The 1970 Bhola Cyclone and the Birth of Bangladesh

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Abstract

The November 1970 Bhola cyclone in East Pakistan, with a death toll of 300,000–500,000, remains the deadliest cyclone ever recorded. We combine satellite data from a NASA mission operational briefly in 1970 with newly digitized archival records of subdistrict-level voting behavior in the December 1970 Pakistan general election, cyclone relief provision, and conflict activities during the 1971 Bangladesh War of Independence. By linking spatial variation in storm intensity to these political and conflict outcomes, we document how the cyclone's devastation—and the stark inadequacy of the Pakistani government's response—shifted electoral support toward the independence movement, ultimately leading to the creation of Bangladesh. Our analysis highlights the intersection of environmental shocks and state capacity in shaping pivotal moments of political change. We find heightened political activism and support for the separatist Awami League in cyclone-affected areas in elections held one month after the cyclone, especially in the subset of those districts where the government failed to provide relief. Pakistan's government reacted to those election results by postponing the convening of the National Assembly and commenced military operations in March 1971. We show that those same cyclone-affected districts are disproportionately represented in an archived list of birthplaces of Bangladeshi "Insurgents" who fought in the ensuing Liberation War. Our statistical evidence using large-sample geospatial data supports historical accounts of the role the cyclone (and the Pakistani state's indifferent response to it) played in the formation of Bangladesh. Events like large-scale natural disasters can reveal the characteristics of leadership by giving citizens an opportunity to observe their response. In this case, it appears to have accentuated a movement that had sought greater economic and political autonomy for East Pakistan. The heightened sense of loss and betrayal crystallized into greater participation in political protests and conflict in cyclone-affected regions. Disasters thus also create focal points that allow people to coordinate political activities. These factors catalyzed pre-existing separatist sentiments into an independence movement but also made them targets for repressive counter-measures taken by the Pakistani state. Our results outline the detailed mechanisms by which a climatic shock translates into violence and conflict, a statistical regularity observed across vast swaths of conflict data (Hsiang et al., 2013).

"Only a crisis—actual or perceived—produces real change."

Friedman (1982)

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"Sometimes it takes a natural disaster to reveal a social disaster."

Wallis (2005)

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1 Introduction

The birth of a nation-state is a pivotal moment in history, marking a collective transition from disparate communities to a unified political entity with its institutional structure and shared identity. Such transformations are often precipitated by focal points that bring systemic vulnerabilities into sharp relief—moments when existing tensions erupt into visible, undeniable signals of impending change. Among these, natural disasters, with their capacity to expose governance failures and amplify existing grievances, often serve as these focal points, triggering shifts in voting patterns, rising support for separatist movements, or even escalating political violence.

By laying bare the inadequacies of the ruling elite, natural disasters can transform latent grievances into organized political mobilization. For instance, the 1978 Tabas Earthquake in Iran, which caused over 25,000 deaths, exposed the Iranian Shah's inadequate response to this crisis and is believed to have fueled dissent that culminated in the Iranian Revolution of 1979 (Axworthy, 2013). Similarly, the 1976 Tangshan Earthquake in China is believed to have accelerated political shifts, including Deng Xiaoping's market reform agenda (Vogel, 2011). The Great Irish Potato Famine, which devastated Ireland, is also believed to have laid the groundwork for the Irish War of Independence (Donnelly, 2002). The Bengal Famine of 1943, exacerbated by British policies, is similarly argued to have galvanized support for the Indian independence movement from British Colonial rule (Sen, 1981). These instances suggest a broader pattern wherein natural disasters act as focal points to amplify existing grievances. By exposing the inadequacies of the ruling elite, such crises have the capacity to transform latent dissent into organized political mobilization. This raises critical questions: are such cases isolated historical episodes, or do they reflect a systematic relationship between natural disasters and political upheaval? What are the conditions that determine whether natural disasters will fuel political change? What lessons can we draw on the mechanisms through which these shocks translate into conflict, aligning with the broader patterns observed in conflict data?

In this paper, we explore how a large-scale natural disaster can act as a catalytic focal point, accelerating state formation and political transformation. Using the 1970 Bhola cyclone in East Pakistan (modern-day Bangladesh)—the deadliest weather event in recorded history—as a natural experiment, we investigate the causal mechanisms by which natural disasters may drive political change. Specifically, we demonstrate how the cyclone served as an inflection point, transforming preexisting secessionist sentiment into political mobilization and, ultimately, war. Our findings reveal that the cyclone intensified pro-independence votes and escalated regional discontent into a decisive push for secession, culminating in the full-scale war of independence and the eventual birth of Bangladesh. In subdistricts more severely affected by the cyclone, electoral outcomes reflected stronger support for the separatist party, and these areas experienced greater conflict intensity during the subsequent war. Notably, these subdistricts were overrepresented in the birthplaces of insurgents (freedom fighters) who fought in the Bangladeshi War of Independence.

In terms of magnitudes, a one standard deviation increase in storm intensity is associated with a 5% rise in votes for the pro-independence Awami League and an increase of approximately two additional insurgents participating in the war of independence per 1000 people. The analysis of mechanisms suggests that the inadequate response by the Pakistani government played a critical role in this political mobilization. Cyclone-affected subdistricts with no state relief, where grievances were likely most acute, witnessed the highest levels of political mobilization and violence during the War of Independence. Causal mediation analysis reveals that roughly 40% of the Bhola Cyclone's impact on voting patterns can be traced to the central government's failure to provide adequate aid (Heckman and Pinto, 2024). The impact of the cyclone was even stronger in regions with higher preexisting separatist sentiment. Qualitative evidence further supports these findings. Martha Chen (Chen, 2024), a social worker in Dhaka during the Bhola Cyclone and currently an academic at Harvard, remarked, "Our circle of friends had little doubt that the central government's failure to respond in a timely or appropriate manner to the Bhola Cyclone reinforced preexisting feelings of government neglect, impacted the election outcome, (and) emboldened the independence movement." The then National Security Advisor to President Nixon, Henry Kissinger, reported to Nixon that "the deep antagonism of Bengalis for the central Pakistani government is now much worse," also linking the disaster to politics (Kissinger, 1970).

The Bhola cyclone provides a valuable setting to examine the causal pathways through which natural disasters, particularly large climatic shocks, can drive political change, contributing to a broader understanding of the well-documented statistical regularity linking climatic shocks to increased conflict (Hsiang et al., 2013). First, the extraordinary scale of the Bhola cyclone, which penetrated deep into East Pakistan (now Bangladesh)—one of the world's most vulnerable low-lying regions—creates a unique opportunity to exploit quasi-random variation in storm intensity across subdistricts. Unlike typical coastal phenomena, the Bhola cyclone extended far inland, enabling comparisons between regions with varying levels of storm exposure and mitigating biases associated with coastal-specific confounders. Consequently, high- and low-storm affected subdistricts are balanced along numerous baseline dimensions, including political alignment, economic activity, and demographic structure, bolstering the credibility of the empirical strategy. Second, the availability of pre-cyclone satellite data and later cyclone events, such as the

2017 MORA and 2007 Sidr cyclones, allows for placebo testing to examine that the observed effects are not merely artifacts of geographic or statistical correlations tied to cyclone-prone areas. Last, the timing of the cyclone, which coincided with the pivotal 1970 general elections in East and West Pakistan (held about a month apart), provided a rare opportunity to link variations in storm intensity and state relief efforts to detailed electoral data, enabling direct observation of political behavior.

Complementing the electoral data, we incorporate conflict records from historical military archives, which document the participation of "freedom fighters" in the Bangladeshi War of Independence (The Ministry of Liberation War Affairs, 2024). These data, alongside our large-scale digitization effort, form the foundation of our analysis. A key component of this effort is the use of satellite data from NASA's ITOS-1 mission (NASA Space Science Data Coordinated Archive, 1970), which provided crucial imagery of the Bhola cyclone during its brief operational window before being discontinued due to a tape recorder malfunction. This fortunate timing allows us to analyze the storm's intensity with unprecedented precision, marking, to the best of our knowledge, the first application of ITOS-1 satellite data to assess the Bhola cyclone's impact. The use of this satellite data introduces an empirical advance, offering highly granular, subdistrict-level variation.[1] Second, we validate the satellite data with wind speed observations gathered from weather stations on the ground during the cyclone (Bangladesh Meteorological Department, 1970). Finally, in addition to digitizing voting, satellite and military archival data, we assemble and digitize a large descriptive dataset, most of which comprises pre-treatment subdistrict characteristics, using agriculture, population and economic censuses of East Pakistan. To explore the underlying mechanisms, we rely on the memoirs of Sheikh Mujibur Rahman, the founding father of Bangladesh, and the World Bank's tracking of aid distributed in the aftermath of the cyclone (World Bank Report, 1970). We also utilize historical agricultural surveys to analyze major crop production, including domestically consumed staples like rice and export crops such as jute. Jute, in particular, was vulnerable to expropriation by the West Pakistani government, as East Pakistan produced it but received limited returns from its export revenue (Ahmad, 1968).

Our findings yield three interconnected implications that advance our understanding of how large-scale natural disasters shape political and institutional landscapes. First, they demonstrate how such events amplify pre-existing grievances, acting as catalysts that drive profound transformations in political and institutional structures. Second, they underscore the pivotal role of responsive governance and effective disaster management in mitigating the destabilizing political effects of environmental crises, highlighting the capacity of state action—or inaction—to shape the trajectory of political mobilization. Third, the results illustrate how climatic shocks, when paired with state neglect, become focal points for political transformation by exposing systemic failures and galvanizing collective political action. Our setting addresses a broader challenge in studying the impact of large-scale natural disasters such as cyclones that often disproportionately affect coastal regions, raising concerns about potential endogeneity due to the unique economic, political, or social characteristics of these areas (Balboni, 2024). This geographic concentration complicates inferring causal effects. However, the Bhola Cyclone of 1970, with its intensity and inland reach—and inaction by the government–resulting in 300,000-500,000 deaths—provides a distinct context. Our analysis remains robust even after excluding all coastal regions, or controlling for distance to coast, allowing us to isolate the storm's impact on inland areas. Furthermore, the findings hold up to numerous balance checks on baseline characteristics, falsification exercises, and sensitivity analyses. Alternative explanations, such as shifts in the number of electoral candidates driving the observed surge in votes for Bangladeshi independence fail to account for the broader political mobilization. Taken together, our results emphasize the central role of the Bhola cyclone in reshaping the political landscape, underscoring how natural disasters can catalyze transformative political change.

Related Literature. This paper speaks to several strands of the literature. First, it speaks to the literature on environmental shocks and conflict (Miguel et al., 2004; Dube and Vargas, 2013; Dell et al., 2014; Burke et al., 2015a). Recent literature has increasingly highlighted the consistent relationship between environmental shocks and violence, with several meta-analyses showing that higher temperatures and extreme rainfall are associated with elevated levels of violence, ranging from civil conflict to interpersonal crime and even self-harm or suicide. Most recently, Burke et al. (2024) highlights the large magnitude of these effects, finding that one standard deviation (SD) adverse change in environmental patterns leads to a 2.5% to 5% increase in conflict risk. Given that most regions of the world are projected to warm by 2 to 4 SDs over the next 30 years, understanding the mechanisms driving this relationship is a critical research and policy priority. Economic factors have been prominently identified to exacerbate conflict, as highlighted by Harari and Ferrara (2018) in their study on African agriculture, and McGuirk and Nunn (2024), who emphasize the interaction between climate, economic shocks, and political institutions. Public policy also plays a crucial role, with studies showing that the expansion of social protection programs in countries like India, Mexico,

[1]The use of satellite data to measure cyclone intensity is straightforward and supported by recent research. For instance, (Hu, 2023) demonstrates that cyclone intensity is closely linked with satellite-measured radiation levels associated with cloud cover. The underlying principle is simple: the cyclone clouds block solar radiation from reaching the Earth's surface. The granular satellite data is cross-validated with ground-based weather station data, revealing a high correlation with measured wind speeds.

and Indonesia can mitigate the link between extreme climate shocks and violence (Fetzer (2020), Garg et al. (2020), Christian et al. (2019), Nunn and Qian (2014)).[2] However, other mechanisms, including psychological factors, are also deemed important; for example, crime rates increase during hot weeks in wealthy countries, and experimental evidence shows that aggressive behavior escalates when participants are placed in hot environments (Almås et al., 2024). Our paper advances this strand of inquiry by demonstrating how large natural disasters, especially climatic shocks, can reconfigure political boundaries, catalyzing the birth of a new nation state.[3]

Second, this paper contributes to the literature on the implications of natural disasters in the era of climate change. While much of the existing research focuses on the economic consequences of climatic shocks, recent studies reveal their substantial and persistent negative effects on global growth, with climate shocks leading to multi-year declines in economic performance (Hsiang and Jina, 2014; Dell et al., 2012). For instance, Burke et al. (2015b) identifies a non-linear relationship between temperature and economic growth, projecting an estimated decline in global GDP of 23% by 2100. The growing scientific consensus around the severe economic consequences of climate change is further supported by Nath et al. (2024), who, even while assuming the eventual convergence of technology between countries, still projects a global GDP loss of 12%, four times higher than previous model-based estimates. Thus, burgeoning evidence indicates that the economic repercussions of climate change are likely to be far more severe than previously anticipated. When it comes to the political consequences of climate-related shocks, exposure to natural disasters tends to exacerbate polarization, as attitudes toward climate change diverge between political groups. Djourelova et al. (2023) suggest that upon experiencing a natural disaster, liberally oriented individuals typically increase their concerns for climate change, while conservatives tend to reduce theirs, deepening societal polarization. As natural disasters become increasingly frequent due to climate change (Knutson et al., 2010; Van Aalst, 2006; Bouwer, 2011), the study of these events and their broader implications grows ever more critical. We contribute to this strand of literature by systematically examining the aftermath of a major environmental disaster and extending the analysis beyond attitudes to explore its impact on political action such as voting and conflict. Our study further clarifies *how* these events catalyze political change by exposing state-society dynamics and revealing the government's commitment—or lack thereof—toward its citizens.

Third, this paper contributes to the literature on state formation and nationhood by situating its findings within the broader historical processes of political contention. Building on Tilly's influential argument that state inaction can transform latent grievances into political upheaval, our study identifies natural disasters as a focal point that crystallizes discontent, enabling coordinated collective action and political mobilization (Tilly et al., 1975). These shocks, whether environmental or other natural disasters can amplify existing grievances and enable marginalized groups to challenge established authority. Furthermore, as emphasized by Jha (2022), the translation of such disruptions into lasting political change hinges on organizational capacity and strategic complementarities within and across groups, underscoring the importance of collective agency in reshaping political landscapes. Historical examples, from the French Revolution to the dissolution of multi-ethnic empires illustrate how such shocks reshape political structures by weakening centralized authority and fostering demands for autonomy. The Pakistan central government's inadequate relief efforts align with the accountability model proposed by Besley and Burgess (2002), where state failures expose the true nature of leadership to citizens, eroding trust and fueling demands for political change. In East Pakistan, the absence of effective relief accelerated support for the independence movement, as governmental neglect exposed a failure to represent group interests. This mirrors broader historical patterns where crises—whether environmental shocks or other crises—undermine centralized authority and intensify calls for political change (Wimmer and Feinstein, 2010; Acemoglu and Robinson, 2001). By linking a major environmental shock to political mobilization and conflict, this paper offers a framework for understanding how governance failures during crises can catalyze systemic change and even a reconfiguration of political boundaries.

