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SPATIAL INEQUALITY IN LIVING STANDARDS AND THE URBAN PREMIUM IN LATE COLONIAL FRENCH WEST AFRICA

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ABSTRACT | Were colonial capitals islands of relative prosperity in West Africa, or did incomes in smaller cities keep up with income levels in major cities like Dakar? Though recent work has shown that real wages for unskilled workers in the major cities of West Africa were by the 1950s relatively high by developing world standards, less is known about income levels in the smaller urban settlements of the region. Using nominal wages and retail prices, this paper estimates welfare ratios in 49 urban centres in French colonial Dahomey, Niger, Soudan français, Haute-Volta and Guinée française for the dry season of 1948.. It shows that there was considerable variation in nominal wages, real wages and the price level across the territory of French West Africa. Coastal towns generally had higher real wages than the hinterland, though coastal Guinea was relatively poor. Real incomes tended to be higher in areas connected to a colonial railway and in areas with higher land productivity. There was an appreciable urban premium, with higher real wages in towns with larger populations.

Keywords: spatial inequality, welfare ratios, African economic history, colonial Africa, real wages

JEL Codes: N17, R12

1. INTRODUCTION

The long-run history of African inequality is squarely on the agenda for economic historians of the continent. A recent literature has relied on the social tables approach to calculate interpersonal income estimates for a number of African countries (Bolt and Hillbom 2016; Aboagye and Bolt 2021; de Haas 2021; Hillbom et al 2023). Some tables are highly disaggregated spatially, while others are calculated more or less on the basis of existing national units. Other aspects of inequality, in particular relating to the urban structure, have been less examined. A common finding in the contemporary literature on spatial inequality is the 'urban premium' of incomes being higher in larger cities than in smaller ones. During colonial rule African cities developed prodigiously. Some were more or less entirely colonial creations, though in some cases, particularly in West Africa and on the Swahili coast, precolonial urban settlements formed the basis for the urban structure that developed under colonial rule (Henderson and Kriticos, 2018; Meier zu Selhausen 2022). Often, colonies were dominated by 'primate cities', large metropolises (by the standards of the time) that dwarfed second and third cities. Others, though, like Senegal and Nigeria, had a more bal-

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anced urban structure. Though urban real wage series have been calculated for some major African cities (De Zwart 2011; Frankema and van Waijenburg 2012; Frankema and Juif 2018; Channing and Everill 2020; Westland 2021; Carvalhal and Palma 2024), we know relatively little about how urban incomes compared *within* countries, and about spatial inequality in incomes in general.

The arrival of European colonisation marked the beginning of a 'reversal of fortune' in West Africa between coastal and hinterland regions (Gaiya 2023). The Sahel—once the birthplace of major empires like Ghana, Mali and Songhay—developed to a relatively deprived region over the long 20th century, while the coastal areas, marginal until European colonisation, are generally richer, and the destination for migrants from the drier north. The causes of this reversal are multiple, but linked. First, the establishment of the trans-Atlantic slave trade shifted the economic and political gravity towards the coast (Gaiya 2024). Second, when formal colonial rule was established—for most of the region, in the late nineteenth and twentieth centuries— administrative and commercial centres were set up on the coast, and investment in public infrastructure was a process of 'diffusion' from centres of early colonial trade (Ricard-Huguet 2022). Even then, there was a strong spatial persistence of investment, leading to diverging economic fortunes between favoured and unfavoured regions (Huillery 2009). Third, the cash crop revolution also tended to mostly favour the coast rather than the hinterland; the latter, due both to climatic conditions and transportation costs, became as much a labour reservoir as it did a source of agricultural exports (De Haas and Travieso, 2022). Areas that participated in the cash crop boom tend today to be economically advantaged than areas that did not, suggesting long-term path dependency in the spatial distribution of income (Roessler et al 2022).

As Moradi and Baten (2005) argue, the impact of the cash crop revolution on incomes might be ambiguous. Generally speaking, nominal incomes were probably higher, but farmers who specialised totally in cash crops were doubly dependent on the market. The price of their output was determined by volatile world market prices, and if cash crops crowded out food crops for household consumption then farmers would also become reliant on potentially volatile local food crop markets. This affected some parts of West Africa quite differently. For example, tree crops like cocoa can often be grown alongside other food crops like yams and cassava, implying no major opportunity cost to participation in the cash crop revolution (Austin 2014a; Austin 2014b). In the drier savanna, where crops like groundnuts and cotton prevailed, the opportunity cost of specialisation in export agriculture in terms of food production was real and in some cases determinative (Tosh 1980; De Haas 2021). We might therefore expect that the effect of the cash crop revolution on real incomes was more important in the forest zone than in the savanna.

African cities today have distinctive economic features. While there is an urban wage premium, unlike in much of the rest of the world, there does not appear to be a relationship between city size and wages (Collier and Jones 2018). Nominal urban wages tend to be higher than one might expect given the level of per capita GDP, and price levels are also high (D'Aoust et al 2017). The high-wage, high-cost nature of African cities has major implications for structural change, since high nominal wages may make production in tradeable sectors non-competitive in a global sense, hindering the growth of manufacturing and forcing African cities to remain 'consumption' rather than 'production' cities (Gollin, Jedwab and Vollrath 2016). Though this feature of African cities is now well-documented, we know very little about its historical roots. Have African cities always been expensive, and uncompetitive? Or is this a feature, perhaps, of the post-structural adjustment period?

This paper offers some tentative evidence on this question. The causes and consequences of inequality in colonial West Africa have more than economic interest. Given the sharp political cleavages that exist within West Africa, particularly between North and South, an understanding of the historical development of economic differences helps shed light on some of the most pressing political challenges facing countries in the region today.

