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Military Forces, Coercive Signals, and Disaster Response Effectiveness

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Abstract: Why do governments deploy their armed forces to respond to certain foreign natural disasters but not others? What factors influence successful coordination between national and foreign militaries implementing disaster response activities once on the ground? We argue that when relief-sending countries deploy their military forces to respond to natural disasters abroad, they can signal their hard power capabilities to the crisis-affected government as well as the other foreign governments involved in disaster response. These strategic considerations directly shape foreign governments' decisions to deploy their military forces and a crisis-affected government's decision to accept these forces. These strategic considerations likewise constrain on-the-ground coordination between foreign and national militaries involved in the response. By leading governments to prevent and/or stall the provision of critical services and aid to crisis-affected individuals, these strategic considerations can negatively influence the effectiveness of disaster response. We assess our argument through three in-depth case studies of the 2013 Typhoon Haiyan in the Philippines, the 2011 Tohuku Earthquake and Tsunami in Japan, and the 2015 Earthquake in Nepal. **DOI:** [10.1061/(ASCE)NH.1527-6996.0000422](). © *2020 American Society of Civil Engineers.*

Introduction

Although governments increasingly dispatch military personnel and equipment to respond to natural disasters abroad (Hofman and Hudson 2009), the type and number of military assets deployed varies significantly among disasters. For example, when several severe earthquakes struck the Padang and West Sumatra provinces of Indonesia in September 2009, killing over 1,100 people and damaging 180,000 houses, the United States deployed over 65 military personnel to provide medical services, conduct aerial assessments of affected areas, and deliver aid (Pierce 2009; Moroney et al. 2013, p. 41). Less than a year later, abnormally heavy rainfall and flash floods in Pakistan affected more than 20 million people, killed nearly 2,000, injured more than 3,000, and damaged over 2 million homes (Moroney et al. 2013, p. 59). Despite the greater magnitude of the damage and humanitarian need, the US military contribution was relatively small in scale—a handful of personnel operating aircraft to support aid distribution (Moroney et al. 2013, p. 57).

Why did the US deploy relatively fewer military assets to the disaster with a higher level of humanitarian need? The disparity between US military deployments to these two different disasters is even more puzzling, considering that governments can gain distinct benefits when they dispatch their militaries to assist a country affected by a natural disaster. By assisting in relief efforts, foreign militaries can improve their reputations abroad and diversify their role as armed forces are shrinking across the globe (Hofman and Hudson 2009; McCulloch 2014). Similarly, providing military assistance to disaster victims can boost a foreign government's soft power (Nye 1990, 2009; Heng 2015) and build trust with allies

(Flynn et al. 2019), particularly because militaries are often the only institutions that possess the workforce, equipment, and training needed to deliver aid, carry out damage assessments, restore communication networks, conduct search and rescue operations, and provide medical assistance after devastating natural disasters (Engstrom 2013; Strategic Comments 2014; Chong and Lee 2018).

Although academics and policymakers argue that politics and aid provided in a disaster aftermath are inexorably linked (Olson and Drury 1997; Drury and Olson 1998; Olson and Gawronski 2010; Siddiqi 2014), scholars have neither examined how strategic considerations motivate governments' deployment of their military assets nor how these considerations influence intermilitary coordination and the overall effectiveness of disaster response. The majority of the relevant scholarship focuses on civil-military relations to identify the obstacles that impede coordination between civil and military actors (e.g., Pugh 2001; Heaslip and Barber 2014; Malešič 2015; Raja et al. 2017). As such, we know little about how military participation in disaster relief operations influences the actual effectiveness of disaster response, particularly when multiple regional powers—and countries engaged in territorial disputes—deploy their military personnel to respond to the same natural disaster.

Although seemingly benign, we argue that countries' deployment of military assets in response to natural disasters abroad serves broader strategic goals, particularly in terms of security competition. Military force deployment to disasters abroad can signal hard power because the operational tactics, logistical procedures, and hardware used in a disaster response directly overlap with those used in traditional combat missions. Most foreign military deployments to natural disasters occur through direct, bilateral interactions between governments and rarely through the United Nations (UN) (Wiharta et al. 2008). Therefore, foreign governments can strategically demonstrate their military capacity and send coercive signals to either the crisis-affected government or other foreign forces also participating in the disaster response.

Through participation in the disaster response, foreign governments can also enhance combat readiness and collect information about the military capacity of the crisis-affected government or other governments that also send military assistance.

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These strategic considerations lead governments to deploy military assets in ways that impede an effective disaster response. First, governments may send armed forces to respond to disasters abroad, but not because of need, producing an overlap in services and overloading the logistical capacities of national forces that coordinate foreign military assets. Second, crisis-affected governments may refuse to accept foreign military assistance or heavily restrict the movement of foreign military personnel in the country, impeding effective service delivery and potentially increasing the loss of life. Third, foreign governments may actively refuse or substantially delay the deployment of their armed forces to natural disasters, thereby stalling or preventing crisis-affected communities from receiving critical services and aid. Although power rivalries, territorial disputes, counterterrorism operations, or other forms of low-level conflict will exacerbate the negative effect of strategic considerations on disaster response effectiveness, we expect that these considerations will also influence coordination between allies. For example, despite the US and Pakistan's long-standing security partnership, US officials believed that Pakistani officials were reluctant to accept US military assets because they perceived the US as encroaching on Pakistani sovereignty (Moroney et al. 2013, p. 57). Finally, strategic considerations may stymie successful coordination and information transmission between the national and foreign militaries on the ground, again creating gaps or overlaps in disaster response.

We develop our theoretical expectations through three in-depth case studies of the 2013 Typhoon Haiyan in the Philippines, the 2011 Tohoku Earthquake and Tsunami in Japan, and the 2015 Earthquake in Nepal. These case studies allow us to trace how macrolevel strategic decision-making translates to microlevel coordination between national and foreign militaries involved in disaster relief activities. We selected these cases because they provide multiple leverage points to assess the relationship between strategic considerations, military force deployment, and disaster response effectiveness. These countries also differ in terms of their bilateral relations with relief-sending countries predating the disaster onset; in particular, they are differentially affected by regional rivalries and territorial disputes. Moreover, the crisis-affected countries in these cases vary substantially on factors that scholars identify as important for disaster response effectiveness, including population size, economic development, military capacity, and disaster preparedness infrastructure (Cutter et al. 2008; Cutter 2016), allowing us to isolate the relationship between strategic considerations and military deployment to natural disasters.

Our findings make several distinct contributions to the existing scholarship. First, scholars highlight the need for the integration of traditional international relations theory and disaster studies (Hollis 2018). By integrating these literatures, we provide critical insight into how political and security interests at the national-level can influence patterns in the organizational-level behavior of foreign and national military personnel. Second, by systematically assessing patterns of deployment and coordination between foreign and national militaries across multiple natural disasters, we can make generalizable inferences about how these national-level strategic considerations for deployment translate into obstacles that impede effective disaster response. Lastly, we build on existing literature that identifies the differential structure and design of key civilian and military response organizations as potential obstacles to coordination and information sharing in large-scale natural disasters (e.g., Burkle and Hayden 2001).

We demonstrate that strategic considerations may disincentives foreign and national militaries from integrating their command and control structures and participating in critical coordination and information-sharing mechanisms. Our findings also have policy implications for stakeholders involved in disaster response. As countries increasingly deploy their militaries to participate in disaster relief operations, identifying factors that increase the likelihood of coordination breakdown is critical for avoiding higher casualties and the loss of life.

This article proceeds as follows. First, we outline existing explanations, highlighting how soft power benefits and breakdowns in civil-military coordination neither explain patterns in countries' deployment of military forces to natural disasters nor subsequent interactions between foreign and national militaries on the ground. Second, we develop our theoretical argument. Next, we discuss the methods we use to assess our claims. We then describe our findings and conclude by discussing policy implications and directions for future research.

