
The Black Man's Burden: The Cost of Colonization of French West Africa

ELISE HUILLERY

Was colonization costly for France? Did French taxpayers contribute to colonies' development? This article reveals that French West Africa's colonization took only 0.29 percent of French annual expenditures, including 0.24 percent for military and central administration and 0.05 percent for French West Africa's development. For West Africans, the contribution from French taxpayers was almost negligible: mainland France provided about 2 percent of French West Africa's revenue. In fact, colonization was a considerable burden for African taxpayers since French civil servants' salaries absorbed a disproportionate share of local expenditures.

On 23 February 2005 the French Parliament adopted a law requiring history textbooks to recognize the positive role of colonization (law n° 2005-158¹). The proponents of this law argued that French colonization had given the colonies massive investments in education, health, and infrastructure that facilitated their development. The argument usually comes with two corollaries: first, colonization benefited the colonies, and second, colonization burdened French taxpayers. This perspective on colonization was far from unanimous and passage of the law rekindled a raging public and academic debate. After several weeks of intense debate among academic historians and civil society, the controversial article of the law was repealed.

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Elise Huillery is Assistant Professor, Economics Department, Sciences Po, 28 rue des Saints Pères, 75007 Paris, France. E-mail: elise.huillery@sciences-po.fr.

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¹ Article 4: "Les programmes scolaires reconnaissent en particulier le rôle positif de la présence française outre-mer, notamment en Afrique du Nord."

This French political episode is part of a broader international debate on the costs and benefits of colonization. Britain by 1901 ruled a formal empire of 11.2 million square miles, with a population of almost 400 million spread over the whole world (Foreman-Peck 1989), while some 79 million people scattered over 4.6 million square miles were ruled by France (Fitzgerald 1988). The debate on the costs and benefits of colonization concerns both the colonizers and the colonies. On the colony side, colonization has been often viewed as a cause of the “African Tragedy” (Bairoch 1993), partly based on the idea that African underdevelopment is rooted in the imperial exploitation of the colonies. According to this view, colonization provided the possibility of economic exploitation because it created barriers to market entry, redistributed rights, and imposed obligations (see Ferro 2003; Liauzu 2004; Bancel, Blanchard, and Lemaire 2005; Manceron 2005 for the French colonization; for a broader discussion, see Foreman-Peck 1989). Moreover, recent research shows that colonial history had persistent effects on current development (Banerjee and Iyer 2005; Huillery 2009, 2011; Feyrer and Sacerdote 2008; Head, Mayer, and Ries 2010), suggesting that colonial economic features could explain a part of long-term African growth. On the other hand, the view that the colonies benefited from massive public and private investments made also good progress. Lance Davis and Robert Huttenbach (1986) depict British imperialism as a mechanism to create an income transfer from the tax paying middle class to the elites in which the ownership of imperial enterprise was heavily concentrated, with some slight net transfer to the colonies in the process. In their view, the main benefit for British colonies was related to state building and protection because the United Kingdom bore most of the defense costs of the British Empire. Jacques Marseille (1984) points to the fact that the colonies received substantial public subsidies from France. Marseille (1996), Daniel Lefeuvre (2005), François Bloch-Lainé (1956), and Jean-Marcel Jeanneney (1963) also support the idea that the metropolis funded large public investments in education, health, and infrastructure. Finally, Catherine Coquery-Vidrovitch (1982) finds that France funded 13 percent of annual public investment in French West Africa from 1905 to 1937. The debate on the economic costs and benefits of colonization for the colonies thus oscillates between exploitation and paternalism, with unclear effects on postindependence African development.

On the colonizer side, colonization was unquestionably perceived as a political asset (so long as the country possessed a great overseas empire, France and Great Britain’s voice would continue to count for

something in world affairs), but the economic profitability for Great Britain and France is nothing less than controversial. Was colonization both politically and economically profitable? If not, what was the price to pay for the international status earned by the empire? In the 1970s most scholars claimed that the French and British economies benefited greatly from low cost imports and from protectionist commercial policies that provided markets for French and British exports (Edelstein 1994; Arghiri 1969; Vanhaeverbeke 1970; Amin 1971, 1973). In the absence of the empire, the colonies could have placed higher tariffs on imperial exports, worsening British and French terms of trade and lowering British and French exports. Avner Offer (1993) also writes that British “investments in defense in empire secured sources of vital raw materials and manufactures during World War I, so that if there was any subsidy to the dominions, it was amply repaid.” Conversely, John Keynes believed British savings would have been better employed at home in creating jobs and modernizing the capital stock of the British economy (Moggridge 1992, p. 422). Marseille 1984, Davis and Huttenback 1986, Patrick O’Brien (1988), Edward Fitzgerald 1988, and Foreman-Peck 1989 followed this idea and provided evidence that colonization was costly to imperial economies. They made three arguments: first, public investments in the colonies were burdensome for French and British taxpayers;² second, the mainland private sector suffered because some private investment was diverted towards the colonies and earned lower than expected returns; and third, colonial trade led to lower productivity gains due to a lack of competition and colonial protectionism (Marseille 1984; O’Brien 1988).

Can it really be that the empire was economically bad for both the colonizers and her colonies? In the absence of a quantitative study like Davis and Huttenback’s, there is little hard evidence to support either of these views of French colonization. The question is vast, including economic aspects (costs and benefits from private and public investments and from colonial trade), political aspects (international voice, state building, legal system, institutions, and their quality) and demographic aspects (new diseases flows and men from the colonies serving in mainland army, among other issues).

² Davis and Huttenbach (1986) argue that British taxes would have been 20 percent less in the absence of empire because the United Kingdom bore most of the defense costs of the British Empire; Marseille (1984) estimates that the investment in public financial assets in the colonies amounted to 7 percent of metropolitan public expenditures in the 1910s, and 4 percent from 1947 to 1958; Marseille (1996) estimates that the trade deficit compensated by France’s public subsidies to the colonies represented 8–9 percent of metropolitan expenditure in the 1920s and from 1945 to 1962.

This article has a modest goal: I ask who paid for the public expenditures in French West Africa and also ascertain the extent to which French subsidies to West Africa weighted down mainland expenditures. To do this, I ignore the fact that tax revenue in both France and West Africa would have been different in the absence of colonization, because I lack the counterfactual situation in which France and West Africa would not have engaged into imperial relationships. The questions I address are: What share of French expenditure was allocated to West Africa? What share of West Africa's revenue was provided by France? These two questions are crucial since scholars and politicians who claim colonization had a "positive role" make essentially the two arguments that the colonies benefited from imperial public investments and that mainland taxpayers sacrificed local investments for investments in the colonies. In the 1970s a team of economic historians supervised by Jean Bouvier and Catherine Coquery-Vidrovitch³ started collecting colonial budget data to answer these questions. François Bobrie and Coquery-Vidrovitch published some analysis of the financial transfers between the metropolis and the colonies, but unfortunately the analysis remained incomplete⁴ (Bobrie 1976; Coquery-Vidrovitch 1973, 1982). Jacques Marseille has been credited with finally ascertaining the cost of colonization for French taxpayers when he published his dissertation in 1984 (Marseille 1984), but his analysis is based on indirect evidence on colonial trade deficits.

I compiled a new data set on the financial transfers between France (hereafter the metropolis) and one specific territory of the former French Empire, French West Africa (Afrique Occidentale Française, thereafter AOF). The AOF was part of a vast empire⁵ that also included other colonies (Vietnam, Algeria, French Equatorial Africa,⁶ and Madagascar), protectorates (Tunisia, Morocco, Cambodia, and Laos), and mandates (part of Cameroon, part of Togo, Syria, and Lebanon). The AOF was a federation of eight colonies: Dahomey (now Bénin), Haute-Volta (Burkina-Faso), Côte d'Ivoire, Guinée, Soudan français (Mali), Mauritanie, Niger, and Senegal. After few exploratory missions starting in 1844, the first French military push in West Africa began in 1854 from the Senegalese coasts and arrived at the west side of current Mali in the late 1850s. Until 1880 colonial military campaigns were

³ Recherche Coopérative sur Programme (RCP), CNRS, "Commerce, investissements et profits dans l'empire colonial français," n°326, 1973–1979.

⁴ Part of the collected data was lost while the university moved, especially data on French West Africa.

⁵ I let aside the territories that remain French today, since colonization is still ongoing there.

⁶ Gabon, Congo-Brazzaville, Tchad, and Centrafrique.

limited to coastal incursions in current Senegal, Mauritania, Guinea, and South Benin. The process amplified in the 1880s, leading to the official creation of French West Africa in 1895, although no drastic modifications for local people occurred before 1900–1910 except in few coastal localities. The federation abolished in 1960. I collected budgetary data from 1844 to 1957 at the colony, federation, and metropolis levels in order to get a comprehensive view of financial transfers in both directions—from Paris to Africa and from Africa to Paris. Obviously AOF is not representative of all French colonies. Nevertheless, this study is an important building block for any understanding of the French Empire. Colonization varied significantly from one territory to another within the French Empire since institutions and economic policies were fit to local conditions. For this reason, it seems crucial to differentiate the analysis by territory to paint an accurate picture of the cost of French colonization. For the former colonies, whose development paths since independence have differed significantly, it is also more informative to learn about each territory separately rather than as a whole.

This article thus attempts to clarify the debate on the cost of French colonization in the specific case of French West Africa. Unlike the existing literature, the article uses firsthand budgetary data covering the whole colonial period. I also distinguish subsidies (public aid) from loans (investments). That distinction, or rather the failure to make it is a major reason why the budgetary cost of colonization has been misinterpreted so far. Moreover, the article considers not only the transfers from Paris to Africa but also those from Africa to Paris which, when ignored, have led to an overestimation of France's contribution to Africa's revenue. The effort therefore provides a more reliable and comprehensive view on colonial public finance in French West Africa.

I find that the costs of AOF's colonization for the metropolis were low. From 1844 to 1957 France devoted on average 0.29 percent of its public expenditures to AOF's colonization. Colonization of French West Africa was profitable for France to the extent that the impact on cumulative domestic production exceeded 3.2 billion 1914 francs. The military cost of conquest and pacification accounts for the vast majority (80 percent) of the average annual cost. The cost of central administration in Paris accounts for another 4 percent. So subsidies to AOF account for only 16 percent of the average annual cost, meaning that less than 0.05 percent of annual total metropolis public expenditures were devoted to AOF's development.⁷

⁷ In section 4, I discuss why military and central administration expenditures are not considered as contributions to AOF's development.