2 Background

Colonial Origins. Understanding the economic and political dynamics that contributed to the separation of East and West Pakistan involves situating their origins within the legacy of British colonial rule and the abrupt partition of British India in 1947. The Radcliffe Commission, tasked with demarcating borders in a matter of

[2]Also related is the work examining the political consequences of other natural disasters, such as earthquakes. For example, (Belloc et al., 2016) show that earthquakes in medieval Italy hindered the transition from autocracy to self-government in cities where political and religious authority overlapped. They argue that earthquakes, perceived as manifestations of divine will, strengthened the legitimacy of political-religious leaders, enabling them to restore social order more effectively than emerging democratic institutions. Also related is recent work by (Bai, 2023), which links earthquakes to increased conflict in Imperial China.

[3]Supporting this argument is recent work by Caprettini and Voth (2023), which shows that higher government spending during the 1930s in the United States fostered greater patriotic support during World War II. Also relevant is recent research examining the impact of a storm in Italy, which is linked to an increase in support for the far-right (Cremaschi and Stanig, 2024).

weeks, left unresolved most disputes and inequities of the region (Collins and Lapierre, 1975).[4] Under colonial rule, governance, trade, and infrastructure were primarily organized to serve imperial interests, leaving historical inequalities unaddressed (Hajari, 2015). The partition divided the subcontinent along religious lines into India and Pakistan, with East Pakistan (now Bangladesh) separated from West Pakistan by over 1,000 miles of Indian territory. This geographical separation, combined with cultural and economic differences, likely contributed to growing tensions between the two wings. East Pakistan's agrarian economy, centered on the production of jute—a major global export and a critical source of Pakistan's foreign exchange—contrasted sharply with the relatively industrial and political dominance of West Pakistan. Despite East Pakistan's significant economic contributions, the benefits were disproportionately concentrated in the western wing, laying the foundation for decades of political and economic discord, beginning with the very inception of Pakistan in 1947.

The Economic Divide. The economic disparity between East and West Pakistan was compounded by cultural and linguistic tensions that erupted in the early years after Pakistan's formation. The *Bhasha Andolon*, or Language Movement of the 1950s, emerged as a key flashpoint in East-West Pakistan tensions following the 1948 declaration of Urdu as Pakistan's sole national language (Jahan, 1972). The call to recognize Bengali alongside Urdu amidst the 1955 Five-Year Plan and the military government's policies prioritizing the Western wing further intensified regional grievances (Stern, 1971; Khan, 2022). Notably, during the first Five-Year Plan, per capita income in East Pakistan declined, while the majority of foreign aid, loans, and revenues from national exports—despite East Pakistan generating 60-70 percent of the nation's foreign exchange—were directed towards West Pakistan. By 1960, these disparities had become stark: per capita income in East Pakistan stood at Rupees 213 compared to Rupees 305 in West Pakistan (30% lesser in East Pakistan), annual electricity consumption was 1.6 Kwh in East Pakistan versus 28.8 Kwh in West Pakistan (Sobhan, 1962). Between 1961 and 1965, the predominant source of macroeconomic savings was East Pakistan, which sustained a consistent trade surplus, whereas West Pakistan experienced a substantial trade deficit. East Pakistan produced about 70% of the world's jute supply, a crucial export commodity that contributed over 50% to Pakistan's foreign exchange reserves. Despite this economic contribution, East Pakistan received only around 30% of national development spending, fueling discontent and calls for greater autonomy (Haq et al., 1976). The inadequate response of Pakistan's central government to East Pakistan's grievances, ranging from unequal economic policies to the denial of cultural and political autonomy, intensified these divisions (Sisson and Rose, 1990). The Six-Point Movement of 1966, led by the Awami League, encapsulated East Pakistan's demands for economic and political autonomy, advocating for greater control over its resources. Emerging amid stark economic disparities and political neglect, the movement, alongside subsequent military action, is widely regarded as a critical precursor to Bangladesh's independence.

Emergence of Awami League. The origins of the *Awami League* are closely linked to the 1948 Language Movement when the Pakistani government's attempt to impose Urdu as the state language of East Pakistan encountered widespread resistance. While not the sole factor, this movement, grounded in the defense of Bengali as a core aspect of regional identity and cultural heritage, played a critical role. The backlash contributed to a faction of the ruling Muslim League breaking away to form the *Awami Muslim League*, which eventually evolved into the *Awami League* under the leadership of Sheikh Mujib. The new party rapidly gained traction and formed a coalition called the "United Front," led by the Awami League (Stern, 1971). This coalition went on to achieve a decisive victory over the ruling Muslim League in the 1954 regional elections in East Bengal.[5] The *Awami League*, initially a prominent member of the United Front coalition, emerged as an independent political force by 1955 under Sheikh Mujibur Rahman, steadily consolidating its support base. The imposition of martial law in 1958 disrupted political activities across the country, halting the party's operations and exacerbating East Pakistan's sense of alienation. By 1966, the *Awami League* regained momentum through its Six-Point Movement, advocating for a federal structure and separate fiscal and monetary administration for East Pakistan, a separate military and currency, signaling escalating demands for autonomy and even independence (Rashiduzzaman, 1970). The announcement of the 1970 general elections marked a turning point in Pakistan's history. Set against widespread student protests that culminated in General Ayub Khan's resignation in 1969, power was transferred not to a democratic regime but to General Yahya Khan's military government. General Yahya pledged to restore civilian rule by conducting Pakistan's first national elections under a universal adult franchise, aiming to address escalating political unrest, especially in East Pakistan.

Bhola Cyclone. The momentum for self-governance in the late 1960s and the anticipation of the 1970 elections were abruptly disrupted by the catastrophic Bhola cyclone, which struck East Pakistan on November 12, 1970. The storm surge submerged vast coastal areas and caused an estimated 300,000 to 500,000 deaths, making it the

[4]The Radcliffe Commission, led by British lawyer, Cyril Radcliffe (who had never been to the region), was tasked with drawing the borders between India and Pakistan in just five weeks, a process criticized for its haste and lack of local knowledge (see for instance, Hajari (2015) for more details). For an analysis of the impact of such redrawing of borders on conflict, see, (Michalopoulos and Papaioannou, 2016).

[5]We incorporate pre-treatment 1954 vote share for the Awami League coalition (or United Front) as a control variable in our regression specifications to account for baseline support for Awami League.

deadliest tropical cyclone in recorded history. Named after the Bhola district, one of the hardest-hit regions, the cyclone brought wind speeds of up to 205 km/h and a storm surge of 10 meters, causing widespread devastation that extended far inland beyond the coastal areas (The Atlantic Oceanographic and Meteorological Laboratory (2024)).[6] East Pakistan's geography, defined by its low-lying topography and proximity to the Bay of Bengal, rendered it exceptionally vulnerable to cyclonic activity. This inherent susceptibility amplified the devastation caused by the Bhola Cyclone, as the region's vast floodplains and inadequate infrastructure allow even less severe storms to penetrate far inland, causing widespread destruction (Frank, 1971). The storm affected approximately 4.7 million people (World Bank Report, 1970). 400,000 houses were damaged, 115,000 fishermen were impacted, and overall damage to the crops and infrastructure was estimated by the World Bank at USD 330 million (World Bank Report, 1972). The coastal regions of Bakerganj, Patuakhali, Noakhali, Khulna, Chittagong, Chittagong Hill Tracts, and Comilla were almost completely wiped out. The Bhola Cyclone, while primarily a devastating natural disaster, also served as a focal point for political awakening, amplifying grievances in East Pakistan and contributing to the broader momentum for autonomy and self-governance (Carney and Miklian, 2022).

Aid by West Pakistan. In the immediate aftermath of the storm, the Pakistani government needed to galvanize swift and coordinated relief efforts. The World Bank underscored the urgency of restoring healthcare, food supplies, and clean water, alongside repairing roads, irrigation channels, and the fishing industry to protect the rural economy and upcoming harvest (World Bank Report, 1970). The report outlined critical measures to aid recovery, emphasizing the reconstruction of roads and irrigation systems alongside the provision of essential farm machinery, seeds, fertilizers, and livestock. To address these needs, the Ministry for Relief and Rehabilitation estimated post-storm expenditures at USD 45.5 million for the following year. This amount included USD 25 million pledged in the form of international loans, supplemented by foreign aid and charitable donations (World Bank Report, 1972). Despite the urgency, relief efforts following the devastating November 1970 cyclone were minimal, concentrated in only a few coastal regions, and largely limited to rebuilding select roads and distributing tractors and water pumps. Eric Griffel, the U.S. development officer leading relief operations in East Pakistan, bluntly highlighted the failure of the response, stating, "The West Pakistani government didn't do anything". Similarly, U.S. diplomat Archer Blood, reflecting on the aftermath of the storm, remarked, "It was almost as if they just didn't care.". In sharp contrast, the international community mounted a highly visible response, with the United States, the Soviet Union, Britain, and other nations providing critical support (Rohde, 2014). American and Soviet helicopters, prominently visible in relief efforts, underscored the stark disparity between international aid and the Pakistani government's limited involvement in addressing the needs of cyclone-affected areas. For many East Pakistanis, the reliance on foreign powers to address their plight while their own government faltered became a decisive moment of disillusionment. Eric Griffel poignantly concluded, "The cyclone was the real reason for the final break." (Bass, 2013).

General Elections 1970. Less than a month after the cyclone, elections were held in East and West Pakistan, with the Awami League receiving overwhelming support. The party's platform strongly resonated with East Pakistan's demands for autonomy. Commentators have noted that the party's nationalist platform effectively unified the region's longstanding grievances into a cohesive demand for greater control over its resources and governance (see, e.g., Baxter (1971); Al Mujahid (1971)). The Bhola cyclone likely shaped the elections by serving as a unifying focal point for the grievances of East Pakistan. In a report to President Nixon, Henry Kissinger, then National Security Advisor, underscored the political ramifications of the Bhola cyclone, stating, "The deep antagonism of Bengalis for the central Pakistani government is now much worse," highlighting its role in exacerbating unrest in East Pakistan (Kissinger, 1970). Similarly, the U.S. aid mission director in Dhaka called the cyclone the "final straw," attributing it to large-scale political mobilization (Griffel, 2015). The 1970 election results, which gave the Awami League a near-total sweep of East Pakistan's Assembly seats, came in the wake of the cyclone. The Awami League, championing East Pakistan's autonomy, won 160 out of 162 National Assembly seats with an average vote share of 75%. The day after the election, the Awami League's key publication ran with the headline: "The flag of independence is flying high on the Bay of Bengal." (Ittefaq, 1970).

Aftermath of the Elections. Having secured an electoral majority in the Pakistani legislature, the Awami League set out plans to govern both the Eastern and Western wings of Pakistan and to draft a new constitution reflecting its Six-Point Program. However, this vision was obstructed by the West Pakistani government, led by General Yahya Khan's military regime, which refused to transfer power to the elected government. The National Assembly session to elect the new Prime Minister—most likely Sheikh Mujibur of Awami League—was never convened. By late February 1971, the military regime had already begun preparations for military action in East Pakistan to

[6] A storm was expected on November 12th, 1970, as weather reports warned of an approaching monsoon, and fishermen noted a drop in barometric pressure 24 hours before it made landfall. Precautionary alerts at the maximum "Red 4" level were issued via evening radio broadcasts, indicating that the storm had reached the highest severity rating of 4 out of 4. The population is believed to have underestimated the severity of the storm, with many mistakenly believing that the intensity was being communicated on a 10-point scale, which contributed to the widespread unpreparedness (Carney and Miklian, 2022).

quell the escalating unrest. On February 27, 1971 troop reinforcements arrived in Dhaka to preempt any declaration of independence by Sheikh Mujib. Tensions escalated further on March 1, 1971, when the central government indefinitely postponed the National Assembly session, triggering widespread protests and a non-cooperation movement in East Pakistan. This marked the beginning of the war for Bangladesh's independence.

War of Independence. On the night of March 25, 1971, the Pakistan Army launched Operation Searchlight in East Pakistan, a military crackdown aimed at suppressing the growing independence movement in East Pakistan. General Yahya Khan justified the military intervention by branding Bengalis as "traitors" and "enemies of Pakistan." His inflammatory rhetoric culminated in the now-infamous statement, "Kill three million of them, and the rest will eat out of our hands," underscoring the regime's violent and oppressive approach toward the population of East Pakistan (Payne, 1972).[7] The military crackdown aimed to suppress Bengali demands for autonomy, resulting in widespread atrocities, including mass killings, sexual violence, and the destruction of entire villages. The military operation is considered one of the darkest chapters in South Asian history. In the wake of this military action, East Pakistan declared its independence as Bangladesh on March 26, 1971. This declaration galvanized widespread support for the independence movement. By the end of April 1971, approximately 250,000 civilians had volunteered to join the newly formed Bangladeshi military force, the *Mukti Bahini* (Saday, 2021). Volunteers, screened by Awami League representatives, were sent to India for up to four weeks of military training, supported by 25 youth camps training 1,000 recruits each. Initially disorganized, the Bangladesh resistance faced early defeats, but by May 1971, efforts to build an insurgent army intensified. By July, training facilities prepared 12,000 new fighters monthly, with the first insurgents targeting factories, electric pylons, and railway bridges. By September, training capacity had surged to 20,000 new military recruits per month, escalating guerrilla operations. With Indian support, Bangladesh established a Navy and an Air Force. By November 1971, the continuous influx of new insurgents significantly accelerated the momentum of the liberation effort (Lindquist, 1977).

Independence of Bangladesh. The conflict came to a decisive end on December 16, 1971, when West Pakistan signed the "Instrument of Surrender," with West Pakistani forces surrendering in East Pakistan. The War of Independence had escalated into an international conflict two weeks earlier when Indian forces intervened following the influx of approximately 10 million refugees to its borders and increasing reports of atrocities in East Pakistan. Indian military involvement led to the Indo-Pakistani War, decisively tipping the balance in favor of the Bangladeshi resistance. By the end of the war, an estimated one to three million people had been killed and millions more displaced, underscoring the profound human cost of the conflict (Baxter, 1971). Throughout the nine months of violence in Bangladesh, there was a systematic and calculated effort to eliminate intellectuals, particularly in the days leading up to West Pakistan's surrender. Between December 12 and 14, 1971, numerous respected professionals—including doctors, engineers, civil servants, and teachers—were abducted from their homes and executed. In Dhaka alone, it is estimated that nearly 80% of the intellectual community was murdered (Akram, 2002). These events highlight the intersection of mass violence and the strategic targeting of societal elites during the conflict. The targeting of intellectuals suggests the deliberate and calculated brutality of the war, positioning it not only as a struggle for liberation but also as a systematic campaign of annihilation aimed at erasing the cultural and intellectual foundation of the new nation. A timeline of key events, from the Bhola cyclone to the War of Independence, is provided in Figure B1 of Appendix B.

3 Data

At the core of this research is a large-scale digitization and data consolidation effort connecting the Bhola Cyclone to electoral and conflict outcomes. By leveraging sub-district level storm intensity measures, we integrate ground windspeed data with satellite observations of the storm and link it with election and conflict data, which we also digitized using archival records. This allows us to provide new quantitative insights into a relatively overlooked chapter in the history of one of the most violent conflicts. Below we provide explanations of the key variables used in the study.