Yet despite the obvious interest in documenting the historical nature of the spatial distribution of income and living costs, quantitative evidence on historical living standards outside the main cities of colonial Africa are scarce. Real wages series have been calculated by several authors (De Zwart 2011; Frankema and van Waijenburg 2012; Frankema and Juif 2018; Channing and Everill 2020; Westland 2021; Carvalhal and Palma 2024), though almost entirely for capital cities, JuiJuif and Frankema's (2018) series for the Central African Copperbelt are a welcome exception, as are de Haas's (2017) 'model farm' estimates of farmer income in Uganda. In West Africa more specifically, only capital cities have estimates for the colonial period: Lagos, Accra, Freetown, Banjul and Dakar (and Luanda in West-Central Africa). While these wage series can help us to understand the evolution of primate cities in West Africa across the colonial era, without estimates from other towns and cities, as well as rural areas, we can say little about the nature of urban premiums, agglomeration effects, and the high-price, high-wage urban economy. Castillo Hidalgo (2024) has also studied the evolution of nominal wages and skill premia at the Port of Dakar, one of the most important employers in French West Africa, showing major racial and skill-based wage inequality.

This paper contributes to the literature on African living standards during colonial rule by examining the standards of living of a particular group of workers in late colonial French West Africa — domestic servants — in 49 towns across the vast federal territory, including five colonies: Soudan français, Haute-Volta, Niger, Guinée française, and Dahomey. Dahomey and Guinée française were both largely in the forest belt, while Soudan français, Haute-Volta and Niger are mostly savanna, Sahelian or Saharan. While nominal wages have already been collected for a variety of locations across French West Africa by van Waijenburg (2018) in order to calculate the value of forced labour, they are public sector wages and, being nominal, and thus do not take account of local price differences and therefore cannot be used to analyse the spatial patterns of living standards given that markets were far from integrated.

This paper addresses three questions. Firstly, to what extent did a spatial 'reversal of fortune', as measured by real wages, already exist in the late colonial period? Is it true that savanna regions had lower standards of living? Here the answer can only be partial, since I do not have price data — and hence real wages — for Senegal and Côte d'Ivoire, by far the richest of the colonies of Afrique occidentale française. Secondly, was there an urban wage premium and did larger cities enjoy higher nominal and real wages? Thirdly, the paper asks to what extent observed variation in real wages was due to the differing price levels: were prices higher in larger cities?

The results of the empirical analysis are four-fold: Firstly, I provide evidence that the rich coastal/poor hinterland dynamics were clearly present and reflected in real wages in West Africa in the late colonial period (which certainly accords with the direction of internal migration flows). Secondly, I find some evidence that incomes were higher in larger cities. Even though the absence of Senegal and Côte d'Ivoire excludes some of the most important urban centres in French West Africa, like Dakar and Abidjan, the results suggest that doubling population size would be associated with a real wage higher by a quarter

to a half of the subsistence basket (the amount required to provide the bare minimum requirements of food, clothing, shelter and energy for a family of four). Thirdly, dispersion in urban real wages was not just due to variation in nominal wages, but that substantial price dispersion played a role. Fourthly, areas with high land productivity, as measured by a calorific suitability index, had higher real wages, as did urban areas connected to a colonial railway.

The remainder of the paper is structured as follows. Section 2 discusses spatial wage inequality in general, and the existing literature on real incomes in West Africa. Section 3 describes the collected dataset comprising wages and prices across French West Africa for the dry season (~November/December) of 1948 from the AOF *fonds* held in the Archives nationales du Sénégal in Dakar. Section 4 discusses the extent and shape of price dispersion across a number of different categories of goods, tradeable and non-tradeable. In section 5, I calculate welfare ratios using a linear programming approach to determine least-cost diets for each location separately. In Section 6, I examine the correlates of welfare ratios across French West Africa, pointing to a possible role for agglomeration economies and mechanised transport in driving higher incomes. Section 7 concludes.

2. SPATIAL INEQUALITY OF WAGES

The existing literature on spatial inequality within countries and regions is large, and I cannot adequately do justice to it here. I will sketch some of the more influential points in the scholarship. Theoretically, one of the most influential theories of spatial inequality at a macro level is the idea of a 'regional inequality U-curve', in which inequality is low when incomes are low, begins to rise as incomes rise, but reaches a critical point after which it begins to decline as incomes continue to rise. In the formulation of Williamson (2014), incomes are relatively equal across the territory initially. Economic growth typically involves the development of some resource that is not distributed equally across space, so spatial inequality increases as those resources are developed, and incomes increase nearby. However, as the development process matures, migration from deprived to prosperous regions raised wages in the former and depresses them in the latter. Capital markets develop over time so that profitable investments in poorer regions attract money. Governments may begin by concentrating their attention on resource-rich areas so as to encourage growth, but over time are obliged to invest in more deprived areas, too. Factor mobility and political expediency therefore ensure that incomes are relatively equalised in the long run.

This model draws attention to an important equilibrating mechanism: the role of migration. If the costs of migration are low enough, then workers will relocate from low- to high-wage locations, which ought to raise average wages in the sending region as supply diminishes and lower them in the receiving region. There were indeed large migration flows in colonial French West Africa, both rural-rural and rural-urban, and to a great extent the direction and magnitude of these flows was related to average income differences between regions (De Haas and Travieso 2022). These differences were not, of course, static. Lakroum (1981) offers an estimate of the ratio of the urban nominal wage and an average 'groundnut' wage: the ratio fluctuates below 1 prior to the Great Depression and shoots up over 1 during the crisis as sticky nominal wages and collapsing commodity prices reversed the spatial distribution of income. The ratio fell gradually back down to 1 by the end of the interwar period. Nonetheless, in general, migration flows almost never are sufficient to erase location rents. Substantial differences in real incomes across locations tend to persist, even if these

are overstated by comparing nominal incomes alone, since prices — and especially the price of non-tradeables — tend to equalize nominal income differences.

