.23 (0.15)
Ln domestic imports per capita	0.038 (0.14)	0.028 (0.21)	-0.15 (0.094)
Ln state population, natives	-0.49 (0.63)	0.83 (1.4)	0.82 (0.61)
Ln income per capita	0.44 (0.34)	-0.025 (0.54)	0.40 (0.25)
Ln unemployment rate, natives	-0.091 (0.25)	-0.36 (0.41)	0.084 (0.20)
Ln ntnl abnormal monsoon affected pop.	0.28*** (0.087)	0.22* (0.12)	-0.035 (0.099)
Copartisanship with Finance Commission	-0.13 (0.12)	-0.18 (0.15)	0.17 (0.13)
Copartisanship with Planning Commission	0.40** (0.17)	0.095 (0.28)	-0.20 (0.17)
Observations	130	130	130
State fixed effects?	Yes	Yes	Yes
Tests of joint statistical significance of endogeneous regressors:			
Wald F-test			3.1
Anderson-Rubin χ^2			5.5*
Tests of instrument strength:			
Angrist-Pischke F-statistic			15***
Kleibergen-Paap F-statistic			2.5*

Newey-West standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$