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**Denis Cogneau  
Yannick Dupraz  
Sandrine Mesplé-Soms**

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# **Fiscal Capacity and Dualism in Colonial States: The French Empire 1830-1962**

Denis Cogneau<sup>1</sup>, Yannick Dupraz<sup>2</sup> and Sandrine Mesplé-Somps<sup>3</sup>

July 2018

**Abstract.** A novel data collection provides comparative evidence on the colonial states of the “second” French colonial empire, from their foundation to their devolution in the 1960s. Colonial states were neither omnipotent Leviathans nor casual night watchmen. On the one hand, we emphasize the extractive efficiency and capacity of adaptation of colonial states to different socioeconomic contexts and varying historical conditions. On the other hand, we put forward dualism as their main common feature and legacy. Colonial public expenditure was biased towards the needs of French settlers and capitalists. It was also costly, as high wages had to be paid to expatriated civil servants.

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<sup>1</sup> Paris School of Economics, IRD, EHESS.

<sup>2</sup> University of Warwick.

<sup>3</sup> Institut de Recherche pour le Développement (IRD), Université Paris-Dauphine, PSL Research University, LEDa, UMR [225] DIAL.

## **Fiscal Capacity and Dualism in Colonial States: The French Empire 1830-1962**

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A sufficiently autonomous government able to provide public goods and implement efficient policies is a major ingredient of economic development, if only for late-starters (e.g., Gerschenkron 1962; Amsden 2001; Adelman & Morris 1997 provide a review). Therefore the consolidation of state capacity, involving in particular the building of a strong tax base, is today widely considered one of the most important challenges faced by poor countries (Besley & Persson 2011). Yet, as argued by Philipp Hoffman (2015), historical state building experiences, in all their diversity, are under-studied. The history of the state overwhelmingly relies on the experience of Western European countries (Tilly 1990, Dincecco 2015) or of today's developed countries (Lindert 2004).

The recent literature on state-capacity draws its empirical evidence from fiscal and legal decisions taken within formally independent countries (Besley & Persson 2009, 2013 & 2014). Yet the majority of today's independent states are the direct successors of colonial administrative structures. A growing body of literature on long-run economic development has stressed the importance of colonial origins, and their bad institutional legacies in the case of colonies of extraction, where very few Europeans settled (Acemoglu & Robinson 2012). Though colonial states are increasingly studied, we still know very little about them. In particular, very few works adopt a systematic quantitative and comparatist approach.

In the historical and political science literature, the colonial state is viewed at the same time as very powerful, and very weak. Though Crawford Young (1995) emphasizes that the African colonial state lacked a few attributes of stateness (sovereignty, national doctrine and international existence), he nevertheless describes it as a Leviathan ("*Bula Matari*" = crusher of rocks in kikongo language), displaying "the purest modern form of autonomous bureaucratic authority" (p. 160), especially at its supposed apex between the two World Wars. In contrast, Jeffrey Herbst (2000) characterizes the African state as "administration on the cheap" (p. 73) with "limited ambition" (p. 77) and, despite its brutality, unwilling and unable to extend its control. For Frederick Cooper (2002), African colonial states were "gate-keeper states" (p. 5), controlling the ports and the trade flows in and out of the colony, but unable to extend power inwards.

Colonial administration left a mark on postcolonial “successor states” (Cooper, 2002).<sup>4</sup> Young sees a legacy of authoritarianism, Mahmood Mamdani (1996) of “decentralized despotism” (pp. 37-61), whereas Herbst instead sees “non-hegemonic rule” persisting within colonial boundaries now protected by the U.N. For Cooper (2002), African states remained gate-keepers, and the critical juncture is not independence, but the period 1945-1965, which is crucial to analyze in order to understand colonial legacies. However, recent quantitative studies of African colonial public finances focus on the period before World War II (Ewout Frankema 2011, Frankema and van Waijenburg 2014, one notable exception is Gardner 2012). Recent works on African colonial public finances also usually focus on British colonies, and studies of the French empire are still rare (with the exception of van Waijenburg 2018, and Frankema and van Waijenburg 2014). Questions about the formation and action of colonial states and about postcolonial hysteresis of course extend outside Africa, if only for instance to South-East Asia studied by Booth (2007).

While colonial states are often approached from the side of taxation and fiscal capacity, it is fruitful to approach the colonial state also from the side of expenditure. Indeed, for “growing public” (Lindert, 2004), the efficiency and sectoral allocation of public expenditure, “productive efficiency” in the terminology of Besley and Persson, are as important as the level and structure of taxes, “extractive efficiency”.

A novel data collection allows us to provide comparative evidence on colonial states of the “second” French colonial empire, from their foundation to their devolution in the 1960s. From administrative archives, we extracted exhaustive and detailed revenue and expenditure data, as well as public employment data, and a set of outcomes of public investment like school enrollment, health inputs, and infrastructure. Our database covers the whole colonial period, and all the French colonies of Northern and Sub-Saharan Africa, and South-East Asia (Indochina). We were able to extend some of these data to 1970, which allows us to study the crucial period of transition from colonial to independent states.

Colonial states of the French empire were neither omnipotent Leviathans nor casual night watchmen. On the one hand, we emphasize their extractive efficiency and their capacity of adaptation to different economic contexts and varying historical conditions. On the other hand, we underline that the public expenditure of French colonies was biased — towards the needs of settlers — and costly, as high public wages needed to be paid to expatriated civil servants.

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<sup>4</sup> Bayart (1993) and Cooper (2014a) also stress this point by asserting that the African colonial state was to some extent a co-production of colonial rulers and autochthonous elites, as the local elites remained in power after independence in most African countries.

Dualism, the existence of high-wage formal enclaves in poor, agricultural economies, was an important feature of colonial states, and an important legacy.

Colonial states did not have very limited resources, as fiscal extraction was high. Internal public revenue represented on average around 9% of GDP in 1925 and around 15% in 1955. Hence even under a strict doctrine of self-financing, colonial states could afford spending, and not only in order and control. They could even borrow and honor their debts. For the colonizer, fiscal capacity meant the capacity to adapt to very different contexts, in particular to the wealth of the colony and the presence or absence of a large settler population. The French Republic was able to resurrect *Ancien Régime* fiscal and legal features, or to recycle the fiscal instruments of pre-colonial states, in order to tax local populations, in some places very heavily. Furthermore, colonial administrations did not stop investing in fiscal capacity when independence became foreseeable in the fifteen years following World War II. The causality ran the other way, as the extension of the franchise demanded and somewhat obtained by local independence movements implied more public expenditure, and hence more taxation. Colonial states modernized their fiscal apparatus and succeeded in increasing tax revenue. Taxing to invest in development was motivated by the hope of preserving imperial domination. Laws and taxes changed to become more progressive, in both meanings of the word. The degree of modernization of the fiscal apparatus was also dictated by the local context. Initially richer settler colonies of North Africa ended up with a more modern fiscal structure than poor countries of Sub-Saharan Africa where the dependence on international trade taxation became very high.

The true limitation of the colonial state was not in its lack of capacity to tax, but in the nature of its expenditure. Colonial public expenditure was biased and costly. It was biased, as it had to serve first the interests of French settlers and capitalists, by favoring investments in railways and harbors to connect mines and plantations to the ports and by providing settlers with urban public services at the standards of Metropolitan France (education, health, electricity). The larger the settlers' enclave, the more public spending was needed. Public expenditure was particularly costly as it had to rely on expensive French civil servants and army men. This high cost meant that despite substantial fiscal capacity the colonies were still under-administered, in terms of the number of civil servants who could be financed and of the volume of public goods that could be produced. While development was costly from the start, it turned even more costly when colonized populations began demanding more equality in pay and in access to public goods. As independence approached, the French increased military and social spending at the same time in an effort to retain the empire. Whereas fiscal autonomy had been

the norm before World War II, colonization turned costly for Metropolitan France as well, as extending the settlers' enclave to the rest of the population meant large overseas redistribution and ever increasing transfers. Dualistic economies and societies were born, as well as aid dependency, both features that survived the decolonization era. Independence, obtained between 1956 and 1962, did not bring any new discontinuity, and at the beginning of the 1970s, the new independent states had maintained the same size as in the 1950s and were still dependent on French aid for 5 to 15% of their expenditure.

The remainder of this paper is organized as follows. Section 1 provides a short historical background. Section 2 summarizes the data construction effort, described further in a large data appendix. Section 3 looks at tax extraction and distribution across space and time. Section 4 looks at spending, costs, and financing issues. Section 5 concludes.

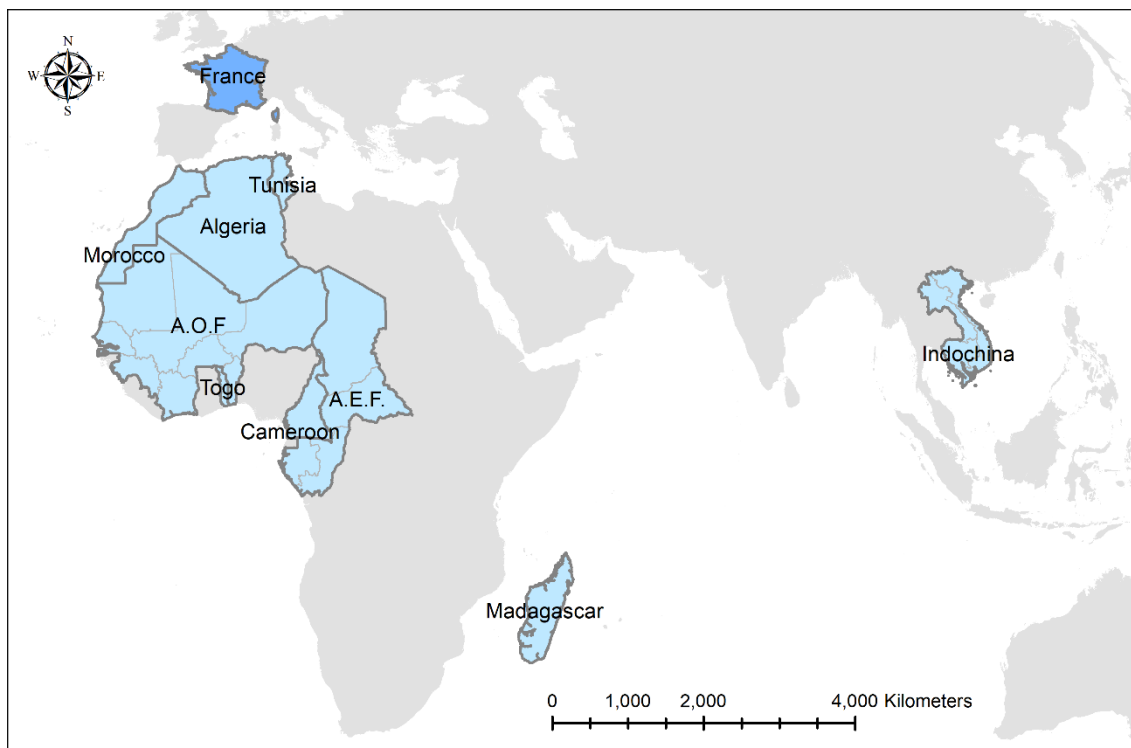
## **1. Historical background and structural features**

Our database covers colonies acquired during the 19<sup>th</sup> and 20<sup>th</sup> centuries, making the bulk of what is sometimes called France's "second colonial empire", in opposition to France's "first colonial empire", composed of colonies acquired before 1830 and largely located in the New World. Figure 1 presents the colonial territories included in our database. Some French possessions are absent: Syria and Lebanon, which the French ruled between 1920 and 1945 under a League of Nations mandate; Djibouti, a small trade post South of Eritrea; the Comoros and Pacific Ocean islands. We also exclude the remains of the first colonial empire: the West Indies (Guadeloupe, Martinique), French Guyana, the Réunion Island in the Indian Ocean, and the five trade posts of India.

The different parts of France's second colonial empire differed in their pre-colonial histories, their geographies, their economies. They did not all have the same administrative status within the empire (colony, protectorate, mandate) and did not receive the same number of European settlers. In this section, we first give a brief timeline of the conquest of France's second colonial empire and discuss initial economic and demographic conditions circa 1850. We then discuss settlement patterns and the political representation of settlers and colonized populations. It is particularly important for our purpose, as it is crucial to understand the type of political bargaining that lay behind decisions of taxation and expenditure in the colonies.

Finally, we give a brief account of the ways the various regions of the empire obtained independence between 1954 and 1962.<sup>5</sup>

Figure 1 — Colonial territories present in our data



### *The conquest of France's second colonial empire*

In 1827, Hussein Dey, the Bey of Algiers, struck the French consul with his fan in a dispute over French debt. This gave the French an excuse to attack Algiers in 1830. The conquest of Algeria lasted four decades, and ended in 1871 when the large insurrection in the province of Kabylie was subdued. Before its conquest, Algeria was formally part of the Ottoman empire, though it benefitted from a large autonomy. This was also the case of Tunisia, whose autonomous government had diplomatic visibility. The French invaded Tunisia in 1881, officially because of Berber incursions in the Algerian territory, interrupting a process of modernization of the state similar to the Ottoman *tanzimat* or to the reforms initiated by

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<sup>5</sup> See the reference list for sources. In particular, for Maghreb-wide historical comparisons, see Valensi (1969), Rivet (2002), Katan Bensamoun (2007). For Algeria's colonial history, see Julien (1964), Ageron (1979 & 1990), Stora (1991 & 1992), Bouchène et al. (2012), Mc Dougall (2017). On public finance one of the first references is Douël (1930). For Morocco's colonial history, see Germouni (2015). For Tunisia's colonial history, see Martin (2003), Chouikha & Gobe (2015), Masri (2017). For Indochina's colonial history, see Brocheux & Hémyery (1994), Brocheux (2009). For the history of French Africa south of the Sahara, see Suret-Canale (1962), Coquery-Vidrovitwh (1974), M'Bokolo (1992), Manning (1998), Almeida-Topor (1999). For the economic history of West Africa, see Hopkins (1973). For the colonial history of Madagascar, see Randrianja & Ellis (2009), Fremigacci (2014).



Muhammad Ali in Egypt.<sup>6</sup> Tunisia was not a colony, but a protectorate, and its official ruler remained the Bey of Tunis, even if actual power was exerted by the French administration. Morocco was, until 1912, a formally independent kingdom, but European imperialist interference, especially from the UK, France and Spain, had grown heavier in the second half of the 19<sup>th</sup> century. The kingdom was plagued by internal conflicts, resistance to reforms, and trade deficit. Between 1904 and 1910, it became very indebted towards the French bank Paribas.<sup>7</sup> In 1912, the southern part of the kingdom became a French protectorate and a small northern part was conceded to Spain. Like Tunisia, Morocco was not a colony, but a protectorate. The king became a sultan, holding formal power, and a governor was appointed by the French ministry of foreign affairs. Conquest wars in the Rif (Spanish part) and Atlas mountains lasted until the mid-1930s.

The colonization of Indochina started in 1858 with the invasion of Cochinchina (South Vietnam), which became officially a colony in 1862. The other territories of Annam (Center Vietnam), Tonkin (North Vietnam), Cambodia and Laos, conquered before 1899, were officially protectorates, though Tonkin was eventually managed as a colony, and the power of local authorities (kings) was perhaps even more limited than in Tunisia or Morocco.<sup>8</sup> In 1897, the five territories were grouped in a federation, the Indochinese Union.

Sub-Saharan Africa was colonized relatively late. The French had established a trade post in Saint-Louis of Senegal in the middle of the 17<sup>th</sup> century, then in a few locations on the Atlantic coast, mainly for the purpose of buying slaves. France also possessed the Réunion Island in the Indian Ocean.<sup>9</sup> The conquest of the African hinterland started in the 1850s, accelerated during the Scramble for Africa in the 1880s, and was almost completed in 1905. French Sub-Saharan Africa was then composed of three blocks: Madagascar, the federation of West Africa (*Afrique Occidentale Française*, or AOF), established in 1895, and the federation of Equatorial Africa (*Afrique Equatoriale Française*, or AEF).<sup>10</sup> Cameroon and Togo were

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<sup>6</sup> Rivet (2002, pp.136-155). Britain agreed on a French Tunisia as it invaded Egypt at the same time (1882) and remained there until 1956, like France in Tunisia.

<sup>7</sup> Rivet (2002, pp. 155-174). On Morocco's indebtedness: Barbe (2016).

<sup>8</sup> The territory of Kouang-Tcheou-Wan at the border of China was occupied since 1899 and retroceded to China in 1945. It is not included in our figures.

<sup>9</sup> In the 1840s, the French took hold of the islands of Nosy-Be, Sainte-Marie and Mayotte. Mayotte and the Comoros archipelago became part of the colony of Madagascar in 1912.

<sup>10</sup> AOF had its capital in Dakar and was composed of eight colonies: Senegal, Mauritania, Soudan (present-day Mali), Niger, Haute-Volta (present-day Burkina Faos), Dahomey (present-day Benin), Cote d'Ivoire and Guinea. Before World War I, Soudan, Niger and Haute-Volta were forming the colony of "Haut-Sénégal-Niger." Haute-Volta disappeared between 1932 and 1946, and its territory was divided between Cote d'Ivoire and Niger. AEF had its capital in Brazzaville and was composed of four colonies: Chad, Oubangui-Chari (present-day Central African Republic), Congo, and Gabon.

added to the French empire after World War I, from the sharing of the former German empire with Britain. They were ruled by France under a mandate of the League of Nations then United Nations, but in practice, the only meaningful difference with full-fledged colonies was the preclusion of military conscription.

### *Initial conditions*

Table 1 gives rough estimates of population and GDP per capita in the colonial empire circa 1850. North Africa (NA) counted 9 million people (22% of the total), Indochina 14.2 (35%), and Sub-Saharan Africa 17.7 (43%), with 2.2 million people on the island of Madagascar and 15.2 in West and Central Africa (WCA). Though population increased significantly during the colonial period, population shares remained stable.

Table 1 – Estimates of population and GDP per capita in 1850

	France	Empire	NA			Indochina		Madag.	WCA		
			Alg.	Tunis.	Mor.	Coch.	Oth.		AOF	AEF	Cam.
Population (millions)	36.2	40.2	4.2	1.3	3.4	1	13.2	2.2	9.3	3.5	2.4
			9			14.2			15.2		
Urbanization (%)	26	2.5	4.8	9.6	7.7	5.1	1.1	2.2	0.9	0.6	0.0
			6.6			1.4			0.7		
GDP per capita (1937 PPP FF)	3,793	532	944	821	726	862	371	581	465	429	482
			844			406			459		

*Sources and methodology:* urbanization data from Eggiman (1999) and Chandler (1987). Population and GDP data: see data appendix.

Our even rougher estimates of PPP GDP per capita show that North Africa was about twice as wealthy as Indochina and Sub-Saharan Africa in 1850. Algeria appears to be the wealthiest territory, but in 1850, it had already endured 20 years of French colonization, so that our GDP figures are pushed up by the presence of some 125,000 European settlers, 110,000 army men, as well as higher public expenditure. Our GDP figures for 1830 give Algeria closer to Tunisia and Morocco.<sup>11</sup> Within Indochina, extreme South Vietnam (Cochinchina) is estimated to be twice as rich as the rest, putting it at par with North Africa. Within Sub-Saharan Africa, Madagascar ranks first.

These differences in GDP per capita are reflected in different urbanization rates, from Eggiman (1999) and Chandler (1987). Urbanization rates are 6.6% in North Africa versus 1.4% in Indochina (but 5.5% in Cochinchina), 2.2% in Madagascar and 0.7% in West and Central Africa.

<sup>11</sup> GDP per capita in 1937 PPP francs is 770 for Algeria, 669 for Tunisia, 570 for Morocco.

They are also in line with what we know of the economic history of these regions and their history of political centralization. North Africa benefited from its millennial integration in the Mediterranean economy, and from its connections with the Islamic world and the Ottoman empire (Valensi 1969). In Indochina, the Nguyen dynasty had extended its imperial rule in the 19<sup>th</sup> century. It had its capital city, Hue, in Central Vietnam (Annam), counting perhaps around 50,000 inhabitants. The former imperial capital Hanoi in the North (Tonkin), was an even larger city with around 75,000 inhabitants. Yet the Mekong delta in the extreme South benefited from superior ecological conditions for rice cultivation, and had already attracted a large Chinese immigration (Bassino, Giacometti & Odaka 2010). In the 19<sup>th</sup> century, the island of Madagascar had been almost entirely united by the kings of *Imerina* (highlands around the capital city Antananarivo; Campbell 2005). West and Central Africa, in contrast, did not have a history of strong political centralization. In the regions conquered by the French, the three most salient political structures of the 19<sup>th</sup> century were probably the Dahomey kingdom in present-day Benin (Polanyi 1966; Almeida-Topor 1995), the Toucouleur empire of El Hadj Omar Tall in Senegal and Mali, and the moving empire of Samory Ture from forest Guinea to Northern Cote d'Ivoire and Ghana, all of which required some military effort to be defeated. Outside of North Africa, the two regions where the most French settlers could be found were also the ex-ante richest and most urbanized, Cochinchina and Madagascar.<sup>12</sup>

### *European settlement*

In terms of settlement pattern, the big difference was between the colonies of North-Africa, where a large number of European settled, and the rest of the empire, where plantation economies were run by a small number of settlers.

In Algeria, European started settling in numbers in the decades following the French invasion. The majority of them were French, the rest Spanish, Italian, and Maltese. They represented 3% of total population in 1850, 5.5% in 1870, and more than 10% on the eve of World War I. Tunisia was also home to a large population of French, Italian, and Maltese settlers (7% of the population in 1913). In Morocco, European settlers were never as many as in Algeria or Tunisia, representing 1% of total population in 1921, and never more than 5%.

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<sup>12</sup> For the year 1937, data on wages paid to unskilled (indigenous) laborers fit with our estimates of GDP per worker (15+ y.o. population), in that these minimum urban wages are not too far (and in most cases above) the GDP per worker. Tonkin makes the most salient exception, average unskilled wages being more than twice our GDP per worker estimate. It might be that Bassino's estimates for Tonkin are too pessimistic, if only for the year 1937 following the Great Depression.

European settlers in North Africa made a large share of urban population, especially before World War II, and a large share of public employment. Those who settled as farmers produced wine, wheat, barley, oranges, lemons and olives for export.

Outside of North Africa, European settlers were few. In Indochina, they never represented more than 0.25% of total population overall, and never more than 0.6% in Cochinchina, where the majority lived.<sup>13</sup> Even within the civil service, they were a minority (10 to 15%), though concentrated in the highest positions. In Cochinchina, the French invested in the production and exportation of rice, rubber, tea, pepper, and coffee. In Tonkin, they exploited mineral resources such as coal, zinc, and tin.

Indochina was also home to a large Chinese minority representing 1.5% of the total population of Indochina in 1925 and a bit less than 2.5% in 1948. They were, like the French, concentrated in the South

Like in Indochina, French settlers were a small minority in Sub-Saharan Africa. They never represented more than 0.5% of total population in West and Central Africa. Madagascar welcomed more settlers, in particular from the neighboring Réunion Island: they represented 0.5% of total population in 1925 and 1.2% in 1955. Madagascar was also home to a significant Indian minority.<sup>14</sup>

### *Political representation of settlers and Autochthons*

Before 1946, Autochthonous populations of the French colonial empire had, with a few exceptions, no political representation and no say in the setting of taxes and the allocation of revenue. French settlers had more political rights, especially in Algeria.<sup>15</sup>

In 1848, Algeria was officially annexed by France and divided in four major constituencies — three *départements* in the North and a military territory in the South. From 1848 to 1852, and after 1871, French settlers were represented in the French Parliament and Senate. Settlers obtained some autonomy in public finance in 1898 when a local assembly, the “*Délégations Financières*”, was established and given power to vote the budget.<sup>16</sup>

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<sup>13</sup> There were a bit more than 30,000 French people in 1925, including around 10,000 military soldiers, a bit more than 50,000 at the end of the 1940s, with 20,000 soldiers. One half of the French resided in Cochinchina in 1925, two thirds in 1948; the rest was mainly in Tonkin.

<sup>14</sup> Asians, including a small Chinese minority, represented around 0.3% of total population.

<sup>15</sup> We use the words “Autochthons” and “Autochthonous populations” to refer to the local populations of French colonies, as opposed to the settlers. The word “indigenous” (*indigène*) was used in the French colonial context and has a negative connotation. The word “native” was used in the British colonial context with a similar connotation.

<sup>16</sup> In this assembly, Muslim representatives were granted a minority of 21 seats over 69, mostly composed of *caïds* who collaborated with the French administration. Cf. Bouveresse (2008).

The French settlers of the Moroccan and Tunisia protectorates had no representation in the French parliament before World War II. Starting in 1881, the French settlers of Cochinchina had one representative. Under the Third Republic, Sub-Saharan Africa was represented in the French Parliament by one representative, elected by the inhabitants of four Senegalese municipalities (*les Quatres Communes*, Dakar, Saint-Louis, Gorée, Rufisque).<sup>17</sup> French settlers could vote, but also Autochthon inhabitants, who had progressively acquired French citizenship.

Starting in 1865, Algerian Muslims could apply for French citizenship, provided they complied with the French *Code Civil* (no polygamy or repudiation, equal inheritance for daughters etc.), but administrative procedures were cumbersome and more difficult than for the average foreign born in Metropolitan France (Weil 2005). In 1871, all Algerian Jews were granted French citizenship. In the rest of the empire, there was no special access to French citizenship, with the exception of soldiers with military decorations. In Morocco and Tunisia, the Jewish minority was never given French citizenship like in Algeria.

In the French empire, those who were not citizens were “indigenous subjects” of France. They had no political rights, but they had obligations, and notably they could be conscripted in the army. Conscription started for the needs of the Moroccan conquest in 1912 and of World War I. In Algeria, a lottery-based three-year military conscription was instituted in 1912 (Clayton 1988). In Indochina, conscription was implemented starting in 1923. Starting in 1912, improvised conscription brought some 150,000 Africans to Morocco and to the frontline trenches of World War I. From 1920 to 1960, a lottery-based military conscription applied in AOF, AEF and Madagascar (in Cameroon and Togo, conscription was precluded by the League of Nation mandates). Between 1920 and 1945 in Sub-Saharan Africa, fit men who were not drafted were reservists to be mobilized in wartime, and were also used as a free labor force in public works like railways construction (Fall 1993).

After World War II, the Autochthonous population of the colony progressively obtained more political rights. In 1946, the French Union (*Union Française*) was created to replace the French empire, and the status of “indigenous subject” was abolished. Autochthons obtained some political representation in local assemblies, in the assembly of the French Union and in the French Parliament. Suffrage, however, remained restricted to a heterogeneous list of occupations and social positions, given in particular the limitations of civil registration

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<sup>17</sup> Saint Louis and Gorée sent a representative to the Parliament of the Second Republic between 1848 and 1852. Under the Third Republic, the Senegalese communes sent a representative from 1871 to 1875, and after 1879.

(Guillemin 1958; Cooper 2014b p. 137-138). Furthermore, in the colonies, French citizens and Autochthons formed two separate electoral colleges electing the same number of representatives, so that settlers were vastly overrepresented. The protectorates of Tunisia and Morocco were not part of the new French Union, and, in Indochina where the war for independence had already started, Viet-Nam, Cambodia and Laos became “associated states” and did not send representatives to the French Parliament.

In 1956, the Defferre reform act (*loi-cadre*) granted universal suffrage to male and female Autochthons, suppressed the segregation of electoral colleges, and gave a larger autonomy to territorial assemblies. In Algeria, it is only with the Fifth Republic in 1958 that the political representation of Muslims was brought closer to their population weight.<sup>18</sup>

This extension of the franchise had of course everything to do with the increasing anti-colonial pressures from the international community and from the independence movements within the colonies. In 1956, Indochina, Tunisia and Morocco had obtained independence, Sub-Saharan African colonies were four years away from obtaining theirs, and the Algerian liberation war had already started.

### *Decolonization*

Decolonization occurred very quickly between 1954 and 1962. Indochina was the first one to go. After a short-lived invasion by Japan in March 1945, the French lost ground and could never recover control over the North held by the Viet-Minh, a coalition of communist and independentist forces. The French fought the Viet-Minh for almost ten years, but French presence in Indochina ended with the defeat of Dieng-Bien-Phu in spring of 1954. A couple of months later, the Algerian liberation war started. While fighting to keep Algeria, the French gradually accepted to let go of the rest of the empire. Tunisia and Morocco obtained their independence almost peacefully in 1956. Between 1958 (Guinea) and 1960, all Sub-Saharan African territories became independent, overall rather peacefully, though the 1947 insurrection in Madagascar and the war against the Cameroonian independence movement UPC (*Union of the Populations of Cameroon*) between 1955 and 1962 were two major exceptions to the rule. The French fought intensely to retain Algeria, sending a total of 1.5 million soldiers, but Algerian independence was eventually obtained in 1962, under strong international pressure (Connelly 2002).

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<sup>18</sup> Male and female Muslims obtained 46 deputies over a total of 67, and 22 senators over 31. Cf. Collot (1987, pp. 16-17), cited by Weil (2005, p. 108).

Independence also marked the end of the large European settlements of North Africa. Just after Algerian independence in 1962, 800,000 French citizens (including Jews) fled *en masse* to Metropolitan France. In Tunisia and Morocco, the emigration of French settlers, which started in 1956, was more gradual, yet most of them had left by the end of the 1960s. Jewish inhabitants also left, for France or for Israel.

## **2. Data construction**

Our analysis relies on the collection of first-hand data in French colonial archives. Our database covers almost all colonies of the second French colonial empire during the entire colonial period from 1830 to 1962. Extraction, compilation, homogenization, cleaning and cross-checking took years. For more details, the interested reader can refer to the large data appendix.

Collection methodology was designed to obtain homogeneously defined spending and tax headings. In particular, our estimates are not dependent on the level of decentralization in a given region, because we consider all public authorities responsible for revenue and expenditure in the colonies (from the French government, responsible for military expenditure, to federal governments, to central governments, to provincial governments, not forgetting auxiliary budget accounts for loan expenditure, health expenditure or posts and telegraphs). Data was collected yearly, except in federations (AOF, AEF and Indochina), where data was collected yearly for the federal government (*Gouvernement général*), but every three years only for colonial governments (*Gouvernements locaux*).