Higher real wages in cities could compensate for urban disamenities, though Gollin et al. (2021) find little evidence for this in contemporary Africa: pollution is more pronounced in rural areas; property crimes are higher in urban areas but the gap is nowhere near high enough to explain income differences, and public goods are more present in urban areas than in rural areas.[2] Another explanation for the persistence of income disparities is the role of spatial sorting: more highly skilled workers tend to move to urban areas, where the return to their skills is higher. This pattern of sorting will produce urban wage premiums even without a role for agglomeration effects or other intrinsic 'place effects'. The empirical literature suggests that in developing countries spatial sorting places a significant albeit not total role in generating urban premiums (Combes, Duranton and Gobillon 2008). That said, limited evidence from Africa suggests that spatial sorting is a much less pronounced driver of the rural-urban wage disparity (Jones, D'Aoust and Bernard 2017).

3. DATA

I compiled a new dataset of 2781 price entries and 49 wage observations from 49 cities across colonial French West Africa (see Table X) in 1948. The price data are taken from a series of price bulletins filled in by district administrators across Afrique Occidentale Française, every three months in the post-World War II period. The returns for some years have been preserved in the *Archives nationales du Sénégal*, though there are gaps that make establishing even a series for the relatively short post-war period tricky. I collected prices for five colonies: Haute-Volta, Niger, Soudan français, Guinée and Dahomey. The composition of the commodity list is not completely uniform, though approximately 114 commodities are regularly listed on the price lists, even if there are nearly always major gaps for most towns. The gaps, in fact, are moderately informative about how uneven market development was. In some interior towns, workers and officials could purchase the full wide range of imported European goods, like cognac and cigarettes; in others, markets featured mostly locally produced foodstuffs.[3]

The wages I use to represent unskilled workers are those for *boys*, i.e., male domestic servants. For other years in which I have information on the wages of *manoeuvres* (day labourers) and of *boys*, the two are roughly equivalent (see Table 1).

Source	Location and year	Boy	Manœuvre
Bulletin de l'Agence économique de l'Afrique occidentale française, March 1933	Senegal, 1932	60–150 francs per month	2–7 francs per day (assuming 25 days per month, 50–175 francs per month)

[2]

[3]The archival sources by colony are: Haute Volta Archives nationales du Sénégal (ANS) 22G 223, Guinee ANS 22G 222, Soudan ANS 22G 227, Niger ANS 22G 225, Dahomey ANS 22G 226.

Bulletin de l'Agence économique de l'Afrique occidentale française, March 1933	Soudan français, 1932	3 to 6 francs per day	1.5 to 3 francs per day, plus ration (usually around 75%–100% of the daily wage)
Bulletin de l'Agence économique de l'Afrique occidentale française, April 1933, p.138	Dahomey, 1932	60 to 150 francs per month	2 to 6 francs per day (Assuming 25 days per month, between 50 and 150 francs)
Bulletin de l'Agence économique de l'Afrique occidentale française, January 1932, p. 88	Haute Volta, 1932	1 to 3.75 francs per day	1 to 2.5 francs per day

TABLE 1. Observations of *boy* and *manœuvre* wages in various locations of Afrique occidentale française, early 1930s.

The advantage of using the *boy* wages is simply that the French almost invariably reported price and nominal wage data separately, and the price sheets for the early post-war period do not include nominal wages except for the *boys*, cooks (*cuisiniers*) and *boy-cuisiniers*, which were typical expenditure items for European officials even away from the major urban settlements. Unfortunately, wages for female workers are too scattered to be used systematically, though those that exist suggest that African women were paid less than African men: in the town of Natitingou, in northern Dahomey, a *boy* was paid 950 francs per month in 1948, while a female domestic worker who could sew and look after children was paid between 700 and 900 francs per month.

Despite their ubiquity in colonial households, historical scholarship on the *boys* is limited and scattered (Faye 2017: 109–10). The importance of male domestic household labour in urban French West Africa dates to the abolition of slavery and the perceived necessity of finding work for children who had fled slavery on the mainland (Faye 1993). The use of freed slaves as domestic servants by European households remained a major part of the urban economy of Senegal for much of the 19th and early 20th centuries. (Duke Bryant 2019). Despite the name, many *boys* were in fact adult men, only some of whom may have begun working as children. The role often involved tasks traditionally considered 'women's work', including washing and cooking (Gardini 2016). Importantly for our purposes in this paper, the position of *boy* was often occupied by those who might otherwise have found work as unskilled labourers. The autobiography of Seydou Traoré (1975), one of the pioneering works of French-language Malian literature, makes this clear: Traoré moves seamlessly from working as a *boy* in the households of various officials and working as an unskilled labourer at jobs like painting scrap metal and cutting grass along the Dakar-Niger railway line.[4] For Traoré, working as a *boy* seems to have been just another form of rela-

[4]

tively unskilled work, interchangeable to some degree with others. The extent to which these wages reflect thick labour markets obviously varies from location to location. In some towns, it is likely that European officials formed the bulk of the demand side of the market. In towns that were situated on colonial railways, and in areas with European-owned plantations, there probably existed a wider variety of employment possibilities. It is worth bearing this in mind when interpreting the regressions which include indicators for colonial railway presence.

