AFRICAN ECONOMIC HISTORY WORKING PAPER SERIES

No. 11/2013

Endogenous Colonial Institutions

Lessons from Fiscal Capacity Building in British and French Africa, 1880-1940

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ISBN 978-91-981477-0-4

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The African Economic History Network is funded by Riksbankens Jubileumsfond, Sweden

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Lessons from Fiscal Capacity Building in British and French Africa, c. 1880-1940*

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Abstract

Given difficult to access pre-colonial forms of surplus extraction, African colonial governments faced severe constraints to raise revenue for incipient colonial state formation. This paper compares the ways in which the British and the French dealt with this challenge in a quantitative framework. We exploit colonial government budget accounts to construct PPP-adjusted comparisons of per capita government revenue by source. A comparison of fiscal capacity building shows that pragmatic responses to varying local economic, political and demographic conditions can easily be mistaken for specific metropolitan blueprints of colonial governance and that under comparable local circumstances the French and British operated in remarkably similar ways.

Keywords: Fiscal Policy, Africa, Colonial Institutions

JEL Codes: E62, H11, H20, N25, N27, O10

* We are grateful to Daron Acemoglu, Julius Agbor, Ralph Austen, Rachel Jean Baptiste, Anne Booth, Stephen Broadberry, Leigh Gardner, Regina Grafe, Patrick Manning, Joel Mokyr, Alexander Moradi, Claudia Rei, Yannay Spitzer, Hendrik Spruyt and the participants at the XVIth World Economic History Congress at Stellenbosch University, the workshop "The New Institutional Economics and Divergence in the Developing World" at Lund University, the Economic History seminar, the Chabraja Center for Historical Studies conference, and the Program of African Studies affiliates seminar and the Comparative Historical Social Sciences workshop at Northwestern University, the African Economic History Network Meeting at Simon Frasier University in Vancouver, the 7th World Congress of Cliometrics at Hawaii University, and the Economic History Association annual meeting for their comments on previous drafts of this paper and broader research project it builds upon. We are grateful for the financial support of the Program of African Studies and the Buffett Center for International Comparative Studies at Northwestern University, the Economic History Association and the European Research Council under the European Community's Seventh Framework Programme (ERC Grant Agreement n° 313114) as part of the project *Is Poverty Destiny? A New Empirical Foundation for Long-Term African Welfare Analysis*.

1. Introduction

There is a vast cross-disciplinary literature in history, economics and political science that aims to understand the role of so-called 'colonial legacies' in long-term development. To reach shared conclusions this literature faces two methodological challenges. First, the absence of a counterfactual makes it hard to know the precise impact of past colonial interventions on present-day outcomes: how a society *would have fared* without colonial intervention remains unobserved. Second, it appears extremely complicated to disentangle the long-term development effects of colonial interventions from the long-term impact of pre-colonial histories, local endowment structures and indigenous social, political and economic agency. Indeed, colonial policies, including fiscal policies, were shaped by the *interaction* between metropolitan imperial agendas on the one hand and local conditions and responses setting the constraints to these agendas on the other hand.

The purpose of this study is to better understand the dynamics of this interaction. By comparing fiscal capacity building efforts in British and French Africa from c. 1880 to 1940 we aim to shed light on a long debated question: to which extent can one detect a distinctively 'French' and 'British' approach to colonial state formation in Africa? Fiscal development offers an excellent lens to study comparative processes of colonial state formation. Loans and aid from the metropolitan government helped to finance the colonial state building effort (Accominotti et al. 2011), but these were limited in size, especially before 1940, and certainly meant to be temporary. Both the French and the British strove to make their colonies fiscally independent as quickly as possible to limit the burden of Empire-building on domestic taxpayers. The pace of colonial state expansion, therefore, depended critically on the development of a local tax base.

There were generally high constraints to raising revenue in sub-Saharan Africa (Africa hereafter). Colonial state boundaries usually did not align with pre-colonial political boundaries and included a patchwork of local systems of surplus production and extraction. Revenues from trade were relatively small compared to other world regions and registered land ownership, a precondition for taxing subsistence farm output (the dominant form of production), was virtually absent (Young 1994, Herbst 2000, Cooper 2002). Moreover, pre-colonial forms of taxation were often based on indigenous slavery, a source of economic extraction which colonial powers in the post-abolition era could not directly tap into, although they did turn a blind eye to its practices to support export sector growth (Austin 2005). Finally, the lion-share of pre-colonial surplus extraction was in-kind, while new-born colonial governments needed monetary revenues to pay the salaries of an expanding administrative staff, which generally comprised between half and two-thirds of annual government budgets before 1940 (Frankema 2011, Gardner 2012).

Comparative accounts of British and French colonial rule in Africa have largely focused on observable differences in institutional design, such as the establishment of systems of indirect rule and common law in the British dependencies as opposed to direct rule and civil law in the French dependencies (Bertocchi and Canova 2002, La Porta et al. 1999, Lange 2004, Grier 1999). Others have contrasted liberal British policies regarding missionary schooling to restrictive systems of state education in French dependencies (White 1996, Brown 2000, Cogneau 2003, Bolt and Bezemer 2009, Callego and Woodberry 2010, Cogneau and Moradi 2013). Emphasizing 'metropolitan blueprints' of colonial rule has a long tradition indeed (Hailey 1938, Sutton 1965, Crowder 1970, Gifford and Weiskel 1971, Fergusson 2002).

Yet, when it comes to the fiscal underpinnings of African colonial states we know surprisingly little about the comparative aspects of 'French' and 'British' approaches.[1] Given the vital importance of taxation for African colonial state development, it would be very valuable to further explore this topic and there are comparatively good historical sources to support such an endeavor. This study is the first to our knowledge that exploits historical records of colonial state finances for a *systematic comparison* of taxation in British and French Africa. Volatile pound-franc exchange rates during the interwar era complicate cross-imperial comparisons of revenue, but we tackle the currency conversion problem by constructing government purchasing power parities (PPP) based on the relative wage and salary costs of different types of government staff. We also use the wage and salary data to create series of real government revenue.

[1] Mkandawire (2010) compares post-colonial African tax systems from a 'colonial legacies' lens, identifying different types of colonial economies as the root cause, but he does not find a specific impact of metropolitan identity.

We document four stylized facts of fiscal capacity building: 1) the cross-colony variation in per capita state revenue was much larger in French Africa than in British Africa; 2) the first order determinant for per capita revenue levels, however, was between coastal and landlocked colonies, not between British and French colonies; 3) there was an initial lead in revenue raising ability in British Africa, but the French colonies rapidly caught up after WWI; and 4) there was convergence in the source composition of tax revenue both *within* and *across* the French and British African colonies in the period under consideration.

We use these stylized facts to scrutinize three oft-cited ideas about British and French colonial rule in Africa: 1) the idea that French rule was more repressive then British rule in terms of revenue extraction and maintaining social order; 2) the idea that the British managed to select territories in Africa that were commercially more viable than others; and 3) the idea that the French organized their administrations in federal structures to enhance political and cultural *assimilation*. We argue that these ideas can be connected through a fiscal capacity lens: French rule was more repressive because of the constraints posed by commercially less viable territories and the creation of large federations can be considered as a political necessity to integrate richer coastal territories with vast hinterland areas through fiscal redistribution. High repression and federal redistribution can explain why French colonies caught up in terms of fiscal capacity building with the 'richer' British colonies.

We proceed by discussing the concept of 'endogenous colonial institutions' in the context of the colonial legacies literature in section 2. In section 3 we present a quantitative analysis of comparative per capita state revenues and in section 4 we analyze its source composition. In section 5 we further elaborate our argument by looking into the different ways in which the French and the British used forced labor as an alternative to raising monetary revenue. Section 6 concludes.

2. Endogenous Colonial Institutions

The debate on the importance of metropolitan identity for the nature of colonial institutions is not confined to Africa, but also plays an important role in the evaluation of colonial legacies in Spanish and British America (Mahoney 2010), and Asia (Booth

2007). The emphasis on colonizer identity as a key determinant of colonial legacies has received substantial criticism over the past fifteen years. For the Spanish-British American comparison a series of studies by Stanley Engerman and Kenneth Sokoloff (1997, 2005) point to the role of local geographical factors (e.g. climate, minerals, location, soil) and native population densities to explain variations in economic and political development in North and South America. John Elliott's (2008) marvelous comparative account Spanish and British America shows in detail how institutional development in the spheres of governance, trade, education and religion was endogenous to the interaction of, and conflict between, metropolitan conceptions and local conditions.

For Africa, the debate on the drivers of colonial institutional development has intensified since the seminal papers of Daron Acemoglu, Simon Johnson and James Robinson (2001, 2002). Revisionist views on the importance of metropolitan policy blueprints are based on a closer study of the role of colonial versus indigenous institutions, and the related *comparative agency* of colonial administrations versus subjected African peoples (Austin 2008, Bayly 2008, Hopkins 2009, Frankema and van Waijenburg 2012). In fiscal affairs this debate concerns the setting of tax *rates* as well as the selection of revenue *sources* in the face of local economic and political conditions, such as the development of commercial ties and African resistance against colonial taxes or forced labor services.

In particular the imposition of native hut, head, and poll taxes have traditionally been understood as central tools for a broad range of colonial government policy objectives. Crawford Young (1994: 129), for example, considers the head tax as "leading the way" in achieving the "requirements of revenue and hegemony". Richard Reid (2009: 146), attributes the creation of a head tax system to similar objectives, maintaining that the imposition of a capitation tax, "the most visible, and the most dreaded manifestation of conquest," was not just "absolutely fundamental to the functioning of the colonial state," but in many ways even its "key purpose". Mahmood Mamdani (1996) has interpreted the British African fiscal system as a central touchstone in the state's hegemony imperative – that is, its cultural hegemony imperative. Mamdani sees the tax collection structure as an integral part of the colonial state's 'decentralized despotism' with built-in incentives for corruption and abuse. As such, the fiscal system became one of “pervasive revenue hunger all along the chain of command,” with widespread efforts “to tax or impose fees on anything that moved” (p. 56). Other scholars have emphasized how direct taxes were intended to fulfill the objectives of integrating Africans into the money and wage economy (Wrigley 1992; Munro 1984; Berg 1977; Freund 1984; Davis and Huttenback 1988, Young 1994) and to ‘civilize’ the colonized subject (Conklin 1997), by instilling them with Victorian bourgeois values as to create a ‘governable person’ (Bush and Maltby 2004).