For French West African taxpayers, French contribution was not as beneficial as has been argued. From 1907 to 1957⁸ the metropolis provided about 2 percent of French West Africa's public revenue. Local taxes thus accounted for nearly all of French West Africa's revenue. These resources supported the cost of French civil servants whose salaries were disproportionately high compared to the limited financial capacity of the local population. Administrators, teachers, doctors, engineers, lawyers, and so on, were paid French salaries and got an additional allowance for being abroad. Thus, in the colonial public finance system, most revenues were collected on an African basis while being spent on a French basis. To illustrate this point, I show that colonial executives (eight governors and their cabinets) and district administrators (about 120 French civil servants) together accounted for more than 13 percent of local public expenditures. These findings imply that colonial public finances imposed a far larger black man's burden than any white man's burden.

THE WELFARE EFFECT OF COLONIZATION ON TAXPAYERS

To start let us make the mechanisms through which colonization affected the welfare of taxpayers explicit.

Taxpayers are assumed to value government spending equally to private consumption so public expenditure adds to private income in taxpayers' disposable income. Moreover, taxation is assumed non-distortionary so domestic production Y does not depend on tax rate τ . Taxpayers' welfare W is a strictly increasing function f of disposable income, which depends on domestic production Y , tax rate τ , and public expenditure G . The economy is therefore defined by the triplet (Y, τ, G) : $W = f((1 - \tau)Y + G)$.

The counterfactual that I consider here is the absence of colonization. In the absence of colonization (hereafter, tilda refers to this counterfactual), public expenditures are simply equal to the tax revenue: $\tilde{G} = \tau\tilde{Y}$, thus the welfare of taxpayers depends only on domestic production: $\tilde{W} = f(\tilde{Y})$.

Colonization leads the metropolis and the colony to increase their bilateral trade of goods and capitals, which has an impact on domestic production Y . It also leads to transfers of public resources between the metropolis and the colony. Let T_o denote public resources devoted

⁸ This period of time is the largest one over which French West Africa's revenue can be observed.

to the other economy, and T_i denote public resources received from the other economy. So in presence of colonization, public expenditures are defined by: $G = \tau Y + T_o - T_i$ and $W = f((1 - \tau)Y + G) = f(Y + T_i - T_o)$.

Whether colonization increases the welfare of taxpayers is therefore simple to characterize:

$$\tilde{W} \leq W \Leftrightarrow f(\tilde{Y}) \leq f(Y + T_i - T_o)$$

But as long $f(\cdot)$ is increasing that is equivalent to:

$$\begin{aligned} \tilde{W} \leq W &\Leftrightarrow \tilde{Y} \leq Y + T_i - T_o, \text{ or} \\ \tilde{W} \leq W &\Leftrightarrow T_o - T_i \leq Y - \tilde{Y} \end{aligned}$$

Colonization improves welfare as long as the variation in domestic production due to colonial trade of goods and capitals is larger than the net public transfers from one economy to the other. This simple formalization of the problem leads to clear welfare effects on taxpayers: For an economy that receives transfers, colonization is beneficial for taxpayers as long as domestic production falls by less than the subsidy it receives. In contrast, for an economy that makes positive net transfer, colonization is beneficiary for taxpayers only if domestic production rises enough to compensate the subsidies.

The contribution of this article is to provide T_o and T_i for both the metropolis and French West Africa, thus providing a lower bound on the variation in domestic production that would make colonization beneficial for French and West African taxpayers: $T_o - T_i$. This work also finds τY (tax revenue) in French West Africa, from which Y can be inferred using an estimation of the average tax rate.⁹ Data on Y in the metropolis is already available from French national accounts.

The remaining parameter \tilde{Y} is the counterfactual domestic production in the absence of colonization. In contrast to the other parameters, it cannot be observed and its estimation would require building counterfactual French and West African economies without French colonial rule. For the French economy, colonization mainly affected the terms of trade and foreign investments. An estimation of \tilde{Y} would thus require assessing how export and import prices varied due to the colonial rule, how much trade flows responded to this price variation, how much transaction costs decreased in the colonies compared to the rest of the world, how this decrease distorted foreign investments in favor of the colonies, and how

⁹ Such an estimation is not an easy task, but I think that it would be feasible since the colonial budgets report the tax rate for each tax (or at least the main ones) in the economy.

the profitability of foreign investments in the colonies compared with foreign investments out of the colonies. In this article, I do not answer any of these questions so I cannot comment on the overall welfare effects of colonization for French taxpayers. For the West African economy, colonization not only affected the terms of trade and foreign investments, but more fundamentally the whole economic and political institutions. For this reason, I argue that an estimation of the counterfactual African domestic production might be out of reach.

DATA

The original data sets used in this article and related documentation are available online at <http://econ.sciences-po.fr/staff/elise-huillery> (“Public Finance Data”).

COLONIAL PUBLIC FINANCES IN AOF

Colonial public finances in AOF were based on three levels of budgets: metropolis, federation, and colony. Let us examine each in turn.

Metropolis Level

At the metropolis level, colonial expenses were part of the budget of the French Ministry of Colonies (before 1894 Ministry of Naval Forces and Colonies). Expenses incurred at the metropolis level are threefold: First, military expenses for colonial conquest and pacification: salaries, housing and transport, and military equipment. Second, administrative costs in the metropolis: the Ministry of Colonies, Geographical, Inspection, and Registration sections, communication costs (mail and telegraph), information campaigns (propaganda material), grants to emigrants to the colonies, grants to schools for colonial officials (ENFOM), and the cost of colonial exhibitions. Third, subsidies to AOF: subsidies to the federation government, public companies, and private companies.¹⁰

¹⁰ For instance, the private railway company La Société de Construction des Batignolles received subsidies from the metropolis to construct the line Dakar-Saint-Louis from 1882 to 1885. The metropolis budget continued to transfer resources to the company to fill the gap between running cost and revenue until 1928. The other railway lines (Thiès-Kayes-Koulikoro, Conakry-Kankan, Abidjan-Ouagadougou, and Porto-Novo-Cotonou-Parakou) were constructed by public railway companies, in other words railway companies that were owned by the government.

Federation Level

The federation received its revenues from federation taxes, mostly on trade, as well as transfers from the metropolis and colony budgets. Occasionally, the federation received short-term loans from the metropolis or from the loan budget (compare infra), which were reimbursed within the same financial year (or in the subsequent year in some cases). Federation expenses included the operating costs of the federation's administration (personnel and capital), and some equipment expenses related to large-scale infrastructure like trans-colonial railways and seaports. The federation also provided some subsidies to the colonies (which were partly rebates on the customs revenue collected from each colony) as well as private companies and the metropolis. Finally, the federation had to service public loans.

Some auxiliary budgets supplemented the federation budget. First, there was the "loan budget" (*compte de l'emprunt*), whose revenue was based entirely on the disbursements of public loans. The AOF authorities contracted six loans in 1903, 1907, 1910, 1914, 1931, and 1932. These loans had to be approved by the French Parliament, because they were guaranteed by the French government. The majority of the funds were allocated to large-scale infrastructure projects and a smaller portion was invested in health and education.

Second, "special budgets" (*budgets spéciaux*) supported public companies working on large infrastructure projects such as railways, the port of Abidjan, the port of Dakar, and the port of Conakry. Their revenues came from the federation, the metropolis, allocations from loans, and the companies' own revenues from operations. A few short-term loans were also received from the metropolis and repayments were charged to the federation. So the only expenses supported by the special budgets were the operations of the companies.

Colony Level

Colonies received revenue from local taxes, as well as transfers and cash advances from the federation. Colony budgets covered local colonial administration (government of the colony and administration of districts and subdivisions, judicial services, security services, and treasury services), public support for agricultural and industrial activities, and public investments in education, health, and infrastructure.

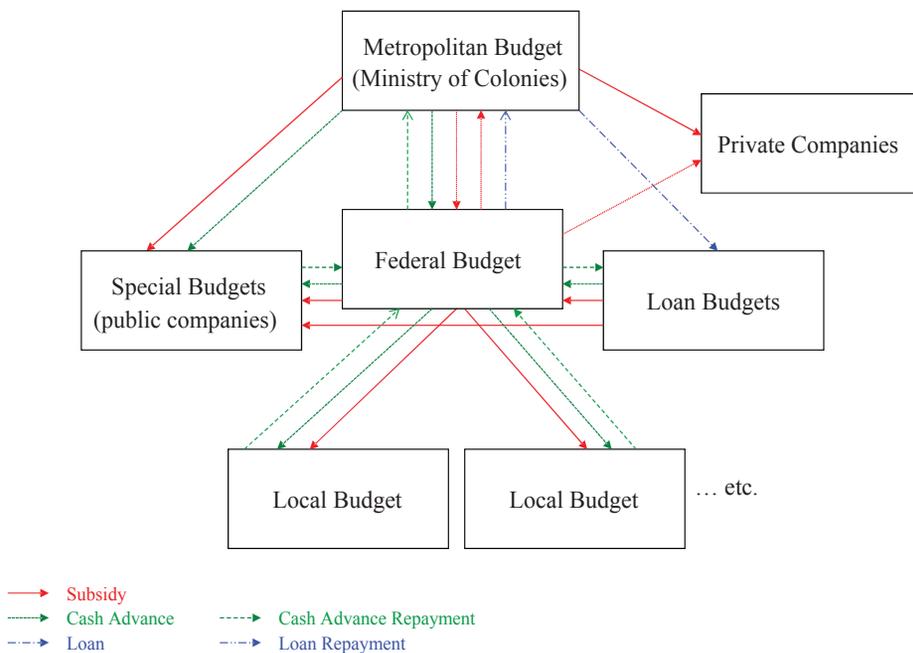


FIGURE 1
STRUCTURE OF COLONIAL PUBLIC FINANCES IN AOF

Notes: The figure represents the flow of financial transfers among the different budgets.
Sources: Author's computation from colonial budgets.

Figure 1 summarizes the structure of the AOF's public finance system and the flow of financial transfers among the different budgets. The organization of French colonial public funding largely reflects the fundamental principle adopted in the law of financial autonomy for the colonies (April 13th 1900). The main operating costs and equipment expenses in the colonies were supported by federation and colony budgets, with the metropolis providing subsidies when necessary. It was thought that the metropolis would provide temporary support until the federation could quickly reach financial autonomy.

DATA SOURCES AND DESCRIPTION

I collected data from all colonial budgets: metropolis, federation, loan, auxiliary, and colony budgets over the whole colonial period (1844–1957).¹¹ Copies of these budgets are in the National Archives of

¹¹ The next subsection presents the detailed periods of data collection for each category of budget.

