

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

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Appendix 1 – Data

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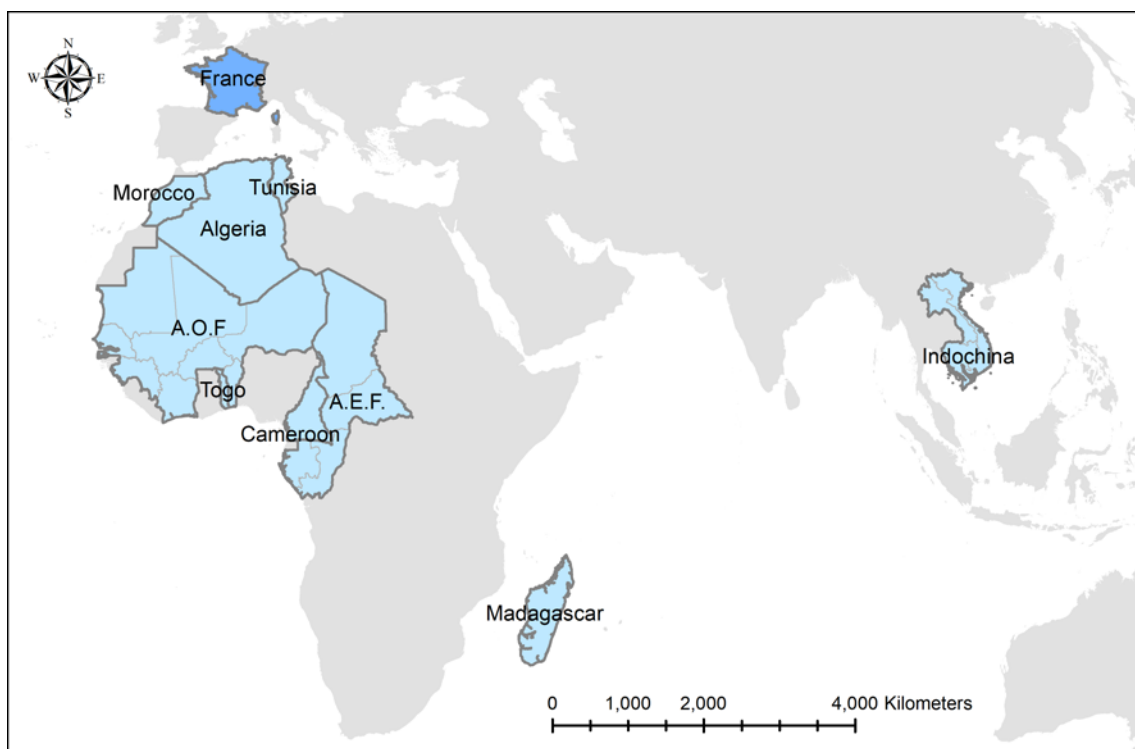
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EXTENT OF THE PUBLIC FINANCE DATABASE

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. The Comoros Islands were part of Madagascar until 1946, when they became a French overseas territory. In total, the former French colonies that are part of our database correspond to 21 contemporary countries: Algeria, Morocco, and Tunisia in North Africa, Benin, Burkina- Faso, Cameroon, Chad, Central African Republic, Congo-Brazzaville, Côte

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	13
Indochina	1871-1953	40		
West Africa ^(a)	1905-1958	18	1959-1967	9
Equatorial Africa ^(b)	1904-1954	22	1958-1970	13
Cameroon	1922-1957	28	1958-1970	13
Madagascar	1901-1956	52	1958-1970	13
Togo	1920-1956	14	1958-1970	13

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

(b) Equatorial Africa includes Chad, Congo (present Congo-Brazzaville), Gabon, Oubangui-Chari (present 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 1953, one year before independence. 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 de 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 nine 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 the central colonial governments, but tried to collect data for all public authorities responsible for revenue and expenditure in the colonies. This requires 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 most of the 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). For this reason, military expenditure almost never appears in colonial budget accounts.¹

¹ There are a couple of exceptions. Military expenditure appears in the colonial budget accounts of the Southern Territories of Algeria between 1904 and 1937, in Morocco until 1937, and again in 1956 in preparation for independence (the amounts are very small compared to those recorded in the budget accounts of the Ministry of War). Military expenditure also appears in the budget accounts of Algeria between 1830 and 1900, but it is not financed locally and corresponds to the expenditure financed by the Ministry of War. Finally, military expenditure appears in the budget accounts of Indochina in 1953 (a year for which the budget accounts of the Ministry of War is not available). More precisely, this military expenditure is found in the national budgets of Vietnam, Laos and Cambodia, and in the regional budget of North Vietnam (Tonkin). Total security expenditure is not broken down between civilian and military, but personnel expenditure is. We use the share of military in personnel expenditure to infer total military expenditure from total security expenditure.

*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.

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 includes 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 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 be allocated to a given region of the empire. We allocated the rest in proportion of the share of each region in allocated expenditure.² On the revenue side, we consider this as direct subsidies from France to its colonies.

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.

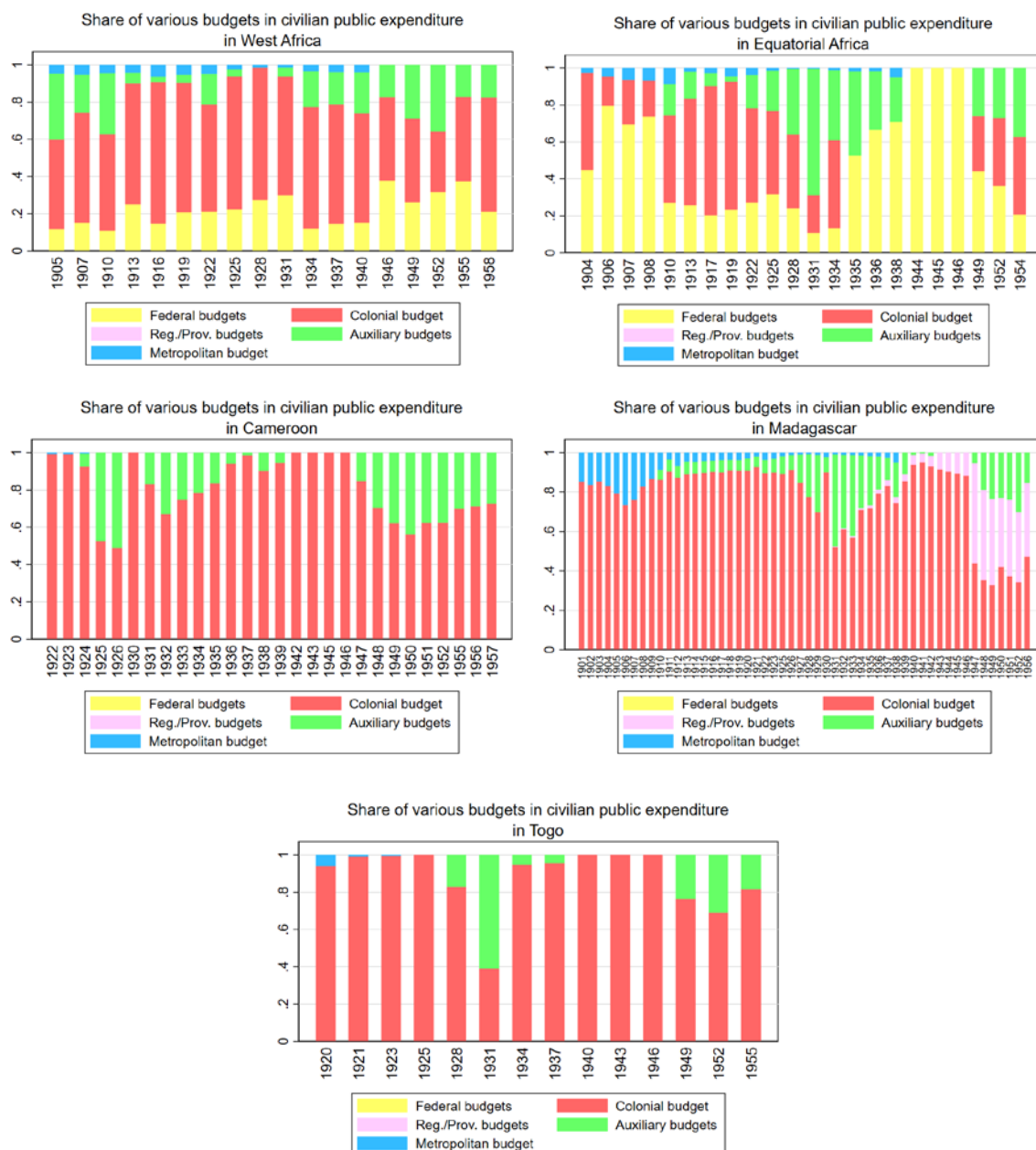
Federal structure. Three regions of the empire, Indochina, French West Africa (*Afrique Occidentale Française*, AOF) and French Equatorial Africa (*Afrique Equatoriale Française*, AEF), were organized in federations. The AOF federation was created in 1895. In 1922, it included eight colonies: Senegal, Soudan (present-day Mali), Guinea, Côte d’Ivoire, Dahomey (present-day Benin), Mauritania, Haute-Volta (present-day Burkina Faso) and Niger.³ Between 1932 and 1946, the Haute-Volta colony disappeared and its territory was divided between Côte d’Ivoire and Niger. The AEF federation was created in 1910 and included four colonies: Congo, Gabon, Chad, and Oubangui-Chari (present-day Central African Republic). The Indochinese Union was created in 1887 and included Cochinchina (South Vietnam), Annam (Central Vietnam), Tonkin (North Vietnam) and Cambodia. Laos

