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Introduction

The Islamic State – West Africa Province (ISWAP) splintered from Boko Haram in 2016, and quickly thereafter, subsumed much of its membership, growing in military power through a series of victories (Stoddard, 2023). The major difference between the two groups that promoted ISWAP's growth and Boko Haram's corresponding decline is ISWAP's development as an alternative to the state and greater focus on attacks towards military and police targets rather than violence against civilians (Sempijja et al., 2023). ISWAP's growth has given it influence over the populace and economy in various localities in northern Cameroon, eastern Niger, and northeastern Nigeria (Barkindo, 2023), with a heightened emphasis on control over people rather than territory to bolster its resilience to counterinsurgency efforts (Stoddard, 2023). ISWAP's ability to develop meaningful control over trade, taxation, agriculture, and resource-rich territories has helped sustain the organization's ability to engage in governance alongside its broader conflict efforts (Nyelade, 2025). While ISWAP is but one organization, do natural resources assist in the development and maintenance of rebel governance more broadly? Are some kinds of governance more likely to develop when groups are financed by natural resources than others?

Extensive research has highlighted a wide variety of circumstances in which natural resources can influence civil conflicts and rebel group behaviors, oftentimes for the worse (Whitaker et al., 2019; Laurent-Lucchetti et al., 2024; Haer et al., 2020; San-Akca et al., 2020; Lujala, 2009; Lujala, 2010). Rebels can profit from natural resources, with different effects on

conflict depending on the resource in question (Conrad, 2019; Whitaker et al., 2019). At the same time, a wealth of literature has developed showcasing how rebel governance is influenced by, and in turn, exercises influence upon a variety of dynamics in civil conflicts (see, for instance, Arjona, 2016; Arjona et al., 2015a; Mampilly, 2011; Cunningham & Loyle, 2021; Loyle et al., 2023). A more robust look at how natural resources may play into the dynamic of rebel governance is needed to better understand how natural resources influence non-violent rebel behavior. While earlier works allude to the potential for natural resources to influence the development of rebel institutions (Conrad et al., 2022), this paper takes steps towards answering the following questions: How do natural resources impact the types of governance that rebels can provide? Do natural resources spur the development of institutions among rebel groups? Is there variation in governance provision based on the nature of the resource itself?

While an expansive body of work has examined the influence of natural resources on state governance practices (most notably through an examination of the “resource curse” (Badeeb et al., 2017; Brunnschweiler & Bulte, 2009; van der Ploeg, 2011; Ross, 1999; Ross, 2015; Rosser 2006; Sala-i-Martin and Subramanian 2013), current research has only scratched the surface of how natural resources might influence *rebel* governance practices. Work such as Conrad et al. (2022), for instance, showcases how natural resource usage by rebel groups increases the provision of healthcare to maintain their workforce. Literature on the resource curse highlights how resources can influence *state* governance broadly, but the curse can also vary depending on the nature of the resource and incentives of the state (Ross, 2015). Based on this research, I argue that the influence of natural resources on rebel governance extends beyond healthcare. Additionally, qualities tied to natural resources, such as whether they are lootable, influence decision-making over what institutions to prioritize and establish.

While rebels may or may not be self-serving in their objectives, there are clear benefits to providing governance, such as other material resources (in the form of taxes), information, legitimacy & public support (Florea and Malejacq, 2023). These benefits come with their own logistic and opportunity costs; however, natural resources can help offset the cost of governance. Natural resources serve as a tool to create the profits needed to provide governance, whether it be to extract more profits from the territory, to provide benefits to the population, or to derive other benefits from governance. Developing social services or security-related institutions serves as viable means of garnering local support or improving the group's ability to exercise power over locals.

Security-related institutions help serve as a fundamental means of coercion or security to defend existing profits and economic capacity and have a lower level of investment especially when compared to social services. Social services, however, provide an opportunity to build more traditional implements of governance that can either be used to reinforce profits or help secure the support of locals at the cost of a higher investment. Developing educational services may bring unique value to groups with lootable resources, providing an infrastructure for training new recruits that are more likely to be incentivized to join for easier resource profits, improving intragroup cohesion in the long-term.

Natural resources lead to meaningful statistical and substantive differences in the likelihood of developing security and social service-related institutions. Groups with non-lootable resources are twice as likely to have security institutions compared to those with lootable resources, while those with no resources are substantially less likely to have security institutions than groups with non-lootable or lootable resources. Further, I find that groups with lootable resources see a significant difference compared to those with no resources in the

propensity to provide social services of multiple varieties. Further, when looking at the substantive effects, I find that groups with lootable resources are more likely to have educational services compared to those with only non-lootable resources. Contrary to existing findings in the literature, I do not find support for natural resources influencing the likelihood of providing healthcare.

However, further research is necessary to untangle the potential causal mechanisms that explain this particular finding. Given the qualitative and quantitative analysis here, further research should be conducted to better develop an understanding of the causal mechanisms behind this relationship and why natural resources influence the odds of providing some institutions but not others. Doing so will help us more robustly understand whether these dynamics are merely a quality of the sample here or a more generalizable relationship.

Literature Review

Rebel access to natural resources creates conditions where violence against civilians is much less restrained and conflict is worsened (Whitaker et al., 2019; Laurent-Lucchetti et al., 2024; Haer et al., 2020; San-Akca et al., 2020; Lujala, 2009; Lujala, 2010). Rebel groups with natural resources can become less reliant on the local population than rebel groups without. Rather than rely upon locals for many of their needs, easy access to resources can incentivize rebels to use greater levels of violence against them and create conditions where alienating civilians is more permissible (Whitaker et al., 2019). However, many of these negative traits are dependent upon the strategies taken by the group and the nature of the resource itself.