Our main variables are Net Public Revenue (NPR), which is public revenue net of loans and subsidies from abroad, and Net Public Expenditure (NPE), public expenditure net of loans and subsidies abroad. These variables are consolidated to avoid double-counts arising from transfers between different administrative layers. Net Public Expenditure excludes military expenditure which was, with a few exceptions, undertaken by the French Ministry of War and Ministry of the Colonies. Public revenue is broken down into different types of fiscal instruments and public expenditure into its sectoral allocation. The net deficit (difference between NPR and NPE) is broken down into different financing instruments (loans, subsidies, transfers from reserve funds). We also collected data on public wages and employment for 6 years between 1913 and 1960.

For a couple of variables, notably NPR and NPE, we were able to extend the database past independence until 1970, using various sources.

Development outcomes or policy variables like school enrollment, health personnel, electricity output, roads or railways length, international trade, were extracted from statistical yearbooks.

To produce comparable figures of revenue and expenditure, we collected population data from various primary and secondary sources, as well as local price indices, and prices for the year 1937. All our variables are expressed in 1937 purchasing power parity-adjusted francs. Finally, in order to put fiscal figures in economic context and express public revenue as a share of GDP — a standard measure of fiscal capacity — we dedicated a special effort to devise GDP estimates for France and each colonial territory, combining national accounting exercises (starting in the 1950s) and historians' estimations of GDP growth in volume. A more detailed explanation of our methodology can be found in the data appendix.

Though we produced data for (almost) all years of the colonial period, our presentation relies on the detailed analysis of two key years, 1925 and 1955. In 1925, France's second colonial empire had reached its largest extent, with the inclusion of Morocco in 1912, and Cameroon and Togo in 1919. The French civilian administration had fully replaced the military and was able to draw stable fiscal revenue from the colonial economies. 1955 provides a snapshot of late colonialism. Indochina had then already left the empire, Tunisia and Morocco were about to get their independence, Algeria's liberation war had just started, and development plans were run in both North Africa and Sub-Saharan Africa.

### **3. Fiscal extraction: high and rising**

Fiscal extraction was already high in 1925, when Net Public Revenue represented 9.0% of GDP on average in the French colonial empire. Revenue then kept rising until decolonization. In 1955, Net Public Revenue represented on average 16.7% of GDP in the French colonial empire. These high levels of fiscal extraction were obtained with fiscal tools adapted to the local geographic, demographic and economic context. Modern fiscal tools were used in places where a large urban population could be taxed. In poorer regions of the empire, the French Republic resurrected *Ancien Régime* fiscal tools, such as monopoly revenues, head taxes, and forced labor.

#### *A sizeable colonial state*

Table 2 provides descriptive figures on the size of the colonial state in each region of the empire for our two key years, 1925 and 1955. In 1925, Net Public Revenue reached 9.0% of



GDP in the empire as a whole, more than half the figure of Metropolitan France (16.7%). Fiscal extraction was therefore far from low in the colonies, and actually high if we consider it in comparative perspective. This is not very far from the share of public revenue in France in 1900 (13%).<sup>19</sup> In China, the share of revenue at all levels of government in GDP never surpassed 5.4% in 1936 (Maddison 2007, p. 53; Young 1971, p. 146). According to Sokoloff and Zolt (2007), tax revenue of the central government ranged between 6 and 8% of GDP in Latin America (Argentina, Brazil and Mexico) in 1930 (p. 123). This figure was not very different in the French empire, at 5.8% on average.

What about the colonies of the British empire? Existing work tend to show that colonial identity was not an important determinant of the level of fiscal extraction. Frankema and van Waijenburg (2014) put forward geographical characteristics as more important than identity of the colonizer. In a companion paper, we show that in West Africa, geographical neighbors colonized one by the British, the other by the French, had very similar levels of public revenue and expenditure per capita throughout the colonial period (Cogneau, Dupraz, Mesplé-Soms 2018).

While Metropolitan France spent some 3% of GDP in debt service and 4% in the army, colonies did not pay for military expenditure and their debt service was limited. Under the doctrine of self-financing that applied until World War II, they receive practically no net subsidies from Metropolitan France, and their capacity to tax directly determined their capacity to spend and reimburse their debt. If we consider civilian public expenditure as a percentage of GDP, we find very similar figures for Metropolitan France and the colonial empire (8%).

Of course, because in 1925 France was about 10 times richer than its colonial empire, the size of the state is about 10 times higher in France when expenditure is expressed in 1937 francs per capita (703 versus 69). If military expenditure is added, this ratio get even higher, as military expenditure directly allocated to the colonies (in particular for military conscription) represents only a small share of the amount spent by France for the defense of its territory and for its imperial projection.<sup>20</sup>

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<sup>19</sup> INSEE. *Annuaire statistique de la France, résumé rétrospectif*. Paris, 1966, p. 486-490 for the central government, p. 503-505 for *départements* and *communes*. GDP from Toutain (1987).

<sup>20</sup> French military expenditure per capita is high in North Africa in 1925 (128 1937 PPP francs), as it is affected by the Rif War in Morocco. The figure for 1955 is also high (159) as it is affected by the beginning of Algeria's independence war.

Table 2 – Fiscal extraction and state size across the French empire in 1925, 1955 and 2010

	<u>France</u>	<u>Empire*</u>	<u>NA</u>	<u>Indoch.*</u>	<u>Madag.</u>	<u>WCA</u>
<b>Year 1925</b>						
Population (millions)	40.46	64.57	13.67 <sup>a</sup>	26.06	3.57	21.27
GDP per capita (1937 FF)	8,776	857	1,846 <sup>a</sup>	632	693	525
Share of Europeans (%)		1.8	8.1 <sup>a</sup>	0.1	0.5	0.1
Net Public Revenue / GDP (%)	16.5	9.0	8.1 <sup>a</sup>	12.5	9.9	5.5
Central gov. Tax Revenue / GDP (%)	11.0	5.8	4.8 <sup>a</sup>	7.6	8.4	5.2
Net Public Exp. (civilian) / GDP (%)	8.0	8.1	7.8 <sup>a</sup>	10.9	8.3	4.4
NPE (civilian) per capita (1937 FF)	703	69	143 <sup>a</sup>	69	58	23
French military exp. per cap. (1937 FF)	334	28	108 <sup>a</sup>	8	13	6
<b>Year 1955</b>						
Population (millions)	43.43	61.29	22.36	34.58	4.92 <sup>b</sup>	34.00 <sup>c</sup>
GDP per capita (1937 FF)	13,879	1,441	2,366	477	1,118 <sup>b</sup>	880 <sup>c</sup>
Share of Europeans (%)		2.9	7.0	0.15	1.2 <sup>b</sup>	0.4 <sup>c</sup>
Net Public Revenue / GDP (%)	26.3	16.7	18.6	9.4	14.6 <sup>b</sup>	13.9 <sup>c</sup>
Central gov. Tax Revenue / GDP (%)	19.0	10.9	10.5	7.1	6.8 <sup>b</sup>	12.4 <sup>c</sup>
Net Public Exp. (civilian)/ GDP (%)	23.1	20.8	23.5	7.0	18.5 <sup>b</sup>	16.6 <sup>c</sup>
NPE (civilian) per capita (1937 FF)	3,210	301	556	33	209 <sup>b</sup>	148 <sup>c</sup>
French military exp. per cap. (1937 FF)	1,034	80	166	123	62	25
<b>Year 2010</b>						
Population (millions)	65.03	357.46	78.67	107.69	21.08	150.01
GDP per capita (1937 FF)	46,807	2,840	7,136	2,240	720	1,318
Net Public Revenue / GDP (%)	25.2	26.3	31.6	22.7	11.2	18.8
NPR / GDP (%), non-mineral	25.2	20.6	22.1	21.7	11.2	15.3
Tax Revenue / GDP (%), non-mineral	25.2	18.0	19.6	19.3	9.2	13.8

Notes: Revenue and expenditure figures do not include social security transfers, which were increasing during the period in Metropolitan France and virtually inexistent in the colonies. \*1955: empire's average is without Indochina. Data on Indochina is 1953 (except PMS region 1954); a: Morocco 1926; b: 1956; c: AEF =1954.

Though fiscal extraction varied within the empire (last four columns of table 2), the variance was in fact relatively limited. Revenue as a share of GDP was the highest in Indochina (12.5%) and Madagascar (9.9%), and the lowest in West and Central Africa (5.5%).<sup>21</sup> North African settler colonies stood in the middles with rates ranging from 7.6% in Algeria to 9.0% in Morocco. If settler colonies of North Africa had therefore higher levels of public expenditure

<sup>21</sup> Indochina is rather close to the figure provided by Booth (2007) for colonial Burma (11.3% of NDP in 1926-1927).

per capita expressed in 1937 francs (143 on average against 69 in Indochina and 58 in Madagascar), it is therefore because they were richer, and not because of higher taxation.<sup>22</sup>

In 1925, revenue as a share of GDP was the lowest in West and Central Africa, and particularly low in AEF (3.2%) and Cameroon (3.1%). However, in West and Central Africa, the French Republic had resurrected the *Ancien Régime* practice of *corvée* labor with the *prestation*, a labor tax requiring Africans to work a fixed number of days per year on local public work projects. In addition, conscription reservists were used in public work projects (Fall 1993). Our figures do not include monetary equivalents of these labor payments, except when they were rebought in cash. Marlous van Waijenburg (2018) had converted *corvée* labor days into francs using unskilled labor minimum wages. She finds that in 1925, *corvée* labor in West and Central Africa increased a colony's revenue by between 9% (in Gabon) and 71% (in Mauritania). Weighting each colony by its revenue, the increase is 20% for West and Central Africa as a whole. This brings the share of public revenue in GDP closer to other areas of the empire, from 5.5% to 6.6%. Including conscripted labor could bring the figure even closer to other regions of the empire. In Madagascar, including *corvée* labor would increase the share of public revenue in GDP from 9.9% to 11%, bringing it closer to the very high level of fiscal extraction of Indochina.

In the 30 years following 1925, state size increased tremendously, both in Metropolitan France and in its colonial empire (second panel of table 2). The only exception was Indochina, where the French colonial state could not resume its control after World War II. The last data point we have in 1953 (one year before independence) shows a decrease in fiscal capacity (from 12.5% of GDP in 1925 to 9%), in public spending, and in GDP per capita. In Metropolitan France, public revenue went from 16.5% of GDP in 1925 to 26.3% in 1955.<sup>23</sup> In the colonial empire, it went from 9.0% in 1925 to 16.7% in 1955 (the 1955 average excludes Indochina). If

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<sup>22</sup> These results are broadly in line with those of Frankema (2010) on British colonies for 1911-1937. Tax incidence was much higher in the colonizing country (UK or France), than in any colony, even including the dominions (Canada, Australia or New-Zealand) where European settlers formed the majority of the population. Likewise, all "partial settlement" colonies (North Africa, South Africa, Southern Rhodesia or Mauritius) levied more taxes on a per capita basis than non-settler colonies. We differ in the way we make a correction for income: we use (very coarse) GDP estimates, where Frankema uses reported average wage for urban unskilled male workers; urban wages can imperfectly correlate with average income if the level of wage dualism varies, depending in particular on the presence of settlers. Yet, in both cases, differences are much reduced, and we find that Algeria did not tax more than French West Africa but more than French Central Africa, while Frankema finds that South Africa ranked below the richest non-settler colonies like Gold Coast or Kenya, but much above the very populated Nigeria.

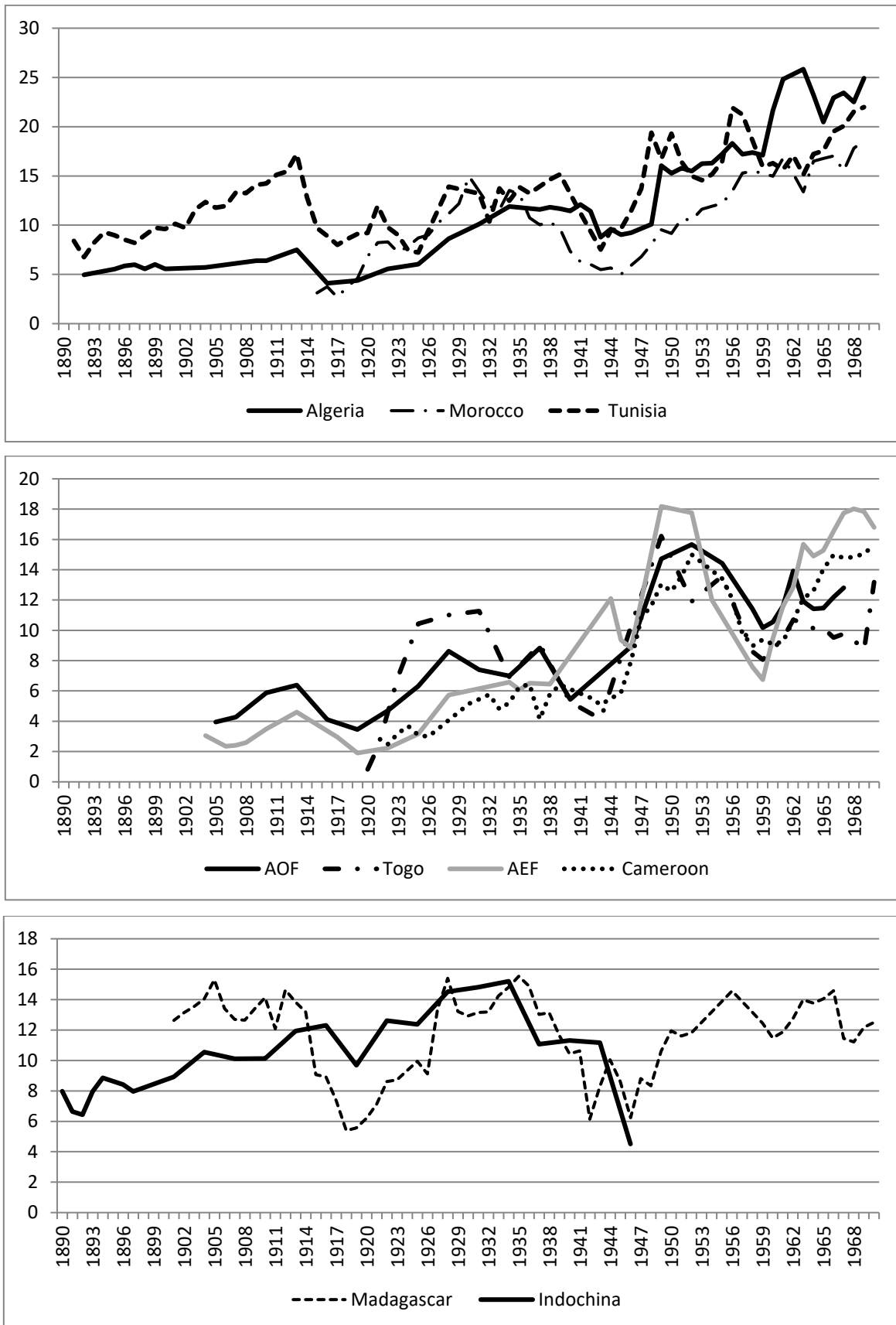
<sup>23</sup> This figure would be much higher if we were including social security transfers like pensions and health insurance in our measure of public revenue. The weight of these transfers increased a lot after World War II in Metropolitan France, and only marginally for the settlers of North Africa. If we were to include social security transfers, French public revenue would climb to 42% of GDP.

we consider the tax revenue of the central government, Latin America was, in 1955, lagging behind French colonies, with figures ranging between 7 and 10% of GDP, versus 10.9% on average in the French colonial empire (Sokoloff and Zolt 2007). Because the colonies started receiving large net transfers from France after World War II (see section 5 below), the increase in state size is even more striking if we consider public expenditure, which boomed from 8.1% of GDP in 1925 to 20.8% in 1955. West and Central Africa is the region where public revenue increased the most, going from 5.5% of GDP in 1925 to 13.9% in 1955, partly because of the modernization of the fiscal apparatus, as notably *corvée* labor was abolished and replaced with more modern forms of taxation in money rather than in kind.

Figure 2 shows the annual evolution of Net Public Revenue as a share of GDP from 1890 to 1970 in each colonial territory. The revenue of second-level administrative divisions (municipalities) is not included, because our series are patchy and incomplete. This is mainly a problem for Algeria, where municipalities represented between 20 and 25% of public revenue (see data appendix). Overall, public revenue decreased during the Second World War as it had during the First, but it then peaked dramatically in the 1950s, both in North Africa and in West and Central Africa. Madagascar stands as an exception with a rather stationary profile. Figure 2 also allows us to assess what happened as colonies were cutting ties with France. There was overall no marked change in revenue at independence. In West and Central Africa, public revenue fell in the years leading to independence in 1960, maybe because of administrative disorganization as the French were preparing to leave and dismantling the federations, but it quickly recovered and, at the end of the 1960s, it was back to the level reached around 1955.

The bottom panel of table 2 presents public finance figures for the year 2010. The states of the former French empire were then collecting as much as 26% of GDP in public revenue. The figure falls to 20.6% when we exclude the oil and mining sectors from both GDP and public revenue. Fiscal extraction on the rest of the economy was also higher on average in 2010 than in 1955, but it is entirely driven by North African countries, while Madagascar has regressed and West and Central African countries has not progressed very much (from 13.9% to 15.3% when excluding the oil and mining sectors).

Figure 2 — Net Public Revenue as share of GDP from 1890 to 1970



Notes: the revenue of first-level administrative divisions (provinces, départements, régions) is included and consolidated, but not the revenue of second-level administrative divisions (municipalities). See data appendix.

How did colonial administrations manage to extract from the empire an already high share of GDP in 1925, and how did they manage to double fiscal extraction in the space of 30 years between 1925 and 1955, especially in the decade following World War II? To answer this question, we now describe how the French colonizer adapted the fiscal structure to different contexts and different historical periods.

### *Fiscal adaptation across space and time*

We categorized fiscal instruments according to their implied degree of state capacity, from tools involving only light administrative management like the head tax (*capitation*) or monopolies on the sale of certain goods (like alcohol or salt) or services (revenue of posts and telegraphs), to taxes on external trade, that do not necessarily require government presence outside the port of entry, to intermediate taxes requiring larger administrative capacity, to modern taxation, requiring the frequent collection or self-declaration of detailed economic information on individuals and firms, like income and turnover taxes — a more detailed classification is given in the data appendix.<sup>24</sup> Though the distinction between direct and indirect taxes is often used as a measure of fiscal capacity, it is not really suited to the colonial case. For example, the head tax (*capitation*), a lump-sum tax levied on every individual except children, the elderly and the physically impaired, was in practice not very costly in terms of administrative management.<sup>25</sup> It was levied by local chiefs receiving wage payments or a share of the amount collected. Though in theory, the head tax required detailed demographic information, lack of administrative capacity meant colonial enumerations were of low quality, especially before 1946 (Gervais and Mandé, 2007).

Table 3 displays the fiscal structure of Metropolitan France and various regions of the French colonial empire in 1925 and 1955. The fiscal structure of the French state was unsurprisingly the most modern. As early as 1925, monopolies provided only 13.3% of total revenue, while modern taxation, direct and indirect, provided 31.5% (column 1).

In the empire, the fiscal structure of North-African colonies and protectorates was the closest to the fiscal structure of Metropolitan France, with modern taxation representing 16.3% of net public revenue in 1925. Algeria first, and Tunisia second had gradually adopted copies of French taxes, in particular direct taxes on wages, benefits, income from personal property,

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<sup>24</sup> Monopoly revenue does not include the receipts of public railway companies, but it does include their excess revenue when they are transferred to the government's budget — see data appendix.

<sup>25</sup> The lump-sum amount of the *capitation* varied, as well as the minimum age threshold. Civil servants and soldiers were exempted from the *capitation*.

real estates, trading licenses, as well as a general income tax that came on top in 1919 Algeria and 1928 Tunisia. The weight of taxes inherited from the Ottoman period decreased everywhere. In Algeria, the precolonial taxes called “Arab taxes” disappeared in 1919 (Todd, 2009). In Tunisia, the product of ancient taxes on palm or fruit trees, land for vegetable farming, or cattle was gradually overcome by the product of *ad valorem* taxes on income drawn from agricultural exports (Nicolai 1962, p. 443). In Morocco, the bulk of modern direct taxation was, before the end of the 1940s, a tax on agricultural income called *tertib*. It was originally introduced by the sultan Moulay Abdelaziz before colonization in 1901, then withdrawn, before being revived by the French administration in 1915.<sup>26</sup> Taxes on external trade represented 16.3% of revenue on average in the North African colonies and protectorates in 1925, a higher percentage than in France, but lower than in other African colonies. Algeria and Tunisia formed a custom union with Metropolitan France, so that, with a few exceptions, neither imports from nor exports to France were taxed. Only dock dues (*octroi de mer*) applied, as they applied to trade with other countries. In Morocco, the protectorate treaties prevented French imports to be taxed at a different rate than imports from other nations.

In the rest of the French empire, in Indochina, Madagascar, and West and Central Africa, the fiscal structure relied heavily on *Ancien Régime* tools like *capitation* and monopoly revenue.

Table 3 – Fiscal structure 1925 and 1955

	<u>France</u>	<u>Empire*</u>	<u>NA</u>	<u>Indoch.*</u>	<u>Madag.</u>	<u>WCA</u>
<b>Year 1925</b>						
Capitation	0.0	11.3	1.1	13.1	32.4	27.4
Monopolies	13.3	28.7	31.2	34.1	15.5	10.0
Intermediate & Other	49.7	35.1	34.8	39.5	26.7	26.4
Trade	5.5	17.9	16.7	12.0	25.4	36.1
Modern direct & indirect	31.5	7.1	16.3	1.3	0.0	0.1
	100.0	100.0	100.0	100.0	100.0	100.0
<b>Year 1955</b>						
Capitation	0.0	5.7	0.0	0.4	17.6 <sup>a</sup>	14.2 <sup>b</sup>
Monopolies	7.5	20.7	26.5	21.0	14.6 <sup>a</sup>	10.8 <sup>b</sup>
Intermediate & Other	30.8	37.7	31.1	36.4	18.3 <sup>a</sup>	23.3 <sup>b</sup>
Trade	8.2	21.5	9.6	38.0	37.2 <sup>a</sup>	41.0 <sup>b</sup>
Modern direct & indirect	53.5	24.3	32.7	4.2	12.3 <sup>a</sup>	10.7 <sup>b</sup>
	100.0	100.0	100.0	100.0	100.0	100.0

Notes: Capitation includes taxes on cattle. \*: 1955: empire’s average is without Indochina. Data on Indochina is 1953 (except PMS region 1954); a: 1956; b: AEF = 1954.

<sup>26</sup> After World War II, the share of the *tertib* gradually decreased to a third in 1955.

In Indochina monopoly revenue represented 34.1% of net public revenue in 1925, with government monopolies on the sale of opium, imported alcohol and salt bringing alone 25% of revenue. Opium was “deliberately a Chinese tax”, as it was purchased mainly by wealthy ethnic Chinese, although it gradually extended to Indochinese urbanites (Bassino 2000, p. 281). Like in North Africa, taxation of trade was limited by the custom union prevailing with Metropolitan France. While monopolies and trade taxes financed the federal government (*Gouvernement Général*), colonial governments drew the bulk of their resources from direct taxation: the head tax, a land tax on paddy fields, taxes on trading licenses, and income taxes. The head tax was levied on Autochthons only, and the land tax weighed disproportionately on them, while trading licenses were shared more or less equally with settlers.<sup>27</sup> From 1920 onwards, European settlers paid a minimal lump-sum tax based on twelve income brackets and a wage tax. Between 1938 and 1941, a general income tax was introduced, and extended to Chinese and Indochinese populations. Among colonial governments, the small but wealthy Cochinchina, where many of the French and Chinese lived, contributed more than other territories, to the benefits of poorer Tonkin and Annam, as some resource pooling was organized by the federal government (Bassino 2000, pp. 279-80). Though European settlers in Indochina were taxed, and though they were much richer than the rest of the population, and richer than European settlers in North Africa, they were not enough to generate a large revenue.<sup>28</sup>

Madagascar and West and Central Africa also had a fiscal structure reminiscent of the *Ancien Régime*. They relied heavily on the *capitation*, a head tax paid by every able-bodied adult (with varying age thresholds), excluding Europeans, civil servants and soldiers, whose lump-sum amount varied across colonies, and across districts within colonies. In West and Central Africa (WCA) in 1925, *capitation* alone represented 27% of net public revenue. In Madagascar, it brought 26% of total revenue, and the tax on cattle brought another 6%. Monopoly revenue was also an important source of revenue for colonial governments, bringing 10% of revenue in WCA and 15.5% in Madagascar. Since the beginning of the 20<sup>th</sup> century, *capitation* rates had been higher in Madagascar than in WCA (Jacob 1987; Coquery-Vidrovitch 1968 & 1972). This, as well as the existence of a cattle tax and larger monopoly revenues explains why net public revenue represented 9.9% of GDP in Madagascar in 1925 versus 5.5 in WCA (table 1).

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<sup>27</sup> Gouv. Gal de l'Indochine, 1931. *Annuaire Statistique de l'Indochine, deuxième volume, 1923-1929*, Hanoi : Imprimerie d'Extrême Orient, pp. 311 (Annam) & 327 (Tonkin).

<sup>28</sup> According to our estimates drawing from income tax data, the average European in Indochina was five times richer than in North Africa. In Indochina, Europeans earned around 9% of national income but where not more than 0.12% of the population — see Appendix 1.



If we follow van Waijenburg (2018) and take *corvée* labor into account, the fiscal structure of West and Central Africa is even more reminiscent of the *Ancien Régime*. *Corvée* labor then represents  $0.20/1.20=16\%$  of total revenue, and capitation  $0.27/1.2=22.5\%$ . *Capitation* and *corvée* labor taken together, two taxes weighing exclusively on the Autochthon populations, represent more than a third of total revenue. In Madagascar, forced labor was less important as the colonizer had made the choice of high *capitation* rates instead.<sup>29</sup> Including the *corvée* increases revenue by 11% and bring the share of *corvée* and *capitation* to 36%.<sup>30</sup>

While modern taxation was virtually inexistent in Madagascar and WCA, representing respectively 0.1 and 0.0% of revenue, their colonial governments relied heavily on external trade taxes. They represented 25.4% of revenue in Madagascar and 36.1% in WCA.

Like North Africa and Indochina, Madagascar was in a customs union with Metropolitan France, so tax import duties were limited. However, exports were taxed, as well as the consumption of a few imported goods. In West and Central Africa, import tariffs could be fixed according to domestic conditions and circumstances. The general principle of favoring or exempting also prevailed, but trade policy was constrained by international treaties in Cote d'Ivoire and Dahomey (part of AOF), and in all colonies part of the Congo River Basin, that is Cameroon, and all colonies of AEF except Gabon (Bernard 1913; Naudin 1929; Cornevin 1972, pp. 294-295).

This might explain why the share of customs revenue was higher in AOF than AEF (38.1% vs 22.3%), and higher in Togo than Cameroon (46.3% vs 22.9%). In turn, the reliance on trade taxes might explain why public revenue was higher in AOF and Togo (6.7 and 7.7% of GDP) than in AEF and Cameroon (3.5% and 3.1% of GDP). West Africa was also initially more extraverted, an extraversion dating perhaps from the time of the “legitimate commerce” in palm oil, peanuts and cocoa that replaced the triangular trade in the first half of the 20<sup>th</sup> century (Law 1995).<sup>31</sup> It appears that reliance on the head tax was a sign of low fiscal capacity, as argued by Frankema and van Waijenburg (2014). The negative correlation they find between the share of direct taxes and total public revenue is, however, likely overestimated, as they

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<sup>29</sup> In order to break with the very unpopular intensive forced labor practices of the precolonial *Merina* kingdom, see Jacob (1987) and Campbell (2005). In counterpart, conscription reservists (the so-called SMOTIG, *Service de la Main-d'Œuvre des Travaux Publics d'Intérêt Général*) were used intensively between 1928 and 1945 (Fremigacci 2014 p. 50); they are not counted in van Waijenburg's estimates.

<sup>30</sup> For 1913/15, the contribution of *corvée* labor was much higher, the SSA average figure from van Waijenburg being 43%. For 1934, one gets a figure close to the one of 1925. In 1946, forced labor was outlawed in French colonies.

<sup>31</sup> The contrast between French West and Central Africa is similar to the contrast between British West and East Africa put forward by Frankema (2011) and Frankema and van Waijenburg (2012 & 2014).

underestimate public revenue and the share of trade taxes in the landlocked colonies of French West and Equatorial Africa.<sup>32</sup>

Net public revenue increased everywhere between 1925 and 1955, and especially in the 15 years following World War II. In Metropolitan France, new revenue mostly came from an increase in direct and indirect modern taxation, which went from representing 31.5% of net public revenue in 1925 to 53.5% in 1955. In the colonies, the big contrast is, again, between the settler colonies of North Africa, where modern taxation was responsible for a large part of the increase in public revenue, and the rest of Africa, where the colonizer relied mainly on an increase in trade taxes, though the fiscal structure was also modernized.

Indochina is a special case, as the war of independence began in the immediate aftermath of World War II. The bottom panel of table 3, column 4 displays the fiscal structure of Indochina in 1953. The French grip had then gotten much weaker, the autonomous government of Vietnam had suppressed *capitation*, and monopoly revenues had lost weight. At the same time, modern taxation had progressed only moderately (from 1.3% of revenue to 4.2%). In a context where the colonial state was losing ground, trade taxation had become the dominant source of revenue, representing 38% of net public revenue versus 12% in 1925.

Table 4 breaks down the increase in net public revenue as a share of GDP between 1925 and 1955 into different tax instruments for North Africa, Madagascar, and West and Central Africa. In North Africa, modern taxation was responsible for half of the increase in fiscal extraction over the period (3.8 percentage points out of a total increase of 7.7). The rest of the increase was split between monopolies (1.7 percentage points) and intermediate and other resources (2.2). Though import tariffs were raised in Tunisia and Morocco during the Great Depression and World War II, and went down only slightly afterwards, they explain only a very small fraction of the increase (0.2 percentage points, all on import taxes).