Senegal, Dakar, and the Bibliothèque Nationale de France, Paris. In Dakar, access to budgets is easy, whereas in Paris it is more difficult because budgets are not publicly available when their physical condition has significantly deteriorated. To my knowledge, some volumes of the federation budgets can also be found at the Centre des Archives Economiques et Financières in Savigny-le-Temple. The documents are organized by budget year and category (metropolis, federation, loan, auxiliary and colony). For each year, two types of documents exist: first, a budget established before the beginning of the year reporting anticipated revenue and expenses; second, a final end-of-year account describing actual revenue and expenses. I used final accounts with actual revenue and expenses except when it was not available or did not include the variable of interest. Finally, data on total public expenditures in France come from the *Annuaire Statistique de la France* (1966).

Budget data were collected to cover the longest possible period of time. The first year of data collection varies by budget type following the development of colonial activities. I collect data beginning in 1844 for France, 1898 for the special budgets, 1903 for the loan budget, and 1907 for federation and colony budgets. Colonial budgets stopped in 1957. Indeed, in 1958 the 5th Republic was established in France and the colonial empire's status changed from "French Union" to "French Community." The new regime gave autonomy to colonies which later became fully sovereign states governed by African leaders. Guinea decided to leave the French Community in 1958, as did Mali in 1959, and then the remaining colonies received independence in 1960. More practically, after 1958 each new state had an independent accounting system and the colonial administrations no longer collected or preserved budget data. After 1958 financial transfers from France to Africa were considered public aid rather than colonial funding.

The year-to-year differences in the organization of the budgets, and to a lesser extent, the differences in budgets between colonies, were a significant challenge. Very close attention was paid to construct variables that represented the same revenue and expenses over time and across territories¹² (further documentation is available upon request).

¹² For instance, French expenditures for AOF were in the budget of the Ministère de la Marine in two subsections ("Service Colonial" and "Dépenses Faites à l'Extérieur") from 1844 to 1862. In 1863, the subsection "Service Colonial" was removed and the corresponding expenditures appear now in chapter V of the budget of the Ministère de la Marine. In 1884 French expenditures for AOF are no longer included in the budget of the Ministère de la Marine but in the budget of the Ministère des Colonies.

Nominal variables were inflation adjusted using a price consumption index from INSEE.¹³ The reference unit is 1914 francs which allows for comparison of results with the existing literature since most papers on the cost of colonization express values in 1914 francs.

Metropolis Budgets

The first Metropolis AOF-related expenses appear in 1844 when the French navy began to explore the West African coast. All years between 1844 and 1957 are reported in the database except a handful of missing years (1858–1860, 1888, 1893, and 1905¹⁴). Military expenses are also missing in 1940/41 and 1945 due to the difficulty of administrative supervision during World War II and 1955.¹⁵ To estimate the total transfers between AOF and the metropolis, I need to estimate France's AOF-related expenses in these few missing years. I interpolated linearly between the two closest observed years: for instance, missing values in 1888 are inferred to be the mean of 1887 and 1889 values. For each year, the database contains the following variables: First, total military expenses (for the whole French Empire), military expenses in AOF, and military expenses spent in some colonies but whose precise location could not be determined.¹⁶ Second, total civilian expenses (for the whole French Empire), expenses for running the central administration, civil expenses in AOF, and civil expenses spent in some colonies but whose precise location could not be determined.

The difficulty in computing the French military and civil expenses devoted to AOF colonization is that AOF colonization expenses are not always entirely observable in the Metropolis budget because the territory the money was spent in is not always clear. The budget specifies the precise location of most expenditure but not all of them. A share of these non-allocated expenses should be attributed to AOF. Furthermore, the cost of running the central administration includes the cost of all colonies and a share of it should be attributed to AOF as well. On average between 1844 and 1957, 22 percent of French colonial expenses were not attributed to a specific colony.

¹³ The consumer price index (CPI) used here is the official Insee-SGF consumer price index from Thomas Piketty (2011).

¹⁴ For 1858–1860 the Ministry of Colonies was removed and merged with another ministry during these three years and the budgets could not be found. For 1881, 1893, and 1905, budgets exist but are not available at the BNF, Paris.

¹⁵ The military section was not available at the BNF, Paris.

¹⁶ Some budgets are more detailed than others regarding the geographical distribution of expenses across the colonies. Recent years are generally less detailed than the old ones.

I use the share of allocated expenses attributed to AOF as a proxy for the share of non-allocated expenses attributed to AOF. Each year, I observe the value of colonial expenses specifically allocated to AOF and to the other territories. I thus observe the share of AOF in these allocated expenses. For some years, I can compute the share of AOF in civil and military allocated expenses separately. Otherwise I compute the share of AOF among total allocated expenses. I then attribute the same share of total non-allocated expenses (civil or military respectively) to AOF as the share of total allocated expenses (civil or military respectively). In this way, I assume that the distribution of non-allocated expenses follows the same pattern as the distribution of allocated expenses. Although not exact, it is the most reasonable assumption I can make.

Federation Budgets

The AOF government was established in 1904 and its first budget in 1905. Budgets for all years between 1907 and 1957 were collected without missing data. However, the documents for the 1905 and 1906 budgets could not be accessed because of their poor physical condition. Among the components of federation revenue, the database reports: Indirect taxes: trade taxes, tax on consumption, registration fees, and transaction fees; Receipts from public companies (mail, phone, telegraph, railways, ports, hospitals, and printing presses); Investment income: yields from capital investments, loan and cash advances reimbursements, and land revenue; Transfers from the metropolis: short-term loans and transfers; Total indirect taxes; Total revenue.

The database reports the following components of federation expenditures: Financial transfers to the metropolis: loans repayments, cash advances repayments and subsidies; Subsidies to colony budgets and private companies; Investment in infrastructure, education, health, security, justice and support to productive sectors; Operation costs of public companies (mail, phone, telegraph, hospital, printing works, railways, and ports); Running costs of the federation administration; Total expenditure.

Special Budgets and Loan Budgets

Special budgets were collected from 1898 to 1957 (no missing years). The database reports the revenue of the special budgets by category: receipts from their own activities, short-term loans and transfers from the metropolis, and short-term loans and transfers from the federation.

The only expenses were the operation costs of the service (e.g., railway or port) so I did not report any specific category of expense in the database.

Loan budgets were collected from 1903 to 1957.¹⁷ Two missing years (1918 and 1938) were interpolated as the means of the neighboring years (1917–1919 and 1937–1939). The database reports all components of the revenue of loan budgets: loan disbursements from the metropolis, short-term loans and transfers from the metropolis and from the federation budget. The database reports the following components of expenditures: investment in infrastructure, education, health, and subsidies to the private sector.

Colony Budgets

Colony budgets were collected from 1907 to 1956 but not for all years. Since there were no direct transfers between France and individual colonies, colony budgets can be ignored to compute the net amount of money that was spent by the metropolis for AOF colonization. However, colony budgets matter to assessing whether the French transfers to AOF were significant in public resources in Africa. Indeed AOF public resources are the sum of federation and colony resources. Given this, the total revenue of each colony is my main variable of interest. I was able to collect such data for 25 years: 1907–1920, 1923, 1925, 1928, 1930, 1933, 1936, 1939, 1943, 1946, 1949, 1953, and 1956. I use linear inference to estimate the revenue in missing years (for instance, the colony revenue in 1921 and 1922 are estimated at the mean of colony revenue in 1920 and 1923).

Colony budgets provide revenue and expenditures information. Among the components of colony revenue, I collected all major direct taxes (personal taxes, value of mandatory service, income taxes, land taxes, residential taxes, taxes on trading licenses, taxes on cattle, and taxes on profits), total direct taxes, and total revenue. Among the components of colony expenses, I collected: administrative staff expenses, security staff expenses, education staff expenses, expenses for doctors and nurses, expenses for public works, indemnities to precolonial chiefs, and finally African chief salaries and bonuses. I also collected the number of African chiefs and the number of schools and pupils when available.

¹⁷ These budgets should exist but are not available at the BNF, Paris.

Data on Transfers from the Metropolis to AOF

Annual transfers from the metropolis to AOF were constructed by combining data from two different sources. I use data from the metropolis budget for transfers before 1915, data from the federation budgets (including the special budget and loan budgets) for transfers between 1915 and 1949, and data from the metropolis budget for transfers after 1949.

There are three reasons for using multiple data sources. First, prior to 1915, a large portion of the transfers from the metropolis to AOF consisted of subsidies to the Dakar-Saint Louis railway operator (La Société des Batignolles). Since these transfers were subsidies to a private firm, they did not appear on federation budgets. Subsidies to the Dakar-Saint-Louis railway operator stopped by 1915 and were replaced with short-term loans—at that point the federation budget becomes an accurate measure of transfers.

Second, the federation budgets are more precise than the metropolis budget. Indeed over time the French treasury produced national budgets that were less and less specific about where in the colonies it was spending money, especially after 1920. The federation budgets are, thus, generally more precise than the metropolis budget in later years.

However, after 1950 I return to using metropolis data since the federation accounts are incomplete. This is because the budget accounts of Fond d'Investissement pour le Développement Economique et Social (FIDES) could not be located. FIDES was created in 1946 to finance a large portion of public investments in the colonies. The expenditures made by FIDES do not appear in AOF's budgets since FIDES is an account in the Caisse Centrale de la France d'Outre-Mer that appears only on the French budget. I located FIDES final accounts for 1947–1949 but not for subsequent years. Therefore, despite the lack of detail on the geographical allocation of the metropolis contributions to FIDES, I use the French budgets after 1950 in order to include FIDES expenditures.

EMPIRICAL STRATEGY

As described in the previous section, transfers between the metropolis and AOF take various forms; so the obvious question is which transfers should enter into the calculation of T_o and T_i ?

FRENCH EXPENDITURES ON AOF VERSUS CONTRIBUTIONS TO
AOF'S REVENUE

When analyzing monetary transfers between two entities, it is logical to assume symmetry: the amount transferred is equal to the amount received. This symmetry holds for AOF's contributions to the metropolis's budget: all expenditures made by AOF taxpayers for the metropolis are contributions to French revenue. But the reverse is not true: some French expenditure related to AOF's colonization did not add up to AOF revenues. In particular, the military costs associated with conquest and pacification and operating costs of the central colonial administration in Paris were not included in AOF revenues. The question is whether these expenditures should be included in the total cost of running AOF.

