

Working Paper
Small boats, long wars
The impact of maritime operations on insurgency duration

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Abstract

This article identifies maritime smuggling as a causal mechanism that increases insurgency duration by providing access to arms and resources with greater control than non-maritime insurgencies, and offers the first mixed-methods evaluation of maritime operations by insurgencies. Maritime insurgency refers to coordinated campaigns by insurgents to influence their land campaign through smuggling, piracy, or maritime terrorism. This article tests and provides evidence in support of four hypotheses related to insurgent maritime behavior and maritime zone. Two approaches demonstrate the plausibility of these arguments. First, the article identifies 19 of 104 insurgencies since the end of the Cold War as maritime and fits a cross-country duration model. Second, it contrasts the maritime Liberation Tiger of Tamil Eelam in Sri Lanka against the landlocked Naga insurgencies to explore the plausibility of maritime smuggling as a causal mechanism. The duration model finds that maritime insurgencies are 79.0% less likely to end on a given day than an equivalent insurgency that does not use the water. The plausibility probe demonstrates the criticality of maritime smuggling to the resistance of the Liberation Tigers of Tamil Eelam. This mixed methods approach presents strong evidence that maritime smuggling contribute to increased insurgency duration.

1 Introduction

Across the world, insurgents supplied by sea disrupt regional security. In the Philippines, Abu Sayyaf boats cross sea borders from Indonesia and Malaysia to supply fighters who continue their three month battle against the Philippine Army. On the Arabian Peninsula, maritime blockade runners deliver supplies to Houthi rebels in Yemen. In 2002, Israeli naval commandos seized 50 tons of weapons aboard the *MV Karine A* and Israel continues to face attacks by Hezbollah's combat divers.¹ These insurgencies are three of the five longest since the end of the Cold War. A superficial examination may lead to conflicting conclusions about the impact of maritime operations on conflict duration. Maritime terrorism and piracy might focus the regime or external actors on dismantling a group or spur diaspora funding. Maritime smuggling could be a lifeblood for material starved groups, or lead groups from their core grievances toward criminality. However, only one of the five shortest civil wars since the Cold War conducted maritime operations. Understanding the role of maritime operations in insurgency will help decision makers and security forces identify and resolve these enduring conflicts.

Just as geographical location influences relative fighting capability,² rebel groups with proximity to the water have unique opportunities: piracy, maritime terrorism, and maritime smuggling. Maritime smuggling provides insurgencies access to a large variety of arms and resources with greater control than non-maritime insurgencies. In the Philippines, Abu Sayyaf relied on maritime logistics to sustain their uprising to control of the city of Marawi.³ Rather than choking off the insurgency with maritime interdiction or port closures, the Army fought insurgents they could see in the city. This article presents evidence leaders should think differently. Water access matters.

Outside of piracy, the existing literature on maritime insurgency describes but fails to explain why insurgent groups take to sea. In this paper, I argue the mechanism of maritime smuggling contributes to insurgency duration. I define maritime insurgency as a coordinated campaign by insurgents to influence their land campaign through smuggling, piracy, or maritime terrorism. With new data on insurgent maritime activities and geolocation data, I test four hypotheses at the dyad level with a duration model. I then contrast the cases of the maritime Liberation Tigers of Tamil Eelam (LTTE) in Sri Lanka and the landlocked Naga insurgency in northeast India to determine the plausibility of my argument. To my knowledge, this article provides the first quantitative study of insurgent maritime activities.

The quantitative and qualitative analysis that follows finds insurgent maritime operations are associated with increased insurgency duration. My model estimates maritime insurgencies as 79.0% less likely to end on a given day than an equivalent insurgency that does not use the water. Likewise, my plausibility probe demonstrates how maritime access influences divergent growth between two groups with similar initial allocations. In addition, I find democracy is associated with increased civil war duration and defense spending is associated with decreased duration.

This paper proceeds as follows. Section 2 sets maritime insurgency in relation to modern theories of civil war duration. Section 3 develops a theory of maritime insurgency that proposes insurgent maritime smuggling as a mechanism critical to conflict duration. In Section 4, I analyze the duration of the 104 insurgencies since the end of the Cold War. Section 5 probes the plausibility of maritime logistics as the mechanism by contrasting the LTTE and Naga. I compare these insurgencies because their origin conditions are broadly similar, but they differ on maritime access. I conclude in Section 6 with the implications of this research for the academic community and policymakers.

2 Maritime Insurgency and Duration

Non-state maritime operations remain an understudied area; however, recent scholarship has begun to connect piracy and insurgent violence. In 1964, counterinsurgency theorist David Galula argued government forces would prefer to fight an island-based insurgency because of the limited escape routes.⁴ With the decline of interest in insurgency after Vietnam, little research into maritime non-

¹"Arafat takes blame for arms shipment" 2002.

²Buhaug, Gates, and Lujala 2009.

³*Islamist militants smuggled weapons in, wounded fighters out of Marawi using water route* 2017.

⁴Galula and Nagl 2006, p. 28.

state violence was conducted until the sensational attack on the USS Cole in 2000 and the rise of Somali piracy. Martin Murphy (2008) explored the links between piracy and maritime terrorism, finding that both are local problems with limited implications for global security.⁵ Rohan Gunaratna (2009) observes a progression in non-state maritime operations from smuggling to surface maritime terrorism to underwater terrorist attacks.⁶ Both authors highlight the high costs and limited benefits of maritime terrorism. Ursula Daxecker and Brandon Prins (2013 and 2015) connected piracy and piracy sanctuary with state weakness.^{7,8} Their 2017 article argued piracy is an important funding source for rebel groups in Africa and Southeast Asia. They found a significant correlation between piracy and conflict intensity.⁹ In this article, I extend Daxecker and Prins' (2017) link between piracy and civil war intensity to consider how non-state armed group maritime operations impact conflict duration.