Existing Literature

To our knowledge, few scholars have examined how governments' motivations for providing aid to disaster-affected countries influence coordination on the ground. Scholarship highlighting specific benefits of foreign aid provision focuses on how countries strategically build their *soft power* by deploying military forces in disaster response. Soft power is a country's ability to secure its interests by *attracting* countries to its policies and *persuading* them to cooperate through inclusive and legitimate actions, rather than coercion or payments (Nye 2009). Specifically, this scholarship suggests that foreign military participation in disaster relief strengthens diplomatic relations (Forster 2015; Karadag 2017) and goodwill between sending and receiving countries (Thompson 2005; Feinsilver 2010; Koukis et al. 2016; Whittaker et al. 2018).

Highlighting this mechanism, scholars argue that military participation in disaster response decreases the likelihood of conflict between two rivalrous countries (Zhang 2006; Streich and Mislan 2014). For example, scholars argue that tensions between China and Japan—two states with a long-standing rivalry and dispute over the Senkaku/Diaoyu Islands—decreased after China deployed 15 rescue personnel to assist Japan's recovery after the 2011 Tohuku Earthquake and Tsunami (Streich and Mislan 2014). Deploying forces to perform disaster relief activities may also bolster the credibility of a country's alliance commitments (Carnegie and Dolan 2015), potentially improving the sending country's relationship with other third-party governments (Elleman 2007).

Additionally, when a government deploys its military to assist a crisis-affected country, it can bolster its national image, particularly its reputation as a regional or global power (Peterson 2002; Kuusik 2006; Carnegie and Dolan 2015; Whittaker et al. 2018). Scholarship demonstrates that the US registered record levels of public goodwill by deploying its military to Japan after the 2011 Tohuku Earthquake and Tsunami (Capie 2015) and to the Philippines after the 2013 Typhoon Haiyan (Forster 2015). Similarly, both China and Japan justified their deployment of troops to natural disasters abroad because this is how "responsible superpowers act" (Bergin 2012; Engstrom 2013). Under former Chinese President Hu Jintao's New Historic Mission—which aimed to perform international roles underscoring superpower status—the government increased spending to train and equip the People's Liberation Army (PLA) to implement force projection contingencies in nonconflict, nontraditional security events (Bergin 2012; Engstrom 2013). South Korea also pursued a strategy of increased military participation in disaster responses to position itself as "a global actor with broad horizons that engages proactively with the international community in the service of peace and development in the world" (Bergin 2012; Engstrom 2013).

However, scholarship on the reputational and soft power benefits of providing foreign aid neither explains the variation in the types of foreign aid sent to disasters nor recognizes that hard-power strategic considerations may influence countries' decisions to deploy their military forces instead of sending other types of aid. As elaborated subsequently, we fill these critical gaps by highlighting that deploying military forces in a disaster response uniquely benefits countries seeking to project their hard power because the skills and capacities that militaries need to respond to disasters effectively mirror those needed to engage in combat operations successfully.

While relatively more attention focuses on the relationship between coordination breakdowns and overall disaster response effectiveness, this scholarship concentrates on obstacles to coordination between militaries and civilian actors, including nongovernmental organizations. This scholarship identifies a variety of cultural, organizational, operational, and normative differences between civil and military organizations that increase the likelihood of coordination breakdowns (Jeong 2005; Franke 2006; Heaslip 2012). Differences in these organizations' structures can also lead to disputes between military and humanitarian actors over the scope of their mandates, which results in the overlapping or nonprovision of aid (Jenny 2001; Hall and Cular 2010; Lamichhane 2016). In particular, this scholarship emphasizes that differences in civil and military organizations' management styles, administrative structures, and standard operating procedures prevent the establishment of collaborative supply chain strategies (Heaslip 2012).

Because intermilitary coordination in disaster response is understudied and undertheorized, we know little about the types of obstacles that foreign and national militaries face. Because militaries often vary in terms of their standard operating procedures, chains of command, available equipment and machinery, and communication and logistical infrastructures, they may also face difficulties in reconciling these differences in the wake of a disaster. As we elaborate subsequently, when governments deploy forces according to strategic, hard power considerations, military personnel may refuse to coordinate with other foreign militaries or stymie the integration of resources and capacities with that of the national military, ultimately impeding effective disaster response.

Theory

Recognizing that countries may have strategic considerations for sending military assets to natural disasters, the UN tried to establish norms that ensure foreign militaries are only deployed as a last resort (UN DHA 1994), and when they are deployed, they are done so in an impartial and neutral manner (Wiharta et al. 2008). As outlined in the United Nations Office for the Coordination of Humanitarian Affairs' (UN OCHA) *Guidelines on the Use of Foreign Military and Civil Defense Assets in Disaster Relief*, also known as the Oslo Guidelines, countries can deploy foreign military assets only if they meet a genuine humanitarian need, operate in accordance with humanitarian principles, and contribute to and coordinate with the other components of the relief effort (UN DHA 1994; OSOCC 2014). These guidelines aim to optimize the use of foreign military assets to support priority humanitarian requirements, like filling capacity gaps in transportation, health and medicine, communications, and information management, among other operational issues (Reario 2015; Simm 2019). Regional multilateral frameworks in East Asia, like the Association of Southeast Asian Nations (ASEAN) Agreement on Disaster Management and Emergency Response (AADMER), similarly emphasize the importance of sending and receiving countries to coordinate their civil-military responses (ASEAN 2010). In 2018, ASEAN established the

Militaries Ready Group, which aims to strengthen multilateral coordination of ASEAN member states' militaries when responding to natural disasters in Southeast Asia (AHA Center 2017).

Because most established international and regional coordination mechanisms exclusively focus on facilitating civil-military coordination, foreign military personnel and the armed forces of crisis-affected governments generally establish coordination mechanisms on a bilateral and ad hoc basis after a crisis onset (Wiharta et al. 2008). The bilateral and extemporary nature of intermilitary coordination allows both assisting and receiving governments to strategically deploy and constrain the movements of military forces to different disaster contexts. Moreover, we highlight that because governments can use the deployment of military force to send coercive signals to recipient governments and/or other foreign governments, coordination breakdowns in disaster response manifest at the local and national levels.

Deploying Military Forces to Respond to Disasters as a Coercive Signal

Scholars have conceptualized how a government's exercise of hard power—namely, its use of material resources and military clout—can compel other governments to behave in ways that are contrary to their initial preferences and strategies (Capie 2015). We argue that the deployment of military forces to natural disasters can be perceived as an exercise of hard power and/or a demonstration of a government's wartime military capacity because the tactics, techniques, procedures, and equipment used in disaster response operations often overlap with those used when conducting traditional military operations. Many stakeholders involved in humanitarian assistance and disaster relief operations draw parallels between the aftermath of a natural disaster and the operational context in which combat operations take place. For example, crisis-affected communities are often characterized by a lack of governance, which is also common in conflict zones (Chong and Lee 2018). In some cases, natural disasters strike in the midst of ongoing combat operations. For example, in September 2013—just one month prior to Typhoon Haiyan—the Philippine army clashed with the Moro National Liberation Front, affecting over 118,000 people, of which 65,000 were still displaced when the typhoon hit the country (CFE-DMHA 2015a).

Moreover, because natural disasters are unpredictable and an effective response must be immediate, governments need the logistical capacity for rapid regional and/or global military deployment. Doing so requires that a government has a regional—or global—system of command and logistics networks to coordinate and quickly move people and resources across large distances for sustained periods of time (Southerland 2019). These networks are necessary for establishing aerial, naval, and information superiority, carrying out precision engagement, and providing agile combat support (Engstrom 2013; Chong and Lee 2018). The dual nature of logistical capabilities needed in combat and noncombat deployments is illustrated in *The Science of Military Strategy*, a book published by the PLA in 2013 (Chinese Academy of Military Science 2013), which stresses the similarities between the requirements for disaster relief and combat operations and asserts that the PLA can use disaster relief operations to test its combat readiness (Southerland 2019).

