Constituency Ties and the Rebel Group Behavior Amidst Natural Disasters

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Abstract

Natural disasters are increasingly overlapping with ongoing conflicts creating what scholars call *dual disasters*. However, these disasters also create 'windows of opportunity' for the government and the rebels to take unprecedented actions. While the existing literature focuses on how governments deal with natural disasters, the rebel response to these *exogenous shocks* remains an understudied area. We seek to explain the heterogeneity of rebel behavior in this context by asking: *why do some rebel groups facilitate the official relief operations during natural disasters while others obstruct them?*This behavior, we argue, is a product of the strength or weakness of the ties between the rebel groups and their constituencies in the pre-disaster settings. We show that rebels having strong ties with the people they claim to represent are more likely to facilitate relief operations by operationalizing constituency ties in terms of *ethnic affinity*, *resource dependency*, *services provision*, and the use of *indiscriminate violence*.

Introduction

The 2012 Typhoon Bopha in Thailand amounted to what scholars call a *dual disaster* – a natural disaster overlapping with existing conflict situations [1]. Not only the typhoon displaced more than a million and killed several thousand individuals[1], it overlapped with multiple ongoing conflicts which made the post-disaster relief efforts an operational challenge for the concerned authorities. The efficacy of these efforts hinged on the behavior of rebel groups active in the affected area because the government's ability to provide security to the aid workers had already been undermined due to the active insurgency in the area. Two rebel groups in the disaster stricken area – *Moro*

[1]Typhoon Bopha - Dec 2012 — ReliefWeb: https://reliefweb.int/disaster/tc-2012-000197-phl

Islamic Liberation Front (MILF) and *New People's Army* (NPA) − reacted differently to the situation. The former declared a unilateral ceasefire and allowed safe passage to the aid workers, while the later not only discouraged people from benefiting from the official relief efforts but also threatened hostile actions against the aid workers [2]. If we are to define the rebel group behavior in dichotomous terms under these circumstances, MILF *facilitated* the official relief operations, while NPA *obstructed* the official relief efforts.

These are by no means isolated events as rebel groups across various insurgencies act strategically in the wake of natural disasters. A similar situation unfolded in the midst of 2004 Tsunami, which overlapped with two ongoing separatist conflicts in Indonesia and Sri Lanka. *Free Aceh Movement* (FAM) declared unilateral ceasefire right after the Tsunami hit the Aceh province of Indonesia where these rebels laid their separatist claims, and this gesture *facilitated* the official relief efforts in the aftermath of the disaster. On the other hand, *Liberation Tigers of Tamil Eelam* (LTTE) of Sri Lanka *obstructed* the official aid operations and forced government to channel aid through their dedicated relief organ − and the government agreed to do so. Similarly, Al-Shabab in Somalia allowed only selective NGOs to operate in their controlled territory during 2011 Somalia Drought. Misappropriation of the relief aid by the group and limited access to the affected population practically paralyzed the relief operation. That said, various rebel groups adopt different strategies in the wake of natural disasters according to the circumstances in which they operate − something that increases my interest in studying these circumstances. However, the existing literature often focuses on the *government-side* of these situations and the *rebel-side* story usually goes untold.

In this regards, this paper proposes a theoretical response to the question, *"why do some rebel groups facilitate the official relief operations during natural disasters while others obstruct them?"* arising naturally from the aforementioned examples. The conditions under which which rebel groups decide either to *facilitate* or to *obstruct* the official relief efforts ought to be scrutinized closely due to two reasons: (1) *dual disasters* are becoming a frequently observed phenomenon [1] [3], and (2) the operational efficacy of the relief

operations is increasingly hinges on the behavior of the rebel groups. This should serve to strengthen the point that the policy implications of this study are manifold as governments might try to accommodate the expected rebel response to the disaster in their official disaster relief blueprints.

The main contribution of this paper is the *constituency ties* based explanation of rebel group behavior during natural disasters. We argue that the decision to facilitate − or otherwise − official relief efforts during/after natural disasters depends on the *strength* or the *weakness* of the *constituency ties* between the rebel group and the population it claims to represent. *Strong constituency ties* mean group represents a definite ethnic/religious group, refrains from using violence, and supply services and public goods to its constituency in return of resources. Such groups would be more likely to facilitate the official relief efforts than the group maintaining *weaker constituency ties*. The latter group would be afraid of loosing control due to the fear of government *wining hearts and minds* of its constituency and obstruct the official relief efforts as a result.

This paper is divided into the following sections. The first section provides an overview of the existing research and identifies the gaps to make way for the second section describing my theory of the expected rebel group behavior during natural disasters. The third section deals with the operationalization of *constituency ties* as well as *facilitation* and *obstruction* strategies of the rebel group. The fourth section discusses the research design employed in this paper and provides an overview of the data. The following section presents and discusses the outcome of our pilot study. The final section sketches a way forward extending this study.