Although duration is a commonly studied dependent variable in civil war research, there is limited consensus on the key variables. In 1998, Collier and Hoeffler pointed to gross domestic product per capita, ethno-linguistic fractionalization, natural resources, and initial population as important factors.¹⁰ However, by 2002, Sambanis argued there was no consensus on a comprehensive set of factors associated with civil war.¹¹ Fearon (2004) identified a difference between coups and periphery conflicts.¹² Examination of economic models for civil war (Collier, Hoeffler, and Sonderbom 2004) found a relationship between economic incentives and war duration.¹³ In a 2010 survey of civil war duration research, Blattman and Miguel organized their summary into economic and social models.¹⁴ Findings on the role of ethnicity and government have been mixed (Fearon and Latin 2004, Montalvo and Reynal-Querol 2004), but suggest a relationship between these factors and war duration.^{15,16} Geography underlies these explanations with rugged terrain and forests being well studied. Buhaug et al. (2009) studied the interaction between geography and rebel capability, finding a robust relationship between the explanatory variables and duration.¹⁷ Notably absent from these explanations is any reference to the mechanism of smuggling or water.

Maritime operations provide resources to insurgents and other groups. Insurgencies rely on natural, exploitable, or foreign supplied resources to enhance their ability to resist and therefore extend an insurgency. Smuggling brings supplies from abroad directly to a rebel group and can provide financial resources if the group engages in smuggling for profit. Beyond these maritime smuggling and piracy operations, some rebel groups also engage in maritime terrorism. The connection between maritime terrorism and resources is less clear, though diaspora populations may send money to groups engaging in high profile attacks.

Below, I define those three behavioral components of maritime insurgencies. Insurgents may engage in several of these behaviors and a single maritime insurgent operation may include overlapping activities.

1. Maritime Smuggling. In this article, I define maritime smuggling as moving goods or people to support the insurgency or to raise funds.^{18,19} The World Customs Organization reported that 33% of firearms seized from smugglers were at sea or river ports and that the average maritime seizure was larger than a land interdiction.²⁰ Anecdotal evidence from the same report indicates that firearms are "smuggled to a large extent via the same smuggling routes used to

⁵Murphy 2008.

⁶Gunaratna 2008.

⁷Daxecker and Prins 2013.

⁸Daxecker and Prins 2015.

⁹Daxecker and Prins 2017.

¹⁰Collier and Hoeffler 1998, p. 563.

¹¹Sambanis 2002, p. 229.

¹²Fearon 2004, p. 227.

¹³Collier, Hoeffler, and Söderbom 2004, p. 227.

¹⁴Blattman and Miguel 2010, pp. 27–31.

¹⁵Fearon 2004.

¹⁶Garcia-Montalvo and Reynal-Querol 2004.

¹⁷Buhaug, Gates, and Lujala 2009.

¹⁸Rumley, Chaturvedi, and Yasin 2016, p. 233.

¹⁹SIPRI 2009.

²⁰United Nations Office on Drugs and Crime 2015, p. 7.

smuggle drugs, often by the same actors transporting other illegal goods or migrants.”²¹ For some maritime insurgencies, like the Patani in Thailand, the relationship between insurgency and smuggling is fluid: some smugglers may donate to insurgent groups, some insurgent groups may smuggle for profit.²² However, other groups rely on professional smugglers. The LTTE’s Sea Pigeons had at least 10 ocean going vessels that made arms deals as far afield as Eastern Europe.²³ Conversely, other insurgents appear to receive proceeds from maritime smugglers to support their insurgency.

2. Piracy. Maritime violence scholar Martin Murphy defines piracy simply as “unlawful depredation at sea involving the use or threat of violence possibly, but not necessarily involving robbery.”²⁴ The United Nations Law of the Sea Convention signed in 1982 narrows piracy to depredations that take place on the “high seas” and “outside the jurisdiction of any state.”²⁵ This widely accepted jurisdiction-based definition creates an opportunity: while pirates may be targeted by any nation, these same individuals become armed robbers on boats when they enter territorial waters, subject only to national security forces. In the Strait of Malacca’s complex maritime borders, pirates associated with the Free Aceh Movement exploited Indonesian, Malaysian, and Thai borders to avoid capture.²⁶ About one-third of reported piracy events take place in harbors further complicating the definition.²⁷ This paper considers piracy events that take place at sea, inside or outside of territorial waters because these attacks require more advanced maritime capabilities rather than low-cost burglary by boat.
3. Maritime Terrorism. Maritime terrorism is a catchall term for politically motivated maritime violence. The Council for Security Cooperation in the Asia Pacific Working Group offers a helpful definition for the types of events that comprise maritime terrorism: the undertaking of terrorist acts and activities (1) within the maritime environment, (2) using or against vessels or fixed platforms at sea or in port, or against any one of their passengers or personnel, (3) against coastal facilities or settlements, including tourist resorts, port areas and port towns or cities.²⁸

Unlike land-based insurgencies, maritime insurgencies must have access to the specialized and costly resources of ships and sailors, though the requirements differ by maritime zone. Blue-water fleets operate on the open ocean and require skilled mariners in expensive ships. Littoral or green-water operations demand less as sailors can rely on the coast for navigation and protection from harsh weather. Finally, insurgents on brown-water rivers or lakes require the least skill and rudimentary boats.

3 Maritime Smuggling’s Importance

Maritime insurgencies are a subset of insurgencies that employ maritime tactics to further land campaigns. Though I outline three maritime insurgent behaviors in Section 2, I argue the mechanism of maritime smuggling causes maritime insurgencies to last longer than other insurgencies. While roads can be monitored by the state and airfields are relatively easy to locate, boats have fewer constraints. Small boats can land almost anywhere and require limited maintenance. The benefits of maritime operations are less clear for piracy and maritime terrorism than smuggling. Piracy provides resources, but also can attract significant international attention.²⁹ High operational costs and limited psychological impact reduce maritime terrorism’s ability to further an insurgent cause.³⁰ Maritime smuggling

²¹United Nations Office on Drugs and Crime 2015, p. 55.

²²Andrew Holt 2016.

²³Vijay Sakhuja 2006, pp. 2–3.

²⁴Murphy 2008, p. 7.

²⁵UN General Assembly 1982, p. 61.

²⁶Schuman 2009.

²⁷Author’s work with Anti-shipping Activity Messages from National Geospatial Intelligence Agency 2017.

²⁸Greenberg 2006, p. 9.

²⁹*CTF 151* 2010.