Deploying forces for foreign disaster responses also requires that governments have significant resources and personnel capacity (Engstrom 2013). Specifically, militaries must have enough personnel with overlapping skills and specializations for the government to send a contingent of troops abroad for an extended period of time while still maintaining national stability and security. At the same

time, to effectively deliver aid to crisis-affected areas, military personnel must have the operational flexibility and proficiency to provide full-dimensional protection in rural and hard-to-access areas as well as to conduct sea, airlift, and maneuver operations (Engstrom 2018). For example, militaries responding to natural disasters abroad often carry out aid distributions, which require militaries to send a joint command in which multiple military branches coordinate at a high operational tempo akin to combat operations (Engstrom 2013). As such, deploying military forces to participate in disaster relief operations provides the opportunity to demonstrate—and improve—capabilities that could be applied to future combat operations, ranging from command and control, small unit leadership to engineering, and helicopter operations (Southerland 2019). Moreover, the equipment and hardware used in disaster relief operations are also critical to combat operations, particularly those used in aerial reconnaissance, including distance power projection assets and surveillance technologies (Chong and Lee 2018).

As elaborated subsequently, because the capabilities and resources used by militaries in disaster relief activities can constitute a coercive signal to the crisis-affected government and involve other stakeholders, countries can gain strategic benefits from deploying or withholding military personnel and assets in disaster relief operations, particularly when they are currently enmeshed in a rivalry or territorial dispute.

Costs and Benefits of Deploying—and Accepting—Military Forces for a Disaster Response

Governments may gain particular strategic benefits from deploying military forces to disaster responses abroad, particularly when a government has a rivalry with either the crisis-affected country or with another government involved in the disaster relief efforts. First, governments can use military participation in a disaster response to signal their *ability* to project force across regional and international waters (Engstrom 2018). For governments enmeshed in territorial disputes or regional rivalries, they can use the deployment of their forces to disasters to signal the *relative* superiority of their technical, operational, and logistical capabilities. Similarly, deploying forces in disaster response indicates a government's *willingness* to deploy military forces abroad, bolstering the credibility of—and the likelihood that it will follow through—coercive threats of retaliation (Engstrom 2018). Collectively, these signals can deter opponents from future aggression, particularly from making a sudden grab for the disputed territory in question.

Second, conducting joint disaster-relief exercises provides a critical opportunity for a government's armed forces to learn about potential adversaries' military capabilities. Although scholars and government officials note that joint disaster-relief training and exercises can strengthen disaster response effectiveness by building trust between responders, establishing preplanned procedures for transferring supplies and equipment to affected populations, and standardizing communication mechanisms (DiGiovanni 2016), these joint exercises also allow military forces to examine their counterparts' information and logistics support, organizational and command capabilities, and general combat readiness. For example, US government officials note that the PLA exploits joint disaster-relief trainings and exercises to gather intelligence on and learn skills from advanced militaries like the US that either directly or indirectly improve the PLA's ability to carry out combat operations, like a blockade of Taiwan. To wit, the US government restricts by law its forces' ability to engage in multilateral disaster relief exercises with the PLA because it constitutes a national security risk (Southerland 2019).

Third, governments can use disaster preparedness programming to justify the construction and expansion of logistical military infrastructure that can be used to facilitate combat operations. For example, China claims that its construction activities on disputed reefs, shoals, and islands in the South China Sea facilitate military deployment in response to natural disasters that occur in the region (Johnson 2015). In 2016, China landed military transport aircraft on the Fiery Cross Reef to evacuate injured personnel (Office of the Secretary of Defense 2017). By consolidating its presence on disputed territory, China is strengthening both its territorial claims as well as its ability to defend those claims without directly risking war (Chong and Lee 2018).

In addition to receiving strategic benefits from deploying forces to disaster zones, governments may also benefit from strategically withholding military support. When a natural disaster strikes, the affected government's military capacity is often overwhelmed by the multifaceted nature of the disaster response. For example, although Japan extensively invested in disaster preparedness infrastructure and programming, the Japanese Self-Defense Forces (SDF) faced significant obstacles when assessing the extent of the damage and mobilizing the people and resources necessary to begin emergency response activities to the 2011 Tohoku Earthquake and Tsunami (Capie 2015; CFE-DMHA 2012). Withholding the deployment of forces may exacerbate the negative effects of a natural disaster on a rival's military capacity, particularly when there is an existing power differential between two rivals. As elaborated in the case study subsequently, tensions over disputed territory in the South China Sea influenced China's initial decision to provide limited financial support to the Philippine government after Typhoon Haiyan in 2013, despite the fact that the Armed Forces of the Philippines (AFP) lacked sufficient resources and logistical capabilities to direct emergency response activities effectively.

Conversely, crisis-affected governments may face particular costs by allowing foreign armed forces to assist in disaster response. Specifically, when a country accepts foreign troops, it signals that its military lacks the technological capabilities and the logistical and operational capacity to effectively carry out emergency response activities (Chong and Chang 2016, 2018). Similarly, accepting foreign forces calls into question the affected government's ability to maintain control over its sovereign territory. These political costs are exacerbated; in order for foreign troops to transport aid effectively, carry out search and rescue teams, conduct need assessments, map crisis-affected areas, or evacuate vulnerable populations, the affected government must allow these personnel access to communication and transportation infrastructure, territory near military infrastructure, and, in some cases, even military bases. When a crisis-affected government is involved in a territorial dispute or rivalry, it may face even greater political and reputational costs for accepting foreign military assistance because demonstrating its lack of self-sufficiency may encourage its rival to engage in more aggressive behavior.

Coordination Breakdowns and Response Effectiveness

Governments' strategic evaluations of the costs and benefits of deploying and receiving armed forces to disasters may negatively influence response effectiveness by stalling or preventing the delivery of aid and services to crisis-affected communities. First, strategic considerations may increase the likelihood that foreign governments will deploy military personnel irrespective of whether it meets the needs of crisis-affected communities. When foreign governments send military personnel and equipment in a disaster response, they often send available resources rather than what is

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actually needed on the ground, creating an overlap in the provision of particular services while leaving other critical services unprovided. Moreover, when unneeded military personnel and/or equipment are sent to a crisis-affected country, it places an avoidable burden on the national military, who must redirect its own personnel and resources to coordinate the movement of foreign troops and equipment.

Second, these strategic costs will make crisis-affected governments—even those that lack the resources and capacity—stall accepting military aid from particular sending countries or not accept aid at all. Crisis-affected countries may be even more likely to refuse, stall, or place contingencies on the deployment of foreign troops to assist in disaster response when they themselves or a key ally is enmeshed in a territorial dispute with the sending country. For example, as elaborated in the 2015 Nepal earthquake case study subsequently, the Nepalese armed forces lacked the capacity to identify and rescue victims from collapsed buildings effectively. Regardless, Nepal rejected Taiwan's offer to send a 20-member search and rescue team, largely because China claims Taiwan as part of its territory and actively seeks to limit the island's international recognition (Denyer 2015).

Third, strategic costs may lead foreign governments to intervene and/or actively prevent a sending country's deployment of troops to a recipient country, particularly if they are enmeshed in a territorial dispute. For example, third-party governments may refuse to provide sending countries permission access to air or maritime space needed to offload aid and equipment or allow sending countries to land at particular airstrips. After the devastating 1999 Jiji earthquake in Taiwan, China stated that all aid sent to Taiwan must pass through the mainland first. Indeed, the PRC denied a Russian plane carrying humanitarian assistance permission to enter its airspace (Denyer 2015).

