Part

Appendix

Table of Contents

A Background: History of Indirect Rule in the Eastern DRC

Up until the mid-19th century, Eastern Congo's political topography was characterized by small kingdoms connected through trade networks, with limited political centralization as compared to the neighboring Kingdom of Rwanda (Chrétien, 2000, Newbury, 1992, 2009). Political authority was centered on the figure of the chief but was elaborately balanced between lineage groups, and political competition revolved around succession to the thrones (Newbury, 1992). From the mid-19th century, the belligerent expansionism of the Rwandan Kingdom forced several kingdoms in the region into vassalage. Concomitantly, the expansion of the East African Slave trade into the region increased violent modes of resource mobilization and labor conscription, as well as governance arrangements akin to indirect rule. Tippu Tip, representative of the Sultanate of Zanzibar, forged a regional empire in which local chiefs were enlisted as intermediaries and charged with mobilizing resources, in particular taxes and labor to serve as soldiers, porters and slaves.

The colonial conquest and colonial rule led to profound changes in the region. In the early days of the Congo Free State, Tippu Tip was appointed governor of the east, spearheading the sub-contracting of rule to powerful intermediaries which would become a hallmark of Belgian colonial rule, from local power brokers to large concessionary companies (Lowes and Montero, 2021). Colonial rule in eastern Congo was carried out through what Hoffmann has called *ethnogovernmentality*, the organization of mediated state power through the constitution of ethno-territorial

entities (Hoffmann, 2021). The creation of the Native authorities, which included an administrative "gridding" of rural areas and the establishment of administrative chiefs and sub-chiefs, as well as mapping efforts and population censuses, served two main functions. On one hand, the native authorities ensured control over rural populations at a low cost. On the other, they served to mobilize taxes and labor destined to a range of activities, from public works for the colonial state—in particular porterage—and the various industries, to the staffing of the *Forces Publiques*, the colonial army (Northrup, 1988, p.41). In 1891, a royal decree recognized the institution of the chiefdom, enshrining native chiefs into the colonial state's administrative apparatus (Hoffmann, 2021, p.254). The land over which indigenous chiefs ruled was given a separate legal status as *Terres Indigenes* (Native Land), instituting a separate land tenure regime governed by customary law, which has continued to this day (Mpoyi, 2013). The creation of the native homelands and the imposition of indirect rule was a messy and violent process, which gave rise to several resistance movements which the colonial state violently repressed. Chiefs found themselves in a difficult position, as they often tried to protect their subjects from the demanding quotas of the state but nevertheless had to comply or face being deposed, imprisoned or even assassinated. As a result of their collusion with the state, their legitimacy and claims to spiritual power could erode, especially as religious and millenarist movements of spiritual resistance to colonial rule emerged and contested their spiritual power, such as the Kitawala movement (Eggers, 2020). From the 1920s, efforts were made to reduce the tax and conscription burden on the populations, but the system nevertheless remained extractive and coercive, leading to several instances of revolts.

After Independence, political turmoil quickly turned into violent conflict with the secession of the provinces of Katanga (1960–1963), Kasai (1960–1962), the rebellions of Kwilu (1964–1965) and rebellion of the eastern provinces (1964–1966) (Kisangani, 2022). Following a *coup détat*, Mobutu was able to 'restore order' through the establishment of an authoritarian and coercive regime. Measures were taken to centralize and streamline the state apparatus in order to exert full control over Congolese society: The objective—clearly stated by Mobutu—was direct rule, supposedly to steer the country towards modernity and development. Customary authorities, whose power had in several areas been extended during colonial rule, represented a direct obstacle to Mobutu's power and his project of creating a centralized administrative apparatus (Young and Turner, 1985). As a result, Mobutu sought to abolish customary authority through a series of decrees from the late 1960s and early 1970s, only to face widespread resistance which forced him to abandon these reforms. The Congolese state nevertheless maintained a 'bifurcated' system of political organization (Mamdani, 1997). Strategic and economically lucrative regions were brought under direct state administration, while in other regions devolved forms of governance, often involving customary chiefs, prevailed.

B Research Ethics

Collecting data in contexts of violence raises important security and ethical questions (Wood, 2006). Beyond the provisions made as a result of the project's ethics reviews (available upon request), the project set up an extensive set of logistical, material, and communication measures to reduce the security risks associated with navigating the volatile security context of North Kivu.

First, we ensured that the researchers bore all the necessary authorizations to carry out the study. Given the tense environment, researchers were at risk of being stopped, arrested and detained. In order to reduce this risk, the project was presented to the North Kivu provincial au-

thorities, in particular the *Ministere de l'Interieur de la province du Nord Kivu* (interior ministry of the province of North Kivu) and the *Agence Nationale pour le Renseignement* (the national intelligence services). Following the official authorization of the project by these authorities, all project members were given an *ordre de mission* (mission statement), which carried the official stamps and signatures of these authorities. This procedure was replicated in each of the administrative units of North Kivu where the study took place. Before arriving in a village, the researchers and project members presented their authorizations to the civilian and military authorities of both the territories and *groupements* in which the villages were situated, and obtained the official stamps authorizing the study by these authorities. This procedure was also replicated at the village level, as the researchers would start by presenting the project and survey in detail to the civilian and military authorities of the village, and obtain their formal authorization (signature and stamp). This considerably reduced the risk of researchers being suspected of being spies or informants, and being arrested or detained.

Second, a number of measures were taken to reduce the exposure of researchers to various forms of threat by criminal or military actors. A tracking, information, and monitoring system was set up to closely follow the movements of researchers. Before going to a study village, the researchers would start by gathering all available information on the security situation of the village. This included the weekly security briefings of the United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA Sud Kivu), as well as weekly calls to Congolese civilian and military authorities in Goma. The researchers and project supervisor would also systematically seek information from local military and civilian authorities at the *territoire* and *groupement*. An assessment was then made of the security level of the study villages. Villages that presented a significant security risk were temporarily or permanently dropped from the study.