³⁰Murphy offers the most comprehensive look at piracy and maritime terrorism and is a good starting place in the study of non-state maritime violence. Murphy 2008

provides insurgent groups access to a greater variety of arms and resources with greater control than land smuggling.

All nineteen maritime insurgencies since the end of the Cold War smuggled.³¹ Insurgents with vertically integrated smuggling operations procure a wider variety of arms and resources directly from suppliers. Land-based insurgencies rely on middlemen, who extract large rents on their trade. Conversely, LTTE ships transported weapons directly from Chinese suppliers to offshore sanctuary sites in India, Myanmar, and Thailand, and then to Sri Lanka.

Naval blockade, the answer to maritime smuggling, is resource and manpower intensive, and can frequently be defeated by insurgent groups with knowledge of local terrain. Despite budget allocations averaging \$650 million annually between 1993 and 1996, American patrols interdicted only 66% of *known* smuggling attempts from Latin and South America.³² In the Philippines, an American Special Forces advisor who trained Philippine police reported he never witnessed a significant smuggling or insurgent find over six months of maritime patrol operations.³³ Because naval blockades are so difficult, maritime insurgencies can supply their forces even when under intense pressure.

With plentiful arms, maritime smuggling insurgencies increase their combat power and may achieve near parity with government forces. Stronger insurgent forces can prolong a conflict by avoiding decisive engagement and increasing their territorial control. These factors should increase insurgency duration.

Hypothesis 1 (H1) *Maritime insurgent conflicts will be associated with greater duration than other insurgencies.*

Hypothesis 2 breaks out maritime insurgency by behavior. Because maritime smuggling provides resources, we should see evidence that smuggling is associated with increased duration. We also should not see evidence that maritime terrorism and piracy are associated with increased duration because of the high costs associated with those behaviors.

Hypothesis 2 (H2) *Maritime smuggling will be associated with increased duration.*

Hypothesis 3 disaggregates maritime insurgency by maritime zone. The advantages of maritime smuggling apply primarily to “green-water” insurgent groups. Even small boats can depart from a seaside village and travel to ports hundreds of kilometers away, lowering transaction costs for moving personnel or equipment long distances. Lashkar-e-Taiba terrorists demonstrated this in their attack on Mumbai, when they travelled at least 500 miles in a 24 meter boat. Many maritime communities have fleets of these boats used for fishing, trading, and smuggling that makes interdiction difficult.³⁴

Blue-water operations cost more because they require more experienced crew and larger vessels. These larger vessels also concentrate risk. In 2009, the Sri Lankan Navy destroyed eight LTTE ocean-going transports, neutralizing LTTE logistics supply during a major land campaign.

The most successful brown-water insurgent operations take place in the African Great Lakes region, where weak governments and brown-water borders are ideal for smuggling. Brown-water operations take place in rivers and lakes too shallow or narrow for green-water and blue-water vessels. While brown-water protects insurgents from traditional naval forces, smugglers on rivers must contend with government checkpoints similar to road networks. Based on the costs of blue and brown water operations, I expect green-water operations to be more strongly associated with increased duration of conflict than brown and blue-water operations.

Hypothesis 3 (H3) *Green-water operations will be associated with increased duration*

Similar to a counter-factual, I isolate the effect of maritime smuggling by testing if non-maritime insurgencies near the coast exhibit a similar association with insurgency duration. This hypothesis tests only insurgencies with geo-located events within ten kilometers of the coast that are not maritime insurgencies. These groups would rely on a third party for arms delivery, likely increasing costs and reducing reliability. I do not expect these groups to have greater duration than maritime groups.

³¹ Author’s research.

³² Office 1996.

³³ Leslie (Mark) Edwards 2016.

³⁴ Leslie (Mark) Edwards 2016.

Hypothesis 4 (H4) *Non-maritime insurgencies near the coast will not have greater duration than other insurgencies.*

Maritime smuggling extends duration by providing resources, but is not sufficient in itself to overcome a regime's access to resources, ability to organize, or technical capability. Though maritime states may not have sufficient capacity to defeat a maritime insurgency, the state's control of ports and major waterways ensures that the state will remain better supplied than the insurgent group.

4 Quantitative Analysis

In this section, I propose to test the hypotheses from Section 3 using insurgency data from the Uppsala Conflict Data Program (UCDP)³⁵ since the end of the Cold War and data I collected on insurgent maritime operations. Analyzing only post-Cold War insurgencies limited the number of conflicts studied, but reduced the likelihood of missing maritime conflicts unreported in available media. Since December 25th 1991, there have been 119 conflicts of which 104 were insurgent conflicts. Insurgent conflicts exclude coups (duration less than 30 days), civil wars where the country split into two organized parties, and terrorist groups without true ambition for territorial control. 104 is a low number of cases for multivariate regression, but is consistent with other cross-country studies of civil conflict.

To determine whether maritime insurgencies have greater duration than other insurgencies, I used a multivariate Cox proportional hazards regression with one observation per conflict. This regression indicates which explanatory variables are associated with increased or decreased conflict duration. Duration equals the time elapsed between a conflict's start date and its end date or 1 January 2017.

I coded insurgencies as maritime if I found evidence they engaged in smuggling, piracy, or maritime terrorism (the on-line appendices contains coding rules). I did not attempt to capture the magnitude of the maritime operations. Developing a metric for insurgent maritime strength is beyond the scope of this investigation. Instead, I used a binary code to record whether or not they engaged in the behavior.

Because maritime insurgencies are located along navigable waterways, there may be factors other than the insurgency's maritime campaign associated with duration. In my first model, I control for factors common to duration research: gross domestic production per capita (in logs), population, whether the country is a democracy, terrain ruggedness, ethnic fractionalization, whether the insurgency sought secession, and external support. In my subsequent models, I add controls for national defense spending per capita (in logs), whether neighboring countries were in conflict, and the median distance from the capital to insurgency attacks (in logs). Readers can find a detailed discussion of how each variable may effect duration and its source in the on-line appendices. Additionally, I pooled standard deviation by country to account for national omitted variable bias.

