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Enforcing Colonial Rule: Blood Tax and Head Tax in French West Africa

Appliquer la loi coloniale : L'impôt sur le sang et l'impôt de capitation en Afrique occidentale française

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Résumé

Nous examinons deux piliers du régime colonial en Afrique occidentale française, la conscription militaire et la collecte de l'impôt de capitation, en utilisant des données inédites au niveau des districts entre 1919 et 1949. Les États coloniaux sont souvent décrits soit comme des Léviathans omnipotents soit comme des administrations au rabais. Nos résultats révèlent que leur pouvoir coercitif était important. Les objectifs de recrutement militaire ont été systématiquement atteints, même en cas d'évitement individuel et de mauvaises conditions de santé, en puisant dans un vivier de jeunes hommes éligibles et aptes. Le respect des obligations fiscales était également élevé, environ 80 % de la population assujettie s'acquittant de ses obligations. Les hausses des taux de l'impôt de capitation entraînaient une augmentation significative des protestations liées à l'impôt, ce qui a probablement incité les administrateurs coloniaux à faire preuve de prudence. La charge fiscale était ajustée en fonction de la richesse perçue dans le district, et une certaine modération fiscale a prévalu en temps de crise. Toutefois, les chocs locaux tels que les sécheresses ou l'effondrement des prix des cultures de rapport ont été largement ignorés. Ces résultats soulignent la capacité des États coloniaux à imposer leur autorité en dépit d'une réactivité politique limitée, offrant ainsi de nouvelles perspectives sur l'économie politique de la gouvernance coloniale*.

Abstract

We examine the enforcement of two pillars of colonial rule in French West Africa, military conscription and head tax collection, using novel district-level data from 1919 to 1949. Colonial states are often characterized as either omnipotent Leviathans or administration on the cheap. Our findings reveal their notable coerciveness in achieving key objectives. Military recruitment targets were consistently met, even amid individual avoidance and poor health conditions, by drawing on a pool of eligible fit young men. Tax compliance was similarly high, with approximately 80% of the liable population meeting obligations. Spikes in head tax rates significantly increased tax-related protests, likely prompting caution among colonial administrators. The tax burden was adjusted according to perceived district affluence, and tax moderation was applied in times of crisis. However, local shocks such as droughts or cash crop price collapses were largely ignored. These results underscore the capacity of colonial states to enforce their authority despite limited policy responsiveness, offering new insights into the political economy of colonial governance*.

Keywords : Colonialism, State Capacity, Taxation, Compliance, Conflict, Military Conscription, West Africa, French Colonial Empire

JEL : D73, D74, H26, H71, N37, 012, P48

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Contents

1 Introduction

When considered together, descriptions by economists, historians, or political scientists provide an ambiguous image of colonial states in Africa.

On the one hand, some past scholarly work claims that African colonial states wielded strong coercive capacity. Young (1994, p.160) describes the European colonial state in Africa as *"the purest modern form of autonomous bureaucratic autocracy"*, and Mamdani (2018) characterizes it as *"decentralized despotism"*. According to Manning (1998), it seems that the French colonial states did not make an exception in this regard.

However, colonial states in Africa were also reported to be "gatekeepers" unable to extend power inward (Cooper, 2019). They have been dubbed *"administration on the cheap"* with *"limited ambition"* by Herbst (2000, pp.73–80). For taxation, colonial governments were limited to implement a *"minimalist strategy"* (Frankema & Booth, 2019, p.13). Such meager capacity was featured against the backdrop of significant non-compliance and resistance from the indigenous population (Coquery-Vidrovitch, 1983). Bolt et al. (2022) argue that colonial states were authoritarian at the national level but had to negotiate with precolonial institutions at the local level.

In order to study the balance between the coercive capacity of colonial states and the agency of colonized people, we analyze two of the most important components of French colonial rule in Sub-Saharan Africa: military conscription and head tax. The same ambiguities described above hold in these two particular cases.

While in British colonies, African armies were composed of volunteers (Moradi, 2009; Cogneau & Moradi, 2014), in French colonies military conscription was one of the many forms taken by forced labour (Killingray & Omissi, 1999). With more than 25,000 West African soldiers killed on the French front during WWI, the term blood tax (*impôt du sang*) came into use in the colonies. Fall (1991) and Waijenburg (2018) describe the system of civilian forced labour (the so-called *prestations*, also known as sweat tax) as a fundamental component of French colonial rule, and conscription was certainly another

one. In 1925, according to Waijenburg (2018), 20 million days were worked for civilian forced labour in six colonies of French West Africa (excluding Mauritania and Niger), i.e., an average of 8.5 days per eligible male (one fifth of the total population). According to our data, around 7 million days corresponded to conscript labour (365 days worked by the stock of conscript soldiers); forced labour by reservists (*brigades de travail*) represented around 1.5 million days. However, at the same time, French conscription in Africa was resisted by extensive absenteeism and self-imposed seasonal migration to neighboring British colonies (Echenberg, 1991; Okia, 2022), as in the example of Ivory Coast and Upper Volta migrations to the Gold Coast (Asiwaju, 1976). We may wonder whether military recruitment was significantly hampered by non-compliance of the colonized.

In addition to the military conscription system, the head tax (*capitation*) was another extractive institution, manifested as a regressive poll tax with a fixed rate imposed on the teenage and adult population, in the early years even on children. As recalled by Frankema and Waijenburg (2014, p.375), Young (1994, p.129) regarded it as *"leading the way"* to achieve *"a basic equilibrium between the requirements of hegemony and revenue"*. The involvement of police forces in its collection is described by Reid (2012, p.183) as *"the most visible, and the most dreaded manifestation of conquest"*. In French West and Central Africa in 1925, capitation brought 28% of total tax revenue (1.5% of GDP), almost as much as trade taxes (1.9% of GDP) (Cogneau et al., 2021). However, since colonial fiscal capacity building was described as effort-minimizing (Frankema, 2011; Gardner, 2010), we may again wonder to what extent this performance reflected high enforcement and compliance, or only the high tax burden imposed on a minority of reachable and docile taxpayers.[1]

Our questions are then the following. First, was the French colonial state successful enough in implementing both the conscription system and the head tax collection scheme, i.e., was it able to draft the number of recruits it targeted and to raise the revenues it aimed at? Second, what were the forms taken by resistance or non-compliance

[1]The British authorities had given up imposing a head or hut tax in Gold Coast and in Nigeria. Furthermore, in Sierra Leone, they had to fight a 'Hut Tax War' in 1898 before being able to implement it with the collaboration of local chiefs (Frankema, 2010, p.467).

from the colonized? Third, how did colonial authorities manage to achieve their goals, if only by granting some consideration to equity? Was the colonial system flexible enough to fine-tune its policies according to local economic and social conditions, as they evolved across time?

To address these questions, we undertook extensive digitization efforts and created a unique panel dataset that covers military conscription and capitation tax levies at the district level for every year from 1919 to 1949, a period regarded as the apex of French colonial rule. We also make use of the conflict data collected by Huillery (2011), which distinguish conflicts on conscription issues and on taxation issues. Our data allow us to examine how recruitment targets compare with realized military draft, and how head tax liabilities correspond to actual revenues collected. In order to estimate the population of eligible military recruits and of eligible taxpayers, we built a demographic model capable of simulating the age structure of the population of each colony, from 1914 to 1950, under different assumptions about mortality and birth rate trends.

Our main findings are the following.

First of all, the coercion exerted by colonial states was quite effective. We find that military recruitment targets were almost always met. Likewise, we find strikingly high compliance with the head tax. Even under the most conservative demographic assumptions, and regardless of the years examined, the collected head tax revenue consistently exceeded 80% of the theoretical expectation, based on head tax rates and estimates of the eligible population.

Second, this success in coercion was not incompatible with limited agency and even resistance from the colonized people, yet differently for conscription and taxation. Both systems relied on the cooperation of local chiefs. Following World War One, collective protests associated with military recruitment declined, and resistance to conscription mainly boiled down to individual defiance through absenteeism at the drafting boards. On the other hand, in terms of head tax levy, we show that spikes in head tax rates increased the likelihood of tax-related conflicts and that overall tax compliance signifi-

cantly went down during the Great Depression.

Third, colonial administrations targeted recruits and taxpayers quite uniformly and coarsely, however they showed limited care and caution when fixing the tax burden. Recruitment targets were roughly proportional to local population, with little adjustment for local contexts. Despite very bad health conditions (three quarters of eligible men were considered unfit) and high absenteeism (another one-fifth), we find that targets were low enough to be met by drawing more recruits among the pool of fit men, apart from a few volunteers. Like for military targets, the colonial administration based its estimates of liable taxpayers on coarse population enumerations, relying on local chiefs for collection. However, the risk of conflict prompted caution when deciding on head tax rates. First, rates were modulated according to the perceived economic affluence of each district, in particular proximity to sea ports or railway lines. Second, excessive tax spikes were avoided in districts that were already enduring high rates; and during the Great Depression, colonial authorities refrained from increasing the tax burden further, almost everywhere. Yet, we do not observe that tax rates (or even military targets) were fine-tuned in order to respond to local economic shocks, like changes in cash crop prices or a severe drought in 1938.

At the end of the day, we conclude that the French colonial authorities were not entirely blind to local constraints or equity, yet were not able to fine-tune their policies across time. Despite their lack of flexibility, colonial states were quite successfully coercive.

Our paper contributes to several strands of literature as follows.

First, we add to the extensive literature on the critical relationship between fiscal capacity, particularly in enforcing tax compliance (Slemrod, 2019), and state building (Besley & Persson, 2009, 2010). Recent advances take this question to the field thanks to randomized controlled trials in collaboration with tax authorities (Pomeranz & Vila-Belda, 2019; Balán et al., 2022; Okunogbe & Pouliquen, 2022; Knebelmann et al., 2023; Bergeron et al., 2024). Other important studies investigate historical fiscal capacity (Cagé & Gadenne, 2018; Cantoni et al., 2024) and the origins of taxation in fragile states (Sánchez

De La Sierra, 2020). On colonial fiscal capacity in Africa in particular, past studies have predominantly focused on effort-minimizing strategies of the colonial state in tax collection (Frankema, 2011; Frankema & Waijenburg, 2014; Gardner, 2010, 2012), the importance of in-kind taxation (Waijenburg, 2018) and the long-term developmental persistence of colonial public finance schemes (Huillery, 2009; Mkandawire, 2010). We expand this literature by highlighting an often overlooked aspect of colonial fiscal capacity in Africa: tax compliance. To the best of our knowledge, this paper is the first to quantitatively assess the compliance of colonized people with colonial conscription and taxation in Africa. In their article on British Native Authorities in West and East Africa, Bolt and Gardner (2020) analyze the determinants of tax revenue per capita at the local level, yet do not disentangle tax pressure and taxpayers' compliance.

In addition, we also contribute to the economics of labour coercion (Acemoglu & Wolitzky, 2011). While a growing economic literature has concentrated on the long-term developmental impacts of coercive colonial labour practices—such as concessions (Dell, 2010; Lowes & Montero, 2021; Dell & Olken, 2020), ethnicity-based subjugation (Blouin, 2022), prison labour (Archibong & Obikili, 2023), military conscription (Salem & Seck, 2023; Mo et al., 2024), and seasonal wage labour (Dupas et al., 2023; Denton-Schneider, 2024)—there is limited quantitative research on the initial institutional formation of these coercive labour systems (Fall, 1991; Echenberg, 1991; Okia, 2022). We address this gap by empirically documenting the hierarchical structure and demographic reach of the military conscription system in former French West Africa.

Ultimately, we contribute to the body of literature examining historical sources of unrest and conflict in Africa, before (Besley & Reynal-Querol, 2014) and after slave trade abolition (Fenske & Kala, 2017), under colonial rule (Christian & Fenske, 2015; Papaioannou & de Haas, 2017) and in the post-colonial era (Michalopoulos & Papaioannou, 2016). Our work adds to this literature by differentiating among types of civil conflicts based on their underlying motives, and highlighting the significant co-movement between tax increases and tax-related conflicts. This aligns with political economics research that has identified similar robust relationships between rising royalty extractions and armed

conflicts, as seen in the case of India (Shapiro & Vanden Eynde, 2023).

The remainder of this paper is organized as follows. Section 2 provides a short historical background, describes the organization of military conscription and head tax collection, and the corresponding data. Section 3 introduces measures of compliance with conscription and taxation and delivers first-order results. Section 4 examines the incidence of individual acts of defiance and of collective protests from the colonized, in reaction to conscription and taxation. Section 5 analyses how military recruitment was achieved and how colonial authorities tried to limit conflicts about taxation. Section 6 concludes.

2 Colonial Administration, Conscription and Taxation

French West Africa (*Afrique Occidentale Française*, henceforth AOF)[2] was organized as a federation of eight colonies, namely, as illustrated in Figure 1 from west to east and from north to south: Mauritania, Senegal, Guinea, Ivory Coast, Dahomey (present-day Benin) on the coast of the Atlantic Ocean; French Sudan (Mali), Upper Volta (Burkina Faso) and Niger, three landlocked territories. It straddled a vast area of more than 4.7 million square kilometers wide, roughly eight times the size of France, although two-thirds of this area was not well suited for agriculture. With around 13 million people only in 1920 (versus 39 in France), the population density was low.

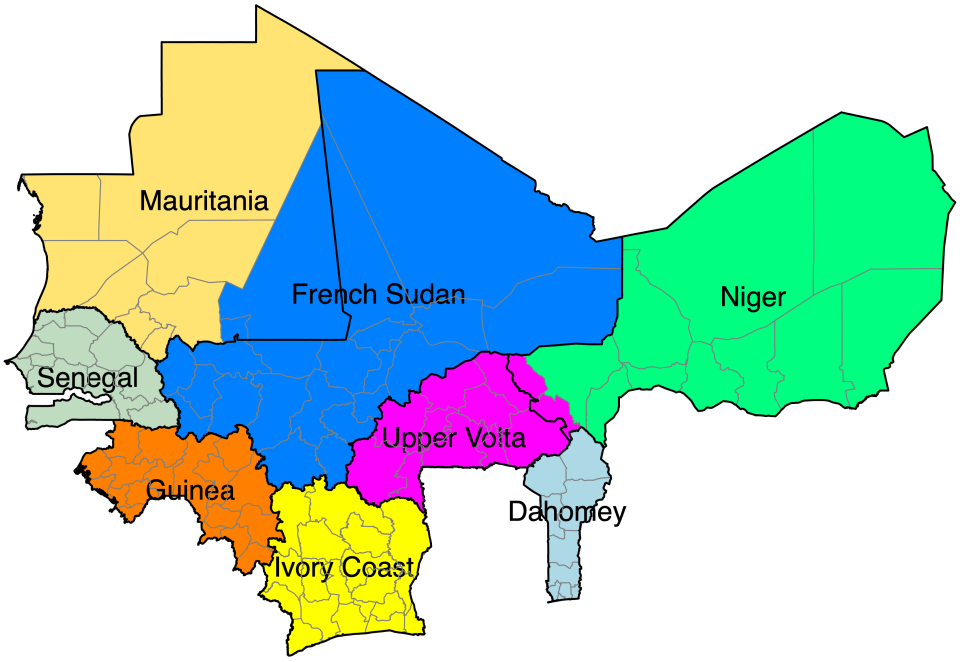
2.1 Administrative Organization of French West Africa

The AOF federation was officially created in 1895. Although the major military conquests were over by this time, peacemaking was still under way, and civilian administration only gradually became effective from the early 1900s to 1920, with it taking the longest for geographically remote regions such as Mauritania, Niger, and Forest Guinea. At the top, a General Governor headed the federation from Dakar, Senegal. In the middle, a Lieutenant Governor was in charge of each of the eight colonies. At the bottom, the colonies were then divided further into districts (*cercles*) and sub-districts (*subdivisions*).

[2]The terms French West Africa and AOF are used interchangeably in this paper.