Military Expenditures

French military expenditures in the colonies consist primarily of personnel and material expenses associated with conquering the colonies. It includes the salary and operating expenses of French colonial headquarters in Paris, as well as wages and supplies for the troops, cost of the cavalry horses, army transportation costs, artillery, and soldier health care costs (including military hospitals in Paris). The military expenditures funded by the French Ministry of Colonies also include the cost of recruiting and transporting Senegalese Tirailleurs. From 1857 on the Senegalese Tirailleurs were recruited in the colonies (mostly in Sub-Saharan Africa) and transported to other places where they served in the French army to help with the colonial conquest, World War I and II, and anti-French resistance wars in Indochina and Algeria. Many Senegalese Tirailleurs served in Europe, providing about 200,000 troops in World War I, which involved significant transportation costs. In his 1910 book "La force noire," the French general Charles Mangin described his vision of a greatly expanded French colonial army thanks to the Senegalese Tirailleurs. The French socialist leader Jean Jaurès in "L'Armée Nouvelle" also advocated recruiting French soldiers in the colonies due to the declining birthrate in the metropolis.

Should these expenditures be included in the cost of running the colony? From the French point of view these costs should be included. In the absence of colonization, none of these costs would have been incurred by French taxpayers. However, a fraction of the military expenditures, specifically the cost of recruiting and transporting Senegalese Tirailleurs to reinforce the French army, is not related

to the cost of AOF's colonization but rather to the cost of securing French territories. Since data in the budget only provides aggregate military expenditures for AOF, I cannot disentangle between the cost of the colonial conquest and the cost of reinforcing the French army for French defense. Both are included in the account of military expenditures for AOF in my analysis, leading to an overestimation of the cost of AOF's colonization.

From AOF's point of view, the question is whether AOF's taxpayers would have incurred the same expenses in the absence of colonization. The answer is clearly no. Without colonization, there would not have been any military cost of conquest or pacification. It is important to note that military costs supported by the French Ministry of Colonies do not include the costs of local defense and the establishment of a state. These costs were borne by the AOF. Federation and colony budgets include a defense and security section that covers the expenditures related to police and military forces used to maintain peace and order within the AOF. Therefore, the French contribution to AOF revenues should not include any French military expenditure.

Expenditures for Central Colonial Administration

The metropolis budget also funded the central colonial administration. This includes the personnel and operating costs incurred in mainland France associated with managing the colonies: the Ministry of Colonies, the Colonial School (*Ecole Coloniale*), the Colonial Garden (now called *Jardin Tropical de Paris*), colonial inspections, the agency tasked with colonial propaganda (*Agence Générale des Colonies*), communication between the metropolis and the colonies, and the two colonial exhibitions held in Paris in 1907 and 1931.

From the French point of view, these costs should definitely be included in the cost of colonization. From the AOF's point of view, the question is again whether AOF's taxpayers would have incurred the same expenses in the absence of colonization. Some expenses related to running the central administration in Paris would have had to be incurred by West African governments, such as the cost of a colonial school to train administrators, or perhaps even the cost of a colonial garden to experiment with new crop varieties. But the Ministry of the Colonies would not have existed in an independent state: AOF was equipped with an adequate administration including a central government, colonies' governments, districts' administrators, subdistricts administrators, and finally indigenous chiefs serving as tax collectors. The Ministry of Colonies in Paris was an additional administrative level the metropolis

needed to coordinate colonial activities and decisions over all territories, which would have been useless in the absence of colonization. The same applies to the communication costs between the metropolis and the colonies, the cost of colonial inspections,¹⁸ the cost of the colonial propaganda agency, and the cost of colonial exhibitions. Thus, in the absence of colonization, a West African government would have avoided a large proportion of central colonial expenditures. Consequently, an estimate of France's contribution to AOF's revenue should exclude central administration expenditures. Alternatively, if expenditures in Paris would have been made by an independent AOF (like the colonial school or the colonial garden), they should be included in the estimate. The former provides a lower-bound estimate, while the latter provides an upper-bound estimate of France's contribution to AOF's revenue.

To conclude, all expenditures incurred by the metropolis for AOF's colonization are not contributions to AOF's revenue. This asymmetry reflects the fact that colonization itself is asymmetric: one economy dominates the other, both politically and institutionally. The cost of this domination is reflected in the cost of military conquest and central colonial administration.

TRANSFERS TO THE PRIVATE SECTOR

Both the metropolis and AOF subsidized private companies in the colonies. These transfers were intended to help private firms start income generating activities in AOF. It is not clear how these subsidies should be treated within the framework. In the absence of these subsidies, AOF taxpayers might have had to cover the cost of these private companies (increasing AOF expenditures by the same amount as the size of the transfers). Under this case, French subsidies to private colonial companies should be included in the France's contribution to AOF development. Another possible counterfactual is that the beneficiaries of these subsidies were French business owners. Under this view, the subsidies were essentially transfers from French taxpayers to French business owners and should not be included in France's contributions to AOF's development.

In the AOF, French subsidies to the private sector all went to one private company: a subsidiary of La Société de Construction des Batignolles. La Société de Construction des Batignolles built and operated the Dakar-Saint-Louis railway line. The metropolis provided a large initial subsidy in 1884, when construction began, followed by

¹⁸ The inspections at the metropolis level were in addition to inspections at the federation and colony level.

smaller annual subsidies until 1914. Railway construction is a classic example of market failure in which high fixed costs discourage private investors to enter the market. Thus, I assume French support for Société des Batignolles was a substitute for AOF public support rather than transfers to private French business owners. In other words, in the absence of colonization, AOF taxpayers would have supported the construction of the railway because it would not have been constructed by unsubsidized private firms due to market failure. As a consequence, French support to the Société des Batignolles should be included in France's contribution to AOF's revenue.

AOF'S PUBLIC LOANS

The AOF received loans from a public bank (La Caisse des Dépôts et Consignations) supplemented by private banks, mainly Crédit Lyonnais, Société Générale, and Banque de Paris et des Pays-Bas (Messmer 1939). These loans required approval by the French Parliament and Senate and were guaranteed by the French government. If AOF defaulted on this debt, the loans would have been repaid from the French budget and thus would be a cost borne by French taxpayers. If properly repaid, there was no cost for French taxpayers.

A total of 2.096 billion in public debt was approved for AOF (65 million in 1903, 100 million in 1907, 14 million in 1910, 167 million in 1913, 1,690 million in 1931, and 60 million in 1932). Among this, 1,014 million was actually disbursed from 1903 to 1937. The loans were systematically repaid as shown in the federation budget, for a total repayment of 1.404 billion. AOF's public loans did not affect French resources since AOF did not default on any of its loans.

What were the benefits for AOF? By securing AOF's debt, the metropolis allowed AOF to borrow at relatively low rates. Even though AOF's loans did not have any cost for French taxpayers, the metropolis implicitly reduced interest payments incurred by AOF. I assume that AOF would have contracted these loans in the absence of colonization. The implicit contribution to AOF's revenue is therefore the difference between interest payments that AOF would have been charged if the debt had not been secured by the metropolis and the actual interest payments.

On the other hand, when approving these loans, the French Parliament included a clause stating that public works funded by the loans must use French materials, as well as French shipping companies to transport the materials to AOF. Auguste Dardenne (1908) examines the additional cost this clause imposes on the colonies. For instance in Indochina, the author

finds costs increase by 15 percent due to this clause. This additional cost imposed should be subtracted from the implicit French contribution to AOF's revenue due to the better loan terms.

Loans made to AOF likely came with both a benefit and a cost: there were smaller interest payments, but also larger material costs. It would be difficult to estimate the loan terms AOF would have been offered in the absence of backing by the metropolis, and at what price AOF would have bought public work materials in the absence of the clause. Such estimates are beyond the scope of this article which focuses on calculating the actual financial transfers between France and AOF. I thus don't include these implicit benefit and cost in the France's contribution to AOF's revenue (which is equivalent to assuming that they offset one another perfectly).

ESTIMATES OF INTEREST

Following the discussion of various transfers between AOF and the metropolis, I propose to estimate the cost of AOF's colonization for French taxpayers as follows:

Cost of AOF for French Taxpayers	= Cost of Conquest	+ Cost of Central Administration	+ Subsidies to Private Companies Operating in AOF	+ Transfer from the Metropolis to AOF	- Transfers from AOF to the Metropolis
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As for France's contribution to AOF's revenue, I propose two estimates. The first estimate, hereafter the lower-bound estimate, does not include the expenditures for central administration among the expenditures that AOF would have had to support in the absence of colonization:

Frances' Contribution to AOF's Revenues (lower bound)	= Subsidies to Private Companies Operating in AOF	+ Transfer from the Metropolis to AOF	- Transfers from AOF to the Metropolis
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The second estimate, thereafter the upper-bound estimate, includes the expenditures for central administration among the expenditures that AOF would have had to support in the absence of colonization:

Frances' Contribution to AOF's Revenues (upper bound)	= Cost of Central Administration	+ Subsidies to Private Companies Operating in AOF	+ Transfer from the Metropolis to AOF	- Transfers from AOF to the Metropolis
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THE COST OF AOF COLONIZATION FOR FRENCH TAXPAYERS

Transfers Between France and AOF

Let us start with transfers from AOF to the metropolis. These appeared exclusively on the federation budget. The objective of these transfers was to reimburse the metropolis for expenses related to AOF's colonization, namely the cost of military conquest and of central colonial administration. After 1945 AOF's transfers to the metropolis also funded French reconstruction and various new French organizations such as ORSTOM (a research agency focused on development issues) or the Cité Universitaire Internationale in Paris (a university in Paris hosting foreign students).

Data on the federation expenses is available beginning in 1907 and I assume that there were no transfers from AOF to the metropolis before that. However, it is likely that AOF started to reimburse the 1903 public loan before 1907. In this case, the assumption that there were no transfers from AOF to the metropolis before 1907 leads to an overestimation of the cost of AOF's colonization and of France's contribution to AOF's revenue (although I miss only maximum three repayments—1904, 1905, and 1906—so the resulting bias would be very small). From 1907 to 1957 total AOF transfers to France amounted to 198.3 million (1914 francs). Figure 2 shows that AOF's contribution to French expenditures increased substantially during the two world wars, as the colonies provided soldiers to help the French army as well as financial resources to cover war expenses. It also shows a sizeable increase after World War II, which reflects the cost of French reconstruction funded by AOF.

Let us now turn to French expenditures for AOF's colonization. It encompasses subsidies to AOF (including subsidies to private companies operating in AOF), military expenditures (not only for AOF's conquest but also for recruitment of the Senegalese Tirailleurs who served in the French army), and AOF's share in the expenditure for the central colonial administration in Paris. Subsidies from AOF to the metropolis are subtracted so as to compute the net transfers from the metropolis to AOF. Figure 3 shows the size and evolution of the net expenditures for AOF over the colonial period. The immediate striking fact is that France's expenditure for AOF has been mainly concentrated after 1941 with net expenditure from 1941 to 1957 accounting for 90 percent of all net expenditure to AOF during the colonial period.