4.1 Descriptive Statistics

I consider 104 insurgent conflicts since the end of the Cold War, of which 37 are ongoing. I coded 19 insurgencies as maritime if they conducted maritime smuggling, piracy, or maritime terrorism. I also determined where maritime insurgent groups conducted operations: brown-water riverine, green-water littoral, or blue-water open-ocean. I coded groups as conducting these operations if I found two sources confirming the activity. For each variable, I compared the maritime and non-maritime explanatory variables with the Kolmogorov-Smirnov test if variables were continuous or the Wilcoxon test if the variables were discrete. I used the Kolmogorov-Smirnov test to determine whether there was a statistically significant difference between the cumulative distribution functions of maritime and non-maritime distribution functions. The Wilcoxon test served the same function, but tests discrete variables. I considered the two distributions significantly different if the p-value was .05 or less.

³⁵Joakim Kreutz 2010.

	Non-maritime N=85	Maritime N=19	p-value
Duration (days)	6387 (7116)	12322 (8928)	0.0085
Maritime Insurgency	85 (100%)	0 (0.00%)	<0.001
Piracy	85 (100%)	14 (73.7%)	<0.001
Smuggling	85 (100%)	2 (10.5%)	<0.001
Maritime Terrorism	85 (100%)	10 (52.6%)	<0.001
Brown Water	85 (100%)	9 (47.4%)	<0.001
Green Water	85 (100%)	5 (26.3%)	<0.001
Blue Water	85 (100%)	15 (78.9%)	0.001
Coastal Insurgency	59 (69.4%)	19 (100%)	0.003
ln(GDPPC)	6.92 (1.27)	7.64 (1.29)	0.037
ln(Population)	17.3 (1.84)	17.2 (1.29)	0.64
Ruggedness	1.41 (1.12)	1.14 (0.68)	0.52
Ethnic Fractionalization	0.60 (0.24)	0.44 (0.32)	0.030
Secessionist	37 (43.5%)	9 (47.4%)	0.961
Foreign Support	78 (91.8%)	15 (78.9%)	0.113
Democracy	70 (82.4%)	15 (78.9%)	0.73
Anocracy	36 (42.4%)	9 (47.4%)	0.70
ln(average annual defense spending per capita)	6.76 (2.29)	7.18 (1.53)	0.24
Neighboring Conflict	0.94 (0.24)	0.89 (0.32)	0.47
ln(median distance capital to conflict)	0.79 (1.14)	0.71 (1.08)	0.63

Table 1: Descriptive Statistics

Note: Percentages of the total 1 value are displayed for dichotomous variables, while sample standard deviation is displayed next to continuous variables.

The descriptive statistics, presented in Table 1, show that maritime insurgencies are similar to other insurgencies on nine of eleven explanatory variables. They significantly differ on ethnic fractionalization – they tend to be less fractionalized – and have greater gross domestic product per capita. Less fractionalized and richer countries are associated with decreased duration, so this difference should bias against my expectations.

These summary statistics confirm that green-water and smuggling are common to maritime insurgency. 89.5% of the 19 maritime insurgencies smuggled and 73.7% of maritime insurgencies operated in the green-water littoral area. The low frequency of pirate, underwater, and blue-water operations may indicate that these are costly or risky strategies.

Finally, 26 non-maritime “coastal” insurgencies occurred near their national coastlines. I identified these insurgencies using geo-located event data³⁶ within 10 kilometers of the coast with the statistical program r. I then coded “coastal” insurgencies as insurgencies that were within 10 kilometers of the coastline, but were not maritime insurgencies. Proximity to the water suggests these groups could have been maritime insurgencies in different circumstances. I will probe the link between maritime operations and duration with this variable.

4.2 Quantitative Results

I find strong support for my theory of maritime insurgency resilience based on this analysis. The cross-country regressions presented in Table 2 confirm hypotheses 1-4: maritime insurgencies, maritime smuggling, and green-water operations are associated with increased duration. Those explana-

³⁶Ralph Sundberg and Erik Melender 2013.

tory variables are both statistically significant and substantively meaningful with a coefficient similar to terrain ruggedness. The greater significance of smuggling shows its importance to maritime insurgency. Coastal insurgencies were not significantly associated suggesting no relationship between coastal insurgencies and duration.

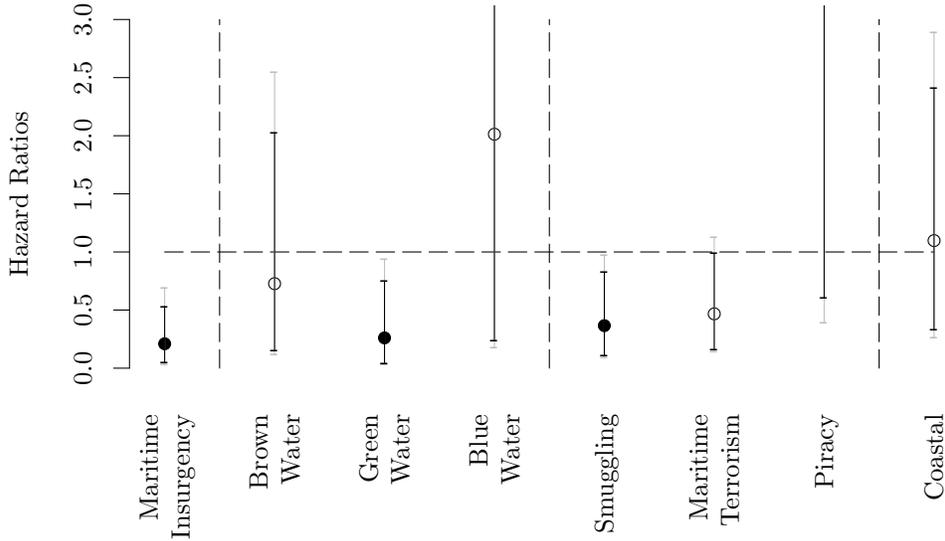


Figure 1: Hazard ratio conflict duration confidence intervals

Note: Each circle indicates the hazard ratio for the explanatory variable below. Filled in circles are statistically significant at the .05 level. Lines represent the confidence intervals where tighter confidence intervals (CI) represent more precise estimates. Black lines represent 90% CI and grey 95% CI.