The researchers also followed strict security protocols for their travel, communications, and accommodation. First, they spent the night in villages/towns that presented an acceptable level of security, and did not travel at night. This meant that, for villages presenting a higher level of risk, the researchers were required commute each day between those villages and a larger and safer center, usually the local town with a national army and/or MONUSCO outpost. Furthermore, a communication system ensured that, each morning and each evening, the research teams would send an SMS to the project supervisor indicating their location, as well as the time and destination of any travel planned in the following days. These SMS went through a Frontline SMS program, which allowed to visualize and track researcher movements in real time. The research supervisor (co-author of this paper) would call each team in the evening to evaluate the security of further displacements, and discuss any problem. All teams were equipped with a Thuraya satellite phone, to use in the case of an emergency or to report their position in areas that lacked phone coverage. Despite these measures, researchers found themselves in difficult situations several times, which were dealt with on a case to case basis, but no major security incidents occured.

In areas controlled by non-state armed groups, security and access was significantly more complex. Indeed, the institutional safeguards—official authorizations—were no longer effective, and could attract suspicion of collaboration with government forces. As a result, particular efforts were made by the researchers to mitigate risks before entering such areas. Building on the knowledge that armed groups often have deep social and institutional bases, contact was made with the civilian authorities of these areas to first evaluate the level of risk of the zone, and explain that the project members worked neither for the government nor any party involved in the conflict. When these didn't present sufficient reassurance, the study villages were dropped from the study.

In addition to the safety of the project members and researchers, the safety of the participants

in the study was of central concern to the research team. The first measure taken for respondent security was the informed consent of the authorities of the villages in which the survey was carried out. The researchers gave a presentation of the objectives of the study and survey questionnaire and handed a paper copy of these to the civilian and military authorities. The authorities were also informed that the Household Surveys would be carried out in private, and that the answers given by individual households would not be accessible either by the respondents or any other person apart from the project researchers, and never at the implementation site. The survey protocols also stressed that the researchers explain to the authorities that, while sensitive issues were addressed in the survey, none of the armed actors would be named in person, and an anonymization process prevented anyone from tracing back answers to particular respondents.

Second, a range of measures were built into the survey protocols and the survey to both detect and avoid any situation that could lead to the respondent being exposed to risk as a result of her/his participation in the survey. First, the researchers carried out the interviews in private locations, where no-one else than the researcher could hear the answers of the respondents, and where the respondents felt safe. Second, the content of the survey—the different parts, and the different types of questions that would be asked—were presented in detail to the respondent before asking for the informed consent. Furthermore, before each 'sensitive' section of the survey (such as security related questions), the researchers repeated the informed consent respondent and reiterated that the respondent could terminate the survey at any moment, that they had the right to not answer certain questions and that they should report whether any element of the survey or the situation could put them or their relatives at risk. The respondent was also reminded several times during the survey that all the collected information would be anonymized, and that the information provided could not be traced back to them. In order to ensure that the survey answers could not be traced back to any individual person, the names of the respondents were never recorded. Also, the list of village residents that were drawn for the random selection of survey households were systematically destroyed immediately after selection of the respondents, and the list of selected households was destroyed immediately after identification of the selected households by the researchers.

Discussing past experiences of violence, particularly through recall methods, can trigger traumatic memories (Corbelli, 2023). While it is impossible to rule out such occurrences, the project sought to minimize exposure to trauma, first through the repeated rounds of informed consent explained above, and also by explaining to the respondents that the survey might elicit traumatic memories. The research team has considerable experience conducting research on violence in eastern DRC, and they ensured that the respondents felt safe and confident before proceeding, and offered follow up discussions.

Data security and storage was also crucial, as anonymity of the data sources is important to ensure that no-one can be identified by potentially nefarious actors. All data was collected on electronic Tablets (Samsung), and no paper-based surveys were used. Both the devices and the data collection software were password protected to prevent anyone not on the study team from accessing the collected data directly from the devices. The data security and storage chain was the following: Surveys were conducted on the tablet devices in the study villages. After a few villages, the researchers would transfer the data to the project's servers via an internet connection in a larger town. The project computer in the study team's headquarters in the provincial capital with access to the server was kept in a safe and guarded project office. Upon reception and verification of the data, the data was immediately deleted from the data collection devices. Through this system, it was impossible for any external actor to access the data in the zone of implementation or even in the

project office in Goma—barring advanced computer hacking techniques. While there were many instances of lost or faulty data due to collection device problems or computer synchronization problems, there have been no reported incidents where unauthorized project members, or any external actor or individual, accessed or attempted to access the survey data.

C Strengths and Limitations of Recall Method

This study relies in large part on the use of recall data, which allows to reconstruct past events, based on the recollection and memory of respondents. In eastern DRC, where historical and administrative documents and records are scarce—due both to the scarcity of historical archiving, but also to the destruction wrought by the war—very little systematic written evidence exists of how the war has unfolded, how it has affected economic, social and political activity, and how it has been experienced and perceived by local populations. Recall data is one of the ways in which this gap in historical records and empirical data can be partially filled, yet with important limitations.

The prime resource of the recall data method used in this survey is the memory and recollection of the inhabitants of rural South Kivu. The method takes advantage of the fact that one of the central modes of transmission of knowledge in the region is oral history, and thus follows methods long used by historians, anthropologists and sociologists (Acemoglu, Reed and Robinson, 2014, Newbury, 1992, Scott, 2009, Vansina, 1978, 2004). The project has sought to deploy a range of safeguards to address and reduce measurement error due to recall data.