Fourth, once foreign military personnel are on the ground assisting in disaster response, strategic-level considerations may influence coordination between foreign forces as well as between national forces and their foreign counterparts. Although practitioners highlight that establishing coordination mechanisms is critical for eliminating gaps and overlaps in service provision (O'Connor 2012), strategic considerations may influence how national and foreign forces develop the command and control structures that provide coherence to disaster response activities, clarify task division, standardize operating procedures, maintain communication, and decide whether they exchange liaison officers after disaster onset. Foreign troops may resist integrating into an interagency hierarchy—or consistently resist providing information—if troops from a rival country assume positions at higher levels of the command chain. In addition to constraining the operational compatibility of foreign forces and national militaries, preexisting rivalries between the crisis-affected government and the sending government may influence how national militaries divide labor, prioritize and assign tasks among different forces, and decide whether they allow foreign troops unrestricted access to security infrastructures, like airports and military bases.

Research Design

We developed a structured case-study approach to assess the relationship between strategic considerations, foreign force deployment, and disaster response effectiveness. We selected three disasters: the 2013 Typhoon Haiyan in the Philippines, the 2011 Tohuku Earthquake and Tsunami in Japan, and the 2015 Earthquake in Nepal. As illustrated in Table 1, we selected these disasters because they vary on characteristics empirically demonstrated to influence the disaster response effectiveness, including population size, economic development, military capacity, involvement in territorial disputes, and the presence of precrisis disaster-preparedness infrastructure, like disaster management ministries (Cutter et al. 2008; Cutter 2016). The selection of natural disasters that vary along these characteristics strengthens our ability to draw generalizable inferences about the role of foreign troops in disaster responses across various national contexts.

We focus on natural disasters in East Asia because governments in the region have increasingly deployed their militaries to provide critical disaster relief to crisis-affected populations in foreign countries over the last decade (Engstrom 2013). Since 1998, Japan, China, Taiwan, and South Korea deployed their militaries in nearly 40 natural or manmade disasters abroad, the majority being in South and East Asia (Engstrom 2018). Similarly, bilateral and multilateral relations in East Asia are characterized by a variety of power rivalries and territorial disputes, as seen in Table 1.

An in-depth examination of responses to specific natural disasters provides a number of distinct analytical advantages. Conducting in-depth case studies bolsters our ability to trace the effects of macrolevel, strategic considerations on countries' decisions to deploy—or accept—foreign troops, as well as the effect of these considerations on microlevel, on-the-ground coordination between foreign and national forces. Moreover, there is a significant within-case variation on the countries that deployed foreign forces in each disaster: a total of 23 foreign militaries were involved in the response to the 2011 Tohuku Earthquake and Tsunami, 29 foreign militaries were involved in response to the 2013 Typhoon Haiyan (Austin 2018), and 18 foreign militaries were involved in response to the 2015 Nepalese Earthquake (CFE-DMHA 2017).

Table 1. Case selection strategy

Country	Total military personnel (2011)	Population (2011)	Military expenditure (% of total govt expenditure, 2011)	Disaster management infrastructure	Economic development	Territorial dispute
Philippines	165,500	95.6 million	6.7	No	Middle income (current $3,103 per capita)	Disputed territory in South China Sea
Japan	260,086	127.8 million	2.5	Yes	High income (current $39,288 per capita)	Power rivalry with China; disputed territory in South China Sea
Nepal	157,750	27 million	8.3	Yes	Low income (current $1,026 per capita)	Stuck between India-China power rivalry

Note: Data on military personnel, population size, military expenditure, and economic development are drawn from the World Bank indicators; territorial dispute data are drawn from Emmers (2009). While Japan had established the Central Council for Accident Prevention and the National Committee for Emergency Management prior to the 2011 earthquake, Nepal had the National Disaster Response Framework and the Nepal Red Cross Society (NRCS) Earthquake Contingency Plan prior to the 2015 earthquake. The Philippines did not have an equivalent ministry or council prior to the 2013 typhoon.

This allows us to compare how different territorial disputes and power rivalries affect coordination between different foreign forces, as well as between foreign and national forces within the same disaster context.

It is important to note that we do not seek to determine whether the overall response to a natural disaster was successful or not. The main goal of disaster response is to provide crisis-affected populations with the services and aid needed to return them to their precrisis standard of living. If crisis-affected governments are exclusively focused on meeting the needs of their communities, we would expect them to make maximal use of foreign military personnel. Similarly, as prompt service and aid provision are critical for minimizing casualties (Ear et al. 2017), we would expect governments to facilitate search and rescue operations and aid deliveries quickly, irrespective of whether they are conducted by national or foreign forces. In the case studies subsequently, we identify instances in which disaster response was ineffective—namely when the provision of services and/or aid was stalled or did not occur at all. We then trace back and identify particular factors that led to this breakdown in the response. As demonstrated subsequently, governments actively stalled—and in some cases refused—foreign forces' distributions of services and aid largely due to macrolevel strategic considerations shaped by existing rivalries and territorial disputes.

We draw the data for our case studies from a variety of primary sources, including public statements from relevant humanitarian practitioners and civilian and military officials involved in disaster response, reports, and assessments generated by governments and aid organizations involved in the response and also news articles that identify the deployment of military assets in real-time. We also draw from secondary sources, including scholarly articles and books, that assess coordination after the fact. Although drawing from diverse sources strengthens our ability to draw inferences about governments' motivations for military deployment in disaster responses, our case study analysis suffers from several limitations. First, the sensitivity of troop deployment makes it difficult to identify evidence of on-the-ground intermilitary coordination systematically. Second, we draw from either English language sources or sources translated into English.

Findings

2013 Typhoon Haiyan in the Philippines

On November 8, 2013, Typhoon Haiyan struck the central Philippines with a force of a Category 5 hurricane (US Congressional Research Service 2014). The accompanying landslides and flash floods caused extensive infrastructure destruction, knocking out transportation, telecommunication, and water supply networks throughout the country (Strategic Comments 2014; NDRRMC 2013). Three months after the disaster onset, UN agencies estimated that more than 14 million people were affected by the typhoon. More than 1 million houses were destroyed, more than 4 million people were displaced, over 6,000 people were killed, and nearly 2,000 people went missing (US Congressional Research Service 2014).

Local governments lacked the capacity and infrastructure to organize the initial disaster response, and as a result, the Armed Forces of the Philippines (AFP) led the way by mobilizing helicopters to deliver aid and assessing the damage in communities affected by the typhoon (Strategic Comments 2014). Although the AFP deployed its naval vessels to the country's smaller islands to deliver 120 t of aid and evacuate the injured in the two days after the typhoon (Stumpf et al. 2014), the lack of resource capacity and

logistical capabilities constrained emergency response activities (Chong and Lee 2018; see also CEDMHA 2014, p. 12). Indeed, the AFP had only three airworthy C-130 transport planes as well as a limited number of helicopters and landing and logistic vessels, making mobilizing troops across the crisis-affected islands difficult. For example, once AFP troops arrived in Samar and Leyte—two of the hardest-hit provinces in the country—the lack of provisions, heavy equipment, and communication infrastructures meant that orders were transported by motorcycles and boat couriers (Strategic Comments 2014).

The Philippines requested international assistance the day after Typhoon Haiyan struck (Strategic Comments 2014; Reario 2015). The AFP established the Multinational Coordination Center (MNCC) to facilitate information sharing and common situational awareness between the AFP and foreign military personnel (Parker et al. 2016). A total of 29 countries deployed their forces to assist the AFP in conducting emergency response activities (Austin 2018). Eleven of the countries that deployed their forces provided a total of 25 aircraft and 12 naval vessels, which delivered relief items to various crisis-affected areas in the Philippines (Austin 2018; Reario 2015). However, the AFP did not establish the MNCC until several days after the typhoon made landfall, which impeded coordination between the AFP and foreign troops. For example, when foreign militaries and their equipment initially arrived in the Philippines, they operated relatively independently and from different geographic locations. They also did not exchange liaison officers or ensure interoperability among their communication systems (Austin 2018).