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<sup>32</sup> Inside the two federation, trade taxes were most often raised at the harbor of entry, whatever their final destination. For that reason, imports, exports, and trade tax revenue of landlocked colonies like Mali or Niger are strongly underestimated in administrative records, as acknowledged in Gouv. Gal de l'AOF, *Budget Général Année 1925*, Gorée: Imprimerie du G. Gal, p. xx-xxi. For example about Soudan (present-day Mali): "We know trade flow figures for this colony are inferior to reality, as the majority of products is declared at the port of landing." Reallocating federal trade revenue to individual colonies to assess federal redistribution is not straightforward.

Table 4 – Fiscal modernization between 1925 and 1955

	NA	Madagascar	WCA
Variation in revenue to GDP 1925-1955 <sup>a</sup>	+7.7	+4.6	+8.1
Capitation	-0.1	-0.7	+0.4
Monopolies	+1.7	+0.6	+0.9
Intermediate & Other Resources	+2.2	+0.0	+1.5
Import taxes	+0.2	+2.6	+2.2
Export taxes	+0.0	+0.3	+1.4
Modern direct & indirect	+3.8	+1.8	+1.5
Import taxes with constant import share <sup>b</sup>	+0.4	+4.7	+1.8
Export taxes with constant export share <sup>b</sup>	+0.0	+1.0	+1.4

a: in percentage points. Madagascar = 1925-1956; AEF = 1925-1954. b: computed as  $(\tau_{1955} - \tau_{1925}) \left( \frac{S_{1925} + S_{1955}}{2} \right)$ , where  $\tau$  is the average tax rate on imports (resp. exports) and  $S$  is the share of imports (resp. exports) in GDP.

In the rest of the empire, there was also a significant modernization of the tax structure, but trade taxes were the favorite instrument of the colonizer to increase public revenue. In Madagascar and WCA, the share of *capitation* in revenue was roughly halved, and the contribution of the *capitation* to the increase in public revenue was small in WCA (0.4 percentage points out of a total increase of 8.1) and negative in Madagascar. At the same time, the share of modern taxation increased, contributing to 1.8 percentage points of the increase in revenue in Madagascar, and to 1.5% in WCA. In colonies like Senegal, which were wealthier than average and had more French settlers, the income tax introduced in the 1930s began to raise more revenue than capitation, and the turnover tax almost as much. Yet the extent of this modernization was more limited than in North Africa.

At the same time the share of trade taxes increased dramatically. Import and export taxes explained 2.9 of the 4.6 percentage point increase in revenue over GDP in Madagascar, and 3.6 percentage points of the 8.1 percentage point increase in WCA (table 4). This was mainly the result of a rise in the average tax rate on imports. In order to isolate the effect of rates from the effect of increasing trade, the two last lines of table 4 show the contribution of import and export taxes imposing a constant GDP share of imports and exports. In Madagascar, the share of trade in GDP actually decreased between 1925 and 1955, so that the contribution of import taxes is even larger. In WCA, the share of imports and exports in GDP did not increase much (trade boomed, but GDP increased as well). The increase in average import tax rates alone explains 1.8 of the 8.1 percentage point increase in revenue. The increase in average export tax rates explains 1.4 percentage point of the increase.

To take stock, in terms of fiscal structure, the most salient contrast was between the settler colonies of North Africa, where the fiscal structure, already more similar to the French one in 1925, kept modernizing, and the poorer regions of the empire, where *Ancien Régime* taxes such as monopolies, capitation (and forced labor) were used heavily, and where, though there was some modernization of the fiscal structure, the increase in revenue after World War II was mainly explained by an increase in trade taxation. Of course, it is impossible to attribute these differences to the presence of settlers only, as North African colonies were also richer *ex-ante* and had historically been part of tax-levying states like the Ottoman empire and the kingdom of Morocco.

### *Increasing progressivity in taxation?*

Modern taxation requiring the frequent collection of economic information on individuals and firms, tends to be more progressive — it is particularly true of the income tax. Does it mean that taxation was more progressive in the settler colonies of North Africa as compared to the rest of the colonial empire, and does it mean that the progressivity of taxation increased in the last decades of colonization?

In the settlement colonies of North Africa, the European and Jewish population earned a large share of total income and for sure paid a large share of the tax bill as well. They paid a disproportionate share of the direct taxes in Algeria and in Tunisia, less in Morocco, because of the agriculture tax mentioned above.<sup>33</sup> They also paid quite a lot of the taxes on imported consumer goods, alcohols in particular. Generally speaking, most of the modernized taxation apparatus applied to a formal sector built around the settlers' enclave, so that Europeans also paid a large share of turnover taxes and of registration fees.<sup>34</sup> Even though the tax apparatus was built around the settler's enclave, tax collection did not collapse after independence and the departure of European settlers. One likely explanation is that Autochthons quickly replaced settlers in formal salaried and non-salaried positions, as large numbers were recruited in the civil service and the army and as capital and land changed hands. Tax rates were also likely increased.

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<sup>33</sup> In 1955 Tunisia, Europeans represented 75% of income tax payers, and the remaining 25% were perhaps overwhelmingly paid by Jews (Alvaredo, Cogneau & Piketty 2017). See also Nicolai (1962, pp. 447-450).

<sup>34</sup> For 1956 Tunisia, Nicolai estimates that indirect taxes paid by Europeans could be more than 50% of total indirect tax revenue (Nicolai 1962, p. 453).

In the rest of the colonial empire, where settlers were few, Autochthons had to pay the majority of the tax bill. This however does not tell us how much each group was taxed in proportion of its own income.

Though our data do not allow conducting a precise incidence analysis, appendix 1 attempts to estimate the tax burden of three groups in the colonies: Europeans, urban and rural non-poor Autochthons, and rural poor Autochthons. The income shares of Europeans and Autochthons are estimated using novel data from income tax tabulation (Alvaredo, Cogneau & Piketty 2017). We assume that the rural poor are taxed mainly via the capitation and taxes on agricultural exports, and in Morocco by the tax on agricultural income (*tertib*). The urban and rural non poor are assumed to pay the same tax rate as Europeans in proportion of their income, with the only exception of *capitation*, which was not paid by Europeans.

In 1925 North Africa, we estimate that Europeans contributed 8.9% of their income to public revenue against 6.2% for Autochthons. Given the very large gap in average income between the two groups, it means taxation was not progressive at all — the average income of Europeans was ten times the average income of Autochthons in 1925.<sup>35</sup> In other colonies, our estimates suggest that the average tax rate on Europeans was higher than in North Africa, from around 12% in Madagascar and WCA to 24% in Indochina. This could reflect the fact that settlers had less political voice in these colonies, or the fact that they were also on average much richer than in North Africa. Yet this did not mean that Autochthons were taxed less. Their tax rates ranged between 5% in West and Central Africa and 11% in Indochina, versus 6% in North Africa. Taking into account forced labor in West and Central Africa would put the Autochthonous tax rate above the North African level. Overall, Autochthons were taxed slightly less in settler colonies than in others, and more taxed in Indochina and Madagascar than everywhere else.

After World War II, the modernization of the tax system should have improved its progressivity along the racial line, as the formal sector increased its contribution. Yet, at the same time more Autochthons migrated to cities, obtained wage employment, and consumed goods produced by the formal sector or imported, so that the shift in progressivity could be more ambiguous. According to our estimates, in 1955 the respective contributions of Europeans and Autochthons had turned rather homogeneous across colonies: Europeans contributed on average 20 to 24% of their income to public revenue against around 12% for Autochthons.

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<sup>35</sup> For Algeria only, Ageron (1990, p. 66) estimates that Autochthons paid 47% of the total tax bill before World War I and 27% after the suppression of “Arab taxes” in 1919. We find almost the same figure (28%) for 1925 Algeria.

There was an increase in progressivity, but it was rather tenuous. However, modernization also implied more progressivity among Autochthons, as increasing taxes on imports, incomes, and the formal sector more generally meant that the richest Autochthons contributed more. This latter conclusion is much less ambiguous than the former. For example, in Algeria, according to our estimates, the rural poor paid 1.9% of their income in taxes in 1925 and 2.2% in 1955, while the contribution of the urban and rural non-poor increased from 10.1% to 19.1%.

To take stock, French colonial states managed from the start to extract significant fiscal resources, by taxing Autochthonous populations sometimes very heavily. As time went, and especially after World War II, they succeeded in doubling extraction while shifting to more modern tax systems with better distributive properties.<sup>36</sup> However, this extractive efficiency of the colonial state did not come with productive efficiency, nor fairness.

#### **4. The true nature and legacy of the colonial state: bias and cost**

The true limitation of the colonial state was not its limited fiscal capacity, but its colonial nature. Its expenditure was biased, serving first the needs of French settlers and companies. Its expenditure was also costly, because of high public service wages, partly explained by the presence of very well paid French civil servants. In the end, the legacy of the French colonial state was dualism, the coexistence of modern, formal-sector enclaves and a traditional, informal sector (Boeke 1953, Lewis 1954). One key aspect of the dualism created by French colonial states was the existence, in poor, agricultural economies, of a high-wage public sector providing public goods at European standards to urban enclaves.

##### *Biased expenditure*

The colonial state had to serve first the interest of French settlers and capitalists, by favoring costly investments in railways and harbors to connect mines and plantations, and by providing settlers, agglomerated in cities, with public services (health, education, electricity) at the standards of Metropolitan France.

Table 5 shows the sectoral allocation of public expenditure as well as a few development outcomes in Metropolitan France and the colonial empire in 1925 and 1955. Like for public revenue, data collection, homogenization and aggregation were organized in order to make expenditure headings comparable across space and time.

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<sup>36</sup> It seems that the consolidation of the fiscal apparatus also went with a strong decrease in the time volatility of tax revenue, see Andersson (2018).

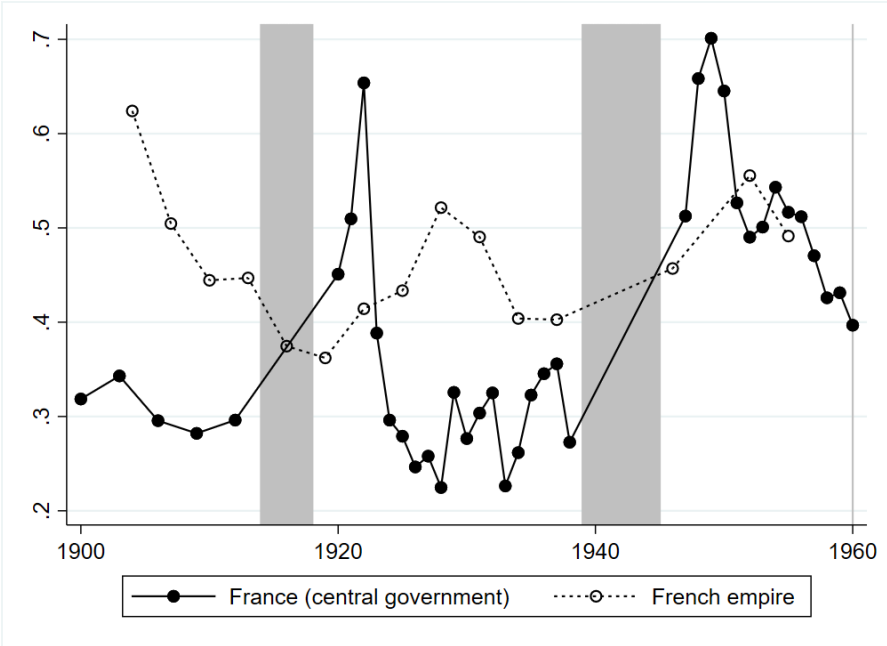
Table 5 – Public expenditure and development outcomes in 1925 and 1955

	Metropolis	Empire*	NA	Indoch.*	Madag.	WCA
<u>Year 1925</u>						
Infrastructure & support to production						
Share in expenditure (%)	41.8	43.3	49.8	37.6	32.4	46.3
kWh per inhabitant	318.5	n.a.	6.5 <sup>a</sup>	n.a.	n.a.	n.a.
Roads meters per 1000 inhabitants	19.2	n.a.	1.0	0.9	n.a.	n.a.
Railroads meters per 1000 inhabitants	1.10	n.a.	0.6	0.1	n.a.	0.2 <sup>b</sup>
Education						
Share in expenditure (%)	20.3	7.3	9.1	6.7	6.4	3.6
Gross primary enrollment, Autochthons (%)	135.3	3.5	4.1	4.7 <sup>c</sup>	n.a.	1.7 <sup>d</sup>
Government schools only (%)	108.4	n.a.	3.8	4.2	n.a.	n.a.
Health						
Share in expenditure (%)	5.9	5.8	6.7	4.4	11.6	5.9
Public health personnel per 1000 inhabitants	1.40	0.14	0.31 <sup>a</sup>	0.08	0.26	0.09
Medical staff per 1000 inhabitants	1.27	0.04	0.15 <sup>a</sup>	0.02	0.08	0.03 <sup>d</sup>
Administration, Finance, Justice and Security						
Share in expenditure (%)	31.9	32.7	24.7	41.6	27.8	30.6
Share in employment (%)	25.0	55.5	46.1	63.5	55.1	56.0
<u>Year 1955</u>						
Infrastructure & support to production						
Share in expenditure (%)	54.9	49.0	47.2	24.0	45.3 <sup>e</sup>	53.4 <sup>f</sup>
kWh per inhabitant	1,148.0	39.5	91.0	3.4 <sup>h</sup>	11.8	5.9
Roads meters per 1000 inhabitants	15.0	4.7	5.0	1.0 <sup>h</sup>	5.9	4.4
Railroads meters per 1000 inhabitants	0.9	0.2	0.3	0.1 <sup>h</sup>	0.2	0.1
Education						
Share in expenditure (%)	13.5	11.3	13.4	10.9	7.1 <sup>e</sup>	7.8 <sup>f</sup>
Gross primary enrollment, Autochthons (%)	109.8	14.5	17.6	13.1 <sup>h</sup>	32.2	12.4
Government schools only (%)	92.9	10.7	17.1	11.4 <sup>h</sup>	20.9	6.4
Health						
Share in expenditure (%)	11.6	8.0	7.7	6.5	8.2	8.7
Public health personnel per 1000 inhabitants	n.a.	0.58	0.65 <sup>g</sup>	0.17 <sup>h</sup>	0.82	0.54
Medical staff per 1000 inhabitants	1.97	0.30	0.29	0.04 <sup>h</sup>	0.50	0.27
Administration, Finance, Justice and Security						
Share in expenditure (%)	15.8	22.0	24.6	42.2	16.4 <sup>e</sup>	17.4 <sup>f</sup>
Share in employment (%)	25.9	42.6	47.4	n.a.	n.a.	38.5

Notes: \*: 1955: empire's average is without Indochina. Data on Indochina is 1953 (except PMS region 1954), except when noted (see h); a: Algeria and Morocco only; b: AOF only; c: Autochthonous municipal schools not taken into account; d: AOF, Togo and Cameroon only; e: 1956; f: AEF = 1954; g: Tunisia only; h: 1943. Public employment and expenditure is without the military. Shares in expenditure are for the central government only in Metropolitan France. Shares in employment are for the central government only everywhere. Gross primary enrollment rates are the number of primary school pupils divided by the 6-13 year old population. They count only public and government-authorized private schools, not unofficial Koranic schools (which gathered 36,000 pupils in 1932 Algeria and 100,000 pupils in 1950 Algeria (Kateb, 2004), nor municipal schools in Indochina. In Tunisia and Morocco, Jewish children, who already enjoyed universal primary schooling like Europeans in 1925, are counted apart.

In all colonies, a large share, between 32 and 50%, of public expenditure went to infrastructure and what we call “production support” — subsidies to private and public companies and expenditure on public services destined to enhance and support production, like posts and telecommunication, mining or agricultural research. A large fraction went in particular to railways, in the form of subsidies to private companies in a first period, in direct investments financed by loan or by buying back the private capital of private companies in a second period, and eventually in subsidies to the operating national company. Only in post-1945 Indochina did infrastructure and production support represent a smaller share of expenditure (24% in 1953), because the independence war prevented large-scale infrastructure projects.

Figure 3 — Share of infrastructure and production support in non-military public expenditure



Note: the source for Metropolitan France is André and Delorme (1983), central government only (excluding départements and communes).

The share of infrastructure and production support in expenditure was overall higher in the colonies than in Metropolitan France, but the years 1925 and 1955 are not representative of longer-term patterns, as the reconstruction effort after World War I and World War II were then absorbing a large part of French public spending. Figure 3 shows that, before World War I and during the 1930s, the share of production and infrastructure expenditure was 10 to 20 percentage points higher in the colonies than in France. Yet, despite some catch-up between 1925 and 1955, the gap between France and its colonies in electricity output, roads and railways remained wide (table 5). For example, in 1955, the number of road meters per 1,000 inhabitants



was three times as high in France (15) as in the colonies (4.7 on average). Indochina, in particular, was lagging behind with 1 meter (data is for 1943).

Railway companies, subsidized by public money, were a safe investment favoured by colonial capitalists. The drawing of railways, main roads and harbors was meant to help the routing of mines' and plantations' outputs. Public subsidies were also directed to the settlement of French farmers in North Africa, or to colonial companies in Sub-Saharan Africa or Indochina. Rural roads, small scale irrigation projects, input access and agricultural extension benefitting Autochthonous smallholders were not prioritized. North African colonies received more electricity than the rest of the empire: in 1955, the number of kWh per inhabitants was 91.0 versus 11.8 in Madagascar and 5.9 in WCA.<sup>37</sup> However, electrification was limited to urban centers, where European settlers lived. If we consider instead public investments that could not easily be targeted only at cities, like road meters per inhabitants, North Africa does not appear better endowed. In 1955, North African colonies had 5 meters of road per 1,000 inhabitants versus 5.9 in Madagascar, and 4.4 WCA (Metropolitan France had 15). Agricultural investments remained concentrated in regions with high potential and a significant presence of European farmers or traders, like the groundnut basin in Senegal, the inner Niger delta for cotton and rice in Soudan, or the rice-producing Mekong delta in Cochinchina.<sup>38</sup> However biased they were, and despite high investment and operating costs, colonial infrastructure investments were still transformative. In particular, railway lines and mahor roads stimulated Autochthonous initiative in cash crops, and spurred the growth of large and wealthier cities (Jedwab and Moradi, 2016 for Ghana and the rest of Africa, Jedwab, Kerby and Moradi, 2017 for Kenya).

As for social spending, it was not a priority of colonial governments. In 1925, the education sector represented 7.3% of public expenditure and 13% of public employment in the colonies, versus 20.3% and 32% in Metropolitan France. In 1955, the share of education had increased to 11.3% of expenditure and 18% of employment in the colonies, while it represented 13.5% of expenditure and 35% of employment in France.<sup>39</sup> Table 5 shows that education was a more important item of expenditure in North Africa than elsewhere. It was particularly true in

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<sup>37</sup> The average of Metropolitan France is perhaps not the best comparator, if only to assess the post-WW2 infrastructure effort. If we instead take one of the most disadvantaged départements in mainland France, the Creuse, the density of electricity stood at par with Algeria in 1925, yet reached double (192.8 kWh per capita) the Algerian level in 1955. Even more impressively, the island of Corsica had almost no electricity in 1925 (1.3 kWh p.c.), then lay above Algeria (130 kWh p.c.) in 1955. From this standpoint, the Corrèze (another relatively poor department next to the Creuse) was indeed preferred to the Zambèze, as urged by the famous motto of the "Cartierist" political movement in the 1950s ("*La Corrèze plutôt que [rather than] le Zambèze!*").

<sup>38</sup> Dumont (1966) harshly criticizes this biasedness of post-WW2 investments under the FIDES.

<sup>39</sup> In France, the share of education in public expenditure drops after WW2, but not the share in employment. The drop in the expenditure share is mainly explained by the temporary increase of public works for post-WW2 reconstruction.

Algeria, which spent 11-12% of public spending on education in both years, and where education personnel represented 36-37% of the civil service. Yet this educational effort was dramatically biased towards European settlers. In Algeria, a specific credit line is reported for the European sub-sector, which received 78% of total education expenditure in 1925 and 82% in 1955. In 1925 Morocco, the European sub-sector received 79% of education expenditure. In terms of expenditure per pupil, European children in Algeria enjoyed the same level as children in Metropolitan France, while Algerian children received no more than in other parts of the empire.

Among Autochthons, primary school gross enrollment rates were extremely low in 1925: 4.1% in North Africa, 4.7% in Indochina, and 1.7% in WCA. In 1955, enrollment had increased, yet only to 17.8% in North Africa and 12.4% in WCA (13.1% in 1943 Indochina). Tunisia, Madagascar and Cameroon displayed the highest rates, around 30%, followed by Togo (23%). In the case of Tunisia, modernization attempts in the 19<sup>th</sup> century led to the foundation of the Sadiki high school in 1875 (Sraieb 1993). Then under French rule, bilingual “Franco-Arab” and “modernized” koranic schools likely encouraged Autochthonous enrollment. In contrast, in Algeria schools only taught in French, and the local government of settlers explicitly rationed the provision of education to Autochthons (Ageron 1979, pp. 152-167 & 532-536). Enrollment of Algerian children, however, accelerated in the 1950s so that at independence in 1962, the rate was 33%, double the level of 1955. In the highlands of Madagascar (*Imerina*), a few Protestant missions offered some schooling as early as in the 1820s, and were then placed under state control by king Radama I (Campbell 2005 pp.86-89). In Togo and Cameroon, mission schools came in under German rule, yet it is only after World War II that the secularist stance of the French Republic was relaxed enough to authorize and subsidize a larger number of mission schools (Cogneau & Moradi 2014; Dupraz 2017). In secondary education, only Tunisia, followed by Madagascar and Cameroon, lie significantly above the average, although at very low levels (respectively 3.4, 1.8 and 0.8% of 11-18 year-old indigenous children, while at the same time this gross rate reached 19.2% in Metropolitan France). At the end of the day, putting settlers apart, the educational performance of the settlement colonies of North Africa was far from impressive.

For health, comparing public expenditure shares is not as informative as for education. In Metropolitan France, the provision of health assistance and medical services relied mainly on the private sector on the one hand, and on lower administrative levels on the other

(*départements* and municipalities, which are not part of our estimates).<sup>40</sup> It is only under the Fifth Republic (after 1958) that a national and centralized public health system took off. In North Africa as well, health was financed by lower level administrative divisions and the private sector. The share of health in public expenditure was very similar in France and in the empire in 1925 (5.9% vs 5.8%) and in 1955 (13.5% vs 11.3%). When we consider public health personnel per 1,000 inhabitants, France stands above the rest (1.40‰ vs 0.14‰ in 1925), but the difference between the settler colonies of North Africa and the rest is not striking. North Africa is at the same level as Madagascar (0.31‰ vs 0.26‰), thanks to a specific effort there towards basic health assistance for Autochthons (“*Assistance médicale indigène*”). When we consider the total number of health professionals per inhabitants, including the private sector and lower level administrative divisions (physicians, pharmacists, dentists and midwives, but not nurses and other personnel), the difference between Metropolitan France and the empire is even more striking (1.27‰ vs 0.04‰), and North Africa stands above the rest in 1925 (0.15‰), but there seems to be a convergence in 1955 — Indochina is lagging behind, but the figure of 0.04‰ is for 1943.

Sovereignty expenditure in general administration, financial services, justice and security represented a large share of colonial public expenditure (32.8% on average in 1925) and an even larger share of colonial public employment (55.5% on average in 1925). These shares would be even higher if we were to include military spending funded by Metropolitan France. The share in employment lay way above the share in expenditure because security involved a large number of low-pay Autochthonous policemen, especially outside of North Africa. Policemen represented 59% of sovereignty employment on average. In 1955, sovereignty spending had lost its weight in Madagascar and WCA, both in the budget and in the labor force. The number of policemen per capita did not increase much, but the police force was professionalized, and wages in this sector were significantly raised, especially after 1949. Such a change was not observed in North Africa, where sovereignty represented the same share in expenditure and in employment in 1955 as in 1925.

Overall, the ratio of education and health investments to “order” spending (Frankema 2011, p. 144) had increased everywhere after 1945, signaling a more developmental orientation, and non-settler colonies had caught up with North-Africa in this respect.<sup>41</sup> Public expenditure

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<sup>40</sup> See footnote of table 5. We were able to recover expenditure shares of first level administrative divisions in the colonies, but not in Metropolitan France. Employment share are for the central government everywhere.

<sup>41</sup> Circa 1925, the structure of expenditure in French West and Central Africa is very similar to the one observed by Frankema for British Africa. See Frankema (2011, p. 142, table 3). Our own analysis in a companion

remained significantly biased, but the bias had decreased, outside of the Indochinese wartime exception. The developmental turn of colonialism did not achieve much however, partly because of the low productive efficiency of colonial public expenditure. In particular, colonial civil service wages were high from the start and remained high after World War II as public employment increased.

### *High costs*

The wage costs of colonial states were high, mainly because of the high emoluments and bonuses paid to European civil servants. Table 6 displays civilian expenditure per capita in 1937 francs, public employment per 1,000 inhabitants and the annual average public wage (in 1937 francs) in Metropolitan France and in the colonial empire at our two key dates, 1925 and 1955. Expenditure per capita is expressed in 1937 francs adjusted for purchasing power parity, using a basket of consumption goods for deflation. Because of vast differences in GDP per capita and wages, this way to express public expenditure clearly *overstates* differences in the volume of public goods and services provided. In the absence of detailed information on the cost of various government goods and services, building a specific public spending deflator is impossible, but we show the number of civil servants per 1,000 inhabitants. This indicator might *understate* differences in public services provision, as it does not take into account the skill content of various occupations.

In 1955, Metropolitan France raised 16.5% of GDP in public revenue versus 9% for the French colonial empire, but the difference in the number of civil servants per capita was much higher. France had 11.8 civil servants for 1,000 inhabitants, more than twice the average for the empire (2.2). Within the empire, though North Africa is the region where public expenditure per capita expressed in 1937 francs is the highest, it is not the region where public employment per capita is the highest (2.9 employees per 1,000 inhabitants). Madagascar, with a high fiscal extraction and the lowest civil service wages, has the highest public employment per capita, with 3.9 employees per 1,000 inhabitants.

If public wages were proportional to GDP per capita, differences in public employment should reflect differences in revenue as a percentage of GDP. This was not the case because, though public wages tended to be lower where GDP per capita was lower, differences in public wages are much smaller than differences in GDP per capita. The average annual public wage

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paper suggests that in West Africa, British colonies went through the same evolutions as French colonies after WW2 (Cogneau, Dupraz & Mesplé-Somps 2018).

in Metropolitan France in 1925 was 17,000 francs versus 12,000 francs in the colonies, while GDP per capita was 10 times lower in the colonies (see table 2). In fact, in Indochina, 14 times poorer, average public wages are almost the same than in France, at 16,000 1937 PPP adjusted francs (see appendix 2 for a discussion of the extremely high wages prevailing in Indochina in the 1920s).

Table 6 – Public Employment and Wages in 1925 and 1955

	<u>Metropolis</u>	<u>Empire</u>	<u>NA</u>	<u>Indoch.</u>	<u>Madag.</u>	<u>WCA</u>
<b>Year 1925</b>						
NPE (civilian) per capita (1937 FF)	524	63	133	68	57	25
Public employment per 1.000 inhab.	11.8 <sup>a</sup>	2.2	2.9 <sup>b</sup>	1.7 <sup>c</sup>	3.9	1.4 <sup>d</sup>
Annual average public wage (1937 FF)	17,049 <sup>a</sup>	11,702	12,902 <sup>b</sup>	15,858 <sup>c</sup>	5,327	6,504 <sup>d</sup>
in units of GDP per 15+ pop.	1.7 <sup>a</sup>	9.3	4.8 <sup>b</sup>	14.8 <sup>c</sup>	5.3	8.1 <sup>d</sup>
<b>Year 1955</b>						
NPE (civilian) per capita (1937 FF)	3,070	277	479	n.a.	209	153
Public employment per 1.000 inhab.	21.6	4.6	6.8	n.a.	4.8	3.1
Annual average public wage (1937 FF)	30,389	20,087	22,791	n.a.	12,343	17,938
in units of GDP per 15+ pop.	1.9	8.0	5.5	n.a.	6.3	11.2

*Notes:* public employment in the central government only, excluding the military. In 1955 Madagascar, following the 1946 decentralization reform, public employment of provinces represented a large share of total public employment, so it was extrapolated from personnel expenditure, assuming that provincial employment was paid the same average wage as central government employment. 15-year old population estimated from population censuses and statistical abstracts. a: 1922 for employment, 1923 for wage bill; b: Tunisia = 1924; c: Cochinchina 1924; d: Soudan, Cote d'Ivoire and Togo = 1926.

To measure wage dualism, the existence of high public wages in a low income economy, we compute the ratio of the average public wage to GDP per working age population (15 year-old and over). In 1925, it is 1.7 in France versus 9.3 in its colonies. It is particularly high in Indochina (14.8, see below) and in WCA (8.1), lower in North Africa (4.8) and Madagascar (5.3).

Between 1925 and 1955, public expenditure measured in 1937 francs boomed everywhere, but GDP per capita, and wages, also increased. Public employment per 1,000 inhabitants roughly doubled everywhere. It increased from 11.8 to 21.6 in France, and from 2.2 to 4.6 on average in the empire. One might have expected a decrease in wage dualism as more Autochthons were hired as civil servants and as lower skilled positions were created, but this was not the case. Wages progressed everywhere, especially in WCA which almost converged to North Africa, and wage dualism increased everywhere — the decrease in the empire's average being only due to the fact that data is missing for Indochina in 1955.