Literature Review

The frequency of natural disasters − especially climatelogical and hydrological ones like cyclones and flash floods − is increasing [4], and so is the research on how they influence *politics as usual*. Most studies subsume natural disasters under the umbrella of climate change [5] [6] treat them as direct contributors to the conflict [7]. Other

scholars negate this direct relationship by highlighting the prevalent governance issues [8] and structural problems [5] that exacerbate with natural disasters [9], which bolsters the natural disasters as 'threat multipliers' argument [10]. An opposite strand of research led by Kelman argues that natural disasters create circumstances that foster cooperation and make way for peace among conflicting parties [11]. However, there is a lack of consensus on the relationship between natural disasters and conflict [12] despite the growing literature and use of sophisticated methods on the both sides [13] [14] [15]. This indicates the need of further research and data collection on thus topic, which is a contribution weintend to make through this paper.

Natural disasters are considered *exogenous shocks* that disrupt the *politics as usual* and have serious implications on the behavior of the actors in political arena [16]. Most studies treat them as *negative shocks* to argue from a Malthusian perspective that natural disasters exacerbate existing conditions conducive to conflict like resource scarcity[5], ethnic grievances [9], and extreme inequality or poverty [17] among others. These studies amount to the *threat multiplier* literature. On the other hand, an alternative strand of research treats them as *positive shocks*. For example, Kreutz demonstrates that natural disasters increase the likelihood of ceasefires and peace talks because governments are more willing to offer concession to the rebels due to increased pressure for diverting resources from the conflict zones to the disaster zones [18]. The studies on post disaster cooperation and strengthening of civil society demonstrate the potential of disasters as *threat reducers* [11] [19] [20] [21]. Nonetheless, a shared shortcoming of these studies is that they tell the state/government-side story of the *politics* of natural disasters and often overlook the effect of these shocks on the behavior of the rebel groups − with a few exceptions [2] [22] [23] [24]. To remedy the weaknes of literature in this regards, this paper tells the *rebel-side* story in the post-disaster settings.

This bring us to the point that if natural disasters are shocking events for the government, they are probably *equally* or even *more shocking* events for the rebel groups. Rebel groups should also feel compelled to make concessions as the governments make when

they are disproportionately affected by such shocks. On a different note, disaster relief is treated as the sole responsibility of the government in aforementioned studies, which we believe discount the role of rebel groups in providing relief to their constituencies. Recent recent literature on rebel governance by Huang, Jung, Florea, and others show that rebels have the tendency to act like a (qusai-)state (especially when they aspire to be one) [25] [26] [27]. These studies suggests that rebel groups engage in services provision to their *constituencies* [28] and even go as far as creating their dedicated disaster relief organizations when it comes to natural disasters [25]. This paper builds on this literature to explore the rebel group behavior amidst natural disasters based on the premise that rebels are as likely as the government to feel the pressure to provide relief to their constituencies when disaster strikes.

Existing research from the *rebel-side* perspective is mainly based on case studies [29] [23] [24] [22] [2]. Enia shows how natural disasters serve as a test for rebel group's functional ability to govern. She suggests that groups (like LTTE) that have the capacity to provide relief to their constituencies tend to obstruct while the groups that are unable to do so (like GAM) tend to facilitate the official relief efforts [23]. Menkhaus' research on Al-Shabab bolsters this argument. He argues that Al-Shabab was successful in monopolizing the relief operations during the 2011 Somalia Drought because its functional capacity was greater than that of the Somali government at that time [24]. Using the same case study as does Enia, Beardsley suggests that whether the group depends on its constituency for resources (taxation, donation etc.) determines whether it allows government to operate in the territory under its control or not. He shows that Free Aceh Movement facilitated official relief efforts by declaring unilateral ceasefire because it depended on its constituency for resources, compared to Tamil Tigers who obstructed the relief operations because they depended on donations from the diaspora [29]. Finally, an interview backed case study conducted by Walch in Thailand concluded that groups with strong social contract with their constituencies are likely to collaborate with the government in relief activities, while those with weak social contract obstruct them [2].

While these studies provide valuable insights into a number of cases, a shared drawback is their external validity.

The existing studies have addressed different dimensions of the same concept, which could be operationalized in a quantitative setting to combine the efforts of the scholars in the field. We argue that *constituency relations* is the *latent variable* the rebel-side studies on natural disasters deal with. However, only Walch comes somewhat close to defining it through ethnic/religious ties. On the other hand, governance provision (operationalized by Enia), the resource extraction (operationalized by Beardsley), and the strategic use of violence (operationalized by Menkhaus) are various dimensions of this concept. A quantitative operationalization that subsumes the theoretical assumptions from these studies could produce generalizable outcomes. Hence, my contribution to the literature will be: (2) providing a *constituency relations* based explanation of rebel groups' *facilitation* or *obstruction* of official relief operations, (2) improving the external validity of the existing studies on rebel groups behavior during natural disasters through a *large-N* study, (3) compiling a new dataset of rebel behavior during natural disasters for this purpose.