The implicit assumption of such interpretations is that colonial states possessed the means to create fiscal regimes to their liking. However, not all historians of Africa share the view of the colonial state as a powerful ‘crusher of rocks’.[2] Jeffrey Herbst (2000), for example, has pointed out that interpretations of the colonial state as an absolutist apparatus strongly overestimate actual European power and the scope of their hegemonic project. The colonizers, “whatever their formal theory of rule,” he argues, were “generally unsuccessful in changing cost structures to allow for a systematic expansion of authority into the rural areas” (p. 94). According to Herbst low population densities made the borders of pre-colonial African states fluid because the marginal costs of collecting taxes (coercion, monitoring, logistics) exceeded the potential revenues. Europeans may have fixated African borders on maps, but they did not ‘control’ the hinterland areas. Leigh Gardner (2010a: 216) maintains that the structure of African colonial administrations remained a “skeleton” and observes that the description of British rule as a “gimcrack effort by two man and a dog” may not have been too far from reality. Ewout Frankema (2011) has argued that parts of the fiscal system in British Africa adhered to the logic of minimizing effort, rather than maximizing revenue.

Of course governance structures in Africa evolved in the context of different imperial aspirations. For France, the incorporation of West Africa meant a logical southward extension of the French presence in North Africa (especially Algeria), as well as an eastward extension of their coastal possessions in the Senegambia. They set out to conquer a vast unified territory, which was envisioned as part of a great French African empire (Wesseling 2003). For the British, South Africa and Egypt were of high strategic

[2] The metaphor Young uses to describe the African colonial state is ‘Bula Matari,’ which means ‘he who crushes rocks.’ (1994: 1).

importance in controlling the gateways to Asia. In the larger scheme of British imperialism, Africa was not essential to sustain British industrial power, nor was it essential to safeguard key commercial interests. India and the New World dominions were the focal point of British foreign policy efforts (Davis and Huttenback 1988; Pakenham 1992). These different perspectives underpinned different metropolitan ideologies of colonial rule in Africa.

Power imbalances played their role too. As the British were at the height of their imperial power in the closing decades of the nineteenth century they had the best military and diplomatic means to pick and choose. Jane Burbank and Frederick Cooper state that the British "ended up with the plums," while France "got what it could – much of it arid lands on the edge of the Sahara plus choicer morsels along the coast (2010: 315).[3] The British had good reasons to be choosier than other European powers, reluctant as they were to spread military and administrative resources too thin. Obviously, the more densely populated areas with a revealed propensity to engage in commercial relationships and less organized resistance against colonial encroachment were favored (Frankema 2012, Green 2012). In these areas taxation was easier to organize via custom duties than elsewhere, sparing the costs of implementing more fine-grained structures of direct tax collection in distant hinterlands.

French colonial bureaucracies were more deeply involved in local affairs in at least two ways. First, they erected a hierarchical administrative structure based on a pyramid-structure of governance layers reaching out to the community level, with a larger number of administrative staff (direct rule). The British, on the other hand, were satisfied with controlling the power of chiefs, rather than interfering directly in local affairs (indirect rule). Second, the French colonial state engaged more intensively in the training of an African elite bureaucracy to strengthen local administrations and develop a rudimentary structure of local and central government representation. The British approach of operating at 'arm's length' granted a greater degree of freedom to chiefs, with fewer layers of official bureaucracy, and a more cost-efficient organization of their 'gate-keeping states' (Cooper 2002).

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[3] The geographical demarcations of the Gambia and Sénégal are illustrative: the British ensured the best part of the region around the Gambia River, while the French obtained the much larger portion around it.

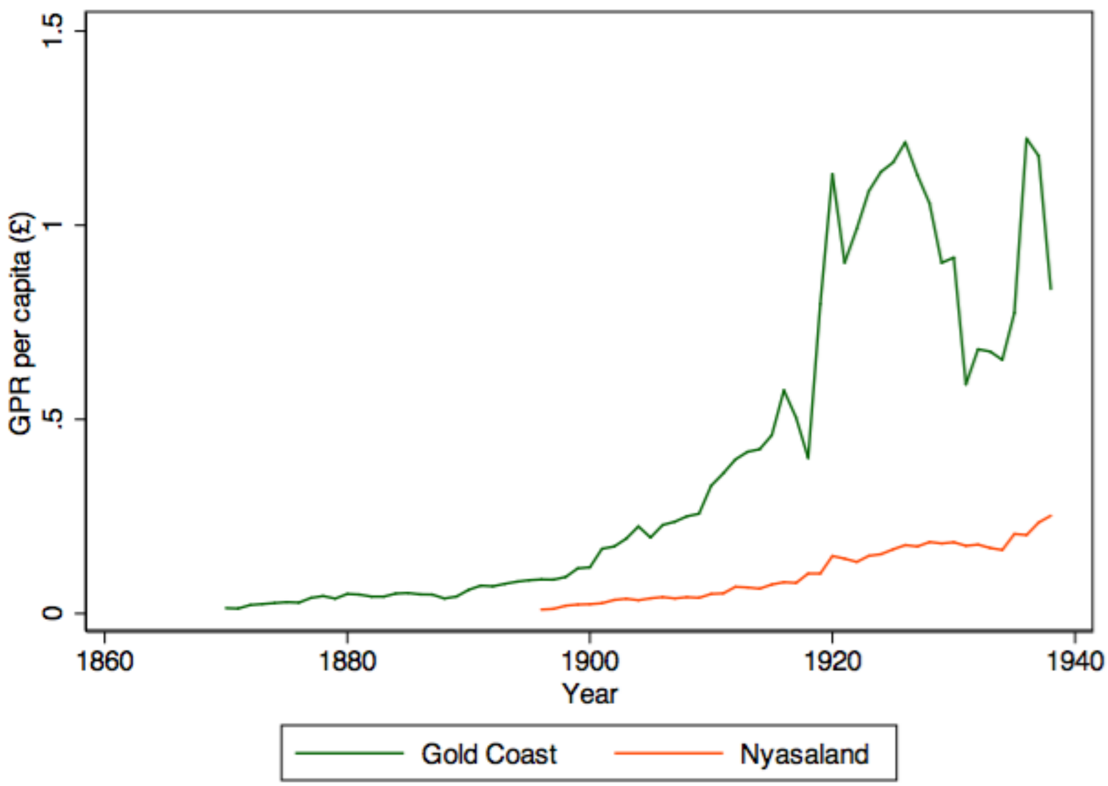
According to Crowder (1970: 212-4) these different approaches of colonial rule constituted a difference in kind, not in degree. While in the British system the relationship between political officers and native authorities was advisory, in the French system chiefs were subordinates. The French ideals of *assimilation* and *association* reflected the ambition to instill French political and cultural values, customs and administrative institutions in the subjected peoples of the overseas territories (*Les Outre-Mer*) with the ultimate objective of their full integration into French society (Manning 1988; Conklin 1997). The British distinction between dominions – containing substantial proportions of white settlers –, directly ruled colonies, indirectly ruled colonies and protectorates reveals a more pragmatic approach towards empire building. Dominions enjoyed rights of self-governance that colonies did not have, while protectorates received military protection, but were formally outside the British Commonwealth.

To sum up, there is no doubt that French and British colonial governance structures differed as a result of different imperial ambitions and approaches, and the relevant question for this study is not whether the British and French employed their own 'style' of colonization or not: they of course did so. The key question is to which extent their different policy approaches were decisive for the design and development of colonial tax systems. What we will argue is that the pace of colonial state development was critically dependent on *varying local constraints* to fiscal capacity building. The differences were pervasive and British and French responses to these varying realities can easily be mistaken for different metropolitan blueprints of colonial taxation.

3. Raising revenue

To structure our thinking about *varying local constraints* to fiscal capacity building it is useful to start with a simple comparison of two British African colonies. Figure 1 shows gross public revenue levels per capita in the Gold Coast and Nyasaland between 1870 and 1940 (measurement procedure to be explained later). The graph illustrates a number of key insights. First, in areas with a long tradition of coastal European-African trade, often concentrated around former slave trade hubs, colonial states expanded earlier and more gradually from the late 19th century onwards, than landlocked territories in the interior. Second, in these areas incipient colonial administrations could tap into existing trade flows to raise revenue for colonial state expansion. Third, in areas such as the Gold Coast, the opportunities to develop a virtuous commerce-state revenue cycle by re-investing custom duties in export-promoting infrastructures were higher. Fourth, the budgets of these colonial states were more vulnerable to exogenous world market shocks such as the great depression in the 1930s. The data presented in the remainder of this section indicate that these mechanisms operated across British and French Africa.

Figure 1: GPR per capita in the Gold Coast and Nyasaland, 1870-1940



To compare the revenue generating capacity of British and French African colonial administrations we took four empirical steps. First, we collected archival data on colonial budget accounts for the years 1911, 1920, 1925, 1929, 1934 and 1937. The year 1911 captures the early stages of the French West and Equatorial African federations, which were established in 1904 and 1910 respectively. The year 1937 is the latest benchmark before the outbreak of WWII. The years 1925, 1929 and 1934 offer the possibility to study the effects of the Great Depression on tax revenues and 1920 serves as an early post-WWI benchmark. We let our study begin in 1880 to pick up the earlier developments in fiscal development, but only deal with these in descriptive terms. We let our study end in 1940, since WWII and its aftermath considerably changed the way in which colonies were financed (especially in terms of loans and structural aid).

Second, we circumvented the distorting effect of exchange rate volatility in the interwar period, when the British and the French went on and off the gold standard at different times and parities, by constructing colonial government PPPs based on four different categories of personnel expenditure in British West Africa and French West Africa: 1) lower-ranked clerk salaries; 2) African public school teacher salaries; 3) urban unskilled worker day wages, and; 4) skilled construction worker day wages (carpenters). The first two categories are to reflect the relative costs of hiring government staff, especially in the lower ranks of civil service where most of the personnel expenses were made. The latter two categories reflect the relative costs of government investments in public works, which took another big portion of colonial state expenditure.

Table 1: French-British exchange rates, colonial government PPPs and related price index of public and private sector labor, 1911-1937

	1911	1920	1925	1929	1934	1937
Government PPP (FA/BA)	31.3	27.6	48.7	94.2	82.3	76.6
Exchange rate Ffr/£	25.1	52.0	101.3	124.0	76.7	122.2
Labor price index FA (1911 = 100)	100.0	99.5	284.8	379.3	363.2	472.8
Labor price index BA (1911 = 100)	100.0	115.9	199.5	128.5	139.2	206.4

Sources: see Appendix 1.

Table 1 compares the PPP estimates with the actual exchange rate. The table shows that a PPP-adjusted comparison of per capita government revenue will yield significantly different results from an exchange rate-based comparison. We thus adopt the PPPs for converting our French African revenue estimates into British pounds. We also use these PPPs to construct a labor price index, which allows us to convert nominal series of government revenue into real terms. All figures presented in this paper are in constant 1911 £. For more details on sources and calculation procedures we refer to Appendix 1.

