

The Proliferation of Coercive Asymmetric Air Power Amongst Violent Non-State Actors and the Threat to International Security¹

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Abstract

This study tests the impact of the proliferation of asymmetric air power among non-state actors on the international security landscape. Contrary to empirical evidence of the geopolitical consequences visible in Russia-Ukraine and in the Middle Eastern conflicts, scientific scholarship is divided on the strategic implications of non-state actors' air attacks. There are two schools of thought in the limited studies available so far. Some hold that the impact of air attacks by non-state actors is tactical in nature. Others conclude that those attacks present a strategic effect. This paper argues that non-state actors' asymmetric air power would present a strategic impact and threaten the international security architecture. Against this backdrop, this study draws the hypothesis from the strategic paralysis theory in airpower and Fourth Generation Warfare theory in insurgencies. Then the thesis is tested with Generalized Moments of Ordinary Least Square Linear Regression process of 181 counts of air attacks by non-state actors from 2006 to 2023. The study finds that air attacks are positive and statistically significant to strategic impact. Furthermore, sponsorship of terrorism and external interventions by states in civil wars are also strong predictors of aerial attacks by non-state actors. The results suggest that asymmetric air power of non-state actors is likely to have international security ramifications.

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Introduction

The latest development in international conflict is that a Saudi and Omani delegation held talks with Houthi officials in the Yemeni capital Sanaa on 09 April 2023 as part of an international effort to find a settlement to Yemen's nine-year conflict (Al Jazeera n.d.). It is claimed that the relentless cross-border drone attacks by the Houthis targeting vital Saudi infrastructure – energy and military installations and airports - is one of the significant factors that compelled Riyadh to peacefully resolve the conflict (Al Jazeera English 2023a). This example illustrates the potential impact of Violent Non-State Actors (VNSAs) drone attacks on strategic policy choices and prompts the question, "Does NSA air power have the potential to change strategic calculations by governments?" Accordingly, this study explores how *coercive air power* capabilities of non-state actors will impact *international security*.

Technological advancements have enabled VNSAs to acquire aerial assets and target critical infrastructure, which is a significant paradigm shift in the international security landscape. According to empirical evidence, approximately 70% of air attacks by VNSAs from 2016 to 2020 (N=440) have targeted critical infrastructure (military, airports, and energy facilities) (Haugstvedt and Jacobsen 2022). Accordingly, it is argued that non-state actors' access to air power is likely to present an international security threat.

From a asymmetric warfare perspective, Hammes (2005) contends that non-state actors will coerce belligerent political leaders to comprehend that their strategic goals are unachievable or too costly for the perceived benefits. And from air power perspective, Warden's (2006) strategic paralysis theory posits that air power can deliver coercion by targeting the centers of gravity of an enemy system. Furthermore, one of the many definitions of terrorism is that terrorism is political in nature (trying to change policy), involving non-state actors, intended to create a psychological effect (often by intimidating and coercing governments and populations), and violence (Byman

2022). Accordingly, an empirical analysis of abovementioned concepts over VNSAs data is expected to demonstrate the impact of asymmetric air power on international security.

Despite empirical evidence of strategic impact, scholarship has yet to table a theoretical framework that captures the full spectrum of the evolving phenomenon. The research is nascent; thus, scientific literature is scarce. The only quantitative study so far, assert that there are only tactical ramifications, thus no strategic impact (Haugstvedt and Jacobsen 2022). In this context, there is a void in extant literature on VNSAs' air attacks compared to voluminous studies on other phenomenon of terrorism. In addition, descriptive studies are divided on the argument of strategic impact of air attacks (Doctor and Walsh 2021; Chávez and Swed 2021; Sayler 2015; Sims 2018). Therefore, it appears that there is a void in the scholarship.