Theory

Natural disasters put the burden of recovery on the government that mobilizes the state resources to provide relief in the immediate aftermath of the disaster. Governments also face domestic as well as international pressure for dealing with *the wrath of god* and their inability to meet these expectation could produce reputational costs for the incumbents. Studies show that citizens punish the leaders for not effectively managing the post-disaster relief operations and often vote them out of the office [30][31]. Post-disaster grievances are expressed in the form of protests when the democratic means to express them are absent [26][32]. Simply put, *constituents punish governors when they fail to provide relief midst natural disasters.* On the other hand, rebel groups often organize themselves as quasi-states − especially when they have territorial objectives [25][27][28]. They often extract resources from the people and fulfill the functions of

a state [33] ranging from running schools and hospitals, establishing rudimentary to complex bureaucratic mechanisms [31], and going as far as having dedicated relief agencies [25]. Rebel groups − like governments − feel certain obligations towards the population they claim to represent or extract resources from − shirking from these obligations could create enormous reputational costs for them. Furthermore, groups striving for legitimacy and depending on their constituency to fund their rebellion against the state are cautious about their reputation. Such groups find themselves *between a rock and a hard place* come natural disasters.

Natural disasters can potentially undermine rebel groups' reputation and hurt their legitimacy if they are incapacitated by the disaster. They alone cannot manage the fallout of natural disasters for they have limited resources at their disposal. Governments on the other hand often receive extra resources from international community that enable them to engage in relief efforts even when they are paralyzed by the disaster [34]. However, the rebel groups experience extreme dearth in the wake of disaster. Part of the reason is that their constituency on which they, under normal circumstances, depend for resources is also devastated by the shock. Hence, *facilitating the official relief efforts is always a viable strategy for the rebel groups* to meet the expectations of their constituency. Nonetheless, to facilitate official relief efforts by allowing government into their territories includes a trade-off. Government can use additional resources at its disposal to *generously* reward the rebel constituency and potentially *win their hearts and minds*. Rebels groups whom mainstay is the *active* or *passive* support of the people they claim to represent would fear losing their constituency if relief efforts produce a *soft corner* for the government in the hearts of people previously feeling alienated by the state. On the other hand, *official relief is always better than no relief* for the rebel groups. Allowing government to *meet their (rebel group's) obligations* is a better option than starving off their constituency. However, this decision to facilitate official disaster relief operations depends on certain pre-disaster conditions.

We argue that rebel groups that are confident in the support of their constituency

are more likely to facilitate the official relief operations than the groups that are not. We call this perception *strength* of *constituency ties*. Rebels rely on the *voluntary compliance* and *passive support* of their potential supports against the state − particularly in the initial phase of the insurgency [35]. The constituency is their main source of resources, information, and shelter for the rebel groups. The more dependent a rebel group is on its constituency, the stronger its ties are with the latter and the more cautious it is of its reputation. If the constituency views rebel group as its *representative*, it can harbor expectations that extend beyond *fighting for our rights* type thinking and more into the welfare of the constituency. This mirrors the state relations with its citizens to a certain extent. *The presence of special ties between the governor and the governed − or in rebels case the representative and the represented − creates reciprocal expectations and obligations.* Constituency could expect *extraordinary* behavior from the rebel groups come natural disasters and force them to facilitate the official relief operations in their constituent territories. Hindering these efforts could disgruntle the constituency and weaken the ties on which the rebel groups rely in the fight against the government. Facilitation, on the other hand, would strengthen their ties with their constituency because it would demonstrate the group's concern for the welfare of the people. The expected behavior is expressed in the following statement:

H1: *Rebel groups with strong ties with their constituency are more likely to facilitate the official relief efforts during natural disasters.*

Rebel groups with weak ties with their constituencies have a relatively clear strategy considering they do not enjoy the same level of local support as do the groups with strong ties. Neither people would expect these groups to make concessions towards the government, not the group would feel obliged to facilitate official relief efforts. As a matter of fact, these groups would like the government to keep away from their area of influence because they would feel greater fear of people defecting to the government's side. Their

reputational concerns would be less pressing because their constituency ties being already weak. Lack of trust between the group and the constituency would enforce a greater need to maintain control for the former. Hence, they would rather starve people than letting government undermine their position in their territory.The expected behavior is expressed in the following statement:

H2: *Rebel groups with weak ties with their constituency are more likely to obstruct the official relief efforts during natural disasters.*

The following section breaks down the *constituency ties* into various dimensions. The expected mechanism linking rebel group behavior to official relief operations after natural disasters is presented in the Figure 1.

Constituency ties are determined by a group's affinity to the population it claims to represent as well as are expressed in the interaction between them. The main determinant of the strength of a group's ties with its constituency is kinship. Ethnicity helps a rebel group delineate the *boundaries* of its constituency. Shared experiences serve to strengthen these ties and the rebel group could occasionally invoke the common ethos to rally support from its constituency. People would have higher expectations from such groups and they would feel compelled to assist them when disaster strikes. These groups would have a clear strategy − facilitation − in the trade-off between welfare of their constituency and potentially losing their position in their sphere of influence because groups representing a historically oppressed ethnic or religious minority would be less concerned about the government winning hearts and minds of its constituency. *One time efforts* like disaster relief − considering there are no long term initiatives involved − would not be enough to remedy the decades long grievances. Hence, a group would feel confident of the loyalty in its constituency and allow government to provide them relief. Doing otherwise, however, would hurt its legitimacy because people would expect the group to