² 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.

³ New colonies were added progressively as the French were conquering more and more territories. The borders of colonies also kept evolving. Before World War I, Soudan, Niger and Haute-Volta were forming the colony of “Haut-Sénégal-Niger.”

was added in 1899. The Indochinese Union became the Indochinese Federation in 1946 and was dissolved in 1949. The AOF and AEF were dissolved in 1958-59.⁴

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



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

⁴ 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.

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.⁵ 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 (*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 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”.⁶ 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*

⁵ 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.

⁶ The receipts and expenditure of the posts and telegraphs are usually recorded in the colonial budget, but in Algeria from 1925, they are recorded in a separate budget, available at the *Bibliothèque nationale de France* between 1925 and 1939. We rely on the summary provided in the statistical yearbooks afterwards (see “List of sources”).

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 the total expenditure.⁷

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 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.

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

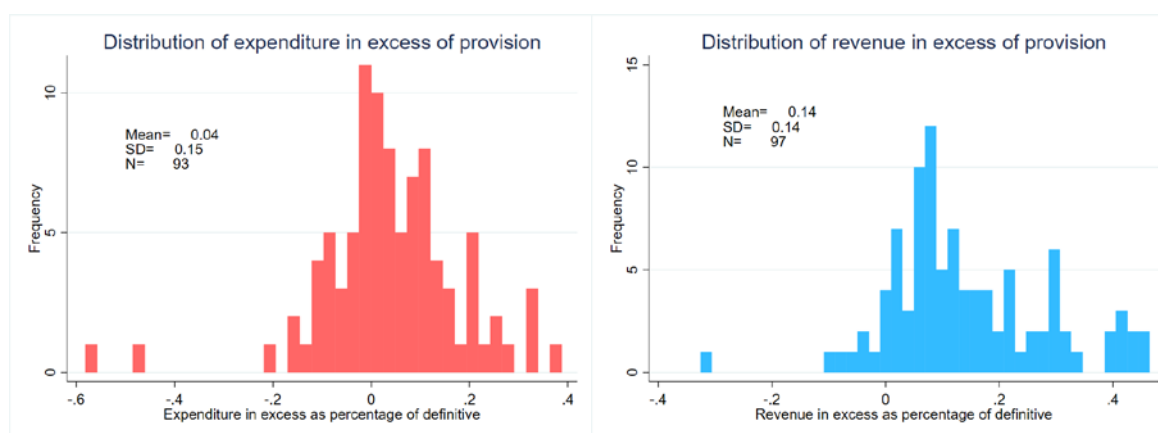
	1925		1955	
	Share in expenditure	Share in revenue	Share in expenditure	Share in revenue
Algeria	23.4%	20.5%	21.2%	24.4%
Morocco	n.a.	n.a.	7.8%	11.4%
Tunisia	9.3%	13.7%	6.3%	7.5%
W. Africa	4.9%	0.2%	n.a.	n.a.
Indochina	1.1%	1.0%	n.a.	n.a.
France	33.1%	n.a.	13.6%	n.a.

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

⁷ The French contributions are also recorded in the French budgets, but in a less systematic way.

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 1872), Rufisque (in 1880), and Dakar (in 1887). In 1955, 44 new municipalities were created in AOF, AEF, Madagascar, Cameroon and Togo.⁸ 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.

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



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).

Definitive and provisional accounts. Several types of documents were produced during the budget process: provisional accounts (usually called “*Budgets*”) were previsions produced in advance of the fiscal year, while definitive accounts (usually called “*Comptes définitifs*”) were published after the end of the fiscal year and 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

⁸ 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

employees, which is why we also use them to collect information on average public sector wages and the size of the civil 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 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).

Social security. Though social security transfers are not part of our main aggregates, we provide separate figures for social security contributions and benefits. There was no social security in the French colonial Empire before 1945. After 1945, social security funds were introduced in the settler colonies of Algeria, Morocco and Tunisia, but not in the colonies of Sub-Saharan Africa and Southeast Asia.⁹ The accounts of various social security funds were found in the statistical abstracts of the relevant colonies.

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

⁹ Algeria had a family allowance fund (*Caisse d'allocations familiales*) and a social security fund (*Caisse de sécurité sociale*). Morocco had a help fund (*Caisse d'aides*) later renamed social security fund (*Caisse de sécurité sociale*). Tunisia had a family allowance fund (*Caisse d'allocations familiales*).

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 ⁽¹⁾	Franc zone report ⁽²⁾
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); Sénégal, 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 they were mostly financed by international aid (grants and loans) and complement the Zone Franc 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.¹⁰ 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.¹¹

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 aux finances, 1964-1965). Franc Zone reports do not always take into account the revenue and expenditure of first-level administrative divisions. It

¹⁰ 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.

¹¹ 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.

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).

Comparison with Metropolitan France. For comparisons 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 (1983) 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). André and Delorme (1983) also give figures for social security benefits. On the revenue side, we assume that social security contributions are equal to social security benefits.

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 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) requires 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.¹² 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 make 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.¹³ For French Soudan in 1946, we know total revenue and expenditure (recapitulated in the 1949 budget), and we break them down into different items of revenue and expenditure using the distribution of 1949. We could not find the budget accounts of Haute-Volta in 1958, but we use the information recorded in the Franc Zone report for that year. We infer 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 in the same year. Expenditure that was not allocated to a specific territory was allocated to

¹² In AOF, affected years and budget accounts are: 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 (1959 instead of 1958), French Soudan (1932 instead of 1931). 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: Annam (1945 instead of 1946), Cambodia (1945 instead of 1946), Cochinchina (1906 instead of 1907), Laos (1897 instead of 1896 and 1902 instead of 1901, 1945 instead of 1946), Tonkin (1945 instead of 1946), PMS region (1954 instead of 1953), municipalities (1942 instead of 1943).