Accordingly, this study intends to fill the gap by incorporating a bivariate regression to explain the relationship between the *proliferation of asymmetric airpower among violent non-state actors* and its relation to *international security*. This paper tests and analyzes this relationship with a dataset of 181 counts of air attacks carried out by non-state actors from 2006 to March 2023, aggregated according to country, year, and month. This will probably be the first empirical study to examine the strategic impact of air attacks conducted by non-state actors. Considering the rapid diffusion of the phenomenon, a significant relationship is expected between the proliferation of airpower and the international security threat, enabling policymakers to deliver concerted solutions in a complex global strategic environment.

This study commences with a literature review which will define the concepts and the terminology in the paper and analyze the existing literature while highlighting the conceptual disparities. The second section will focus on theoretical development, followed by research design

in the third section. The fourth section, before the conclusion, will present an empirical explanation.

Literature Review

Contrary to imminent global strategic implications, the scholarship on the phenomenon is deficient and divided regarding the strategic implications of the threat. Most published materials are descriptive studies, and only a handful of scientific research has been published regarding the concept, which impedes policy responses to this global security concern. Furthermore, despite stark evidence, scientific studies so far deny the threat's strategic coercive implications and conclude that it will have only a tactical value. This is a significant departure in literature, which calls for due attention.

There are two schools of thought in the limited literature regarding the impact of air power in the hands of terrorists. While all scientific research denies the strategic implications, several descriptive studies hypothesize a strategic ramification of the phenomenon. However, descriptive studies fall short of establishing a systematic causal mechanism between air attacks and international security ramifications. Therefore, scholarship has yet to introduce a causal variable to international security despite numerous overwhelming strategic strikes conducted by terrorists. Nonetheless, the scholarship is almost mute about terrorists employing manned aircraft for air strikes. Despite the deviations, this paper reviews the literature on manned and unmanned kinetic air power employment by terrorists and its implications for international security.

Haugstvedt and Jacobson (2020) could possibly be the first to produce a systematic empirical study on the proliferation of air power among non-state actors and argue on the non-strategic perspective of the threat. The authors examine the variation in air strikes in terms of targeting preferences and the impact on the war's outcome. Building on Hemmingby's work on the operations of militant Islamists (Hemmingby 2017), the paper establishes that terrorists, especially in the Middle East, have acquired weaponized unmanned aerial vehicle (UAV)

capabilities. Based on this comparative study, the authors posit that Terrorists' use of weaponized drones does not amount to strategic bombing, inferring that Terrorists are still a step away from significantly influencing public opinion. Furthermore, the study is inconclusive about the threat's influence on 4GW and the impact on the outcome of the conflict.

Doctor and Walsh (2021) assess the strategic utility of Terrorists' air power through Pape's strategic bombing (denial strategy and punishment strategy) and the theater air attacks (interdiction and close air support) concept along with statistical data. After conceptual analysis, the denial and punishment strategies are debated as irrelevant based on the logistical and material limitations the non-state actors encounter for expanded air operations and the sensitivity to civilian casualties. Accordingly, the study concludes that militant groups do not have powerful reasons to use drones systematically for strategic bombings, such as in denial or punishment strategies.

On the contrary, descriptive studies speculate a strategic and international security implication of the threat. Chávez and Swed (2021) statistically analyzed the relationship between industrial development and the proliferation of terrorist drone incidents. Utilizing the supply-side proliferation model, the study demonstrated that in 2012, the interest and success of the attacks skyrocketed as commercial platforms improved (Chávez and Swed 2021). Accordingly, as civilian drones became more advanced and common, terrorists' adoption and success increased rapidly. The study concludes by predicting that flexible and multi-use drones would problematize warzones and domestic, regional, and possibly international security.

In another descriptive study, Sayler (2015) asserts that drone technology is proliferating and emphasizes that while only a handful of countries can operate stealth combat drones, many will have access to armed drones that can penetrate disputed regions or the sovereign territory of other nations (Sayler 2015), which will be a force-multiplier for transnational terrorist attacks. The

author contends that preventing the proliferation of armed drones is impossible, and the drone is here to stay. In relation to international security, the study emphasizes that drones could increase tensions in conflict zones by enabling cross-border attacks or incursions. In crises, drones could create a new step on the escalation ladder, increasing the potential for conflict.