In Mauritania and Niger, the majority of people were nomads or semi-nomads. Nomads were not subject to conscription and paid a tax on cattle instead of the head tax. Because the modalities of colonial rule were different in these two colonies, we exclude Mauritania and Niger from our analysis, and focus on the six other colonies of AOF.[3]

Figure 1: Administrative Regions in French West Africa (1925)



Notes: The bold lines delineate the contemporary country boundaries. The differentially colored region indicate the colonial-time outreach of each single colony within the French West Africa federation. As can be seen, parts of colonial French Sudan include a few districts belonging to contemporary Mauritania. And parts of colonial Upper Volta also include a few districts which belong to contemporary Niger. These districts are dropped in our analyses (more detailed below).

At the local level, district administrators (*commandants de cercle*) were in charge of tax collection, military recruitment, and mobilization of forced labour. They also supervised indigenous justice, oversaw the construction and maintenance of public infrastructure, and managed education and health expenditures. Large geographical distances, combined with the limitation of communication means, contributed to their omnipotent status (Delavignette, 1939; Cohen, 1971). Given that French civil servants were very few,

[3]Furthermore, In Senegal, natives from the municipalities of Dakar, Gorée, Rufisque and Saint-Louis (the *Quatre Communes*) had some kind of French citizenship. After WWI, this made them subject to universal conscription and they did not contribute to the pool of colonial *Tirailleurs*. They were also subject to the same tax obligations as Europeans, the same head tax and also a property tax specific to urban areas. Given their exceptional status, we also exclude these municipalities from our analysis.

administrators also had to rely on the cooperation of African chiefs who received wages and rewards for their services (Zucarelli, 1973).

2.2 Conscription System and Corresponding Data

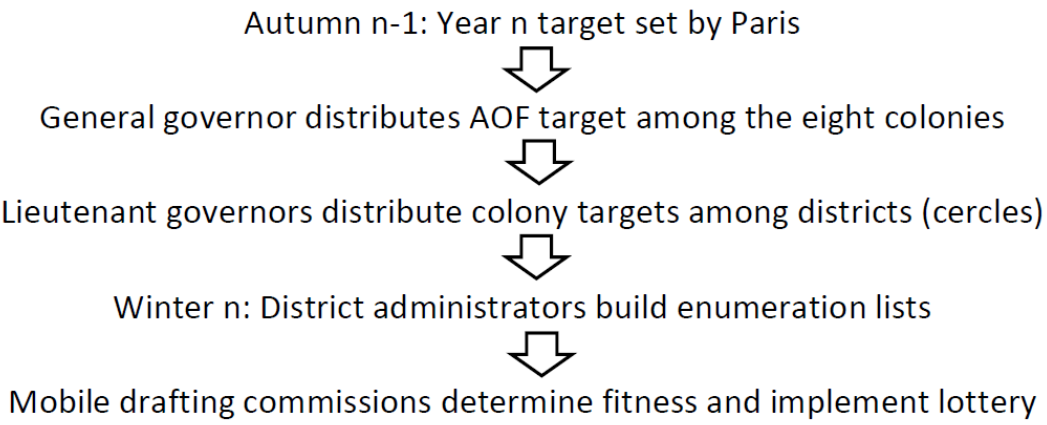
West African colonial soldiers were called *Tirailleurs Sénégalais*, even when they did not originate from Senegal. Since the second half of the nineteenth century until WWI, they had gradually become one of the main pillars of French imperial order. At the time, local chiefs were directly asked to select additional recruits among their people, for a period limited to the conflicts. It was only after 1920 that a formal conscription system was put in place in order to facilitate future levies.[4]

The post-WWI formal conscription system was very much inspired by the partial conscription by lottery applied in France before 1870 (Cogneau & Kesztenbaum, 2021). It was carried out against the backdrop of the pyramidal organization of AOF, as shown in Figure 2. To start with, every autumn, the Minister of War in Paris would indicate the number of *Tirailleurs Sénégalais* required to be recruited for the entire AOF in the next year. The General Governor would then distribute the annual quotas to the eight colonies. In each colony, the Lieutenant Governor would further divide the allocated colony-level quota into district-specific conscription targets and send them to district administrators for the ultimate fulfillment of conscription. This disaggregated level of administration is also the level of analysis in this paper.

During the month of December or January in the following year, after having received the fixed recruitment quota, the district administrators would build an enumeration list of indigenous young men who were regarded as potential recruits for the district in that given year. This process was carried out with the assistance of local chiefs. Young men became eligible at the age of 20 and remained so until the age of 28, even though age was seldom precisely recorded in African societies. The enumerated soldiers would then

[4]The new system allowed sending African troops to German Rhineland (1919-30), Syria (1920-22), and Morocco (1925-26). It allowed mass mobilization in 1938-1940, and around 50,000 West Africans were sent to fight in France. After World War Two (henceforth WWII), some were also sent against the rebellion in Madagascar (1947), and to fight the independence wars of Indochina and Algeria.

Figure 2: Operation of Military Target Allocation



be called upon in their residential villages or towns to travel to the drafting centers in their own district for medical examination. It was at this point in time that a certain proportion of the enumerated individuals would choose to escape from the conscription calls, and some even fled away from their residential districts to evade the search from military authorities. If caught, these absentees were automatically conscripted, except when considered particularly unfit for military service.

Individuals who were present at the conscription centers would then receive medical examinations to determine whether they were fit for the military or not. There were four reasons for which individuals could be judged as unfit: (i) *Exemptés*: physically unfit; (ii) *Dispensés*: already having a family member serving in the military; (iii) *Ajournés*: seemingly under-aged and obliged to come back in the future for reexamination; (iv) *Sursitaires*: temporarily exempted from service due to accepted obligations like education, etc.

Among the soldiers who were deemed fit, the drafting commission first asked who would volunteer to join the army, for four, five, or six years of service. Unlike conscripts, volunteers earned a small salary. In many cases, military authorities put a cap on the number of volunteers. The doctrine of conscription specified that the army should not

rely too heavily on volunteers, as their numbers could fluctuate and decline during wartime. Conscripted soldiers were expected to serve for three years. According to the official target (quota) in the district, the commission would then perform a lottery to recruit a portion of the remaining fit, who together with volunteers would constitute the overall 'first portion' (*première portion*) soldiers. Ultimately, the fit individuals who were left out of the lottery would form the 'second portion', also known as 'reservists', who were activated at the beginning of WWII. Some of them were also mobilized for public works, in the so-called labour brigades (*brigades de travail*).

Our conscription data were digitized from the annual military reports in *Série-4D* at the National Archives in Dakar, Senegal. We could construct an original district-year-level (yet unbalanced) panel military dataset from 1923 until 1947. More details on this panel can be found in the Online Appendix A.1.

The top panel of Table 1 shows descriptive statistics for the main variables that characterize the recruitment process.

2.3 Head Tax Levy and Corresponding Data

The capitation was a lump sum tax, hence the most regressive form of tax levy applied to almost the entire adult indigenous population. During the initial years of colonial rule, the tax base even extended to children aged between 8 and 14. Later on, the age threshold was moved up to 14-16 in the mid-1930s for most colonies (to 16-year-olds as early as in 1926 for Dahomey/Benin). Apart from the basic capitation (*impôt personnel*), additional poll tax rates could also apply to the same eligible population: for local public works (*taxe vicinale*), indigenous medical assistance (*assistance médicale indigène*), or in replacement of suppressed forced labour duties (*taxe représentative des prestations, taxe additionnelle à l'impôt personnel*). We sum up all different forms of head tax rates into one.

Soldiers (*tirailleurs*), their wives and their children were all exempted from the head tax. Military reservists employed in public works were also exempted, as well as in some cases the policemen (*gardes de cercles*). Individuals unable to work, physically impaired

Table 1: Summary Statistics for Conscription and Head Tax

	Military Variables				
	Mean	SD	Min	Max	N
Target	146.5	113.8	5	730	903
Recaptured Absentee (R.A.)	7.5	19.7	0	197	903
Enumerated	2495.5	1874.7	105	10840	903
Absentee	497.8	733.5	0	5213	903
Absence Rate (%)	18.8	15.8	0	82	903
Fit	437.7	461.6	5	4931	903
Fitness Rate (%)	23.3	14.7	3	100	903
Volunteer	27.0	46.5	0	368	903
Volunteering Rate (%)	9.0	15.9	0	97	903
Drafted Soldier (First Portion)	111.2	98.3	0	590	903
Lottery Rate (%)	35.0	22.9	0	100	903
Military Enforcement Rate (%)	99.4	7.3	21	162	903
	Taxation Variables				
	Mean	SD	Min	Max	N
Head tax rate	16.1	7.6	2	67	1906
Actual tax levy	1.6e+06	1.3e+06	0.03+06	10.2+06	1906
Estimated theoretical tax levy	1.8e+06	1.5e+06	0.09+06	9.4+06	1906
Tax Compliance Rate (%)	85.1	22.0	13	218	1906

Notes: Top panel: sample of districts for which all conscription variables are not missing; all figures are numbers of men, excepting rates in percent (%). Bottom panel: sample of districts for which both the head tax rate and the actual amount levied are not missing; all figures are in francs at 1937 prices, excepting the compliance rate in percent (%). See below for the definitions of Military Enforcement Rate (MER) and of Tax Compliance Rate (TCR). For the latter, the reported figure corresponds to our mean demographic scenario.

or too old were also exempted, as well as school students. Nomads, who represented a significant share of the population in Northern French Sudan, like in Mauritania and Niger, paid a tax on livestock (*zekkat*), and were therefore exempt from the capitation or paid significantly lower rates. Exempted individuals could never make more than 2% of eligible taxpayers.

Annually, the lump-sum tax rate to be levied in the following year was first proposed by the district administrator late in the previous year, and then it was submitted to the Lieutenant Governor of the colony for ultimate approval. Rates were usually set at the district level, or else the within-district variation in rates was limited.

Once the head tax rate was approved by the head of the respective colonies and with the advent of the new calendar year, the entire district-level administration would start to engage in the annual capitation tax collection efforts throughout the whole year. The bulk of capitation was collected by local chiefs who received a wage payment and a share of the amount collected as a reward (*remise*), under the supervision of district and sub-district administrators and of upper-tier chiefs (*chefs de provinces, chefs de canton*). Cogneau et al. (2021) show that total payments to the chiefs never represented more than 7% of the total amount collected (even though the wage paid also compensated them for other administrative functions). We share the same finding, with wages representing around 2% and rewards slightly more than 4% of the total amount of head tax collected on average.

In most cases, especially in the early years, the major part of the collection was based on estimates of the number of eligible taxpayers at the village level and on the names of the local chiefs (*rôles numériques*), rather than lists of households or individuals (*rôles nominatifs*). Based on these estimates and lists, the district administrator would further calculate a forecast of the total amount of capitation to be collected in the year, as the product of the head tax rate and the tax base. This tax base was marginally adjusted from one year to another, except when a colony-wise increase in the age threshold called for a discontinuous change.

The main source for head tax rates is the yearly colonial budget (*budget local*) of each colony, where head tax schedules are specified. From this source, also using Huillery (2009) for some years, we could construct a district-year-level panel of head tax rates and actual amounts levied. More details on this panel can be found in the Online Appendix A.2.

3 Measuring Enforcement

The first-order question we seek to address regarding the coercive capacity of the colonial state is whether the colonial administration successfully met its objectives in both conscription and head tax collection.

3.1 The Easy Enforcement of Conscription

On the side of the colonial authorities, the fulfillment of the target numbers can be measured by the Military Enforcement Rate (MER) constructed as the following:

$$MER_{ict} = \frac{Recruited_{ict}}{Target_{ict}} \tag{1}$$

In a given district i in colony c and year t, the enforcement rate is calculated as the fraction of the total number of recruited soldiers out of the military target assigned to the district in that given year. Specifically, *Recruited* refers to the sum of (i) the number of recaptured absentees who were automatically recruited, (ii) the number of volunteer soldiers, and (iii) the number of soldiers assigned to the first portion after the lottery (*appelés*). *Target* is the target number (recruitment quota) assigned by the Lieutenant Governor.

On average, in peace time, a district received a quota of approximately 145 soldiers to be recruited annually among its 20-year-old young male population (Table 1). At the end of the day, the quota was almost always met in each district each year. As defined in Equation 1, the Military Enforcement Rates (MER) averaged at 99.4%, with a small

standard deviation of 7%. The median of MER was 100%, as well as the bottom and top deciles. The MER lied below 97% in less than 5% of the cases, and below 66% in less than 1%. Some of the cases that deviate from 100%, either downward or upward, might even be measurement errors.

On average, three-quarters of the recruits were first portion soldiers selected through the lottery, one-fifth were volunteers, and a small remainder (5%) consisted of recaptured absentees. Ultimately, the average lottery rate was around 35%, which means that a larger share of the fit young males were assigned into the pool of reservists (or to forced labour in public works).

3.2 The High Compliance with Head Tax

In terms of tax collection, unlike conscription, there was no particular taxing target assigned by higher-level colonial officials. However, as mentioned previously, there exists a forecast amount (to be collected in the following year) stipulated by the district administrators themselves. This figure corresponds very closely to the actual amount collected in the coming calendar year. The forecast figure resulted from an informal update of the number of taxpayers in the previous year and did not necessarily reflect the true tax potential at the district level. We then resort to constructing our own estimate of the theoretical tax base.

Concretely, the Tax Compliance Rate (TCR) is calculated as specified in equation 2:

$$TCR_{ict} = \frac{Collected_{ict}}{Theoretical_{ict}} \tag{2}$$

For the numerator term on the actual total amount of head tax collected at the district level, corresponding figures were taken from the annual colony-specific definitive accounts (*comptes définitifs*).[5] Secondly, for the denominator term, the theoretical amount of total head tax was further constructed as the product between the actual head tax rate

[5] At the colony level, actual total amount is always available. At the district level, in the few cases where it was missing we replaced it with the forecast amount to be collected for that year, which, as we already mentioned, was usually closely met.

and an estimated tax base:

$$Theoretical_{ict} = Rate_{ict} \times Base_{ict} \tag{3}$$

The tax rate is the average lump-sum amount due by each liable taxpayer in district i in year t (see data section above). The tax base is the estimated liable population in the district i, i.e., the number of people in the age range fixed by decree in the corresponding colony c in year t.

We built a demographic model, in order to generate population time series for each of the six colonies. The model estimates the total population as well as its age structure, so that the number of liable taxpayers is available in each year, and also the number of eligible conscription recruits (20-year-olds). The demographic projections are anchored on the levels reached by three variables: total population in 1960, drawn from World Development Indicators (World Bank); crude birth rates and infant mortality rates for 1950 and 1960 drawn from Tabutin and Schoumaker (2004). Details on the model and on the simulations can be found in the Online Appendix A.3.

We selected two simulations that, in our view, provide a good sense of the possible range of demographic changes between 1914 and 1950 in French West Africa, both in terms of fertility and mortality. They differ first in the magnitude of these changes, and second in how gradual these changes were. We view the first (resp. second) scenario as providing a lower (resp. upper) bound for the number of liable taxpayers, hence an upper (resp. lower) bound for our estimates of tax compliance. The mean of the lower bound and the upper bound provides us with an intermediate demographic scenario. With respect to the total population, even our upper bound estimates are more conservative than those of Frankema and Jerven (2014).[6]

Figure 3 shows our estimates of Tax Compliance Rates (TCR) at the level of each colony.[7]

[6] In their paper, no age pyramid is estimated.