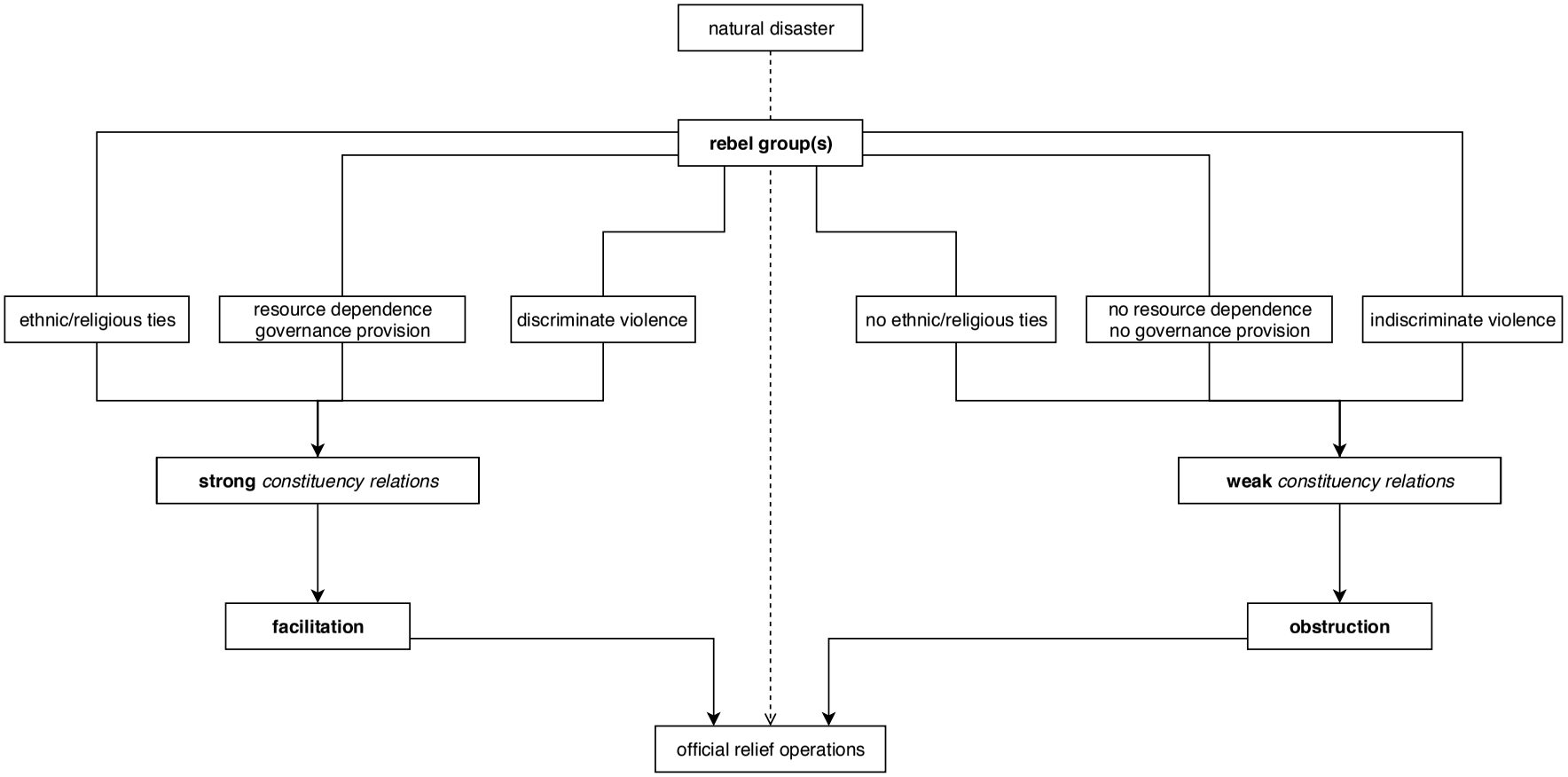

Figure 1: Expected mechanism of rebel groups during natural disasters.

make *concessions* on their behalf in desperate circumstances. *Such group would let the devil in instead of starving its people.*

H3: *Rebel groups representing an ethnic constituency are more likely to facilitate the official relief efforts during natural disasters.*

A rebel group's dependence on the population it claims to represent for material resources is another dimension of constituency ties. Such dependence creates obligations on the rebel side. Unless group engages in predation and extracts resources with coercion, any form of material transfer from the people demonstrates a voluntary compliance with the rebel group of its constituency. Such groups would act cautious during the natural disasters as attempts to obstruct official relief activities would hurt their reputation and might potentially cut off their resource lifeline. On the other hand, natural disaster create acute scarcity of resources in the disaster area and decrease the surplus people donate to the rebel groups in pre-disaster settings. Quick rehabilitation from the disaster means pre-disaster level availability of resources for the rebel group. Hence, such groups would also facilitate official relief efforts our of a sheer interest. On the other hand, rebel groups would have fewer concerns of this nature when they have access to the lootable resources or depend an external sponsors. These groups would try to keep the government away from their territories especially when increased presence of state could potentially hinder their ability to extract resources. Similarly, material independence of a group translates into lower concern for reputation and welafre of their constituency. Such groups would appear to have *a bigger fish to fry* than addressing the *momentary* grievances of their people. LTTE's initial decision to obstruct the official relief efforts have partially been attributed to the resource independence from its constituency [29]. They nonetheless decided to facilitate these efforts due to their ethnic ties with their constituency under the mechanism described above.