Through a similar methodology, Sims (2018) argues that while drones pose a moderate threat to civilians, non-state use poses the most significant combat challenges (Sims 2018). The author contends that professional militaries must invest in conventional air defenses in addition to counter-drone measures, such as electronic jamming, and employ many of the same precautions used to detect and disarm improvised explosive devices (IEDs). According to the study, access to air power offers the same advantage to militants as to the professional military. Contrary to Sayler (2015), Sims (2018) contends that even though militant possession of weaponized commercial drones is not a battlefield game-changer, the threat will place a new demand on professional militaries combatting militant groups and agencies charged with protecting civilians.

As speculated by Sims (2018), the Saudi oil field attack in the Fall of 2019 demonstrated the inability of millions of dollars' worth high-tech air defense systems to protect vital installations (Singh 2019) against a couple of thousand dollars-worth less sophisticated aerial platforms (Sayler 2015).

Literature on air strikes indicates some common grounds while being divergent in terms of certain aspects. Generally, there is a common understanding that air power proliferation amongst violent non-state actors is a growing threat and the civilian population is not an intentional target (Haugstvedt and Jacobsen 2022; Chávez, n.d.; Chávez and Swed 2021; Doctor and Walsh 2021; Sims 2018; Sayler 2015). However, there is a division of thought in its impact. While some studies contend that the air capability of rebels transforms the nature of insurgent warfare (Chávez

and Swed 2021; Sayler 2015), others tend to disagree with the fact (Doctor and Walsh 2021; Haugstvedt and Jacobsen 2022). Furthermore, there is discord on the level of employment too – strategic vis-à-vis tactical. The absence of a strategic narrative will not explain the symbolic attacks, such as the Aramco oil field attack and relentless airwaves on the UAE and Saudi airfields by Houthi rebels (Crinco and Dreby, n.d.; Samaan 2020; Nevola 2023). The theoretical divergence in scholarships may contribute to the fragmented inference of asymmetric air power proliferation amongst non-state actors.

Haugstvedt's and Jacobsen's (2020) study illustrates that the most significant number of weaponized drone incidents (98.9% of all) occurred between August 2016 and March 2020, with a success rate of 72.5%. Based on the findings of Haugstvedt and Jacobsen (2020) and Chávez and Swed (2021), it could be inferred that the terrorists' use of weaponized drones has started to proliferate with development in the industry. Its employment for attacks surged in 2016, indicating that access to technological advancements becomes an intervening factor in the air power proliferation model.

The non-strategic narrative in the current literature could be counter-argued based on Warden's (2006) strategic paralysis theory and other extant studies. Doctor and Walsh (2021) assert that Terrorists' optimum effect is in theater attacks – especially in interdiction or close group operations. The authors contend that limited drone program capabilities confine their broader strategic objectives. However, according to Haugstvedt and Jacobson (2020), an empirical study indicates 251 military (57%), 36 airports (9%), and 17 oil facilities (4%) strikes, which are center of gravity targets (70%) constituting a strategic effect according to Warden's (2011) strategic paralysis theory. Therefore, Doctor's and Walsh's (2021) assertion of air attacks' limited strategic capabilities are debatable and suggest further research.

The abovementioned inconsistencies suggest that the proliferation of kinetic air capability among non-state actors must be reviewed through a different theoretical framework to ascertain its coercive capability and international security implications. Accordingly, this paper intends to evaluate the impact of non-state actors' air power through Warden's (2011) strategic paralysis theory and Hamms's (2005) Fourth Generation Warfare theory and determine if the proliferation will bear international security implications.