Third, we singled out the individual colony shares in the collective revenues of the federal states (AOF and AEF, Kenya-Uganda customs union) to make revenue levels comparable at the colony level, excluding budget transfers from or to the metropole.[4] The French colonies were organized along a layer of three to four budgets, depending on whether or not the colony was part of a federation. The model used in French West Africa (*l'Afrique Occidentale Française,* hereafter: AOF) in 1904 was copied in French Equatorial Africa (*l'Afrique Équatoriale Française*, hereafter: AEF) in 1910, and both were derived, in turn, from the model in French Indochina (Conklin 1997). The AOF and AEF were made up of respectively eight and four colonies which themselves were subdivided into districts (*cercles*) and sub-districts (cantons and villages). At the sub-district level, African chiefs were responsible for collecting taxes and recruiting labor (Coquery-Vidrovitch 1969; Huillery 2009).

The *federal budget* was primarily composed of trade taxes (customs duties) and consumption taxes, which were destined for: (1) the administrative costs at the federal level, (2) the larger public works projects (mainly railroads), and (3) the allocation of subsidies colonies. The *local budgets* of the individual colonies were mainly based on direct taxes, such as head taxes, property taxes, or other local trading taxes. Finally, there were *annexed budgets* to either the federal or local budgets in which the revenue and expenditures from the railways and major ports were documented.[5]

To compare gross per capita public revenue levels on a cross-colony basis we re-allocated the shares of the federal and annexed budget towards the areas of origin (the colonies), thus filtering out the federal redistributive effect and creating 'adjusted' budgets for the French federal colonies that include the same components as the British colonial revenue budgets. The federal transfers were substantial and uneven. In 1925 ca. 40% of the Senegalese revenues were transferred to the federation, whereas Mauritania received 36% of its budget in federal subsidies, without transferring any customs duties or railway receipts. This indicates that the French African federations were redistributive (from rich to poor), although we need to keep in mind that the net-contributors also

[4] The French Ministry of the Colonies budget (*Ministère des Colonies*) relied on metropolitan taxes and its funds were used for military expenses only. This was not very different from the British system, where metropolitan tax-payers supported the expensive British navy, while African colonies co-financed standing armies in the region.

[5] Note that GPR solely consists of 'ordinary' revenue (in other words, regular posts of income) and that extraordinary revenue elements have been excluded.

received a larger share of the federal expenditures and, indirectly, benefitted from infrastructural investments in the periphery that enhanced trade and labor mobility.

In British Africa, federal structures were used less intensively. The example of the South African Union as a governance model remained limited. The fiscal integration of Uganda and Kenya never went further than a customs union established in 1917 and joined by Tanganyika in 1927. The attempt to force these three countries into a federal structure was only made upon independence and was short-lived. The Central African Federation, consisting of the self-governing dominion of Southern-Rhodesia and the British protectorates Northern Rhodesia and Nyasaland was only established in 1953.

Fourth, to avoid potential biases in the *per capita* comparison we used backward projections of population from a revised 1950 benchmark as suggested by Frankema and Jerven (2013).[6] Early French African population censuses grossly overstated the number of people in large parts of the AOF and AEF (Cordell and Gregory 1982, Green 2012), whereas the early British colonial censuses had a tendency to underestimate populations (Kuczynski 1948, 1949).

Table 2 shows total Gross Public Revenue (GPR hereafter) per head of the population for the British and French African colonies for all benchmark years in pound sterling (£). Figure 2 groups the GPR per capita estimates into four categories for the year 1925,[7] distinguishing by colonial power (British-French) and by geographical location (coastal-landlocked). We highlight three findings.

First, the cross-colony variation in per capita government revenue levels in French Africa was larger than in British Africa. Of course, in both empires one can find 'richer' and 'poorer' colonial administrations, but the revenue gap between Sénégal and Niger, both part of the AOF, or Gabon and Chad (both part of the AEF), was about a factor five larger in 1925 than the gap between Kenya and Nyasaland that constituted the 'richest' and 'poorest' states in BEA. The coefficients of variation for the four regions are: 1.15 (AOF). 0.72 (AEF), 0.47 (BWA) and 0.52 (BEA).

[6] We adjusted the population figures for Togo and Cameroon to account for their post-WWI split up.

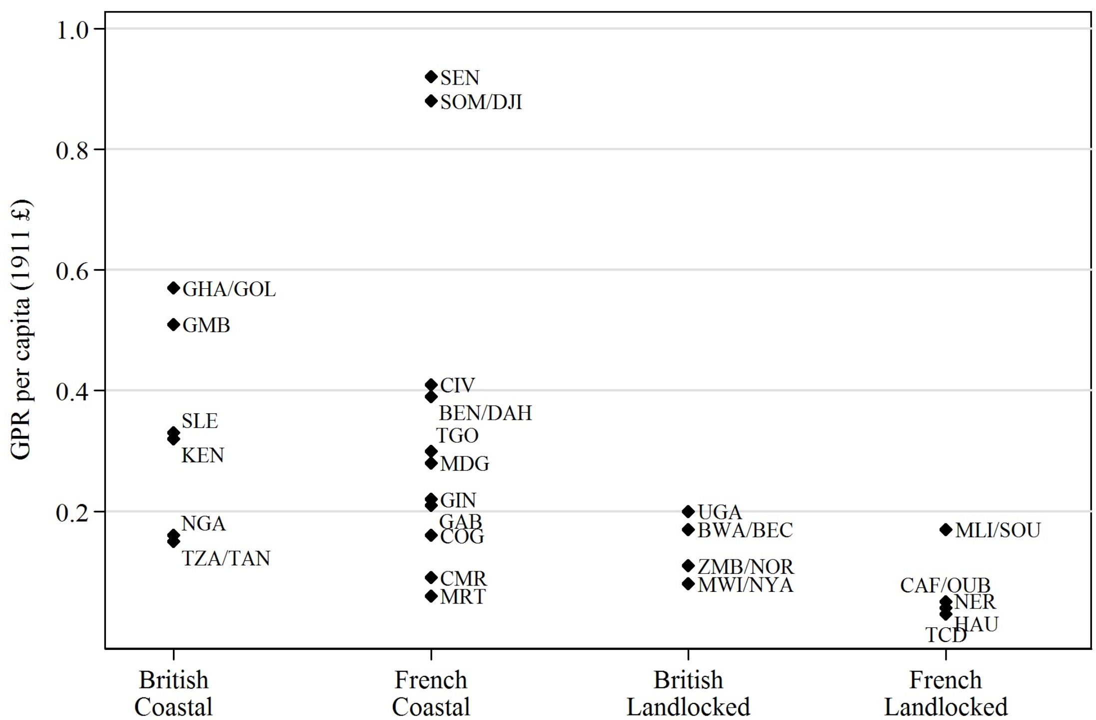
[7] We chose the year 1925 here to illustrate our findings, because it is the first year for which all of our observations are present. As can be derived from the regressions, the stylized facts we documented remain valid when selecting other benchmark years.

Table A.2: Gross Public Revenue per capita in BA and FA Africa for six benchmarks years (in 1911 £)

FRENCH AFRICA	1911	1920	1925	1929	1934	1937	BRITISH AFRICA	1911	1920	1925	1929	1934	1937
Fr. West Afrca (AOF)							*Br. West Africa (BWA)*						
Côte d'Ivoire	0.11	0.35	0.36	0.51	0.21	0.23	Gambia	0.49	0.84	0.54	0.68	0.52	0.57
Dahomey/Benin	0.25	0.40	0.37	0.38	0.27	0.26	Gold Coast	0.36	0.68	0.65	0.55	0.36	0.43
Guinée	0.25	0.42	0.25	0.25	0.24	0.22	Nigeria	0.18	0.20	0.17	0.15	0.10	0.15
Haute Volta/Burkina Faso	n.a.	0.06	0.05	0.08	n.a.	n.a.	Sierra Leone	0.40	0.53	0.41	0.27	0.22	0.31
Mauritanie	0.07	0.19	0.10	0.13	0.16	0.05	*regional av. (non weighted)*	*0.36*	*0.56*	*0.44*	*0.41*	*0.30*	*0.36*
Niger	0.03	0.08	0.05	0.08	0.10	0.07	*regional av. (pop. weighted)*	*0.21*	*0.40*	*0.25*	*0.22*	*0.14*	*0.20*
Sénégal	0.32	0.83	1.08	0.96	0.63	0.82	*Co. variation*	*0.37*	*0.49*	*0.47*	*0.59*	*0.60*	*0.48*
Soudan	0.12	0.30	0.21	0.24	0.18	0.17							
regional av. (non weighted)	*0.16*	*0.33*	*0.31*	*0.33*	*0.25*	*0.26*	*Br. East Africa (BEA)*						
regional av. (pop. weighted)	*0.16*	*0.27*	*0.30*	*0.33*	*0.25*	*0.35*	Bechuanaland	0.26	0.31	0.22	0.20	0.20	0.26
Co. variation	*0.65*	*1.07*	*1.16*	*1.56*	*0.81*	*0.88*	Kenya	0.14	0.60	0.36	0.34	0.25	0.34
							Northern Rhodesia	0.07	0.10	0.13	0.24	0.24	0.24
Fr. Equatorial Africa (AEF)							Nyasaland	0.05	0.09	0.09	0.11	0.09	0.11
Congo	0.24	0.32	0.18	0.30	0.44	n.a.	Uganda	0.06	0.13	0.24	0.28	0.21	0.22
Gabon	0.21	0.22	0.20	0.51	0.60	n.a.	Tanganyika	n.a.	n.a.	0.17	0.22	0.16	0.15
Oubangui-Chari	0.04	0.07	0.05	0.11	0.12	n.a.	regional av. (non weighted)	*0.12*	*0.25*	*0.20*	*0.23*	*0.19*	*0.22*
Tchad	0.02	0.07	0.04	0.04	0.05	n.a.	regional av. (pop. weighted)	*0.11*	*0.34*	*0.22*	*0.25*	*0.19*	*0.22*
regional av. (non weighted)	*0.13*	*0.17*	*0.12*	*0.24*	*0.30*	*n.a.*	*Co. variation*	*0.74*	*0.88*	*0.52*	*0.38*	*0.33*	*0.38*
regional av. (pop. weighted)	*0.07*	*0.12*	*0.08*	*0.14*	*0.18*	*n.a.*							
Co. variation	*0.92*	*0.73*	*0.73*	*0.87*	*0.86*	*n.a.*	*British Africa other*						
							Mauritius	2.15	3.38	2.26	1.60	1.71	1.36
Fr. Africa other													
Cameroun	n.a.	0.19	0.11	0.16	0.14	0.11							
Madagascar	0.28	0.51	0.35	0.49	0.49	0.42							
Somaliland	0.59	1.54	0.86	1.45	1.29	1.24							
Togo	n.a.	n.a.	0.30	0.23	0.26	0.17							
Réunion	0.34	1.73	1.35	1.39	1.53	1.33							

Second, location mattered. Figure 2 illustrates that, although the British generated more government revenue on average in both coastal and landlocked countries, the primary distinction in terms of revenue generating capacity is the coastal-landlocked distinction. In 1925, no single landlocked colonial state was capable of raising revenue beyond £0.20, whereas the majority of coastal colonies generated (far) greater revenues. This contrast becomes even more pronounced if we include the data for outliers such as Réunion and Mauritius (two sugar islands) with GPR per capita levels of respectively £1.35 and £2.26.