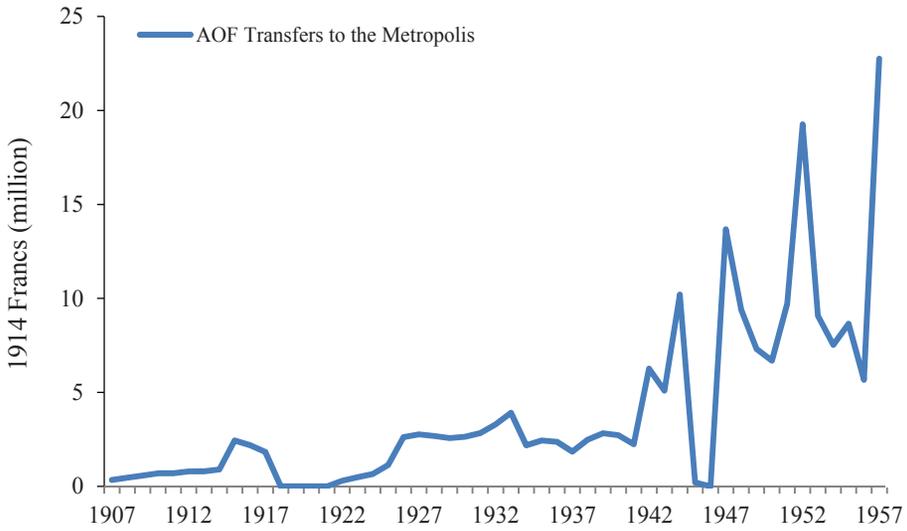


FIGURE 2
AOF TRANSFERS TO THE METROPOLIS, 1907–1957

Sources: Author’s calculations from colonial final accounts and budgets.

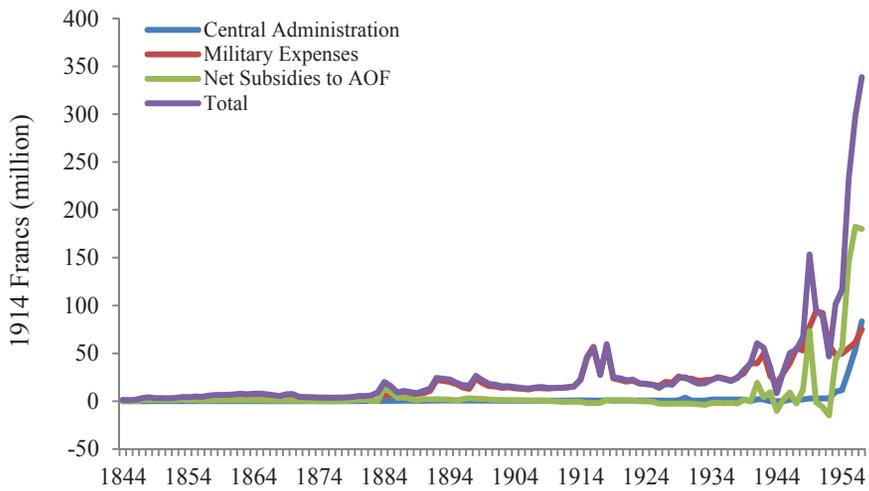


FIGURE 3
FRENCH NET EXPENDITURES ON AOF, 1844–1957

Sources: Author’s calculations from colonial final accounts and budgets.

Because of the disproportionate concentration of expenditure for AOF after 1941, we have to zoom in subperiods in order to better observe the evolution and composition of French expenditure for AOF. Figure 4A zooms in 1844–1899, a period starting with the colonial conquest and ending with financial autonomy laws of the colonies. During this period, the expenditure for the central administration is nonexistent before the creation of the Ministry of the Colonies in 1884, and remains very low even after its creation. Subsidies to AOF are slightly positive but also almost nonexistent during this period, except the big subsidy in 1884 and 1885 to La Société de Batignolles to build the Dakar-Saint Louis railway. Military expenses thus represent almost all French expenditure for AOF and increased rapidly in 1882 reflecting the increased importance of colonial conquests—a period often referred to as the “Scramble for Africa.”

Examining the period 1900 to 1940 (Figure 4B) shows that from its creation until 1940, AOF's subsidies to the metropolis exceeded French subsidies to AOF, reflecting not only the financial autonomy laws of the colonies but also the need for the colonies to contribute to central expenditures. The cost of the central colonial administration remained as nonexistent during this second period as during the first period. Military expenditure is therefore the only cost of AOF from 1900 to 1940. A part of the military expenditure covered the cost of pacifying some resistant areas in AOF (mainly in Mauritania, north Mali, and Niger). Another part of the military expenditure was for the recruitment and transportation of the Senegalese Tirailleurs to help the French army with the conquest and pacification of other territories, as well as with national defense during World War I as reflected by the sharp increase in military expenditures during World War I (especially 1915–1918). It is also worthy to note that the Senegalese Tirailleurs received a pension after World War I, which participates to the fact that military expenditure remained substantial in the 1920s and 1930s.

Finally, the period 1941 to 1957 (Figure 4C) shows that late colonization was very different from the previous colonization, not only because of the dramatic rise in French expenditures for AOF, but also because of the change in the composition of French expenditure. Military expenditures increased during World War II (mostly 1940–1942) due to the recruitment and transportation of the Senegalese Tirailleurs to supplement the French army. It remained high (and briefly increased) after 1946 due to payment of the Senegalese Tirailleurs' pensions and the cost of Senegalese Tirailleurs fighting to suppress

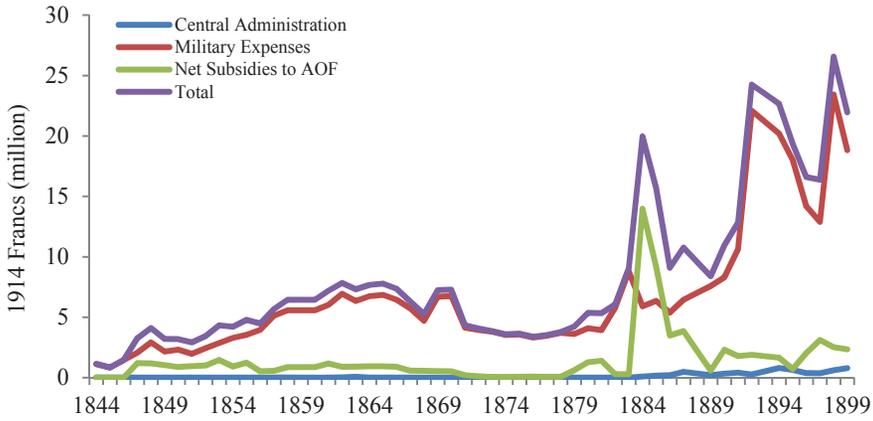


FIGURE 4A
FRENCH NET EXPENDITURES ON AOF, 1844–1899

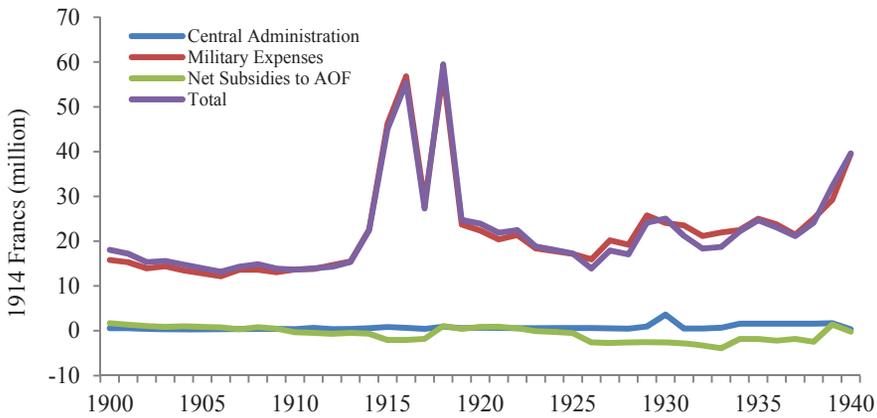


FIGURE 4B
FRENCH NET EXPENDITURES ON AOF, 1900–1940

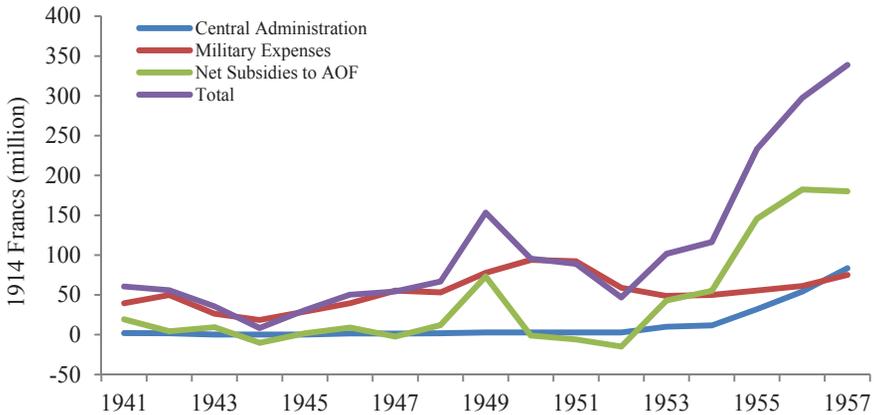


FIGURE 4C
FRENCH NET EXPENDITURES ON AOF, 1941–1957

Sources: Author's calculations from colonial final accounts and budgets.

independence movements in Indochina and Algeria. Military expenditure no longer totalizes French expenditure for AOF: The cost of central administration exploded at the end of the colonial period due to the decision to transfer the personnel expenses for colonies and districts administrators (French civil servants) from colony and federation budgets to metropolis budget in 1955. This reform was meant to encourage the inclusion of Africans in the colonial administration. Moreover, France eventually granted AOF with large subsidies: In 1941 the metropolis created the Fonds de Solidarité Coloniale supplemented, followed in 1946 by the Fond d'Investissement pour le Développement Economique et Social (FIDES), to finance large infrastructure and equipment investments in the colonies.

Overall from 1844 to 1957, military expenditures amounted to 2.211 billion (1914 francs), expenditures for the central colonial administration amount to 247.31 million (1914 francs), and net subsidies to AOF amounted to 750.46 million (1914 francs). Military expenditures thus account for 69 percent of total charges related to AOF colonization, while net subsidies to AOF account for 23 percent and the expenditures for central administration account for only 8 percent.

HOW BURDENSOME WAS AOF FOR FRENCH TAXPAYERS?