[7] Each graph plots $TCR_{ct} = \sum_{i \in c} Collected_{ict} / \sum_{i \in c} Theoretical_{ict}$. This can be estimated even in the few cases where only colony-level collected amounts $Collected_{ct}$ are available. We could alternatively compute: $TCR^*_{ct} = \sum_{i \in c} (Collected_{ict} / Rate_{ict}) / Base_{ct}$, which does not necessitate estimating district level

In each colony and in each year, the lower bound of TCR is most of the time above 60%, and very often above 80%. It is in Dahomey where compliance is the lowest; it even drops significantly during the Great Depression (1932-1934), as indeed was noticed by colonial administrators at the time. However, from 1919 to 1949, the average TCR in Dahomey still reaches 66% according to our mean demographic projection (62% according to our lower bound). Senegal comes second with a period average of 77%. French Sudan is characterized by very stable rates around 80%. The average rates for Ivory Coast, the Upper Volta, and Guinea are above 90%. In the latter two cases and for a few years before WWII, the estimated TCR lies above 100% for our mean scenario, although not for our more conservative lower bound (with only one exception for Guinea in 1927). This might be due to measurement errors in head tax rates at the district level. We rather believe that in early years, colonial administrators could more often 'overshoot', i.e., overestimate the eligible population of villages and demand excessive amounts to chiefs. In the late 1940s, when both population estimates and tax registration are already less uncertain, all colony-level TCR converge to 80%.

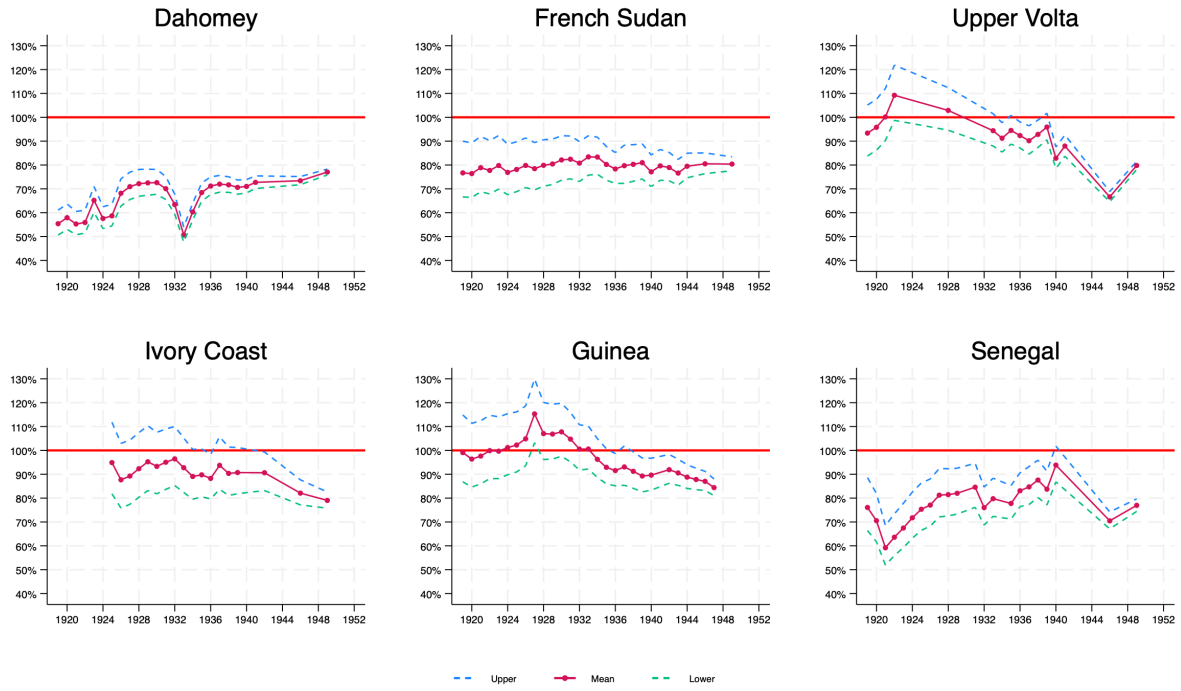
At the district level, the average of TCR is found to reach 85% under the mean demographic scenario, as reported in the bottom panel of Table 1. The median TCR is close to 86%, while the bottom decile reaches 58% and the top decile 110%. At this level, as compared to colonies' averages, measurement errors make data a bit more noisy.

4 Resistance to Conscription and Taxation

We now examine how colonized autochthons resisted conscription and taxation, either through evasion or protest.

liable population, only colony level $Base_{ct}$ (as liability age-based rules do not vary among districts of a given colony). We checked that the two estimates were very close to each other.

Figure 3: Tax Compliance Rates - Colony Level (1919-1949)



Notes: Estimates of Tax Compliance Rates (TCR) at the colony-year level, based on three demographic projections: Upper, Mean and Lower. See definition of TCR in Equation 2. See text and Online Appendix A.3 for the definition of demographic scenarios. The red bar locates at y-axis of 100%, which indicates full compliance, where the actual amount collected (or the forecast amount) is equal to the theoretical tax base. Points that fall above the red line indicates that the total amount collected is larger than the theoretical tax base; and vice versa.

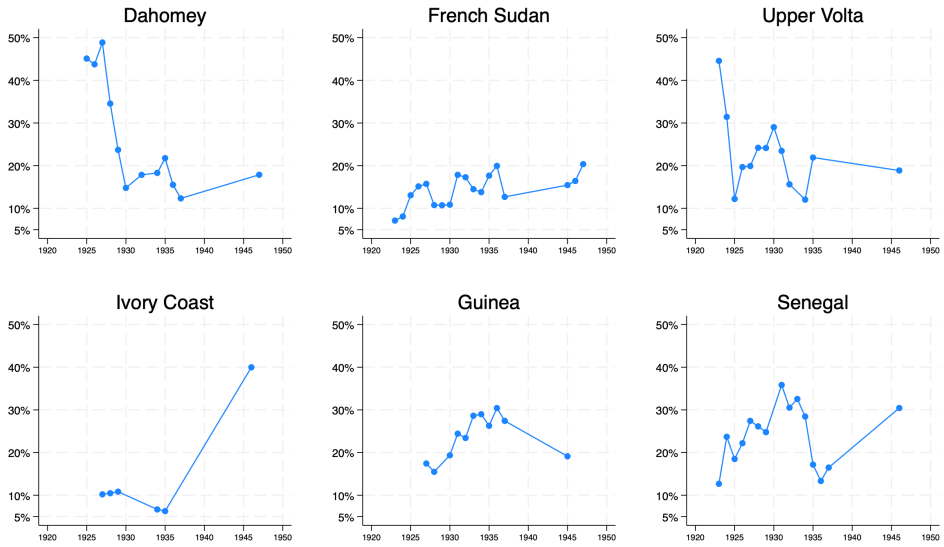
4.1 Conscription: Individual Avoidance and Limited Collective Protests

Absenteeism at the drafting commissions could certainly be a sign of reluctance to conscription and of non-compliance with colonial rule. We can compute the Absence Rate ($AbsR$) as the ratio of the number of absent young men at the drafting commissions to the number of those who had initially been enumerated and registered:

$$AbsR_{ict} = \frac{Absent_{ict}}{Enumerated_{ict}} \tag{4}$$

As already underlined by Echenberg (1991), the colonial authorities were indeed sometimes confronted with high rates of absenteeism in the conscription process, as shown in Figure 4. Absentees could make up as high as 40% of enumerated young men, and on average 19% across colonies and years (see Table 1). As can be seen in Table 1, the number of volunteers was always far below the number of absentees.[8]

Figure 4: Absenteeism Rates



Note: See definition of $AbsR$ in Equation 4.

It should be noted that enumeration and presence are not necessarily two independent

[8]Even if military authorities fixed caps on volunteering as they preferred to rely on mandatory conscription; and of course, keeping in mind that it is impossible to check how much free will was involved in individual volunteering.

stages in the recruitment process. Indeed, absence rates are higher where the number of enumerated young men is higher, as the marginally listed individuals are more susceptible to evade conscription. Pruett (2024) argues that the extension of the railway positively affected absenteeism by allowing reluctant young men to evade more easily. In our cross-sectional district-level analysis, we do not find such a positive correlation between the presence of railway lines and absenteeism. We rather find that, within a colony, it is districts with larger land areas (where there are potentially more opportunities to escape) and closer to sea ports (where outside options could be more attractive) that tend to display the highest absence rates.

Outside of individual absenteeism, the conflict data collected by Huillery (2011), from the political reports written by governors, allow us to distinguish protests directly associated with military conscription.[9] It is essential to acknowledge that these data can be influenced by reporting biases. However, the prevalence of this type of conflict appears very limited, especially compared to other types (see below). Casamance, the part of Senegal that lies south of the British Gambia, constitutes a prominent exception, as is visible on the map of Figure 5; in fact, Casamance was generally hostile to all colonial interventions (see maps in Figures 6 and 7 below). In contrast with head tax rates and tax-related protests (see below), we found no correlation between target increases and the onset of conscription-related conflict.

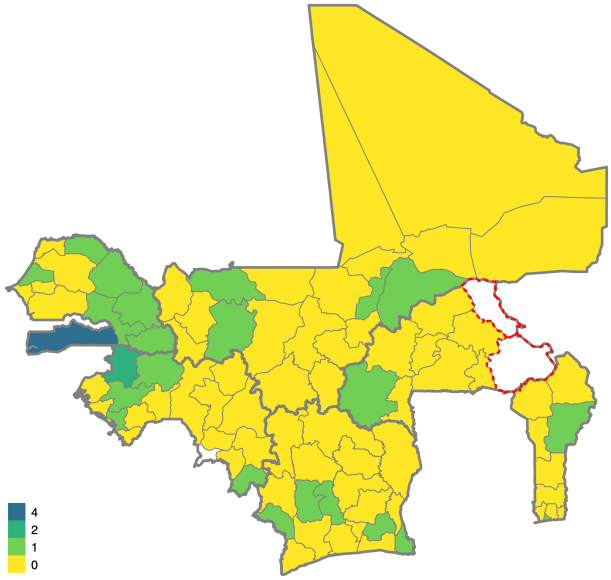
While significant proportions of eligible young men tried to escape recruitment, absenteeism was more an individual decision and colonial authorities were not confronted with strong collective resistance to conscription, at least after WWI.[10]

Among non-absentees, an average of only 23% of potential recruits could be deemed

[9]The Online Appendix A.4 provides more details on how these data are constructed.

[10]Our data start in 1919, thus disregarding the significant riots that occurred during WWI: in 1915 in the district of Beledougou in French Sudan, following a severe drought (1913-14), in the districts of Dedougou and Bobodioulasso in Western Upper Volta (Michel, 2003, p.37-40), then in 1916 in Dahomey (d'Almeida Topor, 1973). During WWII, there were few examples of large-scale rebellion (Thobie et al., 1990, p.341). According to our data, in the mobilization year of 1939, most of the protests took place in Niger where conscription used to be lighter in peace time; this colony is anyway excluded from our analysis. Other cases were the districts of Bandiagara and Mopti in Central French Sudan and Nzerekore in Forest Guinea.

Figure 5: Occurrence of Conflicts about Military Recruitment (1919-1949)



Notes: The map documents the total number of military recruitment-related conflicts at the colonial district level from 1919 till 1949 (the sample covers only ten years of this time period, ending with digits of 3, 6 and 9). The two districts left blank are Dori and Fada, which belong to contemporary Burkina Faso, but were re-attached to the colony of Niger during the partition of Upper Volta (1932-1947). As such they are excluded from our analysis.

fit (see Table 1). This fitness rate was very low if compared to similar figures reported for the metropolitan French army during the same period of time.[11] Absentees might have been healthier than average. However, we argue that absenteeism was never an important constraint, as in the vast majority of cases enough fit men were present to fulfill the recruitment target.

4.2 Taxation: Collective Protests in Times of Excessive Tax Increases

We then wonder whether excessively high tax rates led to conflicts between colonial authorities and the local population.[12]

[11] For example, at the end of the 19^{th} century in a poor district of Paris, 65 to 85% were judged fit (Cogneau & Kesztenbaum, 2021).

[12] With regard to the colonized agency, we also looked for some relationship between tax rates and absenteeism or volunteering on the military side. Higher tax rates might call for additional labour to earn the necessary cash income and push young men to escape conscription, or else volunteer to exempt their family from the head tax and also earn a small pay. Possibly because these two motives counteract each other, we did not find any significant correlation. We did not find either that absenteeism or volunteering correlate with weather conditions or drought incidence.

Figure 6: Occurrence of Conflicts about Taxation (1919-1949)

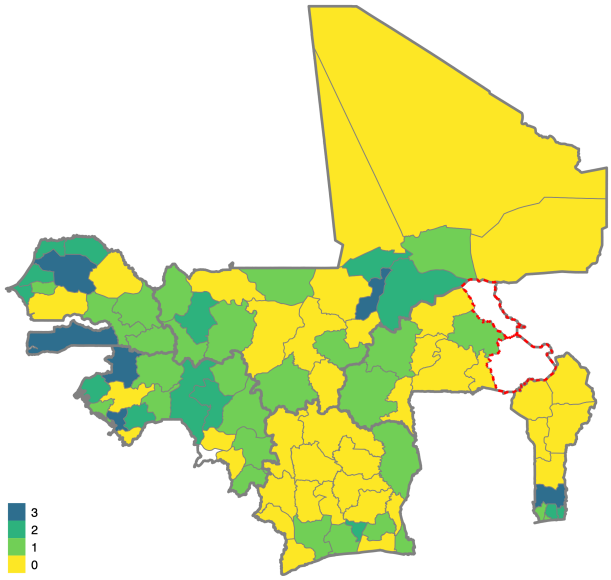
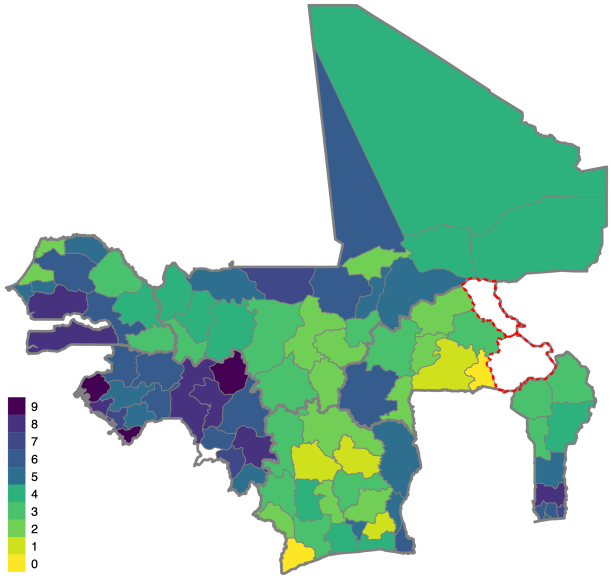


Figure 7: Occurrence of Conflicts Not Linked to Conscription or Taxation (1919-1949)



Notes: The maps document the total number of tax-related conflicts (Figure 6) and of all kinds of general conflicts (not related to military recruitment or taxation, Figure 7) at the colonial district level from 1919 till 1949 (the sample covers only ten years of this time period, ending with digits of 3, 6 and 9). The two districts left blank are Dori and Fada, which belong to contemporary Burkina Faso, but were re-attached to the colony of Niger during the partition of Upper Volta (1932-1947). As such they are excluded from our analysis.

In addition to conflicts related to conscription, Huillery's data enable us to differentiate between conflicts associated with taxation and other types of conflicts. Data collection focuses on years ending in digits 3, 6, and 9 during the period between 1919 and 1949. This sampling approach results in a relatively small sample size for analysis and precludes the measurement of conflict duration (see the Online Appendix Table A4).

As can be seen from the map in Figure 6 compared to that in Figure 5, tax-related conflicts are more frequent than conscription conflicts. Yet, some regions seem to be prone to both types: Senegal and in particular Casamance, Guinea, and Central French Sudan. Cross-sectionally, the Pearson correlation coefficient between the two is 0.33. Other types of conflict, i.e., non-military and non-tax, were far more frequent and also spatially correlated with tax-related conflicts (Figure 7). The Pearson correlation coefficient between tax conflicts and other conflicts reaches 0.46. Apart from already mentioned areas, Southern Dahomey, Eastern Ivory Coast and Western Upper Volta also display more frequent hostility to the colonial order, for taxation or other reasons. Some districts were in conflict in almost all years, as ten years are observed and many districts had more than 7 conflict records between 1919 and 1949.

