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Partisan Politics - Evidence from India**

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Abstract

Do some sub-national governments receive higher transfers from the Central Government than others? Which channels exist for the Central Government to practice partisan politics? Taking note of the significant gap between the relief sought by the states in the context of natural calamities such as drought and the assistance given by the Centre, the present study attempts to contribute to the vast literature on fiscal transfers from the Centre to different states in India with particular focus on partisan politics. The empirical analysis based on total and non-plan fiscal grants from the Centre to different states and an index of drought over the past three decades suggests that the grant allocation in response to drought is higher when political alignment exists between the Centre and the states. The study further shows that the allocation of grants in response to drought is affected by the nature of political alignment and has changed over time.

Key words: *Fiscal Federalism; Political Alignment; Natural Calamities*

JEL Codes: *H77; O23; D72; Q54*

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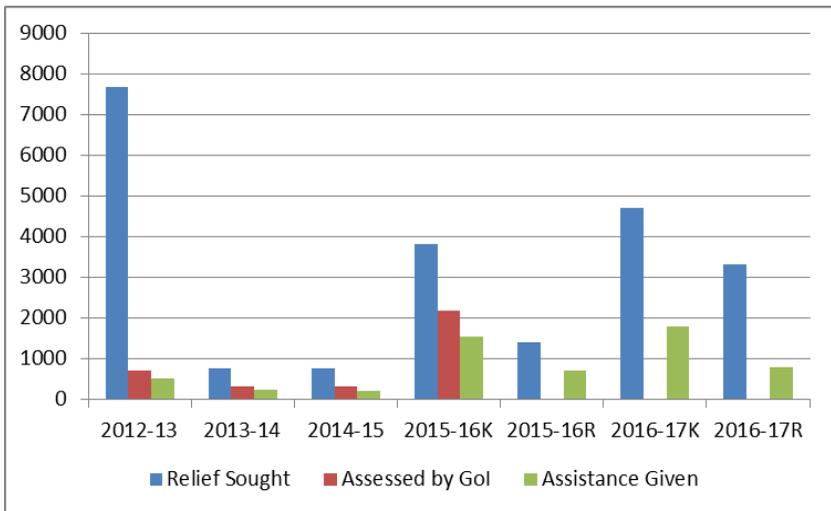
INTRODUCTION

The adverse effects of natural calamities including the climate induced extreme events (such as droughts, cyclonic storms, floods, etc.) have increased over the years (Intergovernmental Panel on Climate Change, 2012). The developing and the least developed nations, in particular, bear relatively larger impacts from these events (Botzen and van den Bergh, 2009; IPCC, 2012). With regards to India, the total damage costs, estimated based on EM-DAT international disaster data base, from climate extreme events (consisting cyclonic storms, floods, droughts and extreme temperature) were US\$ 75.76 million between 1970 and 2014¹. These events caused an economic loss of US\$ 2.92 million in India during 1970s, and it is increased to US\$ 5.84 million, US\$ 18.02 million, US\$ 19.04 million during 1980s, 1900s and 2000s, respectively (Prabhakar *et. al.*, 2015).

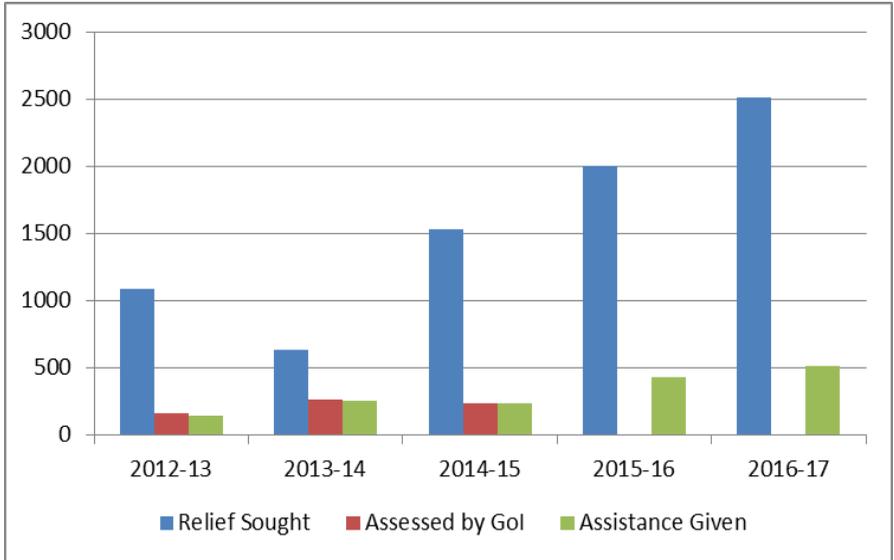
The Central and state governments play significant role in minimizing the adverse impacts of natural calamities, particularly in extending the relief and rehabilitation to the affected population. Substantial gap exists between the relief sought by the state impacted by the natural calamity, damage assessment made by the Central government, and finally assistance given by the Central government to the affected state. Figure 1 shows this gap between assistance sought and provided by the Central government in case of drought for two states. Figure 2 on the other hand shows the shortfall in the Central government assistance to drought for various states in two recent years and also all-India average shortfall over the period 2012-13 to 2017-18. Close to 80 per cent shortfall in the assistance sought by the drought affected states from the Central government points to tendency on the part of the state governments to overstate their demands. Some states appear to have gone overboard in their demands – for instance, the

¹ The reported value is not adjusted for inflation and income, and it is the sum of reported damage costs each year during the reference period.

drought relief sought by Tamil Nadu in the year 2016-17 constitutes almost 72 per cent of the drought relief demanded by all the states in that year from the Central government. However, one cannot rule out the favouritism shown by the Central government towards certain states in extending support – influenced among other things by the political alignment of the Central government with the state government. The significant variability across states in terms of the shortfall in the assistance to drought (figure 2) provides some credence to the possibility of partisan approach adopted by the Central government. Moreover, the relief provided in the wake of a calamity is often combined with on-going welfare programs, the data on grants allocated to states owing specifically to natural calamities may not provide true picture of relief in general, and specifically the favouritism exhibited by the Central government towards states that are politically aligned.