Although the lack of a logistical capacity constrained the AFP response coordination, disaster relief efforts occurred in the context of increasing tension over governments' overlapping maritime and territorial claims to the South China Sea. As elaborated subsequently, South China Sea tensions directly influenced the AFP's decision to prioritize bilateral rather than multilateral coordination with foreign militaries as well as decisions by China, the US, South Korea, and Japan to deploy military assets to assist in disaster relief.

US's and China's Decisions to Deploy Military Forces

Initially, China actively chose not to deploy forces or equipment to assist the Philippines in the disaster response. Despite reports of 1,700 deaths and 615,000 people displaced four days after the typhoon (Southerland 2019) and the Philippine's call for immediate aid (Deutsche Welle 2013), China donated only $200,000 to relief efforts (US Congressional Research Service 2014). After receiving extensive international and domestic criticism (Gaskell 2013) for providing too little aid, China increased its donation to $1.6 million and deployed its hospital ship, the Peace Ark, ten days after the typhoon struck. The Peace Ark, staffed by 93 medical workers and 12 disaster relief experts (US Congressional Research Service 2014), did not arrive until two weeks after the typhoon made landfall (Robles 2013).

Policymakers (United States Congress House Committee on Foreign Relations 2013), humanitarian actors, and other involved stakeholders—in line with scholars who highlight the benefits of disaster diplomacy—collectively agreed that China missed an opportunity to strengthen its position and reputation as a regional power player compared to the US (The Guardian 2013). Comparatively, the US offered $20 million in financial assistance alone; Japan, Australia, and the UK each offered roughly $10 million in aid, along with military personnel participating in search and rescue operations and providing medical aid (Southerland 2019). Indeed, for a regional and rising global superpower like China, the use of a disaster response as a venue to project force is critical to compel its regional neighbors and change the existing status quo, particularly

in terms of territorial and maritime claims (Engstrom 2018). China's initial decision to restrain disaster relief provisions deviated from its consistent deployment of military assets to assist in other disaster response operations. Between 2002 and 2010, the PLA carried out 28 international humanitarian aid missions (Bergin 2013).

China's initial response to Typhoon Haiyan—or lack thereof—was couched in rising Sino-Philippine tensions over disputed shoals and territories in the Spratly Islands. In April 2012, the Philippine Navy apprehended eight Chinese fishing vessels in the disputed Scarborough Shoal. When the Philippine Navy attempted to arrest the fisherman for possession of illegal sea-life, the Chinese Navy intervened and prevented them from doing so (Santos 2012). China has constructed several military structures on the shoal (Zirulnick 2012). In June 2013, the Philippines submitted a formal complaint to the International Tribunal for the Law of the Sea (ITLOS), which was heavily resisted by China (Perlez 2016). On October 29, 2015—less than two weeks before Typhoon Haiyan hit—ITLOS announced that it would proceed with the Philippines' case (Bangkok Post 2015).

The majority of stakeholders and observers attributed China's delayed response to its growing territorial dispute with the Philippines (Southerland 2019; Spegele 2013). Because the AFP's ability to defend its territory—let alone its claims to disputed shoals—was at its weakest after Typhoon Haiyan hit (Wood 2013), China's initial decision to withhold military support was meant to send a coercive message (The Guardian 2013). China's delayed provision of military personnel to assist in the Typhoon Haiyan response eschewed international principles for military participation in disaster relief exercises, particularly the timely deployment of military assets and multilateral coordination with other foreign militaries and civilian organizations (Oslo Guidelines 2007; Wiharta et al. 2008; UNOCHA 2014). By delaying assistance, China slowed the provision of aid to typhoon victims and exacerbated casualties (Southerland 2019).

The US chose a markedly different response to Typhoon Haiyan than China. The US Department of Defense immediately deployed a group of 90 marines to assess the disaster and determine which US military assets would be needed. Nearly one week after the storm, the US deployed the aircraft carrier George Washington, which provided an offshore platform to coordinate the activities of the additional 5,000 sailors and 80 aircraft that the US also contributed to the relief efforts (Strategic Comments 2014). US forces conducted surface and airborne search-and-rescue missions and delivered aid, generators, fuel, and heavy equipment like backhoes and forklifts (Strategic Comments 2014).

Although the Philippines and the US have maintained a mutual defense treaty since 1951, the Philippines actively restricts US troops in the country (Lum and Dolven 2014), allowing only a semipermanent military presence in the country (Whaley 2013). In the months prior to Typhoon Haiyan, the US and the Philippines were negotiating an agreement that would allow the US to position its military equipment in the country and allow US forces to be stationed at Philippine military bases and for longer periods, largely to act as a counterweight to China's growing military infrastructure in the South China Sea (Yamada 2017). Just two days before Typhoon Haiyan struck the country, the Philippine government announced that recent negotiations with the US over the expansion of its military presence in the country had reached an impasse.

Typhoon Haiyan provided two strategic opportunities for US military deployment. First, it provided the US an opportunity to signal its willingness and ability to project force in the South China Sea to China—its longstanding regional rival. Relatedly, it gave the US the opportunity to increase its leverage in its negotiations with the Philippines for increased military presence in the country

(Tiller 2014). Although contested issues, including the control of temporary US facilities in Philippine military camps, stalled negotiations prior to the disaster, two weeks after the US began its relief efforts, the Philippines Foreign Affairs Secretary stated that the response demonstrated the need for an increased rotational presence of US troops (Tiller 2014). In the months after the typhoon, the US and Philippines signed the Enhanced Defense Cooperation Agreement, which allows the US military access to Philippine bases (Yamada 2017).

On-the-Ground Military Coordination

The AFP prioritized bilateral relations with each foreign military team to assist in disaster response over establishing the MNCC (Ear et al. 2017). Specifically, military personnel were led either by their embassies in Manila or from their capital cities (Tiller 2014). The lack of multilateral relationships meant that troops did not widely share pertinent information, including the conditions of primary and alternate landing zones and of ports and alternative sea landing sites for vessels, among other relevant information (Parker et al. 2016).

The AFP established the MNCC on November 16th, more than a week after the disaster struck (Dizon 2013). Although the MNCC was meant to synchronize military-to-military operations between the AFP and foreign personnel, only 16 of the 29 countries that provided troops initially agreed to participate in this coordination mechanism. Notably absent from the MNCC was China, who did not join the MNCC even after the Peace Ark arrived in the Philippines and the Philippine Defense Undersecretary publicly emphasized that all militaries were welcome to participate (Escandor 2013). Although China eschewed multilateral coordination with foreign militaries, tensions between the AFP and Chinese forces also limited bilateral coordination: the Peace Ark was docked in Tacloban Harbor for a short time frame (only 18 days) and left even when crisis-affected communities had pressing medical needs (Goldstein 2016). Cultural and language barriers posed problems (CFE-DMHA 2015a), and Chinese forces' strict entry criteria for new patients also restricted the AFP's ability to maximize its use of the Peace Ark (Tiller 2014).

Similarly, tensions within the Philippines over precrisis negotiations concerning increased US troop presence stalled the AFP from accepting US military assistance. Although the typhoon destroyed the control tower at Tacloban airport, the Philippines was initially hesitant to accept the US's offer to install a temporary replacement (Strategic Comments 2014). The lack of an operational control tower meant that pilots could only land under (daylight confined) visual flight procedures rather than by safer and more efficient instrument landing system navigation, impeding the transportation of personnel and equipment. Although the US and the Philippines eventually reached an agreement on the replacement of the control tower, the Philippines' decision to stall accepting military assistance from the US—and its negative effect on relief efforts—seemed to be rooted in the Philippines' concerns that the US participation in disaster relief efforts would strengthen its case for expanding military presence in the Philippines (Strategic Comments 2014).