Figure 2: GPR per capita in BA and FA landlocked and coastal colonies in 1925 (in 1911 £)



Notes: The label of the observations is their current three-digit country code. In cases where the colonial name differed from the current name, both have been used. For convenience sake, the codes are: BEN/DAH = Benin/Dahomey; BWA/BEC = Botswana/Bechuanaland; CAF/OUB = Central African Republic/Oubangui-Chari; CMR = Fr. Cameroun; CIV = Côte d'Ivoire; COG = Fr. Congo; DJI/SOM = Djibouti/Fr. Somaliland; GAB = Gabon; GHA/GOL = Ghana/Gold Coast; GIN = Guinée; GMB = Gambia; BFA/HAU = Burkina Faso/Haute Volta; KEN = Kenya; MDG = Madagascar; MLI/SOU = Mali/French Soudan; MRT = Mauritanie; MUS = Mauritius; MWI/NYA = Malawi/Nyasaland; NER = Niger; NGA = Nigeria; REU = Réunion; SEN = Sénégal; SLE = Sierra Leone; SOM = Br. Somaliland; TCD = Tchad; TGO = Togoland; TZA/TAN = Tanzania/Tanganyika; UGA = Uganda; and ZMB/NOR = Zambia/Northern Rhodesia.

Table 3: Relationship between metropolitan identity and GPR per capita, pooled regression over all available observations (in 1911 £)

Dependent variable	Gross Public Revenue per capita (log)			
	Pooled regression			
	(1)	(2)	(3)	(4)
British indicator	0.301	0.279	0.126	0.145
	(0.358)	(0.245)	(0.166)	(0.201)
Coastal indicator		1.326***	1.007***	1.066***
		(0.245)	(0.149)	(0.177)
Years pacified			0.029***	0.028*
			(0.004)	(0.009)
Lowest monthly rainfall				-0.007
				(0.008)
Average max humidity				-0.004
				(0.017)
Island indicator				0.021
				(0.614)
Number obs.	156	156	156	156
R^2	0.05	0.47	0.72	0.73

Notes: The geographical variables are taken from Nunn 2008. Lowest monthly rainfall is the average millimeters of rain fallen in the driest month of the year. The average humidity is in percentage and refers to afternoon humidity in the hottest month of the year. The pooled regression includes year-fixed effects, and the standard errors are clustered by colony. As a robustness check, we included a British-coastal interaction term, a variable for precolonial state centralization (taken from Gennaioli and Rainer 2007) used different sets of geographical variables, which does not lead to any substantial change in the coefficients on the British and coastal dummies, or the years pacified variable.

A simple OLS (appendix table 3) and pooled OLS regression (table 3) reveals that those differences are statistically significant while controlling for other geographical variables. Column 1 of table 2 compares the British with the non-British colonies, showing that there is an economically meaningful difference (the coefficient indicates an effect of 0.301 log points), but that it is not statistically significant. In column 2, we add a dummy for the coastal colonies, which is both economically and statistically significant: a coastal colony is associated with a 3.7 times (1.326 log points) greater level of per capita revenue. In column 3 we extend the specification with a variable that captures the length of the period of 'pacified' rule, that is the number of years up to 1940 that the colonial state is in full control over its African territory.[8] This variable too is statistically significant and the coefficient suggests a meaningful economic effect: each decade of 'pacification' is associated with 34% (0.029 log points per year) increase in revenue. The specification shown in column 4 indicates that the results are not sensitive to the inclusion of geographical control variables. In other words, regardless of statistical significance, the magnitude of the coefficients on the British and coastal dummies highlight that the *first order difference* is between coastal and landlocked colonies.[9]

Third, the initial revenue gaps between the British and French African regions became smaller over time as GPR per capita levels converged. This is not that surprising if one considers that, although the partition of Africa occurred in a relatively confined period of time, the actual pace and mode with which these territories were integrated into the British and French African empires varied, in large part due to varying constraints to revenue raising. In fact, around 1900, British West African trade with Europe was, in per capita terms, more than ten times as large as British East African trade (Frankema and van Waijenburg 2012). Similarly, parts of French West Africa, and especially Sénégal, where colonial ties originated from the 1850s onwards, were much better integrated in the Atlantic economy than most of the French equatorial colonies.

The relatively low tax yields in the French hinterland areas such as Niger, Chad, the French Soudan and Haute Volta, were compensated by higher revenues from the richer coastal colonies such as Sénégal, Côte d'Ivoire and Gabon, to such levels that in the 1930s French revenue levels were comparable with those in British Africa as a whole.

Part of the convergence, however, was due the economic depression of the early 1930s, which eroded the customs revenues in the commercial colonies that had increased so rapidly during the 1920s. The colonial administrations of the AEF were the only ones that managed to raise GPR per capita during the 1930s. With the exception of Chad, all budgets more than doubled between 1925 and 1934. In part, this rapid catch-up followed from the large-scale expansion of timber exports, known as the 'okoumé rush', and the greater administrative capacity to collect direct taxes (Gray 2002). Additionally, the

[8] The term 'pacified' was used by colonial administrations at the time, and is therefore of course not a neutral one.

[9] These results remain robust when trying other specifications (e.g. other geographical controls, the inclusion of a British-coastal interaction term, or adding a variable for the degree of pre-colonial state centralization).

completion of the Congo-Ocean railway in 1934 strengthened the integration of the hinterlands into the imperial economy.

5. Direct and indirect taxes

Probing into the sources of African colonial taxes we find that the extent to which colonial administrations *within* the British and French African empires relied upon the two main categories of taxation, direct and indirect taxes, varied much more than one would expect from a 'uniform' imperial administration.

Direct taxes in Africa consisted of taxes that were directly levied on persons, households, huts, cattle or land, although the latter two were rare. Apart from being a source of resistance, direct taxes were relatively inefficient as they required considerable administrative effort to assess and collect. Consequently, both the French and the British African authorities had to rely upon indigenous chiefs for the collection of direct taxes. In the early colonial years, the commission rate was up to 20% in the French African colonies.[10] According to Sara Berry, the strategy of outsourcing tax collection to native chiefs served a dual purpose. Not only was it a means to cut costs, it was also an effective way to integrate existing local power structures into the administrative framework of the new state. As such, she argues, nearly all of the colonial administrations at least practiced some form of indirect rule, regardless whether they had "articulated it as their philosophy of imperial governance." (1993: 25)

Custom duties were collected at a central point of entry or exit, and were fairly easy to monitor and enforce. Smuggling and other forms of tax evasion were problematic, but the overall administrative burden was far lower, especially in the absence of solid physical infrastructures and well-oiled bureaucracies. In general, imports were more heavily taxed than exports, so that the burden of taxation fell partly on European manufacturers exporting to Africa and partly on that particular class of Africans that possessed sufficient cash to consume imported European commodities. These were

[10] Evidently, this number, which has bee derived from the colonial statistical yearbooks, is only a lower bound estimate of how much chiefs could possibly earn through their position. It is well known that the system was highly conducive to corruption, even more so in places where established, but resistant chiefs had been replaced by ones more supportive of the colonial state (Gardner 2010a; Van Zwanenberg and King 1975). Manning's (1998, 84) observation that "many of them built significant fortunes," is thus not surprising.

usually not the poorest strata of society and certainly not the subsistence farmers in the hinterlands who produced, bartered and consumed largely outside the commercial colonial economy. Part of the resistance against trade taxes was thus voiced by metropolitan businesses and trade companies, rather than by African taxpayers. Export taxes did of course meet with resistance from local farmers or European enterprises controlling mines or plantations.

Our results show that there was a strong negative correlation between per capita GPR and the proportion of direct taxes, *independent of metropolitan identity*. Figure 3 presents this relationship for the 1925 benchmark year and the appendix figures 1a-f show that it holds for all benchmark years. In places where the state was able to raise sufficient revenue from taxing trade, governments were happy to drop or minimize direct forms of taxation. No direct native taxes were implemented in the Gold Coast, British and French Somaliland, Réunion, and Mauritius.[11] Southern Nigeria did not have a direct capitation levy until the early 1930s.[12] Although Sierra Leone and the Gambia, both colonies where the government could count on significant trade revenues, did have a flat native tax, the rates of these – unlike the ones in French West Africa – did not change over time. Additionally, the resembling slopes of the fitted lines, underline that both metropolitan powers preferred to tax trade.

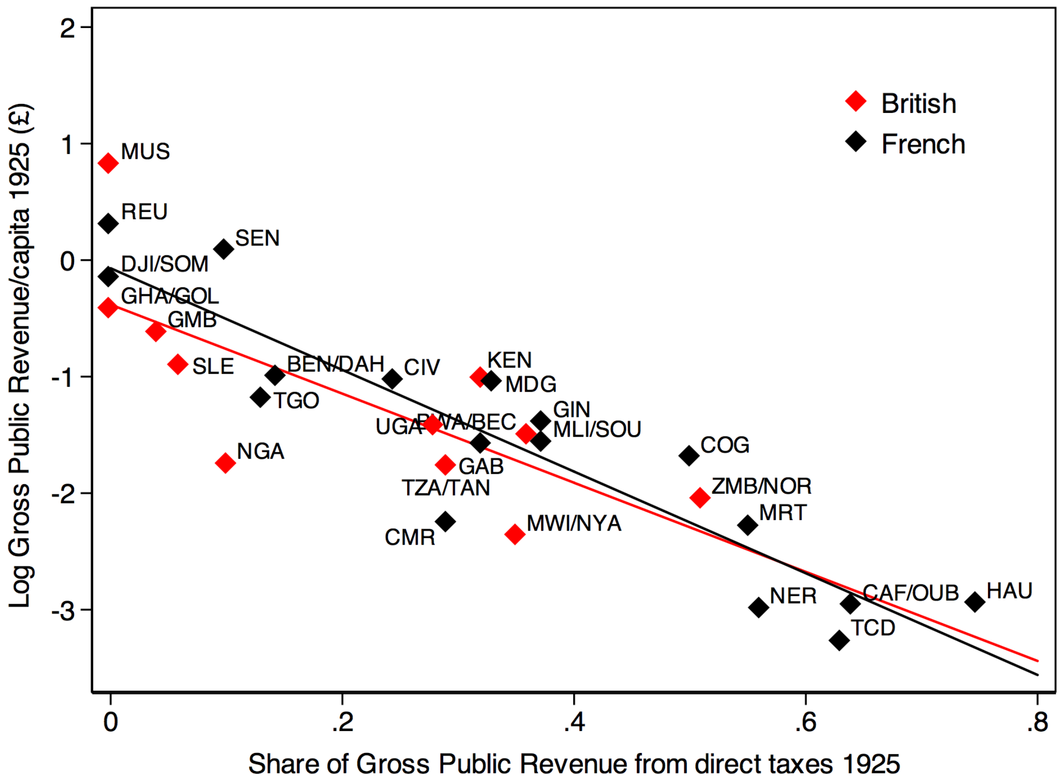
Those colonies that did implement direct taxes largely did so out of necessity: trade taxes simply did not generate sufficient revenue. In some places, direct taxes still did not raise sufficient state income, necessitating the metropole to step in as a last resort; a pattern we observe both in British and French Africa, albeit to differing degrees. Whereas the British did this occasionally in the early years of colonial state formation, and especially in East Africa (Gardner 2012), the French had to do this repeatedly to accommodate structural deficits. For example, Paris transferred metropolitan grants to the

[11] In 1851 a hut tax had been imposed in the Gold Coast, but it was abandoned in less than a decade (1861), because it was highly unsuccessful in terms of the revenue it yielded and custom duties soon proved to be a far better alternative.