After computing the hazard ratio, I find that maritime insurgencies are 79.0% less likely to end on a given day than an equivalent insurgency that does not use the water. Likewise, maritime smuggling insurgencies are 64.5% and green-water insurgencies are 72.8% less likely to end on a given day than non-maritime insurgencies. Figure 1 visually compares hazard ratios and hazard ratio confidence intervals. Maritime insurgency, smuggling, and green-water have lower and tighter confidence intervals, indicating a stronger association between those explanatory variables and increased duration.

Outside of maritime operations, the models presented in Table 2 confirm two previous findings in the civil wars literature. First, the association found in all five models between ruggedness and duration confirms Fearon and Laitin’s 2003 findings.³⁷ Second, regressions 2-5 demonstrate a significant association between defense spending per capita (in logs) and decreased duration. This finding supports Hendrix’s (2010) identification of defense spending per capita as a good proxy for military sophistication.³⁸ The congruence of these findings with previous research into civil war lends further credence to the models presented.

However, the findings in Table 2 also diverge from key findings by other researchers. Most notably, these regressions failed to identify any significant relationship between gross domestic product per capita, population, ethnic fractionalization, secessionist goals, foreign support, neighboring conflicts, or distance from the capital. The relationship between democracy and increased duration in regression 1 also directly contradicts the findings of Cunningham et al. who find the opposite relationship.³⁹

³⁷Fearon and Laitin 2003.

³⁸Hendrix 2010.

³⁹Cunningham, Skrede Gleditsch, and Salehyan 2009.

<i>Dependent variable:</i>					
	(1)	(2)	(3)	(4)	(5)
	Conflict Duration				
Maritime Insurgency	-1.305* (0.633)	-1.829** (0.712)			
Piracy			1.558 (1.049)		
Smuggling			-1.186** (0.641)		
Maritime Terrorism			-0.909 (0.673)		
Brown Water				-0.611 (0.700)	
Green Water				-1.683** (0.845)	
Blue Water				0.159 (0.988)	
Coastal Insurgency					-0.163 (0.612)
ln(GDPPC)	0.229 (0.208)	0.048 (0.243)	0.089 (0.262)	-0.005 (0.238)	-0.065 (0.229)
ln(Population)	0.275 (0.182)	-0.118 (0.264)	-0.100 (0.270)	-0.199 (0.289)	0.015 (0.252)
Ruggedness	-1.077*** (0.306)	-1.375*** (0.370)	-1.227** (0.364)	-1.244*** (0.364)	-1.031** (0.362)
Ethnic Fractionalization	-1.228 (0.840)	-1.976 (1.164)	-1.222 (1.122)	-2.047 (1.304)	0.016 (0.999)
Secessionist	0.301 (0.444)	0.357 (0.502)	0.398 (0.525)	0.246 (0.504)	0.221 (0.506)
Foreign Support	0.221 (0.611)	0.573 (0.672)	0.030 (0.633)	-0.029 (0.653)	-0.336 (0.635)
Democracy	-1.580* (0.922)	-0.581 (1.104)	-0.976 (1.179)	-0.106 (1.243)	-1.049 (1.112)
Anocracy		0.939 (0.638)	0.839 (0.688)	1.050 (0.690)	0.765 (0.682)
ln(average annual defense spending per capita)		0.481*** (0.178)	0.484*** (0.175)	0.464*** (0.182)	0.305** (0.183)
Neighboring Conflict		0.136 (0.865)	-0.292 (0.874)	0.134 (0.898)	-0.278 (0.890)
ln(median distance capital to conflict)		-0.117 (0.218)	-0.075 (0.232)	-0.123 (0.218)	-0.230 (0.244)
Observations	104	104	104	104	104
R ²	0.202	0.274	0.277	0.253	0.216
Max. Possible R ²	0.884	0.884	0.884	0.884	0.884
Log Likelihood	-100.275	-95.377	-95.138	-96.831	-99.395
Wald Test	17.130** (df = 8)	31.500*** (df = 12)	85.900*** (df = 14)	55.330*** (df = 14)	61.030*** (df = 12)
LR Test	23.486*** (df = 8)	33.282*** (df = 12)	33.760*** (df = 14)	30.375*** (df = 14)	25.246** (df = 12)
Score (Logrank) Test	17.692** (df = 8)	25.559** (df = 12)	29.609*** (df = 14)	24.501** (df = 14)	23.192** (df = 12)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2: Predictors of Insurgency Duration

Differences between model specifications surely account for much of this difference, but the verdict is still out on key explanatory variables for insurgency duration.

To confirm the significance of these results, I checked their robustness in two ways presented in the on-line appendices. First, I included cases I had excluded from the regressions presented in Table 2. These groups, like al-Qaeda, which does not have a true territorial ambition, and the 1994 Yemeni civil war, where two states engaged in civil war, did not meet my definition of insurgency. In another check, I added regional fixed effects. With the exception of green water as an explanatory variable with fixed effects, the findings remained robust across different model specifications.

5 Plausibility Probe

In this plausibility probe, I find support for hypotheses 1-3: maritime access and smuggling provide resources crucial to prolonging insurgency. The LTTE, with access to the sea, fought as an active insurgency longer than the Naga with resources from maritime smuggling. Crucial to the LTTE's ability to sustain an insurgency was their vertically integrated smuggling system that ranged from China to Eastern Europe and afforded a high degree of control over the cost and reliability of their arms shipments. Conversely, the landlocked Naga insurgency relied on third-party smugglers, which increased their costs and decreased reliability. The LTTE and Naga are in the top percentile of matched cases, making them ideal candidates for tracing the role of maritime smuggling.⁴⁰

In this section, I examine the how the maritime LTTE fought as an active insurgency longer than the landlocked Naga by virtue of their greater control over a world-wide acquisitions system. First, I provide short conflict histories. Second, I show the LTTE and Naga insurgencies to be comparable insurgencies excepting maritime access. Next, I contrast supply systems. Finally, I contrast each organization's peak capabilities to demonstrate the logistics requirements of each group's supply systems.

5.1 Background

While the LTTE became one of the most sophisticated non-state armed groups of the 20th Century, the Naga insurgency festered in mountainous India (See Figure 2). Both the LTTE and Naga insurgencies were ethnic, secessionist conflicts emerging from the end of British colonial rule with external sponsorship. The LTTE's blue-water supply networks provided sufficient resources to maintain a longer active insurgency. The Naga, despite enduring political goals, rarely fielded sufficient forces to qualify as an insurgency.