For instance, while some resources influence conflict writ-large, others are seemingly pacifiers. Early research showcases how the mere presence of resources in a conflict can lead to

more severe conflicts, whether it be from gems, oil, or gas. Drug cultivation, conversely, actually results in lower conflict intensity (Lujala, 2009). Research also demonstrates that rebels are strategic in how natural resources influence their tactics. For example, research displays how strategies to regulate the illicit diamond trade shifted violent conflict towards substitute resources like tin, tungsten, gold, etc. (Saab, 2025).

Additionally, rebels that *extort* natural resources may engage in more sexual violence while groups that *smuggle* them do not because of the different constituencies that groups need to rely on depending on which strategy they choose (Whitaker et al., 2019). Likewise, groups are more likely to engage in violence when different resource prices fluctuate, depending on whether extraction is labor-intensive or capital-intensive (Laurent-Lucchetti et al., 2024). While natural resources and their nuances have been shown to change a group's violent behavior, insights into how natural resources influence non-violent behavior such as rebel governance create a more robust understanding of the role of natural resources and broader economic capacity in rebel group conduct.

At the same time, a growing literature has examined the role of rebel governance and its impact on civil conflict (Albert, 2022; Florea & Malejacq, 2023; Hassan, 2022; Park, 2024; Teiner, 2022). Rebel governance is conceptualized here as 'A set of actions insurgents engage in to regulate the social, political, and economic life of non-combatants' (Kasfir, 2015; Huang, 2016; Albert, 2022). Rebel groups vary extensively in their levels of organization and governance provision (Huang, 2016). For instance, in Angola, the National Union for the Total Independence of Angola (UNITA) featured a president, congress, committees, a constitution, and diplomatic efforts (Huang, 2016). In contrast, ISWAP has engaged in taxation, Sharia-based justice (with brutal punishment), security, and dispute resolution mechanisms (Hassan, 2022).

Across groups that provide governance, the nature of that governance varies widely. However, understanding the means through which groups can provide governance is important for understanding the broader incentives and disincentives to provide specific *types* of governance. To understand why groups differ in what they provide, one explanation may lie in how different incentives to provide governance influence what groups will establish for themselves or local populations. This study provides a first examination of this answer through an examination of natural resources; natural resources and the qualities among such resources can subsequently shape what institutions are likely to be provided, encouraging some more than others.

While rebels can acquire a variety of benefits from rebel governance, it is ultimately a costly endeavor, with groups facing collective action costs, monitoring/enforcement costs, principal-agent problems, goods-provision costs, and behavior constraints in exchange for providing governance to a local population (Florea and Malejacq, 2023). Because of this, revenue sources such as external support can help supplement the costs of insurgency, allowing rebels to divert resources to institutions like education and healthcare (Huang & Sullivan, 2021). Natural resources and external support share some parallels that help support the plausibility of natural resources as a means to provide governance. Like natural resources, external support can reduce dependence on a local population (Salehyan et al., 2014). However, external support can be fungible like natural resource profits, giving rebels flexibility in its usage that can support governance provision (Meier et al., 2022; Huang & Sullivan, 2021).

This paper provides contributions to our understanding of both natural resources and rebel governance. By beginning to examine the role of resources as an influence on more than just social services (Conrad et al., 2022), this study builds on valuable work to highlight the potential for influences on governance to have both positive and negative implications for the

development of rebel institutions. At the same time, investigating the role of natural and lootable resources in developing governance helps build upon our understanding of the non-violent impacts of natural resource wealth on rebel behavior and decision-making. Institutions hold tangible weight over conflict and can create meaningful effects that have implications for violence and the larger health of local populations, so better conceptualizing and unpacking the role of natural resources in this process can provide valuable insights for academics and policymakers alike.

I argue that natural resources aid in the development and maintenance of rebel governance. Financing from natural resources provides rebel groups with the financial capacity to provide governance, akin to the ways in which natural resources offer a means to meet the logistical requirements for insurgency more broadly (Weinstein, 2005). If a group is interested in providing governance, natural resources are a viable option for doing so. Extensive operations like establishing mines or business networks for profiting from these resources require cooperation or coercion of local populations. Providing governance, institutions, and infrastructure of many varieties can serve to bolster that objective.

As Conrad et al. (2022) demonstrate, evidence already showcases how rebel groups are more likely to provide healthcare when they profit from natural resources because many resources require extensive amounts of labor to extract the full benefits. However, there are reasons to believe that natural resources can spur other forms of governance as well, and decision-making surrounding institutions like healthcare provision may be affected by natural resources beyond the need for continued labor for extraction. This is reflected empirically in both the cases of the Kachin Independence Organization (KIO) in Myanmar and the Allied Democratic Forces (ADF) in Uganda.

The Use of Resources and Governance

In Myanmar's conflict, groups like the KIO had forged ceasefire pacts with the government to reduce the level of violence in the country, but Myanmar's agreements featured an interesting provision: inclusion of groups like the KIO in natural resource production and profits (Brenner, 2015; Venning, 2019). The KIO was a crucial group to make peace with to help end insecurity in northern Burma (Brenner, 2017). Myanmar had leveraged its economic potential to reduce violence through playing to groups' economic interests, diminishing their opposition through co-option of the elite in the organization (Brenner, 2015; Venning, 2019). The KIO agreed to a ceasefire in 1994, after pressure by a government offensive left the KIO severely weakened. A ceasefire offered an opportunity to recuperate and govern territory within Kachin state (Brenner, 2015).