Regarding the incidence of conflicts over time, Figure 8 shows that the frequency of tax-related protests increased during the Great Depression, reaching more than 20% of the districts in 1933. The frequency of other types of conflict was more stable over time. This conflict boom comes after a steep increase in head tax rates, between 1926 and 1933. Remember that tax compliance fell at the same time, especially in Dahomey, Ivory Coast and Senegal (Figure 3). Then, between 1933 and 1936, the mean head tax rate moved little (before growing again until 1940), as the colonial administration tried to mitigate protest and restore compliance.

We further analyze how the changes in head tax rate correlate with the *onset* of tax-related protests or other types of reported conflicts. To this aim, we restrict our analysis sample to district-years such that no tax-related protest was reported in the previous year (i.e., $t-3$ or $t-4$, as conflicts are only recorded every 3 or 4 years). As the head tax

Figure 8: Conflict Occurrence across Time in AOF (1919-1949)

Notes: The graph plots the share in percent of districts with each kind of reported conflict 1919 till 1949 on the left scale, and the time evolution of the mean head tax rate (in 1937 francs) on the right scale.

'rate' is a lump-sum amount to be paid for each liable individual, it is unclear whether what matters collectively is the proportional or the absolute variation in rates. Indeed, in poor districts with low tax rates, a large absolute variation will be felt harder than a proportional one (we analyze heterogeneity below). Hence, we estimate two different models, one with the change in logged rates, another with the change in levels. Estimated regressions are then as the following:

$$Prob(Protest_{ict} = 1) = \beta_0 + \beta_1.\Delta Rate_{ict} + w_t + v_{ct} + u_{ict} \tag{5}$$

where $Protest_{ict}$ captures the onset of tax-related protests or other types of unrest, and $\Delta Rate_{ict}$ is either the time variation of the tax rate or of its logarithm (between t and $t-3$ or $t-4$). Year fixed effects w_t and colony-year fixed effects v_{ct} may or may not be added.[13]

[13]We also tested for another potential determinant of conflict: weather conditions, using the variations in the Standard Precipitation Evapo-transpiration Index (henceforth SPEI) from Vicente-Serrano et al. (2010) (see Online Appendix A.5 for more details). We did not detect any significant effect of weather on conflict, even when distinguishing negative variations in SPEI from positive ones, perhaps due to the low quality

Table 2 reports the results of all possible specifications (in logarithm or levels, with or without fixed effects). Column (1) shows that head tax rate increases make a tax-related protest significantly more likely to burst out, whatever the specification we choose. According to these estimates, a 10% increase in head tax rate results in an increase of 0.9 to 1.1 percentage points in the incidence of a tax-related conflict. As the average conflict prevalence is only 8%, this is a strong effect, even more so because the standard deviation of the change in logged tax rate is 32% (and not 10%). Likewise, moving the change in tax rate (in absolute level) by one standard deviation (6 francs) results in a 3 to 4 percentage point increase (50% increase) of tax conflict incidence.[14]

When further restricting the sample to district-years with no conflict of any kind in the period before, the effect of head tax increases on conflict surge is even stronger, especially when accounting for potential colony-year aggregate shocks on both conflict and taxation (column (2), middle and bottom panels). As the causes of conflict may be hard to disentangle, the distinction between tax-related and other types may be fuzzy, so that having no conflict at all as the starting point may make the identification more precise.

Lastly, as a kind of placebo test, we checked that head tax rates increases do not significantly correlate with the onset of conflicts that are not tax-related (column (3)), even if the coefficients of head tax rate variations remain positive.[15]

of rainfall and temperature data for colonial Africa.

[14] Although the point estimates are of the same magnitude as with no year fixed effect or with year fixed effects only, with colony-year fixed effects the coefficients turn statistically insignificant, even at the 90% confidence level. Variations in head tax rates across time were very much influenced by decisions taken at the colony level: colony-year fixed effects alone explain 82% (resp. 69%) of the variance of first-differenced logged (resp. not logged) head tax rates.

[15] Online Appendix Tables A5 and A6 show the consistent results of an alternative statistical modelling of the same variables, whereby a logistic model is used and district-year variations in tax rates are ranked in three terciles, either for the whole set of districts from 1923 to 1949, or within each year, or else within each colony-year. Districts enduring the highest variations in tax rates (corresponding to the third tercile) come out with odds-ratios above 2, meaning that a tax-related protest is twice more likely to surge compared to districts with the lowest tax rates variations (first tercile). The bottom panel of column (1) again makes an exception, like in Table 2, yet when restricting to non-conflict districts in column (2), the effect again recovers high magnitude and statistical significance. With ordered logit models we also could distinguish two levels of reported conflict intensity (significant and threatening). However, this distinction made no difference in odds-ratios estimates.

Table 2: Impact of Tax Rate Variations on Conflict Incidence

	(1) Tax-C.	(2) Tax-C.	(3) Other-C.
No time fixed effects:			
ΔLog. Tax Rate	+0.095***	+0.097***	+0.065
	(0.031)	(0.034)	(0.072)
Δ Tax Rate	+0.682***	+0.802***	+0.488
	(0.164)	(0.271)	(0.494)
Year fixed effects:			
ΔLog. Tax Rate	+0.110**	+0.165**	+0.101
	(0.047)	(0.064)	(0.119)
Δ Tax Rate	+0.651**	+0.978***	+0.670
	(0.282)	(0.392)	(0.644)
Colony-year fixed effects:			
ΔLog. Tax Rate	+0.092	+0.176**	+0.037
	(0.061)	(0.084)	(0.160)
Δ Tax Rate	+0.504	+0.913**	-0.083
	(0.311)	(0.458)	(0.693)
District FE	Yes	Yes	Yes
Observations	663	377	377

Notes: Linear probability model estimated by ordinary least squares, with no year fixed effects (top panel), year fixed effects (middle panel), or colony-year fixed effects (bottom panel). District fixed-effects increase precision without altering point estimates. Column (1): districts where no tax-related conflict was reported in $t-3$ (or $t-4$). Columns (2) and (3): districts where no conflict of any kind was reported in $t-3$ (or $t-4$). Tax.-C. = Equals 1 (else 0) if at least one significant tax-related conflict occurred in t. Other-C. = At least one other significant conflict, not directly linked to taxation, occurred in t. ΔLog. Tax Rate = Change in the logarithm of the head tax rate between $t-3$ (or $t-4$) and t. Δ Tax Rate = Change in the level of the head tax rate (in '00 francs 1937). Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

We next investigate the heterogeneity in protest responses to increases in head tax rates. In particular, even if proportional or absolute variations in tax rates seem to matter the same on average, they do not necessarily mean the same variation in tax burden for districts with high or low rates. Given that proximity to sea ports is a significant determinant of head tax rates (see Table 5 below), we partition our district sample into two halves based on this variable. On average, districts closer to sea ports exhibit head tax rates approximately twice as high as those further away. As illustrated in Table A7 in the Online Appendix, these proximate districts are also twice as sensitive to proportional (logged) changes in tax rates compared to more distant districts. By contrast, absolute increases in head tax rates have uniform effects on tax-related conflicts, regardless of proximity to sea ports (Table A8). This suggests that absolute increases in the lump-sum tax amount owed are the main drivers of protests across all districts, likely because such increases impose a uniform burden on the majority of poor populations. In districts closer to sea ports, where the monetary economy is more developed and average income is higher, income inequality should also be higher. Thus, the poorest segments of the population face the same deprivation as those in remote districts yet a heavier tax burden. Additionally, population density near sea ports may facilitate coordination for protests. Given this dynamic, it is plausible that colonial authorities aimed to limit conflict by imposing less-than-proportional tax increases in districts with already high rates. Consistent with this, we find that districts with higher initial tax rates experienced slightly slower growth in rates over time (see Online Appendix Table A9).

We conclude that colonial authorities could be confronted with significant protests when they tried to impose high tax increases. During the Great Depression, these protests turned numerous, tax compliance dropped, and both factors led the governors to temporary moderation. The rise of head tax rates resumed after 1936 until WWII. In the 1940s, inflation pushed real tax rates downward, and as of 1949 they had not recovered to their prewar levels. As forced labour was abolished in 1946, colonial public finance started to rely more on less archaic and more progressive forms of taxes, starting with taxes on imports (Cogneau et al., 2021).

5 Explaining Enforcement

We now examine how colonial authorities managed to enforce their military recruitment targets and to ensure high enough compliance with the head tax, despite facing individual or collective resistance from the colonized population.

5.1 Conscription: Low Targets and Lottery

Regarding conscription, we may first wonder whether recruitment targets were modulated according to local conditions. In contrast with head tax rates that we analyze below, we find that it was not the case. In Table 5 below, we regress the (logarithm of) target on a few characteristics of districts, dummy variables for colonies and year fixed effects. We find that (log) target is linked almost one-to-one to (log) district population as estimated by the colonial administration in 1925.[16] The only other variable that is found to impact the target is district land area: Targeted recruitment is on average slightly lower in more spatially stretched-out districts. As mentioned earlier, absenteeism is also higher in larger districts, given that recruitment efforts are likely to be more costly. Once population is taken into account, average target numbers do not even vary across colonies. Other variables coded by Huillery (2009), like presence of an ancient kingdom or resistance to colonial conquest, do not correlate with target. Population alone explains 69% of the variance of (log) target across space and time. District and year fixed effects absorb 89% (and 91% with colony-year fixed effects) in total. As illustrated and explained in Figure 2, following a top-down target allocation, variations in targets across time, at the district level, are firstly dictated by the variation in the aggregate target, at the level of the whole federation of AOF. Combined with the results above, we could conclude that as a first approximation, the aggregate target was distributed among colonies and districts proportionately to population.

Knowing how district targets were set does not tell us how they were enforced on the ground. As previously mentioned, the drafting process was composed of a host of six

[16] This colonial enumeration is different from our own estimates using our demographic model (see Online Appendix A.3), yet reflects accurately the knowledge of colonial authorities of the time.

successive stages: (i) capturing previous years' absentees; (ii) enumerating eligible young men; (iii) calling them to be present at the conscription center; (iv) assessing exemptions and fitness; (v) admitting volunteers; and (vi) performing the lottery. When the assigned target number varied from one year to another, which sub-stages of the recruitment process were contributing the most to meeting this variation?

We distinguish positive and negative variations, as a decrease in the target did not put the same constraint on recruitment process compared to an increase in military quota would do. For each of the six stages we perform the following regression analysis:

$$\Delta Y_{ict} = \alpha_0 + \alpha_1.\Delta T_{ict} \times \mathbb{1}(\Delta T_{ict} \geqslant 0) + \alpha_2.\Delta T_{ict} \times \mathbb{1}(\Delta T_{ict} \leqslant 0) + v_{ct} + u_{ict} \qquad (6)$$

for a given district i in colony c in year t, and where Δ is the variation (first-difference) between two successive years ($t/t-1$, or $t/t-2$ if $t-1$ is missing).[17] T is the target number, and Y = *Recaptured*, *Enumerated*, *Present*, *Fit*, *Volunteer*, or *Conscript*. v_{ct} are colony-year fixed effects that are meant to capture shocks that could have affected the recruitment process as a whole. Yet, we may wish to include them or not, as they could absorb too much of the time variation of targets, as seen above. We actually checked that including them made little difference.

As we may still fear that the target fixed for each district is endogenous to local conditions that also impact recruitment, we implemented an instrumental variable (IV) strategy inspired by the top-down target allocation. For each district, we constructed a predicted target number based on the district's share in the federal recruitment of 1927 (the first year when all six colonies are observed). In each year, predicted target is computed as the 1927 share times aggregate recruitment in the six colonies of French West Africa.[18] Provided that shares are independent from actual year-to-year target variations, this 'Bartik' fixed share variable makes a valid exogenous instrument (Goldsmith-Pinkham

[17] Restricting to strictly successive years ($t/t-1$) does not alter our conclusions. We also considered variations from the last non-missing year over a longer time period, in order to include post-WWII years (see Appendix Table A1). Again, this did not alter our conclusions.

[18] In years before or after 1927 when not all districts are observed, we recompute the share accordingly.

et al., 2020). It is also a strong instrument, highly correlated with the actual target.[19]

Table 3 shows both the Ordinary Least Squares (OLS) and the Instrumental Variable (IV) estimates for Equation 6. As for OLS estimates, Online Appendix Table A10 shows that including colony-year fixed effects v_{ct} brings little change. In the case of a target increase of one additional recruit, it is mostly the number of first portion conscripts that moves upward by 0.86 (OLS) / 0.87 (IV) in column (6); average variations at other stages are not statistically significant at the 95% confidence level. In the case of a downward adjustment of the target, less effort is devoted to recapturing previous years' absentees, and fewer volunteers are admitted, such that the final number of conscripts only decreases by 0.60 (OLS) / 0.57 (IV) on average in column (6); it also appears that fewer young men are enumerated, examined, and declared fit.

Table 3: Impact of Recruitment Target on Various Stages of Drafting Board

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ Recapt.	Δ Enum.	Δ Pres.	Δ Fit	Δ Vol.	Δ Consc.
Ordinary least squares:						
Δ Target ($\geqslant 0$)	+0.0401	-0.2738	+0.8298	-0.5480	+0.0918*	+0.8565***
	(0.0422)	(1.0249)	(0.7296)	(0.7104)	(0.0496)	(0.0707)
Δ Target ($\leqslant 0$)	+0.1338***	+1.6106	+1.4217	+1.3485***	+0.2323***	+0.6018***
	(0.0299)	(1.5914)	(1.3598)	(0.4716)	(0.0464)	(0.0498)
Instrumental variable:						
Δ Target ($\geqslant 0$)	+0.0653*	-0.5646	+0.5844	-0.7144	+0.0594*	+0.8697***
	(0.0367)	(1.2293)	(0.7405)	(0.6365)	(0.0351)	(0.0421)
Δ Target ($\leqslant 0$)	+0.1171***	+2.5221**	+2.4257**	+2.1374**	+0.2704***	+0.5718***
	(0.0255)	(1.2491)	(1.1123)	(0.8301)	(0.0744)	(0.0766)
Observations	736	736	736	736	736	736

Notes: Ordinary least squares (OLS, top panel) and Instrumental variable (IV, bottom panel) estimation of Equation 6. Δ indicates the change in the variable of interest between year t and year $t-1$, or year $t-2$ if $t-1$ is missing. Δ Target ($\geqslant 0$) (resp. $\leqslant 0$) = Positive (resp. negative) changes of the target. Recapt.= Recaptured absentee. Enum. = Enumerated. Pres. = Present. Fit = Declared fit for military service. Vol. = Volunteer. Consc. = Conscripts, first portion of the conscription lottery. Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

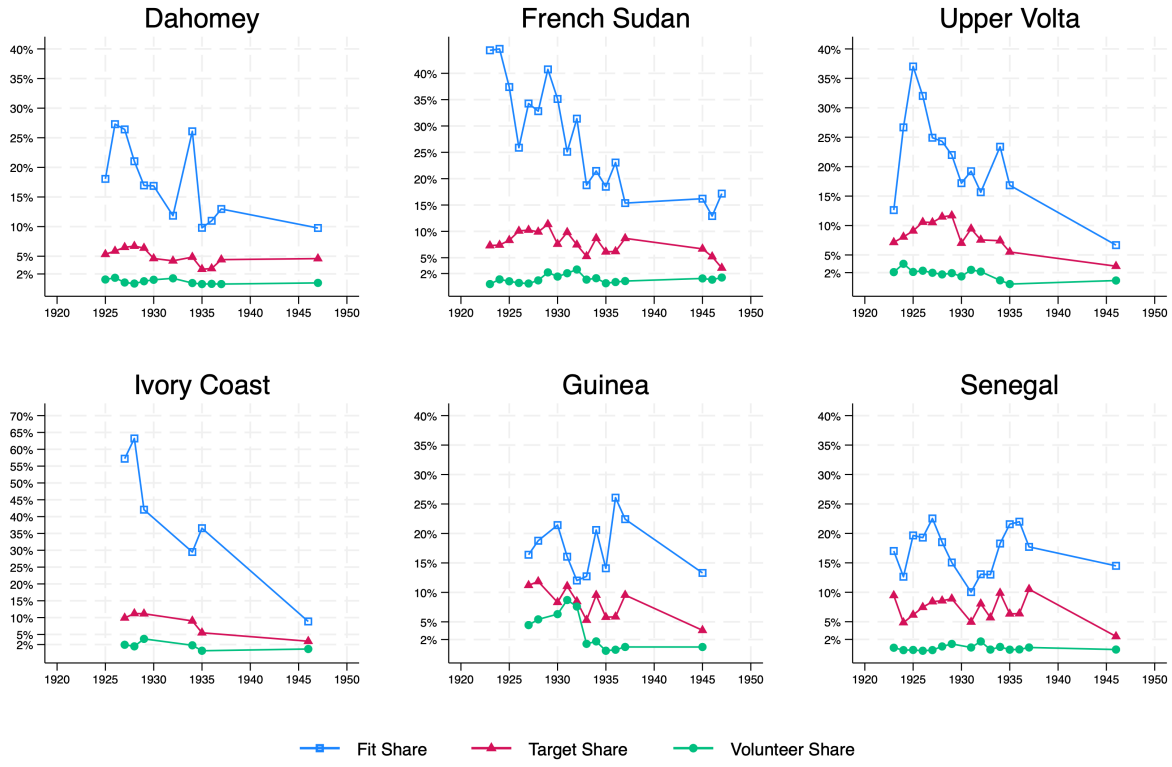
As the target number is met in the great majority of cases, we can check that the sum of the coefficients for $\Delta Recaptured$, $\Delta Volunteer$ and $\Delta Conscript$ is very close to one (OLS:

[19] More precisely, to fit the first-differenced setting of Equation 6, the positive and negative changes in this variable; these two instruments explain 55% of the variance of actual positive changes in targets (F-stat = 443) and 64% of negative changes (F-stat = 656).