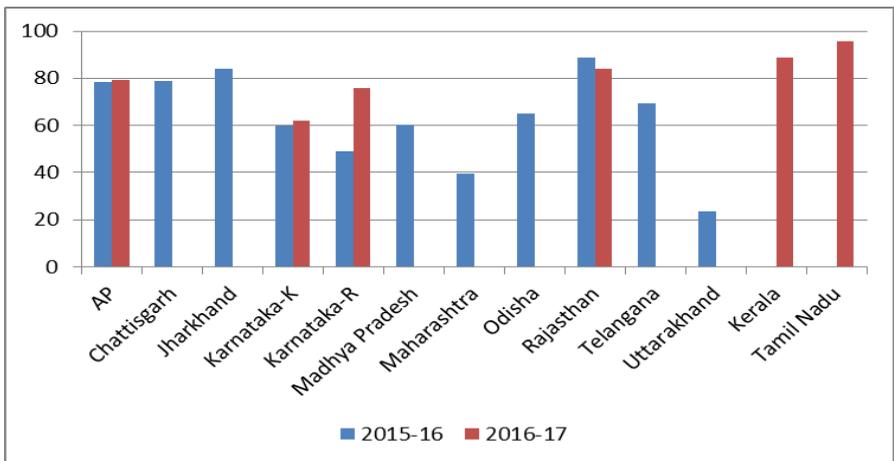
Karnataka



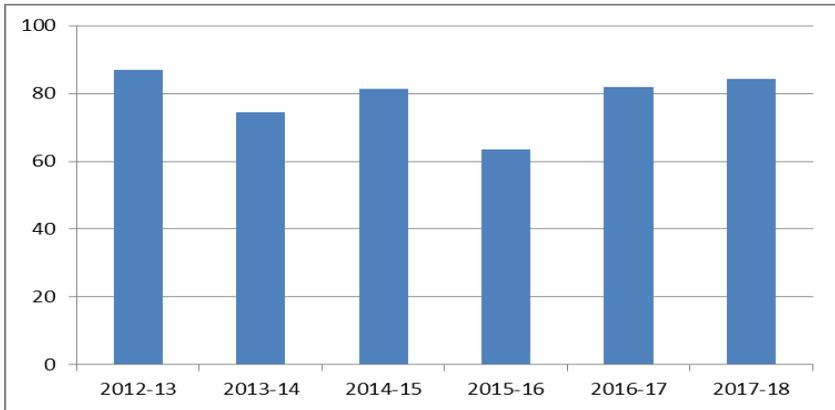
Andhra Pradesh

Source: Lok Sabha Starred Question No. 22, dated 01.12.2015; accessed from www.indiastat.com

Figure 1: Drought Assistance Sought and Sanctioned



Various States



All India Average

Source: Lok Sabha Starred Question No. 22, dated 01.12.2015; accessed from www.indiastat.com

Figure 2: Shortfall (percent) in Drought Assistance

Do some sub-national governments receive higher transfers from the Central Government than others? The fiscal federalism literature examines how transfers can address the vertical and horizontal imbalances within a nation and how they can facilitate economic development. Beyond these normative considerations, the central transfers can also be influenced by partisan political considerations. While the partisan political considerations can influence different components of fiscal transfers, this study specifically explores their role in the context of natural calamities and the associated assistance provided by the centre to the affected state. Different states have handled the natural calamities with varying degrees of efficiency over the years in India. Little is known about the role played by the politicized assistance provided by the Central government in improving the efficiency with which the states manage natural calamities. The present study contributes towards this strand of literature. The study also extends the fiscal federalism literature by providing empirical evidence in the context of use of fiscal policy by the

Central government to address externalities that differentially affect different sub-regions.

The rest of the paper is organized as follows: The rest of this section reviews relevant literature. The third section describes the data and variables used for the analysis along with the empirical strategy followed. The next two sections discuss the results and provide concluding observations.

Literature Review

Two specific strands of literature provide context to the present study: the political economy of redistribution and the political economy of natural calamities. In response to natural calamities, the Central government in India typically directs assistance to the affected states. As mentioned above the significant difference exists between the assistance sought by the states and the relief extended by the Central government. It is in this context we hypothesize that scope exists for political favouritism.

Several studies explored how partisan considerations influence the transfer of resources from the federal government to the subnational governments in general, not necessarily in the context of natural calamities. There has been mixed evidence globally in this context – while Brollo and Nannicini (2012) and Larcinese *et. al.* (2006) find preferential access to resources with political alignment in case of Brazil and the US, respectively, some other studies have found negligible influence of political alignment on federal transfers (e.g., Dahlberg and Johansson, 2002). In the Indian context also the evidence has been mixed, with the results from empirical analyses differing contingent upon the type of financial flows used to measure the political favouritism. Further the literature in the Indian context also explored the extent of favouritism exhibited by the federal government towards states that are core or swing supporters. Arulampala *et. al.* (2009) show that a state which is both aligned and swing in the last election would receive 16

percent higher transfers than a state which is unaligned and non-swing. More recently, Endicott (2015) argued that majority governments tend to favour core supporters whereas coalition governments favour swing supporters.

In the context of natural calamities, there has been some literature that analysed the role of political favouritism. In the United States, Garrett and Sobel (2003) have shown that the states that are politically important to the President have had greater access to disaster expenditures compared to the states that are politically not aligned. Apart from the favouritism angle, the natural calamities and subsequent relief provided have been analysed to understand their influence on Governments winning elections. Downton and Pielke (2001) have showed that in the US there is greater chance for the President to declare a flood as an event of national importance if it happens in an election year. Using cross-country panel data, Chang and Berdiev (2015) show that occurrence of disasters has significant influence on replacing the incumbent government. In the Indian context, Cole *et. al.* (2012) examined how governments respond to adverse shocks and how voters react to these responses. They argue that both governments and voters respond to the events that take place during the year immediately preceding the election.