Of course, average public wages were high because of the presence of well-paid expatriated civil servants, as already noted by Huillery (2014) for AOF and by Frankema (2011) for British Africa. Before World War II, three wage schedules were distinguished in the French colonial civil service: 1) “European” or “Metropolitan”, 2) “federal” or “common”, and 3) “local”. These schedules referred to the capacity to exert functions in 1) all territories including Metropolitan France, 2) within a federation (AOF, AEF or Indochina), 3) in a given colonial territory only. Before World War II, only French citizens could be found in the Metropolitan schedule. For a given nominal position, the base wage could be 20 to 50% lower in the local schedule compared to the Metropolitan schedule.<sup>42</sup> It is hard to evaluate what were, in this wage gap, the respective shares of racial discrimination on the one hand, and differences in training and skills on the other hand. Indeed positions carrying the same name (for ex., “teacher 2<sup>nd</sup> class”) implied different exams and degrees in each schedule.

On top of the gap in base wages, French civil servants received bonuses meant to compensate for expatriation. These could be very high, from 25 to 70% of gross wage, depending on the territory and/or the period, to which a variety of allowances for remoteness, riskiness, housing, family charges and cost of living were added. In Algeria and after World War I in Tunisia, French settlers hired on the spot also received a 30% wage bonus (“*tiers colonial*”), even when they were born in Algeria and did not suffer from homesickness.<sup>43</sup>

Europeans were the majority in public employment in North Africa, and around 10% elsewhere. In Indochina and Madagascar, whose budgets allow breaking down public employment by citizenship, the French represented respectively 12 and 11% of public employment in 1925, and the shares were similar in 1943/45 (table 7). Scarce evidence suggests that the same proportion applied to West and Central Africa.<sup>44</sup> In the settlement colonies of North Africa, Muslim Autochthons made no more than 40% of civil servants, concentrated in

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<sup>42</sup> One example is provided for teachers in Togo by Gbikpi-Benissan, (2011, vol. 2, p. 203).

<sup>43</sup> Interestingly, this kind of bonuses were also applied to overseas territories that remained French after 1960, and are still applied today whatever the place of origin of the civil servant.

<sup>44</sup> In 1926 Togo, African primary school teachers and lower rank instructors made 88% of education personnel (68% if we restrict to teachers): Gbikpi-Benissan (2011, pp. 217-218). In 1938 Cameroon, 595 French men are enumerated in public service, according to a census (Ministère de la France d’Outre-Mer, 1947. *Annuaire Statistique du Cameroun 1938-1945*, volume I. Paris : Imprimerie Nationale, Tableau VIII p. 33). In our data, total public employment is 5,097, so that Autochthons again make 88%.

low-skill and low-rank positions.<sup>45</sup> Among French civil servant in North Africa, the share born in North Africa must have varied greatly depending on the territory and the date considered.<sup>46</sup>

A systematic breakdown of public employment and wages by citizenship is possible only for Madagascar and Indochina in the 1920s and 1940s. As shown in table 7 (first and second row), while French civil servants represented 12% of total employment in 1925 Indochina, they made up 58% of the wage bill. Corresponding figures for Madagascar are close: 11 and 56% respectively.<sup>47</sup> Similar data for 1943-1946 (Table 7, bottom panel) show that the Autochthons' share in public employment didn't move much over two decades.<sup>48</sup>

Not only were French wages much higher on average than Autochthonous wages (10 times higher in both Indochina and Madagascar in 1925), they were, in 1925, higher than the average public wage in Metropolitan France (see table 6). In Madagascar, the French public wage of 28,000 1937 francs was of 1.6 times higher than the average public wage in Metropolitan France (17,000). In Indochina, it was more than 4 times as high (71,000).

Appendix II gives a more detailed account of the rise in public wages in Indochina after World War I. In a nutshell, while inflation was eroding French public wages after 1914, the Indochinese colonial government set up a specific schedule of bonuses in Indochina in order for French public wages to retain their purchasing power. This schedule of bonuses was then used to increase wages even further in the 1920s. It is likely that the decision to keep French public wages high in Indochina, and to increase them further in the 1920s, was explained by the high reservation wage of French settlers in Indochina (see appendix II). A version of the schedule of bonuses used to compensate French civils servants in Indochina was also used to increase the wage of Autochthonous civil servants. It is likely that increasing even further inequalities in pay within the colonial civil service was politically infeasible — colonial

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<sup>45</sup> In 1921 Tunisia, more than 5,000 European civil servants were enumerated in the population census, while in our data for 1925 total public employment is around 10,000 (Régence de Tunis, *Statistique générale de la Tunisie 1925*, pp.8-9). In 1925 Tunisia, 35% of teachers are from the metropolis, 44% are French recruited on the spot, and only 21% are Autochthons (Min. des Aff. Etrangères. *Rapport au président de la République sur la situation de la Tunisie en 1925*, p. 47). In 1936 Algeria, according to population census Europeans make 62% of workers in public services and army (Gouv. Gal de l'Algérie, *Annuaire Statistique de l'Algérie 1939-1947*, p.26).

<sup>46</sup> We estimate that only 5% of French civil servants in 1925 Algeria had been hired in Metropolitan France, versus 36% in Tunisia and 63% in Morocco (where the protectorate was recent and settlers were still few).

<sup>47</sup> In Madagascar, data on employment and wages by citizenship and administrative sector are for 1921 and 1929, yet total wage bill by sector is observed for 1925. We estimate employment by sector in 1925 as the average of the two former years, and deduct wage differences. In Madagascar, the average wage computed from definitive accounts is slightly higher than the one computed from provisional budgets, by 12%; in Indochina it is slightly lower, by 5%. This means that figures from Table 6 and Table 7 are not perfectly consistent.

<sup>48</sup> Data for 1912-13 Indochina suggest that the share of French was just a bit higher, at 13%. Whereas it had expanded quite quickly from 1913 to 1925, public employment did not progress much between 1925 and 1937, and it did not progress in wartime. It even seems to have been reduced by 25% in Indochina occupied by Japan, and this reduction could have affected more the Indochinese personnel than the French.

administrators mention the “necessary parallelism” between French and Indochinese civil servants.<sup>49</sup>

Table 7 – French and Autochthons in civil service 1925 & 1945, Indochina and Madagascar

	Indochina		Madagascar	
	French	Autochthons	French	Autochthons
<b>Year 1925</b>				
Share in total employment (%)	12	88	11	89
Share in wage bill (%)	58	42	56	44
Average annual public wage (1937 FF)	71,315	7,086	28,344	2,752
in units of GDP per 15+ pop.	66.6	6.6	28.1	2.7
in units of GDP per 15+ of each group <sup>a</sup>	1.1	7.3	1.0	3.6
<b>Years 1943-1946</b>				
Share in total employment (%)	10	90	12	88
Share in wage bill (%)	41	59	49	51
Average annual public wage (1937 FF)	29,541	4,392	24,893	3,452
in units of GDP per 15+ pop.	47.7	6.8	20.5	2.6
in units of GDP per 15+ of each group <sup>a</sup>	0.9	8.2	1.1	3.5

*Notes:* In Madagascar, data on employment and wages by citizenship and administrative sector are for 1921 and 1929, yet total wage bill by sector is observed for 1925. We estimate employment by sector in 1925 as the average of the two former years, and deduct wage differences. Data for the 1940s is for 1946. Figures for Indochina do not include the provincial and municipal governments. Figures for Indochina in the 1940s do not comprise the federal government, only the local budgets of only the local budgets of Cochinchina (1944), Annam (1945), Tonkin (1945), Cambodge (1945) and Laos (1943). In 1925, wages are higher by 80% for Autochthons at the federal level, yet employment is only 9% of total, so that not including the federal budget is innocuous. 15 year-old population was estimated at 59% (resp. 61%) of total population for 1925 (resp. 1945) Indochina, 69% (resp. 59%) for Madagascar; 71% (resp. 64%) for the French in both cases. a: using estimates of average income of French and Autochthons, see Appendix Table A.1.

It is therefore not impossible that the very high wages paid to European civil servants were pulling the Autochthonous wage schedule upwards. Though bonuses were originally reserved for French citizens, in skilled occupations like teachers, some allowances could be extended to Autochthons.<sup>50</sup> Measures of dualism, however, are very much decreased when we consider only the wages of Autochthons. In 1925 Madagascar, dualism goes from 5.3 to 2.7 (3.6 when we

<sup>49</sup> See for instance, where the term “parallelism” is used: Gouvernement Général de l’Indochine, 1931. *Recueil général de la législation et de la réglementation de l’Indochine, Supplément de 1926-1927, Deuxième partie (Arrêtés, décisions et circulaires du gouverneur général et des chefs d’administration locale) et Troisième partie (Ordonnances des souverains de l’Annam, du Cambodge et de Luang-Prabang)*, pp. 154-156. [National Library of Vietnam]. “Un taux d’abondement dégressif a dû être adopté pour conserver le parallélisme nécessaire entre les deux traitements.”

<sup>50</sup> For instance West African teachers exerting outside of their colony of origin, i.e. in the intermediate “federal” schedule, benefitted from a remoteness allowance (“*indemnité de dépaysement*”) equal to 4/10 of base wage. Further, from 1925 to 1935 all indigenous teachers in Togo were granted a special bonus (“*indemnité spéciale du Togo*”), first equal to 6/10, 7/10 in 1927, and then gradually diminished to 3/10 in 1933 before to be cancelled due to financial restrictions. Gbikpi-Benissan (2011, vol. 2, p. 205).



exclude Europeans from GDP per working age population). In 1925 Indochina, it goes from 14.8 to 6.6 (7.3).

After World War II, as the public service roughly doubled everywhere, dualism did not decrease, and even slightly increased (table 6). Bonuses paid to French civil servants were significantly decreased, and there is some evidence of convergence in wages as Autochthons started demanding “equal pay for equal work”.

After 1950, the official distinction between citizens and subjects was abolished in all colonies. The three pre-war wage schedules mentioned above were renamed “general”, “superior” and “local”, in order to withdraw references to race, citizenship status, origin or place of recruitment that were explicitly forbidden by law.<sup>51</sup> At the same time, wage bonuses were significantly decreased. In Madagascar and WCA after 1950, executives in the upper-tier, most often from Metropolitan France, saw their 70% bonus reduce to 40%.<sup>52</sup> This adjustment was made easier by the fact that a large part of the top administration had been faithful to Vichy France and was wiped out and replaced after 1944.<sup>53</sup>

As public employment doubled in size everywhere in the colonies of the African continent, the civil service somewhat Africanized, but this movement remained limited, especially in North Africa, where the room for progress was the largest.<sup>54</sup> Table 7 shows that, in Madagascar, the share of Europeans did not decrease between 1925 and 1946. Detailed data on the composition of employment by citizenship in the 1950s is not available, in part because explicit references to race or origins in recruitment had become forbidden by law.

While bonuses were cut at the top and the civil service somewhat Africanized, the ratio of public wages to GDP per working age population remained high. Real wages were multiplied by 1.8 in North Africa (as in France), 2.3 in Madagascar and 2.8 in WCA. GDP per working

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<sup>51</sup> See for instance: République Française, « Loi n° 50-772 du 30 juin 1950 fixant les conditions d'attribution des soldes et indemnités des fonctionnaires civils et militaires relevant du ministère de la France d'outre-mer, les conditions de recrutement, de mise en congé ou à la retraite de ces mêmes fonctionnaires ». Of course in practice, even if not in law, these categories still correlated with race or origin.

<sup>52</sup> See for instance : République Française, « Décret n° 51-511 du 5 mai 1951 fixant, en application de la loi n° 50-772 du 30 juin 1950, les régimes de rémunération, des prestations familiales, des congés administratifs de certains cadres de fonctionnaires civils relevant du ministère de la France d'outre-mer. »

<sup>53</sup> On the Vichy period: Jennings (2001), and Cantier & Jennings (2004, especially pp. 334-363 on the aftermath of Vichy). On the replacement of colonial governors, see Chambru & Viallet-Thévenin (2017).

<sup>54</sup> For 1955, Amin (1966) reports 64,000 non-Muslim civil servants out of 95,000 in Algeria (p.153), 18,000 over 30,000 in Tunisia (p. 161), and 41,000 over 68,000 in Morocco (p. 174), i.e. respectively 67, 60 and 60%, and 63% on average when our estimate for 1925 was... 63% (see above). In 1945 Morocco, 71% of primary school teachers are French, 59% in 1955 on the eve of independence (Roy. du Maroc, *Tableaux économiques du Maroc 1915-1959*, p. 37). In the school year 1962-63, just after Algeria's independence and the departure of many French settlers, “foreigners” still make 41% of all teachers from primary to senior secondary level (Office National des Statistiques de l'Algérie, *Rétrospective 1962-2011*, p.121, Table 4. <http://www.ons.dz/-Retrospective-1962-2011-.html>).

age population also increased, but not as much, so that dualism increased, especially in WCA, where it went from 8.1 to 11.2 (table 6).

In Sub-Saharan Africa, inflation differences with France during World War II and the creation of the CFA franc in 1945 partly account for the increase in real wages. Before 1945, France and its African colonies shared the same currency, the franc. During World War II, inflation had been lower in West and Central Africa than in Metropolitan France (see “Prices” section in the data appendix). This inflation differential led to the creation of the CFA franc in December 1945. In all Sub-Saharan African colonies, including Madagascar, the currency was renamed “CFA franc”, and its exchange rate with the Metropolitan franc fixed at 1.7 (1946-47) then 2 (starting in 1948).<sup>55</sup> In 1948, the new exchange rate compensated the differences in price levels, with the exception of Madagascar, where inflation during the war had been high. This was still true in 1955 AOF and Togo, less true in AEF and Cameroon where inflation was higher in 1949-1955. The CFA franc was very much overvalued in Madagascar. In Sub-Saharan Africa, nominal wages formerly paid in francs were now paid in CFA francs at the same level, and, between 1948 and 1955, were subject to the same proportional increases in nominal terms as in Metropolitan France, meant to increase real wages after they had been eroded by World War II inflation (Piketty 2018 pp. 191-194). Between 1937 and 1955, the inflation differential alone generated large gains in real wages in Sub-Saharan Africa, around 70% in AOF and Togo, 38% in AEF and Cameroon (but less than 10% in Madagascar). Furthermore, the purchasing power of these wages in Metropolitan France or in term of French imports was preserved through the creation and appreciation of the CFA franc.<sup>56</sup>

As bonuses for Europeans were decreased, as the structure of Autochthonous employment changed from low-skill occupations in security to higher-skill occupation in education and health, and as African trade unions started demanded more equality in pay (Cooper, 1996, pp. 277-322 and pp. 407-431), one expects to see a compression of the public wage distribution, but this is hard to show in the absence of detailed data on the distribution of public wages.

We collected for each territory the wage of the lowest and best paid teachers and nurses, as well as the wage of the governor, at six dates between 1913 and 1955. These series are particularly noisy, but they unmistakably show a convergence between the wage of the

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<sup>55</sup> North African colonies kept the franc until their independence, like Indochina with the piaster. Guinea left the franc zone in 1960, Mali only for a while between 1962 and 1984, and Madagascar in 1973. The exchange rate of CFAF remained constant until the CFAF devaluation of 50% in 1994.

<sup>56</sup> In North Africa, inflation was higher during the war than in Metropolitan France. As of 1955, the difference in CPI had been erased in Algeria, but preserved in Tunisia and Morocco, so that real wages remained more depressed there, by 13 to 23% according to our coarse estimates (see data appendix).

governor, which decreases in real terms, and the wage of the rest, which more than doubles in real terms in all groups of colonies. If we exclude the governor, compression of the wage scale is less clear, though there is some evidence for a compression in West and Central Africa. This kind of compression was already observed in 1945 Indochina and Madagascar (compared to 1925), between French wages and Autochthons' wages (table 6).

Overall, public wages remained high in the French colonies after World War II and were high when the colonies obtained their independence around 1960. Authors like Samir Amin (1966) on North Africa and René Dumont (1962) on Sub-Saharan Africa underlined, in the early 1960s, the high level of public wages in newly independent states. Both criticized, in particular, the one-to-one replacement of French civil servants at the same wage.<sup>57</sup>

It is not to say that paying civil servants well is necessarily a bad thing, as we cannot analyze the correlation of wages with productivity.<sup>58</sup> Yet, the colonial legacy of dualism very much determined the features of socioeconomic and political inequalities in the young independent countries. In the first two decades of their existence, an administrative bourgeoisie emerged, a “bourgeoisie of the civil service” in the words of Franz Fanon (1963), whose economic affluence and political influence combined led to the entrenchment of patron-client relationships with the rest of society. Just after independence, the legitimacy of this new social class was high, yet as dualist features persisted and development was not shared, its initial political capital depreciated and its authority was undermined.

To take stock, French colonial states displayed comparatively high fiscal capacity in 1925 and increased this fiscal capacity again in the 30 years leading to independence. Their expenditure, however, was benefitting overwhelmingly French settlers, who received public goods at the standards of Metropolitan France, and French civil servants, whose wages surpassed the wages received in Metropolitan France. Before World War II, the political economy of French colonies fits very well in the two-group model of Besley and Persson (2009), in the case they consider of an “autocracy ruled by the rich”, here the colonizers. The ruling colonizer group displays strong biased preference towards the welfare of its members. It taxes the colonized to redistribute income to the settlers and under-provides public goods. Yet, as long as the colonizer expects to remain in power for a time (i.e. “political stability is high”),

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<sup>57</sup> The extent to which dualism persisted in independent countries is not the object of this paper. Present-day estimates suggests that dualism is still high in Sub-Saharan Africa, even after the CFA franc devaluation of 1994 (Bossuroy and Cogneau 2013). Our research on British and French colonies of West Africa (Cogneau, Dupraz and Mesplé-Somps 2018) suggests that average public wages remained high in former French West Africa but were allowed to decrease in former British West Africa.

<sup>58</sup> On the case of East Africa, Simson (2017) shows that public jobs were allocated meritocratically.

it invests in fiscal and legal capacity – that are complements, and even “over-invests” compared to an utilitarian (unbiased) government, as the private gains from regressive redistribution outweighs the losses due to lower public goods provision.

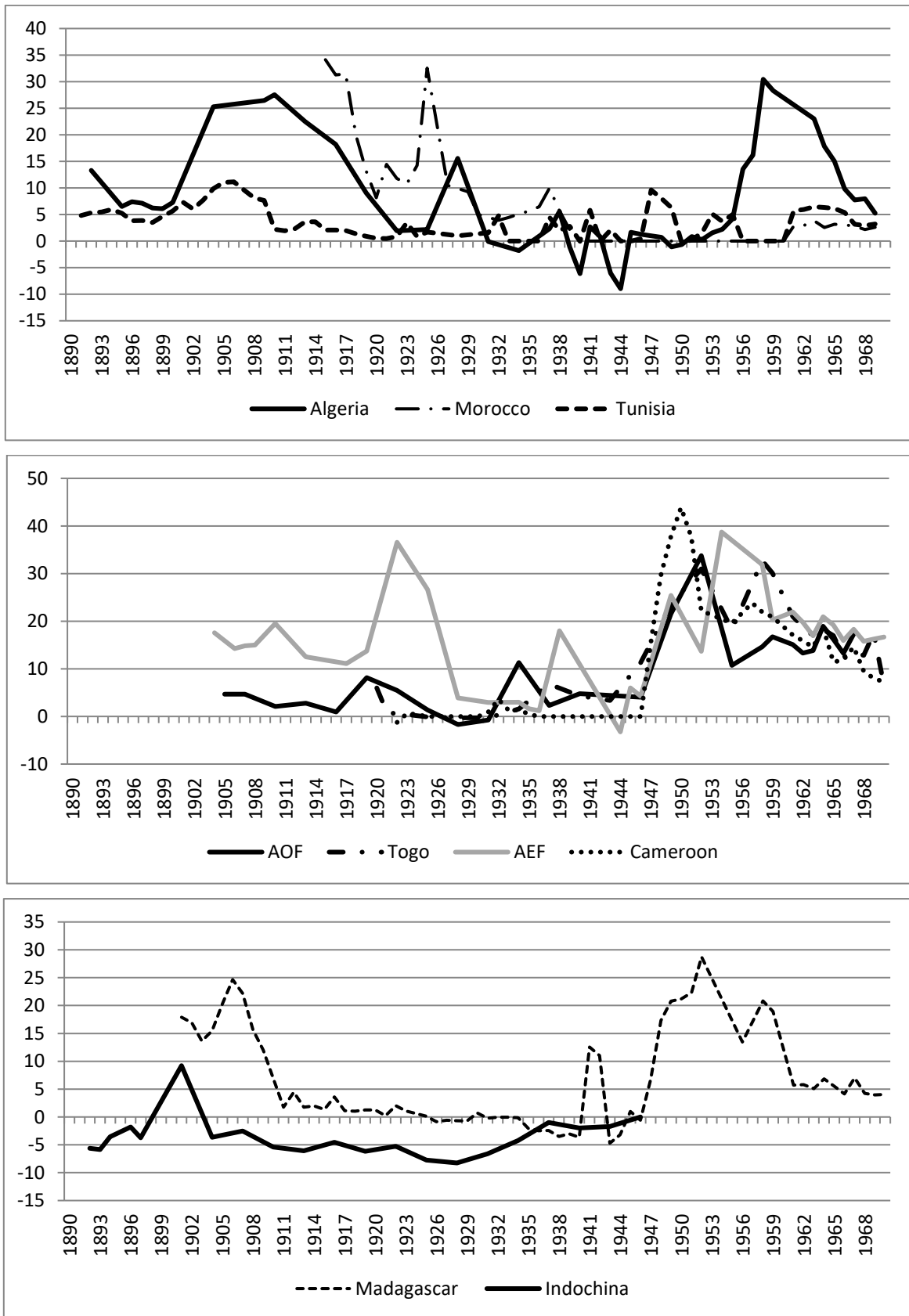
However, as the time horizon of colonial rule gets shorter (independence is expected), which is represented in the model by “political instability” and the risk of being ousted from power, investments in state capacity are also predicted to decrease. And in cross-section, the more colonizers will feel threatened to lose power the less they will invest. Here, the model doesn’t fit the history of French colonial states. After World War II, as their legitimacy was increasingly questioned, French colonial governments did not tax and spend less. They accelerated their modernization project and turned more developmental, in the hope of preserving their imperial dominance. They extended the franchise and gave some political rights to local populations. They also turned fiscal extraction somewhat more progressive and granted some wage equality claims.

The developmental phase of colonialism could not be financed internally anymore, and transfers from Metropolitan France increased, inaugurating a period of aid dependency that survived independence.

### *Aid dependency*

Figure 4 displays net grants from France as a proportion of a colonial territory’s net public expenditure. For some colonies, grants from France could represent a significant share of expenditure in the beginnings, at a time when the fiscal apparatus was still under construction. As expenditure was also low, the cost to Metropolitan France was not high. Between 1870 and 1919, cumulated net French grants represented 6.5% of cumulated expenditure in the empire, yet only 0.05% of French GDP. In Indochina, net grants from Metropolitan France are systematically negative from 1904 onwards, which means that surpluses from Indochinese budgets were financing the French state.

Figure 4 — Net grants from France as a share of total expenditure; 1890-1970



Notes: these are net grants from France, negative numbers mean the grants from the colony to France are larger than the grants from France to the colony (for instance Indochina 1905-1937). French military expenditure is not counted, except expenditure in infrastructure and health.

Between 1920 and 1944, the colonial empire was almost self-financed. Cumulated French grants represented 1.2% of cumulated expenditure only, and 0.03% of French GDP. The visible exception is Central Africa (AEF), where grants represented up to 6.6% of expenditure. Yet, the cost to Metropolitan France was negligible, and ten times compensated by grants from Indochina. Transfers to AEF peaked between 1920 and 1924, the period when Albert Sarraut was Minister of the Colonies. Sarraut's view of the necessity of "adding value" to the poorest colonies was taken by some as the first developmental attempt in the French colonial empire (Cornevin 1972 pp. 281-290).<sup>59</sup>

In the 1930s, some colonial infrastructure projects were financed by state-guaranteed loans. In 1929, André Maginot, a successor of Sarraut at the Ministry of the Colonies, launched the idea of large loans guaranteed by the French government, that were eventually voted in 1931, after he was out of office, and as the Great Depression was beginning to reach France and its empire. The 1931 loans were used mainly for the completion of railway lines like the "Congo-Océan" railway line in AEF or the "Fianarantsoa-Côte Est" line in Madagascar. These loans were still being reimbursed in the late 1950s, but thanks to the large inflation of the 1940s that multiplied prices by 14, real interest rates on these loans ended up being negative, so that they represented a less visible subsidy to the colonies from French bondholders.<sup>60</sup>

In 1946, the Economic and Social Development Investment Fund (FIDES) was created to finance large-scale infrastructure projects in the colonies of Sub-Saharan Africa.<sup>61</sup> Though the colonies also contributed to this fund, the contribution of Metropolitan France was very important (70% of the total). As a result, as can be seen in figure 4, after 1946, net grants from France as a share of expenditure took off in AOF, AEF, Togo, Cameroon, and Madagascar.

In the same period, North African colonies financed developmental projects through loans under the Modernization and Equipment Fund (FME), renamed Economic and Social Development Fund (FDES) after 1955 (Saul 2016 p. 47).<sup>62</sup> Algeria started receiving large amounts of French aid in 1956, two years into the liberation war. This culminated in 1959-1962 under the "Constantine Plan", aimed at industrializing the country.

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<sup>59</sup> The word used by Sarraut was "*mise en valeur*", which can be translated by development or improvement. Sarraut, Albert, 1923. *La mise en valeur des colonies Françaises*. Paris, Payot.

<sup>60</sup> To give just one example, AOF was in the 1950s still reimbursing annuities on loans contracted between 1903 and 1932, for a total debt amount of 3,526 million francs, in which the 1931 loan owned the lion's share (3,120 million, disbursed in seven sections from 1931 to 1937). The total annuities reached 30 million of CFA francs, representing only 0.1% of the Federal budget's expenditure.

<sup>61</sup> F.I.D.E.S.: Fonds d'Investissement pour le Développement Economique et Social.

<sup>62</sup> Whether these development loans were reimbursed after decolonization is a question left for future research. If they were only partly reimbursed, this would attenuate the contrast between Sub-Saharan Africa and North Africa.

Between 1945 and 1962, French grants then finance 17.1% of colonial public expenditure: 23% in West and Central Africa, 17% in Madagascar, 20% in Algeria. While the amount of French aid directed to Algeria decreased quickly after 1963 to represent only 5% of the country's public expenditure in 1969, and while Madagascar also experienced a large downfall in French aid after independence, in West and Central Africa, the share of French aid in expenditure remained high and stabilized between 8 and 16%.<sup>63</sup>

France's colonial empire definitely turned more costly in the last 15 years of colonization, but this was only very partly explained by the increase in civilian transfers. Military expenditure had always represented the bulk of the cost of colonization for France, and they increased considerably after World War II, as France was fighting in Indochina, Algeria, and Cameroon to retain its colonial empire. Figure 5 represents the cost of the colonial empire as a share of France's GDP, divided into civilian net grants to the colonies and military expenditure. Even at its apex in the post-World War II period, the financial contribution of Metropolitan France to colonial civilian expenditure averaged at 0.5% of its GDP, below the aid target fixed today by the OECD for its members (0.7%).

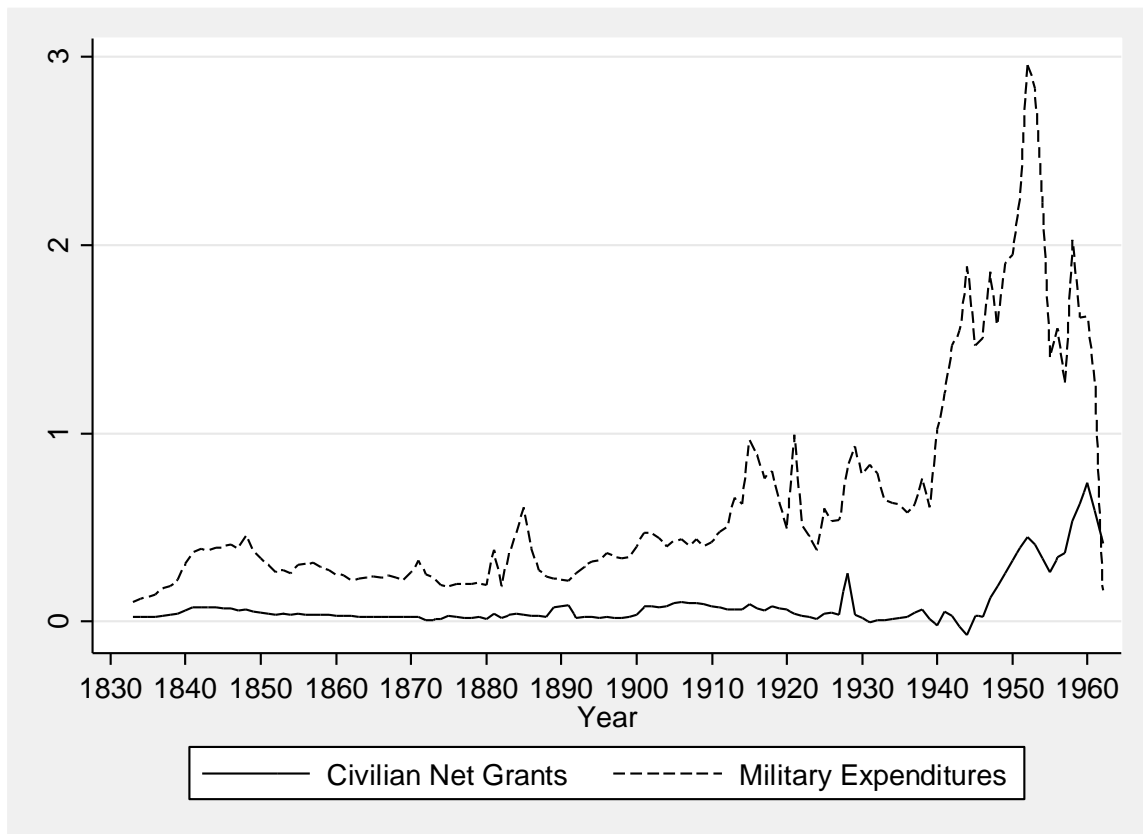
Figure 5 shows that military costs were always much larger than civilian subsidies. Over the 1833-1962 period, military costs weighed on average 0.85% of French GDP versus 0.15% for civilian subsidies. Colonial military expenditure represented on average half of colonial civilian expenditure, and 6% of the empire's GDP. Of course these costs peaked in times of conquest wars (1830-50 in Algeria, 1880-1886 in Tunisia, Indochina, and Madagascar, 1920s and 1930s in Morocco) and during the two world wars because of the costs of managing the conscription of Autochthons. Yet, it is only after 1940 that colonial military expenditure boomed to levels much above 1% of France's GDP, reaching a first local maximum between 1951 and 1954 during the Indochina War (Tertrais 2002), then a second local maximum in 1958-1960, during the war in Algeria, but also in Cameroon.