H4: *Rebel groups depending on their constituency for material resources are more likely to facilitate the official relief efforts during natural disasters.*

Rebel groups and their constituencies often develop symbiotic relationship with the latter providing resources and the former establishing some level of governance [25] [28]. The presence of these *reciprocal obligations* demonstrates strong constituency relations and discontinuity of such goods and services would create resentment among the constituency that would expect some *return on their investments*. Natural disaster disrupts the rebel governance mechanisms on one hand, and increase the constituency's expectation of governance on the other. This increase the pressure on the rebel group facilitate the official relief efforts to meet such expectations. Such groups might also *sell* the official relief efforts as *keeping their end of the bargain*. They could occasionally press on the government to channel aid through rebel affiliated organizations like LTTE did [23]. Nonetheless, even such moves to *monopolize* relief operations could be considered as facilitation as the constituency is usually aware of the government as the main source of aid. On the other hand, groups that neither depend on their constituency for resources not provide them services indicate the absence of a symbiotic relation, and hence weak constituency ties. Such groups would be more likely than others to obstruct the official relief operations.

H5: *Rebel groups providing services to their constituency in pre-disaster settings are more likely to facilitate the official relief efforts during natural disasters.*

Rebel group's reliance on violence as a mode of control indicates the strength or weakness of its *constituency ties*. Rebel groups refrain from using violence against their constituency when feel their are in control [36] [37]. The use of violence is also a self-defeating strategy as it increase the likelihood of constituency defection [38]. Moreover, the greater the trust and the cooperation between constituency and the group is the less

likely the group is to engage in violence against its constituency [39]. On the flip side, a group would resort to violence as a mode of control against its constituency if it senses the latter would defy it. Such groups would be highly concerned about the government winning hearts and minds of the people. Such groups would go to great lengths to obstruct the official relief operations. On the other hand, absence of violence against constituency indicates strong constituency ties. These groups would be less concerned about defection and would allow government to operate in their constituencies during the disaster.

H6: *Rebel groups refraining from using violence against their constituency are more likely to facilitate the official relief efforts during natural disasters.* **Not tested in this paper.**

Dependent variable

Operationalization of *facilitation* and *obstruction* is a tricky part. *Facilitation* amounts to any step taken by the rebel group that allows the official relief operations to function without disruption. These steps include unilateral declaration of civil wars, acceptance of official ceasefires, allowing government to engage in relief efforts in rebel controlled territories, declaration of safe passages, offers to assist in disaster relief, no attacks on officials and aid workers. On the other hand, *obstruction* means rejection (or violation) of ceasefire, threats against aid workers, attacks on official targets, allowing selective organizations to operate, discouraging/threatening people from benefiting from official relief efforts. In other words, obstruction is any step taken by the rebel group that disrupts the official relief operations.

We have decided to explore the cases where (1) both parties (government and the rebels) unilaterally declare ceasefires or (2) both parties agree to cease hostilities in the wake of disaster. Kerutz operationalize this definition to explore the possibility of conflict resolution in the wake of natural disasters.[18] His data provides a ready to use set to dyads that we use to code our variables of interest from other datasets. We consider

his operationalization relevant to our pilot study because ceasefires constitute the most meaningful gesture of cooperation from the rebel-side. Rejection of ceasefire, on the other hand, signals obstruction. The dependent variable is thus coded in binary terms: 1 meaning facilitation and 0 meaning obstruction.

Independent Variables

The data on natural disasters is availed from the Emergency Events Database (EM-DAT). an event or situation is classified as a *disaster* event by Emergency Events Database (EM-DAT) if one or more of the following criteria are met: (1) Ten or more people reported killed, (2) one hundred people reported affected, (3) it leads to the declaration of a state of emergency, (4) it leads to calls for international assistance [40]. This database is updated regularly and provide data on the type, deaths, displacement, and location of the natural disaster among other information. We code the *type*, the *count* or number of disaster, the *intensity* of disaster on a logarithmic scale based on the number displacements, and the *location* of the disaster. Location is particularly important because we use it to decide whether the disaster occurred in a conflict zone or not. If the location overlaps with or is proximate (100 miles) to the *conflict location* in UCDP dataset, we code the disaster as an event occurring in the rebel territory.

We use Reyko Huang's *Rebel Governance Dataset* to code the rebel dependence on civilians for material resources [25]. We used our subjective judgment based on internet research for the groups excluded from Huang's dataset. We code *constituency dependence* as 1 when rebels exclusively depend on civilians for material resources and 0 when alternative sources like foreign support, natural resources, crime and other are at their disposal. We rely on data from Megan Stewart to code *governance*. Stewart classifies rebel territorial control depending on the provision of inclusive and non-inclusive services [41]. We coded only inclusive services for this project assuming that those rebel groups are more concerned about the continuity of services in the wake of natural disasters.

The variable we use is based on the count of inclusive health and education services as a proxy of governance provision. The ethnic relations of rebel groups are identified through ACD2EPR dataset which link ethnic groups from the Ethnic Power Relations dataset directly to UCDP conflict actors [42]. The *ethnic constituency* variable is coded as 1 for the groups supported by majority of the ethnic group according to the ACD2EPR dataset, and 0 otherwise. We use *territorial control* [41], *hostility* among dyads indicated by aggregate battle deaths [18], and *duration* of conflict [41] as control variables. Existing studies indicate that rebels are more likely to cooperate when hostility is low [2]. On the other hand, the probability of peace is higher when conflict is ripe [18]. We test this assumptions against our theory.