The literature on the use of recall data shows us that measurement error associated with recall data varies with the recall period as well as the nature of the recalled events. The cognitive sciences teach us that, the shorter the recall period, the more self-reported answers converge towards the mean of the real distribution (Clarke, Fiebig and Gerdtham, 2008, Kjellsson, Clarke and Gerdtham, 2014, Tourangeau, 2000). Thus, the more a recollected event dates back in time, the more the magnitude of the measurement error increases. This constitutes the first significant challenge to the quality of recall data. Second, armed conflict usually constitutes a period of significant crisis for individuals, which is likely to affect their recollection of the period. While the literature points to the fact that recalling levels is easier than recalling events (Kjellsson, Clarke and Gerdtham, 2014), crisis events are significantly different than other events, and are likely to have particular effects. The literature points to two possible effects of crisis periods on the recollection of events. On one hand, crisis and the traumatic effects they can produce can distort the recollection of events and produce measurement errors (de Nicola and Giné, 2014, Tourangeau, 2000). On the other hand, the intensity of the events unfolding during violent conflict may also trigger a more vivid recollection of such events, and thus work against measurement error due to the length of the recall period (Brück et al., 2016, p.46, Wood, 2003). Furthermore, in recollecting periods of intense crisis, individuals are more likely to recall events with a better accuracy that attitudes, which are more likely to be affected by the distortive effects of trauma (Schacter, Verfaellie and Pradere, 1996, Viterna, 2006, p.14). While the data is inevitably affected by measurement error due the recall period and distortion of the recollection of traumatic events, the literature points to several ways to reduce it, which have been implemented in this study.

C.1 Situating Events in Time: Event Timelines

One of the methods used in this study to reduce measurement error in recall data, and in particular the measurement due to inaccurate recollection of time periods and years, are time cues and event timelines. Time cues are events of common knowledge that are invoked by the researchers to allow the respondent and researcher to situate the precise period at which a specific event has occurred. The literature in psychology and economics suggests that the use of time cues can substantially reduce measurement error about the timing of events (Brown, Shevell and Rips, 1986, Brück et al., 2016, Conway and Bekerian, 1987, de Nicola and Giné, 2014, Deaton, 2001, Dex, 1995). However, Brück et al. (2016, p.46) note that, while the use of event timelines does increase the accuracy of measurement, the quality of the events timeline is of particular importance, as inaccurate timelines are likely to enhance measurement errors.

This study paid particular attention to developing accurate event timelines and time cues and training researchers to use them effectively. First, national and regional events timelines were prepared, and served as a baseline for the confection of local—territory and grouping level—timelines that were developed by the researchers in the areas of implementation. Before the start of the survey in each village, the researchers would consult village experts to develop these timelines, which were then used as temporal references to situate the events recorded in the household survey. These local events timelines would typically include exceptional events in the village history of which residents were likely to have a vivid recollection, such as attacks on the village by armed group, natural disasters such as floods, the discovery of particular minerals (or the coltan boom), or the opening of a school, hospital, market or telephone line. Pilot studies carried out in the first months of the study showed that using these local events timelines significantly enhanced the accuracy of the recollection of dates and periods of events by respondents.

C.2 Cross Checking Event Recollections: Triangulation

The second method used to address the risk of measurement error due to recall is triangulation. Triangulation allows to partially address measurement error due to faulty memory of the timing of events (Rothbauer, 2008). It also allows to reduce measurement error resulting from the positionality of respondents.

The survey protocol was designed to safeguard against such biases, by multiplying data points and extending the period of data collection and verification as much as possible within the logistical and budgetary constraints. The expert survey was carried out over a period of 7 days in each village, and involved the consultation of between 5 and 10 'village experts', in addition to the village chief. These experts were selected on the basis of their knowledge of the village history, but also the main themes of the survey, in particular security and the economy of the village. In each village, the researchers would start by presenting the survey questions and the data to be collected by the village experts, and then supervise the gathering of information by these village experts during an entire week. On the final day, a day-long meeting with all village experts would allow to verify the collected information and cross-check different sources, before recording the data. This process allowed to eliminate a large part of the false or dubious information before it was recorded.

Furthermore, in order to reduce the risk that the data collected in the village survey could be biased by the positionality of the village experts, all village survey measures were systematically replicated in the household survey, which was carried out with 6 randomly selected village residents,

in complete anonymity. Thus, for all the key variables of the study, there were 7 data points, which were then compiled and compared, allowing to significantly reduce measurement error by triangulation. The qualitative reports, which were compiled during the 7 days of presence of the researchers in each village, also served as an additional source of triangulation. For key variables of the analysis, the data points observed in the datasets were systematically compared to the information contained in the qualitative report. The data was then benchmarked to data collected from other surveys, as a test of the accuracy of dates. The data closely matched both the well known and well documented historical events in the region—the start of the war, the coltan boom, the elections etc.—but also ACLED violent event datasets.

C.3 Measuring Changes Rather than Levels

With regards to those variables that are collected in the Household Survey, measurement error can be particularly acute for variables that bear a certain level of complexity, as well as those that are measured on a yearly basis, as it is particularly difficult to recall levels. However, as de Nicola and Giné (2014) show, recalling changes on complex variables is easier than recalling levels. A similar fact is documented for recalling events vs. levels (Kjellsson, Clarke and Gerdtham, 2014). As a result, the survey was designed to measure events and changes rather than levels, when possible. For example, rather than being asked to report their level of wealth on a yearly basis, the researchers recorded the history of the respondent's purchase and sale of key assets—cows, pigs, land, bikes. During pilots and then during the study, it became visible that respondents were much more likely to accurately recall the sale, loss or purchase of particular assets—such as a cows—than remembering their stock of cows for each year.

For those variables where levels were measured, the survey and protocols were designed to limit measurement error due to recall. de Nicola and Giné (2014) show that one of the reasons why measurement error in recall data increases with the length of the recall period is that, for longer recall periods, respondents will use inference instead of memory to estimate levels. However, using the example of fisherman's recollection of their income level, they show that measurement error mostly affects recollection of variations in their income, but not the recollection of their mean income. This is because respondents 'revert to the mean' as the length of the recall period extends, and thus recall the mean with much more accuracy than the variations de Nicola and Giné (2014, p.58).

For those variables where levels are measured instead of changes, the questions focus on getting an accurate measure of the mean, rather than seeking to estimate the variations around the mean. Additionally, the protocols and questions were formulated so as to elicit the most accurate response possible for the estimation of the means. For example, for taxation levels by armed actors during a given year, the respondents were first asked to recall the maximum that a specific armed group levied in taxes during a given period, and then the minimum during that same period. This usually prompted a discussion between the researcher and the respondent that allowed to refresh the memory of the respondent. On that basis, the respondent was then asked to estimate the mean level of taxation by the armed group. The comparison of the 6 data points of the Household Survey with the Village Survey showed that these means were estimated with high levels of accuracy.