However, the post-World War II increase in military expenditure is not only driven by liberation wars. As France increased its military presence in Sub-Saharan Africa after 1946, military spending increased a lot in Madagascar, AOF and AEF. After decolonization, France kept a few permanent military bases in former colonies, until 1961 in Morocco and Tunisia, and until today in Senegal and Gabon, yet withdrawal saved a lot of money on the military side.

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<sup>63</sup> The FIDES was replaced in 1959 by the FAC, *Fonds d'Aide et de Coopération* (Aid and Cooperation Fund).

Figure 5 — Metropolitan transfers, in % of metropolitan France GDP



*Sources:* see data appendix. *Notes:* Civilian net grants include military expenditure in infrastructure and health. Military expenditure includes personnel and operating expenses of troops, and expenditure other than in infrastructure and health. The military costs of the Indochinese and Algerian wars are rough estimates, likely to be underestimated in the case of Algeria.

Except for some infrastructure and health expenditure, we never consider the colonial military expenditure of France as an item of expenditure for the colonies. Yet, once they became independent, the former colonies started developing a national defense budget, so that France’s colonial military spending could be at least partly considered as subsidizing their defense expenditure. Military expenditure in the domestic budget of independent Morocco (after 1957) weighed 13% of total expenditure, or 1.5% of domestic GDP.<sup>64</sup> If we adopt this 1.5% ratio of GDP to define counterfactual military spending absent colonialism, then we find that the subsidizing of defense expenditure by Metropolitan France represented a 0.21% transfer in terms of French GDP, bringing total French aid to its colonies to  $0.15+0.21=0.36\%$  over the 1833-1962 period. Overall, French aid to its colonies was definitely modest.

<sup>64</sup> 11.7 billion francs; Roy, du Maroc, *Tableaux économiques du Maroc 1915-1959*, p. 261. In contrast, according to Amin’s estimates (1966 pp. 281-284), Algeria in 1963 had the largest army in Africa, and spent 70 billion francs on it, meaning 5.2% of GDP, not even counting the pensions of veteran *moujahidins* (30 billion).



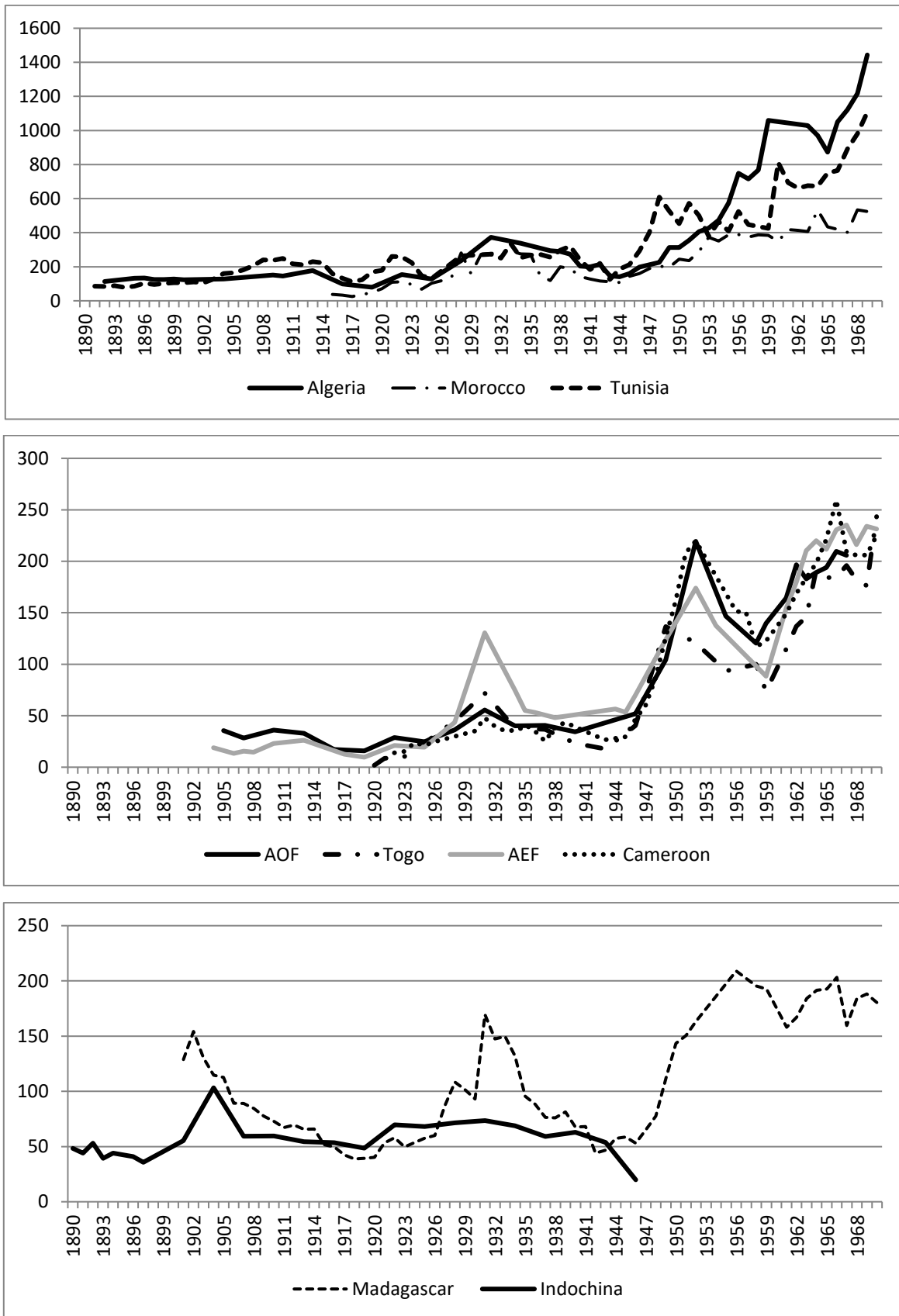
## 5. Conclusion

A novel data collection provides comparative evidence on the colonial states of the second French colonial empire, from their foundation to their devolution in the 1960s. Colonial states were neither omnipotent Leviathans nor casual night watchmen. On the one hand, we emphasize the extractive efficiency and capacity of adaptation of colonial states to different socioeconomic contexts and to varying historical conditions. On the other hand, we put forward dualism as an important common feature and legacy. Another important characteristic was that colonial states were authoritarian and lacked legitimacy. Legitimacy was greatly increased after independence, but dualism and international dependence persisted, and gradually depreciated this initial capital. To compensate, some postcolonial states like Algeria turned even more authoritarian, others, like Madagascar and Chad, quickly faced political instability, while some like Senegal managed their way more peacefully. Yet, most of them were sooner or later contested in their capacity to generate shared development and break with the dualistic structure, whatever the ideological orientation they claimed, pro-western or socialist.

Further work will make advances in two directions. First, additional data collected for British colonies with the same methodology will allow us to examine to which extent the same features can be generalized to a different colonizer. For West African colonies, it seems that common features dominate, in terms of size, tax and spending structure, historical evolution, and transfers from the colonizing country. Differences between the two colonizers are only of second order, like higher spending on education on the British side. However, the tradeoff between wage levels and public employment seems to have been solved differently in each case, resulting in lower dualism and inequality in British colonies (Cogneau, Dupraz and Mesplé-Somps 2018). To further our understanding, the Africanization of high rank administrative positions around independence will have to be analyzed more thoroughly.

Second, ongoing data collection will allow us to extend the analysis after the year 1970 and to present times. Beyond the transition to independent countries, the critical junctures of socialist experiences and structural adjustment policies will be studied, both from the taxation side and the spending side, together with the impact of the commodity boom and bust (1975-1985).

Figure 6 — Net Public Expenditure per capita from 1890 to 1970



Notes: Net Public (civilian) Expenditure per capita in PPP 1937 francs. Includes the expenditure of first level administrative divisions (départements, régions and provinces), but not of second-level administrative divisions (municipalities).

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## Appendix I – Estimates of the fiscal burden on Europeans and Autochthons

To have an idea of the fiscal burden weighing on European settlers versus Autochthon populations in the colonies of the French empire, we start by constructing income shares of the European and Autochthonous populations. We then break down the Autochthonous population into two social classes: urban and rural non-poor, and rural poor. Finally, we make additional assumptions on the incidence of various tax instruments to obtain estimates of the fiscal burden of each group. These are *very tentative* estimates, as the available data is patchy and many assumptions are needed

### *Income shares*

We first devise estimates of the respective income shares of Europeans and Autochthons, using income tax data from Alvaredo, Cogneau and Piketty (2017). The European group comprises Jews in North Africa, and Chinese and Indian minorities in Madagascar. In Indochina, the Chinese population, far more numerous than the European population, is treated as part of the urban Autochthonous group.

We are trying to estimate the share of settlers in national income. Because we have estimates of national income (GDP) and population shares, it is enough for us to know the average income of settlers. Samir Amin (1966) gives estimates for the income shares of Europeans in Algeria (47%), Morocco (37%), and Tunisia (43%). Our sources then give us the (bracketed) income distribution of all Europeans in 1925 Indochina (0.13% of total population), of the top 3% in 1932 Algeria, of the top 33% of Europeans in 1956 Tunisia, and of all Europeans in 1946 Cameroon (0.11% of population).

Given these limited sources, we need to extrapolate in two directions: using the distribution of one given territory and year for another year and/or another territory, and extrapolating the bottom of the distribution when we have only information for the top.

We assume 1) that in non-settler colonies, Europeans are at the top of the income distribution, 2) that the income distribution had the same Pareto shape everywhere at the top, which we take from Tunisia 1956. This gives us, for any  $x$  and  $y$  sufficiently small, the ratio between the income share of the top  $x\%$  and the income share of the top  $y\%$ .

It means that if we know the income share of the top  $x\%$  in a given colony, we can extrapolate the income share of any other top bracket. For example, we know the income share of the top 0.13% in 1946 Cameroon (all Europeans). In 1955, Europeans are 0.37% of

population in Cameroon. To find the income share of Europeans in 1955, we use the income share of the top 0.13% in 1946 and use the ratio of the top 0.1% to the 0.37% given by the 1956 Tunisian distribution. The same extrapolation procedure is used to extrapolate the European income share from its population share in 1925 Cameroon, and in all Sub-Saharan colonies in 1925.

For 1925 Indochina, the income distribution of Europeans is already given by our source. For 1925 Algeria, Morocco and Tunisia, we have the top 3% in 1932 Algeria and, again, use the Pareto distribution of Tunisia 1956 to estimate top income shares from population shares in 1925 Algeria, Tunisia and Morocco.<sup>65</sup>

In a second step, we break down the Autochthonous population in two social classes: “urban and rural non-poor” and “rural poor”. Urban and rural non-poor Autochthons will be assumed to pay a significant share of direct and indirect taxes, of import tariffs, as well as buy a significant share of state-provided services and goods. Rural poor, mostly subsistence farmers, will be assumed to pay the *capitation*, a very small share of imports and excise taxes, and export taxes on agricultural commodities.

For 1955 North Africa, Samir Amin (1966. pp. 114-119) provides population and income shares for urban and rural Muslims in each colony of North Africa. Furthermore, he distinguishes (p. 185) a fraction of rich farmers making 7% of rural population and earning one third of total rural income; we aggregate them to the urban population.

For 1925 North Africa, the urbanization rate of Muslims is drawn from the 1926 population census in Algeria. We add to this urban population 7% of rich farmers (like in 1955). The average income of the rural poor is extrapolated backward to 1925 using the Autochthons’ income per capita growth (hence assuming that income distribution among Autochthons did not change). The average income of the urban and rural non-poor is then computed as a residual.

For countries of Sub-Saharan Africa in 1925, we use 1946 income tax data to infer that the urban population (paying the personal income tax and trade licenses) is 15 times the European population. We then double the figure to account for unregistered rural non-poor.

In 1925 Indochina, we add the Chinese population (1.2%) to the population of urban Indochinese (4.3%) to obtain a figure of 5.5% for urban and rural non-poor than we also apply to Madagascar.

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<sup>65</sup> We obtain very similar European income shares if we use, instead of the Pareto distribution of 1956 Tunisia, 1946 Tunisia, 1947 Algeria, or 1955 Algeria. We also tried an alternative estimation procedure where we disregarded Cameroonian income tax data and used only the Tunisian distribution to estimate the income share of Europeans everywhere. Results were very similar, except in Togo.

In Sub-Saharan Africa in 1955, we assume a 10% urbanization rate, roughly consistent with World Bank data for 1960.

In all colonies outside of North Africa, we assume that the rural poor earn a fixed subsistence income per capita, that we estimate for the year 1925 as the price of a yearly ration of 1,600 kcal of rice in 1938 Madagascar (or Indochina, the two figures are almost equal). For the year 1955 we increase this figure by the growth rate of average Autochthonous income (slightly above 50%) to reflect agricultural productivity gains linked to the take-off of cash export crops. In both years, the average income of the non-poor class is then computed as a residual.

Table A.1 summarizes the results of this tentative estimation procedure.

Table A.1 — Income distribution estimates for the years 1925 and 1955

	NA	Indoch.	Madag.	WCA
<b>Year 1925</b>				
Europeans: Population share (%)	9.2	0.1	0.8	0.1
Income share (%)	50.0	9.1	22.8	5.9
Average income (FF 1937 PPP)	10,193	46,083	19,433	40,299
Urban & Rural Non-Poor: Pop. (%)	16.9	5.5	5.5	2.8
Income share (%)	26.3	30.7	22.7	23.1
Average income (FF 1937 PPP)	2,912	3,517	2,870	4,501
Rural Poor: Population (%)	73.9	94.4	93.7	97.1
Income share (%)	23.7	60.2	54.6	71.0
Average income (FF 1937 PPP)	603	404	404	404
<b>Year 1955</b>				
Europeans: Population share (%)	8.1		1.5	0.4
Income share (%)	41.1		24.4	13.1
Average income (FF 1937 PPP)	12.232		18.149	33.204
Urban & Rural Non-Poor: Pop. (%)	22.0		9.8	10.0
Income share (%)	32.7		24.7	26.2
Average income (FF 1937 PPP)	3.566		2.804	2.422
Rural Poor: Population (%)	69.9		88.6	89.7
Income share (%)	26.1		50.8	60.7
Average income (FF 1937 PPP)	896		641	624

*Source:* Income tax tabulation data from Alvaredo, Cogneau & Piketty (2017). See text for other sources. *Notes:* Europeans include Jews in NA. and Indians and Chinese in Madagascar. Chinese in Indochina are in urban Autochthons.

### *Tax rates*

To obtain estimates of the fiscal burden of each group, we make additional assumptions on the incidence of various tax instruments. We lack the statistical basis (social accounting

matrices) and a well-founded equilibrium model to perform a proper tax incidence analysis, but we try to make a couple of simple assumptions. These assumptions are meant to be conservative in order not to underestimate the fiscal burden of the Autochthons.

*Capitation* is paid only by Autochthons. Because it is a lump-sum tax, its burden, in proportion of income, weighs overwhelmingly on the rural poor. For import taxes, we assume that the rural poor consume only 2.5% of their income in imported goods in 1925, 5% in 1955 to reflect the increased openness of economies. The residual imports are consumed by the two other groups. We assume that non-poor Autochthons consume the same share of their income on imports as Europeans. We assume that export taxes are entirely paid by the rural poor when they produce coffee, groundnuts or cocoa in West or Central Africa, or when they collect rubber in Indochina, or vanilla in Madagascar. For monopolies and intermediate taxes, we assume that the rural poor's propensity to consume taxed goods is one twentieth of the non-poor in 1925, and one tenth in 1955 — these proportions are meant to be similar to the assumption on imports. Non-poor Autochthons are taxed at the same rate as Europeans. Finally, for modern taxes, we assume that the rural poor pay none, except the tax on agricultural income (*tertib*) in Morocco, and that Europeans and non-poor Autochthons endure the same rates.

Table A.2 gives the estimated tax rates on the income of each group in 1925 and 1955.

Table A.2 — Estimates of tax rates on income

	NA	Indoch.	Madag.	WCA
<b>Year 1925</b>				
Europeans	8.9	23.6	12.8	12.2
Autochthons	6.2	11.2	9.1	5.4
Urban or Rural Non-poor	10.1	23.9	13.5	12.2
Rural poor	1.9	4.8	7.3	3.1
All	7.5	12.4	9.9	5.8
<b>Year 1955</b>				
Europeans	20.4		21.1	23.8
Autochthons	11.6		12.5	12.3
Urban or Rural Non-poor	19.1		21.9	24.5
Rural poor	2.2		7.9	7.1
All	15.2		14.6	13.8

*Sources:* See text. *Notes:* Europeans include Jews in NA and Indians and Chinese in Madagascar. Chinese in Indochina are in urban Autochthons.

## **Appendix II — The rise in Indochinese public wages after World War II**

Average public wages were particularly high in 1925 Indochina. The average French public wage was more than twice the average French public wage in Madagascar, and more than twice the average French public wage in Indochina in 1955. Autochthonous wages were very high as well, 2.5 times higher than in Madagascar, and 1.6 times higher than in Indochina in 1945. This appendix lays down the particular sequence of policies that led to these extremely high real wages.

At the top of the hierarchy, the general governor was paid 1937 PPP FF 406,000 in 1925 Indochina vs. 280,000 in Madagascar — a 45% difference. The base nominal wage in current francs was in fact different by 25% only (50,000 vs. 40,000). Both governors receive the same large bonuses, about 2.8 times the base wage (at the 1925 exchange rate of the Indochinese currency, the piaster), comprising not only the “colonial supplement” but also travel and entertainment expenses. The rest of the difference then stemmed from the price level, 18% lower in Indochina according to our estimates. However, in 1925 Indochina the same level of bonuses applied to all French civil servants, more than tripling the base wage in francs. In Madagascar, like in other colonies of Sub-Saharan Africa, bonuses and allowances only reached 70% of base wages.

The story of these very high Indochinese wages is the following. At the start of World War I, France had suspended the convertibility of the French franc into gold. France financed the war by monetary expansion, resulting in high inflation. In Indochina, the piaster remained silver based and inflation was low throughout the war and in the 1920s. As a result, the piaster appreciated from 2.5 francs for one piaster in 1913 to 17 francs for one piaster in 1926. The exchange rate stabilized around 12 under the Poincaré government, before being pegged at 10 after 1930 (Brocheux & Hémerly, pp. 134-135. Giacometti, 1998).

From 1913 to 1917 in Metropolitan France, nominal wages of civil servants had stayed fixed and had lost a lot of purchasing power. Nominal wages were gradually increased from 1918 to the end of the 1930s, starting with the lowest wages of postmen, teachers, etc. By 1925, the top wages of university professors or administration executives were still lower by 40% than their 1913 level (Piketty 2018 pp. 182-191 & pp. 833-834). It has to be noted that, for expatriated French civil servant, the wage schedule of Metropolitan France applied directly to all colonies. In Indochina, wages in francs were converted in piasters.

In Indochina, the colonial government decided to set up a specific schedule of colonial supplements in piasters to compensate for inflation in Metropolitan France (Dareste et al. N°4,

Oct.-Dec. pp. 1080-1083). The schedule was progressive, in that wages at the bottom of the scale received proportionally higher supplements. It was revised each year all along the 1920s. The Indochinese supplement fixed in piaster ended up representing the bulk of the pay: in 1925, it ranged between 2 to 4 times the base wages, when going down the scale from the top (governor) to the bottom. In contrast with Metropolitan France, not only were the real wages of French civil servants preserved in Indochina, they even increased quite sharply between 1913 and 1925, from 1937 PPP FF 52,649 to 71,315 (i.e. by 36%).<sup>66</sup>

According to a September 1920 decree, the “colonial supplement” had to be six tenth of the base wage in francs in Madagascar, and seven tenth in Indochina (Dareste et al. N°1, Jan.-Mar. pp. 89-98). Our data indicate that in Madagascar the applied supplement was actually seven tenth.<sup>67</sup> In Indochina, the specific supplement schedule did not fit the seven tenth rule and was more advantageous, especially for low wages. For example, a French civil servant paid at the Madagascar 1925 average wage of around 9,325 francs, corresponding to a middle rank executive or to a second class teacher, received a 6,527 francs supplement in Madagascar, but 3,990 piasters in Indochina, worth 31,290 francs at the 1925 exchange rate. The bulk of the gap in French public wages between Madagascar and Indochina in 1925 can be attributed to the specific schedule of bonuses in Indochina.

Why did the government of Indochina adopt such a generous bonus schedule? Our tentative estimates of the average income of Europeans (table A.1 in appendix 1) stand at par with average wages in the civil service in both colonies (table 5, fifth row).

Strikingly enough, our tentative estimates of the average income of Europeans (Table A.1 in Appendix I) stand at par with average wages in the civil service in both colonies (Table 5, fifth row).<sup>68</sup> Then, everything is as if the large bonuses paid to civil servants in Indochina were meant to offset a high reservation wage, as Europeans in the private sector were much richer and in lower numbers than in Madagascar, where many relatively poor French men from neighboring *Réunion* island had immigrated. Hence, the rationale for the Indochinese exception must have been the wish to attract skilled civil servants in the most profitable and strategic, yet remote, colony.

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<sup>66</sup> The general governor and the governors of four territories (not Cochinchina) make one exception, but it is that their base nominal wages in francs were lowered between 1913 and 1925.

<sup>67</sup> The colonial supplement was supposed to be seven tenth in AOF and nine tenth in AEF. Our data rather suggest it was seven tenth in all Sub-Saharan Africa colonies until the end of WW2. Before WW1, it seems to have doubled the base wage in SSA and Indochina.

<sup>68</sup> At least for Indochina, these are rather precisely measured thanks to income tax data collected by Alvaredo, Cogneau & Piketty (2017).

It is only at the end of 1930s that the difference between the arbitrary piaster supplement and the seven tenth bonus turned small, at all base wages. Nominal wages in francs had recovered, so that the special supplement schedule had gradually lost its motivation. Further the bankruptcies of the Great Depression had also diminished private benefits, hence the civil servants' reservation wage (Brocheux et Hémerly 1994, pp. 260-269). World War II finished pulling down public wages in Indochina, back to the same levels as in Madagascar. According to Bassino's estimates, the once buoyant Indochinese economy collapsed under the Japanese occupation — GDP per capita was halved between 1940 and 1945. Between 1937 and 1945, inflation was extremely high in both colonies — prices were multiplied by 5.8 in Indochina and 6.7 in Madagascar, but nominal wages did not follow in Indochina. In both colonies, between 1925 and 1943/46, French public wages kept up with Europeans' average earnings, which fell by 60% in Indochina, but only by 25% in Madagascar (in Madagascar the average earnings of Europeans fell mostly because of the arrival of new, less affluent settlers in the 1930s).

The setting of French wages also influenced the wages of Autochthons. In 1925, the average French civil servant was paid 10 times what the average Autochthon received in both colonies (Table 5, third row). This means that Autochthonous civil servants were paid 2.6 times more in Indochina. It is quite surprising, as Indochinese civil servants were not paid the colonial supplement, reserved for French citizens. Sources indicate that some “parallelism” was thought between the French and local wage schedules. During the period of the depreciation of the franc (1918-1930), a generous and progressive exchange rate was applied to translate wages from francs into piasters. In 1926 for instance, when the actual exchange rate was around 10 francs per piaster, an exchange rate 3 to 3.5 (depending on base wage level) was applied, meaning a bonus of  $10/3 - 1 = 2.33$  in terms of the base wage in francs.<sup>69</sup> The wages of subaltern personnel, which had no correspondence in francs, were presumably also pulled upward. Overall, the real wages of Autochthonous civil servants also went up between 1913 and 1925, from 1937 PPP FF 4,219 to 7,086 — a 68% increase.<sup>70</sup>

This “parallelism” between Europeans' and Autochthons' wage schedules then explains why our measure of wage dualism is so high in 1925 Indochina compared to Madagascar. In

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<sup>69</sup> See for instance, where the term “parallelism” is used: Gouvernement Général de l'Indochine, 1931. *Recueil général de la législation et de la réglementation de l'Indochine, Supplément de 1926-1927, Deuxième partie (Arrêtés, décisions et circulaires du gouverneur général et des chefs d'administration locale) et Troisième partie (Ordonnances des souverains de l'Annam, du Cambodge et de Luang-Prabang)*, pp. 154-156. [National Library of Vietnam]. “Un taux d'abondement dégressif a dû être adopté pour conserver le parallélisme nécessaire entre les deux traitements.”

<sup>70</sup> Employment increased more in administrative sectors paying initially higher wages, like education and health, yet the composition effect was limited. The Paasche index of wages increased by 54% and the Fisher by 63%.



Indochina, the average Autochthon in civil service earned 6.7 times the GDP per worker, while the same ratio was only 2.7 in Madagascar (Table 5, fourth row).

In 1946, the Autochthons' average wage had improved significantly in Madagascar. It was now 7 times lower than the French average wage, versus 10 times in 1925. In Indochina, the Autochthons once generous schedule was, like the French schedule, shifted down drastically. Like in Madagascar, average public Autochthonous wages were 7 times lower than French wages in 1943/46, versus 10 times in 1925.

# **Fiscal Capacity and Dualism in Colonial States: The French Empire 1830-1962 Data appendix**

Denis Cogneau, Yannick Dupraz and Sandrine Mesplé-Soms

This version: July 2018

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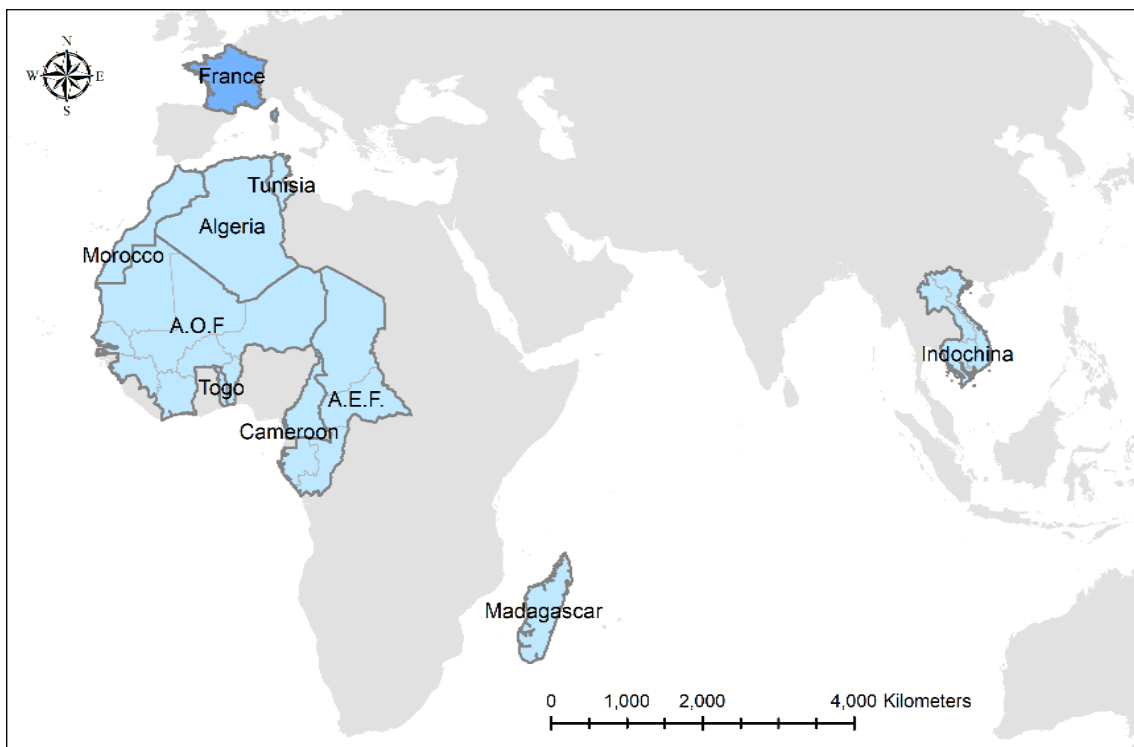
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# EXTENT OF THE PUBLIC FINANCE DATABASE

## GEOGRAPHICAL AND HISTORICAL RANGE

**Geographical range.** Our database covers almost the entire second French colonial empire, corresponding to the second wave of European colonisation from the middle of the 19th century. Except the Indochinese Union, most colonies are in Africa: Algeria, Tunisia and Morocco, the federations of French West Africa (*Afrique occidentale française*, AOF) and French Equatorial Africa (*Afrique Equatoriale Française*, AEF), Togo, Cameroon, and

*Figure 1: Geographical extent of the dataset*



Madagascar (see map on figure 1). Our database does not encompass smaller colonial territories such as the remains of the first colonial empire (Guadeloupe and Martinique in the West Indies, French Guyana, the Reunion Island and the five trade posts of India), New Caledonia, colonized by France in 1853, and the port of Djibouti, colonized in 1884. Lebanon and Syria, under French rule between the two world wars, are not included in the present database either, and will be the object of future research. In total, the former French colonies that are part of our database correspond to 21 present-day countries: Algeria, Morocco, and Tunisia in North Africa, Benin, Burkina- Faso, Cameroon, Chad, Central African Republic, Congo-Brazzaville, Cote d'Ivoire,

Gabon, Guinea, Madagascar, Mali, Mauritania, Niger, Senegal and Togo in Sub-Saharan Africa, and Vietnam, Laos and Cambodia in South-East Asia.