Our data however temporally restrained. It only includes cases from 1990 to 2005. The unit of analysis is dyad-year and the sample is restricted observations in which natural disasters occur.

Results

Table 1. represents estimates for rebel-side facilitation during natural disasters based on basic assumptions. We run the base model for all disasters as well as disasters occurring in the conflict zones − literature uses the term *dual disasters* for the latter. We would like to remind the reader that natural disasters must occur in the conflict zone for our theoretical model to operate so we would like them to treat the model with *all disasters* as reference model. Sample size for *dual disasters* is small because of the limited number of such instances. However, it is sufficient for drawing meaningful inferences. The likelihood of facilitation decreases when disaster hits a conflict zone where ethnic rebel groups are active. This contradicts out theoretical expectations but nothing conclusive can be inferred because the effect is statistically insignificant. Services or governance provision also has negative yet statistically insignificant impact.

Rebel dependency on its constituency for material resources has the most pronounced and statistically significant effect. These findings are in line with our theoretical expecta-

tions that rebel groups depending on their constituency for material resources would be more likely to cooperate with the government in relief and rehabilitation efforts to appear sympathetic to their people. Doing otherwise would disillusion the constituency and it might stop supporting the rebels. Quick rehabilitation of constituency is also important for the rebels because it would resume the supply of resources that disasters usually interrupt. We feel compelled to add a caveat here: these results are far from conclusive due to data limitations. However, they do set a direction for further research. Figure 2. illustrates the findings based on the Model 2.

Table 1: Logistic regression estimates for rebel-side facilitation during natural disasters.

	Model 1	Model 2
	All disasters	*Dual disasters*
Ethnic constituency	-0.284	-0.651
	(0.454)	(0.684)
Constituency dependence	-0.316	**1.586**
	(0.422)	**(0.763)***
Governance provision	-0.0332	-0.0154
	(0.028)	(0.044)
Constant	-1.326	-0.523
	(0.569)*	(0.817)
Observations	348	60
Pseudo R^2	0.01	0.06
LLR	-111.98	-35.18
χ^2	3.17	4.56

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$

We proceed to test our model against various control variables. Research based on *ripeness of conflict* literature suggests that natural disasters serve as tipping points in conflict resolution for protracted conflicts [18]. Another strand of research suggests that hostility among warring parties hinders cooperation during natural disasters [2]. We control for duration of conflict, hostility among government-rebel dyads, territorial control, and intensity of disaster variables to our base model. Territorial control is important because the rebels might not like the withdraw from or allow government to enter their

control territories. We expect a negative effect on facilitation here. Lastly, we expect to see a positive effect of intensity of disaster on rebel facilitation of official relief efforts because they might feel compelled to cooperate when tens of thousands of people are affected compared to a scenarios where only a few hundred are. Assuming rebels are totally incapacitated by the magnitude of the disasters that they have no other option than facilitating the relief efforts. Table 2. represents our findings in this regards.

The direction of estimates does not change. Constituency dependence loses its significance at two-tailed test but directional hypothesis still holds after adding the intensity of disaster variable. Intensity or magnitude of the disaster does force rebels to cooperate with the government but the effect is statistically insignificant as shown in the Model 4.