2011 Tohoku Earthquake and Tsunami in Japan

On March 11, 2011, an earthquake with a magnitude of 9.0 occurred 130.36 km (81 mi) off the shore of Japan, causing a tsunami with waves measuring up to 40 m high and spreading almost 9.66 km (6 mi) (IEM 2011). In addition to destroying or damaging roughly 400,000 houses, the tsunami caused extensive damage to the Fukushima Daiichi Nuclear Power Station, resulting in a core meltdown (CNN 2019). Japan estimated that the earthquake killed

nearly 20,000 people and injured more than 5,000; the earthquake and subsequent destruction of the nuclear power station caused $180 billion in damage (IEM 2011).

Japan's disaster response organization infrastructure is highly developed, and Japan is considered one of the most disaster prepared countries in the world (CFE-DMHA 2012). Indeed, Prime Minister Naoto Kan established a special disaster response unit within his office four minutes after the earthquake struck (Okaniwa 2011). The Japanese SDF, police officers, and national search and rescue teams were dispatched to the crisis-affected areas one hour after the earthquake. Two days after the earthquake and tsunami, more than 50,000 security personnel were mobilized, and at the end of the emergency response phase, more than 180,000 Japanese personnel were deployed in response to the disaster (CFE-DMHA 2012). Three days after the disaster, Defense Minister Kitazawa ordered the formation of a joint task force to facilitate the integral command and operation of the naval, air, and ground SDF (Ministry of Defense 2011).

Despite the advanced nature of Japanese disaster management infrastructure, the SDF faced significant obstacles when coordinating the assistance of foreign military teams, largely because it lacked the capacity to determine the extent of the damage and specific needs in the communities affected by the earthquake and tsunami (CFE-DMHA 2012; Koshimura and Shuto 2015). Japan faced significant criticism for its slow provision of aid and relief: one week after the earthquake and tsunami struck, half a million evacuees were housed in temporary shelters without adequate food, water, and medical assistance (Choate 2011).

Japan's Decision to Accept Military Aid

Japan was extremely selective in terms of the foreign forces it allowed to participate in disaster response operations. While more than 30 countries offered to deploy military medical teams to assist crisis-affected communities, the Japanese government only allowed Israel, Thailand, Jordan, and the Philippines to dispatch medical teams (IDCJ 2014). Although Japan's extensive material resources and logistical capabilities meant that the government did not rely as heavily on foreign military support as Nepal and the Philippines, its longstanding rivalry with China—particularly growing tensions over disputed territory in the South China Sea—directly influenced Japan's decision to accept Chinese military support. China offered to send Japan an 80-member rescue team (which included PLA personnel) and its naval hospital ship to assist in search and rescue operations. Japan refused China's initial offer largely due to the fact that they would need to allow Chinese military personnel access to the Misawa airbase, on which both Japanese and US forces operate in the Aomori Prefecture (Bergin 2012). Ultimately, Japan allowed China to dispatch a 15-member team after the initial provision of emergency response services. In contrast, Japan accepted a 28-member rescue team from Taiwan, a 76-member team from Australia, a 70-member team from Britain, and a 134-member team from France (Bergin 2012).

Japan's refusal and subsequent restriction of Chinese military personnel in the country, and more general refusal of offered support, was likely due to recent tensions over the disputed Senkaku Islands in the East China Sea. In September 2010, the Japanese Coast Guard arrested a Chinese skipper after his trawler collided with Japanese patrol boats near the disputed islands (Wang 2010). The incident prompted a major diplomatic dispute between the two countries: China initiated harsh diplomatic protests, including summoning Japan's ambassador six times, suspending ministerial-level contacts, and postponing talks on disputed undersea gas fields (Wang 2010). When Japan released the fisherman, Chinese and Japanese media both responded strongly, asserting that Japan

had bowed to Chinese diplomatic pressure (Wang 2010). In the wake of this diplomatic win for China, the 2011 Tohoku Earthquake and Tsunami provided China the opportunity to signal its maritime military capabilities compared to the Japanese Naval SDF. Japan's decision to refuse China's naval hospital ship—as well as PLA contingents—was driven in part by its desire to demonstrate military (particularly maritime) self-sufficiency.

Similarly, increasing tensions over the South China Sea likely influenced Japan's request, as well as the US provision of significant air, ground, and naval personnel and equipment to the disaster response. When the earthquake and tsunami struck, the US already had 40,000 troops stationed in Japan from all branches of the military (Feickert and Chanlett-Avery 2011). Upon Japan's request, the US Department of Defense immediately diverted these forces to the relief efforts under Operation Tomodachi, which focused on transporting aid, SDF personnel and equipment, surveying affected areas for victims, and restoring critical infrastructure like airfields (Feickert and Chanlett-Avery 2011). In doing so, Japan authorized the US use of the Yamagata airport for the first time and used the US airbase Misawa to support US and SDF forces (Feickert and Chanlett-Avery 2011). The US also provided navy vessels to support flight operations and transport and refueling services to the SDF (Burton 2019). Although more limited, the US also provided aerial surveillance and radiation monitoring of the damaged Fukushima nuclear reactor (Yoshizaki 2012).

Although the South China Sea is not geographically proximate to Japan, the unrestricted passage through the seas is critical for the $5 trillion in maritime trade—as well as Japan's transport of fossil fuels—that annually occurs through its sea lanes (Corr 2018). As such, the US was able to use the deployment of its military forces in response to this disaster to consolidate its military presence in Japan, signaling to China its ability to conduct a variety of maritime logistical operations and its willingness to support Japanese security interests in the region.

On-the-Ground Military Coordination

Japan imposed a variety of constraints on whether and where foreign military personnel could carry out relief operations in particular parts of the country (Engstrom 2013). For example, the 15-member Chinese team arrived two days after the earthquake and tsunami struck (US Nuclear Regulatory Commission 2011) and only conducted search operations in Ofunato, a city in the Iwate Prefecture with a low population density (Rawnsley 2011). Rather than fly into Misawa airport—which was a 4-h drive away from Ofunato but close to an airbase—Japan required the Chinese team to land at Haneda airport in Tokyo, a 7-h drive from Ofunato (US Nuclear Regulatory Commission 2011). Conversely, Japan allowed teams from New Zealand and the United Kingdom to land and operate out of the Misawa airbase (US Nuclear Regulatory Commission 2011). Ultimately, by restricting the movement of Chinese personnel, Japan delayed support for search and rescue operations in Ofunato by at least three hours, prolonging victims' extraction and access to critical medical care.

Similarly, despite close US-Japan military cooperation and US provision of support during the crisis aftermath, Japanese security considerations created obstacles to their armed forces' coordination. For example, US military personnel involved in disaster response expressed frustration at Japanese authorities' lack of transparency with nuclear crisis management (Stratfor.com 2011). Specifically, Japanese armed forces delayed accepting US help in assessing and addressing the damage to the Fukushima nuclear reactors; similarly, Japanese personnel repeatedly concealed and downplayed the reality on the ground and did not share sufficient

information to allow US military personnel to assist to their full capacity (Stratfor.com 2011).

2015 Earthquake in Nepal

On April 25, 2015, a 7.8 magnitude earthquake hit Nepal, with an epicenter situated roughly 85 km from the country's densely populated capital, Kathmandu. Less than 3 weeks later, a 7.3 magnitude aftershock struck the Dolkha district, causing additional damages and deaths (Barry 2015; Reario 2015). At the end of May, Nepal estimated that the earthquake had killed 8,969 people, injured more than 16,000 people, and displaced over 2.8 million people. Cumulatively, the earthquake caused nearly $10 billion in damage, including 800,000 damaged or destroyed homes, roughly equivalent to 50% of Nepal's GDP (Krishnan and Mehrotra 2015).