From 1988 to 2012, FDI had begun to surge into the resource-rich border provinces where many groups like the KIO reside, with jade exports (primarily from Kachin state) worth anywhere from \$6 to \$9 billion USD in 2011 alone (Brenner, 2015). The infrastructure for resource deals and taxation of this newly growing economy had been crucial for financing the KIO after the ceasefire was signed, as companies could now exploit the natural resources in their territory at unprecedented levels (Brenner, 2015). The KIO had profits from jade mines in the region but has shifted towards timber logging as the value of timber to Chinese markets increased (Brenner, 2015). This industrial growth was good news for many in the KIO, as they had directly expanded services and infrastructure construction as a result; however, it influenced leadership in the KIO to shift objectives away from rebellion and towards extracting profit (Brenner, 2015). The KIO had a number of governance practices, from taxes and schools to immigration and border control, to diplomacy, and a judicial system-- with development being

directly supported by the extraction and export of lootable resources such as jade and timber to China (Venning, 2019).

The ADF originally formed in eastern Democratic Republic of the Congo (DRC) in 1995 to fight against the Ugandan government (Thompson, 2021). The Sudanese government played a direct role in their formation, helping create the organization to topple the Ugandan government (Day, 2011). The ADF had initially received direct support in terms of their training and logistics from the Sudanese government, which translated into a series of violent attacks from 1996 through the late 1990s (Thompson, 2021). The ADF saw further support from the DRC to disrupt Uganda and Rwanda's presence in the DRC at the time. However, by 2001, the ADF had degraded in strength and relied on the remote terrain of the eastern DRC for remobilization to the point where they were declared defeated in 2007 (Day, 2011; Thompson, 2021).

A number of factors contribute to the ADF's growth in resource wealth and governance. The ADF chose to remain dormant, reducing its attacks against the population for nearly a decade from 2003 to 2012 (Thompson, 2021). Further, the ADF had avoided public proclamations, social media, and punished people trying to leave, tightly controlling movement surrounding their camps, minimizing activity that could draw attention to their activities and objectives (Titeca & Fahey, 2016). There is little security present in the region that could prevent the ADF's operations in the remote, rural area that they currently occupy, and so with the group's lack of public statements and lack of frequent or large-scale attacks, the ADF was able to focus on profit (Cullen, 2017). With this dormancy, the ADF shifted attention towards managing the territory in its possession and extracting profits.

A shift towards commercial interests began as soon as the ADF were forced to retreat from Uganda into the eastern DRC in 1995. Where it was once a means to finance their

objectives, it later became their primary goal (Cullen, 2017). During dormancy, the ADF sought to develop commercial activities, operate legitimate businesses, and create an independent community and social code among members based partially on Islam (Cullen, 2017). Rather than rebuilding and seeking a renewed war, the ADF began developing economic operations, entrenching themselves in local black markets, cross-border smuggling, and patronage systems in the area, venturing into markets such as timber, gold mining, and agriculture (Thompson, 2021; Cullen, 2017). Some agriculture included both a cultivation of coffee as well as marijuana sold locally (Titeca & Vlassenroot, 2012). As wealth accumulated, the ADF's base of resources became more stable, increasing their capacity to fight the DRC; by using their extensive commercial network which featured a diversified set of resources, the ADF could improve their resiliency to absorb losses and market downturns (Reeder et al., 2023). This has contributed to their governance provision.

For the ADF, natural resources both offered motive and means for developing governance in the areas it controlled. Some evidence indicates that during the early 2000s, during its dormancy period, the ADF had established a society that featured 'sharia-governed' camps with mosques, schools, health centers, courts, a police force, an internal security force, and a prison despite regular military operations by Uganda, Congolese, and UN troops (Nsobya, 2018; Titeca and Fahey, 2016). The ADF operate mines and sell licenses for tree felling operations, smuggle consumer goods from Uganda into the DRC to fill a supply gap for products like coffee and pharmaceuticals or fuel, and there are members of local authorities that are complicit in their activities which allow them to operate these sites as well as use transportation routes (Cullen, 2017). Additionally, the ADF maintained regular relations with local businesses and political

leaders, and contacts with both national and international financiers with the nominal goal of overthrowing the Ugandan government (Nsoby, 2018).

The KIO and ADF both benefit from extensive economic networks that require interaction with local populations. Through either appeasement, by providing public goods, or more stringent and heavy-handed regulation of local life (or a hybrid of both), groups can be more capable of acquiring further resources if they engage in governance. Even if further profits are not the ultimate objective behind developing governance as in the case of the KIO, the wealth that resources provide helps groups with establishing public goods provisions. Importantly, in each case, natural resources helped provide a variety of provisions-- chief among them were institutions related to social services or security.

Among immediate priorities for new groups, survival is paramount. For groups that have established a degree of control or reliability over natural resources, wealth from such resources can provide a valuable gateway to maintain relevancy and develop their capacity for war. Groups may consider the development of certain institutions worthwhile for maintaining control over a valuable lever of economic capacity. Developing security-related institutions such as immigration or border control (as in the case of the KIO) or prisons, internal security, and police (as in the case of the ADF) helps defend existing profits through more effective enforcement and coercion of the local populace. Further, developing security institutions can help groups defend and scale their operations further by creating means to more effectively extract profits from extortion, taxation, or smuggling in a more organized fashion.

Organizations like the KIO have been known to leverage their security institutions as a means of further securing and garnering resource wealth, for instance (Gluckman, 2015; Combs, 2021). Developing such institutions helps delineate boundaries of influence for the group,

particularly relevant for groups seeking autonomy or independence, while simultaneously creating a means to finance its existence through greater involvement in managing natural resource extraction and its smuggling to other parts of the country or to states like China. Groups that claim to represent an ethnic minority or seek independence, for instance, may seek to establish a border patrol as a way of ensuring that resource wealth that is entering or exiting their claimed region is providing a portion of that economic value to the organization, and thus the larger populace by proxy.