0.04+0.09+0.86=0.99 for positive target variations and 0.13+0.23+0.60=0.96 for negative target variations; same for the IV estimates).

The target allocated annually to a colonial district was most of the time far below the total number of fit young males who were available for recruitment. This can be seen in Figure 9. The target share of 20-year-olds seldom surpassed 10%. In many colonies, and especially in Ivory Coast, fitness standards could even be adjusted upwards across years, such that, as fewer 20-year-old men had to be recruited, fitness ratios also tended to decrease.

Figure 9: Fit, Target and Volunteers as Shares of 20-Year-Old Men



Notes: Here we make use of our estimate of the number of 20 year-old males in each district (around 0.9% of total population), according to our intermediate demographic projection computed as the mean of our two extreme scenarios, upper and lower, see Online Appendix Table A3.

Despite the low fitness ratios, in the vast majority of cases, targets were low enough and fit men were numerous enough to accommodate target increases. In 39 cases out of 903, mostly in remote districts of Guinea and Upper Volta, the targets were just met by

recapturing last year's absentees and/or by recruiting volunteers, such that no lottery was implemented to recruit new conscripts in the so-called first portion. We also identified 17 cases in which the target increase could not be met by further increasing the lottery rate, because the latter was already too high (ranging between 48% and 100%). In these cases, the fitness standards were adjusted downward and more volunteers were recruited. Outside of these unusual cases, we expect that moving the lottery rate was the usual strategy to fulfill the annual recruitment quota.

To better understand how military authorities made choices at each stage of the recruitment process, while taking into account indigenous agency, an analysis of ratios can be preferred to that of absolute levels, and we construct the following ratios for subsequent analyses: (i) of enumerated young males to the 20-year-old population, (ii) of individuals present for medical exams to the number of enumerated, (iii) of the deemed fit to present individuals, (iv) of volunteers to the deemed fit, and lastly (v) of conscripts to the number of deemed fit individuals minus volunteers, i.e., what we called the lottery rate. We estimate the same model as Equation 6 while replacing Y_{ict} by the logarithm of the five ratios listed above, and T_{ict} by the logarithm of the target number. Results are shown in Table 4. OLS estimates including colony-year fixed effects v_{ct} can be found in the Online Appendix Table A11; results are again very robust to this exercise.

For target increases, we cannot reject that the average elasticity of the lottery rate is equal to one, as can be seen in column (5). Regarding earlier stages, target increases push the drafting commissions to grant relatively fewer exemptions, as seen from the coefficients of column (3) for the fitness ratio. According to the IV estimate, this increase in the number of fit men could be compensated by a decrease in the share of admitted volunteers (column (4)).[20]

For target decreases, the elasticity of the lottery rate is much lower and we cannot safely reject that it is zero. We again find that less enumeration effort is implemented (column

[20]Even if WWII mobilization years are excluded, the latter effect might reflect that target increases occurred more often when the French army needed to send recruits to risky operations abroad, so that fewer people were ready to voluntarily pay the 'blood tax'.

Table 4: Impact of Target on Recruitment Decisions (Ratios)

	(1) Enumeration ΔL.Enum.R.	(2) Absenteeism ΔL.Pres.R.	(3) Fitness ΔL.Fit.R.	(4) Volunteers ΔL.Vol.R.	(5) Lottery ΔL.Lott.R.
Ordinary least squares:					
ΔL. Target ($\geqslant 0$)	-0.0935	+0.0232	+0.3369***	+0.2750	+0.9543***
	(0.0716)	(0.0294)	(0.1099)	(0.2322)	(0.1541)
			p-value ΔL. Target ($\geqslant 0$) =1 :		*0.7676*
ΔL. Target ($\leqslant 0$)	+0.3348***	+0.0151	+0.1193	+1.3578***	+0.2899*
	(0.1132)	(0.0281)	(0.1054)	(0.3254)	(0.1730)
Instrumental variable:					
ΔL. Target ($\geqslant 0$)	-0.0854	+0.0353	+0.2563*	-0.6297**	+1.0815***
	(0.0875)	(0.0473)	(0.1512)	(0.3084)	(0.2040)
			p-value ΔL. Target ($\geqslant 0$) =1 :		*0.3896*
ΔL. Target ($\leqslant 0$)	+0.2022*	-0.0050	+0.3550**	+2.5269***	-0.0287
	(0.1071)	(0.0460)	(0.1793)	(0.4509)	(0.2888)
Observations	679	679	679	504	679

Notes: Notes: Ordinary least squares (OLS, top panel) and Instrumental variable (IV, bottom panel) estimation. ΔL. indicates the change in the logarithm of the variable of interest between year t and year $t-1$, or year $t-2$ if year $t-1$ is missing. Enum.R. = ratio of enumerated young men to our estimate of 20-year-old male population (mean demographic scenario). Pres.R. = ratio of examined (present) to enumerated. Fit.R. = ratio of fit men to examined. Vol.R. = ratio of volunteers to fit. Lott.R. = ratio of conscripted (first portion) to fit men minus volunteers (lottery rate). Standard errors are clustered at the colonial district level. Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

(1)), like in Table 3. IV estimates also point to a downward adjustment of fitness ratios (hence a strengthening of fitness standards or more exemptions) and of the share of volunteers, with again no change in the lottery rate (columns (3) and (4)).

Strikingly enough, we find no significant effect of target variations on absenteeism (column (2)). Either colonial subjects were insensitive to—or simply unaware of—military authorities' objectives. Alternatively, it could also be that these authorities were able to keep absenteeism under control when they needed to.

We conclude that recruitment targets were generally low enough so that the lottery system could accommodate any kind of target increase. When recruitment objectives were relaxed (i.e., target decrease), the military authorities felt more free to choose among a variety of options at all stages of the recruitment process: chasing the existing absentees less, enumerating less, exempting more, and/or accepting fewer volunteers.

5.2 Taxation: Modulation of Tax Rates across Space and Time

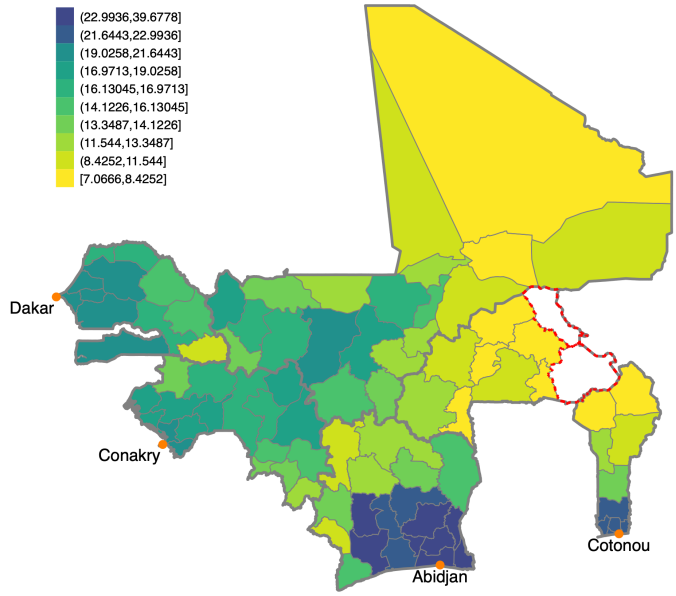
We now aim to provide insights into head tax management.

We first calculate an estimate of the number of taxpayers that the tax administration managed to reach in each district, as the total amount of tax revenue divided by the rate (i.e., $Collected_{ict}/Rate_{ict}$). As discussed above, this number closely reflects the expected tax base that guided district administrators during the collection phase, when asking local chiefs to implement the tax levy in their villages. As can be seen in Table 5 column (2), like military recruitment targets, this number of taxpayers only correlates one-to-one with population in 1925 (as enumerated by colonial authorities) and with year fixed effects. Of course, this is mechanically consistent with the principle of a head tax that was imposed to all teenage and adult individuals. The colonial administration just based both the number of young men to be drafted and the number individuals to be taxed on its coarse demographic count of each district. This also means that differences in average compliance between colonies (Figure 3) stem from the fact that our own population estimates differ from colonial enumerations. Within colonies, we could not identify any

robust correlate of district-level compliance (TCR_{ict}, see equation 2).

However, the colonial administration had another discretionary tool to manage the tax burden, which was the head tax rate. While the number of taxpayers was uniformly set, there was local variation in rates. Figure 10 illustrates the deciles of average head tax rates. These rates range from a minimum of 7 francs to a maximum of 40 francs (at 1937 prices), revealing significant spatial variation and inequalities in tax burden across the region.

Figure 10: Spatial Distribution of Mean Head Tax Rates (1919-1949)



Notes: Colors identify deciles of mean head tax rates (in francs of year 1937) between 1919 and 1949. Darkest colors correspond to upper deciles (higher rates). The two districts left blank are Dori and Fada, which belong to contemporary Burkina Faso, but were re-attached to the colony of Niger during the partition of Upper Volta (1932-1947). As such they are excluded from our analysis.

As can be seen in Table 1, the average head tax rate was 16 francs at 1937 prices. For AOF, Cogneau et al. (2021) estimate the average annual income per capita of the African poor (more than 90% of population) to lie around 400 francs from 1919 to 1949. 400 francs per capita translates into 650 francs per adult (15 year-old and above), so that 16 francs represented 9 days of adult average income. This figure was comparable in magnitude to the in-kind taxation corresponding to forced labour requirements (the sweat tax).

In contrast with military targets, colonial authorities modulated the tax rates according

to their perceptions of the districts' relative economic affluence, hence capacity to pay. Table 5 (column (3)) shows that district head tax rates indeed correlate positively with estimated population (as of year 1925), the presence of a railway line or of palm tree plantations (one of the main cash crops and exported commodities of the time, apart from groundnuts that were mainly cultivated along railway lines in Senegal). Within each colony, relative proximity to one of the four sea ports indicated on the map (Abidjan, Conakry, Cotonou, Dakar) also strongly correlates with the tax rate. In addition, the correlation with distance to port is quite heterogeneous, as can be seen visually from the map. It is the strongest in Dahomey and Ivory Coast, which are south-north oriented, lower in Guinea, French Sudan and Senegal which are west-east territories, and null in Upper Volta (see also Online Appendix Table A12). Poorer landlocked colonies were less taxed (Upper Volta and French Sudan), whereas coastal Guinea, Ivory Coast and Senegal were treated the same on average. Dahomey was very much split into two parts: the southern coastal area with palm tree plantations was heavily taxed, while the northern hinterland was imposed the lowest tax rates in the entire AOF. Within French Sudan, districts along the Niger river were also taxed more.[21]

Colony dummies, distance to sea port and year fixed effects combined explain 70% of the variance of (logged) head tax rates; other variables in Table 5 just add an additional 5%. District and year fixed effects together explain 88%, and this ratio climbs to 95% with colony-year fixed effects (not shown here), like in the case of military targets. Again, this leaves limited room for idiosyncratic time variations in tax rates at the district level.

We finally question whether the colonial authorities were able to fine-tune taxation according to changing local conditions over time.

Most of their decisions on taxation were rather uniform, like on conscription. During the Great Depression (1932-1935), as seen before (section 4.2), they resolved not to increase head tax rates further. This policy applied to almost all colonies and districts, irrespective

[21]For the few points in Huillery (2009) data where payments to chiefs were available, we also found no correlation between chiefs' average wage, or the share of the tax that chiefs could keep for themselves (*remise*), and the tax rate. None of the two variables correlate with compliance either, yet data are scarce and noisy.

Table 5: Determinants of Military Targets, Number of Taxpayers and Head Tax Rates

VARIABLES	(1) Log Target	(2) Log Taxpayers	(3) Log Head Tax Rate
Log. Pop. 1925	+0.953***	+1.025***	+0.093***
	(0.040)	(0.041)	(0.035)
Log. Land Area	-0.135***	-0.044	-0.018
	(0.045)	(0.055)	(0.032)
Railway	+0.049	0.044	+0.143***
	(0.058)	(0.036)	(0.047)
Groundnuts	+0.091	0.090	+0.049
	(0.090)	(0.058)	(0.073)
Palm trees	-0.087	-0.085	+0.249**
	(0.156)	(0.090)	(0.100)
Log. Distance to port	+0.059	+0.019	-0.215***
	(0.065)	(0.047)	(0.033)
Dahomey	-0.136	-0.044	-0.374***
	(0.109)	(0.078)	(0.084)
Upper Volta	+0.024	-0.109	-0.840***
	(0.100)	(0.081)	(0.082)
Ivory Coast	-0.062	+0.089	+0.055
	(0.106)	(0.060)	(0.089)
Guinea	-0.093	+0.095	-0.011
	(0.100)	(0.059)	(0.067)
Fr. Sudan	-0.027	-0.130	-0.164**
	(0.093)	(0.089)	(0.066)
Senegal	0	0	0
	(-)	(-)	(-)
Year FE	Yes	Yes	Yes
Observations	903	1,906	1,906
R-squared	0.843	0.896	0.750

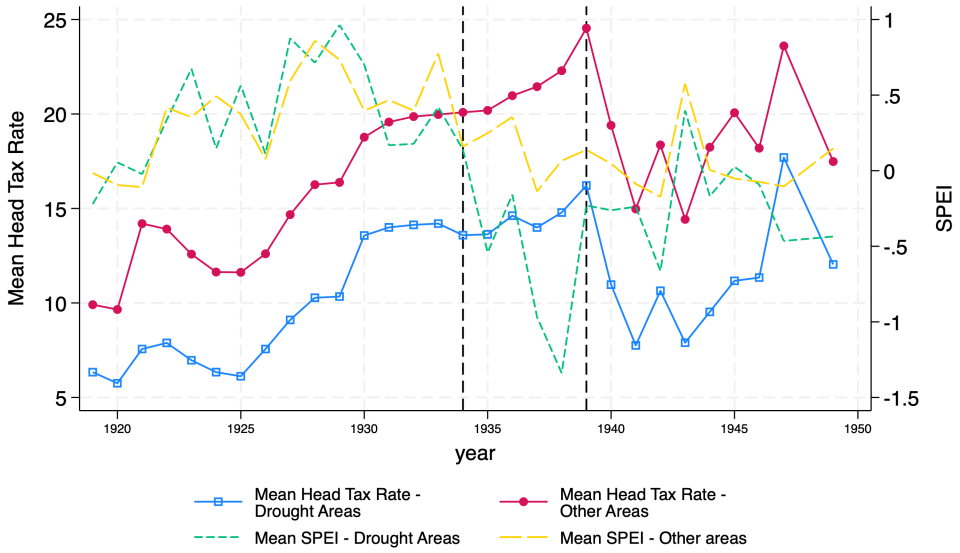
Notes: Target sample: districts for which all conscription variables are not missing. Head tax sample: districts for which both the head tax rate and the amount levied are not missing. Log Taxpayers = Logarithm of the amount collected divided by the tax rate ($Collected_{ict}/Rate_{ict}$). Pop. 1925 = Enumerated population in 1925. Railway = Equals 1 (else 0) if railway line going through the district. Groundnuts (resp. Palm trees) = Equals 1 (else 0) if district belongs to the top quartile of groundnut (resp. Palm kernel and palm oil) income per capita. Log. Distance to port = Logarithm of distance to the nearest sea port (Abidjan, Dakar, Conakry or Cotonou); the variable is centered on the logarithm of the mean of each colony, so that the coefficients of colony dummies correspond to average distance to port in the colony. Standard errors (in parentheses) are clustered at the level of districts (*cercles*): *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

of idiosyncratic local conditions. In 1937, under the left-wing government of the Popular Front in France, they adjusted upward the age liability threshold, to 14-year-old, in all colonies except Dahomey (which, possibly because of its propensity to protest and its lower compliance, had already benefited from an even higher threshold of 16-year-olds since 1926). However, this adjustment came with an increase in tax rates; in some cases, an additional head tax was just introduced to replace the sweat tax, i.e., the in-kind taxation corresponding to forced labour liabilities.