D Individual Beliefs and Supernatural Beliefs

In order to address some of the stereotypes around the alleged negative relationship between so-called 'rational intelligence' and beliefs in spiritual and supernatural forces, which date back to colonial representations of Congolese society, we administered a Raven's Progressive Matrices test. Raven's tests are meant to measure 'rational intelligence' and 'abstract thinking', notions that should be taken with ample critical distance (along with the test itself). In Figure F.3, we can see that respondents who scored higher on a Raven's test also gave their chiefs higher scores on supernatural power (Panel E), and that respondents scoring higher on a rational-experiential inventory gave lower scores on supernatural power to their chiefs (Panel F). Although we cannot draw conclusions about a question that was not part of our research objectives, and need to remain very cautious with regards to these tests, these results show that the alleged binary opposition between rational intelligence and beliefs in the supernatural is not supported by our data. Additionally, we explored some of the political and social orientations of respondents and their association with respondent's perception of chiefs' supernatural powers. Respondents scoring higher on the right-wing authoritarianism scale gave lower supernatural power scores to their chiefs (Panel G). In contrast, respondents scoring higher on social dominance scale give higher supernatural power scores to their chiefs (Panel H).

E Constructing Indices of Direct and Indirect Rule

Measuring direct and indirect rule is challenging because there is no natural dichotomy in the governance arrangements established by armed groups in the areas they control. We take a systematic approach, that constructs vectors on 7 dimensions of governance: (1) extraction of resources (taxation and tribute), (2) mobilization of labor, (3) legitimization/*sensibilisation*[13], (4) administration of the village/entity, (5) allocation of political power, (6) provision of public services, and (7) regulation of economic activity.We construct two indices, one for direct rule, and one for indirect rule, because direct and indirect rule are not mutually exclusive.

For the collection of taxes, we observe whether the group receives a head tax, and whether the head tax is collected by the group directly. We also observe whether the group raises a toll tax, a mill tax, a market tax, and whether the group creates forced debt. The collection of all or parts of these taxes can be delegated to intermediaries, which is the variation that we exploit for our analysis. The head tax, which is collected at the level of households, is often delegated to chiefs, as it can generate resentment among the population and requires legitimacy. More than 70% of groups raise a head tax, and about half of them collect the head tax directly. Groups organize toll taxes, mill taxes, market taxes, and forced debt between 10% and 60% of cases, and the toll tax and market tax are raised in more than 50% of cases. The chief is involved in the collection of the poll tax in 65% of the village×year observations.

For the mobilization of labor services, we observe the recruitment of combatants or support staff (such as porters) for the group. We also record who carried out the recruitments, and whether chiefs directly encouraged the recruitments. The chief is involved in recruitment in approximately 20% of cases, but the group carry out recruitment directly in 55% of village×year observations of episodes of armed group rule. For legitimization/*sensibilisation*, we look at whether the group it-

[13]In the case of armed groups, *sensibilisation* usually means in the DRC the public meetings carried out to convince populations of the objectives, ideologies, and legitimacy of armed groups.

self, or the chief, carried out awareness raising activities and legitimization campaigns to justify the group's ideology and military control over a given entity. We can see that, in 40% of village×years, the group organized the campaigns themselves, and that in about 20% of village×years the village chief organized campaigns in support of the group. Armed groups also chases away local witchdoctors and witches to replace them with their own witch doctors, in 17% of village×year observations, showing that control over the realm of the supernatural is also an important part of the ruling over an entity.

With regards to armed groups' administration, we first observe whether an armed group administers the village, and whether there are signs of an institutionalization and formalization of this administration in the form of written documents, a written code of conduct or a rudimentary 'constitution', whether or not the group provides written contracts as well as written official communications, and whether or not the group has its own seal for official documents. In a majority of cases, armed groups have written official documents as well as an official seal, indicating a level of institutionalization of their administration. We also observe whether the group administers justice. In 75% of cases, the group administers the village directly and provides justice in the village. Chiefs, in contrast, administers the village and provide justice in 20–25% of cases. We also look at military presence and capacity in the entity, and find that the military presence of the group equals approximately 10 armed men on average per village×year of armed group rule.

Regarding the allocation of political power, we ask respondents who they perceived to hold political power in a village or entity: in 55% of the cases, political power is perceived to be in the hands of the group, while it is either shared with the chief or entirely delegated to the chief in approximately 42% of cases. Of these, the chief has all the political power in 20% of cases, and shares the power with the group in another 22% of cases.

Regarding the provision of public services, armed groups provide security in approximately 50% of the village×year observations, but rarely provide health, education, roads, or other public or private services (approximately 5% of the cases).

Finally, regarding economic regulation, armed groups set up roadblocks to tax trade and population movement in 50% of the village×year observations, create a local market only 8 times in the sample, regulate private firms 7% of the time, and are directly engaged in trade in 10% of cases.

We operationalize this categorization by first projecting all activities onto their respective dimension. We do so by using a principal component analysis. Equipped with one variable for each dimension of direct and indirect rule, we then construct a z-score index for indirect rule, and a second for direct rule.[14] We can thus interpret regression results as increases in one standard deviation of the normalized score. We present the results on each of the indirect rule, and direct rule, dimensions, in addition to the standardized scores.

F Appendix Tables and Figures

[14]We end up with one normalized variable for indirect rule, and another for direct rule, whose interpretation in a regression is straightforward, since it has mean zero and standard deviation of one.