Table 1 presents the average annual cost of AOF's colonization for French taxpayers, expressed as the share of France's public expenditures. The average annual share was 0.29 percent of metropolis expenditures—military expenditures amounted to less than 0.24 percent, transfers to AOF to less than 0.05 percent, and central colonial administration not even 0.01 percent (Table 2, panel A). The share of metropolis expenditures absorbed by the military expenditures and the central administration of AOF remained almost stable over the entire colonial period. However, the share devoted to AOF's development (transfers to AOF) varied dramatically before and after 1945, from an annual average of 0.02 percent to an annual average of 0.24 percent (Table 2, panels B and C).

Figure 5 details the evolution of the annual share of metropolis public expenditures devoted to AOF from 1844 to 1957. The most costly year of AOF's colonization was 1949 with 1.4 percent of metropolitan expenditures devoted to AOF. This year included a large investment in the Senegalese Tirailleurs for the French army and a large subsidy to FIDES. AOF was also costly for French taxpayers in 1955, 1956, and 1957 due to large contributions to FIDES

TABLE 1
COST OF AOF COLONIZATION FOR FRENCH TAXPAYERS, 1844–1957

	Cost of AOF Colonization					
	1914 Francs (millions)	Average Share of Metropolis Expenditure (percentage points)				No. of Years
		Mean	Std. Dev.	Min	Max	
<i>Panel A: Total colonial period</i>						
Total, among which:	3,208.81	0.29	0.21	0.04	1.40	114
Military Expenses for AOF	2,211.04	0.24	0.12	0.04	0.71	114
Central Administration for AOF	247.31	0.01	0.03	0.00	0.25	114
Subsidies to AOF	750.46	0.05	0.12	-0.07	0.67	114
<i>Panel B: 1844–1945</i>						
Total, among which:	1,566.15	0.25	0.12	0.04	0.63	102
Military Expenses for AOF	1,450.41	0.22	0.11	0.04	0.57	102
Central Administration for AOF	40.91	0.01	0.01	0.00	0.04	102
Subsidies to AOF	74.83	0.02	0.05	-0.07	0.36	102
<i>Panel C: 1946–1957</i>						
Total, among which:	1,642.65	0.66	0.35	0.20	1.40	12
Military Expenses for AOF	760.63	0.36	0.17	0.20	0.71	12
Central Administration for AOF	206.39	0.06	0.08	0.01	0.25	12
Subsidies to AOF	675.63	0.24	0.28	-0.06	0.67	12

Sources: Author's calculations from colonial final accounts and budgets.

exceeding 0.5 percent of total metropolis expenditures. Finally, French taxpayers devoted about 0.3 percent–0.4 percent of metropolis expenditures to AOF from 1884 to 1885 for the construction of the Dakar-Saint-Louis railway and about 0.5 percent of metropolis expenditures in the 1890s for initial colonial conquest. For the remaining periods, the cost of AOF remained small and investments in AOF's development almost nonexistent. All in all, AOF's development was far from burdensome for French taxpayers.

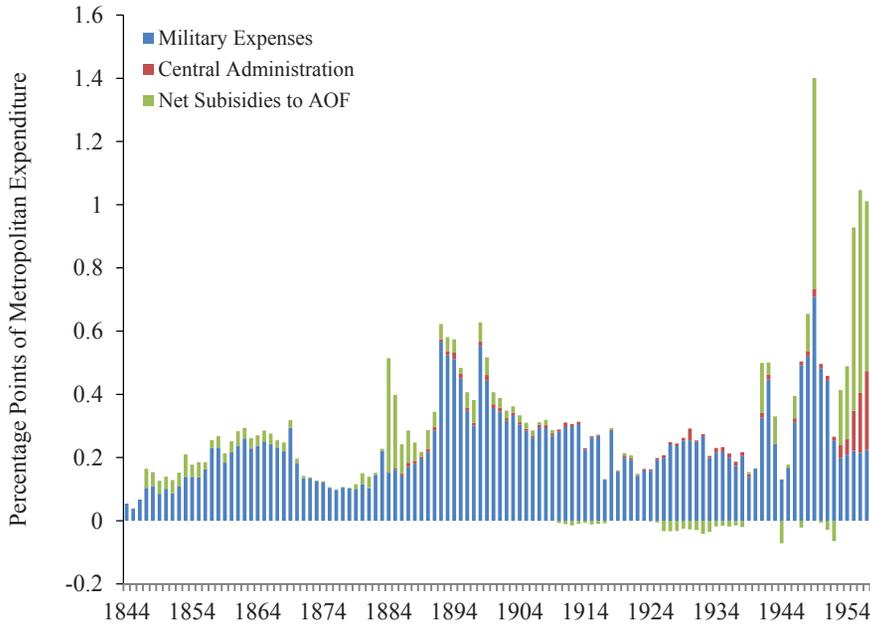


FIGURE 5
EVOLUTION OF THE COST OF AOF COLONIZATION FOR FRENCH TAXPAYERS,
1844–1957

Sources: Author's calculations from metropolitan and colonial final accounts.

THE BENEFIT OF COLONIZATION FOR WEST AFRICANS TAXPAYERS

To what extent did France contribute to AOF's revenue and alleviate West Africans' tax burden. The consensus in France is that the metropolis financed a majority of public investment in the colonies. Even if AOF's development was not burdensome for French taxpayers, it is still possible that France's contribution accounted for a large portion of local investment.

AOF'S REVENUE PROVIDED BY THE METROPOLIS

AOF's total annual revenues are calculated by summing the revenues for colony, federation, loan, and auxiliary budgets. We can do so starting in 1907, when the colonial administration began to produce comprehensive public accounts at both federation and colony levels.¹⁹

¹⁹ Data from colony budgets are collected for 25 years over 1907–1957. A linear trend assumption is made to infer the value of total colony revenue for missing years.

TABLE 2
FRANCE'S CONTRIBUTION TO AOF'S REVENUE, 1907–1957

	Average France's Contribution to AOF's Revenue (percentage points)				
	Mean	Std. Dev.	Min	Max	No. of Years
<i>Panel A: Total Colonial Period</i>					
Lower-bound estimate	1.39	5.43	-4.63	19.56	51
Upper-bound estimate	2.32	6.25	-4.63	25.29	51
<i>Panel B: 1907–1945</i>					
Lower-bound estimate	-0.26	2.87	-4.63	12.74	39
Upper-bound estimate	0.47	2.71	-4.63	13.84	39
<i>Panel C: 1946–1957</i>					
Lower-bound estimate	6.75	8.02	-2.01	19.56	12
Upper-bound estimate	8.35	9.76	-1.64	25.29	12

Note: In this table, the *lower-bound* estimate of France's contribution to AOF's revenue reports metropolitan net subsidies to AOF divided by AOF's total revenue. The *upper-bound* estimate of France's contribution to AOF's revenue reports the sum of metropolitan net subsidies to AOF and metropolitan expenditures for central administration divided by the sum of AOF's total revenue and metropolitan expenditures for central administration. It assumes that AOF would have paid for these expenses would the metropole not have paid for it.

Sources: Author's calculations from metropolitan and colonial final accounts.

The Appendix presents descriptive statistics for AOF's total revenue. France's contribution to AOF's revenue is thus observed from 1907 to 1957.

Table 2 presents the average annual French contribution to AOF revenue from 1907 to 1957 under two counterfactuals giving a lower-bound and an upper-bound estimate of France's contribution. Over the whole colonial period, the annual French contribution ranges from 1.39 percent to 2.32 percent of AOF's annual revenue, meaning that West Africans did not depend on the metropolis to run the colonies and finance public investments (Table 2, panel A). As shown in panels B and C, the picture is very different before and after 1945. Before 1945 the average French contribution is almost zero, whereas after 1945 it is above 7 percent of AOF revenues. In the later colonial period, France's contribution became substantial, suggesting that the increase in resources provided to FIDES was more pronounced than the concurrent growth of local resources.

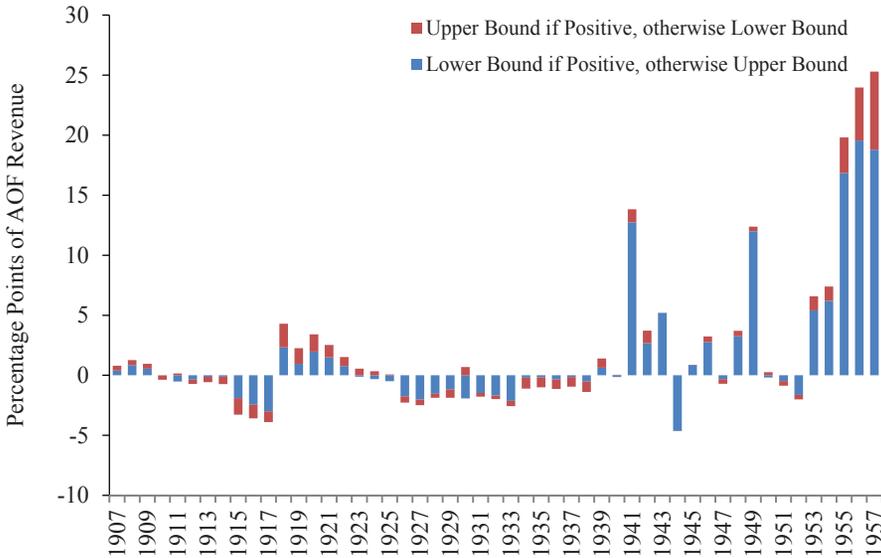


FIGURE 6
EVOLUTION OF FRANCE'S CONTRIBUTION TO AOF'S REVENUE, 1907–1957

Sources: Author's calculations.

Figure 6 details the evolution of the share of AOF annual revenue provided by the metropolis from 1907 to 1957. The first striking fact is that AOF was a contributor to France's revenue more often than a beneficiary: 57 percent of time (29 years from 1907 to 1957), AOF did not receive any contribution from France but rather contributed to France's revenue. In 1944 AOF devoted 4.63 percent of its revenue to the metropolis, while France's maximum donation to AOF never exceeded 1.4 percent of its revenue. Second, we see that the French contribution was exceptionally high in five years: 1941 (creation of the Fonds de Solidarité Coloniale), 1949 (FIDES's first plan), and 1955 to 1957 (FIDES's second plan). Over these five years, AOF received between 12 percent and 25 percent of its revenue from the Metropolis, a huge windfall for AOF. The rest of the time, France's contribution remained small, even negative. All in all, local taxes provided the vast majority—about 98 percent—of AOF's revenue.