Storm Intensity. The key explanatory variable we use is the Bhola Storm Intensity measure derived from ITOS-1 satellite imagery. The underlying principle is simple: cyclone clouds block solar radiation from reaching the Earth's surface. The ITOS-1 satellite, funded by the U.S. Department of Defense, was hailed as the most advanced real-time cloud monitoring system of its time, serving as a critical asset during the Cold War (Carney and Miklian, 2022). This satellite was operational from January 23 to November 16, 1970, until a tape recorder failure compromised further data transmission (NASA Space Science Data Coordinated Archive (1970)). The Bhola cyclone, which occurred on

[7] Despite East Pakistanis comprising 56% of Pakistan's national population, they represented less than 10% of an army estimated at 350,000 personnel, with only two Bengalis among the top 50 officers. General Yahya's predecessor, General Ayub Khan, had disparagingly described East Pakistanis in his diaries as living a "largely uncultured life" and having "no culture or language of their own" (Khan (2007)).

November 12, 1970, fell within the satellite's brief operational window, allowing us to document its intensity through satellite images captured just before the failure. The data even allow us to analyze the distribution of cloud cover on the day of the storm, as well as to conduct placebo tests using the distribution of cloud cover just before and just after the storm. ITOS-1 provided black-and-white Earth maps color-coded by a radiance intensity scale (0–15), where 0 represents the brightest, least cloudy areas. For East Pakistan, we isolate the relevant quadrant, divide it into smaller sectors, and use Python's cv2 library to calculate the proportion of black pixels, yielding grey-scale intensity values (0–255). These values are rescaled to match the radiance scale, with 15 indicating the densest cloud cover. These satellite-derived measures are validated against wind speed data from 17 weather stations active during the storm, showing a strong correlation (Figure B2, Appendix B).[8] While both metrics yield similar results, the satellite data provide greater granularity.

Votes for Awami League. The first outcome variable in our analysis is "Votes for Awami League," capturing the vote share for the separatist party in the pivotal 1970 elections in Pakistan. The Awami League's overwhelming support in East Pakistan secured an outright majority across both East and West Pakistan. These elections marked a pivotal moment in Pakistan's political history, defined by stark divisions between East and West Pakistan, with the Awami League championing East Pakistan's autonomy and control over its resources. The voting data is drawn from an electoral compendium on National Assembly Elections in East Pakistan, archived by a prominent civil society organization (Free and Fair Election Network (2010)). Panel B of Figure 1 depicts the spatial variation in the vote share for the Awami League across East Pakistan, juxtaposed with storm intensity data shown in Panel A of Figure 1. The figure highlights a strong correlation between storm intensity and support for the Awami League, with a notable exception: areas near the coast of Chittagong, where the storm's devastation was so huge that it disrupted typical voting patterns. As (Sobhan, 2007) observes about the region, "about 2,000 bodies had been buried by workers of the Awami League in that area," reflecting both the devastation of the region and suggesting a link between the Awami League's involvement in relief efforts and electoral outcomes in storm-affected regions.

Insurgents. The second key outcome variable in our analysis pertains to the number of soldiers who participated in the Bangladeshi War of Independence, which we define as the number of insurgents. This variable is directly tied to the events surrounding the Awami League's electoral victory in the 1970 national elections, which granted them the right to form the government. However, West Pakistan's refusal to transfer power to the Awami League precipitated a Non-cooperation Movement in East Pakistan. This movement was characterized by widespread civil disobedience against the central government, which, in turn, prompted a violent response from West Pakistan, notably through violent military action. This violence catalyzed the formation of a resistance movement against central government, which we categorize as insurgents in line with the conflict literature. To construct the variable representing insurgents, we rely on historical records, specifically military archives, which document the composition and mobilization of the Bengali insurgents (freedom fighters) (The Ministry of Liberation War Affairs (2024)). We then geo-locate in total 200000 insurgents, enabling us to map variation in insurgent presence at the sub-district level. Figure B3 illustrates the spatial distribution of insurgents across East Pakistan. Notably, this distribution and its correlation with storm intensity suggest a potentially significant relationship between the cyclone and the conflict.

Control Variables. In our regression specifications, we use three sets of control variables. First, we estimate our models with a baseline set of controls, including distance to the coast and pre-treatment votes for the Awami League coalition (United Front). These controls address typical confounders in cross-sectional regressions, such as geographic proximity or historical political preferences, that might otherwise bias the estimated relationship. By including these variables, we mitigate concerns that the Bhola cyclone is merely proxying for omitted factors correlated with Awami League votes. Second, to address concerns of overfitting our specification, we apply the double robust selection procedure from (Belloni et al., 2014), which uses Lasso regressions to select covariates predictive of the treatment and the outcome. This ensures robust control for confounding while balancing model fit. Third, we report results after including the complete set of available controls to assess the robustness of our estimates. We demonstrate the robustness of our results by sequentially dropping these controls one by one. As shown in Figure B5 of Appendix B, the estimates remain consistent and closely aligned with the baseline results, reinforcing the validity of our findings despite the exclusion of individual controls. We digitize the 1951 agriculture and economic censuses, news archives, memoirs of the founder of the Awami League, Sheikh Mujib, and election records to obtain variables such as voter turnout, constructing a large list of control variables. These control variables include voter turnout in the 1970 elections, an indicator for Sheikh Mujib's visits to regions of East Pakistan before the Bhola cyclone, an indicator for student protests in 1969, the percentage of the Hindu population in 1951, distance to the coast of the Bay of Bengal, and an indicator for whether a subdistrict is classified as a city. In the robustness checks section, we estimate additional models incorporating distance to Dhaka, excluding coastal regions, including region fixed effects, and using alternative definitions of the dependent variable. Even in these more demanding specifications, our results remain robust and align closely with the baseline estimates.

[8] The link between cyclone intensity and cloud cover is also supported by recent scientific literature, see for instance (Hu, 2023).

Descriptive Statistics. In this subsection, we provide a brief overview of the data. Table B1 presents summary statistics for the main variables used in the study, including their means, medians, minimum and maximum values, standard deviations, and the number of observations. The data were collected at the level of 162 subdistricts, referred to as "constituencies" or electoral districts, in East Pakistan. These subdistricts were organized into 4 regions, corresponding to the administrative structure of regions in 1970 East Pakistan (now Bangladesh). The mean storm intensity, based on ITOS-1 satellite imagery, is 10.8 out of a maximum value of 15, reflecting the thick cloud coverage over East Pakistan during the Bhola storm, with a standard deviation of 1.8. Figure B2 in Appendix B highlights the correlation between storm intensity measured by the ITOS-1 satellite and ground wind station data (p-value < 0.01). For the outcome variables, the mean vote share of the Awami League is approximately 75%, and there are about 1300 insurgents per subdistrict who participated in the Bangladeshi War of Independence. Table B1 presents summary statistics for all variables used in the study. Additional details on variable definitions, data sources, and data construction are provided in Appendix A of the Online Publication.

4 Empirical Methodology

Estimation Equation. To assess the impact of the Bhola cyclone on votes for the Awami League and conflict, we estimate the following specification:

$$Y_i = \beta \text{ Cyclone Intensity}_i + \gamma Y_{i,t-\tau} + \mathbf{X}'_{i,t-\tau}\theta + \epsilon_i, \tag{1}$$

where Y_i, represents the outcome of interest, such as the vote share for the Awami League or the number of insurgents in the War of Independence, in subdistrict i. The key independent variable, Cyclone Intensity$_i$, captures the intensity of the Bhola Cyclone in subdistrict i, as measured using ITOS-1 satellite data. We include as a control variable, vote share of Awami League Coalition in 1954 elections, $Y_{i,t-\tau}$, which reflects the vote share for the United Front coalition (led by the Awami League). This accounts for pre-existing political support at baseline and allows us to adjust for districts' initial political conditions, which might independently influence subsequent vote shares and conflict. This first-differences model is similar in design to (Heldring et al., 2021), aiming to mitigate pre-treatment differences across districts. We also include distance to the coast as a control variable alongside vote share for the Awami League's coalition. Together, these two variables constitute the "baseline controls," forming the basis of our first key model.

In our second key model, we control for a number of baseline historical and geographic characteristics, $\mathbf{X}_{i,t-\tau}$. We include all pre-treatment variables collected and digitized from historical sources, including memoirs of Sheikh Mujib, census records, government financing documents, population statistics, agricultural census data, and news archives. We estimate our model with this expanded set of 10 control variables, which includes a range of historical subdistrict-level factors to adjust for underlying differences in resilience and recovery, pre-existing political engagement, regional exposure to political movements, and demographic composition. These controls may mitigate omitted variable bias. Voter turnout in the 1970 elections is also included in this group of covariates.

In our third key model, we address the potential risk of overfitting due to the inclusion of 11 explanatory variables (including the storm intensity variable). To ensure a more structured approach to model selection, we apply the post-double-selection method for control variable selection, as outlined by Belloni et al. (2014). This approach systematically identifies and includes only the most relevant variables from a large set of controls. Specifically, it uses Lasso regressions to select covariates predictive of both the treatment and the outcome, ensuring robust control for confounding through double robustness. By incorporating variables from both selection steps, it avoids overfitting and provides a principled framework for covariate selection, yielding consistent treatment effect estimates. All standard errors in our main regressions are Newey-West standard errors, and the results remain essentially unchanged when accounting for spatial heterogeneity using Conley's spatial correlation and other similar methods.

Identification Assumptions. The identification assumption underlying our empirical strategy is that conditional on the distance to the coast and prior votes for the Awami League Coalition, the Bhola cyclone's spatial distribution can be considered effectively random. There are several reasons to support the validity of this assumption. First, evidence from various contexts suggests that weather events, particularly extreme events, are often exogenous to socio-political factors (Cavallo et al., 2013). Meteorological research further supports that cyclones are driven by complex atmospheric and oceanic dynamics, which are plausibly unrelated to the socio-political characteristics of the regions they affect, and their randomness may be exacerbated by climate change (see, e.g., (Emanuel, 2005; Knutson et al., 2010)).[9] Second, and more importantly, balance tests of storm intensity across baseline geographic, political,

[9]While proximity to the coast influences cyclone severity, variation in intensity within coastal and inland districts appears largely stochastic, consistent with suggestions in (Pielke Jr and Landsea, 2008). Other studies also exploit the plausibly exogenous nature of extreme weather events, providing supporting evidence (Dell et al., 2014; Hsiang et al., 2013).

and economic factors suggest that storm intensity is plausibly similar across districts. The baseline variables include demographics such as population size and linguistic composition (e.g., Bengali, Persian, and Arabic speakers), economic indicators such as urban status, proximity to infrastructure, factory counts, electricity access, and main crop plantations, and political factors such as Mujib's 1969 visits, famine casualties, and politicians' birthplaces. The results of these balance tests are presented in Table B2 in Appendix B. Third, given that the Bhola cyclone affected both coastal and inland areas, we show that excluding the most severely impacted coastal districts does not alter our results. This demonstrates the robustness of our findings. Table B4 in Appendix B presents these results, while further identification checks and placebos will be discussed after the main results in the next section.

5 Main Results

Impact on Separatist Votes. Our analysis begins with examining the Bhola Cyclone's impact on votes for the Awami League. Panel A, Column 1 of Table 1 reports a regression of cyclone intensity on vote share, excluding any control variables. Even in this parsimonious specification, we observe a qualitatively and statistically significant positive relationship between storm intensity and the share of votes for the Awami League in the 1970 elections. A one standard deviation increase in log cyclone intensity (0.179) results in a 3.15 percentage point increase in the Awami League's vote share, equivalent to a 4.2 percent increase relative to the mean vote share. In Column (2), we incorporate two key control variables, referred to as baseline controls: distance to the coast and votes for the Awami League coalition in 1954. These controls give the OLS estimation in Column (1) a first-difference interpretation, accounting for baseline political dissent. The point estimates indicate that the effect becomes even larger. A one standard deviation increase in cyclone intensity is associated with a 4.5 percentage point rise in the Awami League's vote share, representing a 6 percent increase relative to the mean vote share. In Column (3) of Panel A, Table 1, we expand the set of controls to include all available baseline variables. These controls capture key pre-cyclone characteristics, such as Sheikh Mujibur Rahman's visits to constituencies prior to the elections, the presence of student protests, an urban indicator for cities recorded in 1961, the percentage of the Hindu minority, subdistrict area, population size, the number of major industrial facilities, and the share of the English-speaking population, among others. The results remain consistent, indicating a qualitatively and statistically significant impact of cyclone intensity on the Awami League's vote share. Since the model in Column 3 includes a large number of controls relative to the sample size, there is a risk of overfitting. To address this, we apply the post-double-selection algorithm proposed by (Belloni et al., 2014) to reduce dimensionality and provide a more structured approach to covariate selection. The results, reported in Column 4 of Table 1 (Panel A) remain similar.[10]

Impact on Conflict. The failure to accept the election victory of the Awami League in December 1970 triggered a cascade of social disruptions, culminating in large-scale conflict. As detailed in the timeline of events illustrated in Figure B1 (Appendix B), the initial political stalemate following the election rapidly escalated into widespread unrest. By March 1971, the situation had escalated into outright war, with East Pakistan's population mobilizing against the central government. What began as an insurgency rapidly transformed into a full-fledged war of independence. A key question arises: to what extent were cyclone-affected areas more likely to respond to the call for Bangladesh's independence? Archival evidence suggests that districts experiencing higher storm intensity were significantly more likely to produce insurgents for the war of Bangladeshi independence. These findings are reported in Panel B of Table 1, while Figure B3 in Appendix B visualizes the distribution of insurgents across subdistricts of former East Pakistan. Across our baseline controls, full set of controls, and Post-Double-Selection controls, the results remain consistent. A one-standard-deviation increase in cyclone intensity is associated with approximately two additional insurgents per 1000 people emerging from affected subdistricts—equivalent to a 30% rise relative to the mean insurgent count recorded in archival data.

Identification Checks. We undertake three critical identification checks to support a causal interpretation of our findings. Our identification strategy hinges on the quasi-random distribution of cyclone intensity across East Pakistan, accounting for coastal proximity and pre-1970 electoral support for the Awami League. First, as noted earlier, the results are balanced across multiple pre-treatment outcomes, including baseline socio-economic, demographic, and political variables, as shown in Table B2 of Appendix B. Second, to address potential concerns about omitted unobserved characteristics, we perform a placebo test. Specifically, we analyze satellite data recorded one day before the Bhola Cyclone's landfall. The results, reported in Panel A and Panel B of Table B7 in Appendix B, show negligible effect. Third, we conducted an additional placebo test, utilizing data from another cyclone that occurred well after the separation of Bangladesh. This test examines its impact on votes for the Awami League in

[10]Since our regressions are conducted at the subdistrict level, we can incorporate district and region fixed effects to account for unobserved heterogeneity at higher administrative levels. As shown in Table B6 of Appendix B, the results remain robust to the inclusion of region fixed effects. Earlier in Table B4 of Appendix B, we showed that excluding coastal areas from the sample also does not alter our conclusions.