4. SPATIAL INEQUALITY IN PRICES

Variation in commodity prices was generally speaking higher than the variation in nominal wages, though there were some exceptions. Measuring the variation of prices using our data is not straightforward because prices were not always quoted in each market, and traditional measures of dispersion (in particular the coefficient of variation) will give biased results if we simply calculate them based on the markets in which prices were quoted if prices are not missing at random. Because the wages of *boys* were quoted in nearly every market, I therefore compare the coefficient of variation for *boy* prices with the coefficient of variation for selected other goods, *keeping the set of locations* constant between the two. For example, if bread is quoted only in Bamako, Niamey and Cotonou, I calculate the coefficient of variation over these three markets for bread and for *boys* (though the coefficient of variation for the cost of a *boy* is fairly stable over different sets of markets, ranging between 0.28 and 0.33). The results for several products are presented in Table 2.

Sugar and petrol, which were universally imported, had a slightly lower coefficient of variation than did wages in the cities for which both were quoted. On the other hand, there was large variation in prices for foods that were produced and consumed essentially locally: cassava and sweet potato having particularly large variations in prices relative to nominal wages. Soap was an intermediate case (there was some local production). The price of millet varied widely, a result that is barely changed if we limit the sample of towns to those in which millet was present in the lowest-cost diets presented in the next section.

	Coefficient of variation	Coefficient of variation of monthly nominal wage, *boy (francs)*	Number of towns both quoted
Sugar	0.22	0.28	48
Petrol	0.26	0.28	52
Bread	0.35	0.26	35
Beef	0.41	0.28	47
Haircut	0.43	0.32	20
Soap	0.47	0.29	48
Millet	0.49	0.30	43
Sweet potato	0.62	0.30	33

Charcoal	0.63	0.30	41
Cassava	0.66	0.31	37

TABLE 2. Price dispersion in French West African towns, c. December 1948

Sources: Price and nominal wage dataset, elaborated by the author from price sheets in National Archives of Senegal (henceforth ANS): for Haute Volta folder ANS 22 G 223; for Guinee folder ANS 22G 222; for Soudan folder ANS 22G 227; for Niger folder ANS 22G 225; and for Dahomey folder ANS 22G 226.

Variation in *nominal* wages, of course, affected other prices directly. This was particularly the case for non-tradeable services, which typically reflect labour costs more completely than other goods and services. The relationship between wages and the price of non-tradeable services in French West Africa can be seen clearly in Figure 1 when I compare the nominal price of a haircut with the nominal wage in a subset of towns for which price quotations were given for both items. It shows a clear positive correlation (Pearson's correlation coefficient = 0.72). High wage cities had high prices for non-tradeables like haircuts, as well as to some extent for other non-tradeables like cinema tickets (Pearson's correlation coefficient = 0.48, n = 17). This pattern has implications for production specialization in African cities.

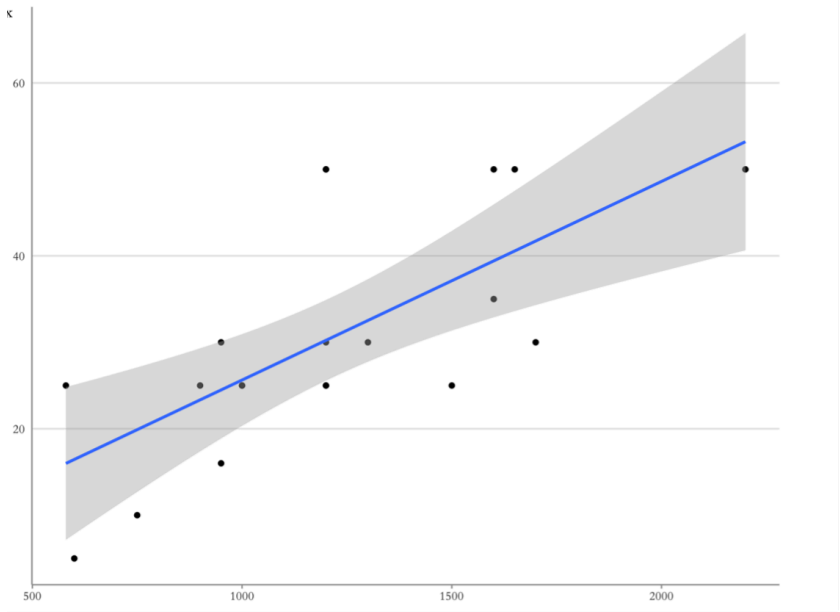

FIGURE 1. Relationship between haircut price (y-axis, in francs) and nominal monthly unskilled wage for domestic servants (x-axis, in francs) in French West Africa, December 1948. *Source*: price and wage dataset described in text.

What impact did the pattern of price and wage dispersion have on welfare ratios? The method used here to compare incomes across space is by now very familiar to economic historians: the 'welfare ratio' methodology of Robert Allen (2001). It involves the construction of a subsistence basket of goods designed to meet mainly physiological needs: a minimum amount of calories and protein, as well as some cooking fats, sugar, soap, cloth, lighting and heating fuel, and an allowance for housing. Since consumption patterns are not constant over space, the calorie and protein requirements, which usually account for the bulk of expenditure, can be fulfilled by the range of foodstuffs actually for sale in any given location.