5.1.1 Liberation Tigers of Tamil Eelam

The Tamil insurgency in Sri Lanka was a sophisticated non-state armed actor. It began in 1976 as an ethnic political movement against reduction in Tamil political and social power. Following early support from Indian intelligence, the LTTE developed a shadow government – with political, military, and international components – that directly challenged the Sri Lankan state. The LTTE is one of five insurgent groups I identified as capable of conducting underwater operations and perhaps the only insurgent group to have its own air force.

Tensions between the Tamil minority and Sinhala majority increased after independence in 1948. India supported the LTTE and other Tamil groups following a series of anti-Tamil riots from 1977 through the early 1980s. Tamil groups established sanctuary in Tamil Nadu, an Indian state across the Palk Strait, whose population considered the Sri Lankan Tamils to be ethnic kin. The requirement to move supplies and personnel between India and Sri Lanka initiated the LTTE's maritime development. With popular support and Indian resources, the LTTE consolidated its control over Tamil militant groups and effectively took control of the Jaffna peninsula in northern Sri Lanka in 1985.

⁴⁰King and Powell 2008.



Figure 2: Location of LTTE and Naga Insurgencies

5.1.2 Naga Insurgency

The Naga insurgency festered in the mountains of eastern India, too weak to achieve secession. Following World War II, India forcibly incorporated the Naga after the partition with Pakistan. On August 14, 1947 Naga nationalists unilaterally declared independence. The Naga engaged in guerrilla warfare and terrorist attacks throughout the 1960s with arms and training left over from World War II. In response to Naga demands, the Indian government created the state of Nagaland in 1963, which appeased moderates, but failed to end the insurgency.⁴¹ Seeking to influence Indian politics, both Pakistan and China trained and supplied Naga guerrillas by 1971. However, low-level violence and criminality, fueled by smuggling and “revolutionary taxation” continued.

5.2 Case Comparison

The LTTE and Naga are well matched across the eleven control variables from the duration analysis with both multivariate and univariate comparisons. The LTTE and Naga insurgencies are in the first percentile of the possible Mahalanobis distances, a multivariate distance measure that accounts for correlations between variables⁴² calculated with the caseMatch package for R.⁴³ While other cases in the top percentile are better matched, this pair stands out for the large body of English language primary and secondary literature.

Control	LTTE	Naga	Pop. Sd.	Sd. Difference	Bias
Democracy	0	1	.39	2.57	Naga
Anocracy	1	0	.5	2.00	LTTE

continued on next page

⁴¹H. Srikanth and C.J. Thomas 2005, p. 63.

⁴²Donald B. Rubin 1973.

⁴³Nielsen 2017.

Table 3 – *continued from previous page*

Control	LTTE	Naga	Pop. Sd.	Sd. Difference	Bias
Ethnic Frac.	.47	.89	.26	1.6	-
Ruggedness	.65	1.01	1.06	.34	-
ln(Population)	16.81	20.78	1.75	2.27	Naga
ln(Defense PC)	6.7	9.80	2.18	1.43	-
Neighbor Conflict	1	1	.25	0	-
ln(GDPPC)	7.65	6.11	1.29	1.19	-
Secessionist	1	1	.50	0	-
ln(distance to capital)	.83	1.39	1.12	.50	-
Foreign Support	0	0	.31	0	-
Diaspora Size	887,000	Smaller	-	-	LTTE
Region	South Asia	South Asia	-	-	-

Table 3: Comparison of Naga and LTTE Characteristics

In the univariate analysis presented in Table 3, the LTTE and Naga are similar across nine of thirteen variables. As an approximation, I considered characteristics as similar if the difference between each country’s value was within two standard deviations of the population of insurgencies studied. The impact of India’s greater population and democratic government will bias their findings towards a longer conflict. Though democracy is commonly believed to reduce conflict duration, regression 1 in Table 2 showed democracy to be associated with increased duration. Greater population is expected to have a similar association. The LTTE’s bias should also be towards longer duration because both anocracy and diaspora size are theoretically associated with increased duration. While both country’s biases are in the same direction, we do not know the exact impact they will have. However, none of these variables were significant predictors of insurgency duration, so I expect the impact to be minimal. Omitted variable bias remains a concern, however these cases are well matched across explanatory variables prior to the beginnings of these insurgencies.

The LTTE and Naga do differ in two important ways outside the control variables: terrain and diaspora population. Nagaland, the mountainous home of the Naga insurgency, is the eighth most rugged province in India. Nagaland is six times more mountainous than the Northern province of Sri Lanka where the LTTE formed.⁴⁴ Though the countries have comparable ruggedness on a cross-country basis, the mountainous conditions in Nagaland favor insurgency. However, the mountainous location did not spread a diaspora, unlike the location of the Tamil insurgency along major trading routes. The LTTE taxed its diaspora heavily, providing external funding unavailable to the Naga. Together, these effects present biases that worked against each other, but to an unknown extent.

India and Sri Lanka present comparable cases in the same region and time period. Despite the mixed bias presented by local conditions, these cases are well-matched and there is value in tracing the influence of maritime smuggling on insurgency. For each case, I will briefly summarize the insurgency’s roots before exploring support mechanisms and peak capabilities.

5.3 Supply

The LTTE supply systems delivered arms in greater quantities and reliability than the Naga. Figure 3 contrasts idealized LTTE and Naga insurgent logistics systems. The LTTE’s oceangoing supply system accessed a greater variety of arms in quantity, and reduced costs and improved security by eliminating middlemen. In mountainous eastern India, the Naga sat near the end of illegal smuggling networks. Each of the Naga’s five arrows in Figure 3 represents supply frictions with significant transaction costs. While the LTTE streamlined logistics, the Naga relied on costly and less reliable third parties.

⁴⁴Author’s calculation.