Further, security-related institutions serve as a means to establish coercive influence over the local populace, whether for establishing themselves as an alternative to the state like for the ISWAP or as a means to extract further economic capacity or increase the degree of control over resource extraction (whether it be the degree or location of extraction) as seen with the KIO and the ADF. For an organization to manage and establish bureaucracy over resource extraction (if not other aspects of economic, political, or social life), the organization needs reliable and credible means of punishing defectors. While regular soldiers are more than capable of doing so, groups in the long term may seek to develop internal security forces near such localities or along smuggling routes to more regularly and more effectively regulate the resource economy. Given these reasons, I derive the following hypothesis:

Hypothesis 1: Rebel groups that profit from natural resources will be more likely to provide security-related institutions than groups that do not.

Mining resources entails a more intensive reliance on local populations that are bearing more risk to extract the resource, and so the need to provide institutions like healthcare serves to provide incentives to locals to work with the rebels or minimize labor problems in the form of sick or injured workers, harming profits (Conrad et al., 2022). For instance, in the case of the

KIO, working in the jade mines is especially dangerous for those extracting and creates considerable pollution and environmental damage at the same time (Roi, 2022). Similarly, local government officials in the region directly supported the development of infrastructure to facilitate resource extraction and border trade, spurring timber extraction and drug trafficking (Woods, 2011). Developing institutions like healthcare or infrastructure thus provides a way of maintaining or growing profits.

An important influence on the development of institutions is the financial cost for development (Florea and Malejacq, 2023). Security institutions such as a border patrol have financial costs but are not far removed from costs a rebel organization typically faces (personnel, weapons, outposts, etc.) and may be more feasible to pay as a result. Social services, however, should be especially costly compared to the development of other institutions – road development, managing schools, providing medical care, or work related to transportation or housing may require heavy financial investment to kickstart programs – incentivizing civilians or members to participate, building the necessary infrastructure, etc. By harvesting lootable resources, groups have lower extraction costs or barriers of entry to resource profits compared to non-lootable resources (Ross, 2004; Snyder, 2006). As a result, the development of “less essential” (i.e., services that do not directly uphold profit) services should become more feasible as a result even if they are further outside a groups’ initial expertise or have higher costs than other forms of governance. However, profits can be used to install other social services, such as education, which provide value beyond directly maintaining profits.

The development of public goods such as education can be seen as intrinsically valuable depending on the goals of the organization. For instance, separatist groups or de facto states which have a direct need for domestic and international legitimacy may see public goods and

governance as an important priority (Yun & Ishiyama, 2025). Beyond this, however, education can provide value, especially for groups that are dependent on lootable resources.

Natural resources attract less disciplined/more opportunistic recruits, which can be helpful for short-term objectives like the immediate defense of a source of profit that said recruits were drawn by (Weinstein, 2005). Lootable resources may exacerbate this dilemma further, given their enhanced accessibility for profit (Haer et al., 2020; Aronson et al., 2024; Sobek & Thies, 2015; Lujala et al., 2005). While we know that groups with ideological and material resources are more likely to provide healthcare and educational services (Soules, 2025a), it is important to consider how the *nature* of the material resources incentivizes the development of institutions which can encourage ideological adoption. Even if lootable resources may attract lower quality recruits that have little motivation to support governance, these resources may also spur the development of institutions that help *manage* these recruits. For instance, a plethora of recruits from natural resources may make providing services that are intensive for human capital, such as a police force, infrastructure development, or managing a justice system, more viable given the expanded membership within the organization. However, social services may also serve to manage new recruits to improve group cohesion.

Education can be used as a tool to socialize civilians, helping develop ideological appeals that promote recruitment and better ensure survival (Palik et al., 2025).

Intragroup ideological diversity spurs internal fractionalization and commitment problems which further lengthens the duration of the conflict (Soules, 2025), and better socialization helps ensure internal cohesion and discipline (Oppenheim & Weintraub, 2017; Hoover Green, 2018), something that may be more valuable for organizations with lower quality recruits; alignment to the group becomes further cultivated during their time in the organization (Ugarriza & Craig,

2013). The development of education can thus help develop the norms and rules both for civilians and materially driven recruits in the long-term to better promote group survival. Educational services can be considered a potential public good that also serves as a means of intragroup non-violent socialization to help address the issues that natural resources, and especially lootable resources, create for recruitment efforts. I thus derive the following hypotheses:

Hypothesis 2: Rebel groups that profit from natural resources will be more likely to provide social services than groups that do not.

Hypothesis 3: Rebel groups that profit from lootable natural resources will be more likely to develop social services than groups profit from non-lootable natural resources.

Research Design

To test my hypotheses, I construct a dataset at the dyad-year level for all conflict and non/conflict-years, based on the UCDP Dyadic Dataset version 24.1 (Davies et al., 2024; Harbom et al., 2008). Specifically, if a dyad has a period of non-active conflict, those years are included in the sample set. Non-conflict years are not included for any point after the last conflict year is recorded in the dataset. After incorporating variables for the analysis, I am left limited to 1990 to 2012, with $N = 783$.

For my dependent variables, I rely upon the data from the Rebel Quasi-State Institutions dataset (Albert, 2022). This dataset contains a litany of different binary variables for whether a rebel group provided or did not provide a certain type of rebel governance. This list of different institutions contains twenty-five different indicators, ranging from political parties to media

outlets to a border patrol or armed forces to healthcare or public transportation. I create a binary indicator for whether rebel groups have any institutions that fall into the categories present in Table 1. While I rely on Albert’s (2022) conceptualization of security and social service-related institutions, I further delineate social services into two additional categorizations. Because existing research on causes of social service development among rebel groups utilize slightly different or more restrictive categorizations, I also include those as distinct tests in the initial analysis. One subcategory of social services examines whether rebels provide healthcare or education, while the other examines only healthcare. For robustness, I also examine whether natural resources influence the provision of both education *and* healthcare and education alone.

Table 1: Categorizations of Rebel Quasi-State Institutions used for the following analysis.