Table F.1: Summary of Armed Group Episodes

Panel A: Indirect Rule Indices

Armed Group	**Indirect Rule**	**Indirect Rule, by Domain**					
		Tax	Justice	Legit.	Admin.	Recruit	Political
RCD-Goma	0.10	0.66	-0.32	0.24	-0.53	0.56	-0.40
Congolese Army	0.74	-0.69	1.02	0.15	0.81	-0.50	0.84
CNDP	0.06	0.56	-0.48	0.43	-0.50	0.69	-0.55
Mayi-Mayi	-0.01	0.62	0.29	-0.37	-0.03	-0.47	-0.04
Congolese Security Agencies	0.14	-1.14	-0.50	-0.17	1.31	-0.63	1.49
Mayi-Mayi Mudohu	-0.55	0.47	-0.05	-0.27	-0.59	-0.63	-0.34
FDLR	-0.38	0.60	-0.31	0.14	-0.47	-0.29	-0.55
Rwandan Group	-0.27	0.21	-0.08	-0.27	-0.29	-0.23	0.04
Nyatura	-0.15	0.64	-0.46	0.19	-0.68	0.50	-0.55
Mayi-Mayi Lulwako	-0.66	-0.18	-0.06	0.11	-0.55	-0.34	-0.55
AFDL	1.15	-0.55	0.89	0.14	-0.25	0.40	0.63
M23	0.18	0.45	-0.54	0.85	-0.68	0.94	-0.55
PARECO	-0.08	0.76	-0.54	-0.09	-0.68	0.46	-0.08
ADF	0.30	-0.97	1.84	0.03	0.93	-0.63	-0.55
Mongore	-0.54	0.17	0.25	-0.56	0.03	-0.63	-0.55
Mayi-Mayi Kifuafua	-0.63	0.52	-0.54	-0.30	-0.68	0.05	-0.55
Raia Mutomboki Eyadema	-0.09	0.52	-0.15	-0.56	0.39	-0.63	0.23
RCD-Kisangani	1.51	-0.19	0.65	1.79	0.39	0.40	0.63
RCD-Mongore	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Kaganga	-0.38	-0.19	0.65	-0.56	0.39	-0.63	-0.55
Mayi-Mayi Kasingie	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Samy-Mze wa meno	-1.21	0.08	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Simba	0.32	0.87	0.65	-0.56	-0.68	-0.12	0.63
Mayi-Mayi Simba-Samy	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Janvier	-1.10	0.34	-0.54	-0.56	-0.68	-0.63	-0.55
Banyamulenge	.	-1.24	1.84	-0.56	0.39	-0.63	.
Mayi-Mayi Kabuchibuchi	0.10	0.87	-0.54	-0.56	-0.68	-0.63	1.80
Mayi-Mayi La Fontaine	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Werrason Mbusa	0.01	0.87	-0.54	-0.56	1.46	-0.63	-0.55
Mayi-Mayi Kifuafua-Padiri	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Surambaya	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Samy-Kabuchibuchi	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mayi-Mayi Padiri Karendo	1.08	0.87	1.84	1.79	-0.68	-0.63	-0.55
Raia Mutomboki	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Deserters	-0.76	-1.24	1.84	-0.56	-0.68	-0.63	-0.55
Foreigners	-1.32	-1.24	-0.54	-0.56	-0.68	0.40	-0.55
Kasidiens	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Mbairwe	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
Batiri	-0.88	0.87	-0.54	-0.56	-0.68	-0.63	-0.55
RCD-KML	0.84	0.17	-0.15	0.61	0.03	1.93	-0.55
Hutu Group	0.95	0.87	-0.54	1.79	-0.68	1.43	-0.55

Notes: This table presents the indirect rule indices of armed group episodes by all armed groups in our data.
Continued ...

Panel B: Episode Timing and Duration

Armed Group	# Episodes	Average Length	Shortest Control	Longest Control	Earliest Control	Latest Control
RCD-Goma	49	5.51	1	9	1998	2013
Congolese Army	32	6.69	1	26	1990	2016
CNDP	25	4.08	2	9	1998	2011
Mayi-Mayi	23	2.26	1	6	1994	2015
Congolese Security Agencies	15	7.60	1	12	1990	2016
Mayi-Mayi Mudohu	12	2.58	1	5	2000	2005
FDLR	9	4.00	2	8	1993	2015
Rwandan Group	8	4.25	1	11	2000	2015
Nyatura	7	2.29	1	4	2010	2015
Mayi-Mayi Lulwako	7	5.00	1	26	1990	2016
AFDL	5	2.40	2	4	1996	2000
M23	5	2.80	2	3	2008	2014
PARECO	5	3.00	2	4	2003	2010
ADF	4	1.75	1	4	1997	1999
Mongore	3	1.00	1	1	2003	2005
Mayi-Mayi Kifuafua	3	2.67	1	4	1994	1997
Raia Mutomboki Eyadema	3	2.00	1	4	2001	2013
RCD-Kisangani	2	2.00	1	3	1999	2002
RCD-Mongore	2	4.50	4	5	2001	2005
Mayi-Mayi Kaganga	2	1.50	1	2	1996	1997
Mayi-Mayi Kasingie	2	4.00	2	6	1992	1997
Mayi-Mayi Samy-Mze wa meno	2	2.00	2	2	2004	2006
Mayi-Mayi Simba	2	1.50	1	2	1999	2000
Mayi-Mayi Simba-Samy	2	3.50	3	4	1999	2007
Janvier	2	3.50	3	4	2008	2011
Banyamulenge	2	1.00	1	1	1997	1997
Mayi-Mayi Kabuchibuchi	1	1.00	1	1	2002	2002
Mayi-Mayi La Fontaine	1	1.00	1	1	2011	2011
Mayi-Mayi Werrason Mbusa	1	1.00	1	1	2007	2007
Mayi-Mayi Kifuafua-Padiri	1	2.00	2	2	2001	2002
Mayi-Mayi Surambaya	1	1.00	1	1	2002	2002
Mayi-Mayi Samy-Kabuchibuchi	1	2.00	2	2	2006	2007
Mayi-Mayi Padiri Karendo	1	3.00	3	3	1997	1999
Raia Mutomboki	1	1.00	1	1	2012	2012
Deserters	1	1.00	1	1	1998	1998
Foreigners	1	3.00	3	3	2012	2014
Kasidiens	1	3.00	3	3	1998	2000
Mbairwe	1	4.00	4	4	1993	1996
Batiri	1	5.00	5	5	1993	1997
RCD-KML	1	6.00	6	6	1997	2002
Hutu Group	1	5.00	5	5	1993	1997
	249	4.25	1	26	1990	2016

Notes: This table shows summary statistics of armed group episodes by all armed groups in our data.