Table 1: Historical range of the dataset

Region	Range of colonial data	# observations	Range of Franc Zone data	# observations
Algeria	1833-1958	96	1959-1969	11
Morocco	1915-1956	41	1957-1969	13
Tunisia	1891-1955	61	1956-1969	10
Indochina	1871-1946	39		
West Africa <sup>(a)</sup>	1905-1958	18	1959-1967	9
Equatorial Africa <sup>(b)</sup>	1904-1954	22	1958-1970	13
Cameroon	1922-1957	28	1958-1970	13
Madagascar	1901-1956	52	1958-1970	13
Togo	1920-1955	14	1958-1970	13

(a) The West African federation includes Cote d'Ivoire, Dahomey (present-day Benin), Guinea, Haute-Volta (present-day Burkina-Faso), Mauritania, Niger, Senegal and Soudan (present-day Mali).

(b) Equatorial Africa includes Chad, Congo (present-day Congo-Brazzaville), Gabon, Oubangui-Chari (present-day Central African Republic)

**Historical range.** For each territory, the starting date depends on the specific history of colonization in the region and on the date at which colonial authorities started producing systematic records of public finances. The first region to be colonized was Algeria, whose conquest began in 1830, the last were Togo and Cameroon, who were given to France as League of Nation mandates after WWI. The end date also depends on the specific history of each region. In Indochina, our database stops in 1946, the year the independence war began. For African colonies, which became independent between 1956 (independence of Morocco) and 1962 (independence of Algeria after an eight year war), we are able to extend the database to the end of the 1960s, using the reports of the Franc Zone, the monetary union between France and some of its former colonies. Since the 1950s, the *Banque the France* in charge of the monetary policy of the Franc Zone has been publishing reports containing some information on the public finances of its member countries. These reports offer a picture of public revenue and expenditure less detailed and complete than the one built using budget accounts directly. Table 1 sums up, for each of the 9 regions considered, the historical range of our public finance data, distinguishing between the “colonial” dataset, built primarily from budget accounts, and the “Franc Zone” dataset, built primarily from the reports of the Franc Zone.

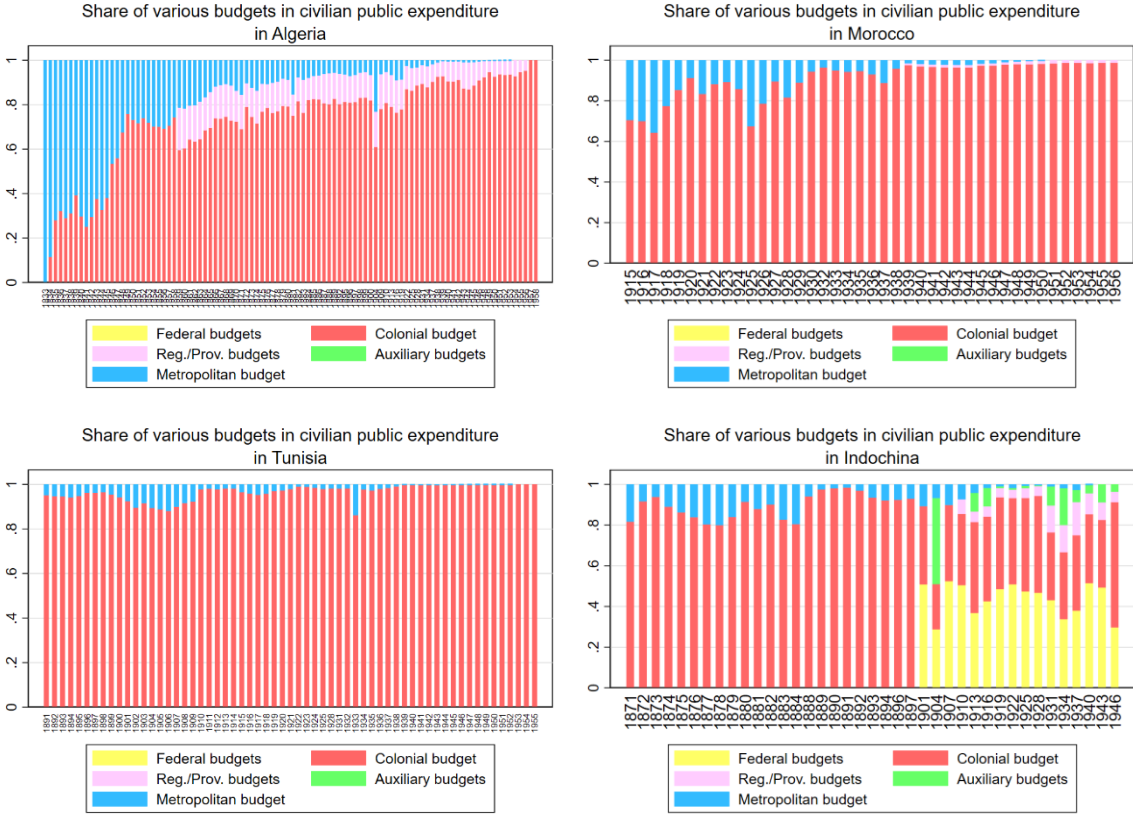
## BUDGET ACCOUNTS CONSIDERED AND SOURCES USED

This section presents the budget accounts considered and the sources used to build the public finance database, as well as the main assumptions made, especially when dealing with missing data. The complete list of sources is displayed in the “Public finances” section of the “List of sources” below. In order to produce figures comparable across time and across regions, we did not only consider central colonial governments, but tried to collect data for all public authorities responsible for revenue and expenditure in the colonies. This required detailed knowledge of the administrative structure of the empire. We collected data from various budget accounts: metropolitan (French), colonial, federal in colonies organised in federations, auxiliary (loan budget accounts, development funds, etc.), as well as the accounts of lower level administrative divisions. For each year and each region of the empire, these budgets are consolidated, meaning that the various transfers between them (subsidies, loans, interests and reimbursements) are cancelled out to avoid double counting of revenue and expenditure items.

**Metropolitan budget accounts.** In Metropolitan France, two ministries were responsible for the majority of spending in the colonies: The Ministry of the Navy and the Colonies (*Ministère de la Marine et des Colonies*), and the Ministry of War (*Ministère de la Guerre*). Military expenditure in the colonial empire was the responsibility of these ministries (the ministry of war dealt with North Africa, the ministry of the colonies with the rest of the empire). Military expenditure therefore never appear in the colonial budget accounts, except in Algeria between 1830 and 1900 (and between 1904 and 1937 for the Southern Territories only), and in Morocco until 1937, and again in 1956 in preparation for independence. It is not obvious whether colonial military expenditure of metropolitan budget accounts should be considered an item of expenditure for the colonies. On the one hand, countries started developing a national defense budget once they became independent, and colonial military expenditure could be partly considered as France mutualizing the cost of national defense. On the other hand, the military conquest and domination of a colonial empire should be considered mainly an item of expenditure for France, the colonizing power. Additionally, military expenditure of the Ministry of Colonies include the payment of colonial troops who contributed to France’s national defense by fighting in Europe during WWI and WWII. In the end, we exclude military expenditure from our public expenditure aggregate, and make colonial military expenditure available separately (see “Variable dictionary” below). However, our public expenditure aggregates do comprise expenditure of the Ministries of War and Colonies that can be thought

of as civilian in nature, namely subsidies to private companies, and infrastructure and health expenditure. Only during the period of conquest, and in Indochina, did this direct metropolitan expenditure represent more than a couple of percentage points of our aggregate civilian expenditure figure (see figures 2 and 3). Only part of this metropolitan civilian expenditure can

*Figure 2: Share of various budgets in civilian public expenditure (North Africa and Indochina)*



*Note:* the quasi-absence of auxiliary budgets in North Africa (Algeria, Morocco, Tunisia) reflects the fact that, in these colonies, auxiliary and colonial budgets were often presented alongside each other and were merged during data collection.

be allocated to a given region of the empire. We allocated the rest in proportion of the share of each region in allocated expenditure.<sup>1</sup> On the revenue side, we consider these as direct subsidies from France to its colonies.

<sup>1</sup> The share of each region in allocated expenditure was computed over 10-year periods. In the budget accounts of the Ministry of the Colonies, regional allocation is not known at all between 1932 and 1959. We use allocated expenditure using the regional allocation of the 1920s. In the budget accounts of the Ministry of War, figures are aggregated for Tunisia and Algeria in 1915, 1921, 1928-1929 and 1933-1937: we allocate between Tunisia and Algeria using average allocation in the 1920s. In 1938 and 1939, figures are given for the whole of North Africa. We allocate between Algeria, Tunisia and Morocco using average allocation in the 1920s.

Figure 3: Share of various budgets in civilian public expenditure (Sub-Saharan Africa)



From 1958 to 1962, there was a ministry in France in charge of the Sahara region (*Ministère du Sahara*). Its expenditure was added to the Algerian public expenditure available in the Franc Zone reports and, on the revenue side, counted as a subsidy of Metropolitan France to Algeria. Other ministries were in charge of Morocco and Tunisia (*Ministère des affaires marocaines et tunisiennes*, 1955-1959) and of Algeria (*Secrétariat d'Etat aux affaires algériennes*, 1958-1963), but their expenditure already appears in the colonial budget accounts and the Franc Zone reports.

**Federal structure.** Three regions of the empire, Indochina, French West Africa (*Afrique Occidentale Française*, AOF) and French Equatorial Africa (*Afrique Equatoriale Française*, AEF), were organized in federations. The Indochinese Union became the Indochinese Federation in 1946 and was dissolved in 1949. The AOF and AEF were dissolved in 1958-59.<sup>2</sup> These federations were organized in a pyramidal structure, with colonial governments (*Gouvernements locaux*) in each colony, responsible for local revenue and expenditure, and a federal government (*Gouvernement général*) responsible for general interest spending (mostly in infrastructure and administration) and financed mostly by custom duties and rents on government monopolies. Within a federation, there were many financial transfers (loans, advances, subsidies) between the different colonies and the federal government. Federal revenue and expenditure represented a large share of total revenue and expenditure (see figures 2 and 3 for the expenditure side). For that reason, we consider these federations as a whole and do not attempt to reallocate federal revenue and expenditure to the different colonies that were to become autonomous republics or independent countries. In a given federation in a given year, consolidated expenditure (revenue) is obtained by summing expenditure (revenue) in the federal budgets and the various colonial budgets, cancelling the transfers within the federation.<sup>3</sup> Though the federations of AOF and AEF were dissolved in 1958, there was residual expenditure and revenue until 1959, recorded in the Franc Zone report for 1959 (France, Comité monétaire de la zone franc, 1959). In the same report, we found the revenue and expenditure of the short-lived Mali Federation, which united Mali and Senegal between 1959 and 1960.

**Auxiliary budgets.** Infrastructure projects financed by loans were often registered on separate auxiliary budgets. Ports, railways, and the health sector also sometimes saw their expenditure and revenue recorded in a separate budget. Because railway companies were not always public, we did not collect data from the auxiliary budgets of railways. In the case of a public railway company, excess revenue was transferred to the colonial budget and is taken into account in our data (in the category “Monopoly revenue”, see “Variable dictionary” below), subsidies to the railway company were also recorded in the colonial budget and are taken into account in our data (in the category “Production support”). Capital expenditure for the construction of railway lines was mostly financed publicly and appears in the colonial budgets

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<sup>2</sup> Indochina was divided in three “Associated States” (Cambodia, Laos, and Vietnam). Colonies of AOF and AEF became autonomous Republics belonging to the French Community, a political association of France and its former African colonies, except Guinea which became independent in 1958. The French Community was dissolved in 1960 when all French colonies south of the Sahara gained independence.

<sup>3</sup> Each colony of a federation had its own colonial budget, except in AEF between 1935 and 1945, where all revenue and expenditure items were written in the federal budget.



rather than the railway budgets. Posts and telegraphs, which were always public, are fully taken into account in our aggregates: their receipts are in the variable “Monopoly revenue”, and their expenditure in the variable “Production support”.<sup>4</sup> As for the various development plans established in the 1950s, their accounts sometimes appear directly in the colonial budget, as is the case for the Constantine plan in Algeria, and are sometimes recorded in special budgets managed directly by France, as is the case for the special development fund created for Sub-Saharan Africa, the FIDES (*Fonds d’Investissement pour le Développement Economique et Social*). The expenditure of the FIDES in each year and each colony was found in a retrospective document published by IEDES (1964). On the revenue side, because the FIDES was financed only by contributions from France and from the colonies, we were able to reconstitute the French subsidy by subtracting the colonies’ contributions from total expenditure.<sup>5</sup>

**First and second-level administrative divisions.** Below the colony (corresponding to present-day countries), we consider first-level (districts) and second-level (municipalities) administrative divisions. The level of decentralization of public expenditure varied within the French colonial empire. It was very low in West and Equatorial Africa, and more important in North Africa, Madagascar, and Indochina.

Our colonial figures always take into account first-level administrative divisions. Algerian *départements* (district) started having distinct budgets in 1859, Malagasy *provinces* in 1931, and Moroccan *régions* in 1939. In Indochina, we use the provincial budget accounts of Cochinchina from 1910 on, and all provincial budgets starting in 1931, when a number of items of revenue and expenditure were decentralized from colonial to provincial budgets. In Tunisia, AOF, AEF, Togo, and Cameroon, first-level administrative divisions (districts) did not have budgets of their own. We can see on figure 2 and 3 that the share of first-level administrative divisions in total expenditure was significant only in Algeria, Indochina, and Madagascar. In Madagascar, the contribution of provincial budgets to total public expenditure became particularly important after the decentralization reform of 1946, reaching 50% in some years.

Second-level administrative divisions (municipalities) had distinct budgets in North-Africa and Indochina. In Sub-Saharan Africa, no municipality was empowered to raise revenue and allocate expenditure before 1955, with the exception of the four Senegalese *communes* which obtained the same status as metropolitan municipalities: Saint-Louis and Gorée (in

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<sup>4</sup> The receipts and expenditure of the posts and telegraphs were usually recorded in the colonial budget, but in Algeria starting in 1925, they were recorded in a separate budget, available at the *Bibliothèque nationale de France* between 1925 and 1939. We relied on the summary provided in statistical yearbooks afterwards (see “List of sources”).

<sup>5</sup> The French contributions were also recorded in the French budgets, but in a less systematic way.

1872), Rufisque (in 1880), and Dakar (in 1887). In 1955, 44 new municipalities were created in AOF, AEF, Madagascar, Cameroon and Togo.<sup>6</sup> We found some budget accounts for second-level administrative divisions, but our series are patchy and incomplete. They are therefore not included in our main aggregates, though we make them available in a separate variable (see “Variable dictionary”). Table 2 displays the share of municipalities in total public expenditure and revenue for North Africa, West Africa, Indochina, and France. Municipalities were particularly important in North Africa. In 1955 for instance, they represented 7.5% of revenue in Tunisia, 11.4% in Morocco, and 24.4% in Algeria. In the rest of the empire, municipalities did not weigh as much. In 1925, they represented 0.2% of revenue and less than 5% of expenditure in West Africa, and about 1% of expenditure and revenue in Indochina (we could not find data for 1955).

*Table 2: Share of municipalities in total net expenditure and revenue*

	1925		1955	
	Share in expenditure	Share in revenue	Share in expenditure	Share in revenue
Algeria	23.6%	20.5%	21.2%	24.4%
Morocco	na	na	7.8%	11.4%
Tunisia	9.1%	13.7%	6.3%	7.5%
West Africa	4.9%	0.2%	na	na
Indochina	1.1%	1.0%	na	na
France	33.1%	na	13.6%	na

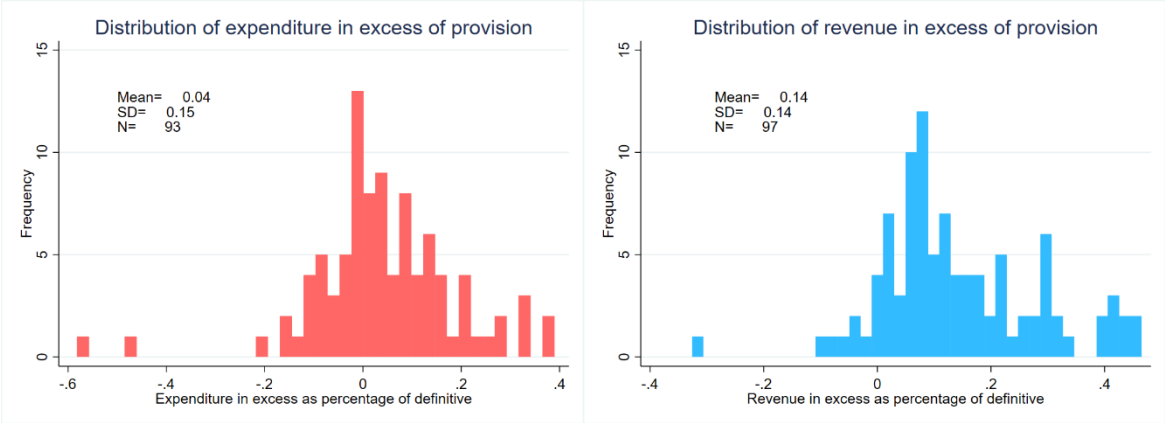
Sources for France: André et Delorme (1983), INSEE (1966)

**Definitive and provisional accounts.** Several types of documents were produced during the budget process: provisional accounts (usually called “*Budgets*”) were provisions produced in advance of the fiscal year, while definitive accounts (usually called “*Comptes définitifs*”), published after the end of the fiscal year, recorded the actual amounts collected and spent. Whenever possible, we rely on definitive accounts, but use provisional accounts in a few years when definitive accounts are missing. Provisional accounts are typically much more detailed, and notably contain information on wages and the number of employees, which is why we also use them to collect information on average public sector wages and the size of the civil

<sup>6</sup> France. *Journal officiel de la République française du 19 novembre 1955*. Paris: Imprimerie des Journaux officiels, 1955, p. 11274. [https://www.legifrance.gouv.fr/jo\\_pdf.do?id=JORFTEXT000000313008](https://www.legifrance.gouv.fr/jo_pdf.do?id=JORFTEXT000000313008)

service (see “Personnel data” below). For the 97 colony-years in common between the two datasets, we can check the discrepancy between provisional and definitive accounts: provisional

Figure 4: Distribution of revenue and expenditure in excess of provision



accounts underestimate final expenditure by 4% on average and final revenue by 14% on average (figure 4). When provisional or definitive accounts are not available, we sometimes use Statistical Yearbooks (*Annuaire Statistiques*) or other official publications, which present definitive figures (see the “List of sources” below).

**Postcolonial data.** To extend the dataset to the postcolonial period, we use mainly the reports of the Monetary Committee of the Franc Zone (Comité Monétaire de la Zone Franc, various dates), and the OECD development assistance committee (OECD-DAC) data (OECD, 2017). The information contained in the Franc Zone reports is not as detailed as the information contained in the budget accounts of various colonies. In consequence, after independence, aggregate revenue net of subsidies and loans cannot systematically be broken down into different tax instruments, and aggregate expenditure net of subsidies and loans cannot systematically be broken down into different sectors. Guinea gained its independence from France in 1958 and cut ties with the former colonizer, refusing to be part of the monetary union headed by France. As a result, Guinean public finances are not recorded in the Franc Zone reports, and we use the figures given in Amin (1971) instead.

One other important limitation of the Franc Zone reports is that they do not systematically take into account the budgets of various development funds. This is not a problem to estimate fiscal revenue, as these funds were typically financed by loans and aid, but this is a problem to estimate net expenditure. Table 3 compares development (capital) expenditure in the few development plans budget accounts we were able to find with development expenditure in the Franc Zone reports in the corresponding years. Franc Zone

reports appear to systematically miss a large share of development expenditure, about half in Senegal (1969) and Madagascar (1964-1966), more than 80% in Haute-Volta (present-day Burkina Faso) between 1967 and 1970.

*Table 3: Development expenditure in the 1960, comparison of different sources*

(current FCFA billions)	Development plan <sup>(1)</sup>	Franc Zone report <sup>(2)</sup>
Senegal (1969)	10.92	4.66
Haute-Volta(1967-1970)	19.76	3.30
Madagascar (1964-1966)	39.38	21.52

(1) *Sources*: Haute-Volta, Direction du plan et des études de développement (1971); Madagascar, Commissariat général au plan (1965-69); Senegal, Secrétariat d'Etat au plan (1972).

(2) *Sources* : Comité monétaire de la Zone Franc (various dates)

To approximate development expenditure in the 1960s, we assume that it was mostly financed by international aid (grants and loans) and complement the Franc Zone reports with the OECD-DAC dataset. Net public expenditure in a given country after 1960 is computed as total expenditure minus debt service as recorded in Franc Zone reports, minus all external loans and subsidies received by the country recorded in the Franc Zone report (except when we know these emanate from a private source or a non-OECD country), plus net OECD ODA (loans and grants) received by the country.<sup>7</sup> This does not affect our measure of net revenue, which is simply the sum of fiscal revenue and revenue of industrial operations, domains and monopolies recorded in the Franc Zone reports.<sup>8</sup>

There are other discrepancies between the series built using colonial budget accounts and the postcolonial series. Franc Zone reports do not record the auxiliary accounts of parastatal sectors such as posts and telecommunications. In Tunisia between 1961 and 1966, we were able to take into account the expenditure and revenue of the posts and telecommunications service recorded in the statistical yearbook of Tunisia 1964-1965 (Tunisia, Secrétariat d'Etat au plan et

<sup>7</sup> On top of aid to individual countries, the OECD-DAC dataset records regional aid allocated to world regions such as “Africa, South of Sahara” or “Africa, North of Sahara.” We allocate regional aid to each individual country in proportion of its share in total allocated aid. Before 1964, French aid to Sub-Saharan Africa is not broken down by individual countries at all. We allocate it to each individual country in proportion of its share in 1964 total allocated French aid to Sub-Saharan African countries.

<sup>8</sup> As Franc Zone reports become less precise in the end of the 1960s, the revenue of industrial operations, domains and monopolies often becomes missing (fiscal revenue is always given). To avoid a break in the series, we extrapolate the revenue of industrial operations, domains and monopolies using their share in total net revenue the last year it was available.

aux finances, 1964-1965).<sup>9</sup> Franc Zone reports do not always take into account the revenue and expenditure of first-level administrative divisions. It is an important concern for Madagascar only, where the share of provinces in total public expenditure and revenue was quite high in the 1950s (see figure 3, panel 4). Malagasy provincial accounts are recorded in the Franc Zone reports until 1960. Between 1963 and 1966, we find them in Madagascar, Commissariat général au plan (1965-1969). Other years are extrapolated (see “Missing data” below). Malian provincial accounts are recorded from 1966 onwards, previous years are extrapolated.

**Comparison with Metropolitan France.** For comparison with Metropolitan France, we use the series on the expenditure of the central government and local governments (*départements* and *communes*) in André and Delorme (1983). For the years 1925 and 1955, we add the expenditure of posts and telegraphs from annual reports (see “List of sources” below). André and Delorme give the sectoral allocation of expenditure for the central government only. Their categorization is slightly different from ours, except for education. We allocate “public authorities” to general administration, “social action” to health, “transport” and “housing” to infrastructure, and “agriculture” and “trade and manufacturing” to production support, to which we add the expenditure of posts and telegraphs. We separate civilian expenditure from military expenditure (“defense” and “veterans”). We remove debt service to get as close as possible to our definition of Net (civilian) Public expenditure (see “Variable dictionary” below). We assume that debt service represented 10% of the expenditure of local governments in 1925 and 5% in 1955 (André and Delorme 1983, p. 75).

Net public revenue and the fiscal structure of the central government in 1925 and 1955 is taken from INSEE (1966, p. 486-87) and from the annual reports of posts and telegraphs. Revenue of *départements* and *communes* is found in INSEE (1966, pp. 504-505, year 1923 for *communes*).

## MISSING DATA

This section details the different assumptions and extrapolations made in order to consolidate various data and avoid breaks in statistical series when particular budget accounts could not be found.

**Colonial budget accounts.** For Algeria, Morocco, Tunisia, Indochina, Madagascar and Cameroon, we set up the goal of collecting data at an annual frequency, though we sometimes

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<sup>9</sup> From 1958 to 1960, we extrapolated the expenditure and revenue of the posts and telecommunication service assuming that its share in total expenditure and revenue was the same as in 1961.

could not find budget accounts for a particular year. For the two African federations (AOF and AEF), we collected federal budget accounts (*budgets généraux*) every year, but colonial budget accounts (*budgets locaux*) every three years only. We also collected data on Togo every three years only. Aggregating expenditure and revenue at the level of the federation (AOF, AEF, and Indochinese Union) required having the budget accounts of all the colonies of the federation in a given year. When we could not find the budget account of a colony, we used the account of an adjacent year.<sup>10</sup> In rare cases, we could not find adjacent years: budget accounts of the colony of French Soudan (AOF, present day Mali) are missing between 1922 and 1928 and in 1946, the budget accounts of Gabon (AEF) are missing in 1947 and 1949, and the one of Oubangui-Chari (AEF) is missing in 1954. In these cases, we made an educated guess for the revenue and expenditure of the missing colony using its share in the total revenue and expenditure of the federation in a close enough year.<sup>11</sup> For French Soudan in 1946, we found total revenue and expenditure (recapitulated in the 1949 budget), and we broke them down into different items of using the distribution of 1949. We could not find the budget accounts of Haute-Volta in 1958, but we used the information recorded in the Franc Zone report for that year. We inferred the sectoral allocation of expenditure, not given in the Franc Zone report, using the allocation of 1956.

There is some missing information in Morocco's special budget ("*Budget spécial*", an investment budget accounting for an average 7% of total expenditure). Between 1926 and 1931, and in 1953, our source gives only revenue, and not expenditure. We set expenditure equal to revenue. Between 1932 and 1937, our source gives only the total expenditure of the special budget, and the sectoral allocation is not given. Between 1926 and 1937, we use the sectoral allocation of 1938. In 1953, we use the sectoral allocation of 1952.

**Metropolitan budget accounts.** In Metropolitan budget accounts (Ministry of the Colonies and Ministry of War) we collected, for each colonial territory, military expenditure, subsidies to private companies, infrastructure expenditure, and health expenditure. Residual expenditure was allocated to each category in proportion of its weight in allocated expenditure

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<sup>10</sup> In AOF, affected years and budget accounts are: *budget général* (1957 instead of 1958), Cote d'Ivoire (1917 instead of 1916 and 1926 instead of 1925), Dahomey (1944 instead of 1943 and 1957 instead of 1958), Haute Volta (1920 instead of 1919, 1929 instead of 1928, and 1954 instead of 1955), Niger (1942 instead of 1943), Senegal (1957 instead of 1958), French Soudan (1932 instead of 1931), Togo (1923 instead of 1922, 1947 instead of 1946, 1950 instead of 1949, and 1956 instead of 1955). In AEF: *budget général* (1903 instead of 1904), Gabon (1953 instead of 1954), Oubangui-Chari (1912 instead of 1913), Tchad (1912 instead of 1913). In Indochina: Cochinchina (1906 instead of 1907), Laos (1897 instead of 1896 and 1902 instead of 1901).

<sup>11</sup> We use the shares of 1919 for French Soudan 1922 and 1925, the shares of 1931 for French Soudan 1928, the shares of 1955 for Togo and Haute Volta 1958, and the shares of 1952 for Gabon 1947 and 1949, and Oubangui-Chari 1954.

in the same year. Expenditure that was not allocated to a specific territory was allocated to each territory in proportion of its weight in geographically allocated expenditure.<sup>12</sup> In years where expenditure was not allocated geographically at all, we followed the geographical allocation of a close enough year.<sup>13</sup>

We collected Metropolitan budget accounts every year systematically from 1870 onwards. Before this date, we collected data every 3 years for the Ministry of War, and every 10 years for the Ministry of the Colonies. Budget accounts are also missing for a handful of years after 1870. In order to have consistent estimates, we filled in the missing years using linear interpolation.<sup>14</sup> After 1939, budget accounts of the Ministry of War are missing for all years except 1946. We used linear interpolation to fill in the gap between 1940 and 1945. We found the military expenditure of Metropolitan France in 1954, 1957 and 1961 Algeria in Amin (1966), and interpolated interim years using the number of soldiers present in Algeria (including conscripts). French military expenditure in 1953 Tunisia are also from Amin (1966), and we kept this figure constant in real terms until 1956. French military expenditure in 1951 Morocco are from Amin (1966). Between 1952 and 1956, we used balance of payments data (Morocco, 1960), assuming that 90% of the public expenditure paid by Metropolitan France were for the military.

As can be seen in figures 2 and 3, the direct, non-military expenditure of Metropolitan ministries was important only in the early colonial period (especially in Algeria), and gradually lost importance over time. Subsidies to colonial governments were more important, especially after 1945, but we do not rely on Metropolitan budget accounts to estimate them. Direct military expenditure of Metropolitan ministries were even more important, and it is important to keep in mind that, after 1939, our figures are only rough estimates.

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<sup>12</sup> For strictly military expenditure, the bulk of expenditure, we followed the geographical allocation of the same year. For subsidies to private companies, infrastructure and health expenditure, which are more volatile, we followed the average geographical allocation of the decade.

<sup>13</sup> In the budget accounts of the Ministry of the Colonies, the geographical allocation of expenditure is not given between 1932 and 1959 (except for Indochina 1950-54 and AOF 1950-51). We allocated military expenditure using the geographical allocation of 1931. For non-military expenditure (subsidies, health and infrastructure), we followed the geographical allocation of the period 1920-1931. In the budget accounts of the Ministry of War, the geographical allocation does not distinguish between Algeria and Tunisia in 1915, 1920-21, and 1928-1937. We allocated between the two territories using the proportions of 1914. In 1938 and 1939, the accounts of the Ministry of War give expenditure for the whole of North Africa. We allocated between Algeria, Morocco and Tunisia using the proportions of 1937. Finally, in 1946, the accounts of the Ministry of War give one figure for North Africa and the Middle East. We allocated between the different colonies using the proportions of 1939.

<sup>14</sup> Missing years are, for the Ministry of the Colonies, 1884, 1886 (AEF only), 1888, 1889, 1892, 1893, 1896 (Madagascar only), 1900 and 1945, and, for the Ministry of War, 1877-1879, 1889, 1892, 1902 (except Indochina), 1906, 1914 (Morocco only), 1916-1919, 1930, 1931, 1940-1945.