DV Classification	Rebel Quasi-State Institutions Indicators (Albert, 2022)
Security-related Institutions	Border patrol, IDs, armed forces, “other military”
Social services (Albert, 2022)	education, healthcare, infrastructure, transportation, policing, law, justice, housing, constituency politics, "other social"
Social services (Huang & Sullivan, 2021; Soules, 2025)	education, healthcare
Healthcare (Conrad et al., 2022)	healthcare

For my independent variables related to natural resources, I rely upon the Rebel Contraband Dataset (Walsh et al., 2018), which provides information on the resources and methods for profit from said resources that rebel groups used over time. I code rebel groups as a 0 if they do not profit from any *natural resource* in a given year (used as the baseline category), a 1 if they only profit from non-lootable resources, and a 2 if they profit from at least one lootable resource. For my list of lootable resources, I look to Findley and Marineau (2014) and include the following resources: alluvial diamonds, drugs, timber, and gems.

To address potential confounders, I include a list of control variables in the analysis. At the group-level, I include a binary for whether groups control any territory or not, an ordinal scale of the relative strength of the rebel group compared to the government, and an ordinal scale for how centralized the rebel group is, all sourced from the Non-State Actor (NSA) Dataset (Cunningham et al., 2009). I anticipate that each of these variables should increase the likelihood of rebel governance being provided, as groups that are stronger, more centralized, and control territory, all should be groups that are in a better position to invest in governance and pay the considerable costs (Conrad et al., 2022; Florea and Malejacq, 2023). Additionally, I include binary variables for whether or not rebel groups are founded with an objective of independence or autonomy, an ideology, or an ethnic identity, sourced from the Foundations of Rebel Group Emergence (FORGE) Dataset (Braithwaite & Cunningham, 2020), given previous research and the qualitative analysis above indicates that these could be potential factors that change the likelihood of governance (Arjona et al., 2015b; Reno, 2015; Brenner, 2015).

At a country-level, I include variables to capture a country's V-DEM polyarchy score (Coppedge et al., 2011, Coppedge 2021), their GDP per capita (World Bank, n.d. -a), and their population (World Bank, n.d. -b). At the conflict-level, given previous research showcases how external support could influence rebel governance and groups that use natural resources may be less likely to receive external support (Huang & Sullivan, 2021; Salehyan et al., 2011), and so I include a count for the number of external supporters involved in the conflict in a given year using the UCDP External Supporters Dataset (Meier et al., 2022). Further, I include a variable for the relative intensity of the conflict in a given year, where a 1 indicates if it's a "minor" conflict (between 25-999 battle-related deaths in a given year) or a "major" conflict (at least 1,000 battle-related deaths); for non-conflict years, this is coded as a 0. Lastly, I include region-

level fixed effects to account for any other potential confounders that may exist at a larger regional level. As a robustness check, I also run the analysis with year-level fixed effects to better account for potential temporal dynamics.

Analysis

For the analysis, I run logistic regressions with robust standard errors and cluster them by country. To help account for potential endogeneity, I lag the natural resource and lootable resource variables by one year. I run four models, one for each form of governance specified above. The results are discussed below.

Table 2 - Rebel Governance Provision and Lagged Natural Resource Usage

	M1: Security Institutions	M2: Social Services (Albert, 2022)	M3: Education or Healthcare	M4: Healthcare
Only Non-lootable Resources	3.499* (0.816)	-0.140 (1.567)	-1.307 (1.516)	-0.525 (1.477)
1 or More Lootable Resources	1.532* (0.462)	1.923* (0.421)	2.257* (0.490)	1.616* (0.596)
Territorial Control	0.741* (0.251)	0.708* (0.209)	0.829* (0.153)	0.968* (0.287)
Strength of Centralization	1.416* (0.624)	1.708* (0.547)	1.877* (0.530)	2.143* (0.646)
Relative Rebel Strength	0.845 (0.489)	0.662 (0.446)	-0.399 (0.402)	-0.379 (0.561)
Independence/Autonomy Movement	3.970* (0.926)	2.134* (0.535)	3.072* (0.410)	2.029 (1.206)
Founded w/ Ideology	0.244 (1.549)	0.085 (1.029)	0.077 (1.195)	0.870 (1.688)
Founded w/ Ethnic Identity	-2.012* (0.998)	-1.746* (0.740)	-2.804* (0.897)	-3.162 (1.646)

External Supporters	-0.024 (0.098)	0.318* (0.109)	0.426* (0.111)	0.305* (0.140)
Polyarchy	-0.976 (2.059)	-1.176 (2.448)	-1.039 (2.208)	-6.873* (2.657)
GDP per capita	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)
Population	0.000 (0.000)	0.000* (0.000)	0.000* (0.000)	0.000* (0.000)
Intensity Level	0.428 (0.287)	0.479 (0.306)	-0.237 (0.348)	-0.692 (0.433)
Constant	-8.311* (3.159)	-7.163* (2.536)	-8.003* (2.033)	-8.121* (4.098)
Observations	783	783	783	751
Pseudo R^2	0.410	0.389	0.437	0.413