Theoretical Development

The sudden savviness for air power of VNSA is not an isolated phenomenon but a component of a larger overarching strategy. Research tends to produce contradicting results when the concept is studied in isolation than in a holistic theoretical context. Accordingly, two complementing theories explain the relationship between the proliferation of asymmetric Air power amongst VNSA and its international security implications. Warden's (2006) strategic paralysis theory explains *how* the surge of air power impacts international security, and the Fourth Generation-Warfare (4GW) concept discloses *why* the VNSA exploits the air domain.

Warden (2006) posits a theoretical foundation for employing air power in a conventional warfare. He proposes three main ways to make the enemy do what we want him to do (4GW phenomenon) – military strategies of imposed cost (coercion), paralysis (incapacitation), and destruction (annihilation). The means to achieve these three ways are attacking the centers of gravity target identified through the five rings systems. At the center of the ring is the enemy's leadership encircled by processes (organic essentials), Infrastructure, population, and fielded forces. Decisive Air power employed on those leverage points will incapacitate his will to fight. The destruction or neutralization of the leadership COG(s) will produce total physical paralysis of the system. In contrast, a successful attack upon COGs within the other rings will produce partial physical paralysis and unbearable psychological pressure upon the leadership.

Accordingly, Warden's (2006) strategic paralysis theory and the 4GW concept together will explain that the primary objective of the VNAs is to use air power as a strategic weapon to coerce the political leadership to influence or accede to their demands. The quest for coercion will endanger the critical infrastructure, which will amount to an international security threat. The target categories always include a country's leadership, critical infrastructure, or the international

system. Moreover, there is a good possibility that VNAs who pursue a transnational ideology will strategize beyond geographical boundaries, making their air capabilities an international security concern.

The hypothesis thus is:

Hypothesis 1: The proliferation of asymmetric Air power amongst VNAs is likely to increase international security threat.

Research Design

This study intends to evaluate the impact of the proliferation of air power among non-state actors on international security. The scholarship is yet to publish a replicable dataset in the public domain. Therefore, this study employs a cross-sectional dataset of air attacks carried out by VNSAs from 2006 to March 2023, aggregating from different data sources and organized according to country, year, month, and the number of events. It consists of data from the Global Terrorism Database (GTD) (“GTD Search Results” n.d.), the Armed Conflict Location and Event Data Project (ACLED) (“ACLED | Bringing Clarity to Crisis” 2022), the Bellingcat project on drone attacks (“Bellingcat - the Home of Online Investigations” 2023), and web sources. The data encompasses events from all six regions of the world – Africa, the Middle East, Latin America and the Caribbean, Europe and Central Asia, Asia-Pacific, and the United States and Canada. Accordingly, the dataset consists of 181 aggregated events from 2006 to March 2023, and the study utilizes Ordinary Least Squares (OLS) linear regression methodology for the analysis.

TABLE 1. Descriptive Statistics

Variables	Mean	Standard Deviation	Minimum	Maximum	Observations
Strategic targets	2.54	2.98	0	16	180
Air Strikes	3.46	4.01	1	21	181
Conflict in border	.81	.39	0	1	181
Civil war	.78	.41	0	1	181
Foreign Intervention	.23	.42	0	1	181
State sponsor	.49	.50	0	1	181

Dependent Variable: International Security Threat

The dependent variable is the *threat to international security*, a count variable represented by *strategic_targets2* in the aggregated dataset. Haugstvedt and Jacobsen (2020) statistically analyzed the types of targets engaged by terrorists' air attacks. However, it does not examine the impact of the attacks. This study aims to examine the impact of air attacks on international security, and the propensity of strategic targets engaged should reflect the expected effect. Therefore, the *threat to international security* is the dependent variable in this study, which is operationalized by counting the number of air strikes on strategic targets during air strikes by the VNSAs, aggregated by country, year, month, and events basis. The variable captures the air strikes carried out to strategic targets, which consist of military installations, oil facilities, energy generation grids, and military and civilian airports. It counts an average of approximately 3 events, with a maximum of 16, a minimum of 0 events, and a standard deviation of 2.978. The distribution reflects the dispersion of observations with possible outliers. However, the ladder and gladder commands do not suggest a log transformation.