As seen before again, governors and administrators tended to limit the growth of tax rates in districts with already high rates, most likely in order to avoid conflict (see section 4.2). This slight mean reversion led to a slow convergence of tax rates across time (see Online Appendix Table A9). However, cash crop producing districts were wealthier to start with, as such were imposed higher tax rates all along the time period. These districts were severely affected by the sharp decline in export prices during the Depression. Yet, Online Appendix Figures A3 and A4 show that they were not treated differently. It should be noted that we could not identify any effect of cash crop price shocks on protests in the corresponding districts, which could explain why colonial authorities did not care to grant them tax rebates.

Poorer districts hit by a severe drought in 1937-1938 received no different treatment either. Figure 11 highlights the 13 districts where the Standardized Precipitation Evapotranspiration Index (SPEI) dropped below minus one in 1938. These districts had already been experiencing adverse weather conditions since 1935, and only began to recover by 1939. Being among the poorest regions, they had always faced lower head tax rates. However, the gap in average taxation between these districts and others remained constant over time. Similarly to the aforementioned cash crop price shocks, there was no significant response from the side of the colonial authorities towards the drought conditions. It is worth reiterating that we found no evidence of an effect of changes in SPEI on protests, which could again explain the apparent indifference of colonial authorities (see footnote 13).

Figure 11: Head Tax Rate and Drought Incidence



Notes: The graph plots mean head tax rates for two groups of districts: (i) the 13 districts (over 88) that display a Standard Precipitation Evapo-transpiration Index (SPEI) below -1 for the year 1938, meaning that a severe drought occurred (ii) all other districts. It also reports the evolution of mean SPEI for the two groups, on the right scale. Four of the 13 districts are in Northern Dahomey (Atacora, Borgou, Djougou, and Moyen-Niger), while the remaining nine are in French Sudan (Bandiagara, Gao, Goundam, Gourma, Macina, Mopti, Niafunke, San, and Tombouctou).

We conclude that when deciding about head tax, colonial authorities showed some care for the relative economic affluence of districts and for the general business climate, and some caution in tax rates increases in the fear of protests. However, they remained blind to more specific variations over time and did not fine-tune the setting of tax rates, either due to lack of attention or because they felt they were already doing enough to avoid conflicts.

6 Conclusion

We investigated the enforcement of two pillars of French colonial rule in West Africa, military conscription and head tax collection, using novel data at the district level between 1919 and 1949. We found that colonial authorities almost always met their military recruitment targets, despite low health conditions and frequent individual avoidance. We also estimated that collected tax revenues represented around 80% of tax liabilities, even

under the most conservative demographic scenario. We then analyzed the implementation of the blood and head taxes in more detail.

With regard to conscription, we showed that recruitment targets were low enough that they could be met by randomly drawing from the pool of (non-absentee) fit young men, in the great majority of cases. Targets fixed for each district were roughly proportional to local population densities, and showed no particular care for local socio-economic conditions. Conflicts related to military recruitment were rare after WWI, and resistance to conscription was mainly an individual matter (absenteeism at drafting boards).

With regard to taxation, the colonial administration granted some consideration to cross-sectional variations in wealth: tax rates were set higher in economically more affluent districts, such as those closer to sea ports. As tax increases could trigger significant tax-related conflicts, moderation applied to the districts bearing the heaviest taxing burdens. During the Great Depression, many tax-related conflicts burst out and compliance dropped accordingly; as a consequence, tax rates were kept stable almost everywhere until 1935. Despite these adjustments, the colonial administration largely remained uniform in its approach, much like its policies for conscription. In the 1930s, districts exporting cash crops whose prices had collapsed were not treated differentially, and the severe drought spell that hit certain districts did not trigger any tax rebate either.

On the whole, colonial states were quite effective in enforcing their rule and were not entirely blind to local conditions, yet they were not able, even if willing, to fine-tune their policies over time.

One aspect not fully explored in this paper is the extent to which colonial coercion depended on the cooperation of local chiefs, some originating from traditional dynasties and others appointed by colonial authorities. As independence approached, urban nationalists notably challenged the authority of these chiefs on such grounds. Further research is needed to examine how the structure and legitimacy of African elites evolved in the postcolonial era, offering valuable insights into the development of present-day state capacity in Africa (Acemoglu et al., 2014; Robinson, 2023).

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A Online Appendix

A.1 Military Sample

Early on in the second half of the nineteenth century, the *Tirailleurs Sénégalais* had constituted the army that conquered West Africa under the French command; many had been recruited from the pool of freed slaves (Echenberg, 1991). Then in peacetime, they became the main pillar of colonial order, aside from the indigenous police forces hired by the colonial administrations. In contrast with the latter, the whole cost of colonial military forces was taken in charge by the Ministry of Colonies in France, i.e., maintenance, equipment, and also the wages of French officers and Non-Commissioned Officers (Cogneau et al., 2021).[22] As of 1910, some 11,000 colonial soldiers belonged to regiments located in AOF, more than 80% being natives, and were complemented by 7,000 policemen and other members of security forces (Cogneau, 2023, p.168). Major rises in military recruitment were achieved for the conquest war of Morocco (1912), then for World War I, when 165,000 soldiers across the entire AOF were called, along with 570,000 other soldiers from the rest of the empire (Cogneau, 2023, p.187). At the time, local chiefs were directly asked to select additional recruits among their people, for a period limited to the conflicts.

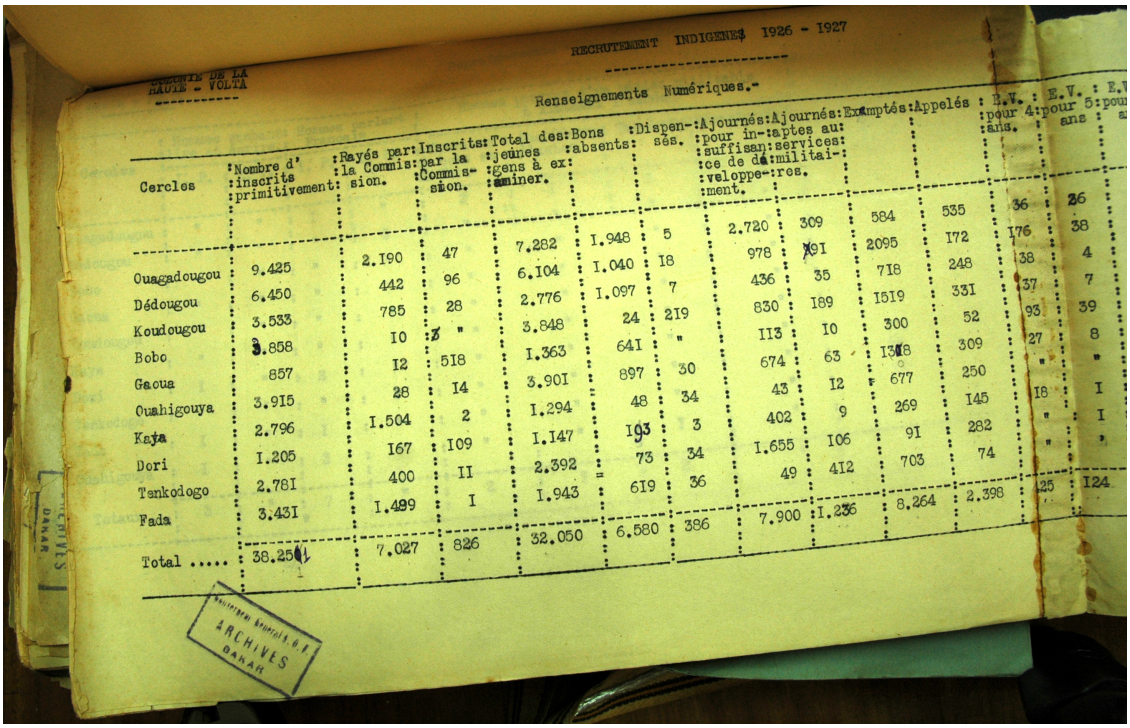
It was only after 1920 that a formal conscription system was put in place, in order to facilitate future levies. The military conscription took place in the form of a mobile drafting commission that moved from one district to another to carry out the recruitment procedure. Such a commission was usually composed of one French army officer as chairman, the district administrator, two clerks and one military physician. An example of the actual itinerary of a mobile drafting board in Ivory Coast can be seen in Figure A1.

[22] Usually officers refer to high-rank and non-commissioned officers refers to lower rank like sergeants.

Figure A1: Itinerary of Mobile Drafting Board in Ivory Coast

Military reports contain detailed information on the recruitment procedures of mobile drafting commissions. Specifically, they include information on the recruitment quota assigned to a given district, the total number of enumerated young males, absentees, fit individuals, actual recruits, volunteers and reservists. Figure A2 shows an example of a drafting table, for Upper Volta (Burkina Faso) in 1927.

Figure A2: Example of Mobile Drafting Board Tables - Upper Volta (Burkina Faso), 1927



RECRUTEMENT INDIGENES 1926 - 1927

CERCLE DE LA HAUTE - VOLTA

Renseignements Numériques.-

Cercles	Nombre d'inscrits primitivement	Rayés par la Commission.	Inscrits par la Commission.	Total des jeunes gens à examiner.	Bons absents.	Dispensés.	Ajournés pour insuffisance de développement.	Ajournés aptes au services militaires.	Exemptés	Appelés	E.V. pour 4 ans.	E.V. pour 5 ans	E.V.
Ouagadougou	9.425	2.190	47	7.282	1.948	5	2.720	309	584	535	36	26	
Dédougou	6.450	442	96	6.104	1.040	18	978	491	2095	172	176	38	
Koudougou	3.533	785	28	2.776	1.097	7	436	35	718	248	38	4	
Bobo	3.858	10	"	3.848	24	219	830	189	1519	331	37	7	
Gaoua	857	12	518	1.363	641	"	113	10	300	52	93	39	
Ouahigouya	3.915	28	14	3.901	897	30	674	63	1318	309	27	8	
Kaya	2.796	1.504	2	1.294	48	34	43	12	677	250	"	"	
Dori	1.205	167	109	1.147	103	3	402	9	269	145	18	1	
Tenkodogo	2.781	400	11	2.392	73	34	1.655	106	91	282	"	1	
Fada	3.431	1.499	1	1.943	619	36	49	412	703	74	"	"	
Total	38.254	7.027	826	32.050	6.580	386	7.900	1.236	8.264	2.398	425	124	

Based on these yearly conscription reports, we constructed an original district-year-level panel military dataset from 1919 until 1949. Due to the quality of archival data, some years of drafting commissions tables remain missing and the panel is rather unbalanced.

For instance, there is little or next-to-none detailed archival information on drafting commissions during WWII. The World War years (1938-1944) are dropped altogether in the end, also due to the fact that the normal peacetime recruitment strategies did not apply to the special wartime needs, such as mass mobilization of second-portion reservists and even different standards of enumeration and of physiological fitness. In the anticipation of war, a first wave of mobilization of reservists took place in 1938.

We also drop years before 1922 (1923 in Dahomey), as the formal conscription is still not in place, and year 1946 for Dahomey and Guinea when plagues caused disruptions in the drafting process.

Furthermore, not all information is available for all different sub-procedures of the recruitment process. This is very much the case for the assigned quota (target) compared

to the information for the rest of the recruitment process, as the target numbers usually appear on separate documents or pages, while the rest are usually organized within one table on the same page per colony/year.

At the end of the day, Table A1 shows the composition of the panel that we exploit, sorted by colony and year, indicating the number of district-year observations within each colony-year conscription table.

Table A1: Military Sample

Year	Dahomey	Upper-V.	Ivory C.	Guinea	Fr. Sudan	Senegal	Total
1923	0	8	0	0	12	10	30
1924	0	8	0	0	14	9	31
1925	8	8	0	0	14	10	40
1926	8	8	0	0	14	10	40
1927	8	8	17	18	14	10	75
1928	8	8	17	18	14	10	75
1929	8	8	17	0	14	10	57
1930	8	8	0	18	14	0	48
1931	0	8	0	18	14	10	50
1932	8	8	0	18	14	10	58
1933	0	1	0	18	14	10	43
1934	8	8	17	18	14	10	75
1935	8	8	17	17	14	10	74
1936	8	1	0	18	14	10	51
1937	8	1	0	18	14	10	51
1945	0	1	0	18	14	0	33
1946	0	8	17	0	14	10	49
1947	8	1	0	0	14	0	23
Total	96	109	102	197	250	149	903

Notes: Sample of districts for which all conscription variables are not missing. Between 1932 and 1947, Upper Volta was split in three parts which were allocated to Ivory Coast, French Sudan and Niger. In the years when no records are available for Ivory Coast, only one district (the one in French Sudan) has data. Due to changes in district boundaries across time (mergers or splits), a few districts in Dahomey, Ivory Coast, French Sudan and Senegal had to be merged to maintain, as much as possible, a balanced panel.

A.2 Taxation Sample

Huillery (2009) only recorded capitation data at three-year intervals, specifically only for the years ending with suffix 3, 6, 9. To get a more complete panel, we digitized head tax rates and collected amounts for each year between 1919 and 1945. For years 1946 and 1949, we retained Huillery's data.

Head tax rates were usually set at district (*cercle*). They were sometimes differentiated across sub-districts (*subdivision*) level, and even more rarely distinguished ethnic groups within a given sub-district. For instance, in 1938 in the district of Daloa (Ivory Coast) and in the sub-districts of Daloa, Issia and Vavoué, the Bete areas were taxed at a 25-franc rate, while other ethnic areas were taxed at 20 francs. The within-district variation in rates was usually limited. We estimated average tax rates at the district level using the best information we could find about the distribution of eligible population across sub-districts and ethnic groups; in most cases, we could use the distribution of prospective tax payers (*rôles primitifs*) across sub-districts and ethnic groups (hence assuming uniform compliance within each district).