Standard errors in parentheses

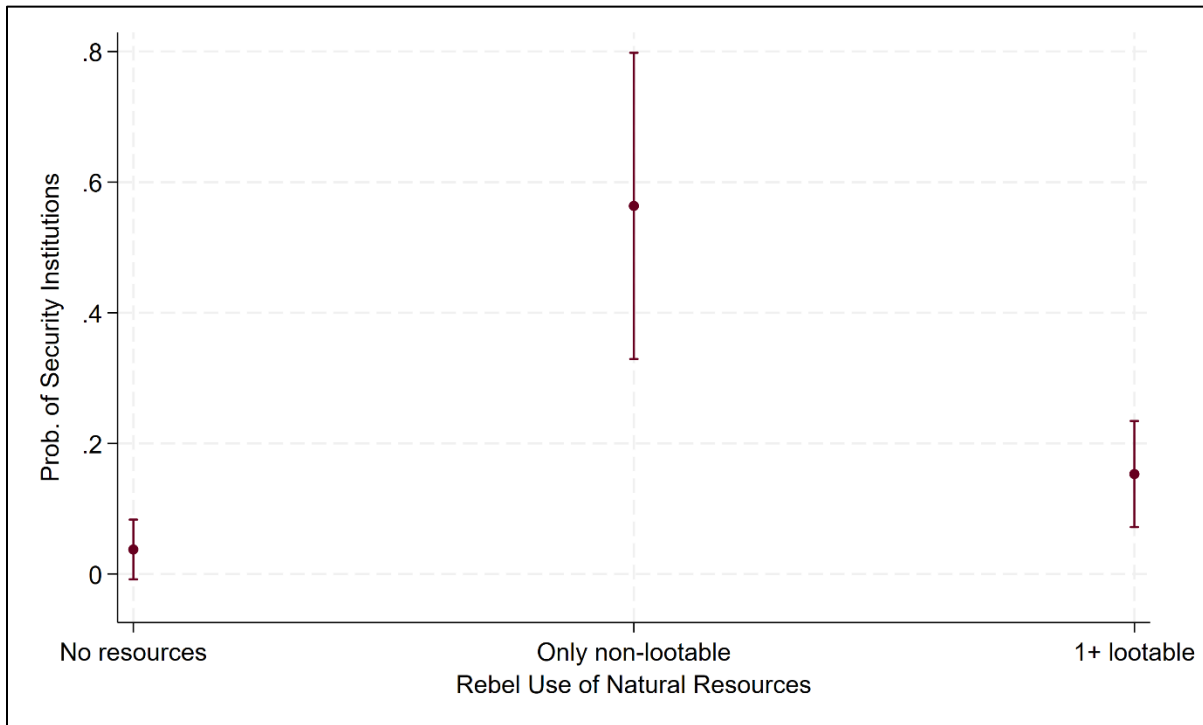
* $p < .05$

The results indicate initial support for Hypothesis 1. I find that groups with non-lootable or lootable resources are more likely to develop security institutions compared to groups that do not have access to some form of natural resource profit. To investigate the substantive effects of natural resources, I showcase the predicted probabilities of having at least one security institution by natural resource access in Figure 1.

I find that there is no statistically significant difference in the probability of having a security institution between groups with no resources and groups with lootable resources. However, I find that groups with no lootable resources are more likely to have at least one security-related institution compared to either other category. Groups with non-lootable resources have a probability of over 55% to have a security institution, making such groups over thirteen times as likely compared to groups with no resources. Similarly, groups with non-lootable resources are over twice as likely to have a security institution compared to groups with

at least one lootable resource. Further research should further investigate the reasoning behind such differences based on the nature of the resource. It may be, for instance, that security-related institutions are more necessary for non-lootable sources that require greater levels of consistent territorial presence, such as management of oil or mining ores.

Figure 1: Likelihood of Security Institutions by Natural Resource Usage



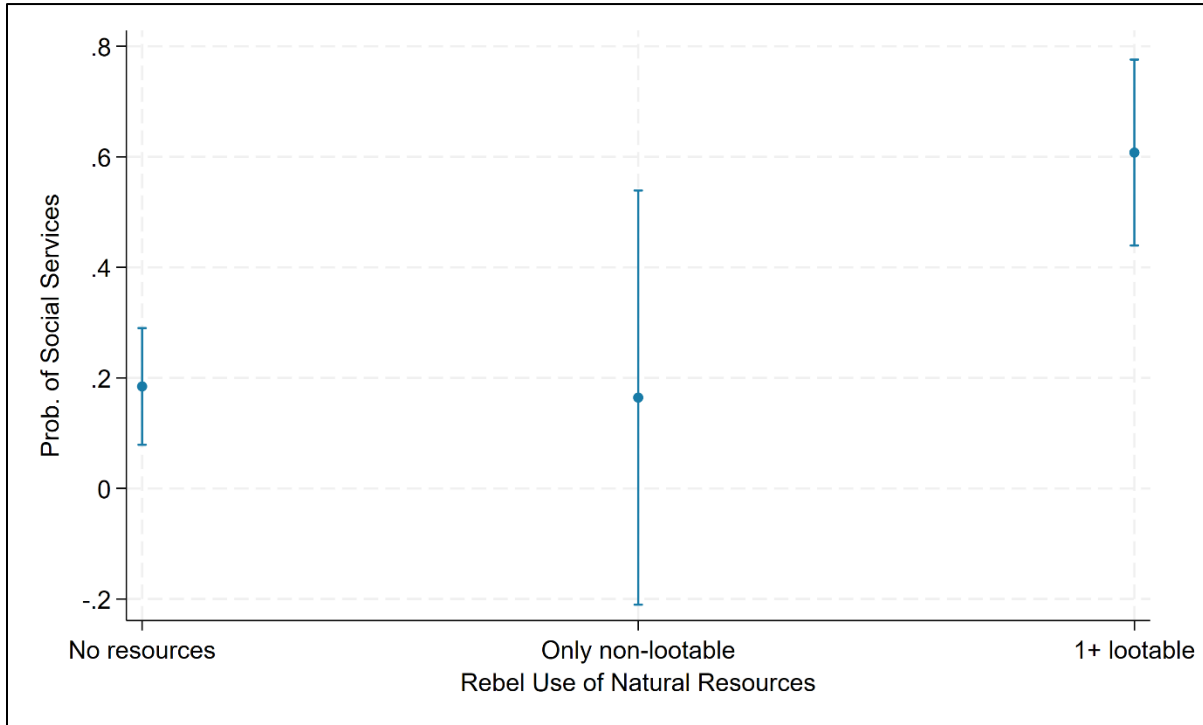
When investigating Hypotheses 2 and 3, I find support for Hypothesis 2 only for groups with at least one lootable resource. Groups with no lootable resource profits are not more likely to have social services of any specification than groups with no resource profits at all.