More recently, Bhavnani and Lacina (2017) examined the degree to which exogenous, long-term migration prompts redistribution of central fiscal resources in India. Based on migration data and monsoon shocks, they show that increase in migration are met with greater central transfers (to the states receiving the migrant population), but such flows are at least 50 percent greater if the political parties in power are aligned at the Centre and the state. Parida (2016) while analysing the economic impacts of floods in India argues that affected state receives favourable funding if it is politically aligned with the Central government. The present study contributes towards this strand of literature by examining

the influence of drought intensity and political alignment on total and non-plan grants from the Centre to the state governments in India.

DATA AND METHODOLOGY

Given the above discussion and review of past literature, the main objective of the study is to examine the role of partisan politics in affecting inter-state distribution of Central fiscal resources, particularly grants from the Centre to the states, in the presence of natural calamities. The specific research questions of the study are:

1. Does partisan politics influence Centre's allocation of grants to states in the context of natural calamities?
2. Does Centre's grant allocation differ according to the nature of political affiliation?
3. How have the effects of partisan politics on grant allocation evolved over time?

Data and Variable Description

To be able to address the specific research questions, the study relies on state-level panel data on total grants and total non-plan grants over the last three decades (1980-2009) along with information on natural calamities, data on copartisanship politics and other control variables including state domestic product, population etc.

Fiscal Transfers

Fiscal transfers include *share in central taxes* and *grants from the Centre*. Grants from the Centre include grants for: (a) state plan schemes (b) central plan schemes; (c) centrally-sponsored schemes; (d) special plan schemes; and (e) non-plan purposes. Further, non-plan grants include: (i) statutory grants; (ii) grants for relief on account of natural calamities; and (iii) other grants. Data on grants which are allocated to states owing specifically to natural calamities are sparsely available. However, focusing on central grants and its components which are sensitive to occurrence

of natural calamities, the study's analysis takes into account total grants as well as its sub-component - non-plan grants as proxy measures of grants for natural calamities.² Both variables were expressed in 2004-05 prices. These information are obtained from the Reserve Bank of India report *Handbook of Statistics on State Government Finances* (RBI, 2010) and *RBI Bulletin*.

Drought Index

Natural calamity is an all inclusive term which includes various types of disasters. However, the study's focus is on hydro-meteorological disasters, specifically droughts. Droughts are events which could occur due to high temperature and low rainfall conditions (called Hot-drought) or due to low temperature and low rainfall conditions (called Cold-drought) . The study focuses on both types of drought through construction of two drought indices. Because drought has direct consequences for Indian agriculture and its economy, each drought index is constructed focusing on the most important agricultural season - *kharif* - and the most important crop of the season - *rice*. State-wise monthly average temperature and total rainfall information at the state level are constructed from the India Meteorological Department daily gridded ($1^{\circ} \times 1^{\circ}$ lat/lon) data (Rajeevan *et. al.*,2009, Srivastava *et. al.*, 2005) for the period 1969-2009. Thus, using the state-wise rice growing season information available from ICAR (ICAR, 2008) the *kharif* rice growing season specific average temperature and total rainfall variables were constructed. Following the existing literature on drought, these temperature and rainfall variables were normalized to construct the drought indices. To construct the drought index representing hot-drought events the following formulae is used (see Yu and Babcock, 2010):

² Total grants and more specifically total non-plan grants are sub-components of the central government transfers which by and large include the central government's allocation of funds to address natural calamities facing the states.

$$DI_{it} = -[\max(0, MTD_{it}) \times \min(0, TRD_{it})] \quad (1)$$

where MTD and TRD are standardized deviations of mean temperature and total rainfall from their long-term values for state i and year t . Thus, by construction DI attains zero value whenever either temperature is below average or the rainfall is above average. The index defines drought only when an area suffers both low rainfall and high temperature. However, few studies have also argued that it is important to also account for the 'Cold-droughts' - i.e., when both rainfall and temperature are below average (Fontes *et. al.*, 2017). To account for both 'hot' and 'cold' droughts, normalized total cumulative rainfall (NTR_{it}) and normalized average temperature (NMT_{it}) are combined in the following way to create the normalized drought index (NDI):

$$NDI_{it} = NTR_{it} \times NMT_{it} \quad (2)$$

such that

$$NDI1_{it} = \begin{cases} NDI_{it} & \text{if } TRD_{it} < 0 \ \& \ MTD_{it} > 0 \\ 0 & \text{Otherwise} \end{cases} \quad (3a)$$

$$NDI2_{it} = \begin{cases} NDI_{it} & \text{if } TRD_{it} < 0 \ \& \ MTD_{it} < 0 \\ 0 & \text{Otherwise} \end{cases} \quad (3b)$$

$$NDI12_{it} = \begin{cases} NDI_{it} & \text{if } TRD_{it} < 0 \\ 0 & \text{Otherwise} \end{cases} \quad (3c)$$

The indices $NDI1_{it}$ and $NDI2_{it}$ respectively represent 'hot' and 'cold' droughts whereas, $NDI12_{it}$ represent 'drought' which are primarily driven due to deficient rainfall. Thus, DI_{it} and $NDI1_{it}$ carry similar interpretation - drought event resulting from low rainfall and high temperature. However, in policy and in common parlance, drought is understood by attaching more weight on low rainfall events, irrespective of the influence of observed temperature deviations, thereby also suppressing any potential interaction effect between low rainfall and

(high or low) temperature events, which is valid in a scientific/meteorological sense. Both DI_{it} and $NDI12_{it}$ as the two drought indices are used in the study's analyses.

Indicator of Copartisan Politics

To examine whether partisan politics plays any role in central government allocation of grants to states when natural calamity occurs, an indicator variable defining 'Centre-state copartisanship' is constructed. In a given state s and a year t if the political party of the Chief Minister is the same as the political party of the Prime Minister or provides outside support to the Centre then the indicator variable takes the value of 1 and otherwise 0. Hence, Centre-state copartisanship is present if a given political party is in power both in the state and in the Centre or supports the party in power in the Centre.