Table F.2: Chiefs' Power is Multi-Faceted, Hinges on Supernatural (Fact 1)—Factor Analysis

	Factor	Uniqueness
Customary authority	0.758	0.425
From the ruling family	0.758	0.425
Enthronement ceremony	0.698	0.513
Confirmed by spirits	0.743	0.448
Was the population consulted	0.649	0.579
Mobilizing ability	0.828	0.314
Sensibilizing ability	0.835	0.303
Supernatural power	0.651	0.577
Management skills	0.700	0.509
Threat of force	0.771	0.406
Charisma	0.789	0.378
Liked at start of reign	0.559	0.687
Requests per month at start of reign	-0.195	0.962
Private conversations per month	0.026	0.999

Notes: This table creates a factor variable of chief power (Panel A) and predicts the factor variable using chief characteristics (Panel B).

Table F.3: Predictors of Chief Power Factor

	(1) Chief Power Factor
Start of reign	-0.00957***
	(0.00325)
Length of reign	-0.000906
	(0.00398)
Birth Year (Mean)	-0.00754**
	(0.00287)
Related to previous chief (Mode)	0.502***
	(0.178)
Related to mwami (Mode)	-0.610**
	(0.258)
Traditional owner of land? (Mode)	1.143***
	(0.184)
How many witches (Mean)	-0.000144
	(0.00649)
Observations	262
R^2	0.559
Fixed Effects	No
Cluster	Village

Notes: This table predicts the factor variable of Panel B in Table 2 using chief hard characteristics. *, **, *** indicate that the corresponding coefficient is statistically significant at the 10%, 5%, and 1% levels, respectively.

Table F.4: Institutional Choice by Different Chief Characteristics

	Indirect Gradient (Indirect − Direct Rule)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Start of reign	-0.0125						
	(0.0111)						
Length of reign		0.00857					
		(0.0160)					
Birth Year (Mean)			-0.00679				
			(0.0175)				
Related to previous chief (Mode)				1.250***			
				(0.418)			
Related to mwami (Mode)					-0.0943		
					(0.710)		
Traditional owner of land? (Mode)						1.387**	
						(0.622)	
How many witches (Mean)							-0.0128
							(0.0294)
Observations	128	108	105	108	108	105	108
R^2	0.333	0.358	0.373	0.438	0.356	0.417	0.356
Year FE	✓	✓	✓	✓	✓	✓	✓
AG FE	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table F.5: Armed Group Control by Chief Power

	Village Controlled by Armed Group	
	Any	excluding Army
	(1)	(2)
Predicted Chief Power	-0.0390	-0.0491
	(0.0552)	(0.0407)
Observations	2064	2064
R^2	0.153	0.296
Year FE	✓	✓
District FE	✓	✓

Notes: This presents estimates of Equation 1 using as dependent variable an indicator for whether an village is occupied by an armed group. The analysis is at the village-year level. Standard errors, clustered at the village level, are shown in parentheses. *, **, *** indicate that the corresponding coefficient is statistically significant at the 10%, 5%, and 1% levels, respectively.

Table F.6: Greater Power of Chiefs Results in More Indirect Rule (Fact 2) Including State Forces

Panel A: Chief Power	*Dependent Variables:*									
	Indirect Rule	**Direct Rule**	**Indirect Gradient**	Indirect Rule Gradient (Indirect − Direct), by Domain						**Intensity Rule**
				Taxation‡	Justice‡	Legit.‡	Admin	Recruit.	Political	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Chief Power	0.130	-0.119	0.250	-0.0550	0.554**	0.141	0.362**	0.0701	0.107	0.0112
	(0.127)	(0.0902)	(0.194)	(0.0790)	(0.245)	(0.131)	(0.139)	(0.129)	(0.187)	(0.105)
Observations	143	143	143	151	151	151	151	151	143	143
R^2	0.473	0.602	0.560	0.432	0.521	0.622	0.596	0.390	0.584	0.415

Panel B: Predicted Chief Power	*Dependent Variables:*									
	Indirect Rule	**Direct Rule**	**Indirect Gradient**	Indirect Rule Gradient (Indirect − Direct), by Domain						**Intensity Rule**
				Taxation‡	Justice‡	Legit.‡	Admin	Recruit.	Political	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Predicted Chief Power	0.385*	-0.428***	0.814***	0.0375	1.214***	0.268	0.589**	0.0488	0.561*	-0.0431
	(0.203)	(0.131)	(0.290)	(0.165)	(0.390)	(0.232)	(0.272)	(0.241)	(0.296)	(0.181)
Observations	136	136	136	141	141	141	141	141	136	136
R^2	0.505	0.623	0.593	0.427	0.517	0.635	0.581	0.429	0.612	0.404

Panel C: Coethnicity	*Dependent Variables:*									
	Indirect Rule	**Direct Rule**	**Indirect Gradient**	Indirect Rule Gradient (Indirect − Direct), by Domain						**Intensity Rule**
				Taxation‡	Justice‡	Legit.‡	Admin	Recruit.	Political	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Coethnic Village-Chief	0.341	-0.457***	0.799**	0.259	0.954**	-0.116	0.620**	-0.0938	0.570**	-0.116
	(0.286)	(0.155)	(0.361)	(0.204)	(0.362)	(0.320)	(0.281)	(0.345)	(0.284)	(0.285)
Coethnic Group-Chief	-0.235	0.248*	-0.483	-0.361**	-0.729**	-0.141	-0.112	0.160	-0.318	0.0126
	(0.208)	(0.142)	(0.301)	(0.154)	(0.332)	(0.298)	(0.211)	(0.257)	(0.265)	(0.192)
Observations	163	163	163	171	171	171	171	171	163	163
R^2	0.385	0.623	0.556	0.448	0.473	0.614	0.650	0.325	0.579	0.314

Notes: This table replicates Table 1 while also including the state forces among the armed groups in the analysis. All specifications include armed group and year fixed effects. Standard errors, clustered at the village level, are shown in parentheses. *, **, *** indicate that the corresponding coefficient is statistically significant at the 10%, 5%, and 1% levels, respectively.