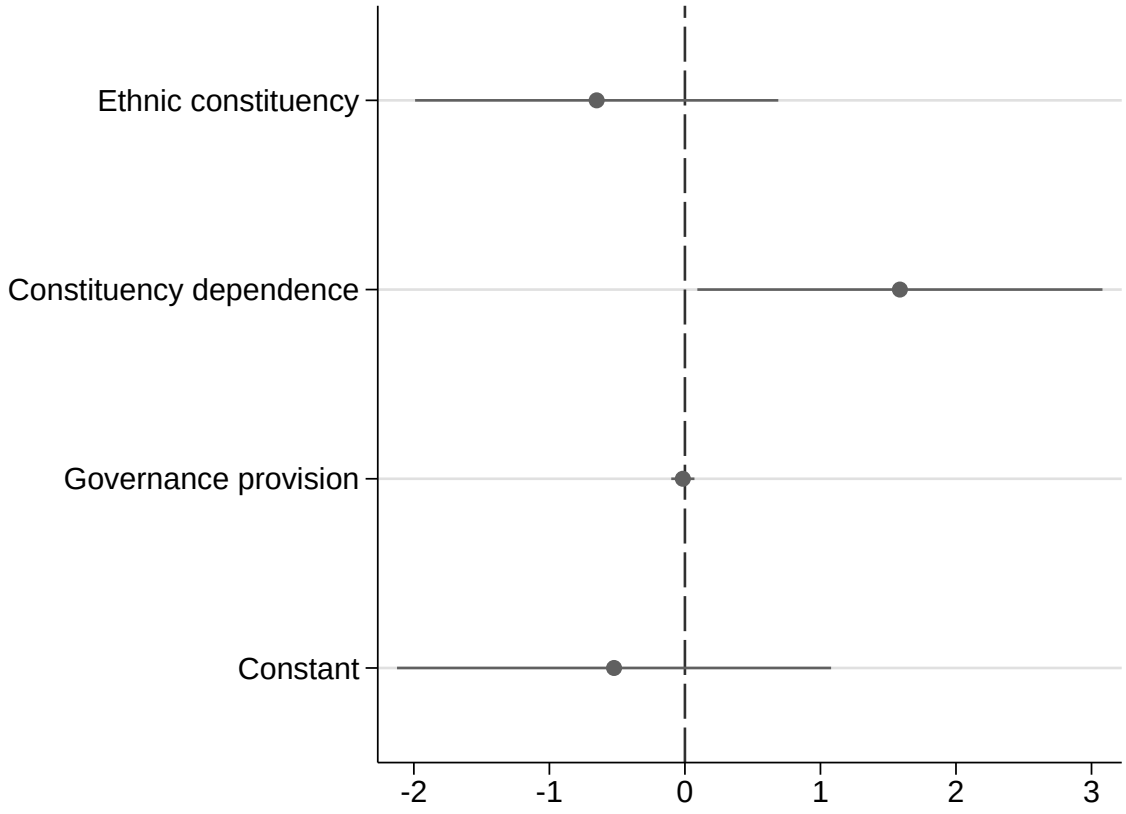

Figure 2: Logistic regression estimates for rebel-side facilitation during natural disasters.

Duration of conflict and level of hostility between dyads produce counter-intuitive results. However, we can ignore them because their magnitude is minute and they are statistically insignificant. The effect of rebel dependence on constituency for material resources strengthens when we control for other variables indicating a strong constituency ties between such rebel groups and the people they claim to represent. These findings suggest the direction of further research with some level of confidence. Figure 3. illustrates the findings based on the Model 6.

Table 2: Logistic regression estimates for rebel-side facilitation during natural disasters.

	Model 3	Model 4	Model 5	Model 6
	All disasters	*Dual disasters*	*All disasters*	*Dual disasters*
Ethnic constituency	-0.351	-0.819	-0.536	-1.028
	(0.475)	(0.735)	(0.516)	(0.856)
Constituency dependence	-0.412	**1.489**	-0.345	**2.169**
	(0.473)	**(0.863)**	(0.484)	**(1.034)***
Governance provision	-0.0485	-0.0302	-0.0587	-0.0768
	(0.031)	(0.052)	(0.033)	(0.067)
Intensity of disaster	0.0584	0.0501	0.0614	0.0187
	(0.062)	(0.109)	(0.064)	(0.116)
Territorial control			0.215	0.0759
			(0.459)	(0.927)
Hostility			0.000822	0.00163
			(0.001)	(0.002)
Duration of conflict			0.00139	-0.00117
			(0.002)	(0.005)
Constant	-1.684	-0.831	-1.896	0.251
	(0.914)	(1.661)	(1.011)	(2.003)
Observations	310	57	307	56
Pseudo R^2	0.03	0.06	0.03	0.10
LLR	-95.60	-32.30	-94.33	-30.77
χ^2	5.91	4.85	7.84	7.20

Standard errors in parentheses

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

Table 3: Logistic regression estimates for rebel-side facilitation during natural disasters.

	Model 2	Model 4	Model 6
	Dual disasters	*Dual disasters*	*Dual disasters*
Ethnic constituency	-0.651	-0.819	-1.028
	(0.684)	(0.735)	(0.856)
Constituency dependence	**1.586**	**1.489**	**2.169**
	(0.763)*	**(0.863)**	**(1.034)***
Governance provision	-0.0154	-0.0302	-0.0768
	(0.044)	(0.052)	(0.067)
Intensity of disaster	0.0584	0.0501	0.0187
	(0.817)	(0.109)	(0.116)
Territorial control			0.0759
			(0.927)
Hostility			0.00163
			(0.002)
Duration of conflict			-0.00117
			(0.005)
Constant	-0.523	-0.831	0.251
	(0.817)	(1.661)	(2.003)
Observations	60	57	56
Pseudo R^2	0.06	0.06	0.10
LLR	-35.18	-32.30	-30.77
χ^2	4.56	4.85	7.20