Independent Variable: Air Strikes

The independent variable, *Air Strikes (air_strikes)*, is a count variable operationalized using the same dataset. The air strikes are the number of total air attacks carried out by the VNSAs (irrespective of whether strategic or not) aggregated to country, year, month, and number of attacks. The empirical evidence indicates that terrorists have employed air power in a wide spectrum: strikes against vital infrastructure (military and energy facilities and airports), civilians, other adversary rebel groups, and tactical military encounters. It has a standard deviation of

approximately 4 with a maximum of 21 events to a minimum of 1 event and a mean of approximately 3 events.

Control Variables

Besides air attacks by non-state actors, there are other events, which factor into international security. Conflicts in the borders (*conflict_in_border*), foreign interventions (*foreign_interventions*), civil wars (*civil_war*), and *non-state actors receiving foreign assistance* (*state_sponsorship*) are some of the significant factors that impact the international security landscape. A bad neighborhood may expose states to transnational attacks by non-state actors. Critical infrastructure bordered by other countries with civil or intrastate wars might have a highly increased possibility of being targeted by transnational terrorists, either deliberately or inadvertently (Piazza and Choi 2018b).

Furthermore, previous studies have determined that countries with critical infrastructure of significant importance to the international system and that engage in foreign military interventions are more vulnerable to transnational terrorist attacks (Piazza and Choi 2018b). The critical infrastructure of those countries is high-value targets for terrorists for coercion.

In addition, a country with civil war (*civil_war*) has a positive effect on being targeted by suicide attacks, which pose another international security threat (Collard-Wexler, Pischedda, and Smith 2014). The final control variable is state sponsorship of terrorism (*state_sponsorship*). Providing weapons, money, training, and safe havens will narrow the capability asymmetry with the belligerent state and give access to the technologically advanced weapons industry, augmenting terrorists' ability to conduct transnational attacks on critical infrastructure (Byman 2022). All four control variables are dichotomous, coded 1 for the country year of positive response to the criteria.

Methods

Several methodological issues should be addressed before discussing the results because this paper uses ordinary least squares to analyze the data. For unbiased, efficient, and consistent estimates, several assumptions should be satisfied (Gujarati and Porter 2009; Kennedy 1998; Lewis-Beck and Lewis-Beck 2015).

At the very onset, achieving the normality of residuals for valid p-values for the t-tests and F-tests is essential, as the study will carry out valid hypothesis testing. The pnorm, qnorm graphical representations, and the Shapiro-Wilk test indicated that the dependent variable *strategic_targets2* is not normally distributed. However, the suggested transformations (gladder and ladder tests) were not statistically significant for normality. With due cognizance, the model is expected to produce valid regression coefficients. Nevertheless, the normal distribution of residuals is an issue to be addressed in the future.

Next, the bi-variate basic model is checked for assumption one violation – linearity and specification errors. Firstly, linearity was checked to ascertain whether the dependent and independent variables have a linear relationship (Kennedy 1998; Lewis-Beck and Lewis-Beck 2015; Gujarati and Porter 2009). The scatter and the acprplot diagrams indicated an approximately linear relationship.

The second test of assumption one is the specification error or omission of the relevant independent variable (Lewis-Beck and Lewis-Beck 2015; Kennedy 1998). The bivariate regression model was statistically significant, with a moderate R^2 indicating that nearly 65% of the variation in the dependent variable was explained. The Ramsey Reset Test was statistically significant at a 1% level, which rejected the null hypothesis of no omitted variable. Accordingly, the model was re-regressed after adding controlled variables based on theoretical specifications.

However, the subsequent Ramsey Reset Test was also statistically significant at 1%, which indicates that the model requires further omitted variable re-adjustments in the future.