In a few rare cases, like in some districts of Dahomey or Ivory Coast in the early years, the head tax rate could also be modulated according to gender and age. We assumed that adult men and women each made up 42.5% of total taxpayers, and children 10 to 16 year-old to make up the remaining 15%.

We believe these averaging procedures do not introduce large bias in the measurement of tax burden at the district level.

Indigenous migrants were sometimes distinguished (*population flottante*), and were imposed the highest rates, equal to the maximum rate in the colony, or even above in rare cases. The actual amount was seldom above 1% of total tax revenues in all colonies.

Europeans were also in general subject to higher head tax rates. The head tax levied on Europeans is usually distinguished from the indigenous part, and it never represents more than 1% of total head tax revenues. In Senegal, apart from the natives of the 'Four Communes' who had quasi-citizenship which we exclude from our analysis (see above), residents of other towns (*communes mixtes*, *escales*) were also treated separately, for the head tax and property tax they paid; most of taxpayers there were Europeans, and the total amount that was collected was never above 2% of colony's head tax totals.

At the end of the day, Table A2 shows the composition of the district-year panel that we

exploit, sorted by colony and year, with the number indicating the number of district-level observations available for each colony within a given year.

Table A2: Taxation Sample

Year	Dahomey	Upper-V.	Ivory C.	Guinea	Fr. Sudan	Senegal	Total
1919	11	8	0	18	20	11	68
1920	11	8	0	18	20	11	68
1921	11	8	0	18	19	11	67
1922	11	8	0	18	19	0	56
1923	11	0	0	18	20	12	61
1924	11	0	0	18	19	0	48
1925	11	0	18	18	20	11	78
1926	11	0	18	18	20	12	79
1927	11	0	18	18	20	12	79
1928	11	8	18	18	20	12	87
1929	11	0	18	18	20	10	77
1930	11	0	18	18	20	0	67
1931	11	0	18	18	20	10	77
1932	11	0	18	18	20	10	77
1933	11	8	18	18	20	10	85
1934	11	8	17	18	20	10	84
1935	11	8	17	18	20	10	84
1936	11	8	17	18	20	10	84
1937	11	8	15	18	14	6	72
1938	11	8	12	18	14	10	73
1939	11	8	12	18	20	10	79
1940	11	8	0	18	14	9	60
1941	11	8	0	0	14	0	33
1942	0	0	12	18	0	0	30
1943	0	0	0	18	20	0	38
1944	0	0	0	18	0	0	18
1945	0	0	0	13	0	0	13
1946	11	8	18	18	20	9	84
1947	0	0	0	13	0	0	13
1949	11	8	18	0	20	10	67
Total	275	128	300	494	493	216	1,906

Notes: Sample of districts for which both the head tax rates and the amount levied are known. Due to changes in district boundaries across time (mergers or splits), a few districts in Ivory Coast, French Sudan and Senegal had to be merged in the 1930s and early 1940s to maintain, as much as possible, a balanced panel.

A.3 A Demographic Model for French West Africa (1914-1960)

The demographic projections are anchored on the levels reached by three variables: total population in 1960, drawn from World Development Indicators (World Bank); crude birth rates and infant mortality rates for 1950 and 1960 drawn from Tabutin and Schoumaker (2004). The projections run from 1914 until 1960, yet we only use their results for our analysis period 1919-1949. Before 1960, we assume that international migration was negligible so that population growth is equal to the birth rate minus the death rate; indeed, migration flows from Upper Volta (present-day Burkina Faso) or French Sudan (Mali) to Côte d'Ivoire only turned important in the late 1950s, with the booms of coffee, cocoa and wood exports. In all projections, our estimates of population levels for 1950 are also close to the ones reported by Tabutin and Schoumaker (2004), except for Mali whose population is very much understated compared to World Development Indicators.

The projections are defined by the values taken by two exogenous variables in 1914: the natural growth rate and the infant mortality rate. The model assumes a stable age structure before 1914, i.e., all ages growing at a constant rate. Then, in each year between 1914 and 1960, new births and new deaths between age 0 and age 79 are computed from the crude birth rate and the mortality quotients at each age (${}_1q_a$). The structure of mortality quotients after 1 year-old (${}_1q_2/{}_1q_1$, ... until ${}_1q_{79}/{}_1q_1$, with ${}_1q_{80}$=1) is fixed and imported from the estimates of the mortality quotients for the US blacks in 1900, by Haines (1994); infant mortality in this population was estimated at 170‰, i.e., a level comparable to West Africa's average for 1960. Across time, all mortality quotients are assumed to vary proportionally to infant mortality (${}_1q_0$). Two parameters are then computed for the demographic projection to fit with the initial natural growth rate (given the stable population assumption) and with total population in 1960: (i) the initial crude birth rate (or the initial death rate, given that initial natural growth rate is fixed); (ii) the ratio of infant mortality ${}_1q_0$ to ${}_1q_1$ (or any other mortality quotient, as their structure is assumed to be fixed).

In the first scenario, for each colony, the initial natural growth rate for 1914 is assumed to be already high at 0.75% per annum. Infant mortality is assumed to decline linearly by only 10% between 1914 and 1950 (and then, mortality quotients ${}_1q_a$ at each age a as well). The crude birth rate is also assumed to linearly decline from its (endogenous) level for 1914 to the (observed) level for 1950. The limited decline of mortality implies that the birth rate must have increased by 24.5% until 1950; and fertility even more, given the decrease of the share of women 15-49 year-old in total population. Increases in fertility during the colonial period and until the late 1970s seem to be credible features of African demographics (Walters, 2021). If we assumed a larger decline in mortality, then the fertility increase would be lower, although this would bring little change to the number of eligible individuals. Between 1920 and 1950, for the whole region, population grows at an average annual rate of 1.49%. This figure is close to the one (1.51%) estimated by Frankema and Jerven (2014), yet population levels are higher, based on World Bank figures for 1960, especially for Mali. Hence, for the measurement of the tax base and of tax compliance, even this upper bound scenario is more conservative than Frankema and Jerven (2014) estimates (which anyway only provide population totals and not age pyramids).

In the second scenario, for each colony, the initial natural growth rate for 1914 is assumed to be at 0.25% per annum only. Changes in mortality and in fertility are also assumed to start as late as in 1935, so that population growth stays constant at 0.25% between 1920 and 1935. Between 1935 and 1950, infant mortality then drops by 20% and the crude birth rate increases by 43%. Again, we could assume a larger drop of mortality and a smaller increase in fertility, but this would bring little change. Between 1920 and 1950, for the whole region, population only grows by 0.71% annually. The number of eligible taxpayers even decreases a bit. The population level in 1920 is 38% higher than in Frankema and Jerven (2014).

We want to avoid over-estimating tax compliance through under-estimating eligible populations. In this regard, the second scenario provides the most conservative lower bound for compliance, as both total population and the share of eligible individuals in total

population are high. It is hard to think of an even more conservative lower bound, as a population growth rate as low as 0.25% in 1914 is already a bold assumption. Furthermore, according to the data compiled by Tabutin and Schoumaker (2004), for the decade between 1950-54 and 1960-64, the maximum decrease of the infant mortality rate was of 15% (in Côte d'Ivoire and Upper Volta). It is unlikely that health improvements were more rapid between 1935 and 1950, compared to the late colonial period 1950-1960.

Table A3 shows the aggregate results of our two demographic projections.

Table A3: Aggregate Results of the Two Demographic Projections

	1920	1930	1940	1950	1920/1950
Scenario 1: upper bound for tax compliance					
Infant mortality (‰)	229	223	217	210	-8.3%
Crude birth rate (‰)	42	45	48	52	+24.5%
Population (million)	11.9	13.3	15.4	18.5	+1.49% p.a.
Under 15-year-old (%)	36.5	38.5	40.8	43.1	+6.6 p.p.
Men 20 year-old (%)	0.94	0.91	0.91	0.93	-0.01 p.p.
eligible to head tax (million)	9.3	9.8	9.4	10.7	+0.48% p.a.
Scenario 2: lower bound for tax compliance					
Infant mortality (‰)	265	265	247	211	-20.1%
Crude birth rate (‰)	37	37	41	52	+41.8%
Population (million)	15.0	15.4	16.0	18.5	+0.70% p.a.
Under 15-year-old (%)	32.9	32.9	33.7	39.5	+6.6 p.p.
Men 20 year-old (%)	0.93	0.93	0.91	0.82	-0.11 p.p.
eligible to head tax (million)	12.1	12.0	10.8	11.4	-0.22% p.a.
Frankema and Jerven (2014)					
Population (million)	10.8	12.5	14.3	17.0	+1.51% p.a.

The demographic model provides us with conservative estimates of the total population of eligible individuals in each colony. This is sufficient to compute colony-level average compliance (see footnote 7 in main text).

In order to compute compliance at the district level, we need to distribute this population across districts. Huillery (2009) provides us with coarse official enumerations of total population for each district in the year 1925. These enumerations give colony totals that are lower than our most conservative (lower bound) simulation, by 32% on average, and

by 12% (Upper Volta) to 88% (Dahomey).[23] We disregard these totals and only use the share of each district to distribute our colony-level demographic estimates of the tax base, under the two assumptions that (i) the proportional lack of coverage of colonial enumerations is the same across districts and that (ii) districts do not deviate too much from the colony average in terms of age structure. Yet we may worry that some districts grew more than others between 1925 and 1950. Even if long-distance migration between colonies was still limited before 1950, coastal and/or more urbanized districts, districts connected to railway and/or producing a significant quantity of cash crop should have attracted short-distance migrants within each colony. As more affluent districts also displayed higher capitation rates (see below), underestimating these districts' weight may bias upward our estimates of tax compliance. We then make use of another colonial enumeration for the year 1956. For example, the population share of the district of the capital city of Ivory Coast (*Lagunes*) grows from 4.4% to 8.3% between 1925 and 1956. We linearly interpolated the district population weights between 1925 and 1956; at the end of the day, this sophistication does not make a big difference for the evolution of compliance.

A.4 Conflict Data

Huillery (2011) collected and constructed data on conflicts, from the so-called 'political reports' written by governors of colonies. Her data distinguishes conflicts linked to military conscription and tax-related conflicts from other types of conflicts (including for example land disputes). The data collection sampled the years ending in digits of 3, 6, 9 from 1919 till 1949 in our period of interest, which implies a small sample size for analysis, and makes that conflict duration cannot be measured. Furthermore, within each one of these conflict categories, the initiating actor can be either chiefs or colonial subjects; the second case is far more frequent, this reflecting in particular the fact that chiefs were usually cooperating with colonial authorities. In addition, another layer denotes whether the conflict episode was directed against the colonial authorities, or was

[23] Except for Senegal and Dahomey for which they dramatically underestimate total population, they are quite close to our less conservative scenario, as well as to estimates from Frankema and Jerven (2014).

an internal conflict among the colonized; here, the first case is far more frequent. We did not choose to consider these distinctions, because a conflict about taxation that would oppose chiefs and subjects should still involve colonial authorities in the background. The data also allow for multiple conflicts in the same district in a given year, yet this is a very unfrequent occurence that does not necessarily capture intensity. Individual conflicts are also graded as either basic, significant, or 'threat to colonial order'. Only a few conflicts are just basic and we retain conflicts that were at least significant. We also find that the distinction between significant and threatening is not relevant.

Table A4: Conflict and Taxation sample

Year	Dahomey	Upper-V.	Ivory C.	Guinea	Fr. Sudan	Senegal	Total
1919	11	8	19	17	20	12	87
1923	11	8	19	17	20	12	87
1926	11	8	19	17	20	12	87
1929	11	8	19	17	20	12	87
1933	11	8	19	17	20	12	87
1936	11	8	19	17	20	12	87
1939	11	8	19	17	20	12	87
1943	11	8	19	17	20	12	87
1946	11	8	19	17	20	12	87
1949	11	8	19	17	20	12	87
Total	110	80	190	170	200	120	870
Total w/o 1919	99	72	133	136	180	108	728

Notes: Sample of districts for which both the conflict status and the head tax rate are known. When analyzing the relation between tax rates variations and conflict onset, year 1919 drops due to first-differencing.

A.5 Weather Data

In order to measure weather shocks during the colonial years, we gathered historical data of a particular drought index, namely the Standardized Precipitation Evapotranspiration Index (SPEI for short in the following) constructed by Vicente-Serrano et al. (2010). Compared to other drought indices, this measure takes into account both temperature and rainfall intensities in measuring the drought likelihood of a given area, and has been rather widely exploited in applied social sciences research in recent years (Harari & Ferrara, 2018; Webb, 2024).

The SPEI values are calculated at monthly intervals at the rather dis-aggregate geographical grid level (0.5 degree * 0.5 degree[24]). It's a standardized index with mean value zero, and variance one with respect to the entire long-term sample (1900-2018). In addition, it's also monotonically decreasing in terms of drought likelihood, such that a positive value is associated with improved weather conditions.

We further project these grid-level SPEI values onto the entire geographical area of the colonial districts at their 1925 boundaries, in order to obtain annual district-level averages. Finally, given that the SPEI indices constructed by Vicente-Serrano et al. (2010) were based on the rainfall and temperature data gathered by Harris et al. (2018), we also gather weather data from an independent source (Matsuura & Willmott, 2018) to create self-constructed SPEI values for additional robustness checks.

A.6 Cash Crops Data

For cash crop export price data, we extracted export unit values from trade data of French colonies (Senegal for groundnuts, Dahomey for palm oil and palm kernels). For missing years we complemented data by using the cash crop export price series from the African Commodity Trade Database (ACTD) (Frankema et al., 2018).

For cash crop production data, we mainly rely on the archival records compiled by Rossignol et al. (1944), where the authors noted down the export production quantity (in tons) of major cash crops in all AOF colonies at the district level, for the year of 1943. This record remains the earliest and most comprehensive source on cash crop production values for French West Africa that we could find. We digitized the export production of main cash crops in AOF, such as groundnuts, cocoa, coffee, palm oil, palm kernel and cotton, at the district level. Given the event of redistricting in AOF across time, we also scale the export production figures back to the 1925 colonial district boundaries.

We finally only use groundnut, palm oil and palm kernel output data, as these three commodities were by far the main exports of French West Africa until 1950. The major

[24]One grid corresponds to a squared area with side length of around 55 kilometers.

takeoff of cocoa and coffee cultivation in Ivory Coast, for example, only began in the 1950s, after our period of interest. Furthermore, most of the expansion of groundnut and of palm tree production was achieved in the 1920s, so that we expect our 1943 data to be able to identify quite well districts that were specialized in these commodities, even for earlier years.

We define districts highly specialized in groundnut as districts belonging to the top quartile of groundnut output per capita (with population from colonial enumerations of 1925): nine districts in Senegal and two districts in French Sudan. Likewise we define districts highly specialized in palm trees as districts belonging to the top quartile of palm oil and palm kernel total income per capita, computed with 1925 export prices and 1925 population: five districts in Dahomey and two districts in Ivory Coast.