1970 and the conflict in 1971. This test investigates the potential influence of region-specific factors, such as whether cyclone-affected areas inherently differ in ways that might independently affect Awami League votes or conflict. The results, presented in Table B8 of Appendix B, show no significant effects, further supporting the robustness of our identification strategy. A potential critique of our earlier placebo test using Cyclone Mora is its relatively lower intensity compared to the Bhola Cyclone. To address this concern, we conducted an additional placebo analysis using Cyclone Sidr, which struck in 2007 with significantly higher intensity (e.g., wind velocities reaching 260 km/h). Unlike Bhola, however, Sidr saw a considerably lower death toll due to improved government preparedness and response. This test examines whether Cyclone Sidr affected Awami League votes in 1970 or the incidence of conflict in 1971. As shown in Table B9, these placebo tests indicate no significant effects, reinforcing the causal interpretation of our findings.[11] Lastly, we conduct a placebo test using pretreatment election data, Table B3 reports no significant relationship between storm intensity and pretreatment election results of Awami League.

6 Mechanisms

Aid by West Pakistan. We now examine the mechanisms through which the Bhola Cyclone may have mediated the rise in Awami League votes and increased consequent conflict. A striking observation from the historical record is the apparent lack of concern and inadequate aid provided by West Pakistan in response to the large-scale devastation caused by the cyclone. World Bank personnel stationed in East Pakistan swiftly assessed the damage and issued a report highlighting priority areas for immediate action (World Bank Report, 1970). The report emphasized the urgent need to restore road networks and repair drainage and irrigation channels to prevent soil salinization and safeguard the upcoming harvest. The rural economy, which bore the brunt of the devastation, required immediate attention, with crops, cattle, and poultry nearly wiped out. It further highlighted the necessity of providing essential inputs such as farm machinery, seeds, fertilizers, and livestock to support recovery efforts. Yet, the military leader General Yahya Khan's infamous remark after a helicopter flyby—"doesn't look too bad" (Carney and Miklian, 2022)—underscores the inadequacy of the government's response to the cyclone. This sentiment was echoed by others who criticized the apathy of West Pakistan's leadership. Eric Griffel, the development officer overseeing the U.S. relief operation in East Pakistan, bluntly stated, "The West Pakistani government didn't do anything," while U.S. diplomat Archer Blood reflected, "It was almost as if they just didn't care." Our analysis of archival data on aid distribution corroborates these criticisms. Drawing the World Bank's reports on the aid distribution (World Bank Report, 1972), we identify the locations where West Pakistan did provide aid—albeit in minimal quantities. As shown in Figure B4 in Appendix B, only a few coastal areas received limited assistance. Critically affected regions, such as Chittagong, were entirely neglected. This uneven and sparse distribution of aid raises an important question: did the limited aid provided mediate the storm's impact? We quantitatively evaluate the relationship between storm intensity and the aid provided by West Pakistan, finding that areas receiving aid were less likely to vote for the Awami League or engage in insurgent activity. Table 2 reports these results. However, the aid provided was so minimal that it did little to counteract the broader trends, with the cyclone having a substantial overall impact on both increased support for the Awami League and heightened conflict. While these findings are suggestive, they raise concerns about the potential endogeneity of aid allocation. It is plausible that the West Pakistani government strategically targeted aid to regions where they sought to preserve their support base, complicating causal inference. In such contexts, Heckman and Pinto (2024) advocates for the use of causal mediation analysis to rigorously estimate the extent to which the mediator—in this case, the allocation (or absence) of aid—accounts for the observed outcomes. As reported in Table B11 (Column 1), the empirical findings suggest that the indirect effect, which in this instance is the aid provided by West Pakistan, statistically mediates the relationship between the votes for the Awami League. Notably, the magnitude of this mediation is considerable, with approximately 40% of the variation being explained through this mechanism.

Pre-existing Grievances. Another mechanism aligned with historical records is the pre-existing grievances that the cyclone likely intensified. If the cyclone served as a focal point to highlight the longstanding marginalization of the Bengali population in East Pakistan, it built upon deep-rooted political and economic discontent. As discussed in the historical background section, the political marginalization of East Pakistan began almost immediately after the partition of British India into Pakistan and India. The 1948 declaration of Urdu as the official language, despite the predominance of Bengali speakers, sparked widespread unrest, culminating in the language riots and the rise of a broader language movement. These grievances became central to political mobilization, with the United Front coalition, led by the Awami League, campaigning on issues of linguistic autonomy and political disenfranchisement

[11] Importantly, Bhola cyclone also does not suppress political participation, alleviating concerns that our results are driven by compositional effects in voting. In fact, our analysis suggests a weakly positive relationship between the Bhola Cylcone intensity and political participation. Table B10 in Appendix B suggests that voter turnout in the 1970 elections may have been slightly higher in areas where the cyclone was more intense.

during the 1954 elections, in which they secured significant electoral victories. To test whether areas where the Awami League-led coalition performed strongly in the 1954 legislative elections were more affected by the cyclone, we examine the relationship between cyclone intensity and political alignment. Table 3 shows that regions with higher storm intensity had significantly higher Awami League vote shares, suggesting a strong interaction between historical political discontent and the cyclone's aftermath. A formal causal mediation analysis, reported in Table B11 (Column 2), also supports this conclusion, indicating that approximately 30% of the observed variation in outcomes can be attributed to pre-existing political dissent, as captured by United Front coalition votes in the 1954 elections Heckman and Pinto (2024).

Similarly, preexisting economic deprivation likely played a role, with evidence suggesting that the cyclone disproportionately impacted subdistricts characterized by higher levels of resource extraction and economic exploitation. The two primary crops in East Pakistan were jute, a cash crop exported almost entirely to earn foreign exchange for the central government, and rice, a subsistence crop produced and consumed locally within East Pakistan. Jute, as a symbol of economic extraction, represented the broader inequalities faced by East Pakistan, where its economic resources were disproportionately used to benefit the central government (Baxter, 1971). In contrast, rice, being locally consumed, was relatively less entangled in such exploitative dynamics. To investigate whether the economic reliance on jute production mediated the cyclone's political effects, we assess whether jute-producing regions, as documented in the 1964 Agricultural Survey, were more severely impacted by the storm compared to rice-producing regions. Table 4 reports these results, revealing that storm-affected regions with a higher share of jute plantations experienced significantly higher levels of political unrest, as reflected in increased Awami League votes and heightened insurgency (Panel A of Table 4). Conversely, no such relationship is observed in predominantly rice-producing areas (Panel B of Table 4).[12] These findings suggest that economic exploitation by the Central Government also potentially amplified grievances in storm-affected subdistricts. Taken together, the results of Table 3 and Table 4 suggest that it is not that the cyclone created separatist aspirations in East Pakistan; rather, it exacerbated and possibly galvanized existing separatist sentiments. The disaster may have transformed latent grievances into a more cohesive and urgent demand for greater autonomy and, ultimately, independence.

Discussion. The Bhola cyclone illustrates how environmental shocks can transform political landscapes by exposing state failures and galvanizing collective action. The storm's devastation and the inadequacy of state relief efforts catalyzed widespread mobilization, turning pre-existing grievances into coordinated separatist demands. As (Rohde, 2014) observes, "Though the Government is a military one, the army was not fully mobilized for ten days... not a single [airdrop] was made in the first few days," highlighting the apathy in the face of widespread suffering. Similarly, (Bass, 2013) emphasizes the cyclone's role in electoral outcomes, stating that it gave Bengali nationalists "a chance to shout their rejection of West Pakistan," leveraging the government's inaction to fuel demands for autonomy. While these accounts are important, (Sobhan, 2007) argues that "the cyclone merely dramatized the argument and reaffirmed their conviction," suggesting that pre-existing political discontent and demographic factors were decisive in the election. The counterfactual—how the independence movement would have unfolded without the cyclone—is inherently uncertain. However, the qualitative and quantitative evidence together suggested that the storm acted as a accelerant, transforming latent grievances into coordinated political mobilization and conflict.

7 Alternative Mechanism and Robustness

Alternative Explanation. To investigate an alternative mechanism underlying the storm-induced increase in Awami League votes, we investigate whether this effect is driven by compositional factors, specifically whether the larger vote shares are attributable to increased electoral competition for the pro-independence Awami League, as measured by the number of candidates contesting the 1970 elections in each subdistrict. Table B13 examines the relationship between storm intensity and the number of candidates per constituency to determine whether heightened electoral competition could explain the observed vote share patterns. The results reveal no qualitative or statistically significant relationship between storm intensity and the number of candidates, suggesting that the increase in Awami League vote shares is not merely a result of greater competition. Instead, these findings suggest that the cyclone intensified pre-existing grievances and amplified support for the Awami League as the political vehicle for expressing these sentiments. The null result on compositional effects strengthens the interpretation that the storm's impact on political outcomes was driven by heightened dissatisfaction with the central government and a rallying effect around the Awami League's platform of autonomy and resistance to exploitation.

[12] In contrast, colonial-era development, such as railroads and industries established before 1947, appear largely unaffected by the cyclone's impact. As shown in **??** in Appendix B, these findings suggest that the storm's effects amplified in subdistricts directly tied to resource extraction and economic exploitation by West Pakistan rather than legacy infrastructure or industries inherited from the colonial period.

Further Robustness Checks. In Appendix B, we report a set of robustness checks, which we briefly summarize here. Our approach to covariate selection was structured, starting with the inclusion of baseline controls such as distance to the coast and pre-1970 Awami League support, proxied by the Awami League-led United Front coalition vote share in the 1954 elections. We then incorporated 10 control variables and also applied a PDS (Post-Double Selection) procedure to show our results were robust. To address concerns that our results may still be driven by a specific control variable, we adopt a transparent approach by sequentially adding each control variable to the model. Panel A of Figure B5 presents the results for Awami League vote shares as the dependent variable, while Panel B focuses on the number of insurgents. In both cases, adding control variables one by one has minimal qualitative or statistical impact on our estimated coefficient for storm intensity. The results consistently show that storm intensity is robustly associated with higher Awami League vote shares and a greater number of insurgents. These findings suggest that the relationship between storm intensity and the observed political outcomes is not an artifact of specific control variables but rather reflects a substantive effect of the Bhola cyclone in shaping political mobilization and unrest. Recognizing the potential for spatial correlation—given the similarity of neighboring districts—we apply the Conley spatial correlation method to account for this issue (Conley, 2010). Beyond this approach, we further examine robustness by varying the spatial correlation cutoff distances, ranging from 10 km to 200 km. The results, reported in Table B14, remain robust across these specifications, demonstrating that our findings are not driven by spatial spillovers or local clustering. We also demonstrate that our results are not sensitive to the choice of functional form for the dependent variable. Specifically, we obtain similar results when using log votes, the inverse hyperbolic sine (IHS) transformation, or a Poisson specification for the mean dependent variable. These robustness checks, reported in Table B15, confirm that our findings remain consistent across different functional forms. To further assess the robustness of our findings, we conduct a randomization inference test by scrambling the subdistricts with varying storm intensity and recomputing the p-values (Heß, 2017). This test enables us to evaluate whether the observed correlations between storm intensity, Awami League vote shares, and insurgency are likely due to random chance. As shown in Figure B8, the results of the test for the coefficients of storm intensity indicate that we can reject the null hypothesis – that the effects occur regardless of permutation – at conventional significance levels.

8 Concluding Remarks

This paper examines the role of the Bhola cyclone in shaping political and conflict dynamics that culminated in the birth of Bangladesh. By linking novel satellite data on storm intensity with newly digitized archival records of voting behavior, conflict participation, and state-led violence, we document how a catastrophic natural disaster intersected with institutional failures to catalyze a political movement for the independence of Bangladesh. The cyclone's devastation—and the inadequacy of relief efforts by the West Pakistani government—amplified pre-existing grievances, fostering political mobilization and escalating separatist aspirations into a full-fledged independence movement. By leveraging quasi-random variation in storm intensity across subdistricts and controlling for pre-existing political dissent and geographic proximity to the coast, we ensure that the results are not driven by omitted confounders. Placebo tests using alternative cyclones, balance checks on baseline characteristics, and the use of post-double-selection methods further support our causal interpretation.

We document three key findings. First, the cyclone's impact revealed the state's inability—or unwillingness—to address the needs of its citizens, intensifying political discontent and galvanizing support for the Awami League's pro-autonomy platform. Second, the heightened grievances in affected regions translated into increased participation in the War of Independence, as evidenced by the disproportionate representation of cyclone-affected districts in insurgent activities. Third, the targeting of intellectuals in these same regions underscores the repressive measures adopted by the Pakistani state in response to the political upheaval.

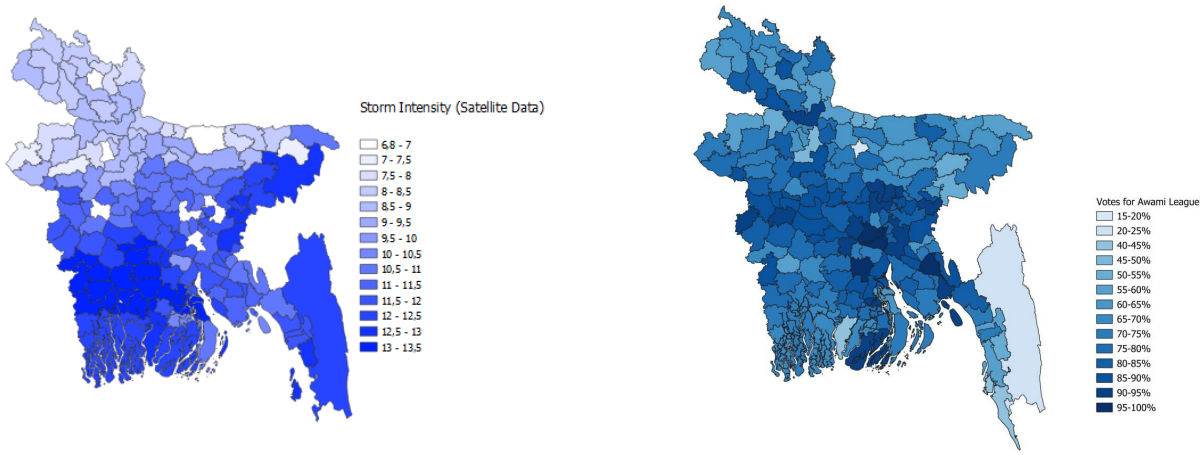
The Bhola cyclone provides a striking example of how natural disasters can act as accelerators of historical change. By exposing institutional failures and uniting marginalized groups around shared grievances, such shocks can fundamentally reshape political and institutional landscapes. This case underscores the need for responsive governance and equitable resource allocation, particularly in regions vulnerable to the dual challenges of environmental vulnerability and political fragility.

9 Figures and Tables

Figure 1: Bhola Cyclone Intensity and Votes for Awami League

(a) Panel A. Storm Intensity

(b) Panel B. Votes for Awami League



The figure depicts share of votes received by nationalist party (Awami League) in each constituency on 1970 election and intensity of the storm by district. The measure of intensity is brightness of the region on the satellite image of the storm. The image was taken by ITOS-1 satellite during its' brief period of functionality.

Table 1: Impact of Bhola Cyclone on Votes for Awami League and Participation in the War of Independence.