¹³ 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.

each territory in proportion of its weight in geographically allocated expenditure.¹⁴ In years where expenditure was not allocated geographically at all, we followed the geographical allocation of a close enough year.¹⁵

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 ten 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.¹⁶ After 1939, budget accounts of the Ministry of War are missing for all years except 1946. We do not try to fill in the gap during World War II (1940-1945), when the North Africa was a battleground of the fight between Vichy France and Free France.¹⁷ 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, using Mahieu 2001). 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 use balance of payments data (Morocco, 1960), assuming that 90% of the public expenditure paid by Metropolitan France were for the military. Though France fought the Cameroonian independentists starting in 1955 (Domergue et al. 2011), the cost of this “hidden war” does not appear isolately in the accounts of the Ministry of the Colonies. Because Cameroon was a trust territory of the U.N., France was in theory not allowed to undertake military expenditure there. We do not know whether the cost of the Cameroonian war is included in the total French colonial military expenditure.

¹⁴ 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.

¹⁵ 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.

¹⁶ 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.

¹⁷ For the Ministry of the Colonies, responsible for military expenditure outside North Africa, our source (the statistical yearbook of the French Union) gives us expenditure during World War II, including the expenditure of Free France (*comité français de la libération nationale*), but strictly military expenditure are missing in 1940 and 1941.

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

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 represent 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 make an educated guess using the share of Tananarive in total provincial expenditure and revenue in 1951. We extrapolate 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 extrapolate 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 infer 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 infer them using their shares in total revenue in 1952 (1956 for the province of Tananarive).

Post-independence budget accounts. In Tunisia, posts and telegraphs expenditure is missing in the Franc Zone reports. We use the figures in Tunisia's statistical yearbook to fill in the gaps (see "list of sources" below). From 1958 to 1960, we extrapolate the expenditure of posts and telegraphs assuming that their share in total expenditure was the same than in 1961.

PERSONNEL DATA

Provisional budget accounts are usually more detailed than definitive accounts, which allow 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 five dates as close as possible to 1913, 1925, 1937, 1949, 1955, and 1960.¹⁸ In each sector, we computed the average wage by dividing total personnel expenditure by the number of employees. We also tried to collect five 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 that case, we infer 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.

Personnel data was collected for central budgets only (federal and colonial in the case of federations), which means that our personnel figure 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).

¹⁸ Only dates before World War II for Indochina.

In West and Central Africa, the number of government employees also falls between 1955 and 1960 (figure 6 again), after the colonial territories had been granted more autonomy by the *loi cadre* of 1956 and the federation had been dismantled in 1959. The magnitude of the decrease cannot be only explained by the departure of French civil servants. We do not know whether it corresponds to an actual drop in the number of public employees or to some decentralization, like in the case of Madagascar, in a context of rapid administrative transformation.

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

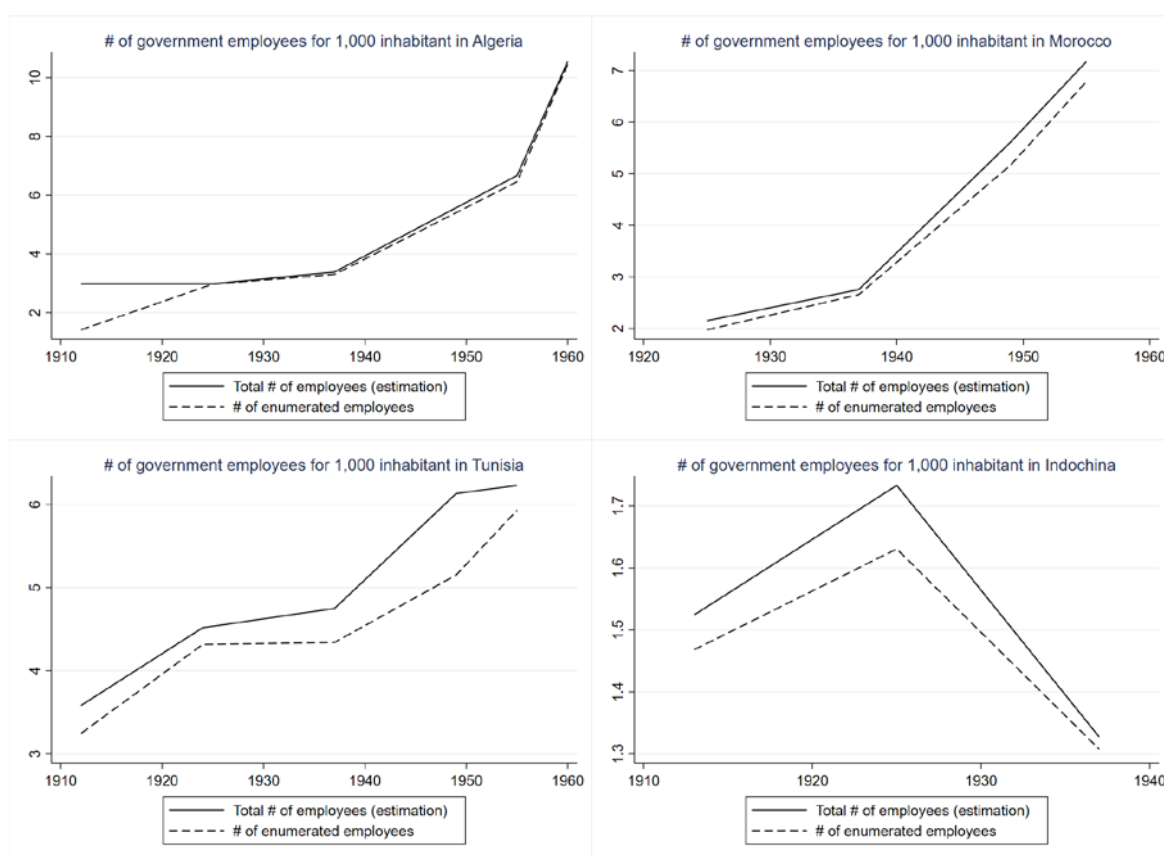
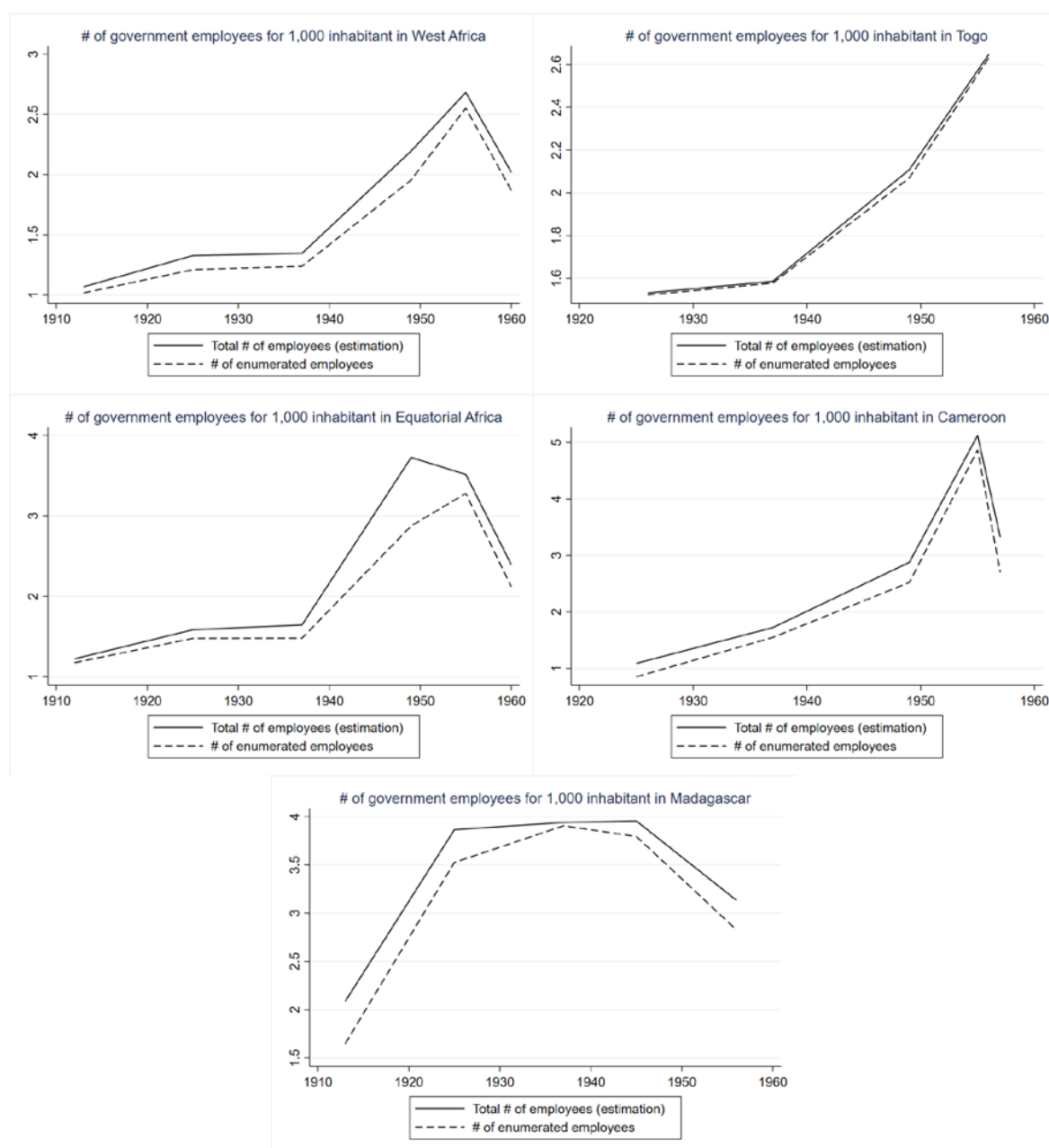