However, this way of defining Centre-state copartisanship rules out the possibility where the party in power in the state is not the same as the ruling party in the Centre, but has *aligned* with the party in power at the Centre. This alignment is possible when the state party either provides outside support (by not being part of the government) or has formed coalition government along with the ruling party at the Centre (i.e., whose candidate is chosen as the Prime Minister). Hence, the Centre-state copartisanship variable can be further divided into two categories: (a) Copartisanship where same political party is ruling in the state and the Centre; (b) Copartisanship where different political party (say, regional/state party) is ruling the state but with some form of alignment with the party in power in the Centre. Accordingly the new Copartisanship indicator variable takes values 0, 1 and 2, where 0 represents no Centre-state copartisanship, 1 represents Copartisanship as in (a) and 2 represents Copartisanship as in (b) above. Through this modification, the study attempts to examine whether the very *nature* of the Centre-state copartisanship has any influence on Central transfers in the presence of natural calamities.

Both Centre-state copartisanship variables have been constructed from data obtained from previous studies including Besley and Burgess (2002), Butler, Lahiri and Roy (1995), Lalvani (2005), Arulampalam *et. al.* (2009), available newspaper reports and other publically available information on electronic and print media. Since Independence till at least the mid-1970s the politics at the Centre as well as at the State has been predominantly represented by the Indian National Congress Party, with only few states such as Kerala, Punjab, Tamil Nadu having political parties different from INC as early as mid-1960s. As a result any effect of Copartisan politics on Central grant allocation would be felt across most, if not all states, leading to little variability in the Copartisanship variables. Thus, the study's analysis is restricted to the post-1980s era, which had witnessed the emergence of national as well as state politics in a full-fledged manner.³

Control Variables

Keeping in view the objective of the study, other variables which may have influence on Central government transfers such as Gross State Domestic Product (GSDP), population (Pop), Human Development Index (HDI) and President's Rule (PR) have been included in the study. Information on GSDP have been obtained from National Accounts Statistics of the Central Statistical Organization (CSO, 2018), which were inflation-adjusted and expressed in 2004-05 prices. Population data has been obtained from Compendium of Environmental Statistics (GoI, 2017), that were linearly interpolated to obtain inter-census year observations. State-wise HDI data has been obtained for the years 1983, 1987, 1993, 1999, 2004, 2009 and 2011 from Mukherjee and Chakraborty (2014), which were then linearly interpolated to produce a panel of observations.

³ A political alignment can be thought to be attempt on the part of the ruling party at the Centre to further their own political goals. Further, the alignment can be also seen as an indicator of bargaining *power* - representing the interest of the sub-national governments. Different components of the transfer system being subject to differing degrees of political economy influence.

President's rule data is taken from Lalvani (2005), Khanna, (1999), Besley and Burgess (2002) and other publically available information.

Methodology

Using the data collected over 1980-2009 for different variables discussed above, the study employs a fixed effects panel regression approach to estimate the effects of Centre-state copartisanship on grants - both total and non-plan grants in the occurrence of natural calamity - drought. Hausman's (1978) specification test was carried out to determine the estimation technique. The test clearly rejects the Null hypothesis in favour of a fixed effects model ($P < 0.0001$). Stationarity tests performed prior to estimation of the regression equation suggests trend stationarity for most of the variables included in the model. The econometric specification of the model is given in Equation (4) below:

$$\ln(G_{it}) = \beta_0 + \beta_1 DI_{it} + \beta_2 Cop_{it} + \beta_3 Cop_{it} \times DI_{it} + \beta_4 \mathbf{X}_{it} + \eta_i + \varphi(t) + u_{it} \quad (4)$$

where G_{it} is representing grants - total grants and non-plan grants. DI_{it} is the drought index, and Cop_{it} is the dummy representing Centre-state copartisanship. The vector \mathbf{X}_{it} represents the vector of control variables such as gross state domestic product and population. The model accounts for the time-invariant state-specific unobserved effects which could be affecting grant allocation (η_i), state-wise time trends $\varphi(t)$ and the idiosyncratic factors u_{it} .⁴

The estimated coefficient of interest in the model is the coefficient capturing the interaction effect between Centre-state copartisanship and the drought index - β_3 . If $\beta_3 > 0$, it can be inferred that in the presence of drought, grant allocation on average is higher whenever Centre-state copartisanship is present.

⁴ A different variant of the specification where both linear time trends as well as year fixed effects are included. Year effects are controlled to account for any year specific influence that could affect grant allocations across all states, for example, a general election year.

RESULTS AND DISCUSSIONS

The descriptive statistics of the variables of the regression model are presented in Table 1 below.

Table 1: Descriptive Statistics of Study Variables

	Mean	Std. Dev.	Min	Max
Ln total grants	11.70	0.89	8.48	14.05
Ln non-plan grants	10.16	1.21	5.00	12.84
Drought Index Type 1	0.30	0.79	0.00	7.05
Drought Index Type 2	0.21	0.25	0.00	1.00
Centre-state copartisanship	0.58	0.49	0.00	1.00
Copartisanship type	0.75	0.72	0.00	2.00
Ln state domestic product	10.39	1.55	6.75	13.41
Ln population	9.68	1.60	6.06	12.17
President's rule	0.11	0.31	0.00	1.00
HDI score	0.33	0.04	0.26	0.40
Observations	693			

Note: Total grants, non-plan grants and state domestic product are expressed 2004-05 lakhs and crores of Rupees, respectively. Population is in lakhs of people. HDI score is linearly interpolated to obtain the scores for the intermediate years other than the quinquennial NSS survey round years.

The relationship between drought and grant allocation through the lens of copartisan politics can be seen from Figure 3. The graph shows the widening gap between grant allocation in response to drought intensity between states when they are politically aligned with the Centre vis-a-vis when they are not. The relationship holds true irrespective of the nature of the drought index used: for both drought in general as well as for 'hot' drought.

Dealing with cross-sectional time-series data, it is important to first check the stationarity of different variables of the model. Panel unit-root tests carried out under different distributional assumptions indicated the presence of longer-term trends. Model variables such as grants, state domestic product as well as population exhibiting in general a secular

trend are the obvious suspects for thwarting the stationarity assumptions and thus require detrending in the model estimation. As discussed above, the dependent variable of interest is Central government grants - total and non-plan grants - which are being used as proxy measures to represent the grant allocation to states in lieu of natural calamities. The response of these measures to political alignment in the presence of natural calamity are estimated using the regression specification above.