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (Storm Intensity)	0.176***	0.251**	0.205**	0.203**
	(0.061)	(0.101)	(0.102)	(0.099)
Adj. R^2	.046	.085	.104	.117
Mean Dep. Var.	.745	.745	.745	.745
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (Storm Intensity)	5.887**	8.913**	10.426**	8.709**
	(2.401)	(4.246)	(4.701)	(4.005)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Adj. R^2	.028	.021	.104	.125
Mean Dep. Var.	6.94	6.94	6.94	6.94
SD of Log(Intensity)	.179	.179	.179	.179
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. Adjusted R^2 is reported, for column 4 adjusted R^2 for OLS estimation with the same set of control is reported. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Storm and Aid to East Pakistan

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (Storm Intensity) X Aid by West Pakistan	-1.080***	-1.348***	-1.311***	-1.311***
	(0.399)	(0.482)	(0.488)	(0.465)
Log (Storm Intensity)	0.191***	0.313***	0.270**	0.270***
	(0.063)	(0.109)	(0.109)	(0.103)
Aid By West Pakistan	2.676***	3.375***	3.294***	3.294***
	(0.982)	(1.198)	(1.210)	(1.152)
Storm + StormXAid = 0 (P-val.)	.026	.028	.028	.028
Mean Dep. Var.	.745	.745	.745	.745
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (Storm Intensity) X Aid by West Pakistan	-2.943	-3.598	-2.829	-2.829
	(12.104)	(12.624)	(13.109)	(12.487)
Log (Storm Intensity)	6.621**	8.036*	9.647**	9.647**
	(2.618)	(4.395)	(4.527)	(4.312)
Aid By West Pakistan	5.393	7.311	4.115	4.115
	(29.523)	(31.134)	(32.433)	(30.895)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Storm + StormXAid = 0 (P-val.)	.756	.707	.591	.591
Mean Dep. Var.	6.94	6.94	6.94	6.94
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Aid Provided by West Pakistan is an indicator that switches to 1 if any aid was provided by West Pakistan to the constituency according to World Bank reporting from the scene of the cyclone (World Bank, 1970). West Pakistan provided relief goods, including road repairs, bridges, tractors, and water pumps, to 16 subdistricts, while the remaining 146 subdistricts did not receive any such aid. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. The table includes the P-value for the post-estimation t-test for Storm Intensity+Storm IntensityXAid=0 as a row. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Did the Storm Intensify Preexisting Political Sentiment?

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (Storm Intensity) X Votes for UF	1.164**	1.170**	1.051**	1.028**
	(0.479)	(0.485)	(0.502)	(0.470)
Log (Storm Intensity)	-0.567*	-0.522	-0.476	-0.468
	(0.325)	(0.338)	(0.341)	(0.326)
Votes for UF	-2.522**	-2.546**	-2.352**	-2.297**
	(1.129)	(1.146)	(1.180)	(1.105)
Mean Dep. Var.	.745	.745	.745	.745
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (Storm Intensity) X Votes for UF	11.806	12.185	13.996	8.136
	(24.197)	(24.355)	(24.317)	(24.264)
Log (Storm Intensity)	-2.031	0.864	1.786	4.426
	(16.805)	(17.526)	(17.271)	(17.153)
Votes for UF	-29.091	-30.685	-33.103	-19.927
	(56.651)	(57.144)	(58.077)	(57.956)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Mean Dep. Var.	6.94	6.94	6.94	6.94
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army scaled by the population of constituency. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Votes for UF are percentage of votes received by United Front, electoral aliance led by Awami League, on 1954 elections. Baseline controls include distance to coast. Controls include indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. The table includes the P-value for the post-estimation t-test for Storm Intensity+Storm IntensityXAid=0 as a row. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Did the Storm Disproportionately impact Major Crop Producing Districts?

Panel A. Jute						
	(1)	(2)	(3)	(4)	(5)	(6)
	Vote Share of Awami League			# of Insurgents per 1000 People		
Storm Intensity X Jute	0.899***	0.906***	0.908***	22.170**	28.253***	23.319**
	(0.228)	(0.237)	(0.229)	(9.911)	(9.804)	(10.340)
Log (Storm Intensity)	-0.259**	-0.292**	-0.311**	-1.788	-4.441	-2.621
	(0.126)	(0.127)	(0.128)	(6.308)	(5.455)	(6.070)
Jute, 1964	-2.075***	-2.120***	-2.121***	-50.451**	-64.502***	-54.372**
	(0.547)	(0.567)	(0.548)	(22.603)	(22.897)	(24.334)
Mean Ind. Var.	.443	.443	.443	.443	.443	.443
Observations	162	162	162	162	162	162
Panel B. Rice						
	Vote Share of Awami League			# of Insurgents per 1000 People		
Storm Intensity X Rice	-0.966	-1.131*	-1.152*	-41.535*	-48.227**	-45.081*
	(0.688)	(0.633)	(0.629)	(23.959)	(23.358)	(24.779)
Log (Storm Intensity)	0.588**	0.617**	0.632**	27.542**	29.995**	28.065**
	(0.296)	(0.282)	(0.278)	(11.738)	(11.998)	(12.255)
Rice, 1964	2.090	2.513*	2.629*	101.529*	113.302**	103.106*
	(1.639)	(1.500)	(1.490)	(56.841)	(55.659)	(59.063)
Baseline Controls	Yes	Yes	No	Yes	Yes	No
All Controls	No	Yes	No	No	Yes	No
PDS Controls	No	No	Yes	No	No	Yes
Mean Ind. Var.	.363	.363	.363	.363	.363	.363
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
Observations	162	162	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Rice indicates the area of rice plantations as percent of territory of constituency in 1963-1964, Jute indicates the area of jute plantations as percent of territory of constituency in 1963-1964. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

10 Appendix A1. Variable Definitions and Sources

Votes for Awami League (December 1970) = This variable represents the percentage of votes secured by Awami League candidates in the December 1970 Pakistan General Elections. The dataset encompasses votes from 162 constituencies in East Pakistan and is derived from an electoral compendium on National Assembly Elections in East Pakistan (Free and Fair Election Network (2010), 46-73).

Storm Intensity 1970 (Satellite) = This variable measures the intensity of the Bhola cyclone using imagery from the ITOS-1 satellite. The satellite data consists of radiance values captured in the visible channel, forming a mosaic of images from all satellite passes on a given day. Radiance values range from 0 to 15, with 0 representing the brightest color, indicative of clouds with the highest reflectivity. The original raw values corresponding to these bins are not available. To operationalize the data, we segment the satellite images over Bangladesh into small grids, calculate the mean grey-scale intensity for each segment, and rescale these values to a 0–15 scale, where 15 indicates the densest cloud coverage. The data is sourced from the National Centers for Environmental Information (National Centers for Environmental Information (2024)).

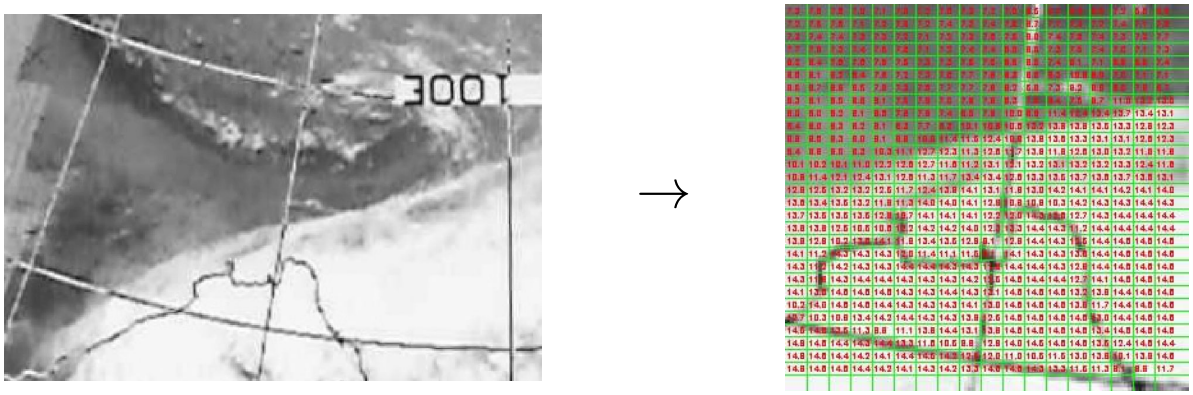
Storm Intensity 1970 (Wind) = This variable measures the intensity of the Bhola storm from the windspeed data of 17 weather stations located in East Pakistan in 1970. Information was obtained from the Wikidata database (Wikidata (2024))

Insurgents = This count variable represents the number of soldiers from each constituency who joined the Liberation

War army. We construct the variable utilizing historical records on Insurgents troops from the website of the Bangladesh Army (The Ministry of Liberation War Affairs (2024)).
Turnout on 1970 Election = This variable represents the turnout for the Pakistan General elections in December 1970. The dataset encompasses votes from 162 constituencies in East Pakistan and is derived from an electoral compendium on National Assembly Elections in East Pakistan (Free and Fair Election Network (2010), 46-73).
Demographic Variables = Data language distribution (including Bengali, Arabic, English, Urdu, and Persian speakers) sourced from the 1951 census conducted in East and West Pakistan (Census of Pakistan (1951)).
Population = The number of registered voters in the constituency (Free and Fair Election Network (2010)).
Indicator of Mujib Visits = This is a binary variable that takes the value of 1 if Sheikh Mujibur Rahman has visited a given region in 1969. The data is sourced from the memoirs of Sheikh Mujib (Rahman (1972)).
Indicator of Student Protest = This is a binary indicator denoting whether a constituency had student protests in the region in 1969.
Distance to Coast = The variable represents the straight line distance from a given constituency to the coast of the Bay of Bengal and is calculated via QGIS software.
Indicator of City = A dummy variable takes the value of 1 if a given region contains a city with a population over 20 000 people. The data is taken from An Economic Geography of East Pakistan (Ahmad (1968), 314).
Pave Road Exists = This binary variable equals 1 if a region had any portion of a paved road within its boundaries in 1964. The data is taken from An Economic Geography of East Pakistan (Ahmad (1968), 257).
Rail Road Exists = This binary variable equals 1 if a region had any portion of a railroad within its boundaries in 1964. The data is taken from An Economic Geography of East Pakistan (Ahmad (1968), 257).
Number of Major Factories = This count variable represents the total number of major industrial facilities located within a constituency as of 1964. The data is taken from An Economic Geography of East Pakistan (Ahmad (1968), 224).
Jute plantations = The variable indicates the area of Jute plantations in East Pakistan divided by area of the district (in percentage) in 1963-1964. The data is taken from An Economic Geography of East Pakistan (Ahmad (1968), 133).
Rice plantations = The variable indicates the area of Rice plantations in East Pakistan divided by area of the district (in percentage) in 1963-1964. The data is taken from An Economic Geography of East Pakistan (Ahmad (1968), 187).
Aid provided = This binary variable is set to 1 if any form of relief was provided to constituencies by the government shortly after the Bhola cyclone. Data includes measures such as miles of reconstructed and newly constructed roads, the number of bridges and culverts built, the distribution of tractors and tillers, as well as the amount spent on relief via the Agricultural Rehabilitation Project and Rural Works Program. The data at the thana (village) level are sourced from the "Report and Recommendation of the President to Executive Directors on a Proposed Credit to the People's Republic of Bangladesh for a Coastal Area Rehabilitation and Cyclone Protection Program. 1972." from the archives of the World Bank (World Bank Report (1972), 35, 41).
Distance to Indian Border = The variable represents the straight line distance from a given constituency to the border with India and is calculated via QGIS software.
One day before storm Intensity = Radiation intensity calculated using the same approach as for the main independent variable for the satellite image one day before the Bhola Cyclone. (National Centers for Environmental Information (2024)).
Sidr Cyclone Intensity = Storm intensity of 2007 Sidr cyclone calculated via the same approach using Satellite Data of Cooperative Institute for Meteorological Satellite Studies. (Cooperative Institute for Meteorological Satellite Studies (2007)).
Mora Cyclone Intensity = Storm intensity of 2017 Mora cyclone calculated via the same approach using Satellite Data of NASA Earth Observatory.(NASA Earth Observatory (2017)).

11 Appendix A2. Raw Data and details on PDS Selection Information

Figure A1: Satellite Image of Bhola Storm



Note: The figure depicts raw and processed satellite image of emerging Bhola storm. Satellite image was taken by ITOS satellite, commissioned by NASA and then processed using specialized software. We extract color intensity of satellite image and construct our main explanatory variable in which more intense shades of white correspond to more severe storm.

Table A1: Post-double-selection covariates for each regression

Table	Selected Covariates for Panel A	Selected Covariates for Panel B
Table 1	Distance to Coast, Share of English Speakers, Distance to Indian Border	Distance to Coast, Total Population
Table 2	Full set of controls	Full set of controls
Table 3	Distance to Coast, Share of English Speakers, Distance to Indian Border	Distance to Coast, Total Population, Distance to Indian Border
Table 4	Full Set of Controls Jute; and Distance to Coast, Share of English Speakers, Share of Hindu, Indicator of Mujib Visit, Share of Votes for UF, Population for Rice	Distance to Coast, Share of Hindu in Population and Total Population for Jute; and Distance to Coast, Share of English Speakers, Share of Hindu, Indicator of Mujib Visit, Share of Votes for UF, Total Population for Rice
Table B3	Distance to Coast	
Table B4	Indicator of Mujib Visit, Share of English Speakers, Distance to Indian Border	Indicator of Mujib Visit, Indicator of Student Protests, Total Population, Distance to Indian Border
Table B5	Distance to Coast	
Table B7	Distance to Coast, Share of English Speakers, Distance to Indian Border	Distance to Coast, Total Population, Share of Hindu Population
Table B8	Distance to Indian Border, Votes for UF 1954, Share of English Speakers	Votes for UF 1954, Total Population, Share of Hindu Population
Table B9	Distance to Coast, Share of English Speakers, Distance to Indian Border	Distance to Coast, Total Population, Share of Hindu Population
Table B10	Distance to Coast, Share of English Speakers, Share of Hindu Population	
Table B13	Distance to Coast	

Notes: The table reports the set of covariates which was chosen by post-double-selection algorithm Belloni et al. (2014) for each regression