Standard errors in parentheses

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

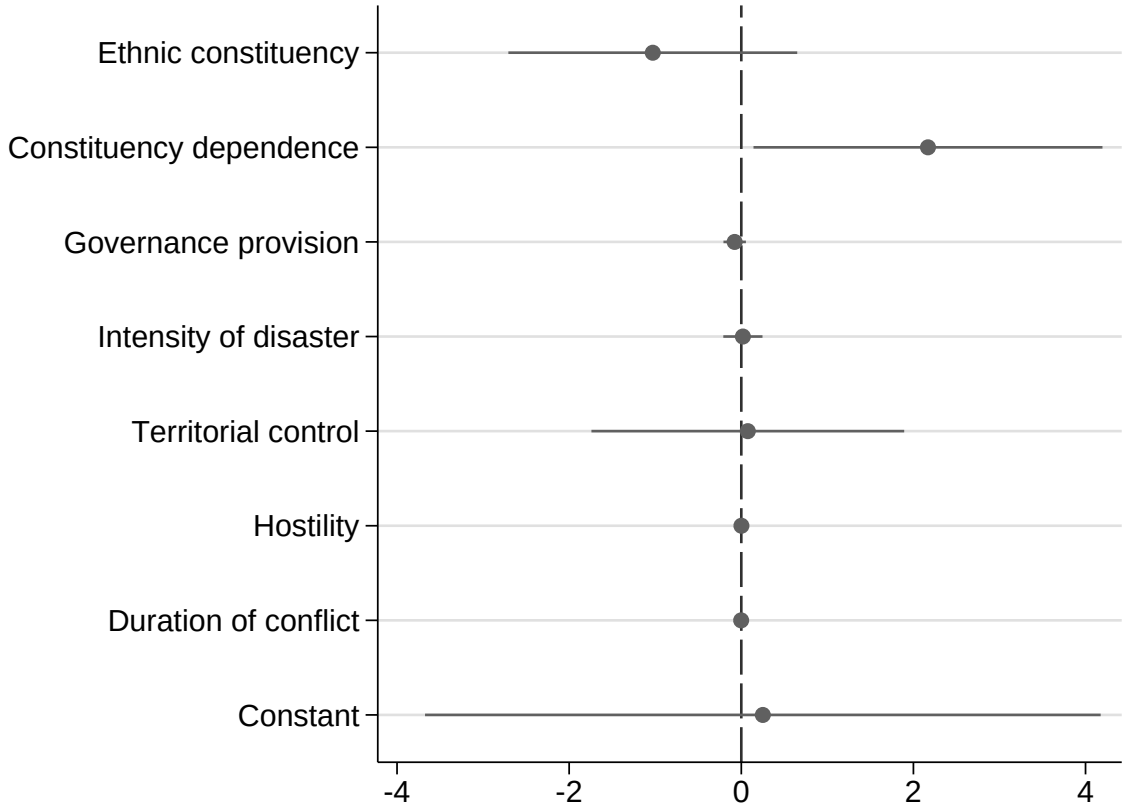

Figure 3: Logistic regression estimates for rebel-side facilitation during natural disasters.

If we are to summarize the findings of our analysis: we find partial support for our main hypothesis (H1) because only constituency dependence hypothesis (H4) is supported by the data.

4.pdf

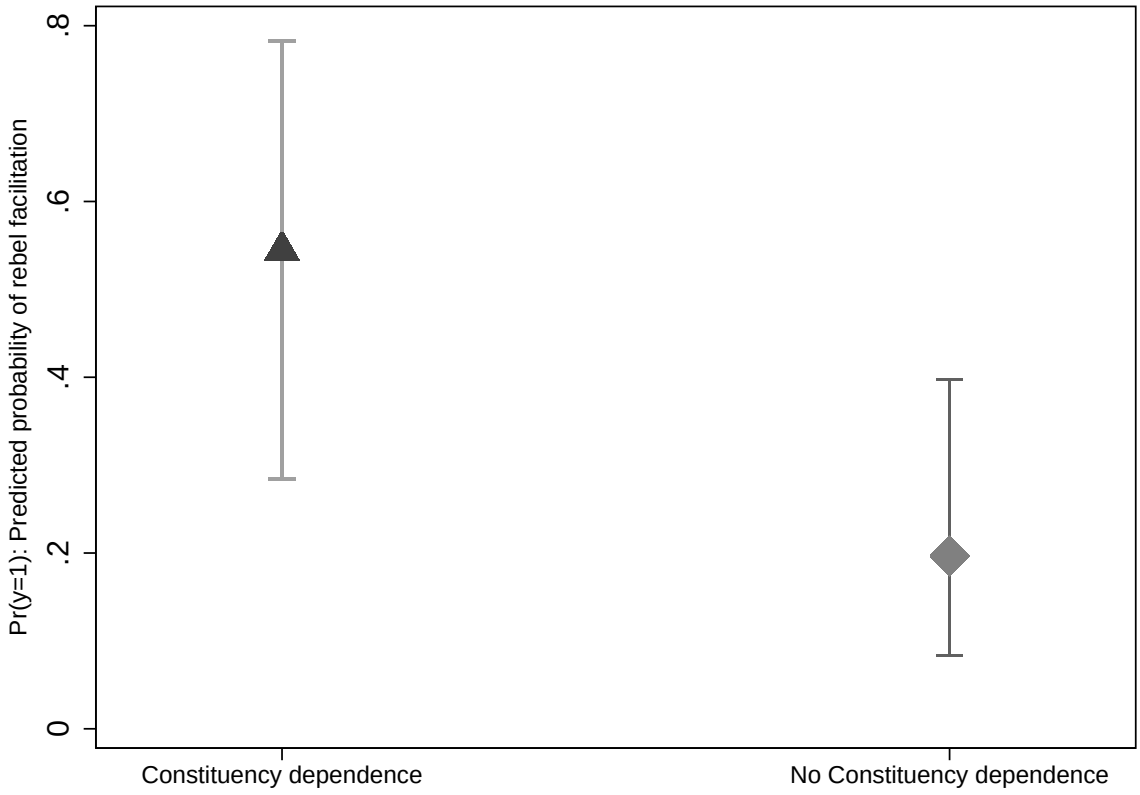

Figure 4: Out of sample estimates for the effect of constituency dependence on rebel-side facilitation during natural disasters.

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