THE BLACK MAN'S BURDEN: THE FRENCH ADMINISTRATION

Examining AOF's expenditures reveals that the cost of running the colony was most likely considerably different from what it would have been in the absence of colonization. AOF's budget supported very high

expenses on the French civil servants who ran the AOF's administration and public services. On top of their usual French salary, French civil servants working in AOF received a significant expatriation premium: for instance, the salary of a French administrator (1st rank) in 1910 was 14,000 francs a year with an additional expatriation premium amounting to 4,000 francs a year. So the total cost of a French administrator (1st rank) was 18,000 francs a year. At this time, West Africans paid a poll tax of three francs per year. This means that in a typical district where a population of 100,000 inhabitants, among which only individuals aged 10 and higher paid a poll tax, a total of 6,000 taxpayers were needed to cover the salary of a single French administrator. The cost of French civil servants seems out of proportion with the capacity of local taxpayers.

How much less would an independent state have cost? The answer to this question is difficult but budgets give some idea: the basic salary of a French teacher was 6,000 francs a year while the salary of an African instructor was 600 francs a year. Therefore, one French teacher costs as much as ten African teachers. Given that France's contribution to AOF's revenue was small, the colonial public finance system had the strange feature that revenue was driven by local capacity while expenditures were driven by French standards.

As a consequence, limited funds were left for public investments. Figure 7 reports the share of colony expenditures devoted to French officials in the colonies: the personnel and material expenditures of the colony governors and their cabinets and the salaries of French administrators at the district level. AOF encompasses about 120 districts over eight colonies. The government officials that I consider in Figure 7 represent less than 130 individuals. For comparison purpose, Figure 7 also reports the share of colony total expenditures devoted to education and health (total personnel and materials). On average, over the 25 observed years between 1907 and 1957, the expenses devoted to 130 French officials represented 13.5 percent of AOF's total expenditures, while education and health together represented only 11.7 percent of AOF's total expenditures. After 1949 the salaries of top officials were funded through the national budget, explaining the decrease in the share of total expenditures devoted to French officials. The cumulative cost of French officials over 25 years²⁰ amounted to 169.4 million 1914 francs, representing 23 percent of total metropolis transfers to AOF over 112 years.²¹ To conclude, AOF's taxpayers

²⁰ The 25 observed years from 1907 to 1957.

²¹ From 1844 to 1957.

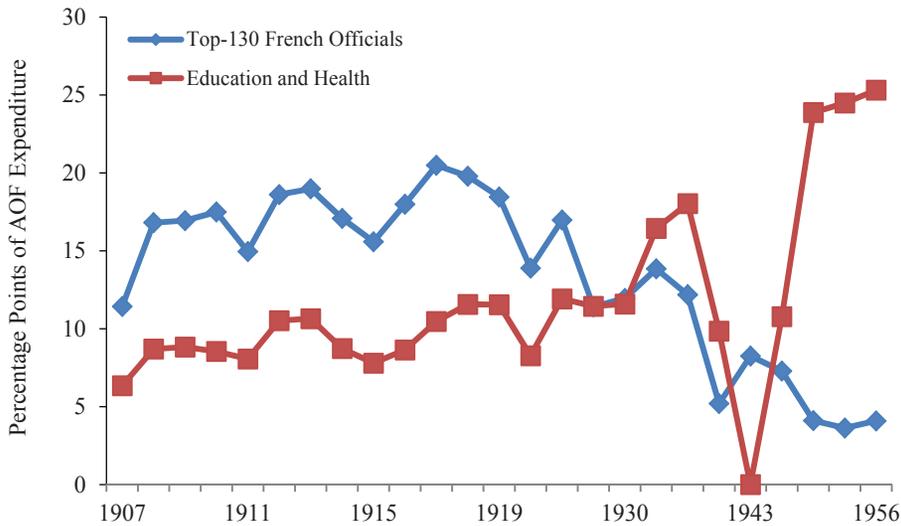


FIGURE 7
SHARE OF AOF EXPENDITURE FOR TOP-130 FRENCH OFFICIALS AND FOR
EDUCATION AND HEALTH, 1907–1957

Sources: Author's calculations from colonial final accounts and budgets.

received only limited benefits from the metropolis but they bore the large cost of French administration.

Despite the fact that the burden of the French administration reduced AOF's capacity to invest in public services, AOF might have experienced some benefits. First, the difference in productivity between French civil servants and African officers may have justified the difference in salaries. Second, the high salaries paid to French officers might have benefited local population through local consumption. However, it seems unlikely that French teachers were ten times more efficient than African teachers, especially since non-native French-speakers may have had difficulty learning from French teachers. It may also be the case that French civil servants in the colonies consumed goods in France rather than spend their salaries in AOF.

In French West Africa, colonization was cheap for France and France's contribution to the colonies' development was very small until just before independence. These results are at odds with much of the leading literature which emphasizes colonization as a financial burden. This section aims to present the results of previous studies on the cost of colonization for French taxpayers, and to discuss the reasons why these results may differ and are generally less reliable than the results of this study.

EXPLAINING DIFFERENCES WITH THE EXISTING LITERATURE

This article finds that on average 0.29 percent of annual metropolis expenditures were spent on the AOF and that France provided on average about 2 percent of AOF's annual revenue. In the absence of similar studies on other colonies, it is not possible to know if this is representative of other French colonies. If in fact AOF was representative of the other colonies, colonization should have absorbed 1.6 percent of French annual expenditure, which is far below the estimates provided by Bobrie (1976) and Marseille (1984, 1996). My estimate uses the fact that the AOF's received 18 percent on average of the Ministry of Colonies' expenditures over 1844–1957. Our findings suggest that colonization was much cheaper for French taxpayers and that France's contribution to colonies' development was much smaller than what was found in previous studies. These differences can be explained in five ways.

First, AOF might not be representative of the other colonies. AOF accounted for 18 percent of the expenditures of the Ministry of Colonies but it is possible that contributions from the colonies to the metropolis were larger from AOF than from the other colonies, resulting in a higher share in the metropolis budget. France's contribution to colonies' revenue might also have been larger in the other colonies, especially in French Equatorial Africa and Algeria which had a reputation for being the most costly colonies.

A second reason for the differences may be the study time period. The previous studies do not cover the whole colonial period: Bobrie (1976) covers 1850–1913, Coquery-Vidrovitch (1982) covers 1905–1937, while Marseille (1984, 1996) mainly focuses on the 1950s. As observed in our figures, the share of metropolis expenditures devoted to AOF and France's contribution to AOF's revenue varied greatly over time, suggesting that studies should consider the whole colonial period to draw general conclusions about the cost and benefit of colonization.

Third, Bobrie (1976) and Marseille (1984, 1996) do not take into account transfers from the colonies to France, resulting in an overestimation of the burden of the colonies for French taxpayers. In this article, I observe transfers from the metropolis to AOF as well as transfers from AOF to the metropolis in order to give an accurate estimate of the effective share of AOF in metropolis expenditures.

Fourth, Coquery-Vidrovitch (1982) and Marseille (1984, 1996) have a different treatment of colonies' public loans. Marseille (1984, 1996) include public loans as part of the cost of colonization for French taxpayers, ignoring the fact that a loan is not a cost but an investment if it is properly repaid. Coquery-Vidrovitch (1982) includes public loan disbursements, net of colonies' repayments, in France's contribution to local public investments. However, she observes disbursements and repayments only until 1937, when AOF's public loans were all disbursed but not yet repaid, which results in an overestimation of France's contribution. Since I observe the repayments until 1957, I take advantage of the fact that repayments were all made in due time and that the French government never had to support AOF's repayments. This way, I exclude public loans from France's contribution to AOF's revenue and avoid the issue with the difference in schedules between loans' disbursement and repayment.

Finally, Marseille's result is based on the assumption that colonies' trade deficits were financed by metropolis transfers. However, there is no evidence that the colonies' trade deficits were balanced by metropolis transfers: they could have been balanced by private investments from French entrepreneurs or lenders, which would have been a source of income for French investors rather than a cost for French taxpayers.²² Alternatively, borrowed fund from local banks, which would have required local savings, could have been used to pay for imports in the colonies. I do not have data on private savings during colonial times in AOF, but I do have data on public savings from final accounts data (subtracting total expenditures from total revenues). Figure 8 shows public savings at the federation level by year from 1907 to 1957. The total public savings in AOF from 1907 to 1957 is 941.6 million (1914 francs). The total trade gaps in AOF from 1907 to 1957 amount to 2,309.1 million (1914 francs). AOF public savings therefore accounts for 41 percent of AOF trade gaps. The possibility that African companies could borrow money from local banks to pay for imports is worth considering given that data shows that AOF trade gaps vis-à-vis the metropolis were not compensated by French transfers. Marseille's interpretation of trade deficits is therefore misleading.

²² According to the estimated returns to investment in Coquery-Vidrovitch (1973) and Marseille (1984), colonial private investment was often very profitable.

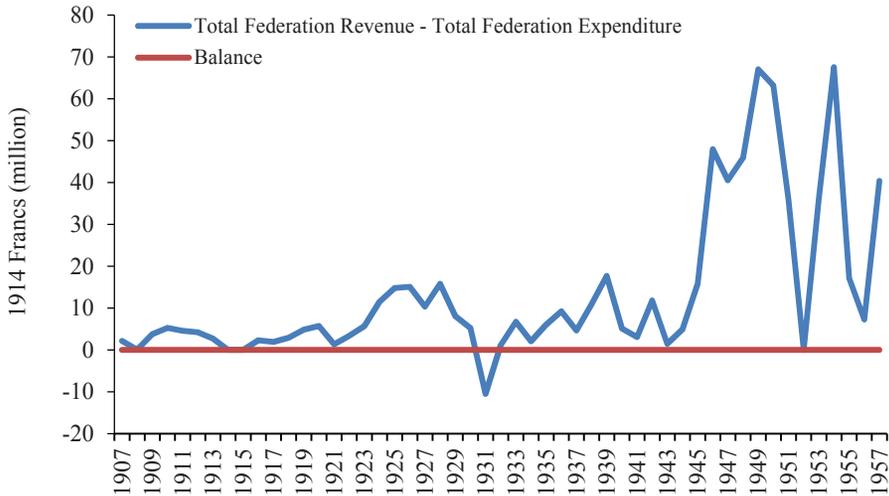


FIGURE 8
SURPLUS OF AOF FEDERATION BUDGETS (FINAL ACCOUNTS), 1907–1957

Sources: Author's calculations.

CONCLUSION

Using original data from colonial budgets, I show that French West Africa did not place a significant economic burden on French taxpayers. France devoted on average 0.29 percent of its annual public expenditures to AOF, among which 80 percent was for military expenditures for colonial conquest and the Senegalese Tirailleurs. Only 16 percent of annual French expenditures for AOF were transfers to AOF, and the remaining 4 percent went to paying for the central colonial administration in Paris. In contrast to the consensus in the prior literature, AOF was far from an economic black hole. Secondly, many Africans believe they owe French colonizers for their schools, hospitals, roads, harbors, railways, and various other infrastructures. Yet they financed 98 percent of the cost of running and developing French West Africa with their own resources. Finally, West Africans supported the high cost of French administrators whose salaries were disproportionate in comparison to local tax capacity. Colonization was therefore more of a black man's burden than a white man's burden.