12 Appendix B.

Figure B1: Bhola Storm and Independence of Bangladesh: Key Events

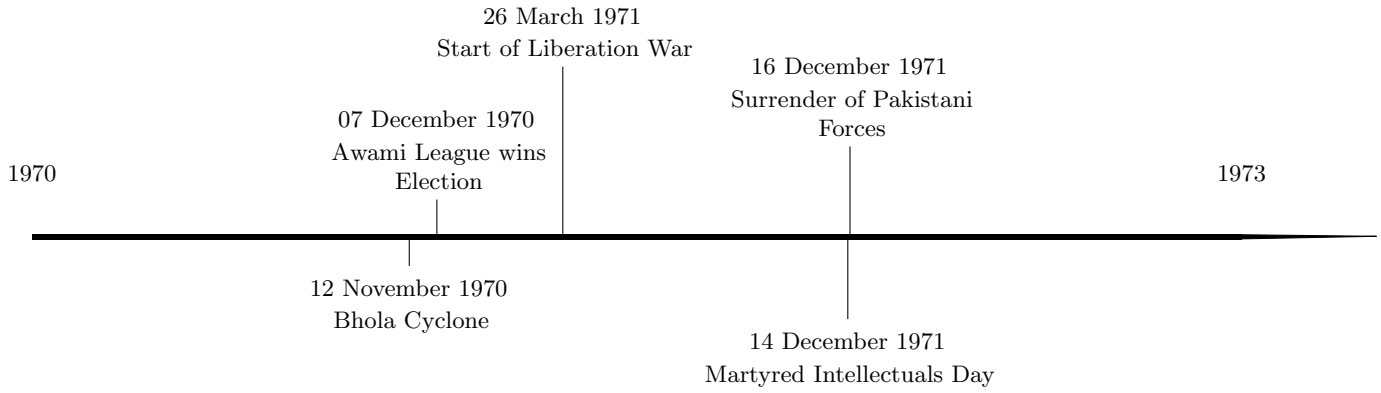
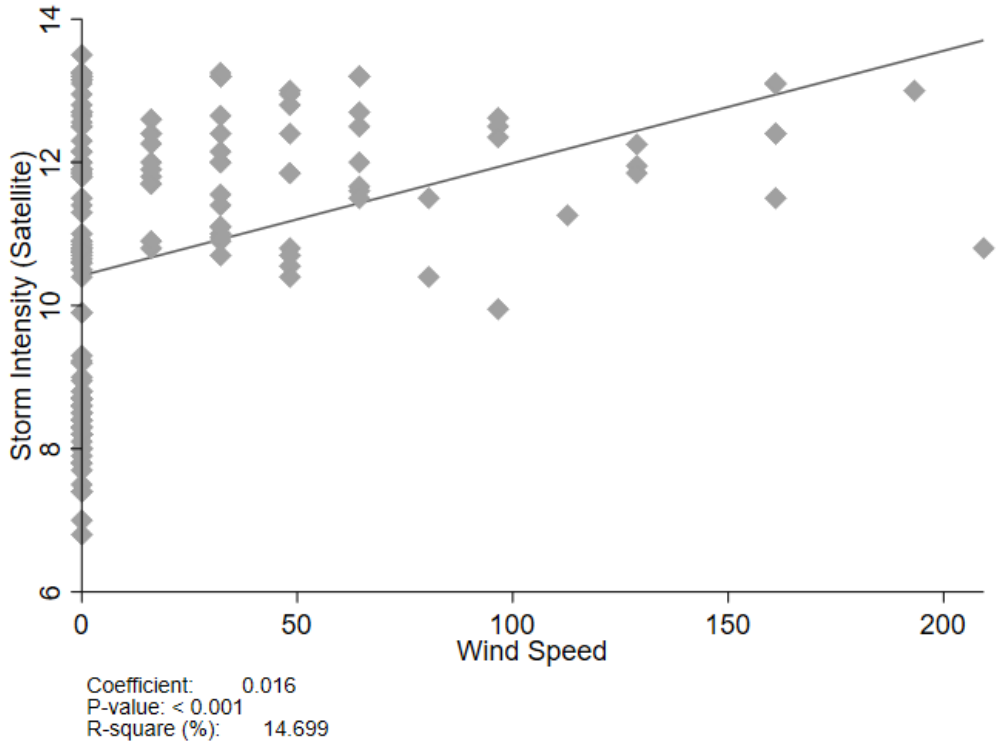
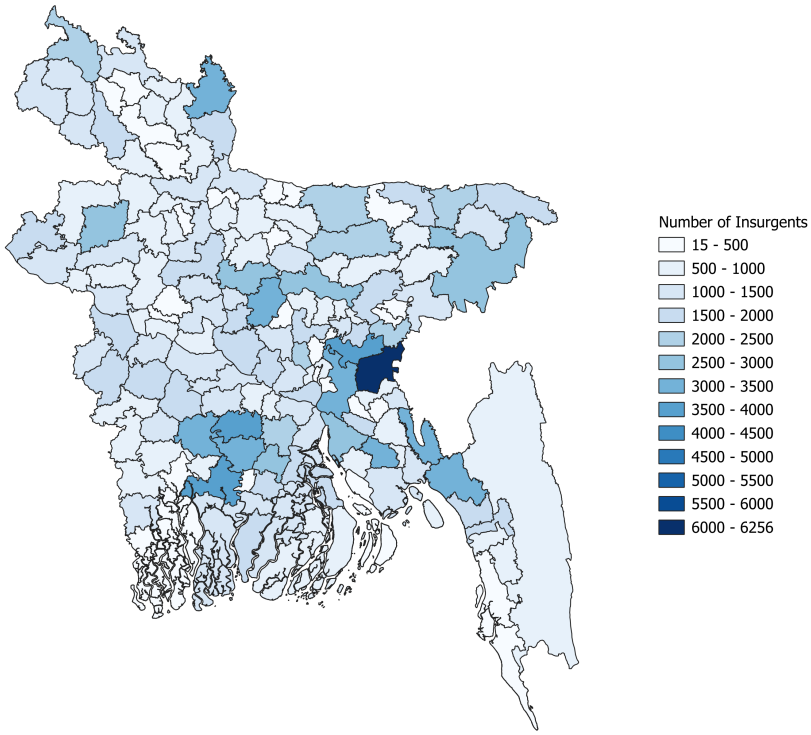


Figure B2: Storm Intensity: satellite and wind speed data.



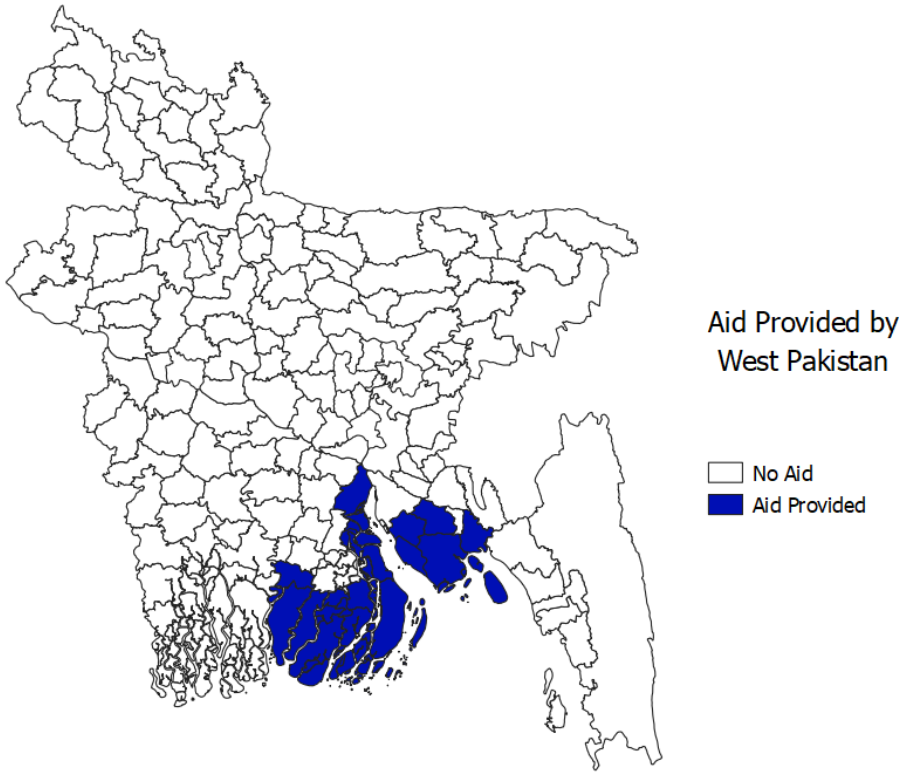
Notes: The figure illustrates relation between wind storm intensity measure from weather stations, and satellite data from ITOS

Figure B3: Distribution of Insurgents



Notes: The map illustrates the spatial variation among participants of War of Independence. Data on Insurgents comes from archive of Ministry of Defence of Bangladesh. The intensity illustrates how many freedom fighter were living in the district before joining the army.

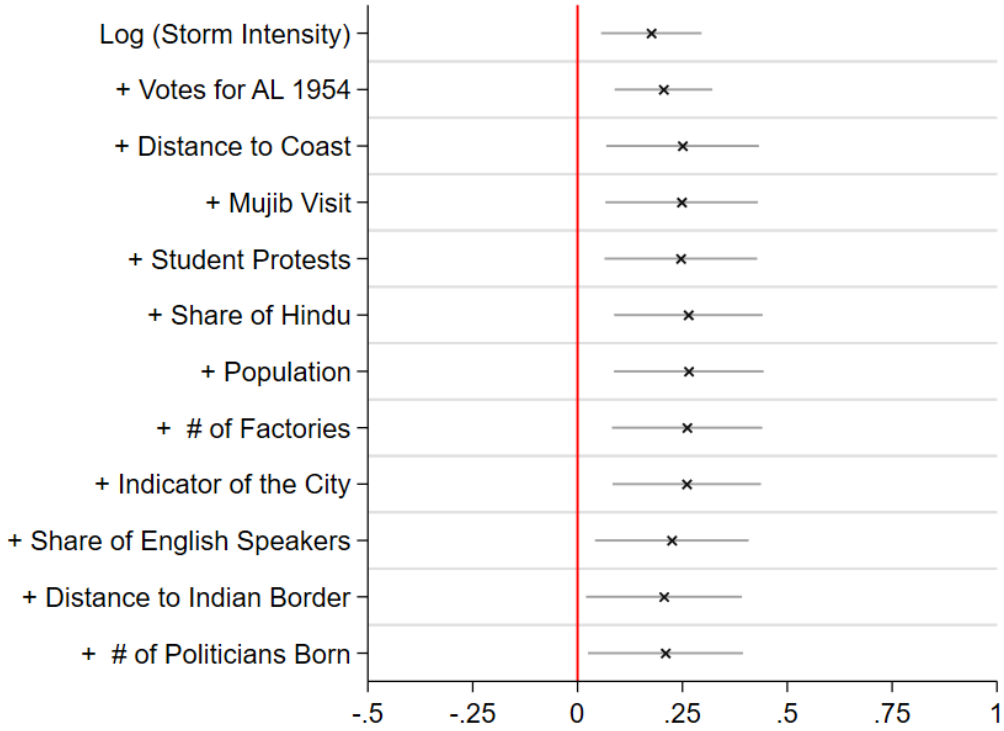
Figure B4: Regions Provided with Aid from Pakistani State



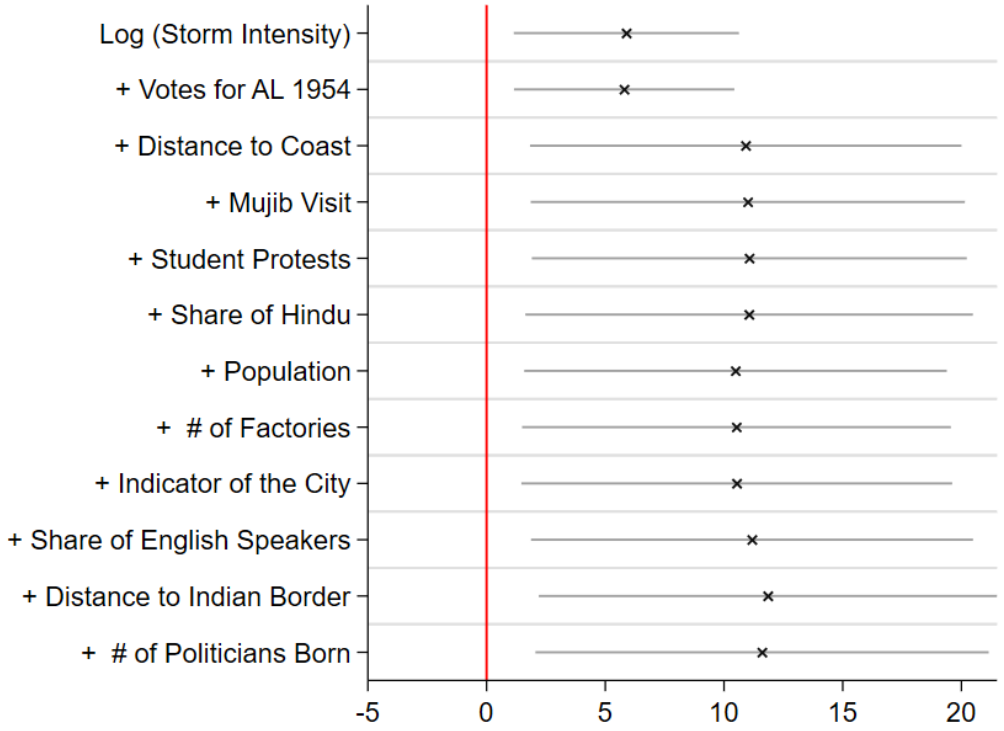
Notes: The map illustrates the regions of Bangladesh to which aid in financial, infrastructural or any other form was provided by the state of Pakistan in year 1970 after the storm according to World Bank reports.

Figure B5: Robustness Check: Main Coefficients Including One Control Variable at Time

Panel A: Votes for Awami League

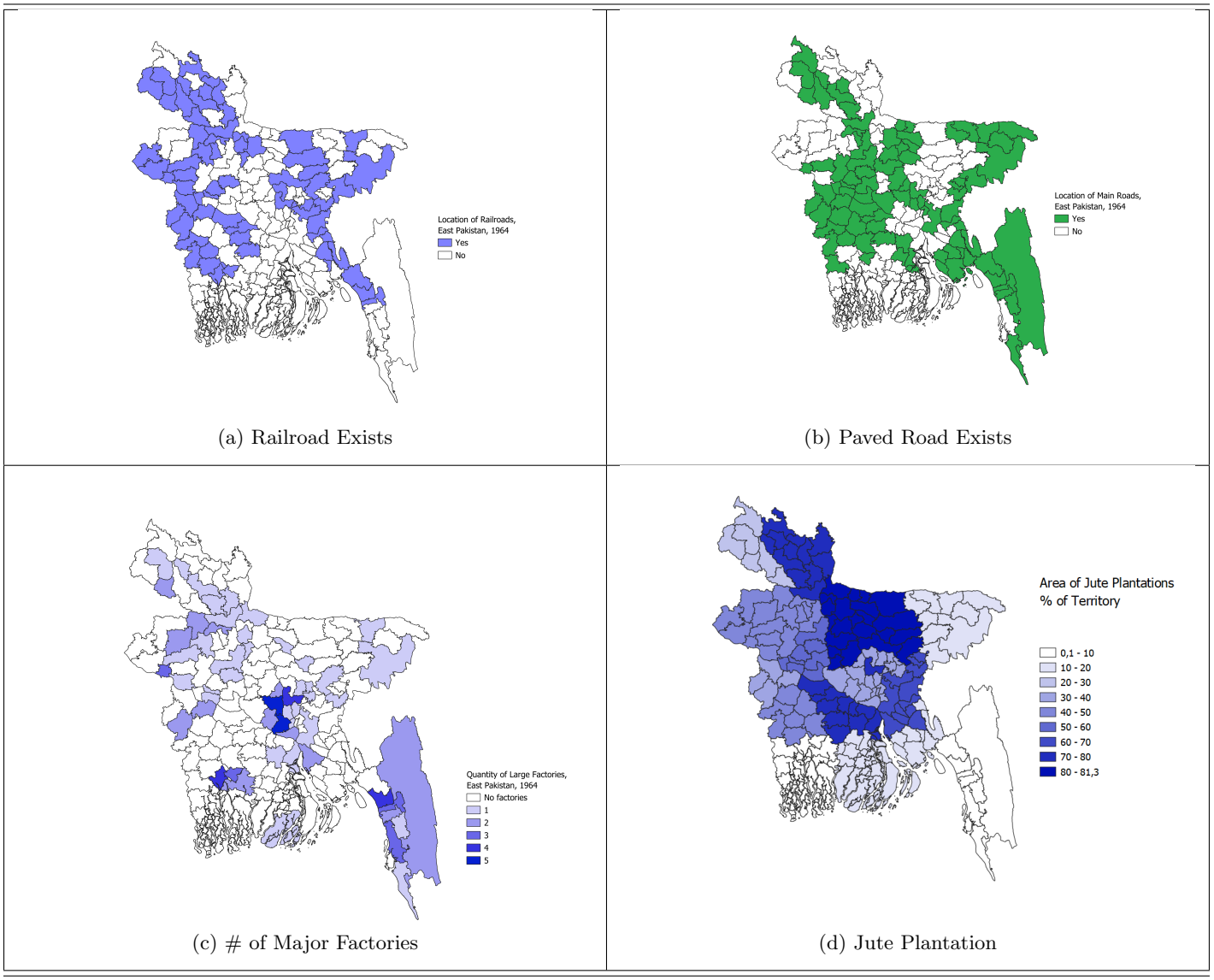


Panel B: # of Insurgents per 1000 people



Notes: The figure reports coefficients of logarithm of storm intensity in regression of votes for Awami League and number of insurgents on logarithm of Bhola storm with adding control variables one by one.