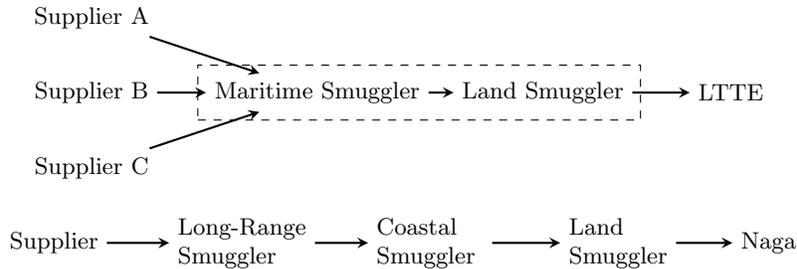


Figure 3: Idealized LTTE and Naga Supply Systems

Note: The dotted box highlights the LTTE’s control over their vertically integrated smuggling network. Conversely, the Naga rely on external actors reducing their control and increasing costs.

5.3.1 Liberation Tigers of Tamil Eelam

The LTTE’s ocean-going fleet, the Sea Tigers, served as a vertically integrated acquisitions arm. The LTTE developed the Sea Tigers as a response to the withdrawal of Indian support in 1991. This supply failure led the LTTE to vertically integrate.⁴⁵ The LTTE’s fleet of “about a dozen vessels of 1,000 to 1,500 tons dead weight tonnage” could purchase arms directly from manufacturers in Europe and Asia at low prices.⁴⁶ Weapons and material were then smuggled from ocean-going vessels to shore on smaller Sea Tiger naval craft after rendezvous at sea. Peter Chalk, an LTTE scholar, described Sea Pigeon activities as follows:

“Ninety five per cent of the time the vessels transport legitimate commercial goods . . . for the remaining five per cent they play a vital role in supplying explosives, arms, ammunition and other war-related materiel to the LTTE theatre of war”⁴⁷

Ultimately, the LTTE’s reliance on eight to twelve ocean-going vessels doomed the organization. The previous tactic of attempting to blockade all landing sites on Sri Lanka was a Sisyphean task for the Sri Lankan Navy (SLN). With American and Indian support, the SLN destroyed the Sea Pigeon floating arms warehouses. With the LTTE unable to rearm and resupply, Sri Lankan army attacked and destroyed the LTTE.⁴⁸

5.3.2 Naga Insurgency

News articles and Indian government counterinsurgency strategy indicate that the Naga relied on external arms smugglers. As early as 1968, the Times of India highlighted the danger of smuggled Chinese arms.⁴⁹ A 2005 report of the arrest of a Burmese smuggler indicated he was transporting forty “mortars, AK-47 rifles, short guns, and launchers.”⁵⁰ However, this steady trickle of arms could barely sustain the insurgency.

Beyond smuggling, the Indian counterinsurgency strategy of targeting border crossings, sanctuary in neighboring countries, and maritime smuggling into Myanmar and Bangladesh indicated the importance of this terrestrial trade. Since 1980, India has built a border fence along the border with Bangladesh to curb smuggling. Additionally, India provided intelligence to neighboring countries to target insurgent camps. In 2004, India’s Border Security Force provided “a fresh list of 210 camps of various insurgent outfits” for destruction in Bangladesh.⁵¹ India has also unilaterally targeted insurgent camps, such as in 2015 when Indian special operators raided an insurgent camp in Myanmar.⁵²

⁴⁵Williamson 1971.

⁴⁶Vijay Sakhuja 2006, p. 2.

⁴⁷Vijay Sakhuja 2006, p. 3.

⁴⁸Richards 2014, p. 62.

⁴⁹The Times of India News Service 1968.

⁵⁰“Burmese opposition radio reports four charged with smuggling arms to India” 2005.

⁵¹BSF sends list of rebel camps to Bangla 2017.

⁵²Rohan Joshi 2015.

Finally, India’s navy and coast guard have sought to curb maritime smuggling into Myanmar and Bangladesh. A 1999 article in *Jane’s Intelligence Review* described a poorly coordinated Indian operation to target maritime smugglers thought to be delivering arms for ground transport through Myanmar or Bangladesh.⁵³

5.3.3 Supply Analysis

Vertically integrated LTTE supply networks delivered arms and material sufficient to challenge the Sri Lankan government. The Naga’s supply system stretched long distances, but the Naga only controlled the final leg. The lack of control puts the Naga at the mercy of high-cost suppliers and forced them to communicate with external parties, increasing the probability of intercept by Indian forces.

5.4 Peak Capability

I proposed that maritime insurgencies are associated with longer duration because of maritime smuggling and logistic network control. So far, I have shown that the LTTE and Naga were insurgencies that began under comparable conditions, excepting maritime access. I then showed that the LTTE’s vertically integrated maritime smuggling network provided a greater variety of resources from suppliers with superior control. Here, I will show that maritime resources allowed the LTTE to sustain an active campaign longer, field larger forces, and develop specialized military and political institutions.

Before diving into LTTE and Naga capabilities, I present two figures to demonstrate the difference between group capabilities. Figure 4 shows that the LTTE actively contested Sri Lankan governance for more total time and for a greater proportion of the conflict. The greater length of the conflict, number of episodes, and average episode duration suggest that the LTTE had greater logistical requirements.

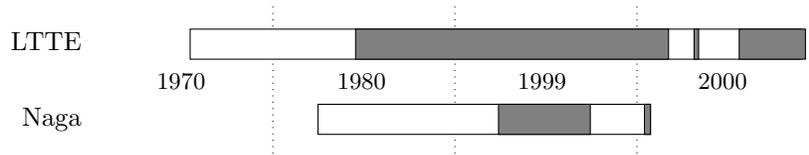


Figure 4: LTTE and Naga Durations

Note: The bar’s total length represents the conflict’s duration where both parties sustained more than 25 battle deaths a year. Dark shaded areas represent conflict episodes with more than 1000 battle deaths per year.

While comprehensive casualty data for these conflicts is not available, Figure 5 compares LTTE and East Indian logged insurgent casualties for the most recent insurgency episodes. The Naga are one of several insurgencies in East India, but more detailed figures were not available. While the East Indian insurgents suffered about 100 casualties per year, the LTTE’s casualties showed great organizational control: the LTTE surged from 87 to 2,319 casualties between years four and five when their episode began. The LTTE then sustained casualties exceeding three-thousand for the next three years. Over a similar time period, East Indian casualties jumped from 29 to 68, and then never exceeded 218 casualties in a single year. While casualty rates vary, this huge difference in casualties suggests a huge difference in fielded forces that would require remarkably different sustainment strategies.