Table F.7: Ultimately, Armed Group Institutions Converge to Direct Rule (Fact 3)

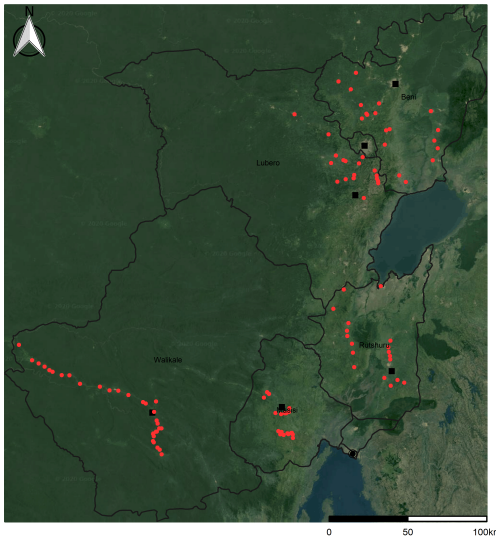
Panel A: Main Sample	*Dependent Variables:*			
	Indirect Rule	**Direct Rule**	**Indirect Gradient**	**Intensity Rule**
	(1)	(2)	(3)	(4)
Group's tenure (years)	-0.149**	0.155**	-0.304***	0.00539
	(0.0631)	(0.0654)	(0.112)	(0.0623)
Observations	657	657	657	657
R^2	0.891	0.863	0.882	0.876

Panel B: Including State	*Dependent Variables:*			
	Indirect Rule	**Direct Rule**	**Indirect Gradient**	**Intensity Rule**
	(1)	(2)	(3)	(4)
Group's tenure (years)	-0.174***	0.148**	-0.323***	-0.0261
	(0.0580)	(0.0588)	(0.104)	(0.0524)
Observations	926	926	926	926
R^2	0.902	0.931	0.923	0.902

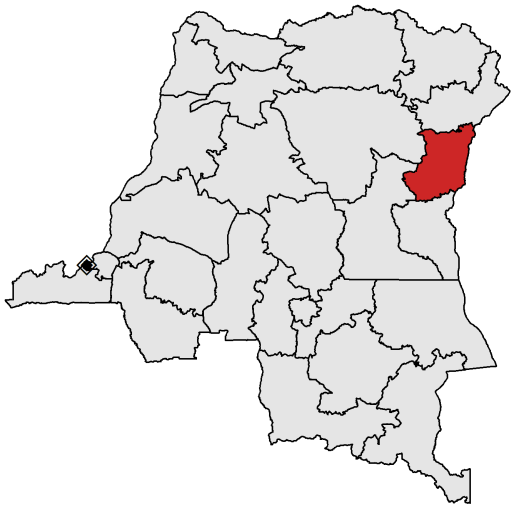
Notes: This presents the estimates of Equation 2 in which the yearly indicators as explanatory variables are replaced with a linear count of the number of years a group has had tenure in a village. The analysis is at the village-year level and all years when a village is occupied by an armed group are included. The Indirect Rule (Column 1) and Ddirect Rule (Column 2) indicators, as well as their difference (Column 3), and their sum (Column 4) are the outcome variables. All specifications include year and armed-group episode fixed effects. Standard errors, clustered at the village level, are shown in parentheses. *, **, *** indicate that the corresponding coefficient is statistically significant at the 10%, 5%, and 1% levels, respectively.

Figure F.1: Map of Sample and DRC

Panel A: Map of Sample Villages



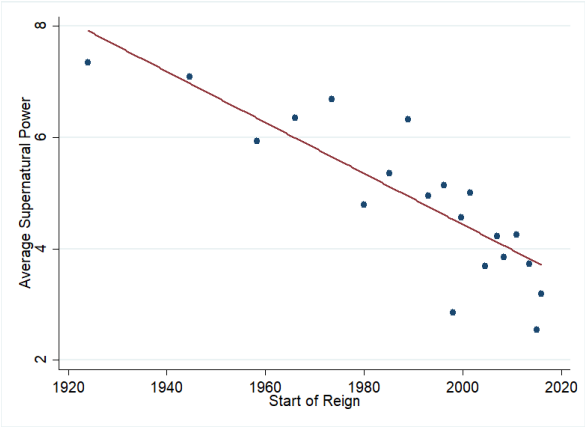
Panel B: Location of North Kivu



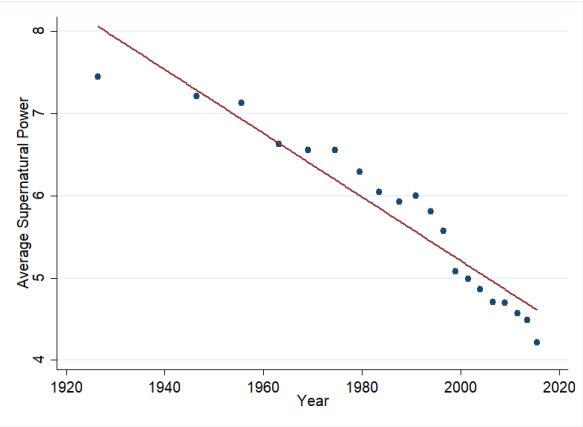
Notes: This figure shows our study locations. Panel A shows the coordinates of the villages in our data and Panel B shows the location of North Kivu, shaded red, in the Democratic Republic of the Congo. The diamond shape indicates the location of the capital Kinshasa.