Figure B6: Spatial Variation of Main Economic Variables



(a) Railroad Exists

(b) Paved Road Exists

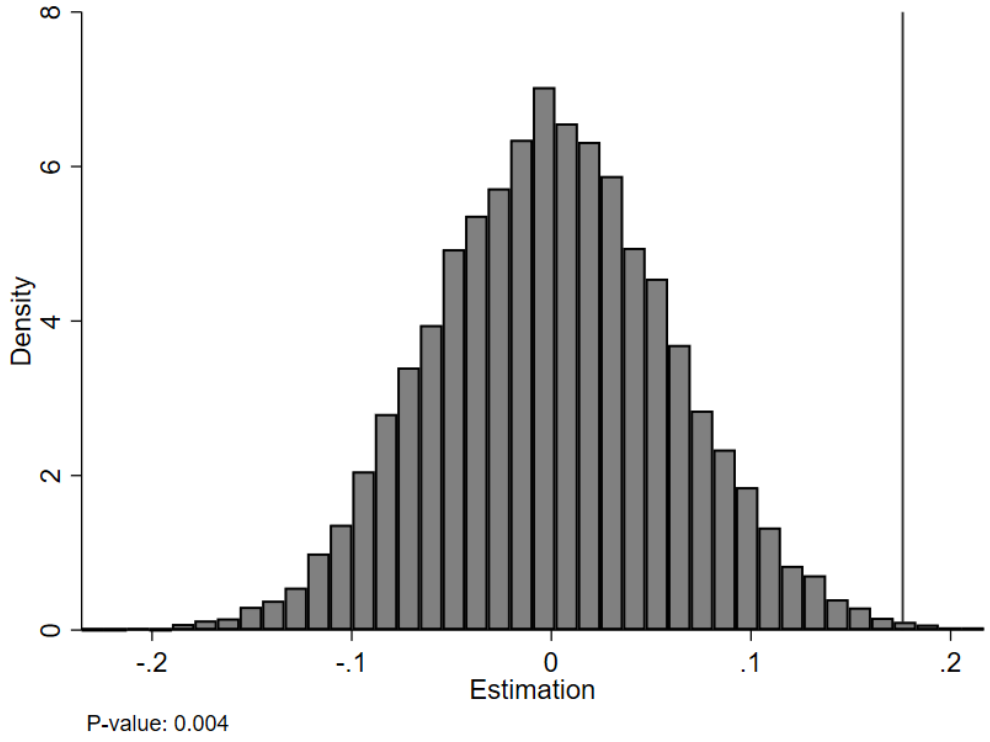
(c) # of Major Factories

(d) Jute Plantation

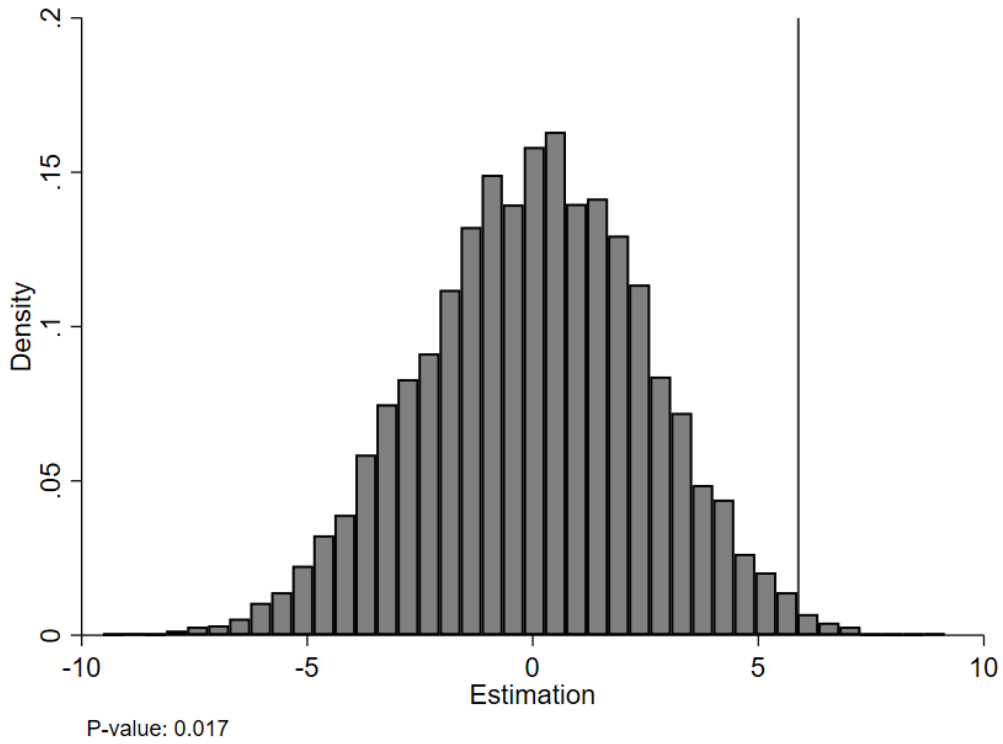
Notes: The panel depicts the variation for the main Economic variables in East Pakistan in 1964. The data is from Economic Geography of East Pakistan, 1968.

Figure B7: Permutation Inference Test

Panel A: Votes for Awami League



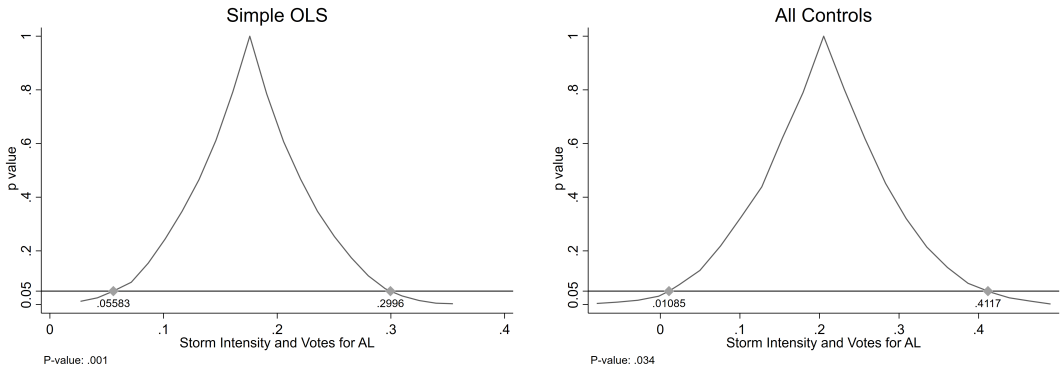
Panel B: Impact on Conflict



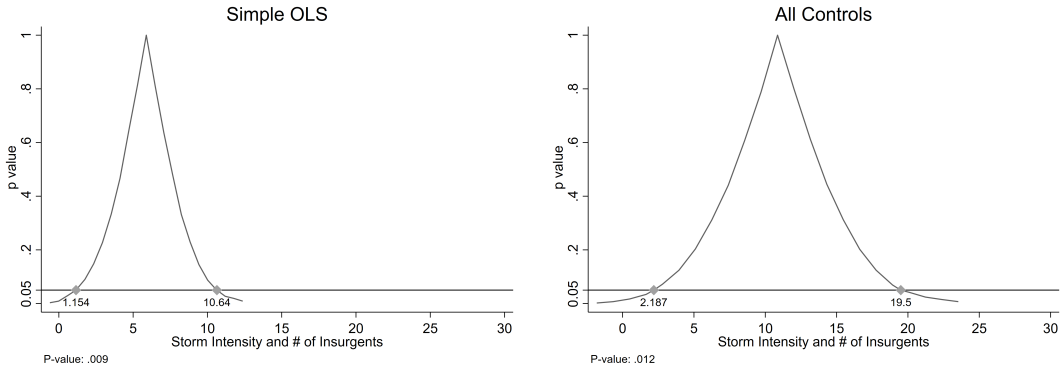
Notes: The figure reports the results of permutation inference test of 10000 permutations. The histogram estimates the probability density function of the estimated coefficient under the null hypothesis that storm has no effect on the votes for Awami League and Conflict. The line indicates the actual estimation of the coefficients.

Figure B8: Wild Bootstrap Test

Panel A: Votes for Awami League



Panel B: Impact on Conflict



Notes: The figure reports the results of Wild Bootstrap test of 999 bootstraps. The histogram estimates the confidence intervals for coefficient of logarithm of storm intensity. The horizontal line corresponds to p-value of 0.05 and values on intersection report the confidence intervals.

Table B1: Summary Statistics of Main Variables

	Mean	**Median**	**SD**	**Min**	**Max**	**N obs**
Bhola Storm Intensity (Satellite)	10.82	11.10	1.829	6.800	13.50	162
Bhola Storm Intensity (Wind Speed)	25.44	0	44.67	0	209.3	162
Share of Votes for Awami League	0.745	0.764	0.138	0.190	0.988	162
# of Insurgents per 1000 People	6.940	4.961	5.739	0.0661	37.19	162
Turnout on 1970 Election	0.567	0.567	0.0860	0.394	0.779	162
Distance to Coast	208.6	217.2	123.1	0.808	479.6	162
Distance to Indian Border	37.48	30.80	35.06	0	112.8	162
One Day Before Storm Intensity (Satellite)	8.774	8.600	0.984	6.800	13.20	162
Mora Storm Intensity (Satellite)	10.99	11.40	1.336	8	13.30	162
Sidr Storm Intensity (Satellite)	14.25	14.40	0.638	10.80	14.80	162
Share of Bengali Speakers	0.765	0.770	0.0341	0.700	0.840	162
Share of Arab Speakers	0.0162	0.0150	0.00814	0.00300	0.0300	162
Share of English Speakers	0.169	0.170	0.0260	0.130	0.220	162
Share of Persian Speakers	0.00523	0.00500	0.00250	0.00200	0.0100	162
Indicator of Mujib Visit	0.0556	0	0.230	0	1	162
Indicator of Student Protest	0.0432	0	0.204	0	1	162
Share of Votes for Awami League Coalition (UF)	0.660	0.679	0.117	0.407	0.960	162
Population of the Constituence	192655.4	191217.5	20391.5	148226	283933	162
Indicator of City	0.191	0	0.395	0	1	162
Paved Road Exists 1964	0.512	1	0.501	0	1	162
Rail Road Exists 1964	0.420	0	0.495	0	1	162
# of Major Factories 1964	0.525	0	0.960	0	5	162
Rice, Share of territory	0.363	0.333	0.108	0.121	0.533	162
Jute, Share of territory	0.443	0.459	0.280	0.000922	0.813	162
Aid Provided	0.0988	0	0.299	0	1	162
# of Political Leaders	1.821	1	2.714	0	16	162
# of Business Leaders	0.123	0	0.483	0	4	162
# of Candidates in the Constituency	4.753	5	1.449	2	9	162

Notes: This table reports mean, median, standard deviation for main variables in our analysis. The unit of analysis is electoral sub-district known as constituency. Figures 1-5 provide spatial variation of selected variables. For description of variables see Appendix A.

Table B2: Balance over District Characteriscs and Pre-Treatment Outcomes

	(1) Area	(2) Population 1964	(3) Indicator of City 1961	(4) Rail Road 1964
Log (Storm Intensity 1970)	48.693	-1590.283	0.077	0.641*
	(186.333)	(13776.666)	(0.275)	(0.360)
Distance to Coast	Yes	Yes	Yes	Yes
Mean Dep. Var.	231.384	192655.432	.191	.42
Observations	162	162	162	162
	Road 1964	# of Factories 1964	Electricity, Coverage 1964	Famine Casualties 1943
Log (Storm Intensity 1970)	0.537	0.557	16.275	2.280
	(0.355)	(0.643)	(17.511)	(1.509)
Distance to Coast	Yes	Yes	Yes	Yes
Mean Dep. Var.	.512	.525	11.532	4.025
Observations	162	162	162	162
	English Speakers 1951	Persian Speakers 1951	Bengali Speakers 1951	Arab Speakers 1951
Log (Storm Intensity 1970)	0.024	-0.001	-0.057**	0.006
	(0.016)	(0.002)	(0.026)	(0.006)
Distance to Coast	Yes	Yes	Yes	Yes
Mean Dep. Var.	.169	.005	.765	.016
Observations	162	162	162	162
	Mujib Visit 1969	Student Protests 1969	# of Businessmen Born in the District Before 1970	# of Politicians Born in the District Before 1970
Log (Storm Intensity 1970)	0.121	0.038	-0.416	-0.364
	(0.179)	(0.094)	(0.281)	(2.399)
Distance to Coast	Yes	Yes	Yes	Yes
Mean Dep. Var.	.056	.043	.123	1.821
Observations	162	162	162	162

Notes: Newey-West standart error in paranthesis. This regression analysis assesses the balance of covariates among control variables. Storm intensity is the intensity of the storm based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Data sourced from various materials about history of East Pakistan (present day Bangladesh) such as Economic Geography of East Bangladesh, memoirs of Sheikh Mujib and Census of Pakistan of 1951. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B3: Placebo: Storm and Pretrearment Election

	(1)	(2)	(3)	(4)
	Votes for AL on 1954 Election			
Log (Storm Intensity 1970)	-0.110**	-0.024	-0.099	-0.024
	(0.048)	(0.085)	(0.080)	(0.085)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Adj. R^2	.022	.029	.129	.048
Mean Dep. Var.	.66	.66	.66	.66
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is Share of Votes for the Awami League led electoral aliance on the 1954 election. Storm intensity is the intensity of the storm based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include distance to coast. Controls include indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. Adjusted R^2 is reported, for column 4 adjusted R^2 for OLS estimation with the same set of control is reported. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B4: Effect of the Storm on the Vote Share of Awami League Excluding Coastal Districts.