Figure 6: Estimated vs. enumerated number of government employees in Sub-Saharan Africa



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.¹⁹ We could not find the budget account of French Soudan

¹⁹ 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).

(present-day Mali) in 1925, 1949 and 1960. In these years in AOF, average wages per sector do 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 compute 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 use 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). For a handful of years (1925, 1945, and 1955), we estimated the population share of 15-64-year-olds (in order to express public wages in units of GDP per worker). For the years 1850, 1925 and 1855, we also estimated urbanization rates. 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).²⁰ 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 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 1871-1872²¹; 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.

The share of 15-64-year-olds in the non-European population comes from CICRED (1974a). The share in 1955 is assumed to be equal to the share of 1954 from CICRED (1974a). The share in 1925 is extrapolated using the share in 1936 and the trend between 1936 and 1948. The share of 15-59-year-olds in the European population is given in the statistical yearbooks of Algeria, and we assume that the share of 60-64-year-olds is the same as in Metropolitan France.

Urban population figures come from Eggiman (1999) for 1850, from the population census of 1926 for 1925, and from the population census of 1954 for 1955 (46 communes).

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.²² 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

²⁰ 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).

²¹ 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.

²² The Spanish were also granted a Protectorate in the South, but its population was negligible.

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 and 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.

The shares of 15-64-year-olds in the European and non-European population are assumed to be the same as in Tunisia.

Urban population figures come from Eggiman (1999) for 1850 and for 1925 (interpolation of 1920 and 1930 figures), and from Eggiman (1999) and The World Bank (2017) for 1955 (average of Eggiman's figure for 1950 and World Bank figure for 1960).

Tunisia

In Tunisia, population in 1911 comes from the 1947 statistical yearbook (Tunisia, *Institut national de la statistique*, 1947).²³ 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.

The share of 15-64 year olds in the Muslim population comes from CICRED (1974c). The share in 1955 is assumed to be equal to the share of 1956 from CICRED (1974a). The share in 1925 is extrapolated from the share in 1946 using the evolution of the share of 15-64-year-olds in the Muslim population of Algeria between 1925 and 1946. The share of 15-59-

²³ 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.

year-olds in the European population is given in the statistical yearbooks of Tunisia, and we assume that the share of 60-64-year-olds is the same as in Metropolitan France.

Urban population figures come from Eggiman (1999) for 1850, from the population census of 1921 for 1925, and from the population census of 1956 for 1955 (cities above 10,000 inhabitants).

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.

The share of 15-64-year-olds in the non-European population comes from Banens (2000). The share of 15-64-year-olds in the European population comes from the 1921 population census and the 1948 statistical yearbook of Indochina and is extrapolated to 1925, 1945 and 1955.

Urban population figures come from Chandler (1987) for 1850, for 1925 from an interpolation of the population censuses of 1921 and 1931, and for 1955 from a backward interpolation of the World Development Indicators figure of 1960.

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 (2014) 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 (2014) give figures for African countries in their post-independence borders, but French Cameroon was smaller during the colonial period because it 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 comes from the statistical yearbooks of AOF and AEF, and, for Togo and Cameroon, from France, *Ministère de la France d’Outre-mer* (1959).

The share of 15-64-year-olds in the European population in 1925 and 1955 is obtained by averaging the Algerian and Tunisian shares. The share of 15-64-year-olds in the non-European population in 1925 is supposed to be equal to the Algerian share (Muslim population). The share of 15-60-year-olds in the non-European population in 1955 is a weighted average (by total population) of the country-level estimates reported by Tabutin & Schoumaker (2004) for the year 1950 (Table A.11). The relative share of 60-64-year-olds is assumed to be the same as in 1954 Algeria (Muslim population).

Urban population figures come from Eggiman (1999) for 1850, from an exponential interpolation of Africapolis data for 1920 and 1930 for 1925 AOF and Togo²⁴, from Eggiman again for 1925 AEF and Cameroon (1930 figures extrapolated backward), and The World Bank (2017) for 1955 (1960 figures).

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).

The share of 15-64-year-olds in the European population in 1925 and 1955 is obtained by averaging the Algerian and Tunisian shares. The share of 15-64-year-olds in the non-European population in 1925 is supposed to be equal to the Algerian share (Muslim population). The share of 15-60-year-olds in the non-European population in 1955 is the estimate reported by Tabutin & Schoumaker (2004) for the year 1950. The relative share of 60-64-year-olds is assumed to be the same as in 1954 Algeria (Muslim population).

Urban population figures come from Eggiman (1999) for 1850 and for 1925 (interpolation of 1920 and 1930 figures), and from Eggiman and The World Bank (2017) for 1955 (average of Eggiman’s figure for 1950 and World Bank figure for 1960).

²⁴ We thank Eric Denis (UMR Géographie-Cités) and the Africapolis project for sharing their unpublished data on West African cities for the years before 1950.

Metropolitan France

In Metropolitan France, total population comes from Vallin and Meslé (2001) and population censuses. The share of 15-64-year-olds in total population comes from INSEE (1966).