During the initial response, forces from at least 18 foreign militaries were deployed to Nepal that consisted of search and rescue, air support, medical, engineering, communications assets, and personnel (CFE-DMHA 2017, p. 1; Bollettino and Kreutzer 2015; Reario 2015). According to the 2013 National Disaster Response Framework, the Nepal Army is responsible for coordinating all multinational and bilateral military assistance and assisting with search and rescue operations—and did so through mobilizing the Multi-National Military Coordination Center (MNMCC) (OCHA 2015; NDRF 2013). However, four civilian and military bodies independently implemented their respective mechanisms for coordination: the Prime Minister's Office, the Ministry of Home Affairs, the Nepal Army, and the Armed Police Force (APF). Overlapping coordination and duplications in service provision were exacerbated because both the Nepal Army and the AFP had overlapping mandates: rather than assign specific responsibilities in the disaster response, both were tasked with addressing the broad, underlying issues of immediate disaster relief and management (Manandhar et al. 2017). In several cases, state security agencies even published contradictory data about the disaster (Manandhar et al. 2017, p. 8).

Deployment of Military Forces from India, China, and Taiwan

Within 12 h of the earthquake, India launched Operation Maitri, sending Air Force personnel alongside more than two dozen aircraft, including its Il-76, C-130J Hercules and C-17 Globe master transport aircraft and MI-17 helicopters, to participate in the disaster response (CFE-DMHA 2015b; National Planning Commission 2015). The Indian Army also sent a major general to oversee the ten coordination teams from the National Disaster Response Force to assist the Nepal Army in search and rescue operations and the provision of medical aid (CFE-DMHA 2015b). By April 27th, hundreds of Indian military personnel were on the ground assisting the Nepal Army with relief efforts (CFE-DMHA 2015b, CDIR No.3 2015). As of May 15th, India had the second largest presence of military personnel involved in the disaster response, with 611 troops (Bollettino and Kreutzer 2015).

China similarly provided immediate financial and in-kind assistance (CFE-DMHA 2015b, CDIR No.3 2015), deploying a 62-member International Search and Rescue Team and a 58-member medical team alongside 13 t of medical aid (Tiezzi 2015). The PLA dispatched 55 soldiers and accompanying rescue vehicles and equipment the day after the earthquake. Three days after the earthquake, the PLA increased its deployment to 170 soldiers for rescue and medical operations (FMPRC 2015). By May 15th, China had deployed 844 troops to assist in the disaster response, as the largest presence of foreign military personnel in the country (Bollettino and Kreutzer 2015). In contrast, US military presence was notably small, with 286 troops from Joint Task Force 505, largely restricted to air support provision (Bollettino and Kreutzer 2015; Morris 2015; US DoD News 2015).

The immediate and significant military assistance sent by Nepal's powerful neighbors is in line with India and China's historical competition for influence in the country (Chand 2017). Although both countries have been major sources of infrastructure development and aid in Nepal, China overtook India as the largest source of foreign investment in 2014 (Shakya and Gurung 2015). India and China maintain a tense relationship, largely due to a long-standing yet unresolved border dispute characterized by low-level skirmishes between Indian and Chinese armed forces (Mandhana 2015). Indian concerns that China will establish restrictive, strategic land and sea corridors are exacerbated by China's One-belt, One-road policy and particularly its increasing cooperation with Pakistan to establish the China-Pakistan Economic Corridor (Tiezzi 2015). Similarly, China has heavily criticized India's provision of asylum to the Dalai Lama, a key religious and political figure in Tibet's claims for autonomy from China (Chand 2017).

The 2015 earthquake provided both China and India the opportunity to increase and consolidate their security presence in Nepal. India's swift mobilization of over two dozen military aircraft, as well as its deployment of high-ranking military officers, was a clear signal to China about India's commitment to curtailing Chinese influence in Nepal (Chand 2017). Indeed, India's swift and significant military response to the disaster likely influenced the types of military personnel and hardware subsequently deployed by China. Despite the Nepal Army's lack of available aircraft for conducting search and rescue operations in remote, rural areas of the country, China did not send air force personnel or military aircraft to assist in the disaster response (Chand 2017).

The rivalry between these two regional powers—particularly Nepal's close relationship with China—directly influenced its decision to accept military personnel from particular countries. Although the Nepal Army struggled to conduct search and rescue operations in semiurban and rural areas of the country in the days after the earthquake, Nepal rejected the Taiwanese offer to deploy a 20-member tracking team with sniffer dogs (Denyer 2015). The current vice foreign minister explained that Nepal rejected Taiwan's offer of military personnel because they were prioritizing help from closer neighboring countries; however, he could not explain why Nepal accepted military personnel from Israel, the US, Britain, Japan, and Finland—all countries significantly farther away than Taiwan (Barry 2015; Agence France Presse 2015). After facing international criticism, Nepal accepted a medical team from a Taiwanese aid organization, which was routed through Hong Kong (Denyer 2015).

Nepal's contradictory refusal of Taiwanese military aid likely stemmed from its close relationship with China. Taiwan is a self-governing entity that split from mainland China after the People's Republic of China declared independence at the end of a civil war in 1949. Since then, China claims Taiwan as part of its sovereign territory and seeks reunification, commonly called the One China policy. Nepal neither recognizes Taiwan nor has diplomatic relations with its governing body. Moreover, China increased its investment in the Nepalese infrastructure over the last decade, strengthening and encouraging close cooperation between the two countries (Denyer 2015). Nepal strategically refused to accept Taiwanese military personnel to signal its commitment to China's core interests (Denyer 2015). Despite appeasing China, Nepal's refusal of Taiwanese military aid likely stalled the location, extraction, and provision of medical services to earthquake victims, particularly because Taiwan has extensive prior search and rescue experience (Shakya and Gurung 2015).

On-the-Ground Military Coordination

Despite the fact that the airport, major roads, and bridges remained intact in Kathmandu, it took more than two weeks for aid to reach villages in Nepal's mountain regions (Bollettino and Kreutzer 2015), largely due to coordination breakdowns involving national and foreign military personnel. However, it is important to note that inefficiencies in the service provision were exacerbated by the fact that the Nepal Army had few air capabilities available in the immediate aftermath of the earthquake. Specifically, the Nepal Army had 12 helicopters from its military fleet and 10 helicopters donated by the private sector at its disposal (CFE-DMHA 2017, p. 1). Considering that many crisis-affected areas in Nepal were only accessible by air, the Nepalese army's limited military infrastructure restricted its ability to deliver critical services and aid to its communities.

Despite establishing the MNMCC days after disaster onset, the Nepal Army largely conducted coordination through its bilateral relationships with responding to foreign military teams. While the Nepal Army's limited logistical capacities influenced its choice to coordinate through bilateral relationships, it was also influenced by foreign military personnel's unwillingness to engage with other foreign troops. For example, the PLA refused to participate in the MNMCC and coordinate with other militaries due to its rivalry with India and the US. In doing so, PLA contingents violated international best practices and potentially contributed to the avoidable loss of life (UNOCHA 2015; Southerland 2019). Similarly, although India had one of the largest foreign military presences on the ground and ran their operations from their own command center a mere 50 m away from the MNMCC tent, they did not participate in the MNMCC (Bollettino and Kreutzer 2015). Ultimately, successful coordination between the Nepal Army and foreign military teams was largely determined by whether the foreign teams had a designated resident coordinator. Foreign military teams with resident coordinators enabled quicker task assignment and deployment; those that arrived without making contact with a local partner or establishing a resident coordinator faced mismanagement of time and resources (Kamal 2015).