Figure F.2: Correlates of Chiefs' Supernatural Power. Chief Characteristics

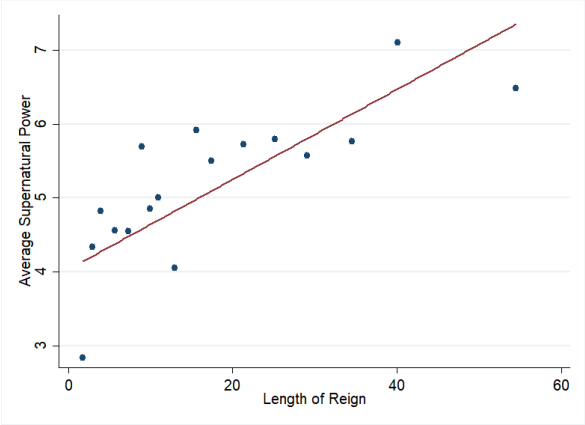
Panel A: By Reign Start



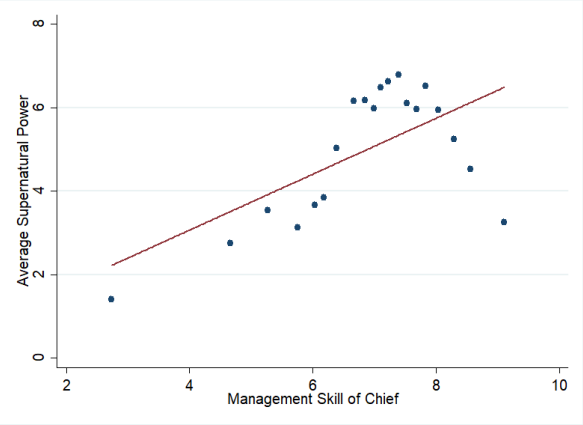
Panel B: Over Time



Panel C: By Reign Length



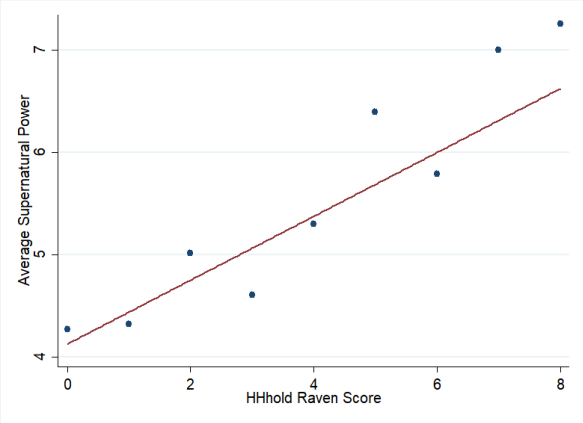
Panel D: Management Skill



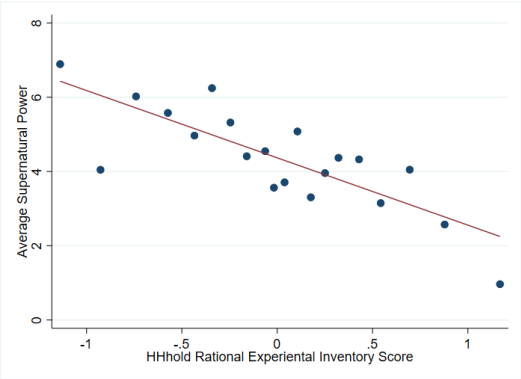
Notes: This figure shows scatter plots of different chief characteristics against the chief's average supernatural power according to villagers. The linear trend is added to the scatter plot.

Figure F.3: Correlates of Chiefs' Supernatural Power. Respondent Characteristics.

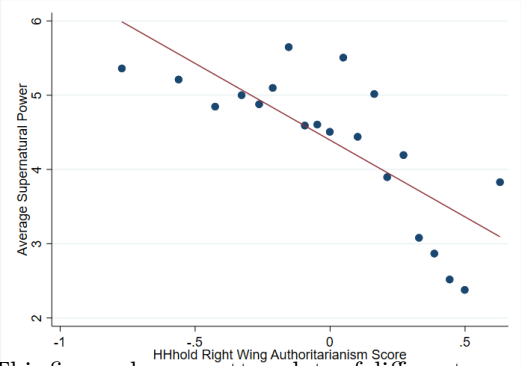
Panel E: Raven



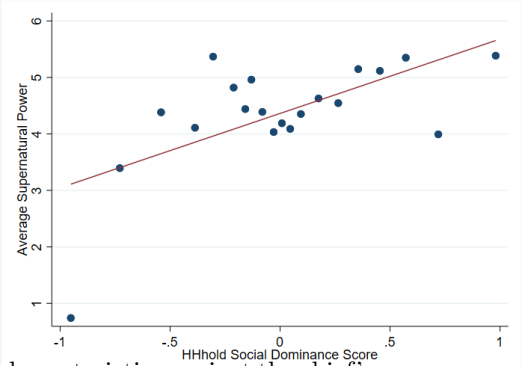
Panel F: Rational Experiential Inventory



Panel G: Right-Wing Authoritarianism

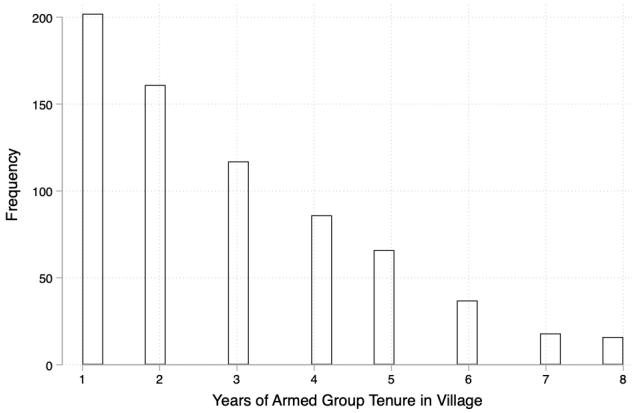


Panel H: Social Dominance



Notes: This figure shows scatter plots of different respondent characteristics against the chief's average supernatural power according to villagers. Panel A shows the respondents score on the Raven's test on the x-axis, Panel B the Rational Experiential Inventory score, Panel C the Right Wing Authoritarianism score, and Panel D the Social Dominance score. The linear trend is added to the scatter plot.

Figure F.4: Sample Size in Fact 3 Coefficient Estimation



Notes: This figure shows a histogram of the sample size used in each year of armed group in village.

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