PRICES

In Northern and Sub-Saharan Africa, monetary amounts collected in various budget sources are given in francs (“of the territory”); each territory had its own bank of issue, but each colonial franc was fully convertible at parity with the French franc. On Christmas day 1945, the French Parliament having just ratified the Bretton Woods agreements, the French government declared a new exchange rate between the French franc and the dollar to the International Monetary Fund, which corresponded to a 60% devaluation with respect to the exchange rate of 1940. The day after (December 26th), the franc of sub-Saharan Africa was renamed CFA franc (“*franc des colonies françaises d’Afrique*”) and appreciated at 1.7 French francs. The francs of Algeria, Morocco and Tunisia remained convertible at parity with the French franc. In 1948, after a new devaluation of the franc (of 44% with the dollar), the CFA franc was again appreciated at two francs. Then from 1948 onward, and until the devaluation of 1994, the CFA franc kept the same exchange rate with the French franc. The main objective of the appreciations of 1945 and 1948 was to boost the competitiveness of French exports to colonies, which had lost ground during WWII. Our own series indeed show that the official exchange rate roughly compensated for the inflation differential between Metropolitan France and French West Africa between 1939 and 1948, but that the CFA franc was likely overvalued in other regions where domestic inflation had been higher: French Equatorial Africa, Cameroon and Madagascar. 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 one *piastre* for ten francs. After the Second World War and the Japanese occupation, the exchange rate was fixed at one *piastre* for 17 francs, but it was largely overvalued, as evidenced by a black market exchange rate of less than ten 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 deflate and adjust 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 leads us to deflate public expenditure with the same Consumer Price Index (CPI) deflator we use 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.

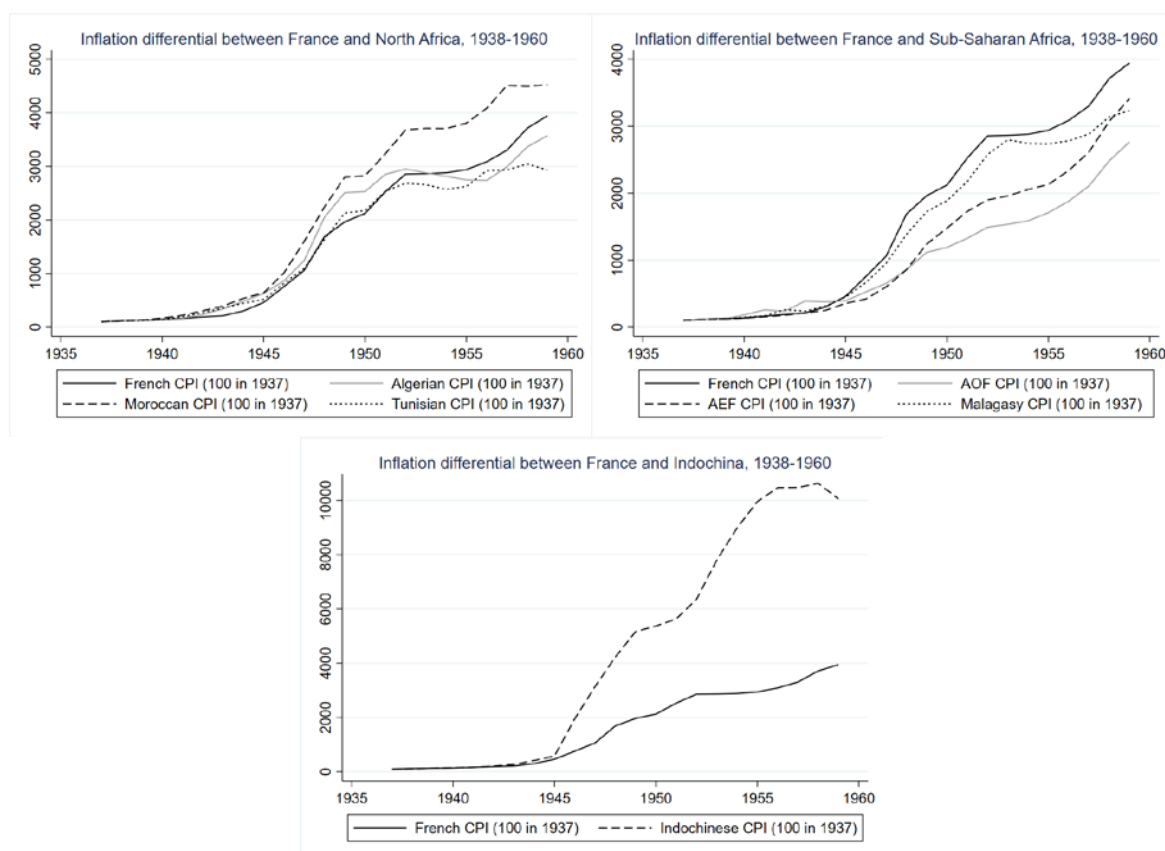
In the end, we adjust all our monetary aggregates using the following method: we use local CPIs to express monetary amounts in 1937 local currency (francs and *piastres*), and then use the relative cost of a basket of goods to adjust for purchasing power parity in 1937. Local CPIs were found in various 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 convert monetary amounts in French francs and deflate 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 infer price inflation between 1953 and 1960 by taking the difference between the nominal GDP growth and real GDP growth (see

section on GDP below).²⁵ After 1960, we rely on GDP deflators from The World Bank (2017).

Figure 7 compares the evolution of prices in France and its colonial empire between 1939 and 1960. The first panel displays 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 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 (see above), worth 1.7 Metropolitan francs, and its revaluation in 1948 to two Metropolitan francs, compensated exactly for the accumulated 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 two price indices is very wide, especially after World War 2. Despite this inflation differential, the exchange rate was fixed at one Indochinese *piastre* for ten francs from 1930 to 1945, and was increased instead of decreased in 1945, at one *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 one for ten was restored in 1953.

²⁵ 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.

Figure 7: Inflation differential between France and its colonies



Once we have expressed all monetary amounts in 1937 local currency using the local CPIs, we adjust for purchasing power parity (PPP) in 1937 using the relative cost of a basket of good. The products and weights used (displayed in table 4) closely follow those used by the French statistical office in the 1950s (INSEE, 1951).²⁶ They match the consumption pattern of a European or a member of the colonized elite. Table 5 presents the price of our basket of goods relative to Algeria, using the official conversion rate for the *piastre*.²⁷ 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 ten francs for a *piastre* is far greater than in the rest of the Empire.

²⁶ Since we always consider relative prices of baskets of goods, there is no need to specify units and quantities.

²⁷ We assume that in 1937, the price level in Algeria was very close to the price level in Metropolitan France.

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

Product	Weight
Starch (flour, rice)	11
Meat (chicken, beef)	18.4
Eggs and milk	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
Total	100.0

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

Algeria	1.00
Morocco	0.89
Tunisia	0.95
Indochina	0.63
West Africa and Togo	0.91
Equatorial Africa	0.85
Cameroon	0.82
Madagascar	0.80

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 combine two main sources. Contemporary national accounting exercises give us nominal GDP from the 1950s onwards, while historians' estimations of GDP growth in volume give us real GDP growth before 1950. These sources, laid out in details in the "Gross domestic product" section of the "List of sources" below, are 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.

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

In Morocco, we use the nominal GDP series of The World Bank (2017) from 1960 onwards. We use the growth of real GDP of Amin (1966) between 1920 and 1960, and of Maddison (2003) between 1820 and 1920. We do 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 take 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 is 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 use 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 take the nominal GDP series of Bassino (2000) for Vietnam (Cochinchina, Annam, and Tonkin) between 1820 and 1970, that we deflate using our CPI. The real GDP per capita of Cambodia and Laos is 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 rely on the nominal GDP series of The World Bank (2017) after 1960. World Bank GDP series start later in Mali (1968) and Guinée (1987), hence we rely on the nominal GDP figures given in Amin (1971). In 1953, we rely 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 are taken from the Maddison Project. Because we do not have 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 gives us a measure of price inflation that we use to deflate our public finance series.²⁸ Real GDP per capita before 1953 is obtained using the real GDP growth rates given in Maddison (2003).