Additionally, I find that regardless of the specification for social services, groups with lootable resources are more likely to have such institutions compared to groups with no resource profits.

When examining the predicted probabilities in Figures 2-4. First looking at Figure 2, I find conditional support for Hypothesis 2 and no support for Hypothesis 3. Groups with lootable

resources are not significantly more likely to have at least one social service institution compared to groups with non-lootable resources. However, they are almost three times as likely to have at least one form of social services compared to groups without natural resources.

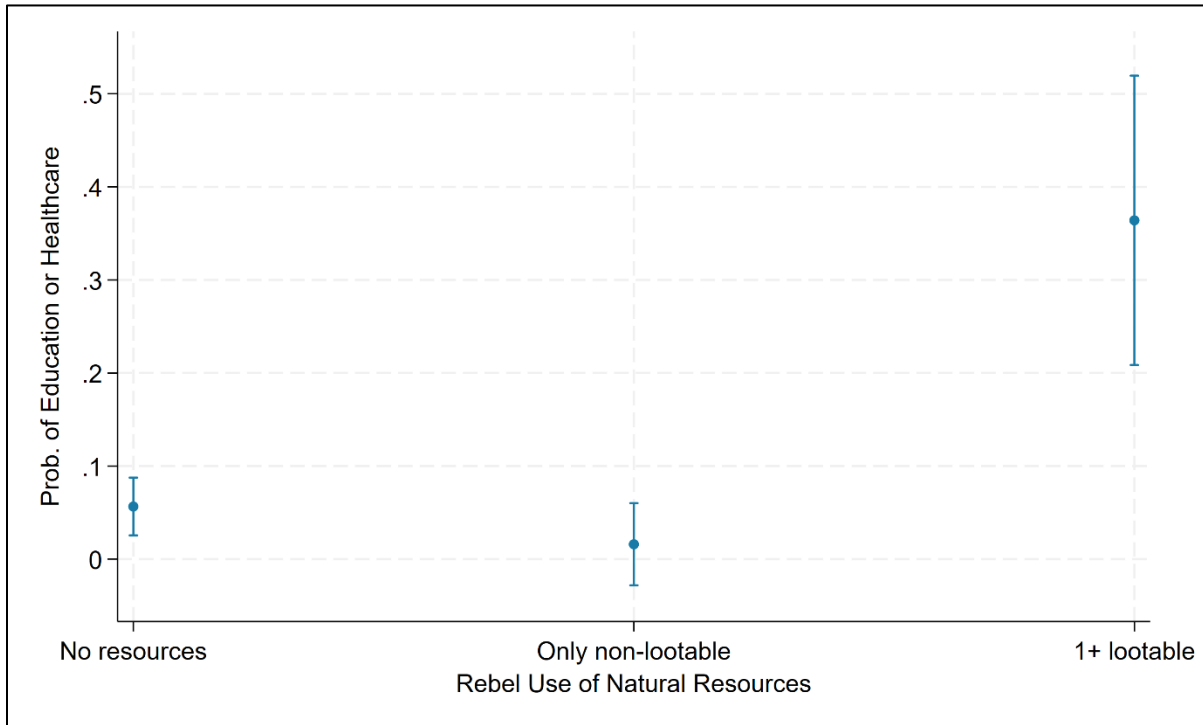
Figure 2: Likelihood of Social Services by Natural Resource Usage



When examining Figure 3, I again find evidence in favor of Hypothesis 2 only in the case of groups with lootable resources. Further, I find support for Hypothesis 3 in the case of education or healthcare. Groups with at least one lootable resource are significantly more likely to have education or healthcare compared to groups with no lootable resources. However, when removing education and examining only healthcare in Figure 4, this difference disappears. Further analysis (included in Appendix A) looking only at education further confirms that the likelihood of education increases by nearly 40 percentage points when groups have a lootable

resource instead of only non-lootable resources, indicating that it is the inclusion of education that drives the difference in effect between lootable and non-lootable resources.

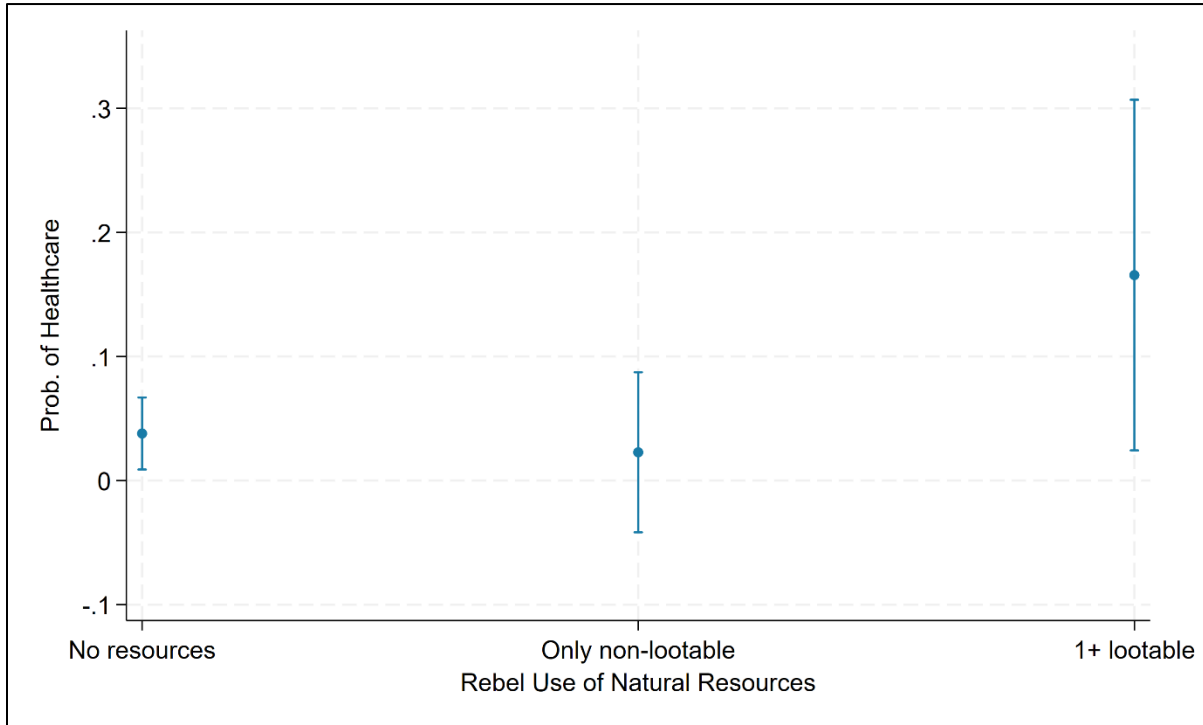
Figure 3: Likelihood of Education or Healthcare by Natural Resource Usage