Variable portion of basket (subsistence basket is the minimum-cost combination to achieve 2100 calories, 50g of protein and 34g of fat per day per adult male equivalent)			
	Calories per kg	Protein (g) per kg	Fat (g) per kg
Maize	3650	94.2	47.4
Peanut oil	8840	0	1000
Bread	2380	93.2	35.9
Beef	2610	256	168
Millet	3780	110	42.2
Beans	310	18.3	2.2
Rice	3600	66.1	5.8
Dried fish	2900	628	23.7
Yam	1180	15.3	1.7
Pork	2990	269	212
Fixed portion of the basket (annual consumption per adult male equivalent)			
Soap	1,3 kg	Charcoal	58 kg
Petrol	1.3 litres	Candles and rent	Additional 7.5% of basket
Clothing:	1 shirt		

TABLE 3. Composition of subsistence basket in French West Africa.

Notes: Adapted from Allen (2001) and Frankema and van Waijenburg (2012).

Following Allen (2001), the procedure I follow is to first calculate the food portion of the basket using a linear programming approach, described below, to calculate the minimum cost of a set of foodstuffs that satisfy the basic human requirements for calories, protein and fat. I then add 1.3 kg of soap and 1.3 litres of petrol to the basket, as well as 58 kilograms of charcoal for heating.[5] Finally, following Frankema and van Waijenburg (2012), I add an additional 7.5% to the basket cost to account for candles and rent (I discuss the price of housing, a key non-tradeable consumption item, later in the paper). For clothing, I depart slightly from the Allen methodology and simply take a common piece of clothing — a shirt

[5]The price lists also include firewood, but the prices for firewood are usually difficult to interpret, since they do not give the type of wood (different types have quite different energy contents) but also usually give prices in units whose weight was likely variable, like a 'tas' or a 'fagot').

for an African man — and consider one shirt a year to be a subsistence quantity of clothing (this is owing to the general lack of prices on fabric sold by the metre).

Not all of these prices were quoted in each town, and unlike for the food portion of the basket, I do not allow for substitution. Therefore, it is necessary to estimate missing prices (here I assume that items were available for purchase in towns without quotations). I experimented with several more elaborate methods, in particular regression-based approaches, but there was little overall explanatory power in the regressions, and the point estimates came with very large standard errors. Consequently, I have decided simply to assign the *maximum* price by colony and by product to missing values (that is to say, if Agadez is missing a price quotation for soap, I assign it the highest existing quotation for soap in the colony of Niger). It is more usual to assign the average price to missing values, but since I believe that missing prices tend to indicate the difficulty of obtaining a given product, it seems more appropriate to assume that the price of a given good like charcoal would, if procured in a location without an explicit price quotation, be higher than the average price for the colony.

It may be objected that this is likely to bias the basket price estimates higher (and hence the welfare ratio estimates lower) for more remote towns, since it is possible that the items were *not quoted but nonetheless available*. I believe this is unlikely, since the price bulletins will sometimes explicitly state that certain common imported items were unavailable for purchase in the town, and this reflects the nature of French commercial penetration in its colonies. Using the mean of the colony's prices rather than the maximum does change the welfare ratios somewhat: for example, the unweighted average for Dahomey increases from 2.07 when using the maximum price to 2.25 when using the minimum; Niger's goes from 1.31 to 1.44. Changing this assumption, though, does not change the overall ranking of colonies, nor does it change the major results of the regressions.

In order to estimate the food portion of the subsistence basket, and following recent work on real wages and poverty (Allen 2017; Zegarra 2021). I estimate least-cost baskets using linear programming. That is to say, I take a set of prices as given, and establish a set of minimum nutritional requirements (2100 calories, 50 grams of protein and 34 grams of fat per adult male equivalent per day). For each location, I minimise the cost of a basket of goods subject to the three nutritional constraints:

$$\min \sum_{i=1}^{n} p_i q_i$$

where i indexes goods and p represents the price in francs, q the quantity, subject to constraints of the form

$$\sum_{i=1}^{n} \alpha_i q_i \geq F_{K\alpha}$$

where α is the content of a unit of i in some given nutrient (calories, protein, fat) and $F_{K\alpha}$ is the minimum daily amount as described by Allen in his work on least cost diets.

I do not interpolate or otherwise project prices for goods that were not reported, on the assumption (which may be too strong) that if a price was not quoted in a given town then it was not available for purchase, at least not in December 1948. Using the *lpsolve* package in R, I set up and solve the linear programming problem town by town. The least-cost diets are summarised in Table 3. Mostly, they accord with what we know about provisioning strategies in West Africa, particularly in the savanna/Sahel: the predominance of millet and

cooking oil, in particular. There are however some surprises: for example, the existence of bread in the least cost diets for Athiémé in Dahomey, where the price of bread was particularly low by West African standards.

It is possible that the fact that the price lists tended not to give prices for an important foodstuff, raw maize grain,[6] will bias the results somewhat, particularly for towns in more equatorial latitudes, since maize appears in the least-cost diet for only a handful of towns in Dahomey and Guinea. Bananas/plantain appear in the diets for several towns, while cassava appears only in the diet for Abomey. Most of the least-cost diets are purely vegetarian,[7] though the Saharan town of Agadez is a striking exception: given the lack of local grain production, a fully beef/mutton-based diet was the least expensive, if not the most healthy, way of procuring the minimum quantities of calories, protein and fat. Considering only the food portion of the overall cost of the subsistence basket, the coefficient of variation is high: 0.55 across all locations in French West Africa; considering the total subsistence basket cost (food portion plus other items) the coefficient is 0.41.