**First-level administrative divisions.** We use linear interpolation to fill in gaps in our public finance series for first-level administrative divisions: Malagasy *provinces* between 1932 and 1937 and between 1960 and 1963, Cochinchinese *provinces* between 1923 and 1930, Algerian *départements* between 1938 and 1948, Moroccan *régions* between 1940 and 1944 and between 1946 and 1948. These assumptions are quite innocuous to our final aggregates because, except in Madagascar after WW2, these budget accounts never represented a large share of total public expenditure and revenue (figures 2 and 3). In Madagascar in 1952, the budget accounts of the province of Tananarive are missing: we made an educated guess using the share of Tananarive in total provincial expenditure and revenue in 1951. We extrapolated the revenue and expenditure of Malagasy provinces between 1967 and 1970 by assuming that the share of provinces in total revenue and expenditure was the same as in 1966. We extrapolated the revenue and expenditure of Malian provinces between 1960 and 1965 by assuming that the share of provinces in total revenue was the same as in 1966.

For Algerian *départements* between 1859 and 1889, our source gives us only aggregate expenditure and revenue. We inferred the fiscal structure and sectoral allocation of expenditure using the distribution of 1892.

In the budget accounts of Malagasy *provinces* between 1947 and 1951, some items of revenue are missing (indirect taxes, revenue of industrial operations and administrative services). We inferred them using their shares in total revenue in 1952 (1956 for the province of Tananarive).

**Aggregation for the whole French colonial empire.** We provide estimates for the whole French colonial empire every three years between 1904 and 1937, and in 1946, 1952, and 1955. These aggregate figures always exclude the smaller colonies that are not part of the database (see above), as well as Togo before 1919, Cameroon before 1922, Morocco before 1925, and Indochina after 1946. When we do not have the budget accounts of a given colony in a given year, we use the budget accounts of an adjacent year.<sup>15</sup>

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<sup>15</sup> We use 1909 instead of 1907 in Algeria; 1926 instead of 1925 and 1932 instead of 1931 in Morocco; 1905 instead of 1904 in AOF; 1938 instead of 1937 and 1954 instead of 1955 in AEF; 1930 instead of 1928 in Cameroon; 1951 instead of 1952 and 1956 instead of 1955 in Madagascar.



## PERSONNEL DATA

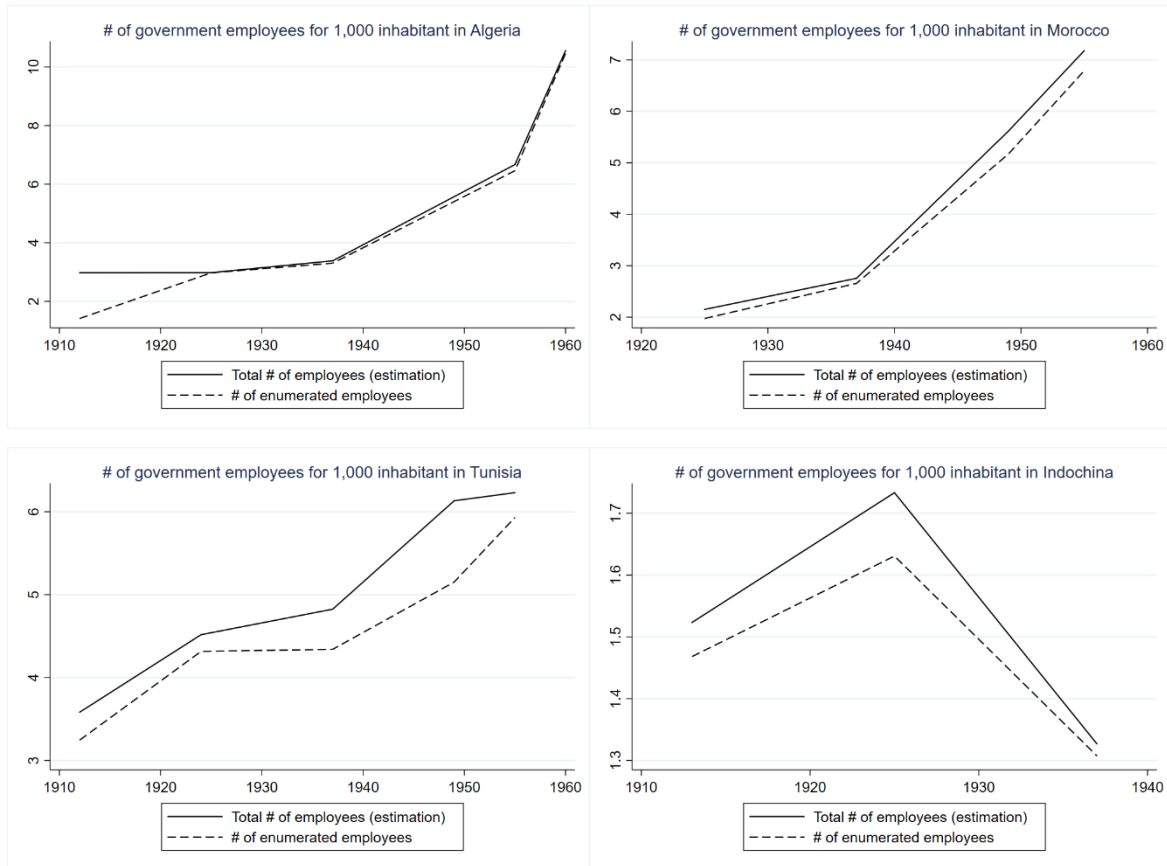
Provisional budget accounts are usually more detailed than definitive accounts, which allowed us to collect some personnel data, such as total number of employees and total personal expenditure per sector. Because counting the total number of employees represents an important collection effort, we limited ourselves to six dates as close as possible to 1913, 1925, 1937, 1949, 1955, and 1960.<sup>16</sup> In each sector, we computed the average wage by dividing total personnel expenditure by the number of employees. We also tried to collect 5 specific wages in a systematic way: the governor's wage, wages of the highest and lowest paid nurse, and wages of the highest and lowest paid teacher.

Provisional budget accounts are very detailed and personnel expenditure can in the majority of cases be matched to an exact number of workers, so that the average wage can be computed. However, some items of personnel expenditure are not attached to a precise number of employees. In these cases, we inferred the corresponding number of employees by dividing the monetary amount by the average wage of the sector, or, when we can infer that these are low-paying jobs such as servants or manual workers, by the average of the lowest wages in the education and health sectors. Figure 5 and 6 display for each region the number of government employees enumerated in the budget accounts and the number of government employees according to our computations. The discrepancy between the two series is never very important.

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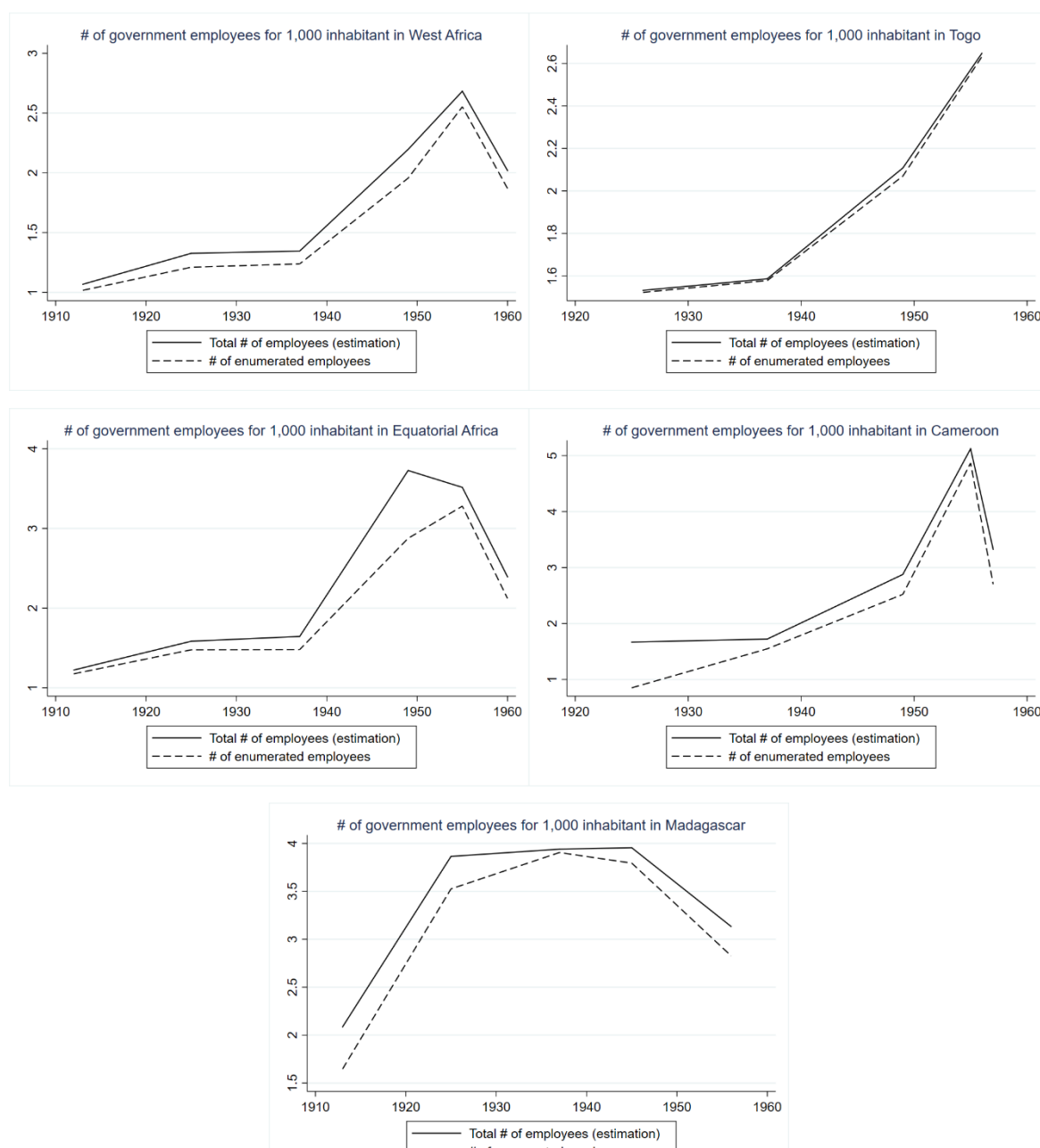
<sup>16</sup> Only dates before WW2 for Indochina.

*Figure 5: Estimated vs. enumerated number of government employees in North Africa and Indochina*



Personnel data was collected for central budgets only (federal and colonial in the case of federations), which means that our personnel figures do not include the workers paid for public works on auxiliary budgets, nor the employees paid on the budget accounts of first-level administrative divisions. This is particularly problematic in Indochina and in Madagascar. In Indochina, the number of employees of the federal and colonial governments decreased after the decentralization reform of 1931 which gave more spending responsibilities to provinces. The drop in the number of government employees per 1,000 inhabitants from more than 1.7 to less than 1.4 between 1925 and 1937 is therefore misleading (figure 5). In Madagascar, the decentralization reform of 1946 considerably increased the share of provinces in total public expenditure, explaining the fall in the number of government employees between 1938 and 1955 (figure 6).

Figure 6: Estimated vs. enumerated number of government employees in Sub-Saharan Africa



**Aggregation and year substitutions.** For Indochina, West and Equatorial Africa, figures are aggregated at the level of the federation. As with monetary expenditure, when we could not find provisional budget accounts for a particular colony in a given year, we used the accounts of a close enough year.<sup>17</sup> We could not find the budget account of French Soudan (present-day Mali) in 1925, 1949 and 1960. In this years in AOF, average wages per sector do

<sup>17</sup> In AOF, affected years and budget accounts are: budget général (1936 instead of 1937), Cote d'Ivoire (1926 instead of 1925), Dahomey (1957 instead of 1960), Guinée (1950 instead of 1949), Mauritania (1958 instead of 1960), and Niger (1958 instead of 1960). In AEF: Gabon (1958 instead of 1960), Oubangui-Chari (1959 instead of 1960), and Tchad (1958 instead of 1960). In Indochina: budget général (1914 instead of 1913), Cochinchina (1915 instead of 1915 and 1924 instead of 1925).

not take French Soudan/Mali into account. In 1925 and 1949, total employment in AOF is computed using the share of Soudan in the total employment of the federation in 1937 and 1955. In 1960, aggregate figures for AOF are computed without Soudan/Mali, and without Guinea — in 1958, the federation of AOF was dissolved, and Guinea gained independence. We could not find the budget account of Chad in 1949: average wages per sector in AEF do not take Chad into account for this year, and total employment in AEF is computed using the share of Chad in the total employment of the federation in 1955.

**Comparison with Metropolitan France.** For the years 1925 and 1955, we computed public employment and average wage per sector for the central government of Metropolitan France. Public employment by category in 1922 and 1956 is given in INSEE (1966, p. 114). The wage bill by sector in 1923 and 1956 is given in André and Delorme (1983, pp. 734 and 739). The wage bill of posts and telegraphs in 1925 and 1955 is given in the annual reports of posts and telegraphs. We used the growth rate of total population to extrapolate the total number of employees and the wage bill for the relevant years (1925 and 1955).

## POPULATION, PRICES, AND GDP

### POPULATION

To produce comparable estimates of expenditure and revenue per capita, we gathered data on total population. We also gathered data on European and other ethnic minority populations (Jews in North Africa, Chinese in Indochina, Chinese and Indians in Madagascar). The “Population” section of the “List of sources” below gives a more detailed list of all references used and where to find them.

#### Algeria

In Algeria, population in 1850 comes from CICRED (1974a). Population figures from the censuses of 1911, 1921, 1926, 1931, 1936, 1948 and 1954 come from the 1955 statistical yearbook of Algeria (Algeria, Sous-direction des statistiques, 1955). Population in 1960 comes from the 1960 UN demographic yearbook (United Nations, 1960). Population in 1966 comes from CICRED (1974a). Population from 1977 comes from The World Bank (2017).<sup>18</sup> European population is defined as non-Muslim population, comprising French citizens (including Algerian Jews who were granted French citizenship by the 1870 Crémieux decree) and other

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<sup>18</sup> To stay consistent with the colonial figures, which never comprise military population, we subtract from the WDI figures estimates of military population (representing around 1% of total population).

Europeans. Population figures for non-Muslims are more detailed and come from the Algerian statistical yearbooks of 1933, 1948-1949 and 1955 (Algeria, Sous-direction des statistiques, 1933, 1948-49, 1955) who present retrospective figures as well as contemporary ones. Figures for 1958-1960 come from the 1961 and 1962 French statistical yearbooks (INSEE, 1961 & 1962). 1960 non-Muslim population comes from CICRED (1974a). Population figures between two dates are estimated by exponential interpolation, except for 1) Muslim population before 1850, where we assume a growth rate of 0.5% per year, the rate given by CICRED (1974a) between 1850 and 1866); 2) Muslim population between 1866 and 1911, where our figures reflect a decrease in population between 1866 and 1872 due to epidemics and the Kabyle revolt of 1871-1872<sup>19</sup>; 3) Muslim population between 1954 and 1960, where we take into accounts the temporary departure of Algerian refugees to Tunisia and Morocco (UNHCR, 2000); 4) non-Muslim population between 1960 and 1966, where our figures reflect the departure of 800,000 French settlers in 1962

## **Morocco**

During the colonial period starting in 1912, Morocco was divided between a French Protectorate and a Spanish Protectorate in the North representing about a tenth of total population.<sup>20</sup> Morocco gained its independence from France in 1956 and Moroccan control over (part of) the Spanish zone was restored in 1958. Our population estimates comprise only the southern (French) zone until 1957, and both zones from 1958 onwards. Population in 1936 comes from CICRED (1974b). Earlier population figures are extrapolated backwards using the population growth rates of Frankema & Jerven (2014). Population in 1952 comes from Morocco (1960). Population in 1960 and 1971 comes from CICRED (1974b). Population after 1982 comes from The World Bank (2017). European population is French population (unlike in Algeria, Moroccan Jews were not granted French citizenship), given by the Moroccan statistical yearbook in 1921, 1926, 1931, 1936, 1947, and 1952 (Morocco, various dates). Jewish population comes from CICRED (1974b), Morocco (1960) and Moroccan statistical Yearbooks (Morocco, various dates). Population figures between two dates are estimated by exponential interpolation.

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<sup>19</sup> If we assume again a population growth rate of 0.5% a year between 1872 and the first reliable population census of 1911, we find that population decreased by 12% between 1866 and 1872.

<sup>20</sup> The Spanish were also granted a Protectorate in the South, but its population was negligible.

## **Tunisia**

In Tunisia, population in 1911 comes from the 1947 statistical yearbook (Tunisia, Institut national de la statistique, 1947).<sup>21</sup> Earlier population figures are extrapolated backwards using a yearly growth rate of 0.7%, fitting the estimates given by CICRED (1974c). Population figures in 1921, 1926, 1931, 1936, 1946, 1956, 1966, and 1971-1973 come from CICRED (1974c). Population after 1971 comes from The World Bank (2017). European population is mostly French, Italian, and Maltese (unlike in Algeria, Tunisian Jews were not granted French citizenship). It is given by the 1947 Tunisian statistical yearbook for 1880, 1886, 1891, 1896, 1906, 1911, 1921, 1926, 1931, 1936, and 1946. It is given by the 1957/58 statistical yearbook for 1956. It is given by CICRED (1974c) for 1961 and 1966. Jewish population comes from Tunisian statistical yearbooks. Population figures between two dates are estimated by exponential interpolation.

## **Indochina**

In Indochina, population figures for Vietnam (Cochinchina, Annam, and Tonkin) come from Bassino (2000) and Banens (2000). For Cambodia and Laos, we use The World Bank (2017) after 1960. Before 1960, population figures are extrapolated backwards using the population growth rate of Vietnam. The figures thus obtained are slightly larger than the ones provided in the statistical yearbooks of French Indochina (French Indochina, Bureau de la statistique générale, various dates). European population and Chinese population are given by the statistical yearbooks of French Indochina. European population is composed mostly of French, but the figures given by statistical yearbooks also include a small minority of Americans and Japanese.

## **West and Central Africa**

Population in Afrique Occidentale Française, Afrique Equatoriale Française, Togo and Cameroon comes from Frankema and Jerven (2014) between 1850 and 1960 and from The World Bank (2017) after 1960. The population given by Frankema and Jerven for Mali and Niger at independence in 1960 is lower than the population given by the World Bank. We therefore opted for higher population growth rates from 1948 to 1960 in order to make the two series consistent. Frankema and Jerven give figures for African countries in their post-independence borders, but French Cameroon was smaller during the colonial period because it

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<sup>21</sup> Because colonial population figures tend to underestimate population, we multiply the 1911 population figure by the ratio of the CICRED (1974) figure over the 1947 statistical yearbook figure in 1921, a year for which we have both figures.

was reunited with former British Cameroon in 1961. We adjust colonial population figures by removing 15% of French Cameroon's population, which corresponds to the ratio obtained by combining French and British colonial estimations (France, Ministère de la France d'Outre-mer, 1959; Great Britain, Colonial Office, various dates). European population come from the statistical yearbooks of AOF and AEF, and, for Togo and Cameroon, from France, Ministère de la France d'Outre-mer (1959).

### **Madagascar**

In Madagascar, population comes from the statistical yearbooks of Madagascar and from The World Bank (2017) after 1970. Population between two dates is estimated by exponential interpolation. Before 1906, we extrapolate backwards using the population growth rate of 0.3% given by Frankema and Jerven (2014). European population and Asian population are given in statistical yearbooks and France, Ministère de la France d'Outre-mer (1959).

### **Metropolitan France**

In Metropolitan France, total population comes from Vallin and Meslé (2001) and population censuses.

## **PRICES**

In Northern and Sub-Saharan Africa, monetary amounts collected in various budget sources are usually given in French francs. Just after World War II, a new currency was introduced in the colonies of Sub-Saharan Africa, the CFA franc ("*franc des colonies françaises d'Afrique*"), worth 1.7 Metropolitan francs. It was worth 2 Metropolitan francs from 1948 onwards. Our own series show that the official exchange rate roughly compensated for the WW2 inflation differential between Metropolitan France and its African colonies. In the French Indochinese Union, the official currency from 1884 onwards was the *piastre*, a silver currency similar in weight to the Mexican peso and the Trade dollar. The *piastre* remained on a silver standard until 1920 and was then pegged to the franc at a variable rate. In 1930, the exchange rate was fixed at 1 *piastre* for 10 francs. After the Second World War and the Japanese occupation, the exchange rate was fixed at 1 *piastre* for 17 francs, but it was largely overvalued, as evidenced by a black market exchange rate of less than 10 francs. Our own series show that inflation was far greater in Indochina than in Metropolitan France during the independence war years.

When considering public finance series, how should we deflate and adjust for purchasing power parity? The answer partly depends on the type of questions asked, and practical solutions are greatly constrained by the availability of price and wage data for the period considered. Under the angle of revenue, it makes sense to use something akin to a GDP deflator, especially when considering the share of public revenue in GDP as an indicator of fiscal capacity. Because of the limited availability of price data, we deflated and adjusted for purchasing power using a basket of consumer goods. Under the angle of expenditure, if we want to compare across time and across space the quantity of public goods and services provided, a specific public spending deflator would be more appropriate, especially for taking into account differences in public sector wages. Building such a deflator would require detailed information on the skill composition of government sector jobs and corresponding salary scales. The lack of such detailed data led us to deflate public expenditure with the same Consumer Price Index (CPI) deflator we used for public revenue. This has the additional advantage of simplicity: because expenditure and revenue are expressed in the same unit of account, deficits can be computed by subtracting net expenditure from net revenue. However, in our cross country comparisons as well as in our time series, a large share of the variation in public expenditure is accounted for by differences in public sector wages, something we evidence by also providing series on the number of government employees per capita and on average wages. In fact, every possible public expenditure deflator taking into account public sector wages will be a weighted average of two extreme scenarios: in the first one (CPI based adjustment), we assume that differences in real wages are a perfect indicator of differences in labour productivity, in the second one (number of employees per head), we give the same value to each government job, regardless of differences in skills and productivity.

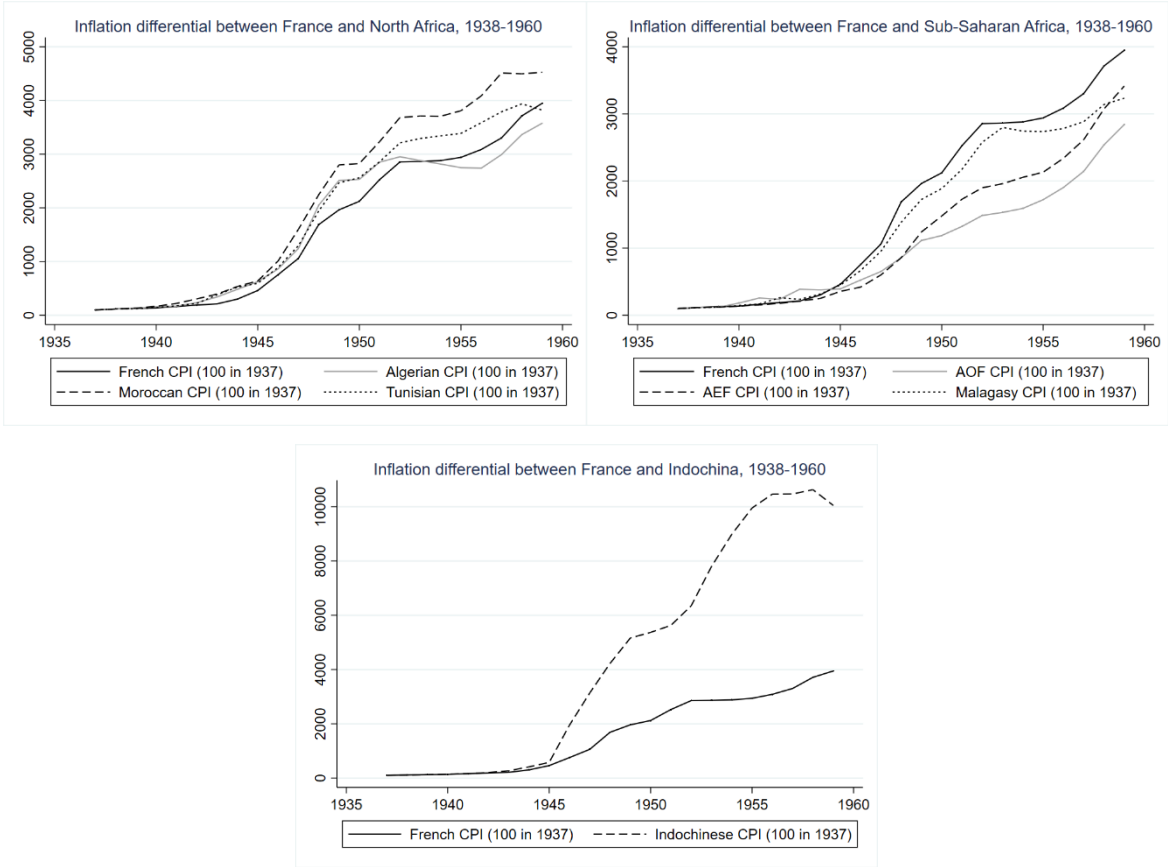
In the end, we adjusted all our monetary aggregates using the following method: we used local CPIs to express monetary amounts in 1937 local currency (francs and *piastres*), and then used the relative cost of a basket of goods to adjust for purchasing power parity in 1937. Local CPIs were found in various statistical abstracts (see the “Prices” section of the “List of sources” below). The earliest ones start in 1913, and most of them start in 1938. Before this date, we converted monetary amounts in French francs and deflated using a French GDP deflator obtained by chaining the INSEE deflator after 1949, Villa (1997) between 1900 and 1948, and Toutain (1987) before 1900. The conversion matters only for Indochina, as in all other colonies before World War II, the official currency was the French franc. In Sub-Saharan Africa (AOF, AEF, Togo, Cameroun and Madagascar), we could not find information on price inflation in the second half of the 1950s. We inferred price inflation between 1953 and 1960 by



taking the difference between the nominal GDP growth rate and the real GDP growth rate (see section on GDP below).<sup>22</sup> After World War II, we relied on local CPIs from The World Bank (2017).

Figure 6 compares the evolution of prices in France and its colonial empire between 1939 and 1960. The first panel display the evolution of local consumer price indices in France and the North African territories of Algeria, Morocco, and Tunisia. During WW2, inflation was higher in North Africa than in Metropolitan France, yet in Algeria prices had converged to the level of Metropolitan France in 1954, and were slightly lower afterwards. In Tunisia, the CPI

Figure 7: Inflation differential between France and its colonies



converged in 1960 only, that is after independence, and in Morocco, it had not converged in 1960. 1937-1946 inflation was lower in France’s Sub-Saharan possessions (panel 2). Madagascar was an exception, as its CPI was only slightly lower than that of France at the end of the war. The introduction of the CFA franc in December 1945, worth 1.7 Metropolitan francs, and its revaluation in 1948 to 2 Metropolitan francs, compensated exactly for the accumulated

<sup>22</sup> Nominal GDP in 1953 is from France, Direction des Affaires économiques et du Plan du ministère de la France d’outre-mer (1955), nominal GDP in 1960 is from The World Bank (2017). Real GDP growth in the 1950s is from the Maddison Project. In Togo, we did not find nominal GDP figures nor prices before 1960. Before this date, inflation is assumed to be the same as in AOF

inflation differential in 1948, for all Sub-Saharan territories except Madagascar. Between 1948 and 1960, prices caught up with Metropolitan levels, especially in AEF, and it seems that the CFA franc turned strongly overvalued. In Indochina (panel 3), the divergence between the 2 price indices is very wide, especially after World War 2. Despite this inflation differential, the exchange rate was fixed a 1 Indochinese *piastre* for 10 francs from 1930 to 1945, and was increased instead of decreased in 1945, at 1 *piastre* for 17 francs. The discrepancy between the official exchange rate and the black market rate gave rise to the trafficking documented in Despuech (1953). The rate of 1 for 10 was restored in 1953.

*Table 4: products and weights used to adjust for PPP in 1938*

Product	Weight
Starch (flour, rice)	11
Meat (chicken, beef)	18.4
Eggs	14.5
Cooking oil	3.8
Grocery (sugar, salt)	12.1
Petroleum	3.4
Electricity	0.7
Soap	8.2
Shoes	12.4
Haircut	15.5

After expressing all monetary amounts in 1937 local currency using local CPIs, we adjusted for purchasing power parity (PPP) in 1937 using the relative cost of a basket of goods. The products and weights used (displayed in table 4) closely follow those used by the French statistical office in the 1950s (INSEE, 1951).<sup>23</sup> They match the consumption pattern of a European or a member of the colonized elite. Table 3 presents the price of our basket of goods relative to Algeria (which was officially part of France), using the official conversion rate for the *piastre*. In Sub-Saharan Africa, where the Metropolitan franc was used in 1937, we actually would not be far off to assume that one franc had the same purchasing power everywhere. In Indochina, the purchasing power of the franc implied by the official exchange rate of 10 francs for a *piastre* is far greater than in the rest of the empire.

<sup>23</sup> Since we always consider relative prices of baskets of goods, there is no need to specify units and quantities.

*Table 5: Price of the consumer basket relative to Algeria in the French empire*

Algeria	1.00
Morocco	0.88
Tunisia	0.95
Indochina	0.62
West Africa	0.92
Equatorial Africa	0.93
Cameroon	0.83
Madagascar	0.81

## GROSS DOMESTIC PRODUCT

Though evidence on historical GDP in Africa is scarce, some measure of GDP is needed to put fiscal figures in economic context and express public revenue as a share of GDP, a standard and useful measure of fiscal capacity (Besley and Persson, 2014). To obtain yearly estimates of real GDP per capita, we combined two main sources: contemporary national accounting exercises gave us nominal GDP from the 1950s onwards, while historians' estimations of GDP growth in volume gave us real GDP growth before 1950. These sources, laid out in details in the "Gross domestic product" section of the "List of sources" below, were combined with our price deflator, PPP adjustor, and population series to obtain series of real GDP per capita in 1937 francs. The deflator and PPP adjustor used to convert nominal GDP in 1937 PPP francs are the same as those used to deflate our public finance data, making the computation of GDP shares straightforward. Most of our sources estimate real GDP growth before 1950 only between a couple of key years.<sup>24</sup> In the absence of further information, we assumed constant annual growth rates in between these key years. Our estimates are therefore moving averages missing the yearly variations in GDP growth due, for instance, to fluctuations in the prices of exported primary products. This means that the year to year variation in share of revenue in GDP might be misleading because our GDP series are, by construction, smooth, while our revenue series are not.