[12] There was a difference between the fiscal strategies in Northern and Southern Nigeria. As pointed out by Bush and Maltby (2004), the Southern part, which was "far more prosperous and economically active," had no direct taxes until after WWI. Even when an income tax was imposed in the 1920s, incomes under £30 per year were exempted from this tax. Taking contemporary wage rates into account, which fluctuated between 12 and 17 pence per day in the 1920s, the annual income of an unskilled urban laborer would exceed £22 per year, assuming a 6-day workweek. It was not until 1937 that the lower income exception was abolished, and that the native income tax thus became applicable to all inhabitants of Southern Nigeria.

AEF on an annual basis until the 1930s, often up to 25-30% of locally raised revenue. The AOF, in contrast, received nothing. Catherine Coquery-Vidrovitch (1977: 190) points out that with a total trade value of 146 million francs for the AEF in 1920, vis-à-vis 1.2 billion francs for the AOF, the equatorial federation long remained "the poor relation among the French colonies."

Figure 3: Gross Public Revenue (GPR)/capita (log) vs. share GPR from direct taxation in 1925



Notes: The labels of the observations are the same as in figure 2.

Figure 3 suggests that in terms of source composition, there were little systematic differences between the way the British and the French designed their fiscal systems. The scatter plots in the appendix, that complement figure 2, underline this point from a temporal perspective as well: the share of direct taxes declined in virtually all colonies up to 1940, but they did so in a movement along, rather than away from, the fitted line. This is not to say that additional policy objectives – such as the desire to create 'governable subjects', to commodify indigenous labor or to establish political hegemony – did not matter at all for the design of fiscal strategies (Young 1994; Conklin 1997; Bush and Maltby 2004). Colonial governments at the time certainly articulated and justified their policies in such terms. The words of AOF Government General William Ponty are telling in this respect (1911):

> "For the native … taxation, far from being the sign of humiliating servitude, is seen rather as proof that he is beginning to rise on the ladder of humanity, that he has entered upon the path of civilization. To ask him to contribute to our common expenses is, so to speak, to elevate him in the social hierarchy."[13]

But a comparative macro-perspective does suggest that these policy objectives first and foremost need to be understood *in the context of endogenous African economic and geographical conditions determining the constraints and opportunities to fiscal capacity building.* This also implies that we should be careful not to overemphasize the agency of European colonial governments in Africa.

That colonial fiscal policies were responsive to endogenous conditions is also reflected *within* colonies. Table 3 shows the official minimum and maximum tax rates for each colony, and the total number of different tax rates that were applied there.[14] All of the maximum rates apply to the main cities, whereas the lower rates were set for the poorest rural hinterlands. Two British-French differences stand out. First, the gaps between minimum and maximum rates were considerably larger in French than in British Africa. In Togo, for example, the minimum-maximum tax rate ratio was around 1:11 in 1925, and in Dahomey we even observe a ratio of 1:20. In British Africa, in contrast, the largest gap that can be observed is 1:4 in Tanganyika in 1937.

Second, the French adjusted their tax rates more frequently than the British. In part, this was caused by higher inflation rates in French Africa (see table 1). But it also reflects a higher degree of precision in French fiscal administration. The British tended to levy head taxes or poll taxes on each adult male, or each hut, house or yard. In some cases, these were complemented by a 'multiple wives tax' to make taxes somewhat more

[13] Quote taken from Conklin (1997: 144).

[14] Note that some tax rates were applied multiple times, so that this captures only the total number of *different* tax rates in circulation rather than the number of districts or sub-groups that had their own tax rates. The former offers a better reflection of the 'fine-grained' nature of the direct tax system.

progressive. The French on the other hand, introduced separate tax rates for men, women and children above a certain age. The French also levied alternative forms of taxation in large parts of Mauritania, Niger and French Soudan, such as the *zekkat*, which was a percentage levy on the value of cattle.

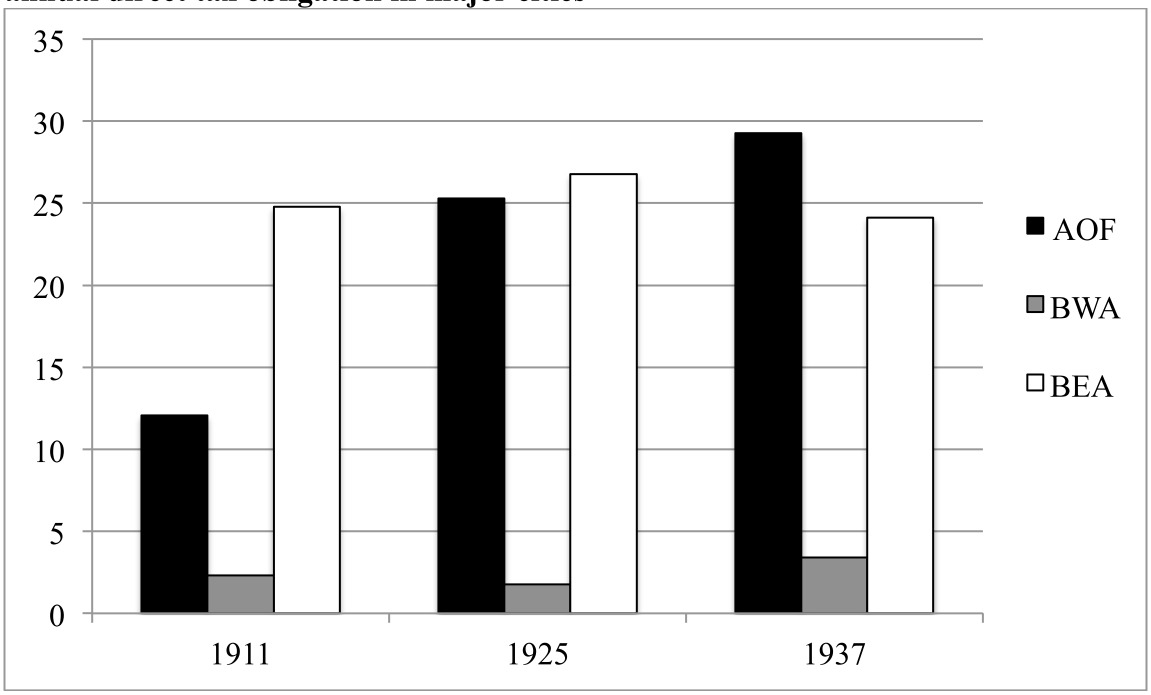
Table 4: Official minimum and maximum native tax rates in 1911, 1925 and 1937

	1911			1925			1937		
	min (fr.)	max (fr.)	# tax rates	min (fr.)	max (fr.)	# tax rates	min (fr.)	max (fr.)	# tax rates
French Africa									
Côte d'Ivoire	0.5	4.5	n.a.	5	22	n.a.	8	50	26
Dahomey	0.25	2.25	n.a.	0.75	15	9	5	23	8
Guinée	3	3	1	5	12	7	12	21	12
Haute Volta	n.a.	n.a.	n.a.	2	5	7	n.a.	n.a.	n.a.
Mauritanie	n.a.	n.a.	n.a.	11	11	1	20	20	1
Niger	0.25	4.5	n.a.	1	6	n.a.	1	10.5	15
Sénégal	3	4	4	5	15	7	10	25	9
Soudan	0.25	4.5	n.a.	3	12	15	9	30	30
Cameroun	n.a.	n.a.	n.a.	1	15	8	2	30	24
Togo	n.a.	n.a.	n.a.	5	55	11	14	175	11
Madagascar	10	30	4	15	35	3	n.a.	n.a.	n.a.
Fr. Somaliland	X	X	X	X	X	X	X	X	X
Réunion	X	X	X	X	X	X	X	X	X
	min (£)	max (£)	# tax rates	min (£)	max (£)	# tax rates	min (£)	max (£)	# tax rates
British Africa									
Gambia	0.2	0.2		0.2	0.2		0.25	0.25	
Gold Coast	X	X	X	X	X	X	X	X	X
(S.) Nigeria	X	X	X	X	X	X	0.25	0.25	1
Sierra Leone	0.25	0.25	1	0.25	0.25	1	0.25	0.25	1
Bechuanaland	1	1	1	1	1	1	1	1	1
Kenya	0.2	0.2	1	0.3	1	7	0.6	0.6	1
N. Rhodesia	n.a.	n.a.	n.a.	0.38	0.5	2	0.3	0.5	4
Nyasaland	0.15	0.3	n.a.	0.3	0.3	1	0.3	0.3	1
Tanganyika	n.a.	n.a.	n.a.	0.1	0.6	5	0.15	0.6	9
Uganda	0.25	0.75	n.a.	0.25	0.75	4	0.35	1.05	8
Mauritius	X	X	X	X	X	X	X	X	X

Notes: Taxes rates for French Equatorial Africa were not systematically reported in our sources

Differentiation of tax rates was thus the rule everywhere, but the range of rates and tax instruments seems to have been wider in French Africa. A closer look at the 'micro-level' aspects of fiscal capacity building, such as varying district level tax rates and household differentiation, underlines the idea that local conditions shaped colonial tax systems: neither the British nor the French randomly assigned tax rates, their choices were largely guided by local conditions, rather than metropolitan policy directives.