Least cost diet	Towns
Maize and peanut oil	**Dahomey**: Porto-Novo, Cotonou, Abomey, Parakou
Maize, bread and peanut oil	**Dahomey**: Athiémé
Maize, meat and peanut oil	**Guinée**: Kindia
Millet and peanut oil	**Dahomey**: Parakou, Natitingou, Gourou **Soudan français**: Bafoulabé, Bandiagara, Bamako, Goundam, San, Niafunké, Koutiala, Kita, Kayes, Gao Niger: Zinder, N'Guigmi, Tahoua, Gouré, Niamey, Dosso, Tillabéry **Haute-Volta**: Ouagadougou, Koudougou, Tougan, Ouahigouya, Bobo-Dioulasso, **Guinee**: Kankan, Tougé, Dabola, Labé, Dubréka, Bolé, Dalaba, Conakry, Diguinraye, Forécariah
Millet and beans	**Soudan français**: Sikasso
Rice, dried fish and peanut oil	**Guinée**: Boffa
Millet, rice and peanut oil	**Guinée**: Faranah
Rice and peanut oil	**Guinée**: Guéckédou, **Soudan français**: Nioro
Yam, pork and peanut oil	**Soudan français**: Koulouba
Dried fish and peanut oil	**Niger**: Maradi
Meat only	**Niger**: Agadez

TABLE 4. Composition of least cost diets by town and colony in French West Africa, December 1948

Source: price and wage dataset described in text, author's calculations.

[6]Though maize meal, 'sémoule de maïs', is specified in the price lists, prices were often not given. It is unclear whether this was because maize meal was not sold at all, or whether it was sold in such small quantities that district administrators chose not to collect prices.

[7]Allen finds a similar result when using the three-constraint diet for contemporary developing countries.

The distribution of real wages lends some credibility to at least one temporal end of the hypothesised West African 'reversal of fortune', even among the poorer colonies of Afrique Occidentale Française: the highest wages seem to be recorded in the southern part of Benin, and in southern Mali, near the border with Senegal. There were appreciable differences in the average real wage across the five colonies in our dataset. Whether we consider the unweighted or the population-weighted average real wage, the colony of Niger had the lowest real wages on average and the southern colony of Dahomey the highest, while — perhaps surprisingly — the traditional labour reserves of Haute-Volta and Soudan français had quite high real wages. In particular, the Soudanese town of Sikasso, near the borders with Côte d'Ivoire and Haute-Volta, had a very high real wage, driven in part by the fact that millet was cheaper there than in any other town in the dataset, at 4.75 francs per kilogram.

Colony	Town	Welfare ratio	Nominal *boy* wage (francs per month)
Dahomey	Abomey	2.09	750
	Cotonou	2.55	1,200
	Natitingou	1.59	950
	Parakou	2.07	1,200
	Porto-Novo	3.33	1,700
	Savalou	0.785	1,250
Guinea	Boffa	1.43	1,500
	Boké	1.39	1,150
	Conakry	2.15	2,200
	Dabola	1.9	1,250
	Dalaba	1.2	1,200
	Diguinraye	2.36	2,000
	Dubréka	1.05	1,050
	Faranah	1.03	1,050
	Forécariah	1.54	1,500
	Kankan	1.78	1,470
	Kindia	1.32	1,350
	Labé	1.14	1,200
	Mamou	1.59	1,200
Haute-Volta	Bobo-Dioulasso	2.59	1,650
	Fada-Ngourma	1.82	1,000
	Gaoua	2.03	1,100

	Koudougou	1.79	1,200
	Ouahigouya	1.14	800
	Tenkodogo	0.513	750
	Tougan	1.29	800
Niger	Agadez	0.46	1,000
	Dosso	1.3	825
	Goure	1.52	1,000
	Maradi	1.64	1,200
	N'Guigmi	1.29	900
	Niamey	1.67	1,300
	Tahoua	1.6	800
	Tillabéry	1.4	1000
	Zinder	0.88	580
Soudan français	Bafoulabé	2.54	1,500
	Bamako	2.03	1,650
	Bandiagara	1.08	1,200
	Gao	1.0	1,600
	Goundam	1.46	850
	Kayes	2.0	1,600
	Kita	2.61	1,500
	Koulouba	1.91	1,200
	Koutiala	1.66	1,050
	Niafunké	1.54	1,000
	Nioro	1.47	1,000
	San	1.77	1,000
	Sikasso	3.87	1,950
	Tombouctou	1.39	800

TABLE 5. Welfare ratios across French West Africa, dry season 1948/9.

Source: price and wage dataset described in text.

Cheap millet appears to have been a longstanding attraction of Sikasso, since the colony-wide minimum and maximum prices given in the *Bulletin mensuel de l'Agence économique de l'Afrique occidentale française* for Soudan français frequently cited Sikasso as the cheapest town in the colony: in the dry season of 1923, for example, millet there cost 0.1 francs per kilo, compared to 0.5 francs in the town of Kayes, near the border with Senegal. The same pattern could be observed again in September 1936, when the millet price was 0.3 francs in

Sikasso and 1.2 francs in Kayes. Sikasso is located in the most agriculturally productive part of Soudan français/Mali, so it is unsurprising that food prices were lowest there; that the real wage for domestic servants was correspondingly high is not surprising on its own terms, but provides an interesting contrast to the 'paradoxe de Sikasso' in contemporary Mali, which refers to the fact that poverty is higher there than anywhere else in rural Mali despite very favourable agricultural conditions (Delarue, Mesplé-Somps and Naudet, 2009).

Colony	Unweighted average real wage	Population-weighted average real wage
Dahomey	2.25	2.89
Guinée française	1.52	1.69
Haute-Volta	1.67	2.29
Soudan français	1.94	2.06
Niger	1.44	1.51

TABLE 6. Population-weighted and unweighted average real wage by colony

Source: price and wage dataset described in text; author's calculations; population figures from the Gouvernement general de l'Afrique occidentale française, *Annuaire statistique de l'Afrique occidentale française 1950-1954*, vol 1.