The third assumption is non-spherical error terms (Kennedy 1998; Lewis-Beck and Lewis-Beck 2015). Non-state actors' air attacks are cross-sectional data, which might have heteroscedasticity, and are expected to have no autocorrelation among residuals (Gujarati and Porter 2009). The Breusch-Pagan test was statistically significant at a 1% level, indicating the rejection of the null hypothesis of homoscedasticity. Therefore, heteroscedasticity was corrected utilizing robust standard error methodology.

The fourth assumption is that the independent variable is non-stochastic – the values of the independent variable are fixed for repeated samples (Lewis-Beck and Lewis-Beck 2015; Kennedy 1998). Violation of this assumption will lead to simultaneity or reverse causation. The LM-Wald in Lochner and Moretti or LM test was statistically significant at a 5% level, establishing simultaneity in the model. The model was corrected for simultaneity using the Generalized Methods of Moments methodology (GMM) (Kisangani 2006). Despite fixing the model using GMM estat was statistically significant, indicating endogeneity, the unsolved omitted variable problem could cause endogeneity.

The final assumptions are that the number of observations exceeds the number of X variables and that no exact linear relationships exist between or among the Xs (Kennedy 1998; Lewis-Beck and Lewis-Beck 2015). The violation of the assumption is multicollinearity. The mean of VIF of all variables was below the cutoff threshold of 10, which establishes no multicollinearity in the model.

So far, the model has been checked for violating five OLS assumptions. The identified violations were fixed, and according to the outcomes of the assumption violation tests, omitted variables, and endogeneity remained to be fixed in future studies.

The next is to identify the variables that require transformation before regressing the full model, as speculated during the descriptive statistical analysis. Further analysis using the gladder and ladder into dependent and independent variables identified during descriptive statistics did not present a transformation of the dependent or independent variables. All four control variables are dummy variables, which does not necessitate transformation. Accordingly, the model utilizes the OLS regression method to obtain the estimation.

Empirical Analysis and Discussion

Table 2 presents our findings on the *international security threat* from the proliferation of air power among non-state actors. Model 1 consists of the dependent variable (*strategic_targets2*) and the independent variable (*air_strikes*). The model fits the data well as indicated by a Wald Chi² that is statistically significant at a 1% level. It thus supports hypothesis 1, which asserts that the proliferation of air power among non-state actors is likely to increase international security threats.

TABLE 2 - Regression Model of International Security Threat

Variables	Model 1 or base model (Robust Standard Error)	Model 2 or full model (Robust Standard Error)
Intercept	.4779 (.4167)	1.4003*** (.4864)
Air Strikes	.5961*** (.1336)	.3233** (.1401)
Conflict in border		-.2032 (.3645)
Civil war		-.4551 (.3863)
Foreign Intervention		.9442*** (.3615)
State sponsorship		1.4003*** (.4862)
Wald Chi ²	19.9	28.31***
R ²	0.66	.5611
Root MSE	1.71	1.967

*p<0.10, ** p<0.05, *** p<0.01, one-tailed test

According to Model 1, an increase in one event of an air strike by non-state actors will present an approximately 0.6 events increase of a strategic target being engaged, holding other variables constant. The *air_strikes* variable is statistically significant at a 1% level.

Model 2 integrates the dependent, independent, and control variables and reflects the correlation between air attacks by non-state actors and other variables. The model fits quite well with highly statistically significant χ^2 at a 1% level. The model explains a 56% variance in the dependent variable. However, the R^2 of the adjusted model (56%) is less than the basic model (66%). On the contrary, the adjusted model is expected to have greater explanatory power of the dependent variable by increasing the R^2 . Therefore, the reduced R^2 is also an aspect that may require further examination in future studies.

According to the full model, one event increase of an air attack will increase nearly 0.4 event increase on a strategic target holding other variables constant. The variable is statically significant at a 5% level. Therefore, proliferation of air power among non-state actors will increase the propensity of air attacks on strategic targets. According to Warden (2006), the ability of an actor to subject a belligerent's strategic targets to aerial attacks will possibly cause coercion. Therefore, the disposition to target the critical infrastructure of the international system increases the threat to international security.