Figure 4: Amount of working days for urban unskilled labor required to meet the annual direct tax obligation in major cities



The large variation in the imposition of direct taxes translated into varying tax burdens. We can provide some rough estimations of the comparative incidence of direct taxes, by transforming the nominal tax rates into the number of working days required to meet the average rate of taxation, using urban unskilled wage rates. We focus exclusively on the urban areas, as we lack differentiated information on countryside wage rates.[15] Figure 4, depicting a regional average for the AOF, BWA and BEA, shows that the incidence of direct taxes in the British areas remained fairly stable over time, but that the levels were much higher in BEA than in BWA, testifying to a very different approach of

[15] To transform the French tax rates from an individual to a household base, we have made the assumption that an average household existed of a father, a mother, and 3-4 children – of which one would have been older than 10 years and not yet started a family of his or her own. Although there was obviously greater variation in terms of family composition, these assumptions correspond well with demographic survey reports and should thus, on an aggregate level, be a fairly good approximation. Considering tax rate were slightly lower for women and children in the French African colonies, we multiply or divide not by a factor 4 (a father, mother and two children), but by 3.

British colonial governments in East and West Africa. Tax pressure in the AOF increased substantially in the course of the colonial period, which is part of the reason why per capita revenue levels in French Africa converged to British Africa. Yet, above all, figure 4 shows that, despite the higher supposed levels of coercion in French colonies, it took the AOF some 15 years longer to reach the average rates of direct tax pressure recorded in BEA in 1911.

6. Forced labor

One important aspect of the colonial fiscal state that we have glossed over so far, and which links up with a discussion about varying tax burdens, are the implicit taxes that were levied in the form of forced labor obligations. Forced labor schemes were pervasive in both French and British Africa, and were deeply rooted in pre-colonial forms of labor coercion such as slavery, labor pawning, debt bondage and communal labor services. They were imposed by both the colonial state and 'private agents' – chiefs, creditors – leading to a wide range of different practices regarding the type of work to be performed, the labor conditions, the number of days of work, and the compensation that was to be received in return, if any. It is worth wile to briefly explore the extent of cross-colonial uniformity and variety in the use and regulation of labor *corvée* services.

Although colonial states justified the implementation of forced labor services as being part of their 'civilizing mission' (Conklin 1997), the forced recruitment of native labor was above all key to solving the 'revenue dilemma' in largely rural and non-monetized African economies (Young 1994). The development of infrastructural networks, as well as the expansion of mining and cash-crop enclaves, required vast numbers of African workers, which were in many places difficult, if not impossible, to recruit via wage labor markets.

Regarding the use of labor services *by the state* it appears that the French organized this practice in a more systematic manner than the British did and, in terms of implicit additional tax income, probably also relied on it to a larger degree. This partly explains why the French withstood the growing criticism by international anti-slavery and pro-labor organizations, by refusing to sign ILO treaties that were aimed at curtailing this practice in the 1930s, treaties that the British did sign (Fall, 1993, 2002; Cooper

1996; Ash, 2006; Okia 2012). The *prestations* in French Africa, which became officially regulated in 1912, applied to every African over the age of 15 for a maximum of 12 working days against a fixed daily ration, and were to be carried out on projects within 5 kilometers of the workers' residence, such as railway construction, road clearing, road maintenance, school building, porterage, and the cultivation of cash-crops. Europeans and the so-called *évolués* were generally officially exempted from this labor tax, or they, together with some of the richer African families, enjoyed the privilege of being able to 'buy-out' their labor obligations.[16] These services were coordinated by the district administration (*cercles*), local chiefs and village heads, and were often poorly supervised.

The British did not introduce an equivalent uniform legal framework for forced labor practices, and took a more pragmatic approach, with largely varying intensities of labor coercion (Akurang-Parry 2000). In the more commercialized areas with well-functioning labor markets, such as in the rapidly expanding cocoa sector in the Gold Coast, forced labor practices were implemented (or maintained) in order to preserve part of the scarce labor supply for public works, especially local infrastructure projects such as road clearing. Workers were recruited by local chiefs and were usually paid for their services in cash or kind. In Uganda, the British adopted the indigenous practice of *kasanvu* (labor tribute) and allowed people to choose: either conduct public work for a fixed amount of days, or avoid the tax by cultivating cotton, which allowed the colonial state to capture rents from trade taxes. So both through the threat of forced labor and the actual practice of it, the British tried to enhance state revenue (Nayenga 1981). In British East Africa labor migrants from British India also relieved part of the labor demand for the large-scale infrastructural projects. Finally, the British made effective use of large-scale land alienation and the creation of native reserves in Kenya and Southern Rhodesia to raise revenue, where the mechanism was twofold. European settlers developed commercial agriculture, which enhanced the potential of trade taxes, and at the same time converted African farmers into wage workers to run the plantations and mines.

[16] The option to buy-out one's labor obligations was expanded to larger groups in the course of the colonial period, and especially in the 1920s. Yet, the additional state income generated from these 'buy-outs' (*rachat des prestations*), suggests that the number of people doing so was negligible. The buy-out rate was in most places roughly the equivalent of the going unskilled native wage rate.

Both the British and the French relied upon the cooperation of native chiefs to recruit labor, but payments for this service seem to have been more common in British African colonies. The harshest forms of forced labor were adopted in the fiscally least developed areas, where the colonial government's desperate scramble for revenue made it resort to outright repression. Although we lack reliable quantitative evidence for the AEF, there are many indications that the most severe excesses of forced labor regimes have occurred there. The AEF's late, but rapid catch-up (as can be seen in table 2) owes much to the construction of the Congo-Océan railway between 1921 and 1934; a project that was funded by extensive and repeated subsidies from Paris, in combination with the coerced labor from more than 127,000 African men to work on its construction without any pay other than food rations, killing at least 20,000 man through poor labor and health conditions (Sautter 1967).

To what extent was the more systematic use of forced labor in French Africa the outcome of a different and more ambitious style of French imperial governance, in which they put more pressure on the indigenous population to finance a heavier colonial state apparatus? We do not have sufficient space to explore this question in detail here, but reasoning by analogy from our study of the variation in indirect-direct taxes, we are inclined to belief that the practice of forced labor was more intensive in areas where alternatives were scarce. The challenge of *mise en valeur* was greater in French Africa, and higher degrees of labor coercion would, at least to some extent, redress the grave fiscal imbalances within the colonial federations. In the 1920s the *prestations* were lowered in Sénégal from 10 days of labor service to 4 under pressure of increasing local resistance against the system. In the AEF they were maintained at a 10 days minimum.

This hypothesis clearly warrants further research and could possibly be informed by an analysis of the Congo Free State (Belgian Congo after 1908). What made the Congo Free State unique from its very inception as a constructed and partly illusionary political entity was the stipulation in the Berlin conference treaty that it was free trade zone, where any form of trade taxes were prohibited (Gardner 20nunn, Clement 2013). The atrocities that have been committed in the Congo are widely considered as among the worst scenarios of colonial repression and exploitation. Without offering any moral justification, it would be good to consider to which extent the rubber campaigns have to be understood in the context of absent alternatives for raising revenue.

7. Conclusion

Despite the different objectives and structures of French and British colonial governance in Africa, the formation of the fiscal state was primarily determined by the opportunities and constraints set by local commercial and environmental conditions, including African responses to intensifying colonial connections. French and British colonial administrations introduced a wide range of different tax instruments, but the overall logic was largely similar: substitute direct taxes for indirect taxes whenever possible and use forced labor to enhance trade *and* custom revenues. Our comparative analysis has generated three kinds of evidence underpinning this claim.

First, we found that the two most important determinants of per capita revenue levels were the location of the colony (coastal or landlocked) and the length of colonial rule in 'pacified' territories, which is an implicit measure for the degree of open resistance against European encroachment. Although the coefficient of the British dummy was economically meaningful, it did not appear statistically significant, nor was its magnitude comparable to that of the geography dummy. British-French competition, especially in West Africa, for the more prosperous and/or commercially most promising areas is consistent with this view.

Second, in terms of the *source composition* of colonial taxes, we found a negative correlation between budget size and direct tax shares that was both remarkably strong and remarkably similar across British and French territories This suggests that where colonial administrations had the option, they preferred to tax trade and refrained from imposing or leaning heavily on direct taxes. Although historians have long interpreted the imposition of these direct native taxes as serving a wide range of policy objectives, such as labor commodification, civilizing the native subject and the integration of local power structures, we consider the use of this tax instrument first and foremost as a second-best alternative in view of lagging custom revenues. We found the highest direct tax shares in the least commercialized areas, which were usually also the areas that were subdued later in time, such as British East Africa as opposed to British West Africa, and the landlocked areas of French West Africa and French Equatorial Africa.

Third, we found no marked difference in terms of the *temporal development* of colonial state budgets. Infrastructural and agricultural investments that were meant to unlock the economic potential of African hinterland areas increased the potential of revenue collection over time. In the majority of cases the tax revenues increased (in nominal and real terms) by enlarging the share of indirect taxes and non-tax revenues (railway receipts mainly). Commercialization thus changed the composition of the fiscal system and it did so both in British and French Africa.

The most important British-French distinction is probably the French preference for federal governance structures. But the federal political system was not just the product of a 'French' blueprint of imperial organization, it can also be regarded as a solution to a fiscal problem: how to integrate vast lowly settled hinterland areas into a fiscally viable state structure? Colonies such as Niger, Mauritania, Chad and Oubangui-Chari were heavily supported by an overarching federal governance structure where part of the costs of state formation (defense, administration) was born collectively. The federations of the AOF and the AEF greatly facilitated the process of integrating hinterland areas into the Atlantic economy by the construction of roads and railways. The drawback was that economic gravity centers such as Sénégal and Côte d'Ivoire and Gabon, had to give up part of their control over tax revenues, especially custom duties. The British integrated neighbor territories in federations or custom unions as well, but in a more ad hoc fashion. However, *within* these overarching structures, local administrations differentiated tax rates and labor corvée services in order to align their tax systems with local political and economic conditions. And whenever British or French administrations could finance the state without imposing direct taxes they chose to do so.

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Appendix

A1. Construction PPPs

The PPPs were calculated in three steps. First, we took the unweighted average unit wage or salary values of three countries in British Africa (BA: Gold Coast, Gambia and Sierra Leone) and French Africa (FA: Dahomey, Sénégal and Côte d'Ivoire) for which there are comparatively good records. The equation for French Africa is:

$$UV_{ij}^{FA} = \frac{\sum_{i=1}^{x=1-n} uv_{ij}^{x^{FA}}}{n}$$

Where x refers to each of the individual colonies, $n = 3$ and UV_{ij} refers to the unit values of the four government expenditure categories i, that is, an indigenous school teacher (low rank), an indigenous clerk (low rank), an unskilled worker in government service (construction worker, gardener, cleaner, messenger or any other comparable type of job with comparable annual earnings) and a skilled construction worker (carpenters as a rule), in each of the six benchmark years j. For British Africa we did the same.