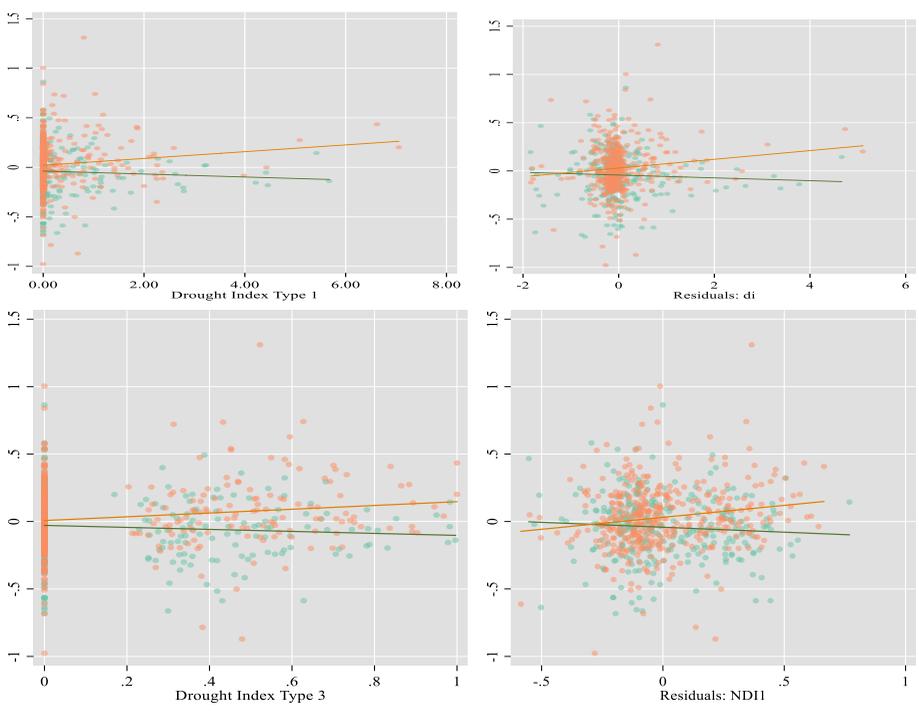


Figure 3: Relationship between Grants, Drought Index and Copartisanship

Note: Scatterplot of drought index with Ln total grants plotted by indicator of Copartisanship (1 = yes, 2 =no). Orange dots correspond to copartisanship and Green dots to non-copartisanship. Best fit lines are color coded similarly. Top (bottom) row presents the scatterplot for Drought Index Type 1 (Type2). Left panels present scatter plot of Ln total grants with respect to levels of DI and Right panels plot the same with respect to demeaned and detrended DI. In all figures Ln total grants (in the y-axis) are demeaned.

Response of Grants to Drought and Copartisanship

Table 2 presents the estimation results for total grants without state-specific time trends (Col(1)-(3)) as well as models incorporating trends (Col(4)-(6)). Greater intensity of drought on average reduces Central allocation of grants (by ~ 2 percent) when political alignment is absent. However, the effects are statistically insignificant. Having political alignment with the Centre on average results in 6-8 percent higher grant allocation compared with the no-political alignment cases, in the absence of drought ($DI=0$). This effect is statistically significant ($P < 0.05$).

The estimated coefficient on the interaction term represents *difference* in the responsiveness of Central grants allocation to drought (*i.e.*, increasing intensity of drought) in the presence of copartisanship compared to when copartisanship is absent. A positive sign of the coefficient therefore suggests the presence of differentiated responsiveness of grant allocations to drought: whenever states politically align with the Centre, grants received in response to drought increases. In fact, the incremental grants are on average 9 percent higher (Cols (4) and (5)) whenever copartisanship is present as compared to when it is absent.

Table 2: The Interactive Effect of Partisan Politics and Drought on Total Grants

	(1)	(2)	(3)	(4)	(5)	(6)
	TGrants1	TGrants1a	TGrants1b	TGrants2	TGrants2a	TGrants2b
Drought Index Type 1	0.0609 (0.0384)	-0.0130 (0.0141)	-0.0165 (0.0142)	-0.0234 (0.0160)	-0.0188 (0.0150)	-0.0165 (0.0142)
Centre-state copartisanship=1	-0.0434 (0.0456)	0.0604** (0.0264)	0.0745*** (0.0217)	0.0600** (0.0256)	0.0581** (0.0262)	0.0745*** (0.0217)
Centre-state copartisanship = 1 x Drought Index Type 1	0.0735 (0.0597)	0.0887*** (0.0205)	0.0561*** (0.0182)	0.0921*** (0.0209)	0.0912*** (0.0204)	0.0561*** (0.0182)
Constant	11.70*** (0.0330)	-5.517*** (1.431)	1.777 (2.462)	10.77*** (0.0308)	2.711 (2.761)	1.734 (2.456)
Observations	693	693	693	693	693	693
R2	0.633	0.894	0.929	0.894	0.895	0.929
Model F-stat	3.989	273.976	87.327	403.825	243.740	87.327
Joint-test P-value	0.008	0.000	0.000	0.000	0.000	0.000
Fixed Effects	State	State	State, Yr	State	State	State, Yr
State-specific trend	No	No	No	Yes	Yes	Yes
Other controls	No	Yes	Yes	No	Yes	Yes

Robust standard errors in parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Dependent variable Ln total grants is expressed in 2004-05 constant prices. Control variables of the respective models include Ln state domestic product (expressed in 2004-05 constant rupees), Ln population (in Lakhs), and an indicator variable capturing number of instances when President's rule was imposed under Article 356 of the Indian Constitution. Reported P -value correspond to the test of joint significance of all three parameter estimates of interest given in the table.