There were five towns with welfare ratios lower than 1: two were in Niger (Agadez and Zinder), and one each in Dahomey (Savalou), Soudan français (Gao) and Haute-Volta (Tenkodogo). In four, the culprit seems to have been very expensive food: in Agadez, as suggested above, the linear programming solution suggests a diet composed purely of mutton. In Tenkodogo and Gao, millet was very expensive in December 1948: possibly a one-off event. In Savalou, the high cost of the linear programming diet (which incorporated oil, yams and pork) might be due to the lack of a maize price quotation for that month, though whether this is because no maize was obtainable or because the district official omitted to collect a price is unclear. Without a more complete panel, we should be careful about over-interpreting any one results, since prices are volatile from month to month, and the price of starchy staples in particularly—which tended to be only locally traded, if they were traded at all—had a large influence on the overall cost of the subsistence basket.

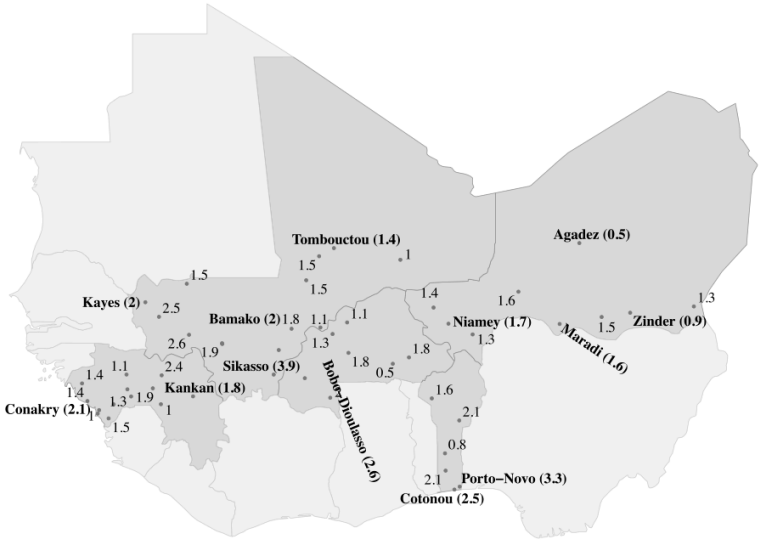

FIGURE 2. Welfare ratios across Afrique Occidentale Française, dry season 1948. *Source*: Author's calculations from price and wage dataset presented in the main text.

6. CORRELATES OF REAL AND URBAN WAGES

The complicated and endogenous nature of city location and population make it more or less impossible to establish rigorous causal estimates of the *determinants* of real incomes in French West Africa, at least from a cross section. In this section, I examine pure correlations to try to generate some hypotheses for future research. The most obvious thing to test is whether or not there was an urban size premium in French West Africa. To do this, in Table 5, I regress the log real and nominal wage, as well as the cost of the subsistence basket population in 1950 (columns 1–3). In columns 4–6, I add a dummy variable to indicate whether the town is a capital of a colony. It would have been interesting to test whether being the capital of a *cercle*—the basic administrative division in AOF—was associated with higher wages or higher living costs. Unfortunately, there are only a few towns in the dataset that were *not* capitals of cercles.

	(1)	(2)	(3)	(4)	(5)	(6)
	Real wage (log)	Nominal wage (log)	Basket cost (log)	Real wage (log)	Nominal wage (log)	Basket cost (log)
Intercept	−0.89*	6.28***	9.65***	−0.50	6.66***	9.64***
	(0.40)	(0.33)	(0.35)	(0.39)	(0.37)	(0.42)
Population (log)	0.15***	0.09*	−0.06	0.11*	0.04	0.06
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)

Capital city dummy				0.28* (0.13)	0.36** (0.11)	0.07 (0.14)
N	48	48	48	47	47	47
R^2	0.13	0.09	0.03	0.14	0.17	0.04

TABLE 7. Urban size premium in French West Africa, 1948.

Notes: P-values are described as follows: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Heteroskedasticity-robust standard errors, presented below the coefficients in parentheses, are calculated using the lmtest package in R. *Source*: Author's analysis of dataset presented in the text.

We can see some evidence for the idea that larger cities had higher wages, even without including the bigger urban settlements in Senegal and Côte d'Ivoire. In column 1, the coefficients imply that an increase in the population of 10% would lead to roughly a 1.5% increase in the real wage. In column 2, we see a statistically significant relationship between the nominal wage and the size of the population: a 10% increase in the population is associated with a 0.9% increase in the nominal wage. There is no significant relationship between the cost of the subsistence basket and population (column 3).

When I add the capital city dummy in columns 4–6, the estimated coefficient for population declines. There is a statistically significant relationship between a town being the capital and having a higher real wage, holding population constant. The capital city dummy is significant in the regression for the nominal wage too, but not the population coefficient. It is possible that part of what appears to be an urban premium is in fact a nominal wage premium in colonial capitals. The capital cities were where the vast bulk of French administrators lived, creating demand for domestic servants that would have been much less acute in other towns. In addition, the colonial salary scale for unskilled African workers in the colonial capitals (the colonial administration in each colony employed a considerable number of guards and other unskilled workers) may have influenced wages for *boys* in those towns more than in the hinterland settlements.