²⁸ 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).

Finally, in Metropolitan France, we take the GDP at market prices from INSEE national accounts between 1949 and 2010, deflated using our GDP deflator. Between 1900 and 1949, we extrapolate 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 from Vincent (1972, p. 334) for 1913, 1929, and 1938. Between 1820 and 1900, we extrapolate backwards using annual growth rates estimated by Toutain (1987).

Extrapolation of GDP fluctuation from import and export series. Most of our sources estimate real GDP growth before 1950 only between a couple of key years.²⁹ We extrapolate deviations around an exponential trend using the fluctuations of imports and exports, for which we have yearly observations from Marseille (1984). We proceed in the following way: in the period 1950-1973 (when we have yearly observations of GDP, exports and imports), we estimate the following relationship for each country (or group of countries in the case of federations)³⁰:

$$\ln(GDP_t) = \beta + a \ln(exports_t) + \ln(imports_t) + c \times t + u_t$$

Where GDP, exports and imports are deflated in 1937 francs using the same deflator, and expressed in per capita terms. By the Frisch-Waugh theorem, this is equivalent to first estimating the deviations of GDP, exports and imports around an exponential trend:

$$\ln(GDP_t) = d_{GDP} + c_{GDP} \times t + e_{GDP,t}$$

$$\ln(exports_t) = \beta_{exports} + c_{exports} \times t + e_{exports,t}$$

$$\ln(imports_t) = \beta_{imports} + c_{imports} \times t + e_{imports,t}$$

Then estimating a and b from the residuals:

$$\hat{e}_{GDP,t} = a \hat{e}_{exports,t} + b \hat{e}_{imports,t} + v_t$$

We then use parameters a and b estimated for each country or group of countries to extrapolate the variations of GDP around an exponential trend from yearly series on exports and imports. For a given country, we observe GDP in year t and year $t + h$. We start by detrending the series of imports and exports between t and $t + h$ by estimating

$$\ln(exports_{t+i}) = \gamma_{exports} + k_{exports} \times i + e_{exports,t+i}$$

$$\ln(imports_{t+i}) = \gamma_{imports} + k_{imports} \times i + e_{imports,t+i}$$

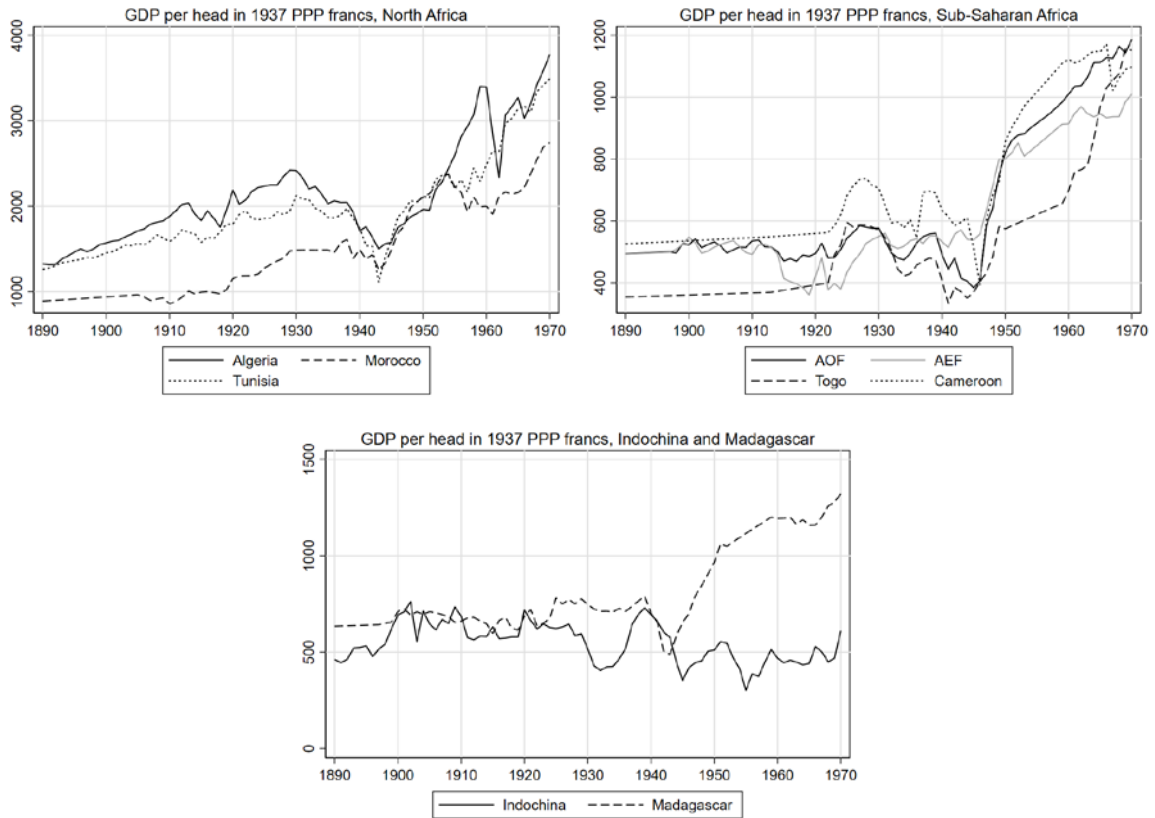
²⁹ Maddison (2003) gives an estimate of real GDP per capita for “Other countries of Black Africa” in 1820, 1870, and 1913. Amin (1966) gives estimates of real GDP in 1880, 1910, 1920, 1930, 1955 and 1960 in the Maghreb.

³⁰ We stop in 1973 to avoid the period following the oil shock, which might be very specific. The years on which this equation is estimated are 1950-1973 for Algeria, Tunisia and Morocco; 1947 and 1953-1973 for AOF, AEF, Cameroon and Madagascar; 1948 and 1950-1973 for Togo. We do not need to extrapolate GDP from imports and exports in Indochina as complete series are already given in Bassino (2000).

For i between 0 and h . We then compute the deviation of GDP from an exponential trend from the residuals: $\hat{e}_{GDP,t+i} = \hat{a} \hat{e}_{exports,t+i} + \hat{b} \hat{e}_{imports,t+i}$. Then we can write GDP at time $t + i$ as $\ln(GDP_{t+i}) = \gamma_{GDP} + k_{GDP} \times i + \hat{e}_{GDP,t+i}$. Because we know GDP at the two endpoints t and $t + h$, we can compute parameters γ_{GDP} and k_{GDP} and compute GDP at every intermediate point.³¹

Our GDP estimations can be seen in figure 8, displaying the evolution of GDP per capita in 1937 francs in the nine regions of our database.

Figure 8: Estimation of GDP per head in the nine regions of the French Empire



ALTERNATIVE ESTIMATES OF GROSS DOMESTIC PRODUCT

As a robustness exercise, we build alternative GDP per capita figures using wage and urbanization data that were not used in the construction of our main estimates. Because wage data are scarce, we only produce these alternative estimates for the years 1925, 1937, 1949 and 1955, and for North Africa, AEF, AOF and Indochina.

³¹ In a previous version of the paper, we did not try to estimate GDP fluctuations and assumed constant annual growth rates between key years. Our GDP estimates were therefore moving averages missing the yearly variations in GDP growth due to, for example, fluctuations in the prices of exported primary products.

We start by estimating the wage rate for four groups of workers: Europeans (and other minorities like Jews in North Africa), skilled urban workers, unskilled urban workers, and rural workers. Unless noted, all wage data come from statistical abstracts. Wages are given in different time units (hours, days). We harmonize assuming 8 hours of work a day and 312 days of work a year, like Frankema and van Waijenburg (2012) who follow Robert Allen (2009).