A.7 Additional Results

Table A5: Impact of Tax rate (in Log) on Conflict Incidence (Logit Models)

	(1) Tax-C.	(2) Tax-C.	(3) Other.-C.
All-population terciles:			
ΔL. Tax Rate 2nd terc.	2.24*	0.31	1.42
	(0.96)	(0.26)	(0.42)
ΔL. Tax Rate 3rd terc.	3.26***	2.63**	1.20
	(1.31)	(1.22)	(0.31)
Within-year terciles:			
ΔL. Tax Rate 2nd terc.	1.45	0.47	1.58*
	(0.58)	(0.33)	(0.40)
ΔL. Tax Rate 3rd terc.	2.50**	2.79**	0.95
	(0.93)	(1.40)	(0.26)
Within colony-year terciles:			
ΔL. Tax Rate 2nd terc.	0.85	1.21	0.61
	(0.29)	(0.68)	(0.20)
ΔL. Tax Rate 3rd terc.	1.03	2.32*	1.06
	(0.35)	(1.13)	(0.24)
Observations	663	381	381

Notes: Odds-ratios estimated using the logistic model. Tax.-C. = Equals 1 (else 0) if at least one significant tax-related conflict occurred. Other-C. = At least one other significant conflict, not directly linked to taxation, occurred. ΔL. Tax Rate 2nd (resp. 3rd) terc. = district-year belongs to the second (resp. third) tercile of the distribution of the change in logged tax rates ($t/t-3$ or $t/t-4$). In the middle (resp. bottom) panels, terciles are year-specific (resp. colony-year specific). Standard errors are clustered at the colonial district level. p-values for *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Impact of Tax Rate (in Level) on Conflict Incidence (Logit Models)

	(1) Tax-C.	(2) Tax-C.	(3) Other.-C.
All-population terciles:			
Δ Tax Rate 2nd terc.	1.83	0.58	1.16
	(0.84)	(0.35)	(0.35)
Δ Tax Rate 3rd terc.	4.59***	2.43*	1.61*
	(1.90)	(1.18)	(0.42)
Within-year terciles:			
Δ Tax Rate 2nd terc.	1.43	0.92	1.09
	(0.56)	(0.53)	(0.26)
Δ Tax Rate 3rd terc.	2.28**	2.11	1.54
	(0.83)	(1.09)	(0.43)
Within colony-year terciles:			
Δ Tax Rate 2nd terc.	0.82	0.99	0.86
	(0.27)	(0.56)	(0.21)
Δ Tax Rate 3rd terc.	1.08	2.06	1.25
	(0.38)	(0.93)	(0.31)
Observations	663	381	381

Notes: Odds-ratios estimated using the logistic model. Tax.-C. = Equals 1 (else 0) if at least one significant tax-related conflict occurred. Other-C. = At least one other significant conflict, not directly linked to taxation, occurred. Δ Tax Rate 2nd (resp. 3rd) terc. = district-year belongs to the second (resp. third) tercile of the distribution of the change in tax rates ($t/t-3$ or $t/t-4$) in 1937 francs. In the middle (resp. bottom) panels, terciles are year-specific (resp. colony-year specific). Standard errors are clustered at the colonial district level. p-values for *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Logged Tax Rate Variations and Conflict Incidence: Heterogeneity Analysis

	(1) Tax-C.	(2) Tax-C.	(3) Other-C.
No time fixed effects:			
ΔL. Tax Rate - Close to ports	+0.148***	+0.205***	+0.242*
	(0.041)	(0.071)	(0.124)
ΔL. Tax Rate - Far from ports	+0.049**	+0.030	-0.043
	(0.019)	(0.025)	(0.089)
p-value equality	0.031	0.023	0.067
Year fixed effects:			
ΔL. Tax Rate - Close to ports	+0.138**	+0.224**	+0.270*
	(0.062)	(0.089)	(0.155)
ΔL. Tax Rate - Far from ports	+0.084**	+0.115**	-0.032
	(0.041)	(0.053)	(0.127)
p-value equality	0.247	0.094	0.048
Colony-year fixed effects:			
ΔL. Tax Rate - Close to ports	+0.120*	+0.223**	+0.140
	(0.067)	(0.102)	(0.192)
ΔL. Tax Rate - Far from ports	+0.045	+0.112	-0.099
	(0.070)	(0.079)	(0.231)
p-value equality	0.240	0.176	0.364
District FE	Yes	Yes	Yes
Observations	663	377	377

Notes: Linear probability model estimated by ordinary least squares, with no year fixed effects (top panel), year fixed effects (middle panel), or colony-year fixed effects (bottom panel). District fixed-effects increase precision without altering point estimates. Column (1): districts where no tax-related conflict was reported in $t-3$ (or $t-4$). Columns (2) and (3): districts where no conflict of any kind was reported in $t-3$ (or $t-4$). Tax.-C. = Equals 1 (else 0) if at least one significant tax-related conflict occurred in t. Other-C. = At least one other significant conflict, not directly linked to taxation, occurred in t. ΔL. Tax Rate = Change in the logarithm of the head tax rate between $t-3$ (or $t-4$) and t. Close to (resp. Far from) ports = district belongs to the top (resp. bottom) half of distance to the four main sea ports (Abidjan, Conakry, Cotonou, Dakar). Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Tax Rate Variations and Conflict Incidence: Heterogeneity Analysis

	(1) Tax-C.	(2) Tax-C.	(3) Other-C.
No time fixed effects:			
Δ Tax Rate - Close to ports	+0.702***	+0.920***	+0.642
	(0.203)	(0.349)	(0.611)
Δ Tax Rate - Far from ports	+0.610***	+0.417	-0.013
	(0.202)	(0.301)	(0.866)
p-value equality	0.748	0.279	0.538
Year fixed effects:			
Δ Tax Rate - Close to ports	+0.644**	+0.978**	+0.735
	(0.286)	(0.403)	(0.687)
Δ Tax Rate - Far from ports	+0.722*	+0.972*	+0.054
	(0.367)	(0.515)	(1.137)
p-value equality	0.796	0.989	0.558
Colony-year fixed effects:			
Δ Tax Rate - Close to ports	+0.515	+0.919**	-0.041
	(0.313)	(0.459)	(0.710)
Δ Tax Rate - Far from ports	+0.178	+0.661	-1.834
	(0.568)	(0.718)	(1.923)
p-value equality	0.489	0.661	0.341
District FE	Yes	Yes	Yes
Observations	663	377	377

Notes: Linear probability model estimated by ordinary least squares, with no year fixed effects (top panel), year fixed effects (middle panel), or colony-year fixed effects (bottom panel). District fixed-effects increase precision without altering point estimates. Column (1): districts where no tax-related conflict was reported in $t-3$ (or $t-4$). Columns (2) and (3): districts where no conflict of any kind was reported in $t-3$ (or $t-4$). Tax.-C. = Equals 1 (else 0) if at least one significant tax-related conflict occurred in t. Other-C. = At least one other significant conflict, not directly linked to taxation, occurred in t. Δ Tax Rate = Change in the level of the head tax rate (in '00 francs 1937) between $t-3$ (or $t-4$) and t. Close to (resp. Far from) ports = district belongs to the top (resp. bottom) half of distance to the four main sea ports (Abidjan, Conakry, Cotonou, Dakar). Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Mean Reversion of Tax Rates

	(1)	(2)	(3)
	ΔLog.Tax Rate $t/t-1$		
Log. Tax Rate $t-1$	-0.061***	-0.032***	-0.023***
	(0.009)	(0.007)	(0.006)
Observations	1,557	1,557	1,557
	ΔLog.Tax Rate $t/t-5$		
Log. Tax Rate $t-5$	-0.215***	-0.107***	-0.074***
	(0.019)	(0.014)	(0.012)
Observations	1,048	1,048	1,048
Year FE	No	Yes	Yes
Colony-Year FE	No	No	Yes

Notes: Ordinary least squares regressions with either no year fixed effects (1), year fixed effects (2), or colony-year fixed effects (3). Dependent variable is the annual variation in the logarithm of the tax rate. *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Impact of Target on Stages of Drafting Board (OLS with Colony-Year FE)

	(1) Δ Recapt.	(2) Δ Enum.	(3) Δ Pres.	(4) Δ Fit	(5) Δ Vol.	(6) Δ Consc.
Δ Target ($\geqslant 0$)	+0.0549	+0.2137	+0.6046	-0.9552	+0.0519	+0.8830***
	(0.0393)	(0.9942)	(0.7684)	(0.9827)	(0.0684)	(0.0690)
Δ Target ($\leqslant 0$)	+0.1315***	+1.4384	+0.9683	+1.4630**	+0.2207***	+0.6148***
	(0.0353)	(1.4384)	(0.9683)	(1.4630)	(0.0777)	(0.0761)
Colony-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	731	731	731	731	731	731
R-squared	0.299	0.100	0.124	0.115	0.331	0.622

Notes: Ordinary least squares estimation of Equation 6, with colony-year fixed effects v_{ct} included (5 singleton observations are dropped). Δ indicates the change of the variable of interest between year t and year $t-1$, or year $t-2$ if $t-1$ is missing. Δ Target ($\geqslant 0$) (resp. $\leqslant 0$) = Positive (resp. negative) changes of the target. Recapt.= Recaptured absentee. Enum. = Enumerated. Pres. = Present. Fit = Declared fit for military service. Vol. = Volunteer. Consc. = Conscripts, first portion of the conscription lottery. Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Impact of Target on Recruitment Decisions (OLS with Colony-Year FE)

	(1) Enumeration ΔL.Enum.R.	(2) Absenteeism ΔL.Pres.R.	(3) Fitness ΔL.Fit.R.	(4) Volunteers ΔL.Vol.R.	(5) Lottery ΔL.Lott.R.
ΔL. Target ($\geqslant 0$)	+0.1162	+0.0592	+0.0228	+0.7588	+1.2057***
	(0.1326)	(0.0412)	(0.1935)	(0.5266)	(0.2321)
			p-value ΔL. Target ($\geqslant 0$) =1 :		*0.3784*
ΔL. Target ($\leqslant 0$)	+0.6575***	-0.0758*	+0.0984	+0.5225	+0.3070
	(0.1535)	(0.0420)	(0.1393)	(0.6155)	(0.2656)
Colony-year FE	Yes	Yes	Yes	Yes	Yes
Observations	679	679	679	504	679
R-squared	0.171	0.128	0.239	0.412	0.221

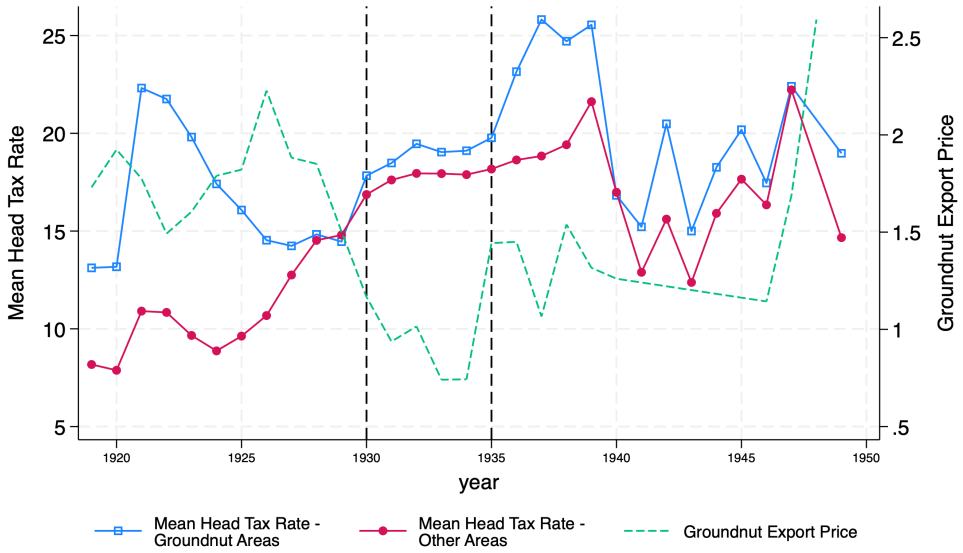
Notes: Ordinary least squares estimation, with colony-year fixed effects v_{ct} included (5 singleton observations are dropped). ΔL. indicates the change in the logarithm of the variable of interest between year t and year $t-1$, or year $t-2$ if year $t-1$ is missing. Enum.R. = ratio of enumerated young men to our estimate of 20-year-old male population (mean demographic scenario). Pres.R. = ratio of examined (present) to enumerated. Fit.R. = ratio of fit men to examined. Vol.R. = ratio of volunteers to fit. Lott.R. = ratio of conscripted (first portion) to fit men minus volunteers (lottery rate). Standard errors are clustered at the colonial district level. Standard errors are clustered at the colonial district level. *** p<0.01, ** p<0.05, * p<0.1.

Table A12: Cross-sectional Determinants of Military Targets and Head Tax Rates

	(1)	(2)
VARIABLES	Log Target	Log Head Tax Rate
Log Pop. 1925	+0.967***	+0.102***
	(0.043)	(0.031)
Log Surf. Area	-0.112***	-0.025
	(0.029)	(0.027)
Railway	+0.050	+0.148***
	(0.046)	(0.044)
Groundnuts	+0.029	+0.030
	(0.093)	(0.057)
Palm trees	-0.011	+0.255**
	(0.192)	(0.123)
Dahomey	-0.180*	-0.392***
	(0.107)	(0.079)
× Log. dist. port	+0.141	-0.185***
	(0.092)	(0.067)
Upper Volta	-0.053	-0.877***
	(0.090)	(0.066)
× Log. dist. port	+0.396*	-0.070
	(0.236)	(0.297)
Ivory Coast	-0.176*	-0.007
	(0.093)	(0.073)
× Log. dist. port	-0.099***	-0.340***
	(0.035)	(0.081)
Guinea	-0.116	-0.021
	(0.089)	(0.050)
× Log. dist. port	+0.178***	-0.114***
	(0.056)	(0.040)
Fr. Sudan	-0.128	-0.200***
	(0.084)	(0.056)
× Log. dist. port	-0.422***	-0.462***
	(0.134)	(0.083)
Senegal	0	0
	(-)	(-)
× Log. dist. port	+0.185*	-0.083
	(0.096)	(0.072)
Year FE	Yes	Yes
Observations	903	1,906
R-squared	0.860	0.774

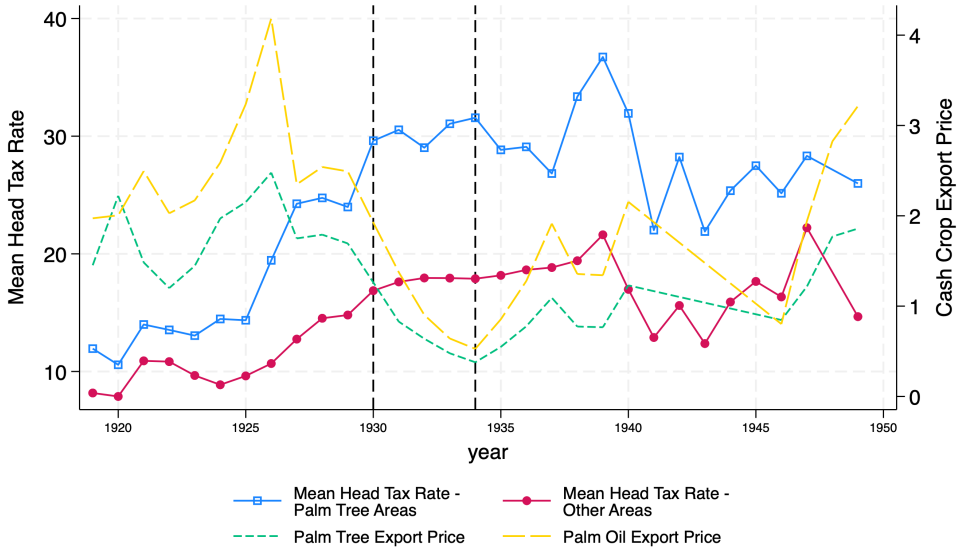
Notes: See Table 5. The effect of distance to nearest port is here specific to each colony. Standard errors (in parentheses) are clustered at the level of districts (*cercles*): *** p<0.01, ** p<0.05, * p<0.1.

Figure A3: Head Tax Rate and Groundnut Areas



Notes: The graph plots mean head tax rates for two types of districts: (i) the ones that belong to the top quartile of groundnut income per capita (nine districts in Senegal, and two districts in French Sudan / Mali), (ii) all other districts. It also reports the evolution of unshelled groundnut export prices, in 1937 francs per kilogram (right scale).

Figure A4: Head Tax Rate and Palm Oil Areas



Notes: The graph plots mean head tax rates for two types of districts: (i) the ones that belong to the top quartile of palm oil and palm tree kernel income per capita (five districts in Dahomey / Benin, and two districts in Ivory Coast), (ii) all other districts. It also reports the evolution of palm tree kernels and of palm oil export prices, in 1937 francs per kilogram (right scale).