Second, we matched the wage and salary UV's for each category i and each year j to obtain the French-British unit value ratios:

$$UVR_{ij}^{FABA} = \frac{UV_{ij}^{FA}}{UV_{ij}^{BA}}$$

Third, we aggregated the UVR's up to a PPP$_j$ for each year j applying equal weights (¼th) to the four expenditure categories i:

$$PPP_{j}^{FABA} = \sum_{i=1} UVR_{ij}^{FABA}$$

Table A.1: Unit Value Ratios and Purchasing Power Parities, 1911-1937

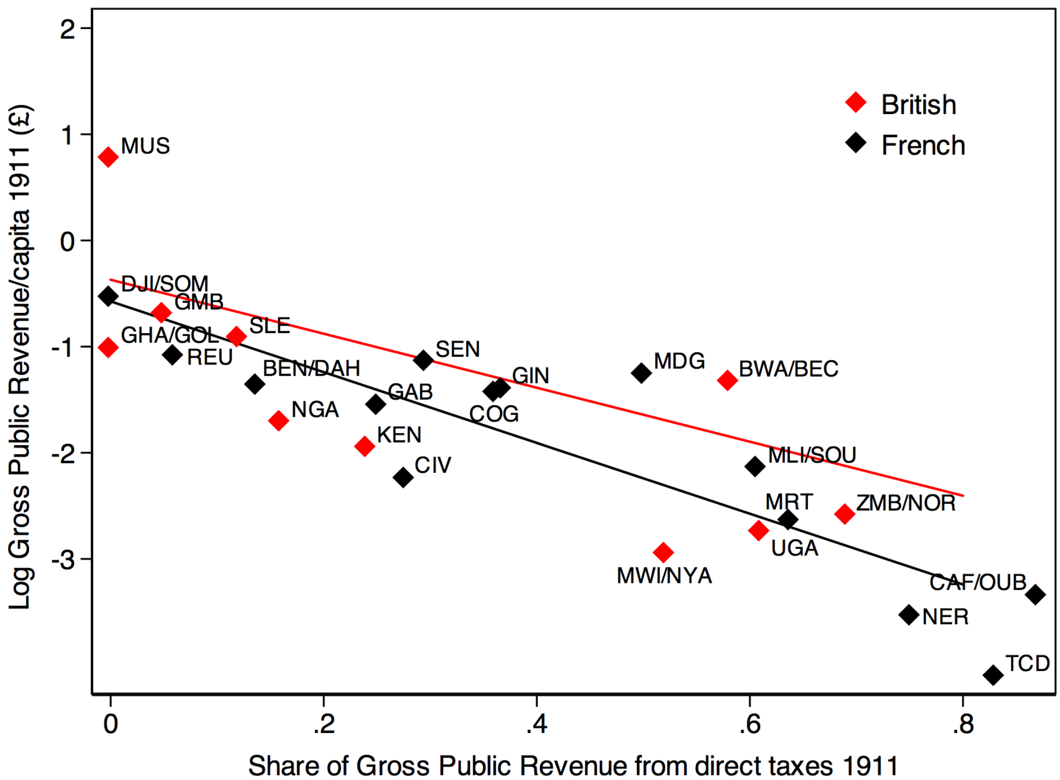
MATCHING 1911	**BRITISH AFRICA (d.)**	**FRENCH AFRICA (fr.)**	
Indigenous clerk/commis	50.00	1500.00	30.00
Indigenous teacher/instructeur	50.00	1800.00	36.00
Carpenter/charpentier	35.70	4.02	27.03
Unskilled worker/manouvrier	12.06	1.61	32.04
PPP (FWA/BWA)			**31.27**
Official Exchange Rate (Ffr/£)			25.1
MATCHING 1920	**BRITISH AFRICA (d.)**	**FRENCH AFRICA (fr.)**	
Indigenous clerk/commis	55.00	1500.00	27.27
Indigenous teacher/instructeur	56.00	1950.00	34.82
Carpenter/charpentier	33.00	3.88	28.22
Unskilled worker/manouvrier	18.00	1.5	20.00
PPP (FWA/BWA)			**27.58**
Official Exchange Rate (Ffr/£)			52.02
MATCHING 1925	**BRITISH AFRICA (d.)**	**FRENCH AFRICA (fr.)**	
Indigenous clerk/commis	67.00	3500.00	52.24
Indigenous teacher/instructeur	60.00	3500.00	58.33
Carpenter/charpentier	60.00	10.25	41.00
Unskilled worker/manouvrier	16.62	3	43.32
PPP (FWA/BWA)			**48.72**
Official Exchange Rate (Ffr/£)			101.3
MATCHING 1929	**BRITISH AFRICA (d.)**	**FRENCH AFRICA (fr.)**	
Indigenous clerk/commis	56.00	6150.00	109.82
Indigenous teacher/instructeur	60.00	7400.00	123.33
Carpenter/charpentier	51.60	16	74.42
Unskilled worker/manouvrier	16.60	4.8	69.40
PPP (FWA/BWA)			**94.24**
Official Exchange Rate (Ffr/£)			124.02
MATCHING 1934	**BRITISH AFRICA (d.)**	**FRENCH AFRICA (fr.)**	
Indigenous clerk/commis	81.00	6030.00	74.44
Indigenous teacher/instructeur	91.00	7725.00	84.89
Carpenter/charpentier	37.50	15	96.00
Unskilled worker/manouvrier	13.00	4	73.85
PPP (FWA/BWA)			**82.30**
Official Exchange Rate (Ffr/£)			76.7
MATCHING 1937	**BRITISH AFRICA (d.)**	**FRENCH AFRICA (fr.)**	
Indigenous clerk/commis	56.00	6100.00	108.93
Indigenous teacher/instructeur	50.00	8500.00	170.00
Carpenter/charpentier	14.20	3.45	58.32
Unskilled worker/manouvrier	39.78	10	60.33
PPP (FWA/BWA)			**99.39**
Official Exchange Rate (Ffr/£)			122.175

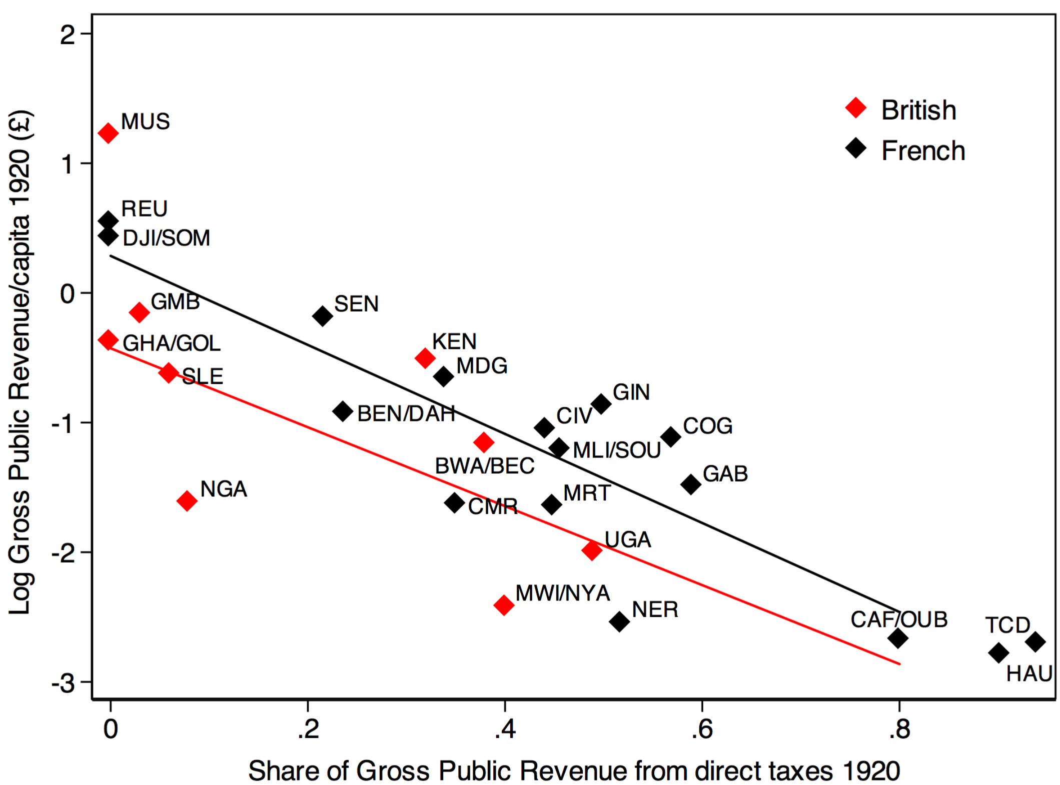
Notes: Starting salaries of indigenous clerks and teachers were derived from those with a rank just above a probationer/stagaire.