In addition to constraining the Nepal Army's ability to coordinate foreign military personnel participating in the disaster response, power rivalries between China, India, and the US shaped the timely provision of aid and services to crisis-affected communities. For example, US forces faced immense operational difficulties accessing Nepal. As Nepal is a landlocked country, US forces had to secure overflight permission from China and India, both of whom stalled approving the passage of US deployments (Austin 2018). Delayed arrival of US deployments also stalled the delivery of life-saving aid and equipment, potentially increasing casualties (Austin 2018). Similarly, in a cluster meeting on May 8th, a British military official stated that although there were two Chinook helicopters ready to fly in from India, these flights had not received clearance to leave; India required that flights carrying relief items to Nepal passing through its airspace stop in India first for inspection (Bollettino and Kreutzer 2015).

In the days after the earthquake, China also expressed concerns about Indian search and rescue teams carrying out relief activities in the Nepalese districts bordering China. In response, Nepal restricted Indian search and rescue teams from flying over the Rasuwa district, which borders Tibet, as well as other border districts (Denyer 2015), although communities along the Nepal-Chinese border were the most affected by the earthquake (Shakya and Gurung 2015). This great power rivalry reduced the effectiveness of international aid, increased friction between responding nations, and possibly contributed to avoidable casualties and a loss of life.

Because the Nepal Army could neither establish nor maintain a powerful coordination body, it assigned major foreign military actors in the country—namely, India, China, and the US—to control all operations within a specific geographic sector (Kamal 2015). Other foreign militaries were assigned to support specific humanitarian clusters (Reario 2015), which limited their ability to provide support for broader humanitarian objectives that spanned cluster issue-areas. Additionally, the Nepalese army had limited knowledge of the presence of foreign military assets present in particular areas of the country, restricting their ability to systematically facilitate coordination between the army and foreign military personnel (Reario 2015).

Rather than reducing tensions between foreign militaries involved in the disaster response, this geographic sector assignment exacerbated intermilitary competition. US officials involved in the Nepalese response stated the PLA refused to allow other foreign military responders access to its area of operations out of concern that doing so might indicate that the PLA lacked capacity relative to other participating military forces (CFE-DMHA 2015b; Southerland 2019). Indeed, a former official in the US Office of the Secretary of Defense reported that US military personnel in Nepal had to appeal to officials in Beijing and Washington, DC, to convince Chinese in-country responders to cooperate in disaster response activities (CFE-DMHA 2015b).

By refusing to coordinate with US forces, the PLA created critical gaps in disaster response. To wit, civilian aid organizations approached US military personnel due to a critical shortage of vertical takeoff and landing-capable helicopters and tilt-rotor aircraft needed in the Chinese-run sector to conduct rescue operations. Given the lack of Chinese aircraft deployed in the disaster response, US military assets in Nepal were uniquely equipped to fulfill this need (CFE-DMHA 2015b). However, when US personnel bilaterally offered to contribute the necessary capabilities to support Chinese relief operations, the PLA denied that they had any shortage (Southerland 2019). In the same vein, other foreign military teams refused to let other organizations involved in the disaster response to use forklifts, debris clearance tools, and all-terrain vehicles (Austin 2018).

Counterfactual Analysis

This section explains how we think that the governments' behaviors would differ in a world in which the deployment of military forces in a disaster response did not have coercive signatures. If dispatching military forces to conduct disaster relief operations did not signal hard-power capabilities, we would observe higher rates of countries *accepting* foreign military personnel to assist in response to large-scale disasters. Certain crisis-affected governments may refuse military personnel because they have sufficient personnel and resource capacity to respond to the disaster, but this would only occur in small-scale disasters. Similarly, we would not see governments—particularly those with low-capacity precrisis military capacity—to refuse foreign military personnel with extensive experience in disaster management.

In a counterfactual world in which countries only received soft power benefits—or only focused on alleviating human suffering when deploying militaries in disaster response—major powers like the US, Japan, and China would quickly deploy their military forces according to the needs of the crisis-affected government. For example, in a counterfactual world, China would have immediately deployed the Peace Ark to assist the Philippines in response to Typhoon Haiyan. Similarly, if China had been focused on winning the hearts and minds of crisis-affected Filipinos, personnel on the

Peace Ark would not have enforced stringent admittance policies. Instead, we would expect it to remain stationed in the Leyte Gulf until the majority of crisis-affected individuals had received necessary medical care.

Similarly, in a counterfactual world, we would expect that foreign militaries would be comparatively cooperative in coordination. Indeed, if relief-sending countries only received soft power benefits—or were only focused on the needs of crisis-affected populations—all foreign militaries would participate in multilateral coordination centers established by the national armed forces. We would still expect some level of competition between foreign military forces involved in the disaster response, as they seek to amass soft power compared to their counterparts. However, we would not expect foreign military forces to try to restrict the movement of other forces in the crisis-affected country, as Chinese personnel did with US and Indian forces in Nepal. Moreover, in a counterfactual world, we would expect that crisis-affected governments would enable foreign military personnel the leeway to operate efficiently in the country.

Conclusion

Through in-depth examinations of the 2011 Tohuku Earthquake and Tsunami, the 2013 Typhoon Haiyan, and the 2015 Nepalese Earthquake, we demonstrate that governments' strategic incentives directly influence their willingness to deploy their military forces for disaster relief activities. Similarly, we illustrate how once foreign military forces are on-the-ground and operating in crisis-affected communities, the macrolevel strategic incentives that led to their deployment constrain interorganizational coordination with the national armed forces and other foreign forces involved in the response. Importantly, we demonstrate how a breakdown in coordination stalls or entirely prevents crisis-affected communities from receiving much-needed aid and services.

Our findings have critical implications for policymakers and humanitarian practitioners as they design and implement disaster response preparedness and response programming. In particular, governments can more easily pursue their strategic interests at the expense of disaster response effectiveness because national militaries tend not to have formal status of forces agreements (SOFAs) with foreign militaries that clearly delineate their relationships during natural disaster responses. Identifying campsites for foreign military teams and outlining their respective roles prior to disaster onset is critical for eliminating obstacles to coordination after a disaster has struck. SOFAs are particularly important for economically underdeveloped and resource-poor countries like Nepal and the Philippines because they are less able to selectively accept and refuse military support or monitor the movements of foreign forces in their country.

The generalizability of our theoretical inferences is limited by several scope conditions of our findings. First, because we examine intermilitary coordination in natural disasters that involve countries entangled in power rivalries or territorial disputes, it is possible that hard-power, strategic considerations have less influence on the deployment and coordination of military assets in natural disaster responses in places lacking these conflict dynamics. Relatedly, as all the case studies occur in East Asia and involve China, the specific power dynamics between China and its regional adversaries may engender hard-power, strategic considerations in foreign military deployment in a natural disaster response. However, we expect our findings to hold outside of the East Asian and conflict contexts and even to influence the coordination between governments with a positive, long-standing security alliance. For example, in response

to the 2010 Haiti earthquake, French military personnel publicly expressed dissatisfaction with the commanding role of US forces and the relatively large size of the US military relief operations compared to those of European nations; this disagreement had to be resolved through a UN-brokered agreement (DiOrio 2010).

Our findings suggest several avenues for future research. First, future research should examine the extent to which multilateral coordinating entities like the UN and/or international peacekeeping missions mitigate governments' decisions to deploy military assets to assist in disaster responses as well as on-the-ground intermilitary coordination. Second, although we identify and examine obstacles in military coordination that emerge in the immediate aftermath of a natural disaster, it is likely that similar and/or additional coordination barriers between militaries emerge during other phases of disaster response. In particular, similar strategic considerations may shape a government's willingness to allow its militaries to participate in disaster preparedness activities, like joint exercises and training. Relatedly, future research should examine how the phase-out of foreign militaries from disaster relief activities impacts the effectiveness of service and aid provision. Specifically, as foreign militaries phase-out disaster relief activities in a given country, it is possible that similar strategic considerations influence the length of time that foreign militaries remain in the country as well as whether they provide logistical support to national militaries as they assume roles once assumed by foreign military personnel.

Data Availability Statement

No data, models, or code were generated or used during the study.

Acknowledgments

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