Of course, causation cannot be established from these regressions; there is obvious potential for omitted variable bias. More agriculturally productive regions may support larger towns and raise the reservation wage, for example. Colonial capitals might be established on the coast to facilitate access to the metropole, while the cost of imported goods will be lower on the coast than inland. In Table 6, therefore, I add a series of controls. I do not claim they are exhaustive, or that they establish causality. The potential that other omitted variables are creating bias remains. In columns 1–3, I include as controls Galor and Özak's (2016) calorific suitability index,[8] average temperature (celcius) and average rainfall from WorldClim (Fick and Hijmans, 2017), and longitude and latitude. These variables are likely to be exogenous to incomes and subsistence basket costs, though not to population. In columns 4–6, I also add two variables that are much less likely to be exogenous: the log of the European population of each town (taken from the *Annuaire statististique de l'Afrique occidentale française*), and a dummy to indicate whether or not the town had a railway station or not (Jedwab and Moradi 2016).

When I control for these potential confounders, the statistical significance on the population variable remains, though it declines somewhat in magnitude in the regression for the real wage. Higher calorific yield of a town's hinterland (defined by a 50 km radius from the

[8]

town centre) is positively associated with the real wage, while the subsistence basket cost is cheaper in these areas. One possible interpretation is simply that the food is cheaper where agriculture is more productive, and this cost-of-living effect drives real wages higher. This may not necessarily be because higher agricultural productivity causes higher incomes: for one thing, there is a strong correlation between the calorific yield of a location and its distance from the coast (and hence with the cost of transporting imported goods). When I add the two additional variables in columns 4-6—access to a railway, and share of the population that is European—I do not find significant results for those variables, though adding them lowers the magnitude of the coefficient on the population variable, and leads to a loss of statistical significance for it. One tentative hypothesis that could be made is that the railway and a greater presence of the colonial administration were the reason that larger towns tended to have higher real wages for unskilled workers. Firm conclusions from this pattern of correlations in a single cross-section should be avoided, though.

	(1)	(2)	(3)	(4)	(5)	(6)
	Real wages (log	Nominal wages (log)	Subsistence basket costs (log)†	Real wages (log)	Nominal wages (log)	Subsistence basket costs (log)
Intercept	−1.20 (2.05)	5.11** (1.69)	6.40* (2.04)	1.46 (1.90)	4.64** (1.52)	5.66* (2.44)
Population (log)	0.12** (0.04)	0.09* (0.03)	−0.03 (0.04)	0.07 (0.06)	0.06 (0.04)	−0.01 (0.03)
Calorific yield (calories per 5x5 cell)	0.09* (0.04)	−0.02 (0.03)	−0.11* (0.05)	0.09* (0.04)	−0.02 (0.03)	−0.11* (0.05)
Average temperature (degrees Celcius)	0.41 (0.20)	0.19 (0.12)	−0.22 (0.17)	0.36* (0.17)	0.19 (0.11)	−0.17 (0.16)
Average rainfall (annual, mm)	−0.39 (0.21)	0.12 (0.18)	0.50* (0.20)	−0.37 (0.22)	−0.19 (0.17)	0.56* (0.24)
Longitude	−0.08 (0.05)	−0.00 (0.04)	0.08 (0.06)	−0.07 (0.06)	−0.02 (0.04)	0.09 (0.07)
Latitude	−0.03 (0.02)	−0.01 (0.01)	0.01 (0.01)	−0.03 (0.02)	−0.01 (0.01)	0.02 (0.01)
Railway access dummy				0.23 (0.17)	0.15 (0.10)	−0.08 (0.14)

European share of the population (%)				−0.35 (0.72)	0.27 (0.80)	0.08 (0.73)
N	48	48	48	46	46	46
R^2	0.31	0.37	0.24	0.37	0.42	0.25

TABLE 8. Correlates of real wages, nominal wages and subsistence basket costs in urban Afrique Occidentale Française, December 1948.

Notes: Heteroskedasticity-robust standard errors, presented below the coefficients in parentheses, are calculated using the lmtest package in R. *Source:* Author's analysis of dataset presented in the text.

7. CONCLUSION

Overall, this article has found some evidence for an urban premium in late colonial French West Africa. Nonetheless, the search for determinants has not been exhaustive. There are other plausible reasons for the real wage premium for more populous urban areas, including urban disamenities, and aspects of the cost of living that are not fully included in the subsistence basket. The most obvious of these is housing, which is accounted for in the Allen basket only crudely. As Westland (2021) has argued, housing costs were often one of the most important components of the cost of living in late colonial French West Africa. He finds a positive correlation between the welfare ratio as calculated using the Allen 5% rent assumption and the magnitude of the correction required when taking account of actual working class rents across a sample of towns in French West Africa in 1951. This suggests that rents were cannibalising a considerable part of the nominal wage premium of larger urban centres. The domestic servants considered in this paper probably did not pay for their own housing, since they were almost certainly housed with their employers. Further research into the question of housing costs and the extent to which they capitalised location rents is needed.

Larger African towns and cities, it appears, were places of higher real incomes, partly because of their size, itself driven to some extent by the existence of railway infrastructure. However, the fact that *real* incomes were higher in such towns suggests that either urban-urban mobility was constrained in some way, or that there were actual agglomeration economies that made workers in larger African cities more productive than their counterparts in smaller towns. The cost of feeding and clothing a family was to some degree determined by the productivity of the land surrounding the town, suggesting that imperfect market integration for foodstuffs and other items of consumption drove differences in welfare across space. Further research on the evolution of these inequalities across time would help to understand the drivers of spatial inequality in colonial Africa, and hence our understanding of the long-run development of disparities in income that still characterise the continent.

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