When investigating how healthcare alone is impacted by natural resource type, I find results which complicate the findings of Conrad et al. (2022). While the model results highlight that lootable resources result in a statistically significant increase in the likelihood of developing healthcare, there is no difference in the predicted probability between groups with no resources and groups with either category of resources. Additionally, when I examine natural resources only as a binary, not considering lootability, I find no significant effect for natural resources on the provision of healthcare (shown in Appendix A). This divergence in findings may be explained by differences in measurement, but it highlights the need for further research to determine the effect of natural resources on healthcare. However, these results still demonstrate

that considering the nature of resources and how it shapes incentives for diverse types of institutions is important to have a full understanding of the effect of various sources of economic capacity on group behavior.

Figure 4: Likelihood of Healthcare by Natural Resource Usage



When looking across controls, I find that more centralized groups and those with territorial control are more likely to have security and social services across all initial tests. Similarly, I find that groups seeking independence or autonomy are more likely to develop security institutions or social services broadly, except for healthcare. In addition, I find results that support Huang and Sullivan’s (2021) conclusion; external support increases the likelihood of developing social services, but external support has no influence on whether groups develop institutions related to security. Lastly, after controlling for other qualities of group foundations,

groups with an ethnic identity are significantly less likely to develop security or social service institutions.

As an initial assessment of the robustness of these findings, I run some additional models. First, when looking at how natural resources influence the provision of both education *and* healthcare, I find again that there is no difference between lootable and non-lootable resources in their predicted probability, but that there is a statistically significant difference between groups with lootable resources and those without them in the model itself. After accounting for year-level fixed effects, I find that the results do not meaningfully change in statistical or substantive significance across the models. When examining only the effect of any natural resource compared to no resources, natural resources result in statistically significant differences for all tested governance types except when investigating healthcare alone.

When estimated using a set of two-way fixed effects (TWFE) models, I find that no significant difference between groups with and without natural resources of any type. However, when investigating social services broadly, a statistically significant difference remains between groups with and without resources; groups with lootable resources are 60% more likely to develop at least one institution considered a social service than groups with no resources. However, I find no significant substantive difference between lootable and non-lootable resources in this case. Lastly, when investigating education and healthcare, I find that groups with non-lootable resources are significantly different from groups without resources, but I find no significant difference by natural resource usage when investigating healthcare alone.

Discussion and Conclusion

Overall, I find support for multiple hypotheses. I find considerable evidence indicating that security institutions are more likely to be present when groups profited from natural resources the year prior, increasing the likelihood by several times compared to those with no resources. I find conditional support that groups profiting from natural resources are more likely to develop social services; groups with lootable resources are more likely to have at least one institution tied to social services than those with no resources. However, I find evidence suggesting a difference between those with lootable and non-lootable resources limited to education. These findings support a larger body of literature that showcases how the relative ease of lootable resources as a means to gain financial capacity can be especially useful for furthering the aims of the group or enabling tactics that do not rely on positive relationships with civilian populations (Haer et al., 2020; Aronson et al., 2024; Sobek & Thies, 2015; Lujala et al., 2005). This fits with suggestive evidence from the qualitative analysis of the ADF and KIO, but future research should continue to examine this to better understand the specific mechanisms behind such a dynamic.

This study demonstrates novel findings that natural resources do not just influence the provision of healthcare, but rather amend incentives for the provision of several different institutions. While certain social services may become more likely, others are unaffected. As researchers continue to investigate the incentives to provide governance, testing a diversity of institutions may prove valuable to more robustly assess the potential simultaneous positive and negative effects on rebel tactics and decision-making within the broad category of governance. For instance, future research may seek to examine how the propensity to provide democratic institutions is influenced by natural resources, where groups may face a “resource curse” similar

to states (Sarkar & Sarkar, 2017; Marks, 2019; Ross, 2015). At the same time, further considering the role of group agency in providing governance through considerations of rebel objectives as a potential moderating factor on the influence of natural resources on governance is likely to provide further depth to this topic.

Future research should continue to build upon these findings by further examining how the nature of the resource in question may relate to the nature of the governance provision in question (e.g., how might resources derived from agriculture/farming, oil, or other categorizations of resources influence the types of governance rebels may provide)? For instance, the effect of natural resources may be due in part to the extraction process, as some work suggests that lootable mineral resources should discourage the development of governance for such groups (Florea, 2020). Further qualitative analysis on a larger variety of cases than is presented here may also prove fruitful for more richly determining a causal pathway between governance and natural resources.

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