Europeans: In North Africa, the average wage of the European worker is estimated as the average wage in France (from Piketty 2019). Indeed, the distribution of occupations among North African settlers was very similar to the distribution in Metropolitan France (Alvaredo, Cogneau and Piketty 2020). In each North African colony, this puts the average wage of Europeans below the average wage of French civil servants, who were more skilled and earned a colonial bonus (“*tiers colonial*”). Outside of North Africa, we estimate the average European wage as the average wage of French expatriate civil servants, that we collected in the budgets of Indochina and Madagascar in 1925 and circa 1945. In Indochina, we use the 1945 wage for 1949 and we interpolate 1937. In AOF and AEF, we use the average wage of French civil servants in 1925 Madagascar and, to obtain subsequent years, we use the nominal growth rate of the average wage in France, but we apply a decrease in the colonial bonus (“*supplément colonial*”) from 70% to 40% after World War II.

Urban autochthons: For North African colonies, statistical abstracts give the minimum wage for a male urban unskilled worker (“*manœuvre homme*”) in the years 1936-39, 1948 (1952 for Morocco) and 1955 (1954 for Morocco). After WW2, the minimum wage is differentiated by city size, but the variance is not large, so we compute a simple average. For the year 1925, we take the minimum wage (in real terms) of 1938 in Algeria, of 1936 in Tunisia, and in Morocco the estimate of the wage of unskilled laborers given in Ayache (1957, p. 421) for 1931. For the five colonies of Indochina, statistical abstracts give the average wage of male unskilled laborers in the years 1931, 1937 and 1948 (only 1948 for Cambodia and Laos). We compute a weighted average of the colony-level wages using the population weight of the main cities in 1948 (using the statistical abstract for that year).³² For 1925, we use the figure of 1931 (in real terms). In West and Central Africa, statistical abstracts give the minimum wages set in the main cities in 1938 or 1939 (including a typical food ration). We compute a weighted average using the city populations in 1950 (using the

³² Saigon and Cholon for Cochinchina, Hue for Annam, Hanoi and Haiphong for Tonkin, Pnomh-Penh for Cambodia and Vientiane for Laos.

Africapolis database for AOF, and Eggiman 1999 for AEF).³³ For 1925 in AOF, we use the minimum wage applying to Côte d'Ivoire in 1924, given in Labouret (1936). We obtain figures for the years 1949 and 1955 using the nominal growth rate of the minimum wage in Dakar (1930-1954) given in Thioub (1994, p. 444).³⁴ For 1925 in AEF, we use the wage of the lowest-rank policeman ("*garde de cercle de 4ème classe*"). For 1955, we use the minimum wage in Libreville (Gabon) given in Lasserre (1958, p. 280), that we multiply by the ratio of the AEF average to the Libreville wage in 1938/39. For 1949, we interpolate. In all colonies, we assume that most urban workers are paid the unskilled wage, but that a minority (20%) earn twice the unskilled wage.

Rural autochthons: For North African colonies, statistical abstracts give the agricultural minimum wage in 1948 and 1955 (1952 and 1954 for Morocco). In Algeria and Tunisia, the minimum wage is differentiated by area, but the variance is not large, so we compute a simple average. In 1925 and 1937 (when there was no agricultural minimum wage), we estimate the ratio of the rural wage to the urban unskilled wage to be the same as in 1948.³⁵ Outside of North Africa, no agricultural minimum wage was ever set. We estimate the rural wage to be half of the unskilled urban wage in each year (this corresponds to the ratios observed in North Africa).³⁶

To get at total labor income, we need an estimate of the number of workers in each group. First, we assume that one third of the population received a labor income. This is a standard assumption in the "welfare ratios" literature, where individual wages are compared to a consumption basket for a family of three people (Allen 2009; Frankema and van Waijenburg 2012). Then, to compute the share of the population in each group, we use our estimates of European population and urbanization rates. We assume that 20% of urban workers were skilled workers. This assumption is quite arbitrary, as is the corresponding assumption that skilled workers earned twice the unskilled wage. For Indochina, AEF and AOF, we explore another route: we obtain very similar estimates of GDP per capita if, instead of breaking down urban autochthonous population between skilled and unskilled, we break it

³³ Dakar, Bamako, Conakry, Abidjan, Bobo Dioulasso, Niamey and Cotonou in AOF; Brazzaville, Pointe Noire, Libreville, Bangui, Fort-Lamy and Fort-Archambault in AEF.

³⁴ For 1955, we can use instead the minimum wage in Dakar for 1956 (Fall 2011, p. 219) and extrapolate to AOF by multiplying by the ratio of the AOF average to the Dakar figure in 1938. The difference is minute.

³⁵ Ratios for 1948 are 59% in Algeria, 56% in Tunisia, and 52% in Morocco. Ratios for 1955 are respectively 55, 52 and 57%.

³⁶ The figures obtained are close to those reported in Alfani and Taddei (2017) on urban unskilled monthly income and farm monthly income for Senegal (1939, 1949 and 1954), Côte d'Ivoire (1939, 1949 and 1954) and for Oubangui-Chari (1953), provided that we take 2/3 of farm income in order to discount the land rent.

down between government employees and all other urban workers. We compute the average wage of autochthonous government employees from the average public wage by assuming (i) that the French made 12% of public employment, like in Indochina or Madagascar in 1925 and 1945, (ii) that French civil servants were paid the average European wage.

Finally, to obtain GDP, we multiply total labor income by 3/2, following a classical rule of thumb in macroeconomics (e.g. Johnson 1954) according to which labor income makes 2/3 of GDP while capital income and land rents make the remaining 1/3.

Table 6 reports these alternative GDP per capita estimates, and how they compare to our main estimates, for the years 1925 and 1955 (Table 7 reports estimates for the intermediary years 1937 and 1949).

Table 6: Alternative GDP per capita estimates using wage data (1925 & 1955)

	1925			1955		
	(A)	(B)	(A)/(B)	(A)	(B)	(A)/(B)
	Alternative estimate	Main estimate	Ratio	Alternative estimate	Main estimate	Ratio
Algeria	2,061	2,235	0.92	3,241	2,594	1.25
Tunisia	1,736	1,858	0.93	2,911	2,207	1.32
Morocco	857	1,278	0.67	1,659	2,228	0.74
Indochina	514	623	0.83	n.a.	302	n.a.
AOF	522	545	0.96	1,094	916	1.19
AEF	424	434	0.98	736	844	0.87

Notes: all GDP per capita estimates are in 1937 francs (PPP)

In 1925, the alternative estimate is always lower than the main one, but only in Morocco is the difference between the two estimates substantial. There, the alternative estimate is only two thirds of the main one. It might be that our main estimate of Moroccan GDP is overestimated, but it might also be that minimum wages in Morocco were set at very low levels. In any case, adopting these lower figures of GDP per capita would increase our estimated revenue to GDP ratios, and therefore reinforce our conclusion of high fiscal extraction.

In 1955, the alternative estimate is lower than the main one for Morocco and for AEF.³⁷ However, it is 20 to 30% higher for Algeria, Tunisia and AOF.³⁸ Yet, a correction of

³⁷ In Morocco, the alternative estimate is also lower in 1949, and particularly low in 1937, at 50% only of the main figure, which might underestimate the impact of the Great Depression (Ayache 1957). In AEF, the alternative estimate is also much lower in 1937 and 1949.

our revenue to GDP ratios by 20 or 30% would not undermine our conclusion of high fiscal extraction, as these three territories are displaying the highest revenue to GDP ratios in 1955.