This portion provided evidence that LTTE logistics sustained an active campaign longer, and fielded larger forces. In the next section, I will describe differences in LTTE and Naga institutional structures, and how they hinge on differences in sustainment strategy.

5.4.1 Liberation Tigers of Tamil Eelam

Between 2006 and 2009, the LTTE suffered more than 2,000 battle-deaths a year while governing northern and eastern Sri Lanka. The LTTE’s military, intelligence, and political systems were similar

⁵³Bedi 1999.



Figure 5: Logged casualties per year by actor⁵⁴⁵⁵

to a state because their maritime smuggling network provided significant resources. The military differentiated its services, conducted combined-arms maneuver, and developed robust sustainment and training institutions.

The LTTE’s army developed elite and specialized units, including artillery, mortar, engineering, and anti-armor. The LTTE air force consisted of at least ultra-light aircraft and two Robinson R44 helicopters, though they are believed to have operated several more fixed wing aircraft.⁵⁶ Robust basic and advanced training courses held both on Sri Lanka and in camps abroad instilled hierarchical control and LTTE ideology. The LTTE’s navy included armed gunboats, fast attack craft, oil tankers, troop carriers, and cargo vessels.⁵⁷ The Sea Tigers also conducted underwater demolitions operations against Sri Lankan navy targets. Together, the Sea Tigers and intelligence service administered the Sea Pigeon maritime supply service’s licit and illicit trading.

The LTTE intelligence service conducted terrorist operations outside of northeast Sri Lanka, managed suicide teams, taxed the diaspora population, and produced propaganda.⁵⁸ LTTE intelligence and propaganda teams were sufficiently sophisticated to broadcast pirate satellite television and radio programming to diaspora populations.

The LTTE’s governance structures were similarly robust. The LTTE initially built parallel systems of government including courts, taxation, schools, and other public services. The Tamil Eelam Bank, perhaps the only insurgent national bank, controlled state-owned enterprises and LTTE employee accounts.

5.4.2 Naga Insurgency

The Naga insurgency reached its peak between 1990 and 1997 when it spread throughout northeast India. Pakistan continued to financially support the insurgency until at least 1994 when Pakistani diplomats provided about \$1 million to purchase arms.⁵⁹ During this time, the Naga insurgency engaged in guerrilla warfare and terrorist attacks: bombing trains, ambushing police officers, assas-

⁵⁶Richards 2014, p. 27.

⁵⁷Richards 2014, p. 23.

⁵⁸Richards 2014, p. 52.

⁵⁹Sashinungla 2017.

sinating government officials, robbing banks, and overrunning police stations.⁶⁰ Detailed information about the group’s military or political structure during that period is unavailable. By 2003, the two principle Naga factions together had 5,000 guerrillas and small regional political organizations. One faction maintained government-in-exile in Myanmar.

5.4.3 Peak Capability Analysis

The LTTE’s vertically integrated smuggling and financial network sustained forces capable of directly challenging the Sri Lankan state. Maritime supply was a critical component of the LTTE’s ability to generate sophisticated forces. By moving higher up the value chain, the LTTE was able to purchase a wider variety of items for lower prices than if they relied on another smuggling group.

The LTTE’s greater sophistication comes at high cost. Specialized military services, a worldwide intelligence presence, and population control cost the LTTE about \$300 million a year.⁶¹ Revolutionary taxation and low-level criminality, favored by the Naga, cannot support such sophisticated institutions. The LTTE’s coastal location made it possible to establish the robust maritime smuggling network to sustain their movement.

6 Conclusion

Insurgencies since the end of the Cold War have lasted significantly longer when they have engaged in maritime operations, especially smuggling. In this paper, I set out to demonstrate a relationship between insurgent maritime operations and conflict duration. In the quantitative section, I found maritime insurgencies to be 79.0% less likely to end on a given day than an equivalent insurgency that does not use the water. The lack of a similar relationship between coastal insurgencies that did not engage in maritime smuggling provided further evidence that maritime smuggling is the key mechanism to insurgent group duration. The plausibility probe, which compared the ocean-going LTTE to the landlocked Naga, highlighted the importance of maritime, green-water smuggling networks in sustaining insurgencies. While the cases focused on South Asia, the cross-country analysis and global flow of illicit arms suggest this article’s external validity is worldwide.

For the academic community, this paper develops and tests a novel theory for why insurgent groups take to sea. Previous work identified the problem of maritime violence and contributing factors, but did not test these factors. Future work in this area might consider whether different coastal conditions are more suitable for maritime insurgencies, or to study global maritime smuggling to develop a greater understanding of factors that allow insurgencies to participate and supply themselves. Micro studies could utilize natural disasters, like the 2004 tsunami that struck Aceh in Indonesia, as natural experiments to test the importance of maritime smuggling to insurgency strength. Additionally, other studies could disaggregate maritime smuggling from bulk arms shipments or group strength to determine the relative effect of each.

If maritime logistics are the lynchpin in maritime insurgent strength, security practitioners should target maritime smuggling networks as a way to starve insurgent forces of resources rather than playing whack-a-mole. The Armed Forces of the Philippines fights rebels on the streets of the Marawi in the Philippines, but mostly ignores the maritime smuggling that sustained the three month insurrection. Close by, insurgents ferried arms in and wounded fighters out of the city across Lake Lanao.⁶² On a regional level, porous maritime borders between the Philippines, Indonesia, and Malaysia allow groups to find safe haven as national forces crack down. Regional initiatives, like the Trilateral Maritime Patrol between the Philippines, Indonesia, and Malaysia, hold promise but suffer from collective action problems and regional rivalries.⁶³ Ultimately, this problem is land based. Solutions must deny maritime insurgents safe-haven and regulate maritime activity ashore.

⁶⁰Sashinungla 2017.

⁶¹*Liberation Tigers of Tamil Elam | Mapping Militant Organizations* 2016.

⁶²*Islamist militants smuggled weapons in, wounded fighters out of Marawi using water route* 2017.

⁶³Prashanth Parameswaran 2017.

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