In Algeria, we took yearly nominal GDP between 1950 and 1957 from Algeria, Service de statistique générale (1958, p. 54), in 1958 and 1959 from Amin (1966, p. 194-195), and from 1960 onwards from The World Bank (2017). To obtain real GDP figures before 1950, we used

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<sup>24</sup> Maddison (2003) gives an estimate of real GDP per capita for "Other countries of Black Africa" in 1820, 1870, and 1913. Amin (1966) gives estimates of real GDP in 1880, 1910, 1920, 1930, 1955 and 1960 in the Maghreb.

real GDP growth estimated by Amin (1966, p.101) between 1880 and 1950 and by Maddison (2003) between 1820 and 1880.

In Morocco, we used the nominal GDP series of The World Bank (2017) from 1960 onwards. We used the growth of real GDP of Amin (1966) between 1920 and 1960, and of Maddison (2003) between 1820 and 1920. We did not use the nominal GDP series of Amin directly because the figure he gives for 1960 is 25% higher than the one given by The World Bank (2017).

In Tunisia, we took nominal GDP in 1957 and 1960 from Amin (1966, p. 297), and nominal GDP after 1965 from The World Bank (2017). Real GDP in other years was computed using the real growth rates of Zarka (1964, p. 214) between 1950 and 1960, and the growth rate of Maddison between 1960 and 1965. Before 1950, we used the growth rate of real GDP given by Amin (1966, p. 35 & p. 101) between 1920 and 1950, and Maddison (2003) between 1820 and 1920.

In Indochina, we took the nominal GDP series of Bassino (2000) for Vietnam (Cochinchina, Annam, and Tonkin) between 1820 and 1970, that we deflated using our CPI. The real GDP per capita of Cambodia and Laos was assumed to be equal to the real GDP per capita of Annam.

In Sub-Saharan Africa (A.O.F, AEF, Togo, Cameroon, and Madagascar), we relied on the nominal GDP series of The World Bank (2017) after 1960. In 1953, we relied on national accounts established by the French Overseas Ministry for AOF, A.E.F, Cameroun, and Madagascar (France, Direction des Affaires économiques et du Plan du ministère de la France d'outre-mer, 1955). Growth rate of real GDP per capita between 1953 and 1960 were taken from the Maddison Project. In the absence of good data on inflation in the 1950s, the difference between the growth rate of nominal GDP per capita and the growth rate of nominal GDP per capita gave us a measure of price inflation that we used to deflate our public finance series.<sup>25</sup> Real GDP per capita before 1953 was obtained using the real GDP growth rates given in Maddison (2003).

Finally, in Metropolitan France, we took the GDP at market prices from INSEE national accounts between 1949 and 2010, deflated using our GDP deflator. Between 1900 and 1949, we extrapolated backwards using the annual growth rates of market GDP estimated by Villa (1997), taking into account the gradual increase in the share of non-market GDP using estimates

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<sup>25</sup> Because we did not find estimates of nominal GDP in the 1950s in Togo, inflation in the 1950s is assumed to be the same as in AOF Nominal GDP in 1960 is deflated in 1937 PPP F using the prices of AOF, and real GDP is then computed using the real growth rates of Maddison (2003).

from Vincent (1972, p. 334) for 1913, 1929, and 1938. Between 1820 and 1900, we extrapolated backwards using annual growth rates estimated by Toutain (1987).

## DEVELOPMENT OUTCOMES

Development outcomes (kWh produced, road and railway meters, primary enrolment and number of medical staff) come from various statistical yearbooks — see the “List of sources” below.

## VARIABLE DICTIONARY

### PUBLIC FINANCE DATABASE

Variables in the public finance database are given per head in 1937 PPP Francs. To recover nominal amounts as they appear in the budget accounts, one needs to divide by the price deflator (deflator) and the purchasing power parity adjustor (PPP\_adjustor) and multiply by population (pop\_tot).

#### **Region**

One of nine colonies, protectorates, mandates, or federations or colonies: Algeria, Morocco, Tunisia, Indochina, West Africa, Togo, Equatorial Africa, Cameroon, and Madagascar.

#### **Year**

#### **Net public expenditure (NPE)**

Net public expenditure is total public expenditure net of transfers to reserve funds, external loans, subsidies and debt service. It is a consolidated aggregate, meaning that it is net of the various financial transfers (loans, subsidies, etc.) between different public budgets accounts within the same region (federal, colonial, and auxiliary budgets, and budgets of first-level administrative divisions). However, NPE includes subsidies and loans to firms and institutions located within the region, as well as subsidies and loans to second-level administrative divisions (municipalities). NPE also includes the civilian expenditure recorded in the budget accounts of the French Ministry of Colonies and Ministry of War. After independence, when Franc Zone reports are used as sources, NPE is computed as total expenditure minus debt service as recorded in Franc Zone

reports, minus all external loans and subsidies received by the country recorded in the Franc Zone report (except when we know these emanate from a private source or a non-OECD country), plus net OECD ODA (loans and grants) received by the country (see “Budget accounts considered and sources used” above).

### **Administration expenditure (exp\_administration)**

Administration expenditure comprises personnel and material expenses destined to general and territorial administration. It comprises financial transfers to autochthonous political authorities, such as the king of Laos, or the sultan of Morocco.

### **Security expenditure (exp\_security)**

Security expenditure comprises personnel and material expenses of the police and prisons.

### **Justice expenditure (exp\_justice)**

Justice expenditure comprises personnel and material expenses destined to Autochthonous and European justice.

### **Financial services expenditure (exp\_finserv)**

Financial services expenditure comprises personnel and material expenses destined to tax collection, the management of the public debt, and the management of government monopolies (on salt, opium, etc.)

### **Education expenditure (exp\_education)**

Education expenditure comprises personnel and material expenses destined to public education, subsidies to private schools, and scholarships. School construction expenses are classified as infrastructure expenditure. In all French colonies, schools were segregated into a European system and a system for the Autochthonous population. In Algeria between 1904 and 1948, and in Morocco between 1926 and 1930, it is possible to identify education expenditure for Autochthons (**exp\_education\_aut**) and for Europeans (**exp\_education\_eur**). The two subcategories do not necessarily sum to total education expenditure because some expenses were common to both education systems. Education expenditure for Autochthons and Europeans are expressed per head of the relevant population: expenditure for Europeans are divided by European population (pop\_eu) and expenditure for Autochthons are divided by Autochthonous population (pop\_tot minus pop\_eu).

**Religion expenditure (exp\_religion)**

Religion expenditure is positive only in Algeria, where the government took charge of the personnel and material expenses of the 4 monotheist religions (Islam, Judaism, Protestantism, and Catholicism). The law of separation of church and state was only partially applied in Algeria, where the government continued subsidising religions after 1907, and notably continued paying the wages of the Muslim religious personnel in an effort to control Islam and avoid political turmoil (Saaidia, 2016).

**Health expenditure (exp\_health)**

Health expenditure comprises the personnel and material expenses destined to health, sanitation, labor inspection, and welfare. Hospital and health centers construction expenses are classified as infrastructure expenditure.

**Infrastructure expenditure (exp\_infrast)**

Infrastructure expenditure comprises expenses for public works, both the construction of new infrastructure and buildings and the maintenance of existing ones. The construction of new railway lines or telegraphic lines falls in this category, but subsidies to railway companies are classified as production support expenditure, as well as the operating expenses of posts and telecommunications. Infrastructure expenditure also comprises the subsidies to second-level administrative divisions destined to the maintenance of local roads (in Algeria only).

**Production support expenditure (exp\_prodsup)**

Production support expenditure comprises subsidies to private and public or semi-public entities whose budgets are not already part of the public expenditure aggregate (like railway companies). It also includes expenses on public services destined to enhance or support production, like posts and telecommunications, power plants, printing department, meteorological department, civil aviation, forestry and mining departments, agricultural research, merchant navy, etc.

**Other expenditure (exp\_other)**

Other expenditure is equal to the different between net public expenditure (NPE) and the sum of all previous items of expenditure: administration, security, justice, financial services, education, religion, health, infrastructure, and production support. Expenditure remaining from the previous financial year (*Dépenses d'exercices antérieurs* /

*d'exercices clos*) is allocated between the different items of expenditure in proportion of their weight in total expenditure.

### **Military expenditure (exp\_mili\_met and exp\_mili\_co)**

Our measure of net public expenditure includes civilian expenditure only. Military expenditure is given separately. The bulk of colonial military expenditure appears in the budget accounts of the French Ministry of the Colonies and Ministry of War and is given by the variable **exp\_mili\_met**. Some items of military expenditure given by the Metropolitan budget accounts are civilian in nature and were added to the relevant categories of net public expenditure (exp\_health, exp\_infrastructure, and exp\_prodsup). On the revenue side, they are considered as subsidies from France. Military expenditure appears directly in colonial budget accounts only in Algeria between 1830 and 1900 and between 1904 and 1937 (budget accounts of Southern Territories only), and in Morocco between 1921 and 1937, and in 1956. It is given by the variable **exp\_mili\_col**.

### **Net public revenue (NPR)**

Net public revenue is public revenue net of transfers from reserve funds, external borrowing, subsidies, interests and reimbursements. It is a consolidated aggregate, meaning that it is net of various financial transfers (loans, subsidies, etc.) between different public budgets accounts within the same region (federal, colonial, and auxiliary budgets, and budgets of first-level administrative divisions). However, NPE includes transfers (subsidies, loans, and reimbursements) from firms and institutions located within the region, as well as transfers from second-level administrative divisions (municipalities).

### **Tax revenue (taxrevenue)**

Tax revenue is the sum of head taxes, external trade taxes, intermediate taxes, and modern taxes

### **Head taxes (re\_headtax)**

Revenue from the head tax (*capitation*), in theory a lump-sum tax, in practice a tax levied at the village level by local chiefs and roughly proportional to population. This category also includes cattle taxes (in Tunisia, Indochina, West and Equatorial Africa, Togo, Cameroon, and Madagascar), and labor tax redemptions.



### **External trade taxes (re\_trade)**

External trade taxes comprise export taxes (**re\_trade\_exp**) and import taxes (**re\_trade\_imp**), as well as harbor dues not attributable to export or import taxes (*octroi de mer* in Algeria). Taxes on the consumption of imported products are considered as import taxes (re\_trade\_imp).

### **Intermediate taxes (re\_intermediate)**

Intermediate taxes comprise taxes with an element of proportionality, but which do not require the frequent collection of statistical information on firms or individuals. They include direct intermediate taxes (**re\_intermediate\_di**), such as land taxes and business licenses (*patente*), and indirect intermediate taxes (**re\_intermediate\_in**), such as circulation taxes and taxes on the consumption of specific luxury goods (alcohol, sugar, tobacco).

### **Modern taxes (re\_modern)**

Modern taxes comprise taxes which require the frequent collection or self-declaration of detailed economic information on individuals and firms. Direct modern taxes (**re\_modern\_di**) are personal income taxes (*impôt sur le revenu*, as well as the Moroccan tax on agricultural income called *tertib*), taxes on benefits, and the tax on interests and dividends (*impôt sur le revenu des valeurs mobilières*). Indirect modern taxes (**re\_modern\_in**) are broad-based consumption taxes, taxes on sales revenue (*impôts sur le chiffre d'affaire*), and turnover taxes (called *taxes sur la production*, *taxe unique à la production* in Algeria, and *taxe sur les transactions* in Tunisia).

### **Monopoly revenue (re\_monopoly)**

Monopoly revenue includes revenue from any economic activity on which the government had a legal monopoly. It comprises revenue from industrial operations (including post and telegraph receipts) and administrative services, and revenue from the sale of various goods on which the colonial government had a monopoly, such as salt (in Tunisia and Indochina), tobacco (in Morocco, Tunisia, Indochina, and Madagascar), alcohol (in Madagascar and Indochina), and opium (in Indochina). It also includes excess revenue of public railway companies transferred to the government's budget, as well as various registration fees.

### **Other sources of internal revenue (re\_other)**

Other sources of internal revenue are the difference between Net public revenue (NPR) and the sum of all previous sources of internal revenue: head taxes, monopoly revenue,

external trade taxes, intermediate taxes, modern taxes. Revenue collected in the current fiscal year on account of the previous fiscal year's budget (*Recettes d'exercices antérieurs / d'exercices clos*) is allocated between the different items of revenue in proportion of their weight in total revenue.

### **Net surplus/deficit (deficit)**

Net surplus/deficit is the difference between net public revenue and net public expenditure ( $deficit = NPR - NPE$ ). The net deficit is, by construction, financed by net transfers from reserve funds, net borrowing, and net subsidies (another way to put it is that the net surplus is composed of net transfers to reserve funds, net loans, and net subsidies given out). Unfortunately, net transfers from reserve funds cannot be systematically computed, but we provide variables for the other components of the net deficit.

### **Net subsidies (netsubto)**

Net subsidies are subsidies received from abroad net of subsidies sent abroad. During the colonial period, the bulk of net subsidies are net subsidies from metropolitan France (**netsubfr**), equal to subsidies from France to the colony minus subsidies from the colony to France. After 1960, net subsidies are aid grants from OECD-DAC aid data

### **Net borrowing (netborto)**

Net borrowing per capita is equal to loans received minus loans given out, minus interests and reimbursements paid out, plus interests and reimbursements paid in. After 1960, net borrowing is net loan aid from OECD-DAC aid data.

### **NPE of first-level administrative divisions (NPE\_adm1)**

First level administrative divisions are *départements* in Algeria, *régions* in Morocco, and *provinces* in Indochina and Madagascar. Their expenditure is already taken into account in the consolidated aggregate (NPE).

### **NPR of first-level administrative divisions (NPR\_adm1)**

First level administrative divisions are *départements* in Algeria, *régions* in Morocco, and *provinces* in Indochina and Madagascar. Their revenue is already taken into account in the consolidated aggregate (NPR).

### **Tax revenue of first-level administrative divisions (tax\_adm1)**

First level administrative divisions are *départements* in Algeria, *régions* in Morocco, and *provinces* in Indochina and Madagascar. The tax revenue of first level administrative divisions is already taken into account in the consolidated aggregate (NPR). Tax revenue of the central government only is simply *taxrevenue – tax\_adm1*.

### **NPE of second-level administrative divisions (NPE\_adm2)**

Second-level administrative divisions are municipalities (*communes*). Their expenditure is not taken into account in the consolidated aggregate (NPE), because it is often missing. NPE\_adm2 is net of all transfers, including subsidies from the central government and first-level administrative divisions.

### **NPR of second-level administrative divisions (NPR\_adm2)**

Second-level administrative divisions are municipalities (*communes*). Their revenue is not taken into account in the consolidated aggregate (NPR), because it is often missing. NPR\_adm2 is net of all transfers, including subsidies to the central government and first-level administrative divisions.

### **Net subsidies from central government to municipalities (sub\_gcadm2) and from municipalities to central government (sub\_adm2\_gc)**

For years in which NPE\_adm2 and NPR\_adm2 are not missing, it is possible to compute total consolidated public expenditure and revenue. When computing total net public expenditure and revenue, one should subtract from net public expenditure the subsidies to municipalities (**sub\_gcadm2**), and subtract from net public revenue the transfers from municipalities (**sub\_adm2gc**). NPE\_adm2 and NPR\_adm2, however, are already net of transfers to and from the central government and first-level administrative divisions. Denoting with a star total consolidated net public expenditure and revenue, we have  $NPE^* = NPE - sub\_gcadm2 + NPE\_adm2$ , and  $NPR^* = NPR - sub\_adm2gc + NPR\_adm2$ .

### **GDP per capita in 1937 PPP francs (GDP)**

The many assumptions behind the building of yearly GDP per capita figures are laid out in details in the section “Population, prices and GDP” above. We used the same deflator to deflate nominal GDP and public finance figures, so that GDP shares can be computed directly by dividing the relevant variable by GDP.

**Total population (pop\_tot)**

See section “Population, prices, and GDP” above and the “List of sources” below.

**European population (pop\_eu)**

See section “Population, prices, and GDP” above and the “List of sources” below. In Algeria, European population includes Jews who were given French citizenship by the 1870 Crémieux decree. In Morocco and Tunisia, Jews were not given French citizenship and are included in the non-European minority population (pop\_min). In Indochina, European population comprises a small number of Japanese and Americans.

**Non-European minority population (pop\_min)**

See section “Population, prices, and GDP” above and the “List of sources” below. Non-European minority population is Jewish population in North Africa (except in Algeria where Jews were given French citizenship), Chinese population in Indochina, and Asian (Chinese and Indian) population in Madagascar.

**Price deflator (deflator)**

See section “Population, prices, and GDP” above and the “List of sources” below. The price deflator, base 1 in 1937, was used to deflate nominal amounts, along with the PPP adjustor. All public finance variables are given per head in 1937 PPP Francs. To recover nominal amounts, one needs to divide by deflator and by PPP\_adjustor. In West Africa after 1960, doing so will produce a nominal amount in current CFA francs (Mali, Mauritania and Guinée went off the CFA franc after 1960, but we converted all nominal amounts in CFA francs for these countries before applying the regional deflator).

**Purchasing power parity adjustor (PPP\_adjustor)**

See section “Population, prices, and GDP” above and the “List of sources” below. The PPP adjustor adjusts for purchasing power parity in 1937. All public finance variables are given per head in 1937 PPP Francs. To recover nominal amounts, one needs to divide by deflator and by PPP\_adjustor. In West Africa after 1960, doing so will produce a nominal amount in current CFA francs (Mali, Mauritania and Guinée went off the CFA franc after 1960, but we converted all nominal amounts in CFA francs for these countries before applying the regional deflator).

## PERSONNEL DATABASE

### **Region**

One of nine colonies, protectorates, mandates, or federations or colonies: Algeria, Morocco, Tunisia, Indochina, West Africa, Togo, Equatorial Africa, Cameroon, and Madagascar.

### **Year**

#### **Total revenue (re\_to)**

Total revenue, not consolidated. This is simply the sum of gross revenue over all the budget accounts (federal and colonial) in the region.

#### **Total expenditure (exp\_to)**

Total expenditure, not consolidated. This is simply the sum of gross expenditure over all the budget accounts (federal and colonial) in the region.

#### **Average wage of government employees (avwage\_to)**

Average wage of government employees, all sectors, including bonuses and allowances, in 1937 PPP Francs. Computed by dividing total personnel expenditure attached to a given number of employees by the number of employees. Government is only colonial government in colonies, federal and colonial governments in federations of colonies, excluding the local governments of first- and second-level administrative divisions.

#### **Total number of government employees per 1,000 inhabitants (nbemppc\_to)**

Total number of employees is the sum of total number of enumerated employees and estimated number of employees when items of personnel expenditure are not attached to a precise number (the monetary amount is divided by the average wage). Government is only colonial government in colonies, federal and colonial governments in federations of colonies, excluding the local governments of first- and second-level administrative divisions.

#### **Average wage and number of employees by sector**

Average wages are in 1937 PPP francs (divide by deflator and PPP\_adjustor to recover the nominal wage). Number of employees is given per 1,000 inhabitants (multiply by pop\_tot to recover the actual number of employees). The definition of each sector corresponds exactly to the definition given in the variable dictionary for the public finance database.

**GDP per capita (GDP), total population (pop\_tot), price deflator (deflator), purchasing power parity adjustor (PPP\_adjustor)**

See definition in the variable dictionary for the public finance database.

## **LIST OF SOURCES**

To build our public finance and personnel database, we gathered data from around 1,700 official publications. These publications were accessed in several libraries and public archives: the Bibliothèque Nationale de France (BnF) in Paris, the Bibliothèque Universitaire des Langues et Civilisations (BULAC) in Paris, the Bibliothèque Cujas (BC) in Paris, the Bibliothèque de documentation internationale contemporaine (BDIC) in Nanterre, the Centre des Archives Economiques et Financières (CAEF) in Savigny-le-Temple, the Bibliothèque Universitaire de Grenoble (BUG) in Grenoble, and the Centre des Archives de l'Outre Mer (CAOM) in Aix-en-Provence. We indicate in brackets the place (or places) where we accessed the source and the location number, when relevant. For the Bibliothèque Nationale de France, a location number starting with NUMP indicates that the publication was digitized and made available on the BnF's digital library Gallica ([www.gallica.bnf.fr](http://www.gallica.bnf.fr)). If no location number is indicated, the source comes from a private collection. When a series of publication was printed by several publishers, we give only the first publisher and place of publication.

### **PUBLIC FINANCES**

#### **Metropolitan France**

André, Christine and Delorme, Robert. *L'Etat et l'économie. Un essai d'explication de l'évolution des dépenses publiques en France (1870-1980)*. Paris: Seuil, 1983.

INSEE (Institut national de la statistique et des études économiques). *Annuaire statistique de la France, résumé rétrospectif*. Paris, 1966. [BnF: NUMP-10025]

France, Ministère de la France d'Outre-mer, Service des statistiques. *Annuaire statistique de l'Union française outre-mer*. Paris: Impr. nationale, 1951. [4-LC25-321 (2)]

France, Ministère des affaires économiques et financières, Secrétariat d'Etat aux postes, télégraphes et téléphones. *Rapport sur la gestion financière des services pendant l'année 1955*. Paris: Imprimerie des journaux officiels, 1957. [Bnf: FOL-LF186-443]

France, Ministère du commerce et de l'industrie. *Rapport sur la gestion financière et la marche générale des services des postes, télégraphes et téléphones pendant l'année 1925*. Paris: Imprimerie des journaux officiels, 1927. [BnF: NUMP-16601]

#### *Budget accounts of the Ministry of the Navy and Ministry of the Colonies*

France, Ministère de la marine et des colonies. *Compte définitif des dépenses de l'exercice...* Paris : Impr. royale, then Impr. nationale, 1833-1938. [BnF: 4-LF224-7]

France, Ministère des colonies. *Compte définitif des dépenses de l'exercice...* Paris, 1884-1938. [BnF: 4-LF224-119]

France, Ministère de la France d'Outre-Mer (services civils et militaires). *Compte définitif des dépenses de l'exercice...* Paris : Impr. nationale, 1953-1954, 1955-1959 [BnF : FOL-LF156-184, CAEF]

#### *Budget accounts of the Ministry of Defense*

France, Ministère de la guerre. *Comptes généraux présentés par le ministre de la guerre pour l'exercice...* Paris: Impr. royale, then Impr. nationale, 1819, 1821-1937. [BnF: NUMP-3685 & 4-LF194-10, CAEF]

France. *Ministère de la Défense. Compte définitif des dépenses.* Paris, 1946, 1955. [CAEF]

#### *Budget accounts of the Ministry of the Sahara*

France, Ministère du Sahara. *Loi de finance, compte définitif.* 1958-1962. [Bnf: FOL-LF156-184]

## **Algeria**

#### *Statistical abstracts*

Algeria, Gouvernement général civil. *Statistique générale de l'Algérie.* Algiers: Impr. de l'Association ouvrière, various dates between 1867 and 1925. [BnF: LK8-1043]. (The second volume for the year 1900 contains retrospective data from 1830, as well as communal and departmental data.)

Algeria, Sous-direction des statistiques. *Annuaire statistique de l'Algérie.* Algiers: Impr. Administrative Emile Pfister, various dates between 1926 and 1960. [BnF: 4-O3W-583]

Algeria. *Statistique financière de l'Algérie. Algérie du Nord et territoires du Sud.* Algiers: Impr. agricole et commerciale, 1900-1902, 1904-1905, 1909-1932, 1934-1935, 1937. [BnF: NUMP-3485]

Algeria, Service de statistique générale. *Statistique générale de l'Algérie. Tableau de l'économie Algérienne.* Algiers: Impr. Baconnier, 1958. [BnF: 16-LC32-174]

#### *Definitive budget accounts*

Algeria. *Compte définitif des dépenses de l'exercice...* Paris: Impr. Impériale, then Nationale, 1858-1880. [BnF : 4-LF269-3]

Algeria. *Compte définitif des recettes du budget de l'Algérie pour l'exercice...* Algiers: Impr. Algérienne, various dates between 1914 and 1957. [BnF: NUMP-4918, CAEF]

Algeria. *Budget de l'Algérie. Compte définitif des dépenses de l'exercice...* Algiers: Impr. Algérienne, various dates between 1914 and 1957. [BnF : NUMP-3572, CAEF]

#### *Provisional budget accounts*

Algeria. *Projet de budget... - Gouvernement général de l'Algérie.* Algiers: Impr. de V. Heintz, 1925, 1937, 1955-1956. [BnF: FOL-LK19-400 & NUMP-3535]

Algeria. *Délégation générale en Algérie. Services civils en Algérie. Budget voté de 1960.* Algiers: Impr. officielle, 1960. [BnF: 4-LF156-200]

### *Auxiliary budget accounts*

Algeria, Gouvernement général de l'Algérie. *Budget annexe des postes, télégraphes et téléphone de l'Algérie : Compte définitif des résultats de l'exercice...* Algiers: J. Carbonel, 1927-1939. [BnF: FOL-LK19-609 & NUMP-4652]

Algeria, Gouvernement général de l'Algérie. *Budget annexe des postes, télégraphes et téléphone des territoires du Sud : Compte définitif des résultats de l'exercice...* Algiers: J. Carbonel, 1927-1939. [BnF: FOL-LK19-609 & NUMP-4652]

## **Morocco**

### *Statistical Abstracts*

Morocco. *Annuaire économique et financier*. Casablanca: Impr. G. Mercié, various dates between 1917 and 1929. [BULAC: BIULO PER.5552]

Morocco, Direction générale de l'agriculture, du commerce et de la colonisation. *Annuaire de statistique générale du Maroc*. Casablanca: Impr. réunies de la Vigie Marocaine et du Petit Marocain, various dates between 1925 and 1936. [BULAC: BIULO PER.6096]

Morocco, Direction de l'industrie. *Annuaire de statistique générale de la zone française du Maroc*. Casablanca: Impr. réunies de la Vigie Marocaine et du Petit Marocain, various dates between 1937 and 1953. [BDIC: Q6400]

Morocco, Royaume du Maroc, Ministère de l'Economie Nationale, Division de la Coordination Economique et du Plan, Service Central des Statistiques. *Tableaux économiques du Maroc, 1915-1959*. Rabat, 1960.

### *Provisional budget accounts*

Morocco. *Empire Chérifien. Protectorat français. Budget de l'exercice...* Various dates between 1925 and 1955. [CAEF: F4120]

## **Tunisia**

### *Statistical abstracts*

Tunisia. *Statistique générale de la Tunisie*. Tunis, various dates between 1881 and 1939. [BnF: NUMP-7491 & MFILM 8-O3I-371]

Tunisia, Institut national de la statistique. *Annuaire statistique de la Tunisie*. Tunis: Institut national de la statistique, various dates between 1940 and 1999. [BnF: 4-O3W-35, 8-SG PER U-160 & MICROFICHE M-25451]

### *Provisional budget accounts*

Tunisia. *Budget Général de la Tunisie*. Various dates between 1931 and 1952. [CAEF]

Tunisia. *Régence de Tunis. Protectorat français. Budget de l'Etat et des Etablissements publics annexes pour l'exercice...* Various dates between 1912 and 1955-56. [CAEF: 4329]

Tunisia. *Régence de Tunis. Protectorat français. Projet de budget de l'Etat pour l'exercice 1924*. [CAEF: F4473]

### *Other*

Tunisia. *Rapport au Président de la République sur la situation de la Tunisie*. Paris: Imprimerie nationale, 1890-1916, 1918-1925, 1927, 1929, 1931, 1934. [BnF: NUMP-11318]



Tunisia. *Rapport au Président de la République sur la situation de la Tunisie*. Paris: Imprimerie Nationale, 1938. [CAEF]

## **Indochina**

### *Statistical abstracts*

Indochine française, Bureau de la statistique générale. *Annuaire Statistique de L'Indochine ...*. Hanoï: Impr. d'Extrême-Orient, various dates between 1927 and 1949. [BnF: MICROFILM M-14883]

*Annuaire statistique du Laos. Troisième volume. 1951-1952*. Saigon: Vo-Van-Van, 1954. [BDIC: Q15925]

### *Federal budget accounts — definitive*

Indochine, Gouvernement général. *Compte Administratif du Budget Général*. Saigon: Impr. Colonial, various dates between 1900 and 1913. [BC: 9.915-2]

Indochine, Gouvernement général. *Compte Administratif du Budget Général de l'Indochine pour l'exercice ...* Hanoï-Haïphong: Impr. d'Extrême Orient, 1911-1943, 1946-1949. [BnF: NUMP-3483 & FOL-LK19-547]

### *Federal budget accounts — provisional*

Indochine, Gouvernement général. *Budget Général pour l'exercice...* Hanoï: F.-H. Schneider, various dates between 1904 and 1913. [BC: 9.915-5]

Indochine française, Haut-commissariat. *Budget général : exercice...* Hanoï, then Haïphong: Impr. d'Extrême-Orient, 1914, 1925. [BnF: FOL-LK19-482]

Indochine française. *Projet de budget général : exercice 1937*. Hanoï: Impr. d'Extrême-Orient, 1937. [BnF: NUMP-4948]

### *Colonial budget accounts: Annam (Centre Vietnam) — definitive*

Annam. *Compte administratif du budget local de l'Annam pour l'exercice...* Various places: Impr. d'Extrême-Orient, 1894, 1896, 1899, 1904, 1905, 1910-1943. [BnF: MFILM LK19-478]

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In Afrique Occidentale Française, we use import prices to measure inflation between 1938 and 1944. We track the price evolution of a yearly subsistence basket composed of 195 kg of flour, 5 liters of oil, 1.3 kg of sugar, 1.3 kg of soap and 600 grams of cotton cloth. See Allen (2009) and Frankema and van Waijenburg (2012) for discussions of the methodology of subsistence baskets. Starting in 1945, we rely on CPI computed by the statistical office of AOF.

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## *Togo*

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