In the absence of political alignment, therefore, states not only received lower grants in a 'normal' year (or a non-drought year), but if a drought (of average intensity) were to occur, these states also received almost 9 percent lower grants. Thus, with increasing intensity of drought, the difference between grants allocated to the politically aligned states vis-a-vis the non-aligned states increase. These results also remain robust when the influence of year specific unobserved factors are controlled for (Cols (3) and (6)).

The response of non-plan grants - a relatively more close proxy for grant allocations towards natural calamities - to droughts in relation to copartisanship is presented in Table 3. For states without alignment, non-plan grants allocation reduces by 4 percent for every unit increase in drought intensity; a relatively more adverse effect compared to total grants. However, similar to total grants, these effects being statistically insignificant ($P < 0.2$) signify that grant allocation to states without political alignment are at best non-responsive. During normal years, copartisan states receive on average similar levels of non-plan grants compared to non-copartisan states. However, if an average intensity drought were to occur, copartisan states received ~16 percent higher non-plan grants in response compared to non-copartisan states. These effects, which are also significant ($P < 0.001$), indicate that even if both categories of states were to receive the same grant allocation in a non-drought year, the gap between non-plan grant allocation between both categories increase with drought intensity. The estimates also remain robust to the inclusion of year fixed effects in Col (3) and (6).⁵

⁵ A number of other robustness checks were performed for the models. These include: (a) estimation based only on large states (*i.e.*, excluding the North-Eastern states where data gaps were more, the 3 newly created states of Chhattisgarh, Jharkhand and Uttarakhand and Goa); (b) using different types and definitions of drought indices - for 'hot' and 'hot' and 'cold' drought. The results also yielded similar to that discussed above.

Table 3: The Interactive Effect of Partisan Politics and Drought on Non-plan Grants

	(1)	(2)	(3)	(4)	(5)	(6)
	NGrants1	NGrants1a	NGrants1b	NGrants2	NGrants2a	NGrants2b
Drought Index Type 1	0.0676 (0.0719)	-0.0330 (0.0419)	-0.0434 (0.0474)	-0.0484 (0.0416)	-0.0403 (0.0422)	-0.0434 (0.0474)
Centre-state copartisanship=1	-0.104 (0.0855)	-0.00326 (0.0681)	0.00977 (0.0632)	0.0157 (0.0661)	-0.00532 (0.0681)	0.00977 (0.0632)
Centre-state copartisanship=1 x Drought Index Type 1	0.121 (0.0963)	0.157** (0.0606)	0.131** (0.0603)	0.155*** (0.0599)	0.160*** (0.0600)	0.131** (0.0603)
Constant	10.18*** (0.0608)	-9.264*** (3.494)	-0.962 (7.651)	8.872*** (0.0742)	0.936 (8.050)	-0.992 (7.630)
Observations	670	670	670	670	670	670
R2	0.355	0.633	0.712	0.630	0.634	0.712
Model F-stat	3.502	90.483	28.941	131.084	78.951	28.941
Joint-test P-value	0.015	0.027	0.117	0.035	0.028	0.117
Fixed Effects	State	State	State, Yr	State	State	State, Yr
State-specific trend	No	No	No	Yes	Yes	Yes
Other controls	No	Yes	Yes	No	Yes	Yes

Robust standard errors in paranthesis. * p < 0.1, ** p < 0.05, *** p < 0.01

Note: Dependent variable Ln non-plan grants is expressed in 2004-05 constant prices. Control variables of the respective models include Ln state domestic product (expressed in 2004-05 constant rupees), Ln population (in Lakhs), and an indicator variable capturing number of instances when President's rule was imposed under Article 356 of the Indian Constitution. Reported P-value correspond to the test of joint significance of all three parameter estimates of interest given in the table.

Response of Grants to Drought and Type of Copartisanship

While it is important to note the effects of political alignment on Central grant allocations, it is also equally important to explore the effects due to the varying nature of copartisanship. Copartisanship occurs through the same party in power at the Centre (denote as Copartisanship type 1 meaning `same party') and at the state level or due to different party providing outside support to the government (denote as Copartisanship type 2 meaning `outside support'). Two questions arise in this context: relative to the case where there is no-copartisanship (a) does grant

allocation in response to drought differ across both types of the copartisanship? (b) in response of drought, is grant allocation for copartisanship type 2 greater than that for copartisanship type 1? The rationale for posing the second question arises since it is plausible that grant allocation could be used as a tool to *appease* different political parties in power at the state (compared to the party of the Prime Minister) so that they continue to provide their support, while the need for such appeasement may not arise for the first type of copartisanship. Results pertaining to total grants are presented in Table 4.

Table 4: Types of Partisan Politics, Drought: Effects on Total Grants

		(1)	(2)	(3)	(4)
		TGrants2	TGrants2i	TGrants2a	TGrants2b
Drought	Index	-0.0265	-0.0166	-0.0226	-0.0162
Type 1		(0.0165)	(0.0142)	(0.0154)	(0.0143)
Copartisanship		0.120***	0.0658**	0.117***	0.0663**
type=1		(0.0302)	(0.0259)	(0.0313)	(0.0267)
Copartisanship		-0.0491	0.0753**	-0.0437	0.0841***
type=2		(0.0313)	(0.0312)	(0.0316)	(0.0315)
Copartisanship		0.0806***	0.0544***	0.0805***	0.0524***
type=1 x Drought		(0.0219)	(0.0188)	(0.0216)	(0.0192)
Index Type 1					
Copartisanship		0.145***	0.103**	0.134**	0.0890**
type=2 x Drought		(0.0556)	(0.0454)	(0.0562)	(0.0448)
Index Type 1					
Constant		10.73***	10.72***	3.100	1.727
		(0.0331)	(0.0639)	(2.752)	(2.468)
Observations		693	693	693	693
R2		0.897	0.927	0.898	0.929
Model F-stat		277.007	90.833	196.157	83.078
Joint-test P-value		0.000	0.000	0.000	0.000
Fixed Effects		State	State, Yr	State	State, Yr
State-specific trend		Yes	Yes	Yes	Yes
Other controls		No	No	Yes	Yes

Robust standard errors in parenthesis. * p < 0.1, ** p < 0.05, *** p < 0.01

Note: See Table 2 notes.