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (Storm Intensity)	0.278***	0.301***	0.210**	0.178**
	(0.065)	(0.063)	(0.083)	(0.076)
Mean Dep. Var.	.753	.753	.753	.753
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (Storm Intensity)	8.882***	8.611***	11.113***	10.998***
	(2.977)	(2.857)	(3.834)	(3.808)
Coastal Regions Excluded	Yes	Yes	Yes	Yes
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Mean Dep. Var.	7.099	7.099	7.099	7.099
Observations	126	126	126	126

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with Population num_polit over 20.000 people as for 1961 in the constituency, percentage of Hindu across the Population num_polit, number of politicians born before 1970 in the constituency, population of the constituency, number of major industrial facilities in the constituency, share of English speaking Population num_polit and distance to Indian border. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. Coastal regions (within 100 km from the coast) are dropped in the analysis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B5: Effect of Storm on Total Number of Insurgents

	(1)	(2)	(3)	(4)
	# of Insurgents			
Log (Storm Intensity 1970)	974.419**	1517.612**	1892.298**	1505.346**
	(431.665)	(752.112)	(811.661)	(733.997)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Adj. R^2	.024	.019	.081	.024
Mean Dep. Var.	1299.932	1299.932	1299.932	1299.932
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is number of participants of War of Independence. Storm intensity is the intensity of the storm based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. Adjusted R^2 is reported, for column 4 adjusted R^2 for OLS estimation with the same set of control is reported. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B6: Robustness to Adding Fixed Effects.

	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity)	0.176***	0.245***	0.251**	5.887**	3.659	8.506*
	(0.061)	(0.086)	(0.105)	(2.401)	(2.979)	(4.586)
Region Fixed Effects	No	Yes	Yes	No	Yes	Yes
Baseline Controls	No	No	Yes	No	No	Yes
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
Observations	162	162	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, distance to the coast. Fixed effects used include 5 regions fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B7: Placebo Test. Effect of the Radiation One Day Before the Bhola Storm

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (One Day before Bhola Storm Radiation)	-0.146	-0.210	-0.197	-0.163
	(0.135)	(0.136)	(0.134)	(0.122)
Mean Dep. Var.	.745	.745	.745	.745
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (One Day before Bhola Storm Radiation)	-7.024**	-10.747***	-9.004**	-4.505
	(2.736)	(3.373)	(3.744)	(3.074)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Mean Dep. Var.	6.94	6.94	6.94	6.94
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh), of War of Independence participance living in the constituency, scaled by the population of the constituency. One Day before Bhola Storm Radiation is the variable constructed from ITOS-1 satellite image of Bangladesh one day before forming of Bhola Cyclone (7 Novemner 1970). To construct it the same approach as for the main independent variable was used. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, population of the constituency, number of politicians born before 1970, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B8: Placebo Test on Mora Cyclone (2017) on Awami League Votes and Conflict

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (Mora Storm Intensity 2017)	-0.062	0.036	-0.038	-0.076
	(0.068)	(0.071)	(0.083)	(0.075)
Mean Dep. Var.	.745	.745	.745	.745
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (Mora Storm Intensity 2017)	1.516	1.849	2.879	2.214
	(2.573)	(2.374)	(2.877)	(2.187)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Mean Dep. Var.	6.94	6.94	6.94	6.94
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh), of War of Independence participance living in the constituency, scaled by the population of the constituency. Mora Storm Intensity is the intensity of the storm based on satellite data by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, population of the constituency, number of politicians born before 1970, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B9: Placebo Test on Sidr Cyclone (2007) on Awami League Votes and Conflict

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
Log (Sidr Storm Intensity 2007)	0.532***	0.371	0.200	0.215
	(0.188)	(0.241)	(0.235)	(0.247)
Mean Dep. Var.	.745	.745	.745	.745
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People			
Log (Sidr Storm Intensity 2007)	10.294	6.046	9.479	7.877
	(7.458)	(8.481)	(8.593)	(8.329)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Mean Dep. Var.	6.94	6.94	6.94	6.94
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh), of War of Independence participance living in the constituency, scaled by the population of the constituency. Sidr Storm Intensity is the intensity of the storm based on satellite data by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, population of the constituency, number of politicians born before 1970, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B10: Effect of Storm on Political Participation

	(1)	(2)	(3)	(4)
	Turnout on December 1970 Election			
Log (Storm Intensity 1970)	0.032	0.189***	0.109*	0.100*
	(0.036)	(0.058)	(0.058)	(0.055)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Adj. R^2	-.002	.062	.27	.22
Mean Dep. Var.	.566	.566	.566	.566
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is turnout on the 1970 election in East Pakistan (present-day Bangladesh). Storm intensity is the intensity of the storm based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. Adjusted R^2 is reported, for column 4 adjusted R^2 for OLS estimation with the same set of control is reported. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B11: Aid Mechanism. Causal Mediation analysis

	Aid from W. Pakistan	Votes for UF 1954	Roads 1964	Mujib Visits 1970
	(1)	(2)	(3)	(4)
	Vote Share of Awami League			
NIE				
Log (Storm Intensity)	-0.487**	-0.212	-0.044	0.006
	(0.232)	(0.132)	(0.078)	(0.020)
NDE				
Log (Storm Intensity)	1.699***	0.853***	0.649*	0.475**
	(0.591)	(0.307)	(0.333)	(0.204)
TE				
Log (Storm Intensity)	1.213***	0.641***	0.605**	0.482**
	(0.391)	(0.225)	(0.273)	(0.201)
Baseline Controls	Yes	Yes	Yes	Yes
% of Effect Mediated	40.1% ***	33.1% *	7.1%	1.3%
% of Effect Mediated P-val.	< 0.001	.073	.502	.754
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). Storm intensity is the intensity of the storm based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Aid Provided by West Pakistan is an indicator that switches to 1 if any aid was provided by West Pakistan to the constituency according to World Bank reporting from the scene of the cyclone (World Bank, 1970). West Pakistan provided relief goods, including road repairs, bridges, tractors, and water pumps, to 16 subdistricts, while the remaining 146 subdistricts did not receive any such aid. Mujib visit is an indicator that is 1 for constituencies visited by Mujib in electoral campain of 1970, Roads is an indicator of main (paved) road presented in the distric in 1964, votes for UF is percentage of votes gained by United Front, electoral aliance led by Awami League. Natural indirect effect mediated by Aid provided reported in the first row, natural direct effect of the storm reported in the second row, total effect reported in the thirs row. Proportion explained and P-value of significance of proportion explained are reported in the table. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B12: Did the Storm Intensify Preexisting Economic Grievance?

Panel A. Railroads						
	(1)	(2)	(3)	(4)	(5)	(6)
	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity 1970) X Railroad 1964	-0.055	-0.091	-0.091	4.385	6.161	6.161
	(0.127)	(0.137)	(0.131)	(4.873)	(5.141)	(4.913)
Log (Storm Intensity 1970)	0.267**	0.228*	0.228*	7.793*	7.505	7.505
	(0.124)	(0.134)	(0.128)	(4.660)	(5.179)	(4.951)
Railroad Coverage 1964	0.162	0.258	0.258	-9.159	-13.559	-13.559
	(0.301)	(0.322)	(0.308)	(11.008)	(11.732)	(11.214)
StormXRailroads and Railoads = 0 P-val.	.285	.116	.092	.48	.44	.405
Observations	162	162	162	162	162	162
Panel B. Factories						
	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity 1970) X Major Factories 1964	-0.018	-0.041	-0.048	-1.312	-0.024	-0.381
	(0.074)	(0.075)	(0.067)	(2.867)	(3.036)	(2.911)
Log (Storm Intensity 1970)	0.253**	0.225**	0.208**	11.656**	11.853**	10.732**
	(0.104)	(0.103)	(0.103)	(5.016)	(5.205)	(4.679)
# of Major Factories 1964	0.051	0.097	0.117	2.830	0.110	0.820
	(0.180)	(0.180)	(0.164)	(6.930)	(7.308)	(7.012)
Baseline Controls	Yes	Yes	No	Yes	Yes	No
All Controls	No	Yes	No	No	Yes	No
PDS Controls	No	No	Yes	No	No	Yes
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
StormXFactories and Factories = 0 P-val.	.782	.85	.769	.579	.989	.954
Observations	162	162	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League on the 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is number of participants in Liberation war of 1971 living in the constituency scaled by the population of constituency. Storm intensity is the intensity of the storm based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA, Paved Road Existsis an indicator which switches to 1 if one of the main roads crosses the constituency, Railroad Exists is an indicator which swithes to 1 if the railroad crosses the constituency, # of Factories is a variable that captures the number of large industrial facilities in the constituency as for 1964. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, area of constituency in square miles, population of the constituency, share of English speaking population and distance to Indian border. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B13: Effect of the Bhola Storm on the Number of Candidates in the Constituency

	(1)	(2)	(3)	(4)
	# of Candidates			
Log (Storm Intensity)	-1.309**	-1.359	-1.245	-1.401
	(0.628)	(1.102)	(1.134)	(1.084)
Baseline Controls	No	Yes	Yes	No
All Controls	No	No	Yes	No
PDS Controls	No	No	No	Yes
Adj. R^2	.02	.015	.028	.014
Mean Dep. Var.	4.753	4.753	4.753	4.753
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is number of candidates in constituency on the December 1970 election in East Pakistan (present-day Bangladesh). Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the population, number of politicians born in the constituency before 1970, population of the constituency, number of major industrial facilities in the constituency, share of English speaking population. PDS controls, which were selected using post-double selection algorithm Belloni et al. (2014) are reported in Table A1. Adjusted R^2 is reported, for column 4 adjusted R^2 for OLS estimation with the same set of control is reported. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B14: Robustness to Accounting for Conley Spatial Correlation.

Panel A. Radius 10km	(1)	(2)	(3)	(4)	(5)	(6)
	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity)	0.176***	0.251**	0.205**	5.887**	8.913*	10.860**
	(0.061)	(0.101)	(0.097)	(2.785)	(4.992)	(5.270)
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
Panel B. Radius 50km						
	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity)	0.176**	0.251*	0.205	5.887*	8.913*	10.860*
	(0.082)	(0.144)	(0.132)	(3.072)	(5.200)	(5.753)
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
Panel C. Radius 100km						
	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity)	0.176*	0.251	0.205*	5.887***	8.913***	10.860**
	(0.092)	(0.157)	(0.123)	(2.192)	(0.499)	(4.656)
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
Panel D. Radius 150km						
	Vote Share of Awami League			# of Insurgents per 1000 People		
Log (Storm Intensity)	0.176*	0.251**	0.205***	5.887**	8.913***	10.860**
	(0.091)	(0.105)	(0.064)	(2.589)	(3.393)	(4.826)
Baseline Controls	No	Yes	Yes	No	Yes	Yes
All Controls	No	No	Yes	No	No	Yes
Mean Dep. Var.	.745	.745	.745	6.94	6.94	6.94
Observations	162	162	162	162	162	162

Notes: Conley standard errors in parentheses. The dependent variable is share of votes got by Awami League on the December 1970 election in East Pakistan (present-day Bangladesh). # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Baseline controls include votes for United Front, the electoral aliance led by Awami League, in 1954 and distance to coast. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with Population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the Population, number of politicians born before 1970 in the constituency, population of the constituency, number of major industrial facilities in the constituency, number of businessmen born in the constituency, share of English speaking Population and distance to Indian border. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B15: Robustness to Alternate Definitions of Dependent Variable.

Panel A. Impact on Votes for Separatist Party				
	(1)	(2)	(3)	(4)
	Vote Share of Awami League	Log(Votes)	Ihs(Votes)	Poisson
Log (Storm Intensity)	0.205**	0.321*	0.167**	0.279**
	(0.102)	(0.174)	(0.085)	(0.137)
Mean Dep. Var.	.75	-.32	.68	.75
Panel B. Impact on Conflict				
	# of Insurgents per 1000 People	Log(Insurgents)	Ihs(Insurgents)	Poisson
Log (Storm Intensity)	10.860**	1.172*	1.078*	1.524***
	(4.524)	(0.627)	(0.560)	(0.574)
All Controls	Yes	Yes	Yes	Yes
Mean Dep. Var.	6.94	1.63	2.37	6.94
Observations	162	162	162	162

Notes: Newey-West standard errors in parentheses. The dependent variable is share of votes got by Awami League, logarithm of share of votes and inversed hyperbolic sine of share of votes got by Awami League on the 1970 election in East Pakistan (present-day Bangladesh) and # of Insurgents per 1000 People is total number of soldiers who were fighting in the Liberation War of 1971 who war living in the constituency before joining the army. Storm intensity is the intensity of the storm in November 1970 based on satellite data collected from images captured by the ITOS-1 satellite Comissioned by NASA. Controls include votes for United Front, the electoral aliance led by Awami League, in 1954, indicator of Mujib visit, indicator of student protests, indicator of city with Population over 20.000 people as for 1961 in the constituency, distance to the coast, percentage of Hindu across the Population, number of politicians born before 1970 in the constituency, population of the constituency, number of major industrial facilities in the constituency, share of English speaking Population and distance to Indian border. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

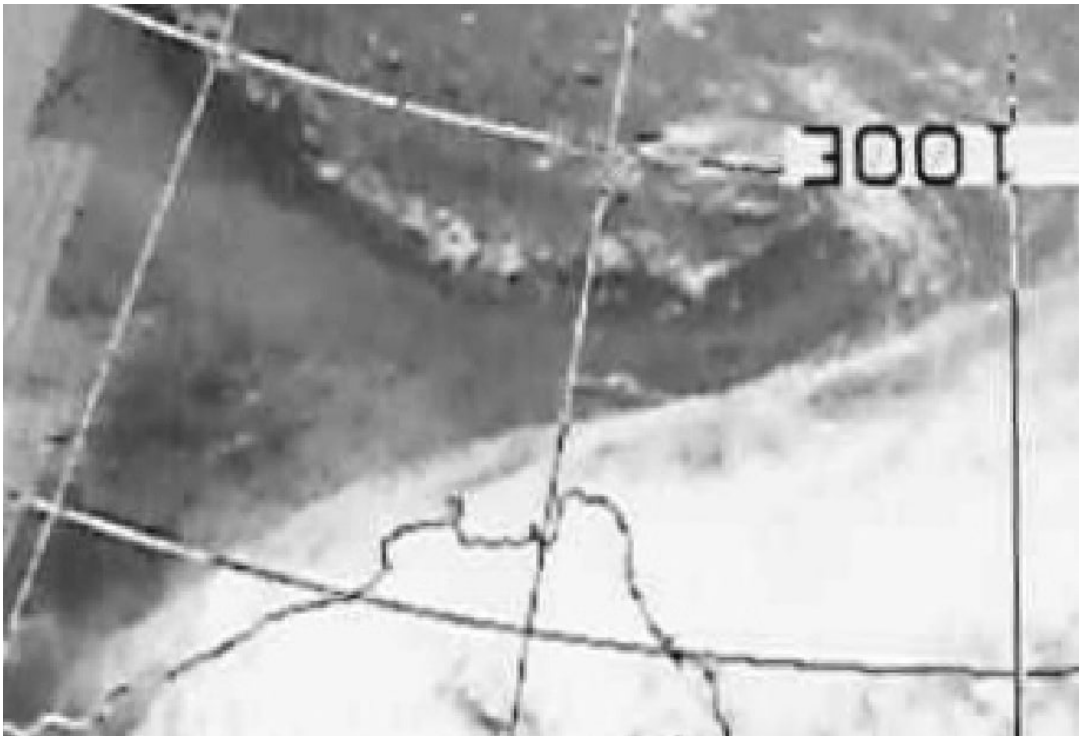


Figure B9: ITOS Satellite image taken on November 10, 1970, around the emerging of Bhola storm

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