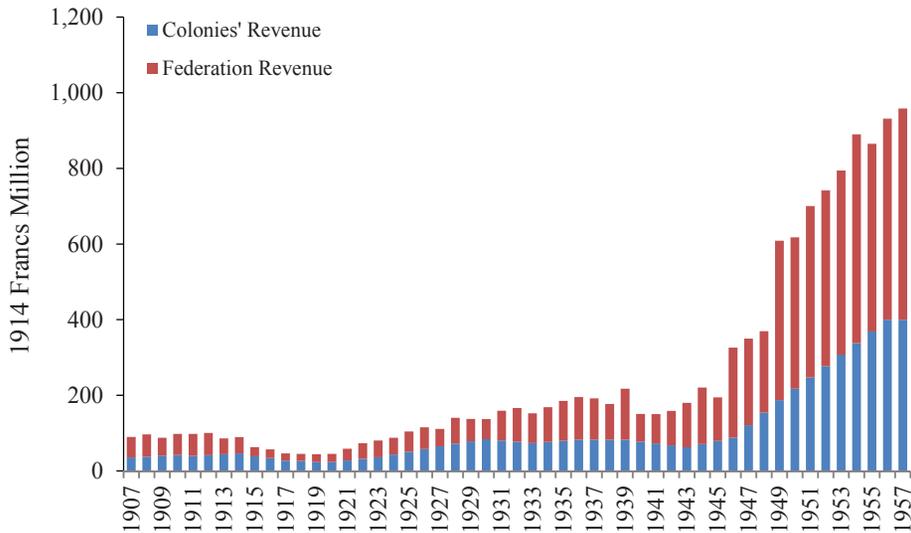
The next step is to assess whether this result holds for the other French colonies in order to provide evidence on the total cost of colonization for French taxpayers as well as Indochina's, Algeria's, Equatorial Africa's, and Madagascar's taxpayers. We would then like to go a step further and estimate the impact of colonization on French

domestic production to assess the net profitability of colonization for France. The broader question of whether colonization was economically bad for both the colonizer and her colonies is still open, but the modest contribution of France to West Africa's development suggests that it should not have been really bad for France, whereas it could have been so for West Africa. In other words, our findings make unlikely that colonization of West Africa dampened French growth in a serious way, while it leaves large room for the hypothesis that it caused persistent damage on the West African economy. This article reinvigorates an important debate on colonial history with the hope of renewing this area of research.

Appendix: Descriptive Statistics on AOF Total Tax Revenue

At the federation level, most revenue came from trade taxes (68 percent on average over 1907–1957). Nine percent came from income generated by the federal government (receipts from public companies and financial yields). Nine percent came from French short-term loans and transfers. Revenue for the loan budget came from loan disbursements from the metropolis (64 percent of total revenue over 1903–1957), while the 36 percent left came from short-term loans and transfers from the metropolis and the federation budget. A majority of the revenue for auxiliary budgets came from receipts from their own activities (92 percent of total revenue over 1898–1957), while the remaining 8 percent was made up of short-term loans and transfers from the metropolis and the federation budget.

At the colony level, most revenue came from direct taxes (54 percent on average over 1907–1957). The remainder of revenue came from indirect taxes and transfers from the Federation budget. Most direct taxes were on individuals including capitation taxes, “prestations” (coerced labor which was mandatory for all individual above age 8 or 10 depending on the period. Each taxpayer had to do public service work for a given number of days each year, except those who could pay a fee in exchange for not working.), residential taxes and income taxes. Personal taxes account for 44 percent of total colony revenue over 1907–1957. Finally, among personal taxes, the most important were capitation taxes, a per-person tax which was the same for all individuals regardless of income or wealth. Capitation taxes accounted for 39 percent of total colony revenue over 1907–1957. Income taxes, which were introduced in 1933 in AOF, did not catch up with capitation tax revenue: in 1956 income taxes accounted for 25 percent of personal taxes whereas capitation taxes accounted for 75 percent of personal taxes. The general picture that emerges from the budget data is that local people, especially the poor, contributed significantly to public funding during colonial times.



APPENDIX FIGURE 1
AOF REVENUE (FEDERATION AND COLONIES), 1907–1957

Sources: Author's calculations from colonial final accounts.

Appendix Figure 1 shows the evolution of AOF total public revenue from 1907 to 1957. The overall growth of AOF total revenue was slow from 1907 to 1945, with two significant downturns corresponding to the two World Wars. The decrease in AOF total revenue during the two World Wars was due to the decrease in trade taxes at the federation level as a consequence of worldwide trade contraction.

After 1945 the growth of AOF total revenue is spectacular: it was multiplied by five in 13 years. Both federation revenue and colony revenue grew quickly during this period, with federation revenue growing at an even faster rate than colony revenue.

REFERENCES

- Amin, Samir. *L'Afrique de l'Ouest bloquée, L'économie politique de la colonisation, 1880–1970*. Paris: Editions de Minuit, 1971.
- _____. *L'échange inégal et la loi de la valeur*. Paris: Editions Anthropos, 1973.
- Annuaire Statistique de la France. Résumé rétrospectif. Paris, INSEE, 1966.
- Arghiri, Emmanuel. *L'échange inégal, Essai sur les antagonismes dans les rapports économiques internationaux*. Paris: Editions François Maspero, 1969.
- Bairoch, Paul. *Economics and World History, Myths and Paradoxes*. Chicago: University of Chicago Press, 1993.
- Bancel, Nicolas, Pascal Blanchard, and Sandrine Lemaire. *La fracture coloniale: La société française au prisme de l'héritage colonial*. Paris: La Découverte, 2005.
- Banerjee, Abhijit, and Lakshmi Iyer. "History, Institutions, and Economic Performance: The Legacy of Colonial Tenure Systems in India." *American Economic Review* 95, no. 4 (2005): 1190–1213.
- Bloch-Lainé, François. *La Zone franc*. Paris: Presses Universitaires de France, 1956.

- Bobrie, François. "Finances publiques et conquête coloniale: le coût budgétaire de l'expansion française entre 1850 et 1913." *Annales* 31, no. 6 (1976): 1225–44.
- Coquery-Vidrovitch, Catherine. "A propos des investissements français outre-mer: l'exemple de l'Ouest Africain, 1910–1965." In *Actes du IIe Congrès des historiens économistes français, La position internationale de la France*. Paris: EHESS, 1973.
- _____. "Le financement de la 'mise en valeur' coloniale, Méthode et premiers résultats." In *Etudes africaines offertes à Henri Brunschwig*, 237–52. Paris: EHESS, 1982.
- Dardenne, Auguste. *Les emprunts publics et le régime de décentralisation financière dans les colonies françaises et les pays de protectorat*. Paris: Librairie des publications officielles et du bulletin des lois, 1908.
- Davis, Lance, and Robert Huttenback. *Mammon and the Pursuit of Empire: The Political Economy of British Imperialism, 1860–1912*. Cambridge: Cambridge University Press, 1986.
- Edelstein, Michael. "Imperialism: Cost and Benefit." In *The Economic History of Britain Since 1700*, edited by Roderick Floud and Donald Mc Closkey, 197–216. Cambridge: Cambridge University Press, 1994.
- Ferro, Marc. *Le Livre noir du colonialisme: XVIe-XXIe siècle, de l'extermination à la repentance*. Paris: Editions Robert Laffont, 2003.
- Feyrer, James, and Bruce Sacerdote. "Colonialism and Modern Income: Islands as Natural Experiments." *Review of Economics and Statistics* 91, no. 2 (2009): 245–62.
- Fitzgerald, Edward. "Did France's Colonial Empire Make Economic Sense? A Perspective from the Postwar Decade, 1946–1956." *The Journal of Economic History* 48, no. 2 (1988): 373–85.
- Foreman-Peck, James. "Foreign Investment and Imperial Exploitation: Balance of Payments Reconstruction for Nineteenth-Century Britain and India." *Economic History Review* 42, no. 3 (1989): 354–74.
- Head, Keith, Thierry Mayer, and John Ries. "The Erosion of Colonial Trade Linkages After Independence." *Journal of International Economics* 81, no. 1 (2010): 1–14.
- Huillery, Elise. "History Matters: The Long-Term Impact of Colonial Public Investments in French West Africa." *American Economic Journal - Applied Economics* 1, no. 2 (2009): 176–215.
- _____. "The Impact of European Settlement Within French West Africa: Did Pre-Colonial Prosperous Areas Fall Behind?" *Journal of African Economies* 20, no. 2 (2011): 263–311.
- Jeanneney (Rapport). *La Politique de coopération avec les pays en voie de développement*. Paris: La Documentation Française, 1963.
- Lefevre, Daniel. *Pour en finir avec la repentance coloniale*. Paris: Flammarion, 2006.
- Liauzu, Claude. *Colonisation. Droit d'inventaire*. Paris: Armand Colin, 2004.
- Manceron, Gilles. *Marianne et ses colonies, une introduction à l'histoire coloniale de la France*. Paris: La Découverte, 2005.
- Marseille, Jacques. "La politique métropolitaine d'investissements coloniaux dans l'entre-deux guerres." In *Actes du IIe Congrès des historiens économistes français, La position internationale de la France*. Paris: EHESS, 1973.
- _____. *Empire colonial et capitalisme français, Histoire d'un divorce*. Paris: Albin Michel, 1984.

- _____. "La balance des paiements de l'outre-mer sur un siècle, problèmes méthodologiques." In *Actes du colloque "La France et l'outre-mer, un siècle de relations monétaires et financières,"* edited by the Comité pour l'Histoire Economique et Financière de la France. Paris: Imprimerie Nationale, 1996.
- Messmer, Pierre. *Le régime administratif des emprunts coloniaux*. Paris: Librairie Sociale et Economique, 1939.
- Moggridge, D. E. *Maynard Keynes: An Economist's Biography*. London/New York: Routledge, 1992.
- O'Brien, Patrick. "The Costs and Benefits of British Imperialism, 1846–1914." *Past and Present* 120 (1988): 163–200.
- Offer, Avner. "The British Empire, 1870–1914: A Waste of Money?" *Economic History Review* 46, no. 2 (1993): 215–38.
- Recherche Coopérative sur Programme (RCP), CNRS, "Commerce, investissements et profits dans l'empire colonial français," n°326, 1973–1979.
- Vanhaeverbeke, André. "Rémunération du travail et commerce extérieur." Centre de Recherche des pays en développement, 1970.