When there is no political alignment, total grant allocation reduces almost 2 percent with greater intensity of drought. However, the effects are not statistically significant across all models. Compared to this base case - when there is no copartisanship - states with copartisanship of the first kind on average received approximately 12 percent higher grants in a normal year. With the second type of copartisanship, states on average received 4-5 percent lower grants as compared to those without any political alignment. However, these differences were statistically insignificant and suggests that at best they received the same amount of grants in a non-drought year. Grant allocation for both type of copartisanship statistically increases (as opposed to the base case) with higher drought intensity: states exhibiting first type of copartisanship receive nearly 8 percent ($P < 0.01$) higher grants in response to drought, whereas those exhibiting the second type of copartisanship receive 13-15 percent higher grants compared to those without any political alignment with the Centre. Accounting for short-term unobserved factors which affect all states alike, however, the estimated effects for the second category not only reverse in sign, but also in their magnitude and statistical significance (Col (2) and (4)). In other words, in the absence of drought, parties providing outside support receive on average ~8 percent and ~2 percent more grants compared to the non-copartisan states and states exhibiting copartisanship of the first type, respectively. This depicts the presence of level effects across different categories of copartisanship. Furthermore, in the event of occurrence of droughts, grant allocation increases for states exhibiting both types copartisanship with higher drought intensity, but the magnitude of such response differs across both copartisanship categories. Relative to the base case, grant allocation in response to drought is 5 percent higher for the first type of copartisanship while the same for the second is approximately 9 percent. The responsiveness of grants to increasing intensity of drought is higher for the second category is a result robust across different models.

In the case of non-plan grants (see Table 5) however results are not as conclusive. Nevertheless, grant allocation in response to drought

increases and is ~15 percent (Cols (1) and (3)) higher for the copartisanship type 1 relative to the case where copartisanship is absent. The corresponding effects for copartisanship type 2 showing higher non-plan grant response to drought as in case of total grants (~17 percent) are however statistically insignificant. Thus, keeping in mind the role played by partisan politics in the allocation of non-plan grants (as in Table 3), the dominance of one kind of political alignment over the other is found. Further, evidence in favour of appeasement effect are not clear in case of non-plan grants as seen in case of total grants.

Table 5: Types of Partisan Politics, Drought: Effects on Non-plan Grants

	(1)	(2)	(3)	(4)
	NGrants2	TGrants2i	NGrants2a	NGrants2b
Drought Index Type 1	-0.0516 (0.0419)	-0.0507 (0.0476)	-0.0434 (0.0424)	-0.0419 (0.0476)
Copartisanship type=1	0.0731 (0.0763)	-0.0168 (0.0714)	0.0417 (0.0788)	-0.0461 (0.0741)
Copartisanship type=2	-0.0881 (0.0876)	0.120 (0.0890)	-0.0863 (0.0877)	0.120 (0.0895)
Copartisanship type=1 x Drought Index Type 1	0.146** (0.0635)	0.127* (0.0645)	0.154** (0.0633)	0.140** (0.0638)
Copartisanship type=2 x Drought Index Type 1	0.187 (0.126)	0.104 (0.0827)	0.172 (0.126)	0.0821 (0.0869)
Constant	8.836*** (0.0786)	9.112*** (0.170)	1.188 (8.080)	-1.743 (7.662)
Observations	670	670	670	670
R2	0.631	0.709	0.635	0.713
Model F-stat	88.217	28.565	61.824	28.798
Joint-test P-value	0.054	0.091	0.062	0.078
Fixed Effects	State	State, Yr	State	State, Yr
State-specific trend	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes

Robust standard errors in parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: See Table 3 notes.

Changing Response of Grants to Droughts and Type of Copartisanship

Grants' response to drought in the presence of political alignment could exhibit changes over time. To examine whether such effect holds true in the study's sample, the study periods are divided into two 15 year sub-periods: 1980-1994 and 1995-2009.⁶ The results for total grants and non-plan are presented in Table 6 and Table 7.

Table 6: Response to Drought and Copartisanship over Time: Total Grants

		1980-1994			1995-2009		
		(1)	(2)	(3)	(4)	(5)	(6)
		TGrants2	TGrants2a	TGrants2b	TGrants2	TGrants2a	TGrants2b
Drought	Index	-0.0384*	-0.0472**	-0.0268	-0.0340***	-0.0242*	-0.0202
Type 1		(0.0225)	(0.0210)	(0.0168)	(0.0131)	(0.0133)	(0.0147)
Centre-state		-0.0235	-0.0124	0.00367	0.0657**	0.0666**	0.0484*
copartisanship=1		(0.0308)	(0.0317)	(0.0273)	(0.0291)	(0.0290)	(0.0265)
Centre-state		0.0892***	0.0798***	0.0693***	0.0535*	0.0472*	0.0363
copartisanship=1		(0.0286)	(0.0269)	(0.0214)	(0.0284)	(0.0281)	(0.0275)
x Drought Index	Type 1						
Constant		10.89***	10.01	10.65*	9.847***	1.360	0.0337
		(0.0379)	(6.408)	(6.221)	(0.0721)	(5.118)	(4.517)
Observations		322	322	322	371	371	371
R-sq.		0.915	0.920	0.938	0.946	0.947	0.956
Model F-stat		119.009	71.428	42.320	243.970	144.959	77.848
Joint-test p-val		0.013	0.029	0.007	0.000	0.002	0.045
Fixed Effects	State	State	State	State, Yr	State	State	State, Yr
State-specific	Yes	Yes	Yes	Yes	Yes	Yes	Yes
trend							
Other controls	No	Yes	Yes	No	Yes	Yes	Yes

Note: Robust standard errors in parenthesis. * p < 0.1, ** p < 0.05, *** p < 0.01

⁶ The choice of a 15 year period is at best random, without much rationale. Analysis based on three sub-periods of 10 years each, during 1980-1989, 1990-1999 and 2000-2009 also were carried out and results were similar to two sub-period division of the sample.