Table A.3: Relationship between metropolitan identity and per capita tax revenue

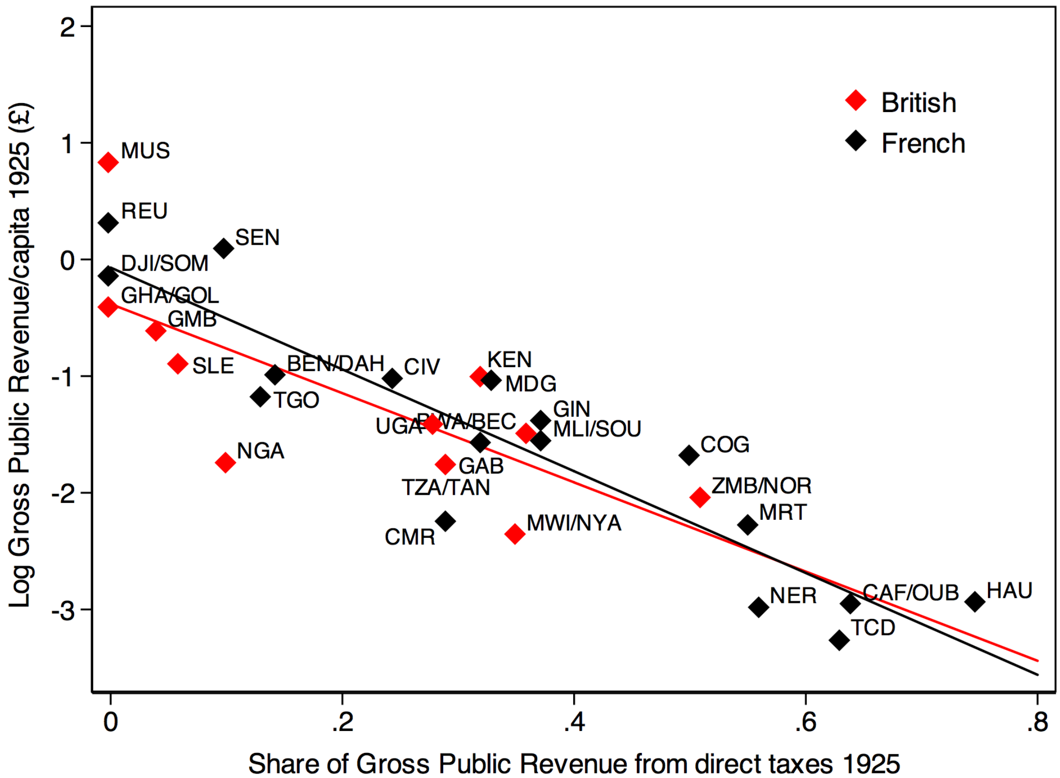
Dependent variable	**Gross Public Revenue per capita (log)**					
	OLS					
	1911	1920	1925	1929	1934	1937
British indicator	0.461	0.212	0.273	-0.020	-0.220	0.171
	(0.230)	(0.244)	(0.243)	(0.222)	(0.215)	(0.252)
Coastal indicator	1.439***	1.371***	1.076***	0.881***	0.789**	0.943**
	(0.258)	(0.285)	(0.255)	(0.233)	(0.226)	(0.287)
Years pacified	0.037*	0.020	0.024*	0.033**	0.027**	0.034*
	(0.014)	(0.011)	(0.010)	(0.009)	(0.009)	(0.012)
Lowest monthly rainfall	-0.015	-0.011	0.000	0.000	-0.009	-0.007
	(0.009)	(0.010)	(0.010)	(0.009)	(0.019)	(0.010)
Average max humidity	0.006	-0.013	0.002	-0.014	-0.154	-0.010
	(0.024)	(0.026)	(0.022)	(0.020)	(0.019)	(0.023)
Island indicator	-0.802	0.548	0.431	-0.294	0.213	-0.352
	(0.759)	(0.698)	(0.679)	(0.612)	(0.584)	(0.762)
Number obs.	24	26	28	28	27	23
R^2	0.84	0.78	0.75	0.73	0.730	0.695

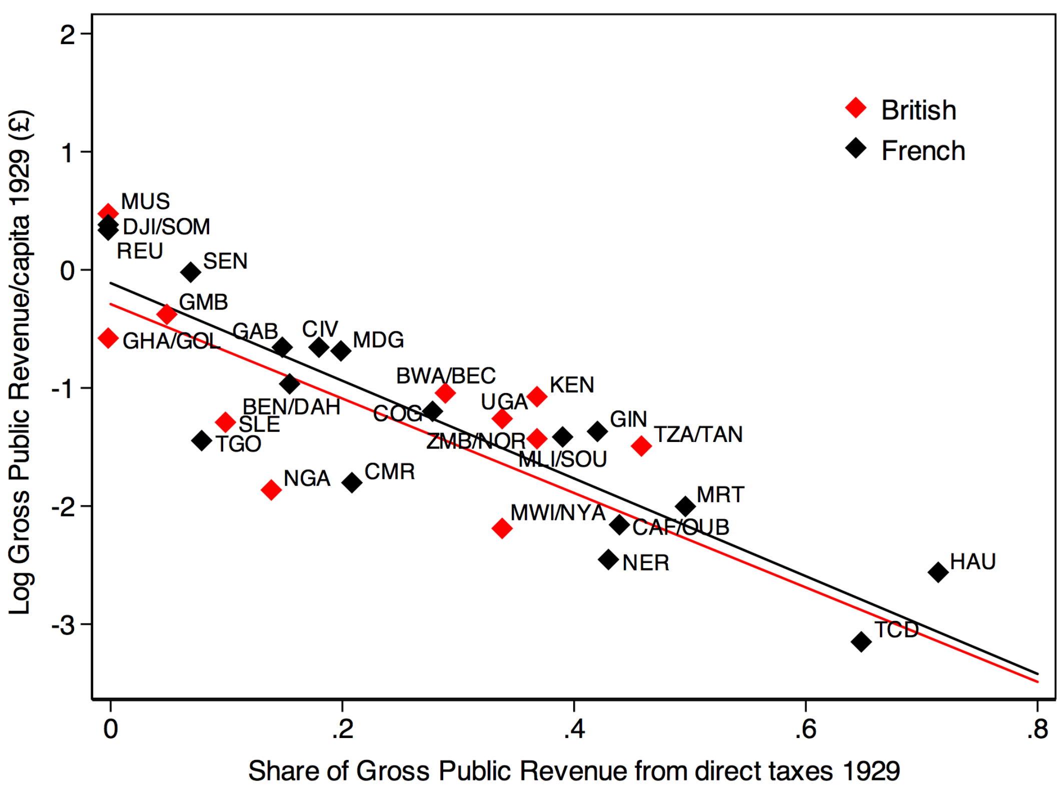
Figures A.1a-b: GPR/capita (log) vs. share GPR from direct taxation in 1911 & 1920



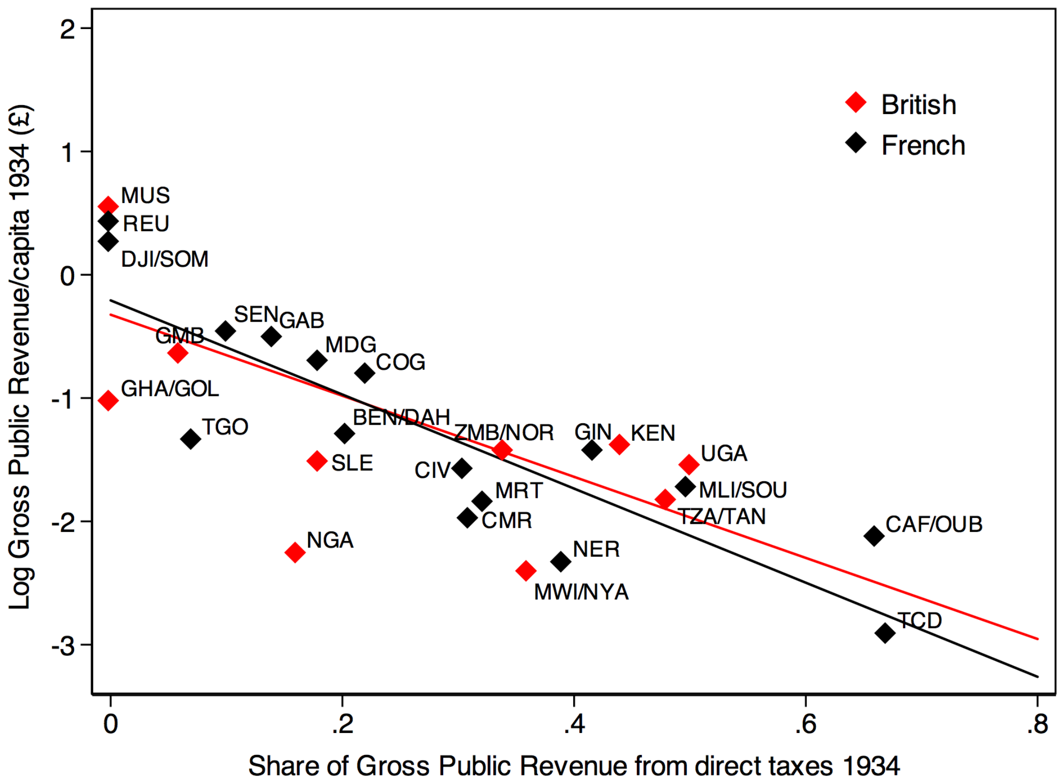


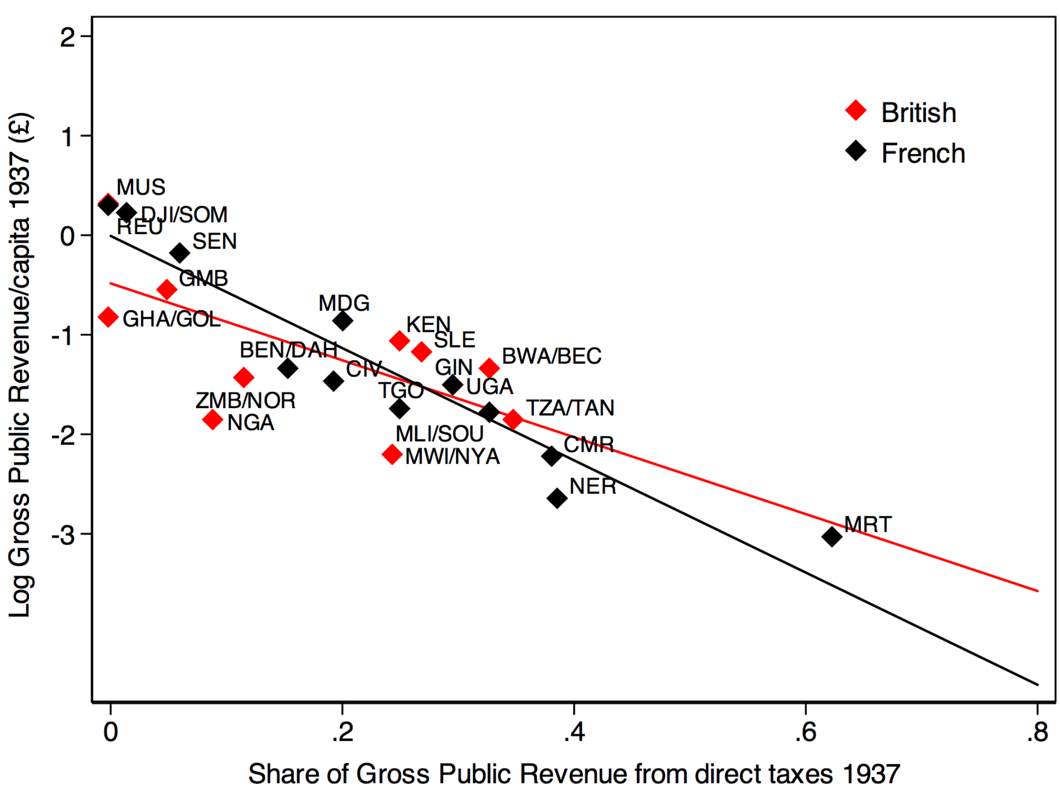
Figures A.1c-d: GPR/capita (log) vs. share GPR from direct taxation in 1925 & 1929





Figures A.1e-f: GPR/capita (log) vs. share GPR from direct taxation in 1934 & 1937





A2. Sources PPPs and Government Revenues

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