Out of the control variables, conflict in the borders and civil war are negatively related to strategic attacks and were statistically insignificant at a 10% level. Accordingly, having a shared geographical border in a conflict will reduce the air attacks on strategic attacks compared to a non-contiguous geography holding other variables constant. Similarly, civil war reduces attacks on strategic targets compared to an absence of civil war, holding other variables constant. However,

the ongoing civil war conflict landscape evidence is to the contrary. Therefore, the model needs to be further examined for a robust determination.

On the other hand, foreign intervention and state sponsorship are positively related to strategic targets. The presence of foreign intervention increases attacks on strategic targets with a statistical significance of a 1% level compared to a conflict where there is no foreign intervention, holding other variables constant. The outcome explains that terrorists tend to target states intervening in conflicts. The finding correlates with other studies where foreign intervention has drawn transnational attacks from VNSAs (Piazza and Choi 2018a).

Similarly, state sponsorship of terrorism also increases air attacks on strategic targets with a statistical significance of 1% level compared to a conflict where there is no state sponsorship holding other variables constant. Non-state actors receiving state sponsorship in terms of expertise, technology, and resources will be capable of acquiring formidable air capabilities to launch attacks on strategic targets both within and foreign states. The finding explains the advanced drone capabilities in Houthi's arsenal who are provided with Iranian support (Tanchum 2019; Doctor and Walsh 2021; Haugstvedt and Jacobsen 2022; Chávez and Swed 2021; Tanchum 2019).

In summary, the positive and statistically significant relationship between air strikes and strategic targets substantiated the hypothesis that the proliferation of air power among non-state actors will likely increase the threat to international security. Evidence of the phenomenon has started to emerge in the international system. Defense analysis claim that relentless drone attacks by Houthis on Saudi critical infrastructure could be one of the significant reasons for the unilateral peace initiative by Riyadh (Al Jazeera n.d.; Al Jazeera English 2023a). Furthermore, internal intervention by states in conflicts and non-state actors receiving state sponsorship increases the

propensity of air attacks on strategic targets. However, the negative relationship between the air threat to strategic targets bordering a conflict country and civil wars calls for further examination.

Conclusion

The technological advancements have enabled the non-state actors to acquire aerial capabilities and exploit the third dimension of warfare – air, which is possibly a paradigm shift in the international security landscape. The contemporary empirical evidence manifests that non-state actors are employing their burgeoning air capabilities to great effect by targeting the critical infrastructure of the international system to coerce governments into political submission, thus making the proliferation of air power among non-state actors a threat to international security.

Despite the formidable threat, the scholarship is deficient and divided on the impact of the evolving threat. Against this backdrop, this study will probably be the first scientific study to demonstrate the strategic effects of the proliferation of air capabilities on international security. The findings will make policymakers realize that air power in non-state actors' hands is formidable threat, posing global security and policy implications. The disclosures of the findings of this study will be significant to many disciplines of social science – international security, international affairs, civil war, terrorism, air power, and irregular warfare as the phenomenon influences these aspects in the scholarship.

However, the study reveals that the scholarship is still in its infancy and necessitates further research to introduce more robust models. The absence of a replicable dataset in the scholarship is a significant void that impedes the research. This study encountered methodological issues during its analysis. The model suffered from the normal distribution of dependent variable, model specification (omitted variable), and endogeneity. In addition, the dataset may need to be refined further. Therefore, the scholarship needs to grow more on the phenomenon.

In sum, the proliferation of aerial capabilities is a phenomenon to reckon with. The findings of this study will pave the way to examine the correlation with the other contributing factors in bi-variate or multi-variate models further. From a policy perspective, the policymakers could review the states' capacities to respond, mitigate, or prevent the impact of this relatively new concept in civil wars. The contemporary security landscape signifies that the threat necessitates a multi-national and multi-agency strategy to address the situation. Therefore, the policymakers and the academia, in unison, should devise proactive approaches to protect the world from such asymmetric threats.

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