Table 7: Alternative GDP per capita estimates using wage data (1937 & 1949)

	1937			1949		
	(A)	(B)	(A)/(B)	(A)	(B)	(A)/(B)
	Alternative estimate	Main estimate	Ratio	Alternative estimate	Main estimate	Ratio
Algeria	2,261	2,044	1.11	2,037	1,914	1.06
Tunisia	2,091	1,895	1.10	2,102	2,051	1.02
Morocco	757	1,572	0.48	1,378	2,045	0.67
Indochina	586	642	0.91	370	504	0.73
AOF	537	549	0.98	806	748	1.08
AEF	243	527	0.46	508	800	0.64

Notes: all GDP per capita estimates are in 1937 francs (PPP)

DEVELOPMENT OUTCOMES AND TRADE DATA

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. Trade data (exports and imports) come from Marseille (1984), the Franc Zone reports (*Comité Monétaire de la Zone Franc*, various dates), and The World Bank (2017).

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).

³⁸ It is also the case in 1937 and 1949, though the gap between the two estimates is smaller in these years.

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. It does not include social security transfers. 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_au**) and for Europeans (**exp_education_eu**). 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 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 four 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. It does not include social security transfers. 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 difference 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)

Our measure of net public expenditure includes civilian expenditure only. Military expenditure is given separately by the variable **exp_mili**. The bulk of colonial military expenditure appears in the budget accounts of the French Ministry of the Colonies and Ministry of War. 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 (**netsubto**). Military expenditure appears directly in colonial budget accounts only for the Southern Territories of Algeria between 1904 and 1937, Morocco between 1921 and 1937, and again in 1956 (the amounts are very small compared to those recorded in the budget accounts of the Ministry of War). Military expenditure also appears in the budget accounts of Algeria between 1830 and 1900, but it is not financed locally and corresponds to the expenditure financed by the Ministry of War. Finally, military expenditure appears in

the budget accounts of Indochina in 1953 (a year for which the budget accounts of the Ministry of War is not available). More precisely, this military expenditure is found in the national budgets of Vietnam, Laos and Cambodia, and in the regional budget of North Vietnam (Tonkin). Total security expenditure is not broken down between civilian and military, but personnel expenditure is. We use the share of military in personnel expenditure to infer total military expenditure from total security expenditure.

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, NPR includes transfers (subsidies, loans, and reimbursements) from firms and institutions located within the region, as well as transfers from second-level administrative divisions (municipalities). NPR does not include social security transfers.

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_intermedi**), such as land taxes and business licenses (*patente*), and indirect intermediate taxes (**re_intermedi_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 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_adm2gc)

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 $NPR^* = NPR - sub_adm2gc + NPR_adm2$.

Social security transfers (re_socsec and exp_socsec)

Social security transfers are not part of net public expenditure (NPE) and net public revenue (NPR). There were no social security transfers in the colonies before World War II. In 1945, social security funds were created in the colonies and protectorate of North Africa. The variable re_socsec gives social security contributions and the variable exp_socsec social security benefits.

Total population (pop)

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.

Share of 15-64-year-olds (share1564)

See section “Population, prices, and GDP” above and the “List of sources” below. The population share of 15-64 year-olds is estimated only in 1925, 1945 and 1955. In North Africa and Indochina, we estimate the share of 15-64-year-olds in the Autochthonous population (**share1564_au**) and in the European population (**share1564_eu**).

Price deflator (deflator)

See section “Population, prices, and GDP” above and the “List of sources” below. The price deflator, base one 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).

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.

Value of exports per capita in 1937 PPP francs (export_val)

See section “Development outcomes and trade data” above and the “List of sources” below.

Value of imports per capita in 1937 PPP francs (import_val)

See section “Development outcomes and trade data” above and the “List of sources” below.

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 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 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.

Total population (pop), share of 15-64-year-olds (share1564), price deflator (deflator), purchasing power parity adjustor (PPP_adjustor), GDP per capita (GDP)

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

LIST OF SOURCES

To build our public finances 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 (<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.

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Togo

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Togo. *Compte définitif des recettes et dépenses du budget local du Togo pour l'exercice...* 1923-1938, 1947, 1950, 1952. [BnF: FOL-LK19-857]

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Togo. *Budget local du Togo pour l'exercice...* Gorée: Impr. du Gouvernement général. 1920-1922, 1924-1944, 1947-1950, 1952-1954, 1956. [BnF: NUMP-3562 & FOL-LK19-504]

Afrique Equatoriale Française

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Federal budget accounts — definitive

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Colonial budget accounts: Moyen-Congo — definitive

Afrique Equatoriale Française. *Budget local du territoire du Moyen-Congo : compte définitif des recettes et des dépenses. Exercice...* Brazzaville: Impr. Officielle du gouvernement general, 1927-1956. [BnF: NUMP-3520 & FOL-LK19-579]

Colonial budget accounts: Moyen-Congo — provisional

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Colonial budget accounts : Gabon — definitive

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Colonial budget accounts : Gabon — provisional

Gabon. *Budget local : exercice... / Afrique équatoriale française, Territoire du Gabon*. Various places and publishers, various dates between 1890 and 1958. [BnF: FOL-LK19-371, FOL-LK19-778 & FOL-LK19-796]

Colonial budget accounts : Oubangui-Chari — definitive

Afrique Equatoriale Française. Oubangui-Chari. *Compte définitif des recettes et des dépenses : budget local : exercice...* . Paris : E. Larose, 1925, 1926, 1951. [BnF: NUMP-3526 & FOL-LK19-576]

Colonial budget accounts : Oubangui-Chari — provisional

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Colonial budget accounts : Chad — definitive

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Colonial budget accounts : Chad — provisional

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Cameroon

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Budget accounts of Madagascar — provisional

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Algeria

Retail price index in Algiers, 33 products (1938-1957)

Algeria, Sous-direction des statistiques. *Annuaire statistique de l'Algérie. Nouvelle Série. Volume 1 (1939-1947)*. Table XIII, p. 250. [BnF: LK8-1043 (BIS)]

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Retail price index in Casablanca (1914-1959)

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Retail price index (1938-1968)

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Indochina

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Cost of living index for Europeans in Saigon and in Hanoi (1911-1940)

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Consumer price index for blue collars in Saigon (1941-1948)

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Consumer price index for Europeans in Saigon and Hanoi (1949-1954)

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Afrique Occidentale Française

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.

Import prices of flour, oil, sugar, soap, and cotton (1938-1944)

Afrique occidentale française, Service de la statistique générale. *Annuaire statistique de l'Afrique occidentale française. Vol. 4 : 1939-1951*. Dakar: Impr. de la Mission. Table IV, p. 264-67. [BnF: 4-LC32-139]

Cost of living index for Europeans in Dakar (1945-1955) and Abidjan (1947-1955)

Afrique occidentale française, Service de la statistique générale. *Annuaire statistique de l'Afrique occidentale française*. Vol. 5 : 1950-1954. Dakar: Impr. de la Mission. Tables 1-3-21 and 1-3-22, p. 330-31. [BnF: 4-LC32-139]

Togo

We did not find prices for Togo before 1960 and we use the consumption price index of AOF (see above).

Afrique Equatoriale Française

Consumption price index for Europeans in Brazzaville (1938-1955)

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Consumption price index for Europeans in Bangui (1951-1955) and Fort-Lamy (1950-1955)

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Cameroun

In Cameroun, we use the consumption price index of Brazzaville to infer inflation between 1938 and 1951.

Consumption price index in Douala (1952-1955)

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Madagascar

Consumption price index for Europeans in Antananarivo (1938-1951)

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Consumption price index for Europeans in Antananarivo (1952-1955)

Institut national de la statistique et des études économiques (France). *Annuaire statistique de la zone franc*. Paris, 1958. Table 1, p.159. [BnF: 4-LC25-321]

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