Table 7: Response to Drought and Copartisanship over Time: Non-Plan Grants

	1980-1994			1995-2009		
	(1)	(2)	(3)	(1)	(2)	(3)
	NGrants2	NGrants2a	NGrants2b	NGrants2	NGrants2a	NGrants2b
Drought Index Type 1	-0.185** (0.0870)	-0.192** (0.0852)	-0.138* (0.0727)	-0.0289 (0.0390)	-0.0267 (0.0418)	-0.0300 (0.0441)
Centre-state copartisanship=1	- 0.242*** (0.0926)	-0.270*** (0.0948)	-0.203** (0.0902)	0.185** (0.0888)	0.199** (0.0894)	0.148* (0.0834)
Centre-state copartisanship=1 x Drought Index Type 1	0.327*** (0.103)	0.334*** (0.103)	0.308*** (0.0848)	0.0322 (0.0709)	0.0204 (0.0718)	0.0244 (0.0670)
Constant	9.259*** (0.112)	9.133 (18.91)	15.39 (16.99)	7.511*** (0.220)	-12.04 (20.21)	-19.31 (18.63)
Observations	308	308	308	362	362	362
R-sq.	0.598	0.604	0.677	0.707	0.709	0.766
Model F-stat	17.411	10.434	8.073	58.679	33.318	21.976
Joint-test p-val	0.003	0.002	0.002	0.079	0.089	0.214
Fixed Effects	State	State	State, Yr	State	State	State, Yr
State-specific trend	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	Yes	Yes	No	Yes	Yes

Note: Robust standard errors in parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Over both 15 year periods, grant allocation in response to drought reduced for states without any political copartisanship. While the reduction was to a relatively smaller extent in the second period, these effects remained statistically significant ($P < 0.1$) over both time periods. However, over time there has been a change in the nature of grant allocation when copartisanship was present. During the first period states with copartisanship received on average received similar level of grants⁷ during a normal year as compared to those without copartisanship. However, during the second period these effects were statistically significant ($P < 0.05$) and were ~7 percent as compared to states without copartisanship. Grant allocation in response to drought in the presence of copartisanship was ~8 percent higher compared to when copartisanship was absent and these effects were statistically significant at 1 percent level. However, these effects were weaker in the second

⁷ The t -stat corresponding to the test estimated parameter difference was 1.56, failing to reject the null hypothesis at 5 percent level of significance.

period both in their magnitude and statistical significance. In other words, the manner in which grant allocation has happened for states with copartisanship has undergone a change over time – drought as the channel through which higher grants had been provided to states with political alignment has become less important. That is, higher grant allocation to copartisan states in a normal year (when $DI=0$) has become a practice during the later period.

Non-plan grants also showed a very similar response over time. The interaction effect in the later period was insignificant implying that drought channel for higher non-plan grant allocation to copartisan states has weakened over time. Moreover, these effects were also same for both non-copartisan and copartisan states: the t -statistics testing the difference in the slope parameter of drought in the presence of copartisanship was not statistically ($P < 0.2$) different from that for the copartisanship category. However, more important to note is how the effect of copartisanship on non-plan grant allocation in response to drought has changed over time. Estimated marginal effect of copartisanship shows that in the first period non-plan grant allocation was ~15 percent lower with an average intensity drought for copartisan states as compared to non-copartisan states. In the second period however such grant allocation for copartisan states was ~20 percent higher as compared to non-copartisan states.

CONCLUSION

The present study examines in the Indian context the effect of political alignment on Central grant allocation in response to natural calamities. More specifically, the study analyzes whether grant allocation – both total and non-plan grants – in response to drought is higher when political alignment exists between the Centre and the states. Exploring on the nature of such Centre-state copartisanship, the study further examined whether types of political alignment matters for Central allocation of grants.

Total grants are not much responsive to droughts when Centre-state copartisanship is absent. However in the presence of copartisanship, total grants increase in response to drought and are 9 percent higher compared to when it is absent. Having alignment with the Centre fetches about 6 percent higher grants for states compared to when there is no alignment in a non-drought or normal year. Further, total grant allocation in response to drought is higher when states are ruled by political parties which provide outside support to the party or the coalition of parties ruling at the Centre as compared to when states are ruled by the same political party that is in power at the Centre. This could be viewed as the presence of an appeasement effect in the central allocation of grants.

In a normal year, non-plan grants received across states, irrespective of whether copartisan alignment exists between the states and the Centre, are of similar levels. Non-plan grants do not increase in response to drought in the absence of copartisanship. However, such grant allocation increases in response to drought, where the differential non-plan grant allocation response to drought between states with copartisanship and without copartisanship is ~16 percent. Favouritism towards own party seems to be present in case of non-plan grants as against effort to appease other parties providing outside support.

The study also carries out an analysis of the relationship between grant allocation response to drought and copartisanship over study sub-periods: Differentiated grant allocation in response to drought continues over its sub-periods. However, the nature of grant allocation has undergone changes over time: in the more recent times, higher grant allocation for copartisan states being given does not in any way depend on natural calamity. That is, favouritism in grant allocation is being done without necessarily it being linked through any channels such as drought or migration. The effects are more pronounced for non-plan grants.

Central assistance for addressing natural calamities has been a common practice in the Indian context. Such assistance comes mainly in view to tackle the vulnerability due to natural calamity or enhance their reconstruction and restoration efforts. Political economy factors could hardly be thought to influence the occurrence and extent of a purely exogenous natural calamity such as droughts and floods. In other words, damages suffered by any federal state from natural calamity would not depend on whether the state has politically aligned with those in power at the Centre. However, the manner in which a state responds to such natural calamity is expected to depend on political factors. In fact, recent evidence suggests that presence of such copartisan politics could enhance the efficiency with which states could manage such exogenous shocks (Parida, 2017). However, there is little evidence in the literature attributing such plausible enhancement in efficiency in managing natural disasters to one immediate implication of such copartisan politics – increased allocation of grants. Thus, in understanding the link between copartisan politics and its effects on the efficiency of disaster management, first it is important to establish whether copartisanship leads to increased grant allocation in response to natural calamities. The present study attempts to address this question.

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